the Edwards and equivalent units include burrowed and algal mudstone, skeletal siltite, skeletal calcarenite, rudist reef, and planktonic foraminiferal carbonate mudstone. Comparing the Cretaceous and Recent models, a change in reef frame from rudists to corals is the principal difference but minor faunal components in back-reef sediments are similar.

Rock samples are described quantitatively and compared vectorially. A reduction in the dimensions of the vector space is accomplished by factor analysis. Sample composition of the reef and associated facies is determined from the resulting rotated factor matrix. A factor score, computed by post-multiplying the transpose of the standardized data matrix by the square of the rotated factor matrix, emphasizes important rock components controlling the various facies. Thus, the number of critical components needed to outline the environments is reduced.

Parameters for the analysis include components modified by textural and structural adjectives (excluding burrowed carbonate mudstone). A second factor analysis was run using only important faunal components as outlined by the factor score. Environments outlined by the two analyses are very similar notwithstanding this reduction in the number of descriptive parameters. However, micro-sedimentary structures and textures are important in environmental interpretation of facies containing extinct faunas.

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UNIT REGIONAL VALUE AS BASIS FOR DECISION-MAKING IN SELECTING AN EXPLORATION STRATEGY

In a private-enterprise economy it is necessary that the search for, and development of, the non-renewable natural resources lead to a profit. The United States has produced such resources in the amount of $458.101 billion in the period 1911–1964, or has returned $151,569 per square mile. The value per square mile by states (1911–1964) ranges from $\$1 \times 10^6$ for Pennsylvania to $\$1.09 \times 10^4$ for Maine. The returns for Oregon ($9,508)-Maine ($10,906) and Minnesota ($136,264)-Indiana ($166,251) are similar despite very different geological environments between the similar pairs.

The objective of decision-making in selecting alternate exploration strategies is to select an optimal one; the potential value of a region is one attractive criterion. For example, a return for Alaska of $3,483 per square mile is so far below the average expected value for the United States, and the geological environment of Alaska is sufficiently varied that a very large return from a systematic search procedure is almost guaranteed.

On this basis an examination of the value per unit area (or volume) of the earth's surface would pinpoint those areas which are over- and under-developed; coupled with broad geological comparisons among over- and under-developed areas this would indicate the areas of greatest future potential.

Systematic search procedure of a large region would supply an inventory of its natural resources and this may then be used for an orderly development of these resources; from the figures on past production per unit area of the United States, this search program also will almost certainly be a commercial success. Such a program would supply a wealth of geological information and rejuvenate local exploration for specific resources.

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STRATIGRAPHY AND PETROLOGY OF BECK SPRING DOLOMITE (PRECAMBRIAN), KINGSTON RANGE, SAN BERNARDINO COUNTY, CALIFORNIA

The Beck Spring Dolomite (Pahrump Group, upper Precambrian) has an average thickness of 1,300 feet in the type area, Kingston Range, San Bernardino County, California, where it is divided into three unnamed members. The lower member, 500–700 feet thick, is composed of alternating laminae of finely crystalline and medium-crystalline dolomite mosaic. Allochem ghosts are scarce but include intraclasts and pellets. The laminae are primary features modified by replacement and recrystallization. The middle member, a replaced oölite calcarenite, is 300–400 feet thick, composed of finely to medium-crystalline dolomite mosaic with abundant ghosts of oölites, pisolites, and pellet-lump intraclasts. Selective replacement by quartz is fairly common, as well as re-dolomitization in some places. The upper member, 400–500 feet thick, resembles the middle member, but is partly laminated, has been extensively replaced by chert, and is brecciated and recemented. Allochem ghosts are similar to those found in the middle member. Although contacts are gradational, the three members can be traced throughout the type area.

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HERITAGE OF PETROLEUM GEOLOGISTS

The heritage left us by the early petroleum geologists has been ignored and practically forgotten. Those geologists should be remembered not so much for their achievements, but for their methods of applying the geological science and their contribution to it. These methods and contributions should be "dusted off" and restudied, and once again used as guideposts for future thinking. Their intrepidity, firm persuasion, and complete dependence on sheer intellect created the basic concepts which were responsible for world-wide, successful petroleum exploration. It is stressed that, to meet exploration requirements of the future, the profession must develop more original ideas, and not be afraid to push those ideas forward into fruition. It is only then that modern geologists will emulate their predecessors, who, as pure scientists and free-thinkers, conquered their problems through their strong courage of conviction.

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GEOLOGIC SUCCESS AND ECONOMIC FAILURE (ARE WE HUNTING ROCKS OR DOLLARS?)

A geologic success that is an economic failure may range from a structurally high dry hole to a large and prolific gas discovery located in a sparsely settled area where there is neither a gas market nor prospects for getting one in the near future. If a project is not an economic success, it is, to some degree, an economic failure because there is no neutral ground. Economic success generally is measured by rate of return on invested capital and by total profit related to investment.

In addition to direct costs, the cost of money or capital and the cost of taxes are two very important factors affecting economic success, and must be considered in appraising a venture. The question, "How much oil or gas must be found for economic success?"