Pennsylvanian, providing reservoirs in numerous oil fields such as Aneth and Cache-Ismay. Although these are generally considered to be randomly distributed stratigraphic traps, there is ample evidence that sedimentary growth of the bioherms was localized on very gentle, basement-controlled paleostructures. Although the reservoirs are generally too thin for recognition on present-day seismic sections, seismic mapping of paleostructure, not Laramide structure, is the key to further exploration of the lucrative basin.

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Mesozoic and Early Cenozoic Arc-Trench System of California—Do the Pieces Still Fit?

The Mesozoic and early Cenozoic arc-trench system of California has been interpreted to include the Franciscan Complex as a subduction complex, the Great Valley sequence as a fore-arc basin, and the Sierra Nevada batholith and volcanic rocks in the western states as the magmatic arc. The similar ages of these elements and the stacking sequence in the Franciscan Complex (youngest to the west) are consistent with this interpretation. However, some recent studies in paleomagnetics, radiometric dating, and sandstone petrology, particularly in the Franciscan Complex, suggest that a simple model of subduction and accretion does not explain many relations.

With the growing evidence for lateral translations of microplate along the Pacific margin during the Mesozoic and Cenozoic, some authors have attempted to explain Franciscan complexities by these large-scale lateral translations. Limestone and volcanic blocks in the Franciscan melange have been shown to be allochthonous, but there is yet no definitive evidence for large-scale translations of the melange as a whole. Several problems remain unsolved, including the relation between blueschist terranes, the large time delay between deposition of some sediments and their subsequent metamorphism to blueschist facies, the relation of sandstone provenance between the fore-arc basin and subjection complex, the distribution of sedimentary facies across the entire trench slope/fore-arc region, and the differing styles of deformation in the various Franciscan belts. Recent studies of modern and ancient arc-trench systems help explain some of these problems, but others remain enigmatic.

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Thermal Effects on Sedimentary Organic Matter and Recognition and Mapping of Subjacent Igneous Plutons, Ruby Range, Colorado

The Ruby Range igenous complex, west-central Colorado, is characterized by mid-Tertiary granodiorite plutons which intrude Paleozoic, Mesozoic, and Tertiary strata. Conventional contact metamorphism is limited to a mile-wide zone adjacent to the Ruby Range axis. Geochemical and related studies, including hydrocarbon levels and types, kerogen composition, visual kerogen, and vitrinite observations, on the organic matter in intruded sediments demonstrate that low-grade thermal metamorphic effects extend about 6 mi (9.6 km) from the Ruby Range intrusive axis. This is an unusually wide thermal aureole and indicates important heat sources in addition to the intrusions along the Ruby Range axis. Peripheral sills and laccoliths caused little thermal effect on the sediments. It is concluded that the thermal aureole adjacent to the Ruby Range is enlarged because of subjacent intrusions. Specifically, it is postulated that the White Rock pluton projects into the subsurface beneath the sedimentary cover. Recognition of organic matter metamorphism in the overlying sediments permits tracing the approximate margin of the pluton from its outcrop area in the northeast for a distance of about 10 mi (16 km) to the southwest along its subjacent trend. Relations between the trend of metamorphic isotherms and topography indicate that the pluton has a steep (stocklike) southeast margin. Significantly, the recently discovered molybdenum deposit beneath Mt. Emmons, near Crested Butte, Colorado, is located approximately along the projected trend of the subjacent extension of the White Rock pluton. Recognition of very low grades of thermal metamorphism of organic matter may also have application to the location and evaluation of geothermal reservoirs.

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Corporate Strategies Among Domestic Uranium Explorationists

Exploration by the uranium industry has responded to adverse market conditions in a uniform and predictable manner. Exploration personnel were reduced drastically, and even eliminated entirely in some places. Grass roots exploration has all but come to a halt, with selected properties being designated for drilling in the near future. Only those properties with relatively high grade, high tonnage potential will be designated for exploration. The grade cutoff may be as high as 0.50%, depending on distance from the processing mill and other economic factors. The goal of exploration, as well as the production phase of the industry, is to weather the economic storm and survive. Exploration efforts must be concentrated close to a mill, with most activities being conducted by a small number of people. The geologic targets, if previously unexplored, must bear close resemblance to ore bodies that have proved productive in the past. Diversification into other mineral ventures, such as base and precious metals, may also be required for survival.

Foreign countries with exploration interests in the United States are subject to the same pressures as domestic companies, but are able to weather the storm more effectively than domestic companies due to government backing or ownership of many foreign exploration companies.

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Mechanism and Kinetics of Sulfate Inhibition on Dolomitization of Calcium Carbonate

Calcite and aragonite transformation to dolomite has been accomplished in a few days in hydrothermal experiments using artificial seawater without sulfate and in $MgCl_2$ + $CaCl_2$ + NaCl solutions of seawater ionic strength, at 200° and 150°C. Calcium carbonate transformation to dolomite is retarded and frequently inhibited, depending on the concentration of SO_4^{2-} in solution. The mechanism of this reaction is being investigated. Preliminary results indicate that it is a surface-controlled mechanism.

These results explain: (1) the formation of either primary or replacement dolomite in organic-rich sediments, especially in sedimentary environments or rapid sedimentation, in which microbial sulfate reduction prevails, and diffusive communication of the interstitial water with seawater is precluded; (2) the observed large variations—from negative to strongly positive