

ronment at several key reference sections in the study area.

NICHOLS, KATHRYN M., U.S. Geol. Survey, Denver, Colo.

Field Relations of Some Pre-Tertiary Dolomites in Great Basin

In marine, pre-Tertiary, carbonate-platform deposits, primary and secondary dolomites are commonly associated. "Primary" dolomite is used here in the sense of penecontemporaneous replacement of calcareous sediments essentially at the time of their deposition; primary dolomite preserves microcrystalline textures and fabrics indicative of inner-platform sedimentation. "Secondary" dolomite is used here in the sense of post-depositional replacement of limestone or calcareous sediment by the progressive, slow growth and coalescence of discrete dolomite crystals. Secondary dolomite is generally characterized by saccharoidal texture, which may be formed at different diagenetic stages, as well as by hydrothermal processes. The boundaries of secondary dolomites may cross-cut stratification surfaces, thereby making depositional and paleogeographic interpretation difficult.

Primary and secondary dolomites in the Great Basin commonly show a distinctive and recurrent pattern of spatial relations. In ascending order, marine limestone, which may be of any facies, is supplanted by sucrosic secondary dolomite, which in turn is overlain by primary dolomite. The boundary between the unaltered limestone and secondary dolomite is commonly a zone of mottled limestone and dolomite in which nodules or beds of secondary chert are present. The boundary between primary and secondary dolomite is abrupt and, in places, is an unconformity of regional extent. The regionally coextensive occurrence of primary and secondary dolomite indicates that secondary dolomitization is related to the formation of the overlying primary dolomite or to the surface on which it was formed, and is thus eogenetic. With the wide range of possible scenarios affecting the water chemistry of carbonate platforms, either the reflux or mixed-water hypothesis could be adapted to explain this pattern of coextensive occurrence of primary and secondary dolomites. For example, primary-dolomite areas could be associated with the concentration of magnesium or, through exposure, could be the avenue through which meteoric water is introduced into the system.

NININGER, ROBERT D., U.S. Dept. Energy, Rockville, Md.

Future of Uranium

The future of nuclear power has been uncertain for a number of years. However, despite somewhat lower forecasts than some years ago, nuclear is emerging again as a major future power source both in this country and throughout the world. Uranium is the mainstay of nuclear power whether alone or in combination with plutonium. If nonproliferation concerns dictate the former, much larger quantities of uranium will be needed than otherwise but, in either case, a many-fold increase in production will be required. Additional uranium re-

sources are being developed in the United States and the world at an adequate rate for the time being, but this rate will have to be increased substantially toward the latter part of the century. United States reserves calculated at a forward production cost of \$50/lb of U_3O_8 increased in 1978 by about the same amount as in 1977. Total estimated resources did not change significantly, however, and exploration activity has apparently begun to level off at least for the present. The development of uranium deposits in Texas and successful exploration to expand Texas uranium resources can play a significant, although probably not major, role in meeting United States uranium demand.

NOEL, DENISE G., Muséum Paris, and HÉLÈNE MANIVIT, BRGM, Orléans, France

Calcareous Nannoplankton in Upper Aptian and Albian Black Shales from South Atlantic (DSDP Legs 36, 40)—Sedimentologic Implications

Nannofacies analyses of 65 samples of Upper Aptian and Albian black shales from the Falkland Plateau, the Cape Basin, and the continental margin off Angola (South Atlantic, DSDP Leg 36, sites 327 to 330; DSDP Leg 40, sites 361 to 364) provide data on depositional environment. The presence of nannoplankton shows undeniable marine conditions, productivity of surface waters, and oceanic connections. The mode of fossilization (coccolith aggregates interpreted as coccospheres dislocated on the spot) indicates stagnant and confined depositional conditions, which are confirmed by the presence of pyrite framboids. Coccoliths that are present only as casts show that dissolution processes took place in the sediment and not in the water column.

NOEL, JAMES A., R. L. Burns Coal Corp. and Wright State Univ., Dayton, Ohio

Coal Resources of Part of Southern Illinois Basin

Pennsylvanian rocks in the southern Illinois basin are sandstone, shale, coal, and thin discontinuous beds of limestone. Stratigraphically these rocks and their associated coal seams have been designated: Caseyville Group, Mt. Rorah and Wise Ridge coals; Tradewater Group, Davis and Dekoven coals; Carbondale Group, #2, #2A, #3, #4, #5, #5A, and #6 coals. The Wise Ridge, Davis, Dekoven, #5, and #6 coals have been strip mined, and the #5 and #6 coals have been deep mined. Extensive subsurface reserves have been proven for the Davis, Dekoven, and #5 coal and strippable reserves for the #5.

The Pennsylvanian sediments dip to the north and northwest at 80 to 100 ft/mi. Rocks of the Tradewater Group have been faulted against Upper Mississippian sediments along the Shawneetown-Rough Creek fault, whose displacement is about 1,400 ft (420 m). The up-thrown block forms a broad curving ridge with a steep fault-line scarp on the north and this ridge is the dominant topographic feature of the area. The Cottage Grove fault trends slightly north of west across the northern boundary of the area and has a displacement up to 150 ft (45 m). No structural features have been discovered on the east and west sides of the area.

The sediments between the coals generally consist of,