epoch of activity, extending from the Middle Jurassic until the Early Cretaceous time it has been queiscent and the Central graben has been filled successively by chalks, sandstones, and, finally during most of the Tertiary, by shales or mudstones. The rate of subsidence of the basin, calculated by plotting observed depth in hole versus time, during this quiescent period appears to increase in the later stages. However, when compaction, water depth of deposition, and sediment load are considered, the rate of subsidence of the basement becomes close to linear trending to exponential.

Between 50 and 100% stretching of the Central graben during the last epoch of activity can account for the observed amplitude and rate of subsidence. Such stretching is compatible with the measured heat flow and though there is no actual seismic refraction data across the Central graben this explanation is strongly supported by evidence of a thinner crust under the Viking, Witchground, and Buchan grabens to the north. A geologic model based on stretching which can account for the Jurassic and Early Cretaceous faulting and the general post–mid-Cretaceous saucer-shaped basin is presented. On the basis of this model the thermal maturity and hydrocarbon potential of certain sedimentary horizons in the northern part of the Central graben are examined.

SCOTT, R. W., Amoco Production Co., Tulsa, OK

Early Cretaceous Reef Communities in Gulf Coast

The development of paleocommunity concepts has led to new hypotheses of Cretaceous reef structures. Important biota of Early Cretaceous Tethyan reefs were corals and algae, besides various rudists. Different communities produced distinct structures upon shelf margins, interior shelves, and carbonate ramps. Further, the communities changed through time as rudists evolved. This change in community structure influenced the types of reefs prevalent at different times.

Bound framework associations consisted of coral skeletons thickly encrusted by algae and stromatoporoids and cemented by micrite soon after deposition as indicated by buried erosion surfaces. Boring organisms generated large amounts of micrite as well. Caprinids, radiolitids, and monopleurids are sparse. Bound frameworks developed upon Early Cretaceous shelf margins and carbonate ramps.

Mobile associations consisted of caprinids, radiolitids, and toucasiids encrusted by algae within a loose gravel of skeletal debris. Micrite and sparry cement are both well developed. Mobile associations formed passive banks in the shallower parts of the shelf margin and in high energy parts of the interior shelves. These buildups became important in the Aptian and later replaced the bound frameworks in the Late Cretaceous.

Stable associations consisted of caprinids, toucasiids, monopleurids, radiolitids, and caprotinids surrounded by calcareous mud. Many shells were thinly coated by algae and bored by sponges, among other organisms. The shells still are in a stable growth position. Micrite cement originally was more abundant than spar between grains. These biostromes, thickets, and coppices developed mainly upon interior shelves during Aptian to Maestrichtian time.

SHARP, JOHN M., JR., Univ. Missouri, Columbia, MO

Temperature and Pressure Relations in Thick Sequences of Accumulating Sediments

The various processes involved in fluid flow and thermal energy transfer in major sedimentary basins are closely interrelated. The major thermal energy transfer processes appear to include conduction, convection by upward-moving pore fluids both on discrete and diffuse scales, and possibly endothermic or exothermic reactions. Fluid flow in sequences of accumulating sediments is predominantly the result of excess pressures. These excess pressures were probably produced by compaction disequilibrium and aquathermal pressuring. The latter is strongly temperature dependent as are several other secondary causes of excess pressuring. The combination of pressure-producing factors may create conditions for natural hydraulic fracturing and for subsequent pressure dissipation and upward convection of heat. The pressure and temperature distributions in accumulating sedimentary basins are strongly dependent on (1) the thermal and hydraulic conductivities of the sediment, (2) the rate of sediment accumulation, and (3) the geothermal gradient.

SHEEHAN, PETER M., Milwaukee Public Museum, Milwaukee, WI

Paleogeography and Marine Communities of Silurian Carbonate Shelf in Utah and Nevada

Silurian shelf sea communities can be used as a tool in the interpretation of depositional environments in the Great Basin. The Laketown Dolomite was deposited in a shelf sea adjacent to the Silurian margin of the North American plate. Initial deposition began in the middle Llandovery and continued into the Wenlock. Shallow-water communities include a time-sequence of pentamerid communities in shallow, rough water and a dasyclad algae community in shallow, calm water.

Basins to the north and south of the Tooele arch formed in the late Llandovery. The northern basin was nearly filled by the end of the late Llandovery. The southern basin continued to deepen during the early Wenlock but was filled by the middle of the Wenlock. Communities from the basins reveal that the southern basin attained a greater water depth than did the northern basin. With increasing depth, brachiopod guilds were progressively more diverse while shell size and robustness decreased.

SHERBORNE, J. E., JR., S. J. PAVLAK, W. A. BUCKOVIC, et al, Union Oil Co. of California, Casper, WY

Uranium Deposits of Part of Central Great Divide Basin, Wyoming

Economic uranium deposits occur within tabular, arkosic sandstones of a large Eocene "wet" fan complex known as the Battle Spring Formation in the central Great Divide basin. These "roll-front"-type deposits are located where the fan complex intertongues basinward with finer-grained fluvial, paludal, and lacustrine facies of the Wasatch and Green River Formations.