carbon accumulations giving rise to a seepage. Data are available for typical hydrocarbon backgrounds, abnormal hydrocarbon backgrounds, suspected gas seeps, and suspected petroleum seeps.

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APPLICATIONS OF DIGITIZED LOGS IN EXPLORATION

Present-day technology is supplying digitized wireline log records, either at the well site or at computing centers. Most of these records are used to calculate reservoir parameters of subsurface formations. Although porosity estimates have been vastly improved by these procedures, the techniques developed have dubious application in lithologic evaluation. Digitized logs do provide an excellent base for improved display of log information. Variable area, variable density, mixed mode, and filtered-curve displays accentuate similarities in deposition patterns between wells. Logs in wells with hole-deviation problems or steeply dipping beds may be normalized to match nearby wells. The human eye can be encouraged to act as an analogue computer by such changes in mode of presentation. Techniques developed to estimate formation fluid pressures from well-log data have been used to control drilling practices and may have a significant contribution in detecting patterns of fluid migration within deposition basins.

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KINZERS FORMATION—APPALACHIAN ANALOGUE OF BURGESS SHALE?

The Kinzers Formation of southeastern Pennsylvania contains a definite Middle Cambrian fauna near the top of what has been designated as Lower Cambrian rocks. Locally fossiliferous limestone, dolomite, and shale are highly deformed by folding and faulting, making physical tracing of individual units difficult or impossible. Ten faunules can be recognized within the Kinzers Formation, and range in age from Early Cambrian to middle Middle Cambrian. One unexplained time gap occurs in this interval.

The Middle Cambrian fauna, found in black organic shale, compares favorably with part of the Middle Cambrian Burgess Shale fauna. A lower assemblage, designated the "*Ogygopsis klotzi* fauna" contains *Ogygopsis klotzi* (Rominger), *Acrothele decipiens* (?), *Elrathina* sp., *Olenoides* sp., and *Peronopsis* sp., as well as unidentified agnostid trilobites, silicic sponge spicules, and segmented worms. The upper part of the black shale, less than 10 ft above the *Ogygopsis klotzi* faunule bed, contains an assemblage herein designated the "*Peronopsis* sp. faunule." This faunule includes *Peronopsis* sp., *Bathyuriscus* sp., *Elrathina* sp., and *Oryctocephalus* sp.

These beds may represent offbank ("outer detrital") deeper water deposits correlative in part with the Parker Formation of northwestern Vermont and the West Castleton Formation of the New York Taconics.

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TECTONIC CONTROL OF DEVONIAN REEF SEDIMENTATION, ALBERTA

Kaybob reef is one of a group of geologic reefs which underlie west-central Alberta and which comprise the Upper Devonian Swan Hills Formation of the Beaverhill Lake Group. Kaybob reef is a flat north-south elongate lens, 250 ft thick, 11 mi long, and 3 mi wide, built on the Slave Point Formation, a widespread platform carbonate.

Detailed core study of sedimentary structure, texture, and constituents reveals that the carbonate sediments composing the reef can be grouped into 3 environmentally controlled facies groups: reef-slope, reef-margin, and shelf-lagoon facies. The reef-slope facies is a stromatoporoid-crinoid-brachiopod grainstone. The reef marginal deposits consist of a groundmass of massive stromatoporoid grainstone containing varied concentrations of different stromatoporoid growth forms (ranging from slender branching to large massive heads).

The interior facies includes several rock types arranged in repeated vertical sequences. A basal unit of massive wackestone is overlain by combinations of massive, thin-bedded, and laminated mudstones, mudclast grainstones, and amphiporid carbonate conglomerate. Submarine and subaerial scoured surfaces are present within the upper units. The outer slope sediments intertongue with contemporaneous open-marine deposits seaward and with the reef-marginal facies on the inner side of the reef. This pattern changes laterally in vertical section, as the thickness of the reef changes from place to place. The upper half of the reef shows a marked westward displacement.

Position of the various facies within the geologic reef mass, and comparison with Holocene carbonate sediments from several Caribbean localities, together provide a paleoenvironmental interpretation. The interior facies includes most of the sediment types which have been described from recent shallow shelf-lagoon environments. Sequential arrangements are the same and result from similar processes. The marginal realm includes many facies comparable with those observed in Holocene "reef tracts," ranging from scattered coral growth on a sand bottom to coral constructed buttresses of ecologic reefs. Circumferential variations in geologic reef development, the westward displacement of the upper part, and a thick pile of open-marine deposits on the southwest are attributed to prevailing north winds during the Devonian.

Tectonic control is exhibited at 4 levels. 1. The interior shelf-lagoon sequences are initiated by small-scale pulses of subsidence, perhaps complicated by eustatic sea-level changes. 2. Larger scale subsidence variations account for the thickening and thinning of the geologic reef body as a whole. 3. An orthogonal pattern of sharp elongate folds trending NE-SW and NW-SE is expressed clearly at the base of the reef. The folds are confined to the area of reefing, where they controlled reef initiation by forming mud mounds during upper Slave Point deposition. The pattern may reflect Slave Point block faulting. 4. This reef and others in the region, together with their associated carbonate-shelf deposits, fit into a well-expressed orthogonal tectonic pattern controlled by larger scale basement features. The basement features include a "family" of NE-SW-trending, relatively stable arches revolving about a NW-SE-trending major arch, the West Alberta ridge. They form part of the system of stable arches that provides the tectonic framework of the continent.

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COMPUTER-BASED INFORMATION BANK FOR CRETACEOUS FORAMINIFERS FROM WESTERN INTERIOR REGION, UNITED STATES AND CANADA

Micropaleontologists and stratigraphers are overwhelmed by the vast accumulation of literature dealing