The American Association of Petroleum Geologists Bulletin
V. 55, No. 8 (August 1971), P. 1391-1402

ASSOCIATION ROUND TABLE

CALL FOR PAPERS, AAPG 57TH ANNUAL MEETING, APRIL 17–19, 1972

DENVER IN '72

A change has been made in the method of obtaining papers for presentation at national AAPG conventions. The change will be initiated at the Denver meeting to be held April 17–19, 1972. In past conventions, papers have been presented only by invitation of the program commitee. Under the new system, any member, or others sponsored by members, may submit a title and abstract for consideration by the program committee.

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ROCKY MOUNTAIN SECTIONS

The Rocky Mountain Sections of AAPG and SEPM met May 2–5, 1971, in Billings, Montana. Abstracts were published in the March *Bulletin* (v. 55, no. 3, p. 535–545). The following previously unpublished SEPM abstracts are published now in order that a more complete record of that meeting may be available to members.

ABSTRACTS

BALDWIN, JOAN, Univ. of Arizona, Tucson, Ariz.

ENVIRONMENTS OF DEPOSITION OF MOENKOPI FORMATION IN NORTH-CENTRAL ARIZONA

In north-central Arizona, the Moenkopi Formation of Triassic age consists of generally unfossiliferous red mudstone, siltstone, gypsum, and sandstone that contain abundant sedimentary structures, such as ripple marks, cross-stratification, ripple laminae, salt-crystal casts, mudcracks, sole marks, parting lineation, and core-and-shell structures.

Three informal members established for this study were the "lower member," the "lower massive sandstone," and the "upper member."

Flaser, wavy and lenticular bedding, bimodal distribution of ripple laminae dips, parallel ripple marks dominant over cuspate ripple marks, gypsum beds and veins, salt-crystal casts, and lack of channel deposits are the suite of sedimentary features that are interpreted to indicate a tidal-flat environment during deposition of the "lower member."

The very fine-grained "lower massive sandstone" can be divided into four subunits, which were formed by a transgression-regression of the sea. Wavy-ripple laminated beds in subunit 1 were probably deposited in very shallow water. Medium-scale wedge planar and trough sets of cross strata with average southeastward dip make up subunit 2, and indicate megaripples formed by longshore drift. Subunit 3 consists of lenticular, wavy, pod-shaped beds that formed in water shallower than that for subunit 2. Continuous, even, large-scale, low-angle cross strata and medium-scale wedge-planar and trough sets of cross strata characterize subunit 4 and are typical of beach deposits.

The significant sedimentary features in the "upper member" are unimodal distribution of ripple laminae dips, cuspate ripple marks dominant over parallel ripple marks, channel deposits with shallow-trough cross strata, an increase in the number and thickness of sandstone and siltstone beds compared with the "lower member," plus vertebrate bones, tracks, and plant impressions. This suite of features indicates a floodplain environment.

Early in Moenkopi deposition, north-central Arizona was a tidal flat and sabkha. The sea on the west fluctuated east and west, and finally transgressed over the entire area. As the sea regressed, a beach formed, and rivers flowing from the east deposited sediment on a westward-prograding floodplain. In the northern, southern, and central parts of the region, sabkhas existed for a time during regression. At the end of Moenkopi deposition, the entire area was a floodplain.

The association of redbeds and evaporites, the absence of fossils in the "lower member" and the "lower massive sandstone," and the paleowind directions indicate that the climate during lower and middle Moenkopi deposition was probably hot and arid. The additional sandstones, the presence of *Calamites* (?) impressions, and trackways and bones of amphibians in the "upper member" suggest that the climate became more humid at the end of Moenkopi deposition.

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DRESBACHIAN FAUNAL ZONES IN PILGRIM FORMATION OF SOUTH-CENTRAL MONTANA

Dresbachian faunas were collected in Montana from the Pilgrim Formation on lower Beaver Creek near Helena, at Castle Rock on Mill Creek south of Livingston, and on Wolf Creek near Red Lodge.

The *Aphelaspis* zone is present at the top of the Pilgrim Formation only at Wolf Creek. The *Crepicephalus* zone is the highest zone observed at Mill Creek and the *Cedaria* zone is the highest at Beaver Creek. Four genera of trilobites, *Aphelaspis, Blountia, Cheilocephalus,* and *Glaphyraspis:* two brachiopod genera; and *Hyolithes* are recognized from the *Aphelaspis* zone. The few genera and numerous individuals are typical of that zone and may be interpreted as indicating cool currents moving south during the time of deposition of the *Aphelaspis* zone. Only species characteristic of the lowest part of the zone are recognized, though higher beds may have been deposited originally.

The most common species is *Aphelaspis walcotti* Resser which shows steplike growth pattern in the ratio of the preglabellar field length to the glabellar length.

The upper 34 ft of the *Crepicephalus* zone in the Pilgrim Formation at Wolf Creek consists of rounded limestone-pebble conglomerate, mottled, partly dolomitized oolites, and abundant glauconite in a micritic matrix. This lithology is interpreted as characteristic of carbonate tidal flats. Calcareous sandstone with fragmentary fossils and frosted quartz grains comprises the upper 2 in. of the *Crepicephalus* zone and the lower 7 in. of the *Aphelaspis* zone. The uppermost beds of the *Aphelaspis* zone are medium- to coarse-grained biosparite with a well-preserved fauna and indicate a lower energy environment than that in which calcarenites are deposited.