

Johnson, General Vice-Chairman for IAHS, Washington, D.C.; and William C. Finch, General Vice-Chairman for AAPG, Houston, Texas.

AAPG EAST COAST OFFSHORE SYMPOSIUM
Baffin Bay to the Bahamas

Atlantic City, New Jersey

April 23-25, 1973

Chalfonte-Haddon Hall Hotel

Sponsor: EASTERN SECTION, AAPG (2nd Annual Meeting)
 Host Group: PETROLEUM EXPLORATION SOCIETY OF NEW YORK

April 23—Registration

April 24—Technical Papers on Offshore Canada

April 25—Technical Papers on Offshore United States

Because of oil and gas activities to date and the future potential, the structure and stratigraphy of this vast area should be examined.

Eastern Section AAPG members, Exploration Managers, and Chief Geologists who are AAPG members will receive further notices and hotel reservation forms. Others who wish to attend may make reservations directly with the hotel, specifying attendance at the Symposium.

For additional information, please write to:

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 Gateway I, Suite 500
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PROPOSED AMENDMENTS TO CONSTITUTION AND BYLAWS

Because there is presently three months' lead-time necessary for items submitted for publication in the *Bulletin*, it is anticipated that proposed amendments to the Constitution and Bylaws will not be published in this issue of the *Bulletin*. Instead, as provided in an amendment to the Bylaws, this notification will be made by mail to the entire membership. Please be alert for this notice, as an enclosure in a regular mailing from AAPG Headquarters.

PACIFIC SECTIONS
AMERICAN ASSOCIATION OF
PETROLEUM GEOLOGISTS
AND
SOCIETY OF ECONOMIC
PALEONTOLOGISTS
AND MINERALOGISTS
ANNUAL MEETING
MARCH 9-10, 1972
Bakersfield, California

ABSTRACTS

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OLIGOCENE AND MIOCENE MOLLUSCAN STAGES,
TEMBLOR RANGE, CALIFORNIA

Shallow-water mollusks from the Temblor Range, central California, represent five, or possibly six, provincial mega-invertebrate stages. This molluscan sequence is unique because (1) elsewhere in the California Coast Ranges Oligocene and early Miocene sedimentary sequences are dominantly of nonmarine or deep-water facies, and (2) the mollusks are interbedded with

deep-water benthonic foraminifers representing at least as many microfaunal stages. Only in the southern part of the San Joaquin basin is there a reasonably complete sequence of shallow-water invertebrate assemblages of Oligocene and early Miocene ages. The molluscan biostratigraphy of this entire sequence previously has not been studied in detail, but the foraminiferal assemblages are well documented and represent a complete sequence of late Oligocene and Miocene microfaunal stages.

The Oligocene and Miocene molluscan sequence is based largely on assemblages from the Temblor Formation; the basal shale member contains *Bruclarkia columbiana*, an index species for the "Lincoln Stage" of Weaver. The overlying "Phacoides reef," formerly assigned to the "Vaqueros Stage," represents a previously unrecognized post-"Lincoln," pre-"Vaqueros" molluscan stage in California. The lowest occurrence of "Vaqueros" mollusks is in the stratigraphically higher Agua Sandstone Member; the highest is in the Carneros Sandstone Member. The button beds at the top of the Temblor Formation and sandstone lenses in the overlying Monterey Shale include mollusks restricted to the "Temblor Stage." Mollusks from the Santa Margarita Formation in the southwest part of the range are referable to the "Margaritan Stage," stratigraphically higher assemblages from this formation are referable to the "Jacalitos Stage."

Pectinids (*Aequipecten*, *Lyropecten*, *Pecten* s.s., and *Vertipecten*) are the most useful mollusks in biostratigraphic subdivisions and provincial correlation of this sequence, i.e., *Phacoides* "reef"—*P. sanctaecruzensis*, V. n. sp., Agua Sandstone Member—*L. magnolia*, V. perrini; Carneros Sandstone Member—*L. crasscardo*, *L. miguelensis*, V. nevadanus; button beds—*A. andersoni*, *L. crasscardo*; and Santa Margarita Formation—*L. estrellanus*, *L. crasscardo*.

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LATE PALEOGENE-NEOGENE PLANKTONIC BIOSTRATIGRAPHY AND ITS GEOLOGIC IMPLICATIONS, CALIFORNIA

Planktonic microfossils indicate that at least in some typical sections, the Narizian Stage (Kreyenhagen Shale) is middle Eocene, spanning part of the range for the P10-P14 zones (about 49-45 m.y. ago). The Refugian Stage is essentially late Eocene, representing Paleogene zones P15-P17 (about 45-37.5 m.y. ago). Oligocene time is represented approximately by the Zemorrian Stage, defined by Paleogene zones P18-P22 (about 37.5-22.5 m.y. ago). Miocene subdivisions are: early Miocene, Saucian Stage (Neogene zones N4-N8), radiometric age span about 23-15 m.y. ago; middle Miocene, Relizian, and Luisian Stages (Neogene zones N9-N12), radiometric age span about 15-11 m.y. ago; and the late Miocene Mohnian Stage (Neogene zones N13-N18), radiometric age span about 11-3 m.y. ago. The Pliocene is represented by the Repettian, Venturian, and the lower part of the Wheelerian Stage (Neogene zones N19-N21) with a radiometric age span of about 3-1.79 m.y. ago. The Quaternary is younger than 1.79 m.y., embracing the upper part of the Wheelerian Stage, the Hallian, and younger units, representing Neogene zones N22 and N23. Employing planktonic criteria, boundaries of stages based on benthic species are clearly time-transgressive.

A major structural change occurred in the Zemorrian Stage, the Oligocene, introducing a new set of basin patterns with the destruction of the Farallon plate and the adjacent spreading center, about 29-24 m.y. ago. A second important structural change occurred about 4 m.y. ago, in the late Miocene, with the development of a different pattern of basins and the formation of the Gulf of California. This new tectonic pattern resulted from, or was related to, the development of a westerly motion of the Pacific plate. The major volcanism of the California Tertiary occurred following the destruction of the Farallon plate, during the early and middle Miocene.