

STRUCTURAL RELATIONSHIPS BETWEEN LESSER ANTILLES, VENEZUELA, AND TRINIDAD-TOBAGO

L. A. WEEKS
ESSA, Atlantic Oceanographic Laboratories
Miami, Florida

R. K. LATTIMORE
ESSA, Atlantic Oceanographic Laboratories
Miami, Florida

R. N. HARBISON
ESSA, Atlantic Oceanographic Laboratories
Miami, Florida

B. G. BASSINGER
ESSA, Atlantic Oceanographic Laboratories
Miami, Florida

G. F. MERRILL
ESSA, Atlantic Oceanographic Laboratories
Miami, Florida

A B S T R A C T

Over 2500 nautical miles of seismic reflection profiling, gravity, magnetics and bathymetric data were collected by the ESSA Coast & Geodetic Survey ship DISCOVERER in 1968.

A review of the structural geology of the southeastern Caribbean and the South American continent in conjunction with the ESSA data supports a relatively "simplistic" explanation for the geological structure.

The Barbados ridge was found to be a highly fractured anticlinorium, supported by "basement" rocks, and consisting of two parallel arches with a central syncline. The Lesser Antilles volcanic arc, the Tobago trough and the Barbados anticlinorium are traceable into the Venezuelan and Trinidadian shelves (South American continent).

An analogy between the Caribbean island arc system and previous work done in the Andaman Sea (Indonesian island arc) shows the validity of the concept of continuation of continental mobile belts into island arc systems. The mobile belt and the island arc system are manifestations of orogeny in different crustal types. Evidence is against wrench faulting, with its implication of vast horizontal movements of individual blocks.

The island arc structural belts and the mobile belts of the continent are interrelated, gradational, and interlocked.

TECTONICS OF SOUTHERN RIM OF GULF OF MEXICO BASIN

A. E. WEIDIE
Department of Earth Sciences
Louisiana State University in New Orleans

A B S T R A C T

Major orogenesis affected the southern rim of the Gulf basin during Late Paleozoic, Mid-Cretaceous, and Laramide times. Post-Laramide deformation has been dominantly epeirogenic or fault movements of normal or strike-slip character. A surprisingly large number of the tectonic features of southern Mexico and northern Central America are continuous beneath the adjacent Gulf of Mexico and/or Caribbean Sea. The following examples are cited: (1) Zacatecas zone—boundary of zones 3 and 4 of Bryant *et al.* (1968), (2) Trans-Mexican Volcanic Belt-Teziutlan massif—southern limit of zone 4 of Bryant *et al.*—Pera Salient—Progreso shear zone of northern Yucatan—Yucatan Channel uplift, (3) Ticul Fault and Nuevo-Arenas swell, (4) Maya Mountains—Glovers Reef High—Cayman/Misteriosa Ridge—Sierra Maestra of Cuba, (5) San Cristobal—Comitan Fault Zones—Chixoy-Polochic and Motagua Fault Zones—Bonacca Ridge, (6) Uluu Graben of Honduras—downfaulting of continental margins of British Honduras and Quintana Roo.

Evaporite deposits are widespread in the southern Gulf. Diapirs are common in the Isthmian region of Mexico and extend northward to the Sigsbee Deep west of the Campeche Banks. Probable salt ridges are found in Bryant *et al.* zones 1-4. Significant quantities of Cretaceous evaporites underlie the Yucatan platform and may extend northward beneath the Campeche bank. Salt diapirs are known to occur in Cuba. It is postulated that the salt in the Isthmian Basin of Mexico may also be of Cretaceous age and continuous with the Yucatan deposits. The age and distribution of the salt are critical in understanding the Mesozoic history of the southern Gulf. It is doubtful that appreciable quantities of evaporites underlie easternmost Yucatan or occur in the Yucatan basin (northern Caribbean) but more detailed knowledge of this area is necessary. Cretaceous evaporites are known to occur in Guatemala and it is possible that they may extend beneath the northern Caribbean.