CORRELATION OF SILURIAN STRATA BETWEEN GEORGIA, ALABAMA AND FLORIDA BASED ON CHITINOZOAN BIOSTRATIGRAPHY

Robert F. Goldstein
Amerada Division
Amerada Hess Corporation
Lafayette, Louisiana

ABSTRACT

Silurian chitinozoans have previously been described from four wells in north-central Florida. These wells have also been previously correlated with each other as well as with known Silurian sections. The youngest assemblage is Ludlovian in age; the oldest is of Upper Llandoverian age.

Outcrop samples were collected from the Silurian Red Mountain Formation in Alabama and Georgia. This formation has been dated as Llandoverian on the basis of megafossil evidence. Four Red Mountain Formation sections are divided into biostratigraphic zones on the basis of chitinozoan assemblages.

Attempts at correlating the well and outcrop samples based on the frequency of chitinozoan taxa proved unsuccessful because only a few taxa are abundant throughout the sections. Instead, correlations are made on the first or last occurrence of certain taxa. A comparison of the assemblages in the oldest (Upper Llandoverian) Florida well section and the youngest (Upper Llandoverian) Red Mountain Formation section indicates that they have only two taxa in common. A comparison between the other portions of the Florida and Alabama-Georgia sections was not feasible due to the age differences.

The general aspect of the Florida assemblages is quite different from the ones in Georgia and Alabama. It is concluded that the sections in Georgia and Alabama are of different ages than those in Florida. The rocks are not different faunal facies of isochronous strata since chitinozoans are planktonic and are therefore not lithofacies dependent.

One problem encountered in this study was that three of the wells did not penetrate very deeply into Silurian strata. Three of the Florida wells only penetrated the Upper Silurian and only one went as deep as the Lower Silurian. Future work in correlating the Silurian rocks from these three states must depend on new wells being drilled to greater depths. Only in this way can a more complete Silurian section be determined in Florida.

EPI-PALEOZOIC HYPER-SALINITY AND MARINE BIOTIC EXTINCTIONS

Richard L. Bowen
Department of Geology
University of Southern Mississippi
Hattiesburg, Mississippi

ABSTRACT

From consideration of the volumes of halite and associated salts deposited since the Permian, one must infer that either: 1) sea water at the close of the Paleozoic was hypersaline relative to seas of today (35‰ Salinity); or 2) while 6,000,000 + cu. km. of salts have been precipitated from the world ocean in highly varying amounts at irregular intervals xince the Permian, an equal volume of salts have gove into solution. Data from analysis of sedimentary sulfur-isotope ratios strongly support the former inference. Concording, but more speculative, support also is available from aridity indices.

A condition of hypersalinity in the oceans of the Permian world would explain the known patterns of Permian extinctions with peculiar satisfaction. The evidence suggests that those marine taxa (*e.g.*, echinoderms, fusulines, coelenterates) with the lowest tolerance for salinity variability were precisely the group within the entire Permian biota that suffered the greatest proportion of extinctions at the close of the Paleozoic. Such an explanation is more consistent with a uniformitarian Earth than causes sought in cosmic radiation variability or pulses, which should have affected terrestrial organisms more strongly than marine taxa.