MEETINGS

HGS DINNER MEETING—MAY 14, 1990

CHRISTOPHER R. SCOTESE—Biographical Sketch

Christopher R. Scotese is a Senior Research Geologist with Shell Development Co., Houston, Texas. He received his PhD from the University of Chicago in 1985. Dr. Scotese is chairman of the PALEOMAP Project and co-editor of the books, *Mesozoic and Cenozoic Plate Tectonic Reconstructions*, and *Paleozoic Paleobiogeography and Paleogeography*. Dr. Scotese is also the author of more than 30 papers on plate tectonics and Earth history, and co-author of *Terra Mobilis: A Plate Tectonics Program for the Macintosh*.

PHANEROZOIC PLATE TECTONIC RECONSTRUCTIONS: INSIGHTS INTO THE DRIVING MECHANISM OF PLATE TECTONICS

Plate tectonic models describing the development of the Atlantic Ocean (Srivastava, Rowley, and Cande), Indian Ocean (Patriat, Royer) and Pacific Ocean have been combined with preliminary plate tectonic models for Asia (Rowley), Tethys (Sengor, Dercourt *et al.*), the Soviet Union (Zonenshain *et al.*) and the Paleozoic (Scotese, McKerrow) to produce a global model of Phanerozoic plate motions. Fifty plate tectonic reconstructions will be presented illustrating the movement of the continents and the development of the world's ocean basins since the late Precambrian. The maps are the preliminary draft of the PALEOMAP Phanerozoic Atlas Project, a jointly sponsored IUGG/IUGS program.

The pattern of plate motion during the last 600 million years can be characterized as "episodic". Long intervals of steady state plate motion (lasting 20-50 million years) have been interrupted at irregular intervals by tectonic events that have triggered global changes in the rates and directions of plate movement. At least 12 times of global plate reorganization can be recognized during the Phanerozoic. These events took place during the: latest Precambrian, middle Ordovician, early Devonian, early-late Carboniferous, early Permian, late Triassic, middle Jurassic, early Cretaceous (Valanginian), early Eocene, and early Miocene.

It appears that these global plate reorganizations arise from interactions between the plates and are not the result of deep-seated events in the asthenosphere. The loss of a major subduction zone due to continent-continent collision, or the loss of a spreading center due to subduction of a ridge, are the two principal events that trigger global plate reorganizations. From the pattern of plate motion during the last 600 million years, it is clear that the forces that drive the plates are concentrated in the lithosphere (slab pull and ridge push) and that the pattern of convection in the Earth's interior does not play an active role in determining the movement of the plates.