

## "SCHOOLS OF PALEOGEOGRAPHIC THEORY

"It has long been known that the geography of the earth has changed greatly during the course of its history. Seas often occurred where now is land. Continents have changed in shape and in their connections with each other. Paleogeography, the historical approach to physical geography, has as its aim the reconstruction of all such geographical events. It also has deeper implications, for it involves an understanding of the whole construction of the earth and especially of the nature and mechanics of the crust of the earth. Here historical biogeography has a crucial part to play. The sequences and relationships of past faunas are always pertinent evidence and sometimes the only good evidence of ancient geographical conditions. Hence not only must paleogeography be used as framework for biogeography, but also biogeography must be used as a criterion for theories of paleogeography.

"Some earlier paleogeographers postulated that land and sea segments of the earth's crust differ in no really essential way. Which is land and which is sea was supposed not to depend on local characteristics of the crust itself but simply on whether segments happened to be uplifted or not. Theorists of that school envisioned the presence of vast continents where now are the Pacific, Atlantic, and Indian Oceans. Earlier geographical developments of faunas were supposed to have occurred on a map unrecognizably different from that of today. Such extreme views no longer have any informed supporters. Land and sea segments of the crust are known to be different in average composition. Practically everyone now agrees that during most of the history of life there has been some degree of constancy or continuous identity in the continental and oceanic segments of the earth's crust, despite great changes in outline and other details.

"That conclusion still leaves room for disagreement as to the nature and position of past connections between continental blocks. One school of theory has indulged in the extravagant postulation of land bridges between the continents. No two students of that school have agreed precisely as to when or where the bridges existed, but their maps show the oceans crisscrossed with isthmian connections, from Europe across the mid-Atlantic to America, from Africa across the South Atlantic to South America and across the Indian Ocean to India, from Asia or Australia across the Pacific to America, from Australia and South America to Antarctica, and so on.

"Another school, especially associated with the name of the German geologist Wegener although others before and after him have developed similar theories, holds that the continental segments have been floating blocks drifting on the deeper parts of the crust. The theory is that the continental segments once formed a single mass, or two of them, which then broke up into the present continents. The separation and present placing of the continents are supposed to have resulted from slow drifting apart of fragments of the original block or blocks.

"Finally there is a school which holds, with the land bridge builders, that continents and oceans have tended to maintain their identities and positions through most of geological history, but which minimizes the number of vanished connections between the continents. The former existence of any bridge over what is now an ocean is considered highly doubtful or rejected altogether. The past existence of a few bridges across what now are island arcs or straits is considered sufficient to account for all known biogeographical events.