# GENESIS OF RECENT LIME MUD IN SOUTHERN BRITISH HONDURAS

by

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In view of the abundance of lime mud in the geologic record it is paradoxical that studies of Recent carbonate sediments generally have concentrated on the origin of sand-size carbonate particles rather than on the origin of the finer-grained constituents. Only on the Great Bahama Bank has the genesis of lime mud received serious attention; so much attention, in fact, that the words "aragonite needles" have become virtually synonymous with "lime mud" in the minds of many geologists. Preliminary investigation of Recent lime mud from Southern British Honduras, however, revealed a paucity of aragonite needles. An investigation was therefore undertaken to ascertain the nature and origin of the lime mud in this area.

Mineralogical, chemical, and petrographic point-count data were gathered. The strontium content of the carbonate mud fraction of lagoon samples increases systematically toward carbonate shoals. The mineralogical composition of the carbonate mud fraction of lagoon samples averages 25% high-strontium aragonite, 24% low-strontium aragonite, 44% high-magnesium calcite, and 7% low-magnesium calcite. Petrographic data suggest that the high-strontium aragonite is primarily coral debris admixed with lesser amounts of Halimeda debris. Similary, low-strontium aragonite consists primarily of mollusc debris; and high-magnesium calcite, of Foraminifera debris. The data suggest that the Shelf Lagoon mud consists of transported shoal-derived debris somewhat diluted by in situ-produced mollusc debris and hyaline Foraminifera debris.

Physical breakage and abrasion in agitated environments is considered the dominant process of lime mud production on the carbonate shoals; whereas the major factors in the in situ production of lagoonal lime mud appear to be: (1) the inherently fragile nature of the shells of molluscs and tests of hyaline Foraminifera of the lagoon environment, (2) the removal of binding organic matter from mollusc shells, (3) the weakening of larger skeletal particles by the activity of boring micro-organisms, and (4) the mastication, ingestion, and perhaps even simple movement of sediment by the vagrant benthos.

The results of this study indicate that lime mud may originate in a variety of ways. While it may be difficult or impossible in the geologic record to recognize ancient analogues of the various types of lime mud that can be recognized in the Recent, an awareness of the possible multiple origins of lime mud serves to increase our understanding of the genesis of ancient lime mudstones.