SURVEY OF THE GEOLOGY OF HAITI

GUIDE TO THE FIELD EXCURSIONS IN HAITI

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19). Thus, upper bathyal to nerito-pelagic and hemipelagic facies intertongue with coarser components as a result of both intermittent subaqeous mud flows during flood stages of the adjacent rivers, and basin edge mud slumps associated with tectonic instability of the active boundary fault system, and further volcanic activities to the north.

RIVIERE GAUCHE FORMATION: Butterlin, 1954, p.67; 111. Named after Rivière Gauche, one of the tributaries of the Rivière de Jacmel, which flows southward within the Jacmel-Fauché depression (Figure 2).

Type locality: Subsequent designation, Butterlin, 1960. On road Trouin - Jacmel, 12.8 kilometers southeast of Trouin (Figure 12).

The Rivière Gauche Formation is defined to include conglomerates, yellow or brown sands, and coarse brown argillites. The bottom of the formation is reported to unconformably overlie older Miocene rocks, and its top is overlain by Quaternary allubium, or coral reefs(Butterlin, 1960, p.47).

The thickness of the formation has been estimated by Butterlin (op. cit.) to be within the order of 250 meters. The Riviere Gauche Formation is supposed to characterize the sedimentary deposits of the Jacmel-Fauché depression. It is found in the valley of Riviere Gauche, and Riviere Lavagne, (or Rio Fauche) flowing south and north respectively, within the depression.

ELEVATED TERRACES

Raised terraces are well developed throughout the Caribbean region, and in Hispaniola in particular. The most spectacular terraces occur in the Northwestern Peninsula in Haiti, and the Beata Peninsula at the extreme eastern end of the La Selle-Baoruco block in the Barahona Province of the Dominican Republic.

The highest terraces in Haiti reach an altitude greater than 500 meters in the Northwestern Peninsula at the Bombardopolis Plateau (Figure 4), and the highest ones in the Dominican Republic are those in the Barahona Province cresting at more than 1200 meters. Terraces in this latter area are covered with significant amount of ore grade laterites which are presently mined for Bauxite. Laterites also occur on the Bombardopolis Plateau but their relatively high silica content (Si 02 = 21%) indicates a rather poor grade Bauxite.

Pleistocene terraces of the Northwestern Peninsula, such as those near Mole Saint Nicolas (Figure 5), are also found in numerous areas of the island, but they are never as well developed. The best preserved ones worth mentioning are those found at Cap Saint Marc south of the Bay of Saint Marc, the northwestern end of the Southern Peninsula near Roseaux east of the city of Jérémie (Figure 4, 10), west of the city of Jacmel, along the southern

coast of the Southern Peninsula in Haiti, and at the Llanura costera del Caribe (Figure 2) at the southeastern end of the Central Cordillera physiographic unit (cf. section on physiographic provinces).

The terraces of the island have not yet been studied as extensively as those of other Caribbean islands where similar raised reef terraces occur, as for instance the well known and well-studied Barbados terraces. As pointed out earlier, the island is seismically active and much tectonic activity has taken place in the Late Pleistocene, but not much is known about the rate of vertical displacement during that time. A recent study in the Mole Saint Nicolas areas has brought some direct evidence of fast uplift in the region. Dating of the lower series of terraces in this area shows that the most prominent terrace cresting at 52 meters gives Th_{230} / U_{234} dates on unrecrystallized Acropora palmata which average 126,000 yrs ± 5000 yrs B.P. Assuming a sea level of 6 meters above present level (as it has been reported in the literature) at 125,000 years ago, the date gives an uplift rate of 37 cm. per 1000 yrs. Such a rate makes the Northwestern Peninsula of Haiti, the site of fastest reported uplift in the Caribbean (Dodge et al., 1981). Fast uplift in the northern regions is in sharp contrast to nearly negligible uplift rate recorded in the southeastern regions of the island. The difference has been attributed to crustal tilting from each other side of the Cayman trench (Horsfield, 1977).

ROAD LOG TO EXCURSIONS

EXCURSION ONE: PORT-AU-PRINCE - JACMEL

The city of Port-au-Prince is built over conglomeratic series of the Riviere Grise/Delmas Formations which became emergent during the Pleistocene. As you can see from figure 3, the city is built along the edge of one of the major fault systems which mark the southern boundary of the Cul-de-Sac/Enriquillo graben.

Most of the bedrock is Miocene or Pliocene, as discussed in the section on the formations. The nature of the bedrock here has provided excellent physical conditions for the rapid expansion of the city. The clastic deposits are indeed easy to excavate and exhibit high porosity and permeability. Such properties are particularly advantageous as the entire city uses only septic tanks and privies. The presence of easily accessible calcareous breccia along the fault zone has also been a major determining factor in the rapid expansion of Port-au-Prince. The most recent architectural style attests to this change, stone and concrete structures are rapidly replacing the old Victorian style gingerbread houses (Figure 22). The calcareous breccia or Laboule sand (Maurrasse and Pierre-Louis, 1982), occurs in great abundance throughout the foothills of the La Selle Mountain which forms the backdrop of the city.

The center of the city from the main square down to the bay is built on fanglomerates of a huge holocene fan developed at the mouth of several dry channels, and particularly the one called Ravine Bois de Chene. This fan slopes gently (Figure 22c) toward the bay where its delta is still transgressing quite rapidly. It has transgressed more than 200 meters during the past 25 years. The sedimentary processes presently taking place in this