

Systematic mapping on a scale of one inch to the mile from the Taiping to Lumut area indicates the presence of three stratigraphic units. They are the Simpang Formation which is the oldest and is equivalent to the Old Alluvium of Walker (1955), the Gula Formation which is an estuarine to marine clay with subordinate sand member and the continental Bruas Formation which is equivalent to the Young Alluvium of Walker (1955). The first edition of the Quaternary geology map of Peninsular Malaysia (1 inch to 500,000) is being prepared based on these formational units. An isopach map on a similar scale is also being prepared to indicate the thickness of alluvium. Information collected about the Quaternary deposits have been utilised by hydrogeologists, engineers and planners for their studies.

Finally it must be mentioned that the division in cooperation with other divisions of the department from time to time prepares economic geology reports especially pertaining to placer tin, clay and other industrial minerals for public consumption.

#### **S. PARAMANANTHAN and S. ZAUAYAH: Soil Scientist View of the Quaternary of Peninsular Malaysia.**

The Quaternary of Peninsular Malaysia can be separated into eight distinct pedological units. Six of these units have been recognized by soil scientists since soil surveys began in Peninsular Malaysia as early as the 1950's. Two other units were only recognized in the last two years. These eight pedological units are as follows:-

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| 1. Reworked Lateritic Deposits (Older)   | P <sub>3</sub> T |
| 2. Reworked Lateritic Deposits (Younger) | P <sub>2</sub> T |
| 3. Older Alluvial Deposits               | T <sub>2</sub>   |
| 4. Sub-Recent Alluvial Deposit           | T <sub>3</sub>   |
| 5. Recent Alluvial Deposit               | T <sub>2</sub>   |
| 6. Marine/Estuarine Deposits (Clay)      | T <sub>1</sub>   |
| 7. Marine/Estuarine Deposits (Sand)      |                  |
| 8. Organic Deposits                      |                  |

The main features of each of these pedological units are given in Table 1 below. Their approximate geological ages are also suggested. It must be pointed out that these ages are yet to be confirmed.

Table 1: Characteristics of the Pedological Units of the Quaternary of Peninsular Malaysia

Pedological Unit	Characteristic Features	Possible Geological Age
Organic Deposits	Deep organic deposits of brackish water origin. Large pieces of undecomposed logs often present.	Recent

Pedological Unit	Characteristic Features	Possible Geological Age
<i>Marine-Estuarine Deposits (Sand)</i>	<i>Characteristic series of beach ridges found along the east coast. Age of ridges progressively becomes older with distance from the coast. Their sandy nature enhances the formation of podzols.</i>	<i>Recent</i>
<i>Marine-Estuarine Deposits (Clay)</i>	<i>Broad coastal plain deposits found typically along the west coast. Deposits are dominantly 2:1 minerals, high water tables and saline in their natural state. On drainage they may develop into acid sulfate soils. They have high amounts of Ca and Mg. They grade further inland into the organic soils. These areas are cultivated with rice (Muda) or oil palm, coconut, cocoa and rubber.</i>	<i>Recent</i>
<i>Recent Terrace Deposit (<math>T_1</math>)</i>	<i>Terrace alluvial deposits found along the major rivers. These form a sequence of soils affected by the present day ground water table which occurs near the surface. Deposits are often characterised by high silt content, mica flakes, manganese concretions. Rice is grown on the drained soils. Mineralogy is characterized by kaolinite and illite. These areas are characterized by flat terrain (relief amplitude less than 1 m), with old river channels, ox-bow lakes, etc.</i>	<i>Recent</i>
<i>Sub-Recent Deposits (<math>T_2</math>)</i>	<i>These alluvial deposits occur on gently undulating terrain with a relief amplitude of about 3 metres. These deposits are characterized by variable textures-sandy loams to clays, kaolinite mineralogy, low silt content, plinthite within the profile (in the clayey soils) a deep fluctuating water table, sometimes deficient in Cr and other trace elements. These deposits are the Younger Alluvium of Walker (1956).</i>	<i>Late Pleistocene to Recent</i>
<i>Reworked Lateritic Deposits (<math>P_2T</math>)</i>	<i>These are deposits which have lateritic gravels within one metre of the surface. The lateritic gravels (petroplinthite) overlie a massive, impervious plinthite saprolite. The terrain is gently</i>	<i>Late Pleistocene</i>

Pedological Unit	Characteristic Features	Possible Geological Age
	undulating and the relief amplitude about 2 to 5 metres. These deposits occur at about 3 metres above the level of the sub-Recent Deposits. Mineralogy is mainly kaolinitic and iron-minerals and the plinthite is "fresh" and shows little or no indication of having been altered. The laterite gravels are fine, hard and smooth, with a high bulk density (B.D.).	
Old Alluvial Deposits	These deposits form low hills and often occur as foothills along the Main Range. These deposits can be easily mistaken for the in situ soils. However at depths around one metre the colours first become mottled and then become paler due to presence of either quartzite or granite pebbles. These deposits are probably not true alluvium but more likely colluvium or alluvial fans. The provenance controls the nature of the deposits - particularly the texture. The quartz is sub-rounded and milky-coloured. Structures are often weak and consistence very friable.	Mid-Pleistocene
Reworked Lateritic Deposits (P <sub>3</sub> T)	These lateritic deposits are often red coloured and deep. The lateritic gravels (Petroplinthite) are less rounded and mixtures with iron-coated materials may be common. The B.D. of these gravels is lower than these in P <sub>2</sub> T. The plinthite which occurs below the gravels is more weathered and crumbles easily when pressed between the fingers. These deposits form low hills, which have a relief amplitude of about 5-15 metres. These deposits occur at an elevation about 2-5 metres above the level of P <sub>2</sub> T.	Early Pleistocene
Reworked Lateritic Deposits/Iron-coated Parent Materials (P)	These deposits form lateritic cappings on hills with a relief of about 15 to 20 metres. The materials are less rounded, and are almost always a mixture of iron-coated parent materials and sub-rounded petroplinthite gravels. The underlying saprolite is highly weathered. Some recementation of the materials to form large blocks are common. The B.D. of the gravels is low.	Mid-Late Tertiary