HOLIDAY GEOLOGY

Trinidad Asphalt Lake

Near the southwestern corner of the Caribbean island of Trinidad, the village of La Brea takes its name (in Spanish) from the adjacent tar pits that include the Trinidad Asphalt Lake. One of only three natural tar lakes in the world (the others are in Venezuela and California), this is formed by an active, natural seepage of hydrocarbons from which the volatiles are lost into the atmosphere.

Source rocks are Cretaceous marine shales far below, and these feed the Tertiary sandstones that are reservoir rocks for the numerous nearby oilfields. Some of the heavy-fraction tar rises along intersecting faults to form the Asphalt Lake. This extends to about 40 hectares, most of which has a black rubbery surface that becomes notably softer when warmed in the sunshine. But about a fifth of its area is of more liquid tar that is freshly risen from below; rainwater can lie in shallow pools over both types of tar. There is some rising sulphurous water and also methane that is sometimes seen as small dancing flames.

The Lake has been drilled to a depth of 60 m, and it was just the same asphalt all the way down. There are numerous other tar seepages nearby, some of which have only been found when digging into the soil to set foundations for new houses, but none has developed into a large open lake.

The material exposed in the Asphalt Lake is a valuable resource, which is used to make road surfacing. Annual extraction is about 9000 tonnes; obtained by scraping the soft tar from trenches to a metre or so deep, and these then naturally refill within a week or so. But over the years a total of 82M tonnes represents significant over-abstraction, so the Lake now lies inside its own crater that is about 9 m deep, whereas its surface was level with the adjacent ground 200 years ago.

The Asphalt Lake is now a modest visitor attraction, and guides are on hand to ensure that over-inquisitive geologists don't take one-way trips into the soft areas. It is easily reached from the island capital, Port of Spain, by express bus to San Fernando and then a local bus onward to La Brea.

Tony Waltham

Sampling the tar, with a wooden stick dipped into the sticky fluid asphalt lying just beneath the rubbery crust that forms the fairly stable surface.

View across the Asphalt Lake, with a stream of fresh, black, liquid tar, which is currently emanating from a fissure, amid the paler grey surface of older tar now slightly weathered.