Le Bouilli Port - Les Creux Trail.

Raised beach, dykes & chasms (Les Creux Fantômes).

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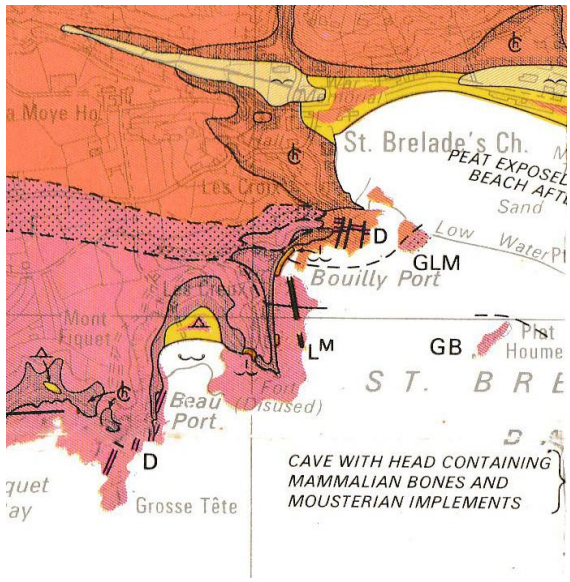

Fig. 1.

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This is a beautiful little area which was explored by the author prior to a Section visit; it is scenically attractive and spectacular in parts, and also historical. Although named on the OS map, as La Saline, it is situated on the western side of St. Brelade's Bay between St. Brelade's Church and Les Creux on land, and La Saline and the Slipway on the coast **(Fig.1)**.
It includes outcrops along Le Chemin de(s) Creux beyond St. Brelade's Church and La Chapelle des Pêcheurs, southwards into the rocky bay of La Saline (OS map), Le Bouilli (Stevens et al, 1985) or Bouilly Port (Perry's Guide), and the beach outcrops from Bouilly Port northwards to the Slipway.
The road outcrops along Le Chemin de(s) Creux are easy to examine but to examine the beach outcrops, return to the church, descend to the beach and use the concrete path to the jetty. Climb the steps to the Viewpoint (site of Le Coleron Battery, again unmarked on the OS map) above Bouilly Port (Le Bouilli means 'on the boil', a reference to the wave action), and to your immediate right (west), is a view of spectacular, deep, steep-sided chasms, which clearly reveal some of the geology around you.
To examine the spectacular chasms mentioned above, descend to the bottom of the steps, turn south and cross the wave-cut platform to round a low rocky point into Les Creux Fantômes (phantom hollows), named after the weird shapes of the rocks (Stevens et al, 1985) at the northern end of Bouilly Port. **Care should be taken on each of these routes over uneven surfaces and should only be done at low spring tides.**

This trail can start along Le Chemin de(s) Creux, the private road behind St. Brelade's Church to Les Creux, recently widened a little, with fresh cliff-face exposures on one side, and views back to the view-point and down into Les Creux Fantômes (Bouilly Port) on the other.
Geologically, the area is situated in the South-west granite (Bishop & Bisson, 1989), actually three different granites which crop out between La Corbière and Noirmont Points, and the road passes near where two of these granites are exposed. The area also includes several dolerite

dykes, some clearly exposed in the roadside cliff face, and others in the chasms, also **a new raised beach exposure and glacial head deposits**, a variety of erosional features and at certain times, beach springs.
Starting along Le Chemin de(s) Creux past the church, the pink, coarsely crystalline granite, often porphyritic, crops out in freshly exposed faces. Well-jointed sections are followed by two minor intrusions of dark grey dolerite **(Figs. 2 & 3).** The first is low down in the face and has two thin 1cm thick veins rising at a low angle towards the second which is a 1.5 m wide dark grey, dolerite dyke, striking c. E-W and steeply dipping southwards.

Fig. 2.

Fig. 3.

Further along the road, there is an unusual exposure of what appears to be a fault zone possibly formerly eroded into a gully, c.1.5m wide with angular fragments of granite but **also with areas of rounded beach pebbles near the base left and right of a large central, rounded boulder (Figs. 4 & 5).**
This appears to be a **new** raised beach site at c.30m level (J. Renouf, pers. comm.). The pale brown – pink, rounded granite pebbles are not abundant and vary in size from 1-10cm, lying within a coarse sand and grit matrix; hence they form an unsorted deposit. Overlying it there is a deposit of mixed angular granite fragments lying within a grit and sand matrix, bearing similarities to glacial head. The deposit is bounded on each side by vertical walls of granite, 1 – 1.5m apart and appears to fill therefore, a narrow gully, possibly in a former wave-cut platform which lies above and is covered by the present day soil and vegetation.

Fig. 4

Fig. 5

It is difficult to descend to the beach from this road (as mentioned above); the path is not marked and descends through trees. It is steep, twisting and stony in parts and involves a scramble down over rocks at the base onto the rocky beach. The safer route is via a narrow path which descends past the last house. This leads onto a short path to Le Coleron Battery view-point and passes a spectacular deep, vertical sided, narrow chasm, eroded into the cliffs from the south **(Fig. 6).**

Fig. 6.

Fig. 7.

Just before the look-out, the path allows an ideal view immediately west into the continuation of the vertical-sided chasm, and right opposite you is a spectacularly exposed, near-vertical dyke in the far wall **(Fig. 7).**

Being very careful, one can walk out onto part of a narrow ridge which separates the look-out chasm from another just to the west. The dyke continues below you across this ridge and across the next chasm to the west, though it is not exposed as clearly in its western wall. Looking back at the wall which descends from the view-point path, there is no dyke exposed along strike, so it would seem that this gorge has been eroded along a tear fault. Further exploration is needed to determine the direction of movement.

Walking back along the view-point path and descending to the breakwater leads onto the second part of the trail at the southern end of St. Brelade's Bay beach. Looking south one can see the present wave-cut rocky platform and one needs to walk over it to find a dolerite dyke striking across it and into the cliff face **(Fig. 8)**. It is faulted by small N-S striking dextral tear faults and could be the missing continuation of the dyke seen from the lookout, displaced to the south by a N-S dextral tear fault along which the chasm has been eroded. The cliff itself is composed of well-jointed pink granite with an irregular upper surface below a variable thickness of glacial head, part of which shows weak stratification **(Fig. 9).**

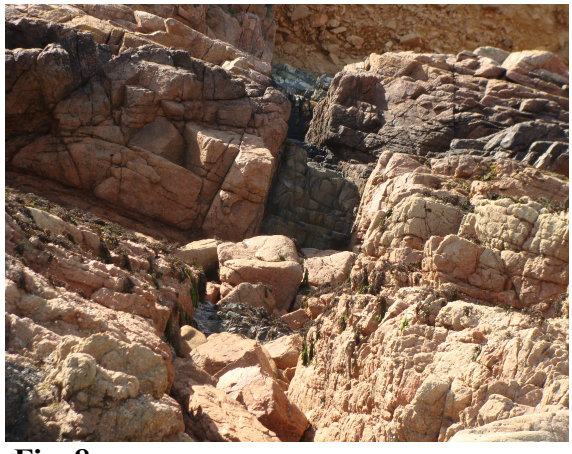

Fig. 8.

Fig. 9.

Scrambling up and over the low cliffs (Les Fantômes) and little headlands further south, one descends into the area of Les Creux Fantômes and is confronted by spectacular chasms c. 2m

wide, with near-vertical walls **(Fig. 10)**, eroded in the granite and striking N-S. There are three, the first one having been seen alongside Le Coleron Viewpoint path.

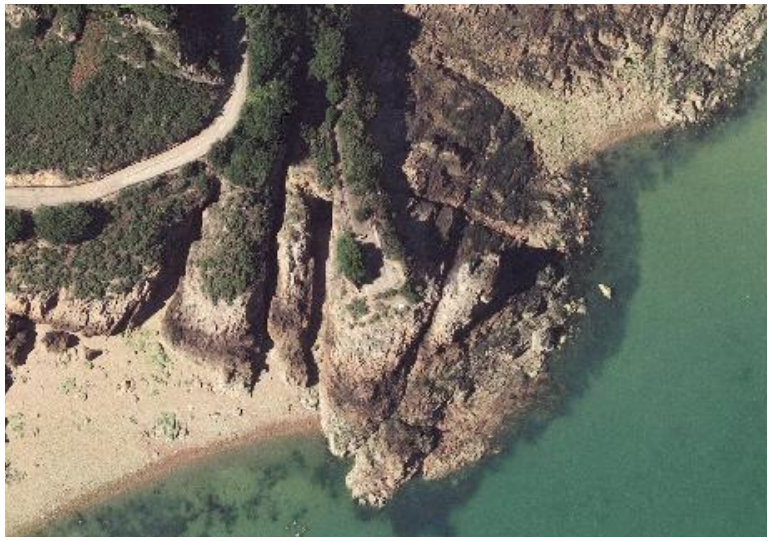

Fig. 10.

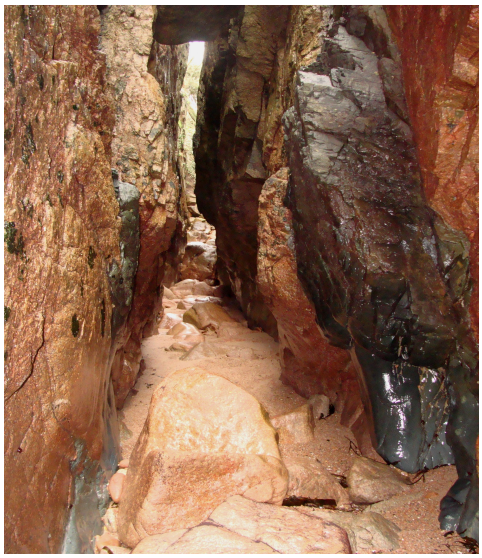

Fig. 11.

Fig. 12.

Remnants of dark grey, dolerite dykes crop out in the floors of them and also in the walls. They vary a little in thickness **(Figs. 11 & 12**) and their intrusive contacts with the granite are clearly exposed. The contacts vary from planar to slightly curved and there are thin offshoots or bifurcations which vary in length. Unusually here, there is also an example of veining in the floor of the eastern gully, where an almost filigree structure, clearly showing the mode of intrusion, occurs in an apparent boulder or possibly a remnant of a dyke buried by the pebble deposit **(Fig. 13).**

Fig. 13.

From here, walk back over the wave-cut platform to Le Coleron breakwater and along the concrete path to just beyond the steps down the low breakwater. Here, depending on the work of tides and waves, a study of the beach gravels in the first few metres, will reveal yellow-brown, silty clay around the base of small granite outcrops and forming patches within the recent gravels. This was more extensive during the storms in March ('08) but seems to represent a buried loess deposit **(Figs. 14 & 15).**

Fig. 14.

Fig. 15.

It is doubly interesting because a variety of differently coloured, worked flints lie on the surface and rarely, only partly in the deposit. In addition, isolated pieces of possible Normandy ware can be seen and a small part of the stem of a clay pipe was also found.

Finally, a walk across the beach towards the slip-way reveals small streams which seem to come from the culvert to the left of the slip. However, some originate in the beach a little further to the right (east) and are worth examining. These streams come from water bubbling up through the sand and seem to represent small springs of ground water from the granite bed-rock below the beach and forming the land to the north. They also have brown deposits on the surface, possibly iron rich bacterial blooms **(Figs. 16 & 17).**

Fig. 16.

Fig. 17.

Brief Geological History.

During the Lower Palaeozoic, the Porphyritic granite (c.550 Ma) and the Aplite/Microgranite (c.527 Ma) of the SW granite in the area described, were intruded below the Precambrian Jersey Shale Formation after its deposition, uplift and folding, and during the eruption of the andesites forming the lower part of the Volcanic series (c. 522 – 477 Ma). The adjacent Corbière granite was then intruded (c. 483Ma) and more andesites erupted, while during the same period (but later than 483Ma) there was intrusion of the dolerite dykes of the Main Dyke Swarm along E-W strikes.

The N-S dolerite dykes were intruded later possibly at the same time as the N-S tear-faulting as they cut the E-W dykes.
Intrusion of the NW granite, occurred below, during the eruption of the rhyolites and the uplift and erosion and deposition of the Rozel Conglomerate (c. 477 – 426 Ma).
The folding and intrusion occurred during a period from c. 700 – 425 Ma, ie. c. 275 Ma from the Precambrian to Silurian, a long period known as the Cadomian Orogeny (Brown et al, 1990, p. 181 et seq.).
This seems to have been followed by a long period of erosion, during the Upper Palaeozoic and Mesozoic, which removed the country rock and revealed the granites, until Tertiary limestones were deposited around the island.
During the Pleistocene there were several periods of higher sea level during interglacial times when raised beaches were formed, the 30m one described above being the oldest; other raised beaches deposits occur at 8m and 18m on the opposite side of St. Brelade's Bay. These were interspersed with periods of loess and head deposition during intervening glacial times, the deposits in the present littoral zone described above being produced during the last glacial period before the present sea level rise. The present climatic regimes and weather, which control the present weathering, marine and fluvial erosion and deposition, have produced the springs and the beach sands illustrated above.

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