Portelet Common Coastal Trail.

La Cotte de St. Brelade to Le Fret.

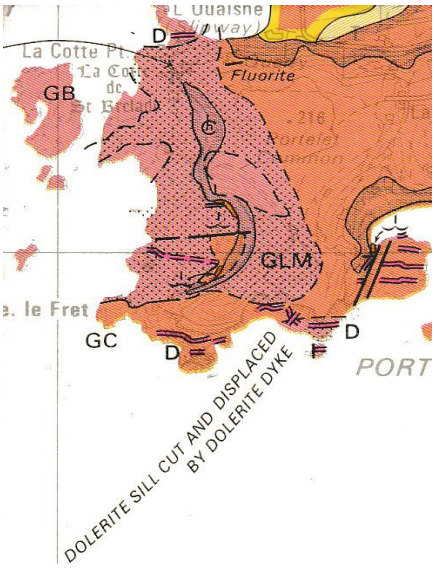

Fig. 1.

The Trail can start at L'Ouaisné beach and continue southwards via the quarries and the rock shelter, La Cotte de St. Brelade **(Fig. 1; photo, J. Percival)**, then along the beaches on the west side of Portelet Common **(Fig. 2)** and then back up onto Le Fret Point, but the main part of the Trail concerns the raised beaches, the trail for which starts from the west side of Portelet Common.

N S

Fig. 2.

La Cotte is within the cliff outcrops (N) on the left hand side of the photo **(Fig. 2)**, and Portelet Common forms the plateau surface along the top of the cliffs and slopes. The raised beach sites can be approached from the Portelet Common car park via the path southwestwards to a long granite wall, then west down the path across the heather-covered slopes to a stand of trees at the top of the low beach cliffs. From there, it is a short, steep descent via a path to the beach on the north side of the headland between the two bays. **High tide times must be checked and care must be taken when walking over the boulders, rock ledges and low crags.**

Many raised beaches at 8m, 18m and 30m around the island have been recorded but not always described, e.g. Marett (1911, pp. 449-480), Mourant (1933, p.60-61, Portelet to the east), Keen (1978), Renouf (1986, p.39) and Bishop & Bisson (1989, p. 84, incl. head, p. 87). Detailed work is at present in progress (Dr. J. Renouf, pers. comm.).

These raised beaches are in the 8m beach interval and are situated at the back of two bays, with present day pebble beaches, to the south of La Cotte de St. Brelade headland on the west side of Portelet Common facing St. Brelade's Bay.
These notes and illustrations help comparisons to be made between these and beaches in La Cotte de St. Brelade at the same elevation but they should be confirmed by detailed mapping and petrographical studies of the rock types.

In the first, smaller, northern bay to the left of the central crags (Fig. 2), accessible from a path down through several trees at its southern end, there are two possible raised beach levels. The first, starting from its first obvious appearance about half way northwards along the bay, consists of two possible pockets of pebbles which occur above head; vegetation cover makes it difficult to trace any bedding but they seem to be part of a lower-level beach **(Figs. 3, 4)**.

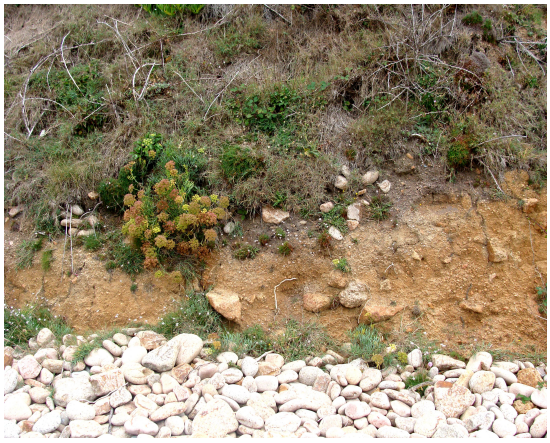

Fig. 3.

Fig. 4.

Above, is faintly stratified head overlain by a second, seemingly higher pebble bed, 60 -100cm thick, which is again overlain by more faintly stratified head; the stratification being possibly due to solifluction or gelifluction **(Fig. 5)**. Some metres further south, fine grained, yellow sand and clay form a lens in the lower head **(Fig. 6)**.

Fig. 5.

Fig. 6.

Several metres further south (just north of the path descending onto the beach through the trees), it is thought that the upper pebble bed has dipped and thickened and lies in the grey soil profile within the first two metres above the present beach level (**Figs. 7, 8)**.

Fig. 7.

Fig. 8.

Continuing southwards around the headland between the two bays, there is a small pocket of raised beach above the bedrock of porphyritic granite, the oldest of the SW Igneous complex **(Fig. 9)**. This raised beach deposit is immediately above a possible raised wave-cut platform at the foot of the headland and is noticeable for the smaller size of the pebbles (gravels) and their differing rock types, one of which is dark maroon and maybe rhyolite. Further on, round the south side of the headland, a narrow gully has been eroded along a discontinuous dolerite dyke, c.60cm wide, striking approximately E - W **(Fig. 10).**

Fig. 9.

Fig. 10.

N  S

Fig. 11.

In the second, southernmost bay, on the right of the central crags (Fig. 11), the raised beaches occur in the low cliffs at the back of the beach and extend southwards towards Le Fret Point.
They are separated from those of the northern bay by the small but high rocky headland of the SW granite complex, the central crags mentioned above **(Fig. 11)**.
At about mid-tide level at the northern end, the beach is composed of beds of well cemented, light and dark coloured, generally small, rounded gravels, and scattered larger pebbles of

many different rock types. Assuming this is a raised beach, an upper, second raised beach of larger, light coloured, rounded granite pebbles can be seen starting on the left **(N)** at c. 2 - 3m up the cliffs. This passes up southwards into an overlying thicker bed of brown, rounded pebbles which appears to descend southwards to beach level. The raised beach exposures are interbedded with intervals of yellow-light brown gritty sand, silty clay, and angular boulders in a yellow-brown sandy matrix which are thought to be loess and head.

Succession.

Head; large angular boulders, 5-7cm to 15cm) towards top of cliff.
Sand; yellow – brown, with clay lenses, ? loess.
Pebbles of second raised beach; light grey & brown, granite, rounded, between angular boulders, and localised grey ?shale & dark grey ? red-spotted ?spherulitic rhyolite clasts.
Loess & head; yellow to brown with some rounded grit clasts and angular boulders above.
Conglomerate of first possible raised beach. Small pebbles/gravel, 2 - 4cm, round, elongated, well-cemented; shale, granite, aplite, diorite, quartz and flint.

The lowest raised beach is at present day mid-beach level at the northern end of the second present day beach, and consists of c. 1m of small, 2 - 4cm rounded pebbles of a variety of rocks, eg. shale, granite, aplite, diorite, quartz and flint, generally in contact and well-cemented **(Fig. 12)**. The matrix is brown-yellow sand and grit **(Fig. 13)**.

Fig. 12.

Fig. 13.

Above is a layer of yellow-brown, medium-grained silty sand with some rounded grit, c. 60cm thick **(Fig. 14)**, with scattered angular granite fragments of various sizes towards the top **(Fig. 15).** This is possibly loess overlain by head.

Fig. 14.

Fig. 15.

These deposits are overlain by the second raised beach, which can be seen starting higher and further left (N) of the lower one, above some possibly fallen angular blocks at the foot of the cliffs. It is a thin bed, c. 30cm thick, of clean, light grey, rounded granite pebbles, some of which occur in between large, angular, red granite boulders **(Fig.16).** Further along it appears to thicken and pass upwards into a thick layer of larger, brown (possibly due to a sedimentary coating), well-rounded pebbles, seemingly off-set to the south **(Fig.17).** This exposure and pebble colour may be the result of a cliff-fall and represent the internal unweathered part of the raised beach.

Fig. 16.

Fig. 17.

This in turn is overlain c. 1m of yellow sand with an upper layer of small angular rocks and possible loess.
Further south again, brown, silty clay lenses crop out in the beach below and above the raised beach pebbles **(Figs. 18 & 19).**

Fig. 18.

Fig. 19.

Within the raised beach here, there are angular and rounded clasts that superficially resemble dark grey shale **(Figs. 20, 21)**. These need to be detached and examined closely as they may possibly be dolerite from the nearby dyke which could have been eroded and provided beach pebbles.

Fig. 20.

Fig. 21.

Also, in this area of the cliff, just below the bed of cleaner, smaller pebbles, very unusual, larger cobbles of a red and white 'spotted' dark grey rock occur, not yet seen in the bed rock of this area.
The 'spots' are sub-spherical, c. 1mm in diameter, and may be composed of the red feldspar, common in the underlying SW granite **(Figs. 22 & 23)** but the shape and distribution of the 'spots' resemble those in the variety of spherultic rhyolite, composed of small, circular spherulites, seen at La Crête Point on the east coast, north of Anne Port Bay. These need to be examined in more detail.

Fig. 22.

Fig. 23.

Finally, in the more inaccessible upper part of the cliff, angular boulders in the familiar yellow-brown ochre-coloured, fine sediment, possibly head **(Fig. 24)**, overlie the pebble beds.

Fig. 24.

Ascending the raised beach cliffs back along the descent path, the trail continues to Le Fret Point and down the gently sloping cliffs, to examine the granite, its xenoliths of diorite and very rare laminated Jersey Shale, and the fine E-W striking dolerite dykes **(Figs. 25, 26).**

Fig. 25.

Fig. 26.

Brief Geological History.

The SW Igneous Complex (or South-west Granite) consists of three granites of different ages, formed during the Lower Palaeozoic and which crop out in the SW corner of the island from La Corbière to Noirmont Point. Their outcrop patterns are oval and concentric about St. Brelade's Bay. The central area comprises a narrow band of Porphyritic Granite (La Moye granite) around a central Microgranite (Beauport or St. Brelade granite, see map and text, Bishop & Bisson, 1982 & 1989) and forms the oldest combination (c. 550 – 527Ma); it forms the bedrock to the raised beaches described above. The outer Corbière granite is a coarsely crystalline granite with hornblende and is the youngest, intruded c. 480Ma.
The granites were intruded after the deposition, uplift and folding of the Jersey Shale Formation to the north and east and the intrusion of the diorites, xenoliths of which can be seen at Le Fret Point. This seems to have happened at about the same time (c. 522 – 477 Ma) as the andesites of the St. Saviour's Andesite Formation were forming to the north east which were then followed by the deposition of the Rozel Conglomerate.
This was followed by the intrusion of the E-W dolerite dykes, part of the Jersey Main Dyke Swarm, seen along the trail.
There seems to have been a very long period or periods of uplift and erosion while Tertiary limestones were being deposited on the sea bed around the island and before the formation of Jersey's raised beaches during the Pleistocene.
The loess deposits south of La Cotte near present beach level seem to represent deposition during a former glacial period, pre-Ipswichian/Eemian, while the overlying raised beaches seem to be part of the 8m raised beaches which were deposited during the later Pleistocene sea level rise during the Ipswichian/Eemian c.130-115,000 years ago. Discussion of the dating methods and results in the Jersey and the Channel Islands area is comprehensively presented by Renouf (2010, p.1-4). The overlying head and loess represent a return to glacial conditions and gelifluction periods during the last glacial period, the Devensian, c. 115,000 - 10,000 yrs ago. The present sea-level rise and climatic regime during the last 10,000 years have produced the present landforms by marine erosion accompanied by physical and chemical weathering.

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Ralph Nichols. 2011.