FIELD EXCURSION TO THE ISLE OF MAN

Leader: T.D. Ford May 25-28th, 1984

A small and very select party of 11 members enjoyed three days of magnificent weather and geology over the Bank Holiday weekend. A high-speed drive to Liverpool was followed by a rather crowded voyage on the ferry across the submerged Triassic basin of the Irish Sea and members had a view of the platforms of the Morecambe Bay gas field. A short drive then took us to our accommodation at Castletown, appropriately situated on the Carboniferous Limestone, with outcrops barely 10m away on the beach. Some members were even seen looking for fossils before breakfast!

The first day's field work was a traverse of the Carboniferous Limestone outcrops of the south coast. The fault-bounded outlier at Port St. Mary showed thin-bedded Castletown Formation limestones with abundant corals, bryozoa, *Zoophycos* feeding trails and scattered gastropods. Sparse quartz pebbles suggested that land was not too far away at the time of deposition. Bedding plane surfaces raised questions as to why some were flat and others were hummocky. Both ends of the section are faulted against Manx Slates, and tight folds in the Lonan Flags division were examined in the bay west of Kallow Point.

Moving to Strandhall shore, large Caninid corals were abundant, and a complex of faults, dykes and a thin mineral vein at Poyll Breini caused discussion. Raised beach gravels with sub-fossil limpets were partly covered by tufa. Moving eastwards, up the succession, the reef limestones of the Poyllvaaish Beds were soon reached at Salt Spring and fossil-hunting started in earnest. Beds packed with goniatites almost made some members forget lunch! Across the inlet of Ghaw Gortagh, close to Poyllvaaish Farm, exposures caused a lot of discussion. What appeared at first sight to be isolated small reefs turned out to be fallen blocks of reef limestone in a matrix of thin black shaly limestones distorted by compaction round the blocks. Geopetal fabrics demonstrated that the blocks were locally overturned.

On the east side of Poyllvaaish Bay, a petrographic diversion was had on the reject offcuts of various granites, diorites etc. from a small monumental masonry works. Close by, the highest Dinantian beds are black shales with occasional calcareous bands, with crushed goniatites and bivalves scattered on bedding planes of the Close ny Chollagh Formation. Numerous dolerite dykes of presumed Tertiary age cut the succession in the Poyllvaaish area, but these were coincidental with the passage of the Carboniferous limestones up into the pene-contemporary Scarlett Volcanics. Lenses and tongues of black limestone passing into agglomerates demonstrated their relationship at Close ny Chollagh point. The volcanics outcrop continuously for a mile of shore, with spectacular exposures of pillow lavas, amygdaloidal basalts, coarse agglomerates, fine tuffs and a wall-like intrusion, with a probable vent showing radial columns at the Stack of Scarlett. Adjacent to the Stack, the volcanics' contact with the limestones was obscured by faults and much dolomitization before dykes were crossed on to well-developed folds in the Castletown Formation again.

A short drive took us round to Langness Point where the basal Carboniferous breccias are seen resting on weathered Manx Slate in Dreswick inlet. Eroded into impressive stacks and arches, the breccias along the west side of Langness are cut by a fault, several dykes and a mineral vein.

The second day took us north across the Manx Slate country. A diversion was made into the "spar" quarry in the Foxdale granite to see the massive quartz-feldspar and quartz-mica pegmatites cutting the rather kaolinized granite. "Spar" here means vein quartz!

At Peel, immediately outside the seaward Castle walls a shallow quarry on the wave-cut platform showed tight, small folds, with faults and a contemporary dyke in the Niarbyl Flags division of the Manx Slate. Microfossil evidence has shown that the Manx Slate Group is of uppermost Cambrian to lowest Ordovician age, though details of the succession of stratigraphic units within the Manx Slate are still controversial.

North of Peel a short climb over a headland took us via a cliff path down into the Traie Fogog bay for magnificent exposures of the Peel Sandstone. Generally regarded as of Old Red Sandstone age (though it has yielded no diagnostic fossils) features of fluvial sandstones are well-displayed in the steeply dipping sandstone. These pass up into red mudstones and finally into thick cornstones (= calcretes) with a gravelly matrix, representing an ancient series of soils. The overlying fine breccias by The Stack have yielded limestone pebbles with Ordovician and Silurian fossils of unknown provenance. Sources in Ireland were thought most likely.

After lunch, a move was made a mile north along the coast to walk down into Whitestrand Bay. Very similiar lithologies of Peel Sandstone are well-exposed here but the details suggest that they are a repetition of depositional facies rather than a faulted recurrence of the same beds as in Traie Fogog. At the north end of Whitestrand Bay the headland shows the Peel Sandstone Beds in wild disarray and much discussion ensued. The consensus was that primary slump folds showed overturning towards the east, i.e. away from the present Irish Sea basin towards the Manx Massif, with a Devonian palaeoslope in the opposite direction to that seen today. Current-bedding directions and the fossilferous pebbles supported the hypothesis of a westerly source for the sandstones. Subsequently these primary structures had secondary, tectonic, shears superimposed in the form of numerous sub-horizontal fault planes. Shearing and shattering became more pronounced on the north side of the headland as the strong fault in the Wills Strand Bay was approached. This threw Peel Sandstones against Manx Slates with a small intrusion of much altered dolerite.

On the return journey to Castletown, a stop was made briefly at Niarbyl Point to see the crush breccias, and another stop was at the ruined Glen Rushen mines, were lead and copper had been produced from a major east-west vein complex cutting both Manx Slate and Foxdale Granite. Relics of the miners' ingenious devices for winding, pumping and ore-processing were pointed out.

The third day was largely on the Pleistocene. After a drive to Kirkmichael, the cliffs adjacent to Glen Wyllin were examined. The succession of Devensian tills and outwash sands and gravels was pointed out and questions were raised about the presence of *Turritella* shells in glacial sediments. To the north, kettle holes dated at around 18000 BP yielded peat infills and calcareous marls with *Chara*. They demonstrate that glaciation finished here rather earlier than in some nearby regions, but soliflucation deposits across the kettle holes showed that cold climate persisted for a time. A drive across the rolling hills of the Bride terminal moraine took us to the Point of Ayr at the northern tip of the island to see the fine storm beach ridges, with their abundant derived pebbles of riebeckite microgranite from Ailsa Craig in the Firth of Clyde. Lunch was taken on the prom at Ramsey before a drive across the hills to Laxey, stopping briefly at one of the island's many archaeological treasures—King Orry's Grave, actually a Bronze Age burial chamber.

At Laxey, a pilgrimage was made to the giant water-wheel, Lady Isabella, 72 ft. in diameter. Installed in 1852, it helped to pump the lead-zinc-copper mines dry to a depth far below sea level. A walk upstream took the party to the turbine house and the water-pressure engine shaft, further evidence of the miners' fight against their old enemy, water. Here the President demonstrated that he could still get into an old boiler but no members were willing to follow.

Apart from getting lost on the motorway complex round Manchester, the return journey to Nottingham was uneventful, and the party was left with memories of a highly varied weekend, with many geological problems both solved and unsolved.

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