Day Excursion to
Dumbarton and Ardmore Point

Leader Mike Keen
Saturday 18th August 2012
Report by Emily Unsworth

Our trip to Dumbarton and Ardmore Point started off at the Gregory Building with a virtually full minibus. We drove along the Clyde, through Dumbarton and Cardross to our first location at Ardmore Point. The rocks which we were about to study are Devonian, Old Red Sandstone. Setting off along the path round the point, with comments on how much better the weather was than some field trips we could remember, we reached our first location. Here we could see relatively thin (15 to 30cm) layers of conglomerate and bedded sandstone. The clasts in the conglomerate were poorly sorted ranging from 0.5 to 10cm. In some places on the beach clasts were up to 30cm in size. No matter how many interesting/different looking rocks we tried to break open they all turned out to be quartzite. The small scale cross bedding and poor sorting of the clasts indicated that the paleoenvironment in which these were formed was shallow fast flowing rivers with high sediment loads forming sandbars and a braided path. The size of the large clasts would indicate that they were not transported far and the quartzite would require metamorphic conditions for its formation. Aluvial fans from mountains would produce this sediment but what mountains? The Caledonian mountains wouldn't have produced the quartzite clasts.

Moving further along the shoreline we came to an area where, within tens of meters, the dip of the beds could be seen to change direction, dipping west, south and east curving round. This was a plunging syncline, eroded down and on a convenient scale to be seen in one view.

Our next stop was where a strike-slip fault had left evidence of its movement in the form of slick-n-slide marks. Those with sensitive fingertips can, apparently, tell which direction is smoother than the other when running their fingers along the slick-n-slide.

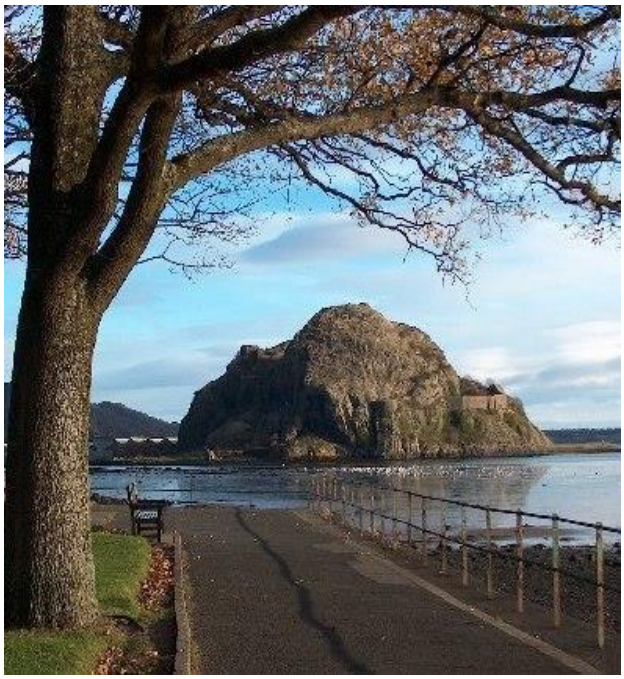
After making our way through undergrowth, rock pools and some unstable boggy areas we finally arrived at the unconformity between the Lower Old Red Sandstone, which we had been looking at, and the Upper Old Red Sandstone (the Middle Old Red Sandstone being missing). Half the group stood on each side of the unconformity to see the difference in strike direction on each side.

Our final location at Ardmore Point was to see a small (but perfectly formed) example of a fault where small pebbles were actually embedded in the fault plane, indicating that there were earth movements causing the fault at the same time as the rock was lithifying. At this point we had our picnic lunch sitting on the rocks by the sea.

Getting back to the minibus we headed off for our next location. Unfortunately an earlier reconnaissance had found that Auchensail quarry is now completely overgrown and inaccessible, so we therefore headed straight for the much more accessible Havoc Hole, taking note of the raised beaches and inland sea cliffs on the landward side of the road.

Havoc Hole (West Dumbarton) has a fantastic example of red, aeolian, dune bedded sandstone. The scale of the cross bedding (aprox. 2m) is much larger than that seen at our first location at Ardmore Point and the rounded sandstone grains indicate that the depositional environment was dessert sand dunes. This Upper Old Red Sandstone rock is red in colour which is due to a coating of ferric oxide (rust) on the sand grains.

Our next stop on the trip was Dumbarton Rock, a volcanic plug from the Carboniferous age. As the basaltic lave left in the volcano cooled it contracted forming columnar jointing. As these columns form perpendicular to the cooling surface it was possible to see that this had not been completely horizontal. Taking the path between the rock face and football ground we came to the shore of the Clyde. Here we could see fallen blocks of basalt and the underlying Upper Old Red Sandstone. WE also saw tuff and agglomerate formed from the volcanic ash.



After our final journey back to Glasgow we then thanked Mike Keen for leading us on a trip to a range of diverse geological environments.