

Perth & environs: 30 June 2018

Leader: Con Gillen

Report by: *Anne & Bill Gray*
19 from EGS

Participants: 13 from GSG,

This was a joint excursion with the Edinburgh Geological Society. The original aim of the excursion was to study exposures of the Lower Devonian Ochil Volcanic and Scone Sandstone Formations that dominate the geology of the Perth area and then to look at a variety of rock types that have been used for building stones in Perth city. However an event at Scone prevented us from visiting the Scone Sandstone exposures. The geology of the Perth area and the localities we visited are described in Browne & Gillen (2015) and the locality numbers from that guide are given in the following account.

Our coach went to Kinnoull Country Park to meet the Edinburgh group and our leader, and arrived at 10:30 in glorious sunshine, which lasted all day.

We started with the short walk from the car park to the Corsiehill Quarry (NO 1350 2334; Locality 15.1), operational from 1832 until 1932, where a Carboniferous quartz-dolerite sill was extracted for road metal. Con pointed out the contrast in durability between the porphyritic dolerite and the surrounding lava, which forms Kinnoull Hill. The lavas were softer and more crumbly than the dolerite, with numerous vesicles.

From the quarry, a 30 minute steep walk up through the dappled shade of the forest led us to the top of the hill (NO 1366 2282; Locality 15.2), where we admired glorious views from several viewpoints, sampled tiny wild strawberries, and visited Kinnoull Tower, a folly that occupies a commanding position above the escarpment on the south-east side of the hill. From here we had a majestic view of the River Tay meandering across the valley below, and of the scarp of the Ochil Volcanic Formation which marks the position of the North Tay Fault. The lava flows in this cliff are much less defined than those seen in the Clyde Plateau Volcanic Formation. We then returned to the buses to travel to the city centre.

Photo 1 (P1040941_2.jpg). View from Kinnoull Hill viewpoint (Locality 15.2) looking east. The scarp of the North Tay Fault with Kinnoull Tower on top can be seen on the left. The outcrop belongs to the Ochil Volcanic Formation. *Bill Gray*



View from Kinnoull Hill viewpoint (Locality 15.2) looking east. The scarp of the North Tay Fault with Kinnoull Tower on top can be seen on the left. The outcrop belongs to the Ochil Volcanic Formation. *Bill Gray*

There used to be many quarries in the Perth area, mostly mining the Scone sandstone, but they are now all defunct. Our original plan had been to visit one of these, the Quarrymill, near Scone Palace. The stone from these quarries is thought to have been worked for the abbey and palace at Scone and to have been used for the Stone of Destiny. However, because this plan had to be cancelled, we turned our attentions to the way the stone was used in the building of St John's Town, the original name for Perth. We were dropped off on the west side of the river and walked across Queen's Bridge to visit Kinnoull Aisle (NO 1231 2332; Locality 16.9), the remains of the 14th century church that is the burial site for the Kinnoull family. The Scone Sandstone Formation has a very varied appearance, ranging from pale blond to a rich dark red, is well-bedded, often cross bedded and displaying usually small well-rounded clasts. Con described how it was laid down in great depth over the millennia that followed the end of the Caledonian orogeny. The mountains were by then well eroded and the sand fragments that reached the Perth area had been transported by rivers from far-off low-lying hills in the north, becoming rounded and frosted by their deposition. Warm climatic conditions account for the presence of iron, giving the red hue to the stone.

We then had lunch in Kinnoull Park, amid very pleasant terraces overlooking the river.

After our lunch we walked up from the park to the eastern section of Queen's Bridge (NO 1226 2342, Locality 16.8), where we saw a fine example of a sand volcano in the Carboniferous sandstone from which the bridge is constructed, and learned that this was a de-watering structure.

We next visited Kinnoull Parish Church (NO 1230 2354; Locality 16.6), which is constructed of Scone sandstone which displays fine bedding with some elongated mud clasts.

One of the most spectacular constructions from the local stone is the Smeaton Bridge over the Tay (NO 1202 2385; Locality 16.5).



Smeaton Bridge (Locality 16.5). The columns are made of Scone sandstone & the spandrels (the circular inserts) of basalt. *Bill Gray*

The pillars are formed from large blocks of bright red cross-bedded sandstone from Quarrymill, some containing pebbles standing proud of the surface, while the round spandrels (circular inserts) are formed from the local black basalt. Therefore, the bridge neatly encapsulates the geology of the area. The column on the west bank displays marks recording the levels of flooding that the city has endured over the last 100 years. The pillars of the new flood defences are fashioned from smooth-faced Locharbriggs red sandstone. This was a Permian desert formation, without the rich variety seen in the local sandstone.



Column on the west bank of Smeaton Bridge (Locality 16.5), composed of cross-bedded Scone sandstone and with marks recording the levels of flooding over the last 100 years. *Bill Gray*

On our way to look at the building stones we made a detour through North Inch park to look at the granite plinths of the war memorial (the granite probably came from China) and the statue of Prince Albert (NO 1190 2390; Locality 16.5c) The plinth of the statue is made of Scone sandstone and the blocks in the upper part have been laid with the bedding vertical, resulting in fast erosion. The statue itself is made of cross-bedded Carboniferous sandstone from Redhall Quarry Edinburgh (Gullane Formation).

The centre of the old city houses several buildings of Scone sandstone, notably St John's Kirk, the oldest building in the city, and St Matthew's Church. The buildings we looked at were:

St Matthew's Church (NO 1210 2357; Locality 16.10) – Scone sandstone but with an entrance arch of Carboniferous sandstone.

Sheriff Court (NO 1207 2340; Locality 16.11) – Carboniferous sandstone at the front (probably from the Lothians), Scone sandstone at the back. (The columns at the entrance had originally been intended for a building in Charleston in Fife.)

Wall of County Prison (NO 1210 2357; Locality 16.11) – Carboniferous quartz-dolerite blocks with doorways of sandstone & slate.

St John's Kirk (NO 1195 2355; Locality 16.1) – Perth's oldest building (1126) - Scone sandstone.

City Hall (NO 1185 2355; Locality 16.2) – Dundee Flagstone Formation (below Scone Sandstone Formation).

Former Bank of Scotland (NO 1200 2350; Locality 16.2c) – Carboniferous sandstone.

Sandeman Building & Gloag Building (Kinnoull Street) (NO 1165 2370 & 1170 2372; Locality 16.13) - Locharbriggs sandstone from Dumfriesshire

Con gave us a challenge when we came to the old city wall (NO 1194 2372; Locality 16.3): to find a block of garnet mica schist. He explained that this 12th century structure was the only place where one can see building stones that have come from the Highlands. These early defensive walls were erected using the local sandstone and also stones gathered from the island in the middle of the river in the city, composed of quartzite, greenschist and mica schist, which had been brought down by rivers and were well rounded and worn. We were, of course, successful in our search, helped by the bright sunlight highlighting the mica in the schist.

Our last port of call was the complex of old mill buildings (NO 1145 2373; Locality 16.14) which cluster around the city lade which powered the water wheel. Formed again from the local Scone sandstone, these are very handsome and well-preserved buildings.



Section of city wall (Locality 16.3). The garnet mica schist is the large block near the centre of the picture. The other blocks are composed of sandstone, greenschist & quartzite. *Bill Gray*

By now, the late afternoon sunshine was taking its toll on our energies and we were looking forward to our high tea at the Grampian Hotel nearby. It provided a welcoming cool hall, lots of iced water, pleasant dishes and tasty scones and cakes. Refreshed, we joined our coach shortly after 6 pm and headed back to Glasgow. A good day was had by all.

Reference

Browne M.A.E. & Gillen C. (eds) 2015. A Geological Excursion Guide to the Stirling and Perth Area. Edinburgh Geological Society, 3-23, 183-203.