Cuillin Hills 10:

Fionn Choire

An excursion within the low ground of Fionn Choire, NW of the Cuillin Hills, where Paleocene silicic volcanic rocks form a thick and laterally extensive sequence adjacent to the NW margin of the (younger) Cuillin Intrusive Centre. The distinct paleness of these poorly vegetated volcanic rocks within the corrie contrasts with the backdrop of the dark, rugged higher ground formed of various gabbroic rocks of the intrusive centre.

Aspects covered: hydrothermally-altered plateau lavas and sedimentary units; silicic pyroclastic rocks (lava-like ignimbrite, tuff, lapilli-tuff, breccia); basic minor intrusions; glacial landforms and deposits of the northern part of the Cuillin Hills.

Route: Glen Brittle (Gleann Bhreatail) - Allt a' Mhaim - Tobar nan Uaislean - Fionn Choire - Allt an Fhionn-choire - Allt Mór an Fhinn Choire (- return Glen Brittle).

The path from Glen Brittle to Tobar nan Uaislean is 3km. Access to Fionn Choire can also be from Sligachan, whereby the through path between Sligachan and Glen Brittle adjacent to the Allt Dearg Mòr is used to access Tobar nan Uaislean (5km).

Distance: 9km (from Glen Brittle) or 12km (from Sligachan) (return journey).

Time: 6/7 hours.

General comments: Tobar nan Uaislean is easily accessed by the relatively good through path between Glen Brittle and Sligachan. On fair-weather days, there are superb views of the northern Cuillin Hills, from Sgùrr nan Gillian to Sgùrr Thuilm.

Follow the Broadford - Portree (A87) road to Sligachan (26km (16 miles) from Broadford and 14km (9 miles) from Portree).

If starting from Sligachan, there is parking close to the road junction, for example, on the south side of the road 100m east of the new bridge over the River Sligachan.

If starting from Glen Brittle (Gleann Bhreatail), take the Dunvegan (A863) road along Glen Drynoch to the Carbost (B8009) road (8km; 5 miles). From here, follow the Carbost road, along the south side of Loch Harport, as far as Merkadale (2.5km (1.5 miles)) and thence take the minor road signposting Glen Brittle. Descend into Glen Brittle (Gleann Bhretail) to a point south of the hairpin bends at [NG 4239 2581] where (pay) parking is available, popular for visitors to the so-called Fairy Pools on the Allt Coir' a' Mhadaidh (an optional locality, see below). Alternatively, there is limited parking in the forestry ground on the NE side of the road *c.* 500m back towards Carbost (i.e. before/above the hairpin bends in the road).

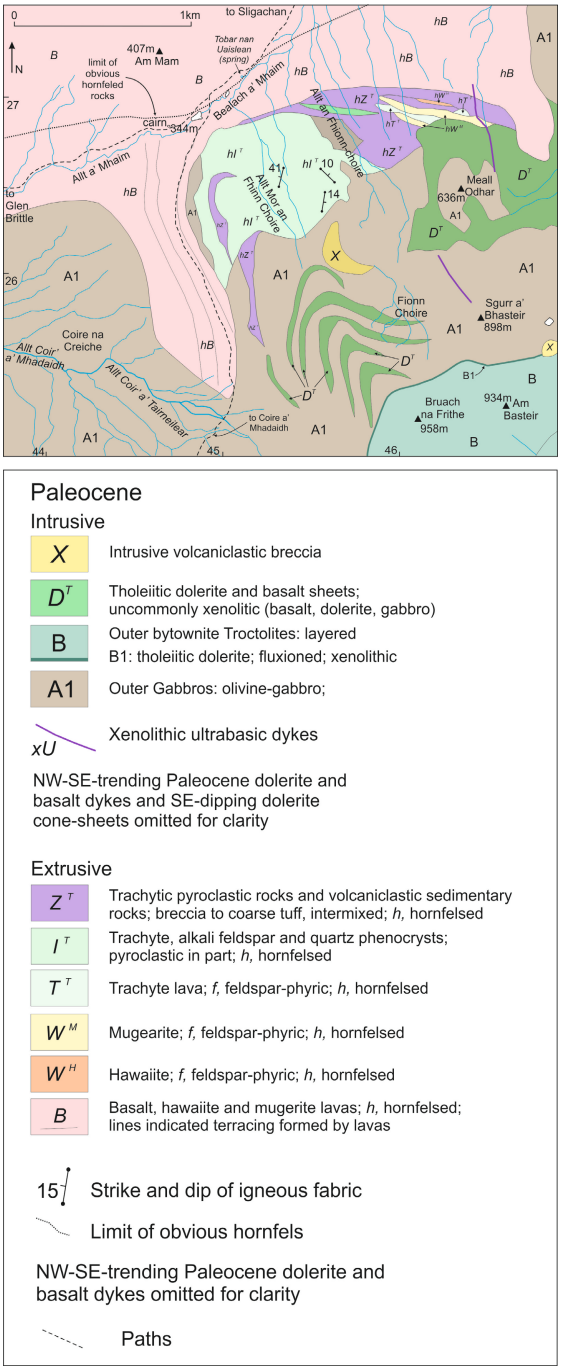

Figure Cuillin 11.1: Summary map and key of the NW Cuillin Hills area.

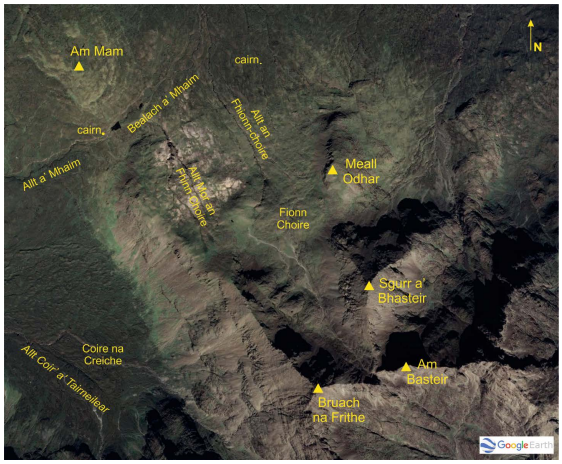

Figure Cuillin 11.2: Annotated Google Earth® image of the Fionn Choire area.

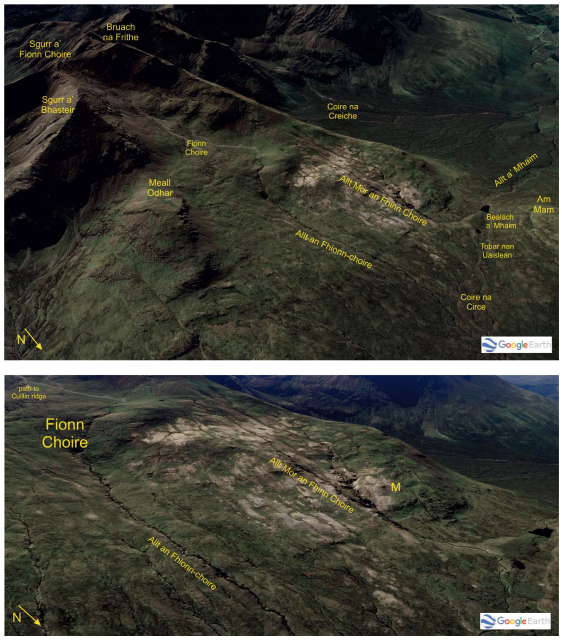

Figure Cuillin 11.3: Annotated oblique Google Earth® images of the Fionn Choire area.

From the path at the (pay) parking area for the Fairy Pools, cross the minor streams that flow into the Allt Coir' a' Mhadaidh and follow the path NE, parallel to the forested area. Beyond, the path runs parallel to the Allt a' Mhàim (on its NW side). Continue along the path, gaining height past the cairn to the Bealach a' Mhàim. At this watershed there is a spring, Tobar nan Uaislean.

If accessing from Sligachan, take the path that starts on the south side of the Dunvegan (A863) road, close to the Sligachan Hotel. The path is on the north side of the Allt Dearg Mòr and trends SW into Coire na Circe and upstream to the Bealach a' Mhàim and the Tobar nan Uaislean. Note the many plunge pools within this river, enjoyed by walkers on their return journey from the northern Cuillin Hills on typical hot Summer days. Many of these pools are aesthetically superior to the more famous (and overly popular) Fairy Pools on the Allt Coir' a' Mhadaidh.

On Am Màm, to the NW, the typical terraced topography of the plateau lavas is poorly developed due to a significant cover of glacial deposits and peat.

The volcanic rocks to be examined in this excursion occur within the lower part of Fionn Choire and are dominated by a conspicuous poorly vegetated, pale-weathering unit. Exposure is restricted mainly to stream sections; consequently, four localities will be visited, which illustrate the main lithologies and possible time relationships.

Locality 1 [NG 4508 2679]:

SE of the Cairn and Bealach a' Mhàim, on the west side of the Allt Mòr an Fionn Choire, the terraced crags comprise hornfelsed basaltic lavas and interbedded (volcani)clastic units, ranging between sandstone and conglomerate/breccia. NW-SE -trending basaltic dykes cut the sequence. Glacial striae are common on the tougher central portions of some of the lavas. Exposure is best in the vicinity of the one stream that cuts through the sequence.

Figure Cuillin 11.4: Crags west of the Allt Mòr an Fionn Choire, comprising interbedded basaltic lavas and clastic units. View towards the south.

Figure Cuillin 11.5: Typical amygdaloidal-textured basaltic lava within the crags west of the Allt Mòr an Fionn Choire. Coin *c.* 24mm across.

Figure Cuillin 11.6: Breccia dominated by angular to subrounded clasts of basalt within the crags west of the Allt Mòr an Fionn Choire. Coin *c.* 24mm across.

Figure Cuillin 11.7: Glacial striae on surfaces of basaltic lava in the crags on the west of the Allt Mòr an Fionn Choire. Pole *c.* 1m long.

Beyond the top of the preserved lava sequence, as far as the obvious isolated knoll, is pale-weathered *in situ* rock surrounded by shattered (scree) material.

Locality 2 [NG 4513 2671]:

The isolated exposure of the knoll and the exposures within the banks of the western tributary of the Allt Mòr an Fionn Choire to the east are part of a significant outcrop of lava-like ignimbrite.

Lava-like ignimbrites are, as the name suggests, ignimbrites in which the particulate character of the ignimbrite, comprising flattened/stretched, compacted and welded pyroclasts of compositionally evolved material (rhyolite, trachyte etc.), mimic so-called flow banding within compositionally-evolved lavas. Typically, such high-temperature (high-grade) ignimbrites are deposited from pyroclastic density currents close to the source vent during large explosive eruptions.

The dominant components of the ignimbrite are glass shards and pumice fragments covering a range in size, typically from centimetre down to micro-metre, together with crystal fragments and fragments of unrelated material that have been picked up during eruption and deposition. Fragmentation of crystals is the result of inter-particle interaction within the eruption column. Welding, or agglutination, the joining together or adhering, of the various components, is due to the high (magmatic) temperature of the pyroclasts, and the planar fabric, or eutaxitic texture, is due to compaction during accumulation. Post deposition interaction with heated groundwater has resulted in much of the glassy components of the Fionn Choire lava-like ignimbrite to devitrify, producing micro-crystalline quartz-feldspar intergrowths.

The non-genetic term fiamme is commonly used to describe the pancake-shaped fragments that comprise an ignimbrite; the width:thickness ratio of fiamme within the Fionn Choire lava-like ignimbrite are up to 35:1, indicative of significant compaction at a high temperature. Deformation of the simple pancake morphology can be attributed to compaction around (accidental/non-genetic) lithic fragments within the ignimbrite.

Lithophyse, spherical or lensoidal cavity-like structures, are present and typically comprise concentric bands lining the cavity, and an interior (commonly empty) cavity. Cavities up to 2cm are recognised within the Fionn Choire lava-like ignimbrite. They form due to gas escape from the ignimbrite prior to final solidification.

Post deposition deformation, rheomorphism, includes the formation of folds and intra-ignimbrite shear planes. Localised boudinage structure and brecciation are also characteristics of lava-like ignimbrites.

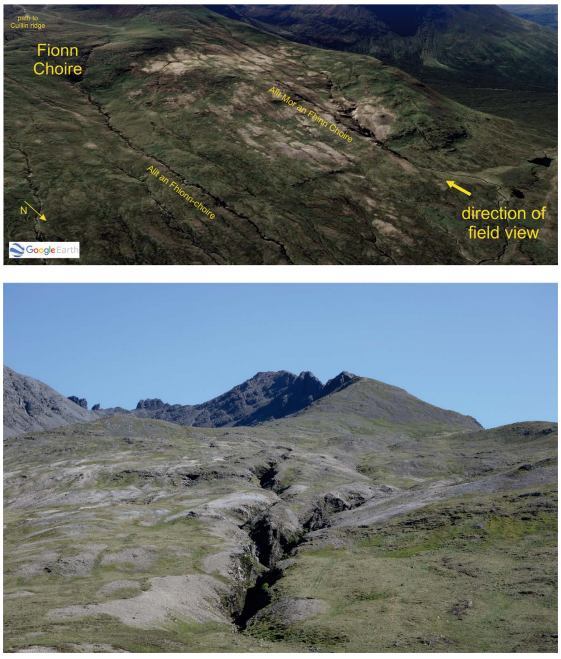

Figure Cuillin 11.8: Annotated oblique Google Earth® image and field view towards the SE along the Allt Mòr an Fionn Choire.

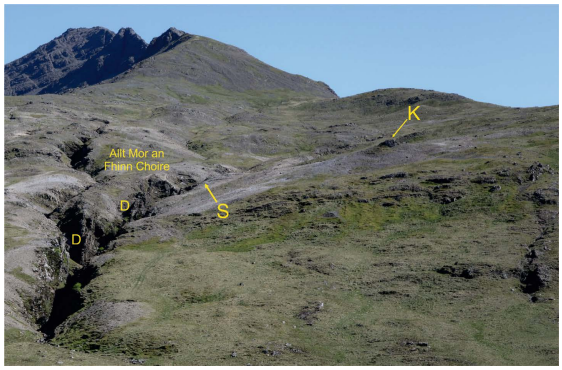

Figure Cuillin 11.9: Field view indicating the location of: the knoll of lava-like ignimbrite west of the Allt Mòr an Fionn Choire (K); the synform within the exposure of lava-like ignimbrite on the west side of the river (S); and, the prominent younger dolerite dykes of the NW-SE -tending swarm (D).

Figure Cuillin 11.10: Field views towards the west from the western tributary of the Allt Mòr an Fionn Choire indicating: the knoll of lava-like ignimbrite (K); and, the synform within the exposure of lava-like ignimbrite on the west side of the river (S). The younger dark brown dolerite dykes of the NW-SE -tending swarm contrast with the pale lava-like ignimbrite.

Figure Cuillin 11.11: General view of the knoll of lava-like ignimbrite west of the Allt Mòr an Fionn Choire. Pole *c.* 1m long.

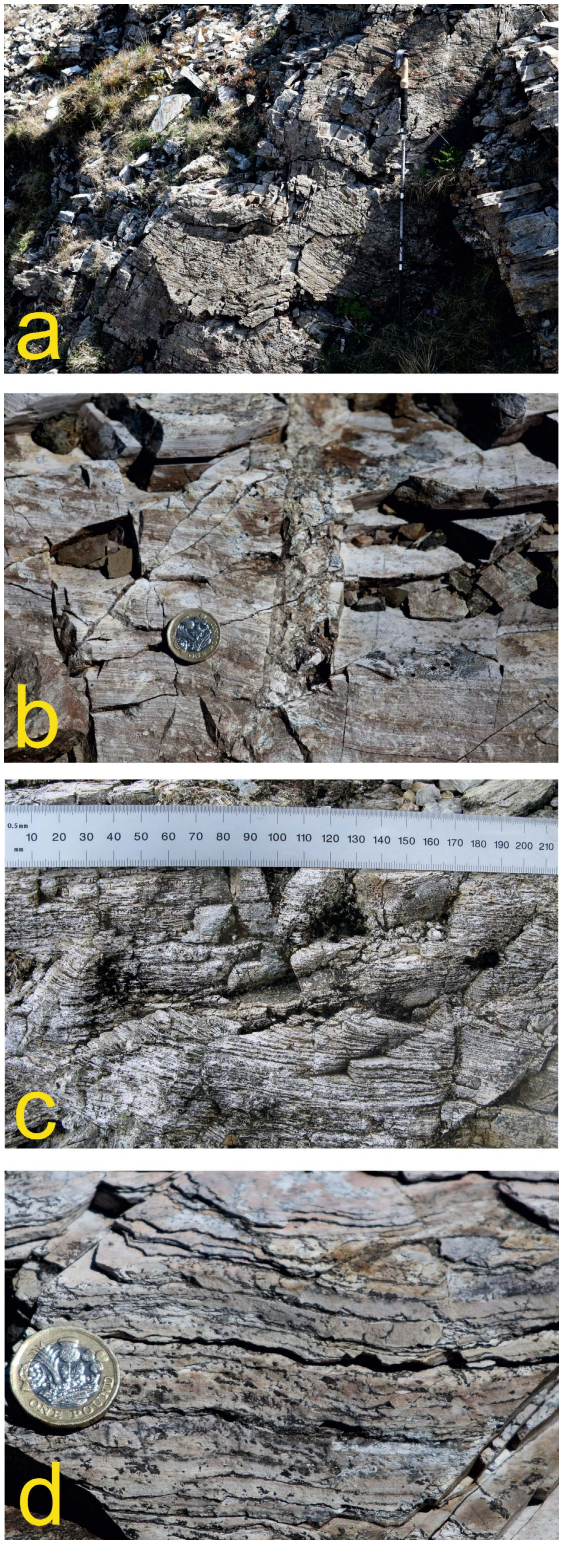

Figure Cuillin 11.12: Examples of the fabric of the lava-like ignimbrite exposed between the knoll and the the western tributary of the Allt Mòr an Fionn Choire. Note: broad folds in (a); closely-spaced planar fabric in (b); discordant fabric domains in (c); and, close-up of fabric in (d). Pole *c.* 1m long; coin *c.* 24mm across.

Within the banks of the western tributary of the Allt Mòr an Fionn Choire, giving rise to small waterfalls and plunge pools, are colour-contrasting dykes and inclined sheets, mainly of dolerite. The dykes are members of the Paleocene NW-SE -trending regional swarm and are genetically linked to the Paleocene lavas and the gabbro-dominated Cuillin Intrusive Centre. Dyke trends are locally variable and some of the non-vertical intrusions may be related to the suite of basic cone-sheets associated with the Cuillin Intrusive Centre.

Figure Cuillin 11.13: Contrasting pale lava-like ignimbrite acting as country-rock to dolerite dykes (and cone-sheets?) within the western tributary of the Allt Mòr an Fionn Choire.

Follow the main eastern tributary of the Allt Mòr an Fionn Choire upstream to *c.* [NG 4532 2656] to conspicuous exposures of unsorted breccia.

Locality 3 [NG 4573 2671]:

These poorly-sorted, coarse-grained strata contain angular to sub-rounded blocks of various fine-grained crystalline igneous rock (basalt, hawaiite, mugearite), together with fragments of dark, fine-grained, clastic material (tuff or volcaniclastic sandstone) and striking fragments of pale, banded material recognisable as the lava-like ignimbrite that dominates much of Fionn Choire. The clear time-relationship of these deposits, post-dating the deposition of at least part of the lava-like ignimbrite, indicates the likely complexity of the volcanic sequence in Fionn Choire, much of which is obscured by scree.

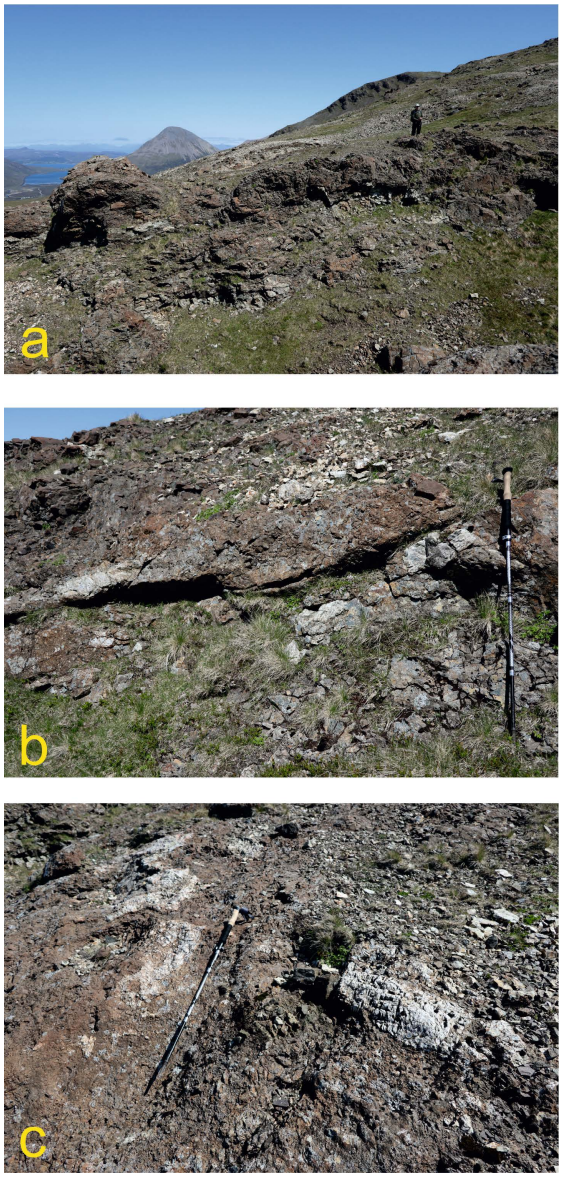

Figure Cuillin 11.14: Breccia within the eastern tributary of the Allt Mòr an Fionn Choire, with dark, angular to sub-rounded blocks of fine-grained crystalline igneous lithologies and fine-grained clastic material, together with conspicuous blocks of lava-like ignimbrite, identical to the main outcrop of this unit: (a) view towards east, Iain Allison for scale; (b) section through crudely stratified breccia in the east bank of the tributary, with conspicuous pale blocks of lava-like ignimbrite, pole *c.* 1m long; and, (c) detail of breccia with pale blocks of lava-like ignimbrite, pole *c.* 1m long.

Continue east across the hillside towards an obvious cluster of boulders at [NG 4593 2699] and onwards to a conspicuous crag at [NG 4603 2692].

Figure Cuillin 11.15: Cluster of boulders of crystal tuff at [NG 4593 2699], with *in situ* material forming the conspicuous crags, in the distance, at [NG 4603 2692].

Figure Cuillin 11.16: Crag of crystal tuff overlying (in recess) stratified volcaniclastic sandstone (tuff?) at [NG 4603 2692], intruded by a brown-weathered dolerite dyke (top right).

Locality 4 [NG 4603 2692]:

The sequence forming the minor crag consists of a laminated volcaniclastic sandstone (tuff?), making the recess, overlain (forming the main crag) by several metres of crystal tuff (top not seen). The crystal tuff comprises volumetrically-dominant, conspicuous, fragmented crystals of plagioclase (up to several centimetres), together with lithic fragments of a variety of igneous lithologies, including material that matches with the lava-like ignimbrite, within a matrix dominated by fragmented glassy material. There is no obvious sorting or grading within the crystal tuff.

Crystal tuffs form by fragmentation and eruption of crystal-charged magmas, typically of relatively evolved (silica-rich) composition.

Figure Cuillin 11.17: Stratified volcaniclastic sandstone (tuff?) underlying crystal tuff. Pole *c.* 1m long.

Figure Cuillin 11.18: Crystal tuff, dominated by fragmented plagioclase crystals and a variety of lithic fragments, the most conspicuous of which is the banded material, left of centre, near-identical to the lava-like ignimbrite elsewhere in Fionn Choire. Coin *c.* 24mm across.

Figure Cuillin 11.19: Crystal tuff, dominated by fragmented plagioclase crystals and a variety of lithic fragments, Coin *c.* 24mm across.

Figure Cuillin 11.20: Detail of crystal tuff, dominated by fragmented plagioclase crystals and a variety of lithic fragments, Coin *c.* 24mm across.

Return to the road at Glen Brittle or Sligachan.

End of excursion.

Bad weather day:

The Fairy Pools of the Allt Coir' a' Mhadaidh are worth visiting, either as part of the main excursion, or as a short 'bad weather day' option. Access is from Glen Brittle. Be aware that the Fairy Pools are a popular visitor attraction and at times the area can be overrun by visitors: if possible, go either early or late in the day to enjoy a degree of solitude. From the (pay) parking area, walk east to the north side of the Allt Coir' a' Mhadaidh along the (too) well-constructed path. The pools are strung out over a length of *c.* 1km where the river flows over plateau basalt lavas. Return using the same route.

However, similar, if not better, plunge pools occur on the Allt Dearg Mòr, where you can enjoy your own company. These are outlined at the beginning of this excursion.