
The five days of field excursions and logistics

Summary of the field excursions

A brief outline of each of the 5 days of field excursions is given below, and a summary map of the area covered in each excursion is given in (Figure 7) (also on a separate sheet in the hack pocket).

Day 1 Dalradian host rocks and contact hornfelses, Ballachulish Igneous Complex. (detailed maps in (Figure 8) and (Figure 11))

A day of stops along roads. Provides an overview of the regional host rocks, the main rock types of the igneous complex, and characteristic low grade and high grade metapelitic hornfelses in the aureole.

Day 2 Rock types and intrusive relationships, Ballachulish Igneous Complex (detailed maps in (Figure 9))

A strenuous all-day hill traverse leading to the summit of Sgorr Dhonuill. Focuses on rock types of the igneous complex, in particular the petrological variations and intrusive relationships between the monzodiorite-quartz diorite shell and the central granite.

Day 3 Involves two moderate hill traverses

Day 3 Part 1 (Figure 10) Fraochaidh prograde sequence, Ballachulish Igneous Complex

A complete prograde traverse through the contact metamorphic zones in the politic Creran Succession in the south of the aureole; shows the widespread ('normal') succession of metamorphic zones.

Day 3 Part 2 (Figure 11) Chaotic Zone migmatites, Ballachulish Igneous Complex

An examination of spectacular anatectic migmatites of the 'Chaotic Zone', on the west flank of the complex.

Day 4 (detailed maps in (Figure 12)) Prograde sequence in the Ballachulish Slate along the Gleann a' Fhiodh – Coire Chaorann ridge

A moderate all-day hill walk. Gives a complete prograde traverse through the somewhat different contact metamorphic zones developed in the graphitic Ballachulish Slate: finishing with examination of the hybrid mixing zone between appinite and marginal quartz diorite of the igneous complex and adjacent anatectic migmatites.

Day 5 (detailed maps in (Figure 13)) Medium- to high grade metamorphic rocks, Ballachulish Igneous Complex Day 5

A strenuous all-day hill traverse. Focuses on medium- to high-grade contact metamorphism of interbedded marbles, calsilicates, metapelites and quartzites in the small syncline on the east flank of the complex, finishing with examination of contact relations and metasedimentary screens on the east flank, including spectacular 'chocolate-tablet' anatectic migmatites.

Logistics for field excursions

Weather and hill conditions – equipment

Weather in the Ballachulish/Glen Duror area tends to be variable and can be very wet (annual rainfall about 250 cm). The driest period is between mid-April and mid-June, with September also having been quite dry in the 1990's. The ground topography is typical Scottish hill country, with mountains up to ca. 1000 m (3000 feet) but most of the ground below ca. 500m (1500 feet) (see Cover Photo and Photos 1 and 2). Whereas along the roads there is extensive habitation, the hills are largely uninhabited (except by sheep), with much of the area being covered by a forestry reserve run by Forest

Enterprise.

Several of the field excursions involve journeys up to about 500 m in elevation, and participants will have opportunities, if they wish, to surmount the 'Munro' (>3000 feet) peaks of Sgorr Dhearg and Sgorr Dhonuill at 1024m and 1001 m respectively (see Cover Photo and (Photo 1) and (Photo 2)). Although no technical climbing gear is required, some of the hill slopes on the excursions are steep and rocky, and wading boots are essential.

Rapidly changing weather condition means that good quality windproof and waterproof outer clothing and warm inner clothing should be carried in the hills at all times. For general purposes, and particularly in case of poor visibility during bad weather or hill mist, a compass as well as a topographic map (see under 'Maps') should be taken on hill excursions. A whistle is extremely useful for making oneself heard if any difficulties arise.

For locating oneself on hillsides in several of the field trips, an altimeter will also be found very useful.

Hammering and sampling

Most of the features described in this field guide are best observed on weathered outcrop surfaces. eliminating most of the need for a geological hammer. A geological hammer is only of significant use when sampling is planned, and in this circumstance it is hoped that the sampling is both necessary and done with the preservation of the field exposures in mind. Destruction of field exposures by hammering is irrevocable and represents a material loss of scientific data for the future.

1. clean and well exposed outcrop surfaces are relatively rare and have often been delicately etched by sun and rain over thousands of years — DO NOT DESTROY THEM BY HAMMERING
2. hammering of exposures is not allowed in areas belonging to Forest Enterprise, as is any activity which might destroy the natural environment;
3. excellent representative specimens can often be collected from loose material at the foot of exposures.

Forestry activities, forestry roads and vehicular access

The major part of the ground formed by the Ballachulish Igneous Complex is an active commercial forest under the control of Forestry Commission, Scotland. A complex of roads/tracks services the forestry operations. A few of the main forestry wads are shown on the geological Coloured Map (Map 1) accompanying this guide, but the complex of tracks is much better represented on the 1978 OS Sheet NN 05/15 'Glencoe' (1:25000). However, owing to continuous forestry activity, old forestry roads may become closed, and new roads opened, without notice. Changes to the road/track network from that shown on the 1978 OS map, and known to the authors in 1999, are summarised in the following section on 'Maps and grid references' and in the individual excursion notes. With respect to the explanatory excursion notes, please remember that the density and type of forest cover may vary substantially depending on when in the cycle of forest planting, growing and harvesting a given excursion is attempted.

Many of the excursions use the access into the hills provided by forestry roads/tracks. Access along the main roads/tracks is generally available by foot, but logging operations on hillsides may make some tracks unavailable at times. Access by vehicle (motor car or minibus van) is possible along the main roads/tracks with the permission of Forest Enterprise, however, gates on the main access roads to Gleann a'Chaolais and Glen Duror are usually locked. : A key to these gates may be obtained from the Forest Enterprise office in Oban (address: Forest Enterprise, Millpark Road. Man. Argyll, PA34 4NH). The office telephone number is 01631 566/55, and opening hours are normally 9.00 a.m. to 5.00 p.m. weekdays. Visitors from the south may wish to call into the office on their way to Ballachulish. The drive from Ballachulish to Oban takes about one hour.

Maps and grid references

Geological maps of the igneous complex and aureole are provided in this guide. Excellent coverage of the geology of the surrounding area is provided by British Geological Survey 1:63,360 (1" = 1 mile) Sheet 53. entitled 'Ben Nevis', and is

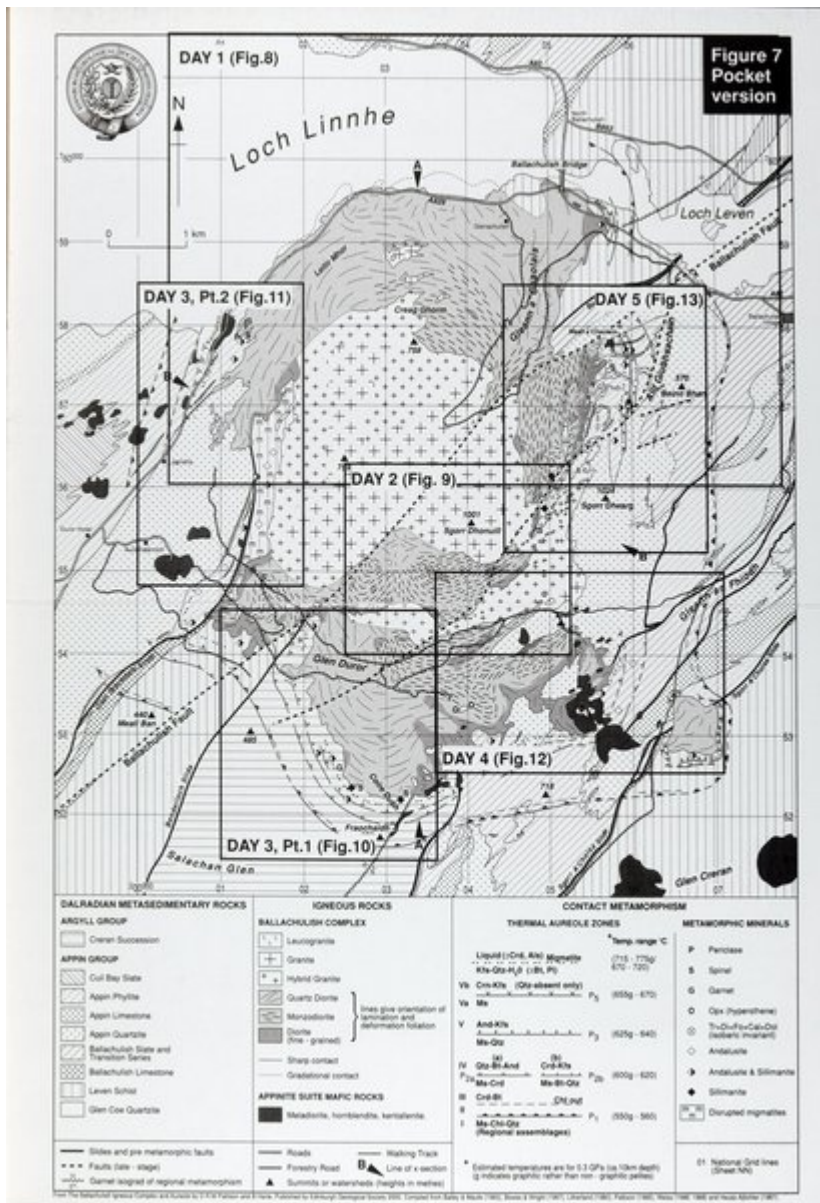
the basis for the classic memoir by Bailey & Maufe (1960).

The best topographic map for the igneous complex and aureole is the U.K. Ordnance Survey 'Pathfinder series' 1:25,000 map NN 05/15, entitled 'Glencoe' (1978). The next map to the north (NN 06/16: 'Kinlochleven') covers parts of the north shore of Loch Leven not included in NN 05/15. Ordnance Survey 1:50,000 ('Landranger') maps are also widely available.

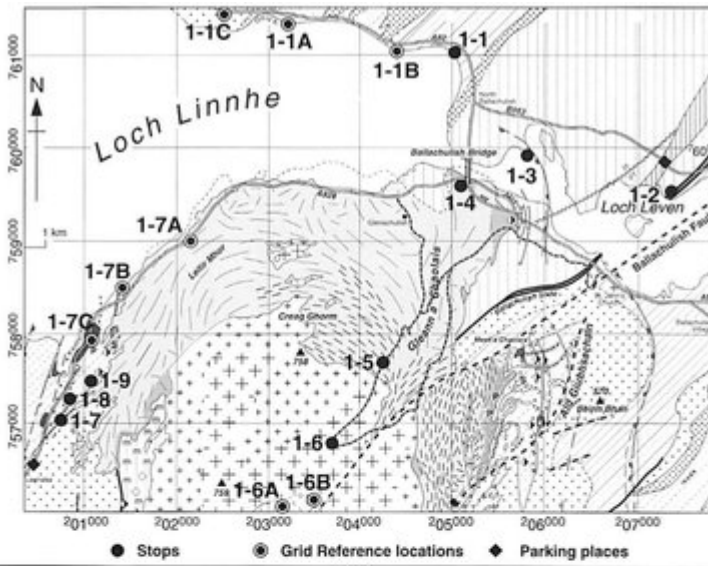
The locations of the field stops in the guide are given using the standard British National Grid, which is marked on the Ordnance Survey maps. Using the 1:25,000 maps, it is convenient to give grid references in 8 numbers to the nearest 50 m, with the easting separated from the northing by a slash (e.g. [NN 0675 5850] is the reference for St John's Church, which is between Ballachulish village and the Ballachulish bridge).

There have been some changes to the forestry roads following the 1978 publication of the 1:25,000 'Glencoe' map. These changes are indicated on the Coloured Map (Map 1), (Figure 7) and the excursion maps. The main changes are:

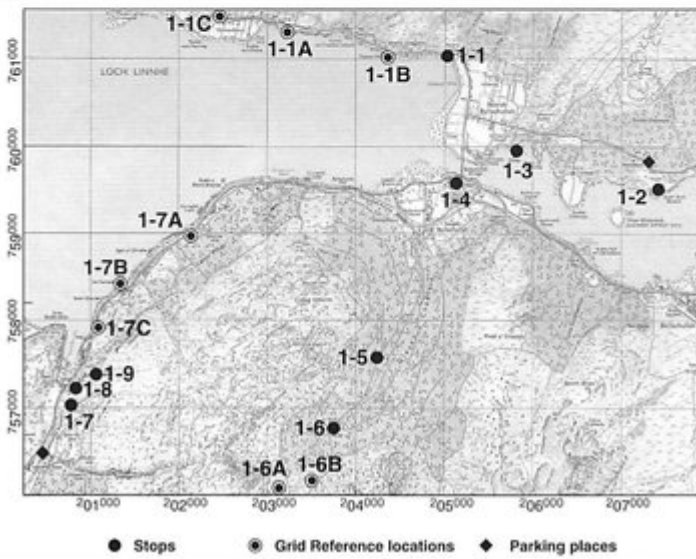
1. between [NN 0145 5435] and [NN 0150 5415], a short road now connects the two longer forestry roads shown on the 1978 OS map (see (Figure 10) and directions to Stop 2-2 and to start of Day 4 traverse).
2. from [NN 0410 5435] (the termination of the upper forestry road in 1978), the upper forestry road has been extended to join up with the lower road at [NN 0445 5440] (see (Figure 9) and (Figure 12) and directions to start of Day 2 or Day 4 traverse).
3. from [NN 0505 5455] (the easternmost termination of the road system in Glen Duror in 1978), the road has been extended to the south and east for another 0.4 miles (0.6 km) to approximately NN 0540/5430 (see (Figure 12)).
4. the road on the south side of Glen Duror that is to be followed to reach the start of the Day 3, Part 1, traverse does not appear on the 1978 Ordnance Survey map at all. It is shown approximately on the Coloured Map (Map 1) and (Figure 7) and (Figure 10) (see directions to start of Day 3, Part I traverse).



(Figure 7) Outline of area for field excursions. Geological map showing location of field stops for Day 1 (see (Figure 7) for key to geological map).

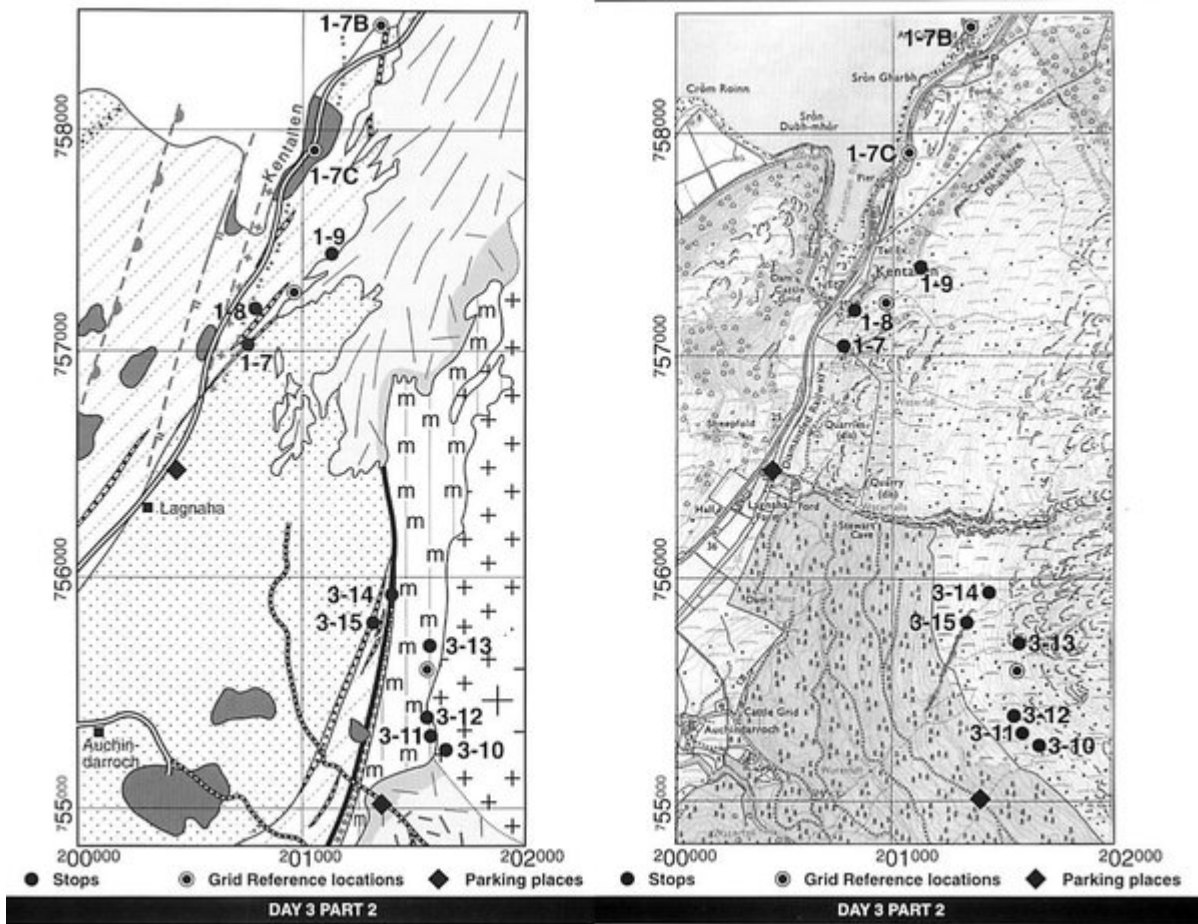


DAY 1

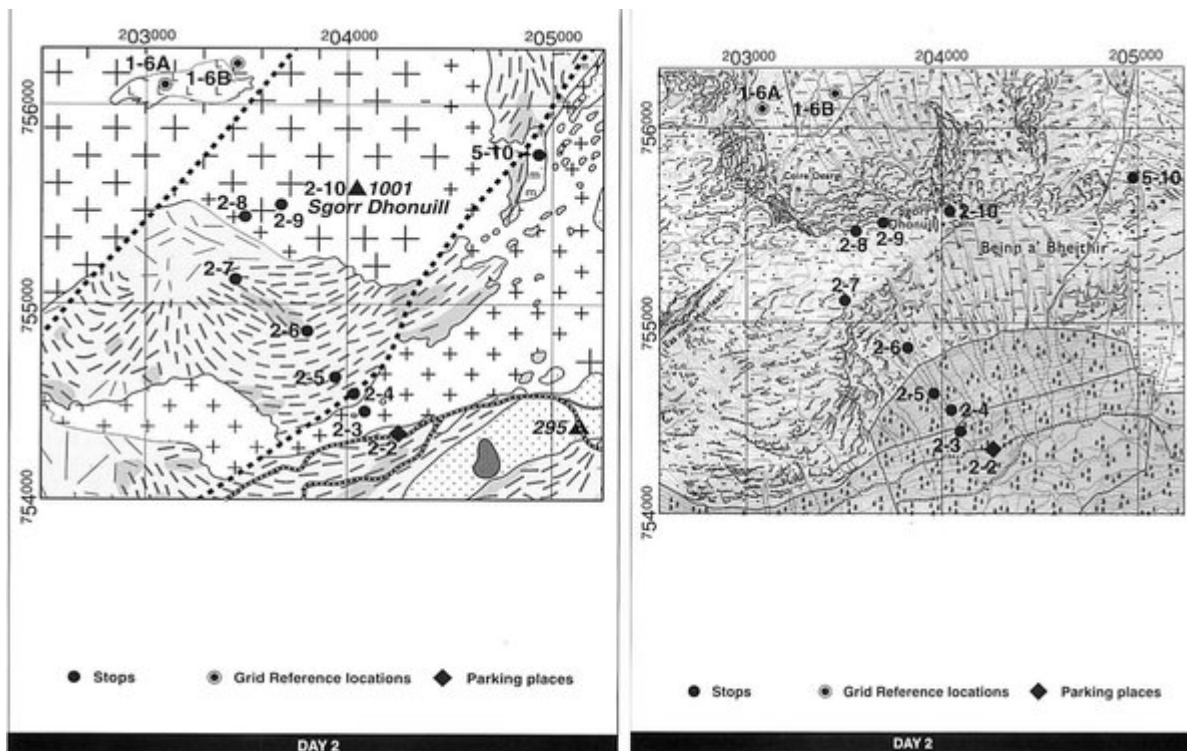


DAY 1

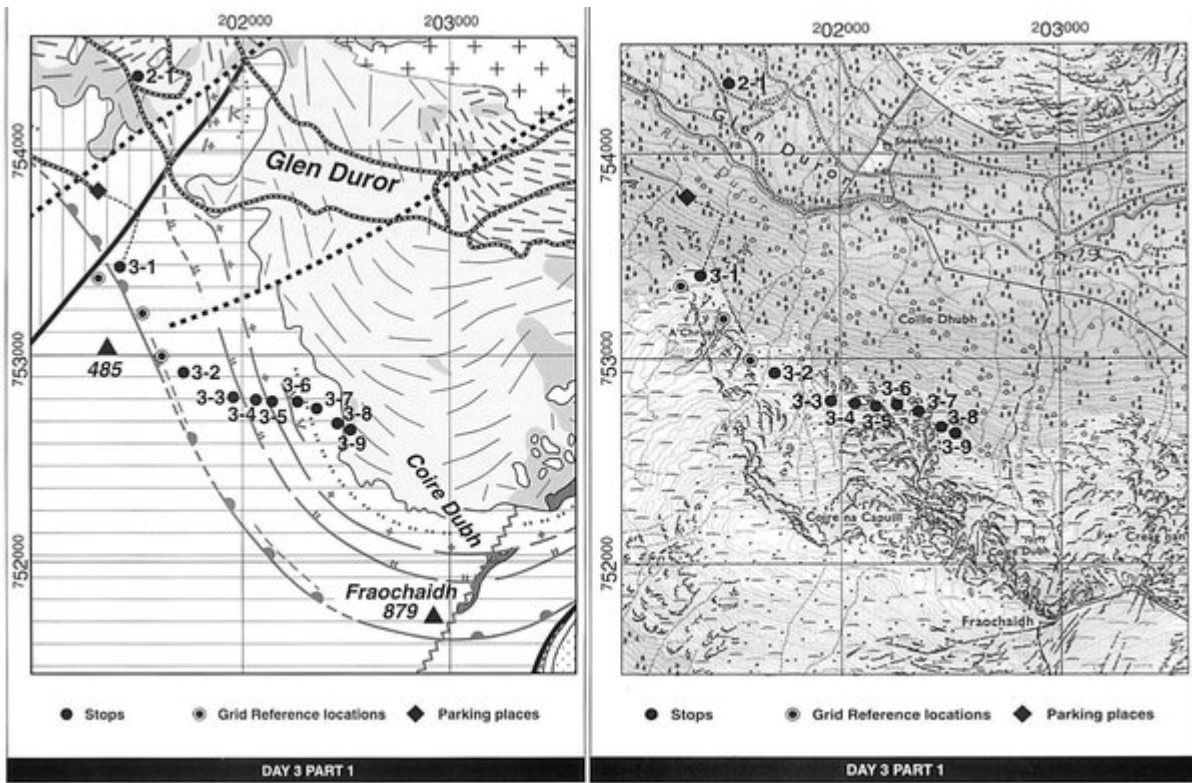
(Figure 8) (a) Geological map showing location of field stops for Day 2, see ((Figure 7) for key to geological map). Corresponding topographic map showing location of field stops for Day 1 (reproduced with permission by the Ordnance Survey).



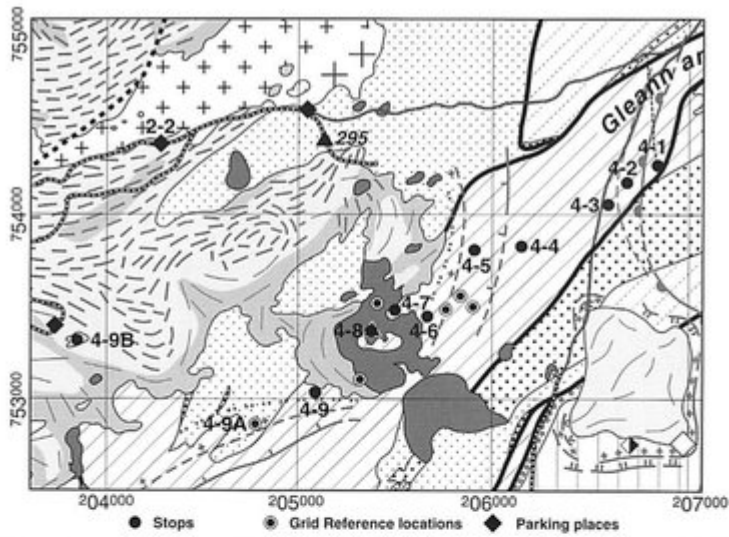
(Figure 11) (a) Geological map showing location of field stops for Day 3 Part 2, (see (Figure 7) for key to geological map). Also shows Day 1, Stops 1-7 1-8 & 1-9. (b) Corresponding topographic map showing location of field stops for Day 3 Part 2: (reproduced with permission of the Ordnance Survey).



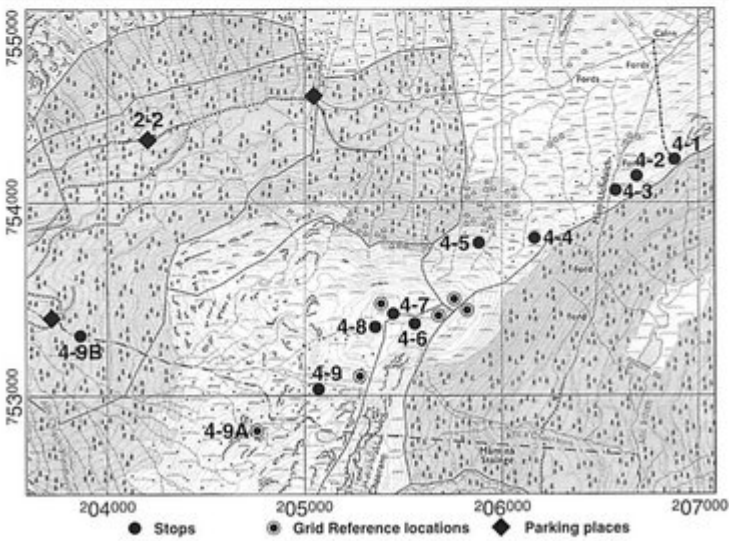
(Figure 9) (a) Geological map showing location of field stops for Day 2 (see (Figure 7)) for key to geological map) See (Figure 10) for Stop 2-1 (b) Corresponding topographic map showing location of field stops for Day 2 (reproduced with permission of the Ordnance Survey).



(Figure 10) (a) Geological map showing location of field stops for Day 3 Part 1, Fraochaidh traverse, (see (Figure 7) for key to geological map). (b) Corresponding topographic map showing location of field stops for Day 3 Part 1 (reproduced with permission of the Ordnance Survey).

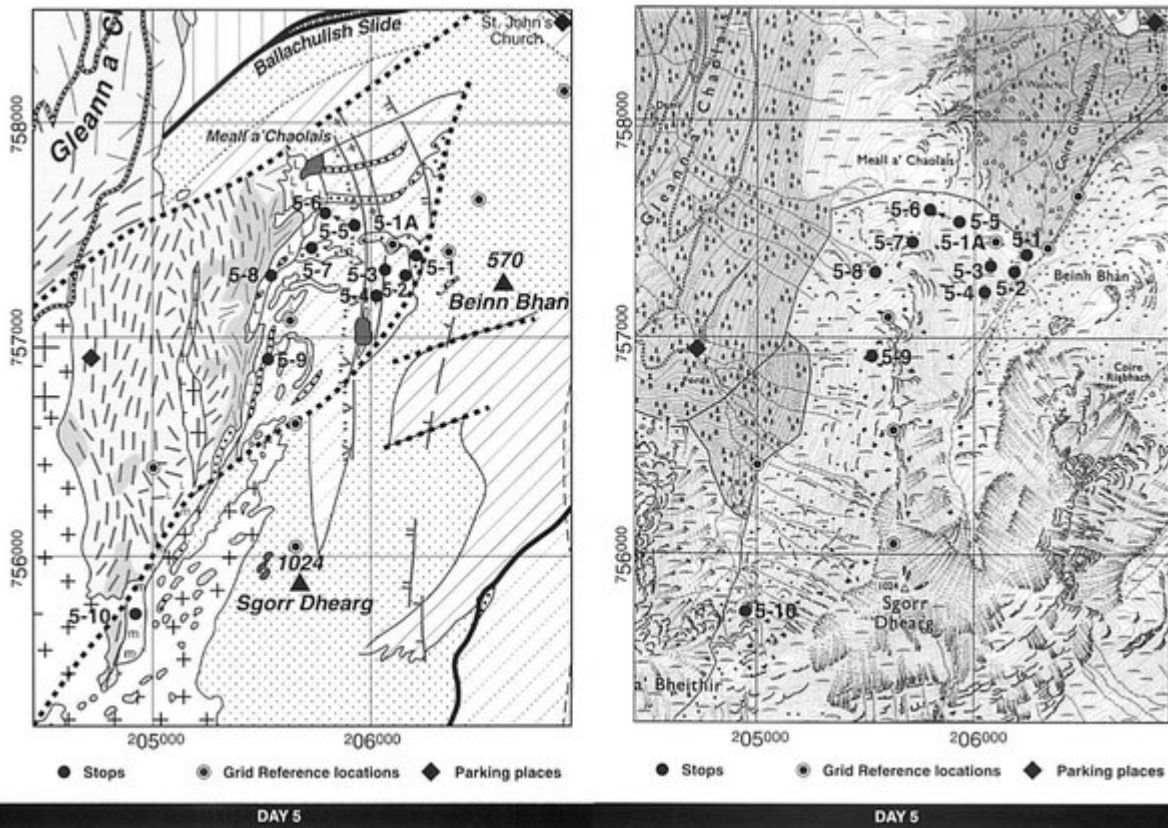


DAY 4



DAY 4

(Figure 12) (a) Geological map showing location of field stops for Day 4 (see (Figure 7) for key to geological map) (b) Corresponding topographic map showing location of field stops for Day 4 (reproduced with permission by the Ordnance Survey).



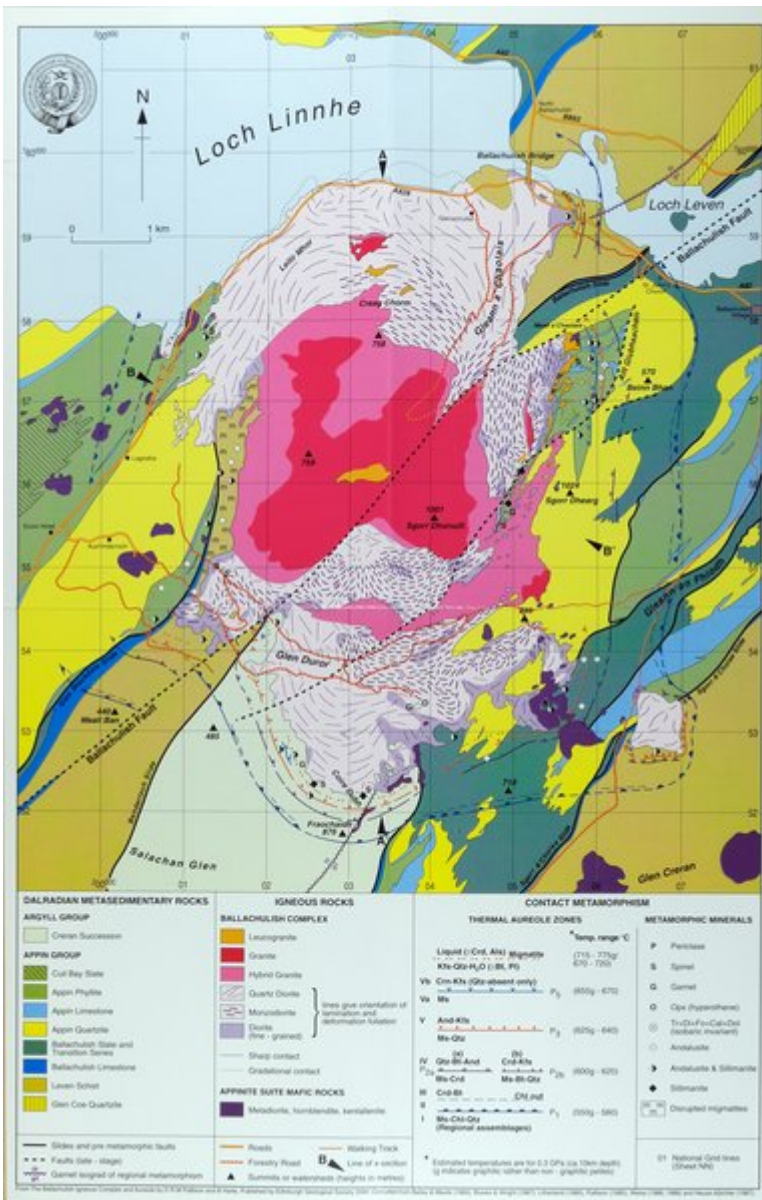
(Figure 13) (a) Geological map showing location of field stops for Day 5 (see (Figure 7) for key to geological map). (b) Corresponding topographic map showing location of field stops for Day 5 (reproduced with permission by the Ordnance Survey).



(Photo 1) (Frontispiece). Overview of the Ballachulish Igneous Complex and Aureole from Tom Meadhoin ridge, looking SW.



(Photo 2) View to SW from the summit of Sgorr Dhearg looking across Loch Linnhe



(Map 1) Geological map of the Ballachulish Igneous Complex and aureole. (map in endpocket).