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# Leadhills and Wanlockhead

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O.S. 1:50,000 Sheet 71 Lanark & Upper Nithsdale

B.G.S. 1:50,000 Sheet 15E Leadhills

Route: (Figure 49)

The Leadhills–Wanlockhead district is of great geological interest since it contains the largest, and formerly the most productive lead-zinc deposit in Scotland. Galena and sphalerite were mined here for over 400 years and exploitation only ceased in the 1930s. Moreover, many more mineral species have been recorded here than for any other Scottish locality (Brown 1891, 1925, MacKay 1959, Porteous 1876, Temple 1956, Wilson 1921), and in recent years several more rare minerals have been added to the list (e.g. Livingstone & Sarp 1984). Leadhills and Wanlockhead are the highest inhabited villages in Scotland, lying at an altitude of some 400 m O.D. in valleys incised into barren, treeless, heather moorland. Mining may have begun with the Romans but can be traced back to the year 1293, when the monks of Newbattle Abbey were granted a charter for lead mining; the mines were greatly extended in the 16th century and much alluvial gold was extracted from the stream gravels (Gillanders 1981). By the time mining finally ceased in the 20th century, some 70 lead-zinc veins had been discovered and worked in an area of 8 km<sup>2</sup>. In addition to the standard lead-zinc ores such rare mineral species as leadhillite, susannite, lanarkite, caledonite, chenite, scotlandite, mattheddleite and macphersonite have been recorded (see p. 161–2), the most recent additions to the list being veszelyite and queitite (Jackson 1990, Green 1990[10]). The Museum of Scottish Lead Mining at Wanlockhead covers the history of mining in the area and is fully worth visiting on its own account.

The sedimentary rocks in the district are mainly greywacke, chert, and shale of Arenig–Caradoc age. They have been intensely faulted and shattered, and since many of the older mining records indicate that the richest parts of the veins are often associated with shaly crush-rock, it seems highly probable that the mineralisation was controlled by the many fractures which allowed the passage of the hydrothermal fluids. The mineralised zone is part of a shale belt extending from Leadburn to the Mennock Water between Lowther Hill and Middle Moor but partly because of the intense faulting and partly due to lack of exposure between the cleughs, little of the detailed structure can be deduced. Creywackes, which are probably of Caradoc age, lie to the south-east of the chert-shale belt and are separated from it by a major NE–SW strike fault.

Geological parties should seek permission before visiting the district from Hopetoun Estates (for Leadhills), and Buccleuch Estates (for Wanlockhead). Some of the old mine dumps may shortly be designated SSSI, in which case the Nature Conservancy should be approached. It is inadvisable to visit the area in the grouse-shooting season. On no account should any of the old adits be entered, as some of them are in an extremely dangerous condition. Leadhills is best reached from Abington on the A74 Glasgow–Carlisle road by way of the B797 road for 10 km to the first exposure in the Glengonnar Water.

## 1. Clowgill Dod: Arenig sedimentary rocks

On the west face of Clowgill Dod [NS 889 180] are good exposures of volcanic rocks, shales and cherts showing red-staining of the cherts. The structural relationships of the rock types are complex. Exposures of chert and shale can be examined going up the bed of the Bellgill Burn for 400 m till the foot of a dry cleugh on the north side is reached. On the north face the shales show the typical bleaching effect which occurs in shales close to outcrop in this area. Close examination shows that the shales have been considerably faulted. The south face of the section is of greywacke which has been faulted against the shales. Outcrops of chert continue in the burn bed for only a further 50 m upstream from the cleugh. The greywackes from this point to the source of the burn are more massive with well-developed jointing. In some places sedimentary structures can be seen on water-worn bedding surfaces. Further upstream is the first of the old lead

mines of Bulmer's Moss.

## **2. Big Wool Gill: greywackes and mine dumps**

Return to the road and continue for 1.4 km towards Leadhills until Big Wool Gill [NS 885 165] goes off to the east. The gill gives an excellent section through the vein-bearing greywackes. Near the bottom of the stream in the wood, exposures of a felsite dyke can be seen. A few metres to the north of this point is a mine dump around an old mine shaft. The waste material is all sheared black shale, which occurs, together with chert, near one of the main crush zones in the drainage adit across the road. On the west side of the main road round the old mine shaft is a chert outcrop. Underground this can be seen to be in faulted contact with the greywacke which crops out further up the Glengonnar Water. The north-east to south-west face of this chert outcrop is close to the actual line of the fault seen underground.

## **3. Wanlock Water: faulted chert and greywacke**

Continue south on the B797 road through Leadhills to Wanlockhead and take the minor road which goes north-west along the Wanlock Water for 2 km. Opposite the old crush mill [NS 858 140] there are outcrops of shale and chert. The shaly material has been intensely crushed, intruded by quartz veinlets and silicified. Apart from the quartz veinlets and silicification the material is similar to that found along the planes of the reverse faults in this region and this outcrop is the only accessible exposure of a major fault line in the neighbourhood.

## **4. Sowen Burn: slag heaps, graptolitic shale**

Continue a short distance north-west to where the Sowen Burn joins Wanlock Water [NS 855 145]. On the south side of the Burn the ruins of the old Meadowfoot ore-smelting mill can be seen, with the flues best preserved. This smelter operated from 1843 until the 1930s when it was dismantled and the machinery sold for scrap. Owing to the fumes from the smelting process, a large area has been denuded of vegetation and a miniature 'bad lands' topography has resulted.

The slag heaps surrounding the Meadowfoot smelter are of considerable mineralogical interest. Within the dumps are pockets of blue-green mineralised slag, and in these are small crystals of a variety of minerals which have probably been produced by the action of rainwater on the slag heaps, subsequent to the smelting process, over a period of a century (Green 1987). These include anglesite, brochantite, caledonite, chenite, elyite, lanarkite, langite, leadhillite, linarite, litharge, paralaurionite and scrpierite. The most remarkable association recorded is lautenthalite growing in orientated plates round wroewolfite.

There are exposures of chert and black shale in the Sowen Burn, and some of the black shales near the bottom of the stream and some outcrops at the very top have yielded good graptolites. Peach and Horne (1899, p. 293) record a number of species, including *Dicranograptus ramosus*, *Glyptograptus euglyphus* and *Oicellograptus sextans*. The exposures at the top of the burn are well developed and show faulted contacts between shale and chert.

## **5. Glencrieff Mine dumps: primary minerals**

Return towards Wanlockhead until Glencrieff Shaft [NS 865 133] is reached. A close examination of the dumps round this shaft should yield representative specimens of all the primary minerals which occur in the veins in this district. Good specimens of the following minerals can be found: galena, sphalerite, chalcopyrite, pyrite. Good specimens of the following gangue minerals are also easy to find: ankerite, calcite, barytes, quartz. Rare primary minerals include marcasite, niccolite, rammelsbergite, cobaltite (Temple 1956). Digging into the dumps is unlikely to be very rewarding. A close examination into the dump edges and any disturbed areas of the dump which have been washed by rain is more profitable. Excessive collecting is to be discouraged. Leave transport at Glencrieff Shaft and walk eastwards to Whyte's Cleugh. The transport should proceed to Glengonnar Shaft to await the party.

The next three localities, 6, 7, and 8, are probably the most rewarding in secondary minerals. Specimens of the following may be found, some commonly, others rarely, in one or all of these localities: cerussite, anglesite, leadhillite, linarite,

pyromorphite, vanadinite, smithsonite, hydrozincite, hemimorphite, malachite, azurite, chrysocolla.

## **6. Whyte's Cleugh: Secondary minerals**

Whyte's Cleugh is accessible by a dirt road leaving the Wanlockhead road at [NS 867 134]. There is a large flat area round the Bay Shaft. The valley floor from this point is worth examination as it has been entirely infilled for several hundred metres with broken vein material. Higher up the valley, the large dump of material removed about 1960 from the Whyte's Cleugh adit is very rewarding in secondary minerals. Still higher up the Cove Vein dumps may give good results if fresh exposures are available.

## **7. Dumps at Head of Snar Water: Secondary minerals**

Follow a rather poorly defined footpath from Whyte's Cleugh to the dumps [NS 876 145] at the head of Snar Water which can be particularly fruitful. Linarite is occasionally found in the cores of weathered nodules. Close examination is worthwhile as many of the specimens are quite small.

## **8. Hopeful Vein–Sarrowcole vein dumps: secondary minerals**

Continue thence to Hopeful Vein and Sarrowcole Vein dumps which extend northwards from the Lady Ann Hopetoun Shaft at NS 880 142. There are many small shafts in this area and, possibly, a little opencast work took place. Pyromorphite is quite common as small crystals on gangue material. This is the area in which Temple (1956) made most of his discoveries. Further north at the junction of the Sarrowcole, Laverockhall veins and George's Roust vein there are a number of small shafts and possibly some opencast mines. These again contain pyromorphite and other secondary minerals, all as small specimens.

## **9. Railway Cutting, Wanlockhead: outcrops of veins**

Return to the main road north of Wanlockhead and make for the old railway cutting between Wanlockhead and the Glengonnar Shaft [NS 879 131] to [NS 881 136], which passes through greywacke with the outcrops of several veins. These include Lee's, West Stayvoyage, East Stayvoyage and possibly one or two lesser veins. The actual veins are marked by limonite and haematite staining along fault planes. Return to Glengonnar Shaft and rejoin transport.

## **10. Wanlockhead: The Museum of Scottish Lead Mining**

No excursion to the area would be complete without a visit to this museum, situated in an old miner's cottage in the centre of Wanlockhead [NS 874 130]. It is open daily (1000–1600 hrs) from Easter to October, and at least 1½ hours should be allowed for seeing all the exhibits. The Mining Museum has displays of local gold, silver and rare minerals, an audio-visual display and working models of beam and pump engines. Guided tours are conducted half hourly round the Loch Nell Lead Mine. It is also possible to visit restored miners' cottages and a visitors walkway is arranged round the surviving relics of the old mining community and the mines, engines and tramways.

The excursion described above will occupy a full day in the field. For those who may wish to spend more time in the district the additional localities 11 to 18 will afford further opportunities for the study of chert-shale relationships and the collection of minerals.

## **11. Scar to the north of Glenkip Head: faulted greywacke and chert**

An excellent exposure of a faulted junction between greywacke and chert occurs in the scar [NS 877 164] on the east side of the Glenkip Burn. The north face of the scar is composed of greywacke nearly to the top where there are narrow outcrops of shale and chert. The south face of the scar is entirely chert except for a small outcrop of black shales at the very bottom of the scar.

## **12. Glenkip Head: Chert, shale and greywacke**

A series of exposures of chert, shales and greywackes occurs at Glenkip Head [NS 876 160]. The most northerly of this group of scars is in typical black shales which have been bleached. Some poorly preserved graptolites have been found in this outcrop. The other scars contain sporadic outcrops of the three main rock types but contacts are rare. The only known example in the district of a naturally occurring gossan appears in this area. The outcrops are in the line of strike of the next locality at Hunt Law scars.

## **13. Hunt Law scars: chert, shale and greywacke**

The more northerly scar [NS 871 157] on the east side of the Snar Water, has a complex series of outcrops of chert, shale and greywacke over a vertical range of 100 m in 300 m. The southern scar [NS 872 155] has a similar series of outcrops in approximately the same height range. These two scars show very clearly the complexity of the chert-shale zone in the vertical direction. There is one small outcrop of altered basaltic lava at the edge of the dressing floor near the bottom of the southern scar. This is stratigraphically and structurally the lowest horizon seen in the district.

## **14. Lamb Knowes area: dumps, mineralized sedimentary rocks**

The chert-shale outcrops in the area of the stream junction (870155) north of Lamb Knowes, area continuation of those in the Hunt Law scars. In the western branch of the stream, greywacke occurs from 200 m above the junction to beyond a group of small mines on the east bank of the stream. Samples of vein material from the dumps round these mines show post-mineralization brecciation. Black shales and chert occur again in the stream just before the junction with the Sownen Dod tributary. This tributary also has outcrops of chert and shale for a short distance but greywacke crops out all the rest of the way to Sownen Dod. All the small tributaries of the Snar Water, as they are traced towards their sources on Wanlock Dod and Laverock Hall have outcrops of chert and shale. The most interesting outcrop is along the stream and the steep banking from [NS 874 149] to [NS 876 148] showing black shales underlying greywacke.

## **15. Glencrieff: mineralized greywacke**

This steep little valley [NS 867 128] joins the Wanlock Water opposite Glencrieff Cottages. The outcrops are all in greywacke typical of the mineralized area. Immediately above the entrance to the Glencrieff Horse Level some 300 m above the road, there is a waterfall. The rock which forms the waterfall is apparently greywacke. Microscopic examination, however, reveals that most of the greywacke has been replaced by dolomite which occurs as euhedral or subhedral crystals. This dolomitized greywacke has been noted in only one other place, underground in a cross-cut from the drainage adit from the Lochnell vein. The cause and associations of the dolomitization are unknown.

## **16. Corbie Linn: Graded bedding and conglomeratic greywacke**

A narrow gully [NS 873 121], 100 m along a track on the west side of the B797 road south of Wanlockhead, is in typical greywacke. Some examples of graded bedding can be found in the fragments in the talus at the bottom of the gully. At the top a smaller gully extends north from the main gully. In the east face there is a small outcrop of a very well-developed conglomeratic greywacke with sharp angular rock fragments. A number of rock types can easily be distinguished in the clast assemblage.

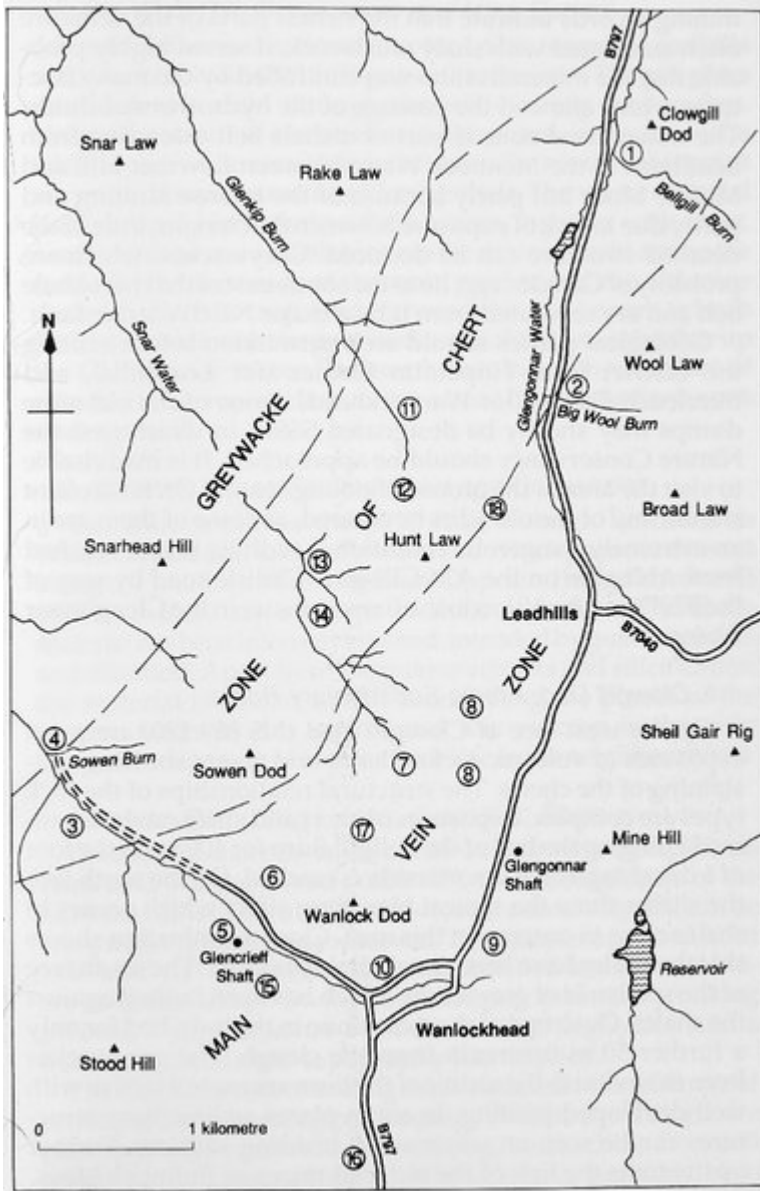
## **17. Belton Grain: vein dumps**

North and east of Wanlock Dod, dumps extend from [NS 873 141] to [NS 874 137] and probably include the high Pirn Mine which is a locality for vanadinite. All these dumps are very old and the surfaces are much weathered. Close examination is worthwhile. The dumps are accessible by footpaths either from Whyte's Cleugh or Leadhills.

## **18. Lady Manner's Scar: opencast workings**

Opencast workings on the Susanna Vein on Lady Manner's Scar [NS 880 158], north-west of Leadhills is the type locality for a number of minerals but is not now so fruitful as localities 6, 7 and 8. Small specimens of jamesonite have been found as veinlets in some fragments of dump material.

## References



(Figure 49) Leadhills and Wanlockhead excursion.