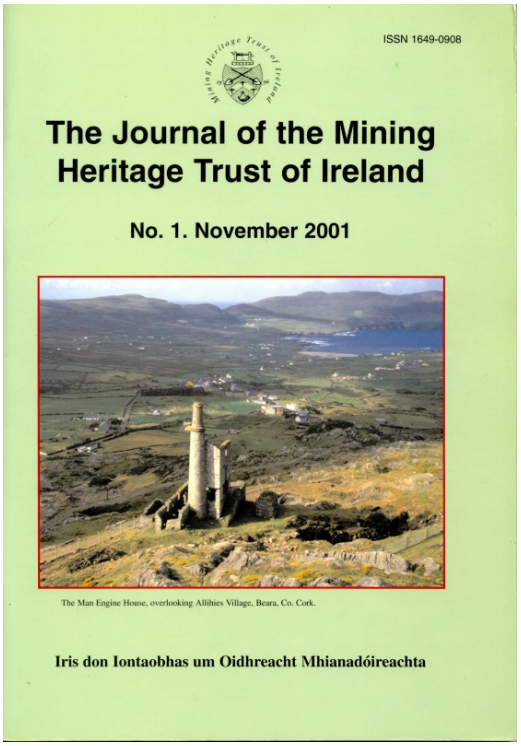

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THE SANDSTONE MINES OF MOUNTCHARLES, CO. DONEGAL

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Abstract: A short scarp of sandstone exposed in the Townland of Drumkeelan, northwest of Mountcharles in south County Donegal has a very long history of stone mining, back to at least the late 12th century, for Assaroe Abbey near Ballyshannon. It provided high quality stone suitable for monumental work and masonry. Some important public buildings, such as the National Museum of Ireland, the National Library and Leinster House (the Dail) and Sligo Town Hall used Drumkeelan stone in their construction. The mines are accessible today, but modern quarrying is destroying part of them.
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THE GEOLOGY OF THE MINES

The Mountcharles area is on the north western margin of the Carboniferous rocks of Ireland. The majority of the Lower Carboniferous (Dinantian) rocks in the Sligo-Donegal basin are marine limestones and shales which were deposited in a shallow sea, which spread gradually northward across Donegal Bay, depositing the Ballyshannon Limestone Formation. Following this transgression of the sea northward on to the Donegal mountain range in Carboniferous times, rivers draining southward, built out deltas to the south. The Drumkeelan mines are within the Mullaghmore Sandstone Formation, which is a key unit within this deltaic sequence (Long and McConnell 1999). A variety of depositional environments are found within the deltaic sequence, but the Mountcharles area was probably a littoral facies, that is close to the shore in Lower Carboniferous times. The sandstones are feldspathic with iron silicate or calcareous cements. The feldspars, along with the quartz grains were probably derived from weathering of the Donegal Granites to the north.

A DESCRIPTION OF THE MINES

The scarp ridge is in two main sections, with the Upper Drumkeelan Quarry at the east end of the ridge, and the Lower Quarry at the western end (Figure 1). A minor road passes through the ground between them with a dangerous junction at a place called Bearna Dearg. Another minor road passes along parallel to the scarp and the quarries can be accessed from this by old tracks. Each quarry consists of a linear face, into which adits are driven at a consistent level. The Upper Quarry has at least 21 entrances, although many connect internally. Carville (1984) noted that it is split into strips privately

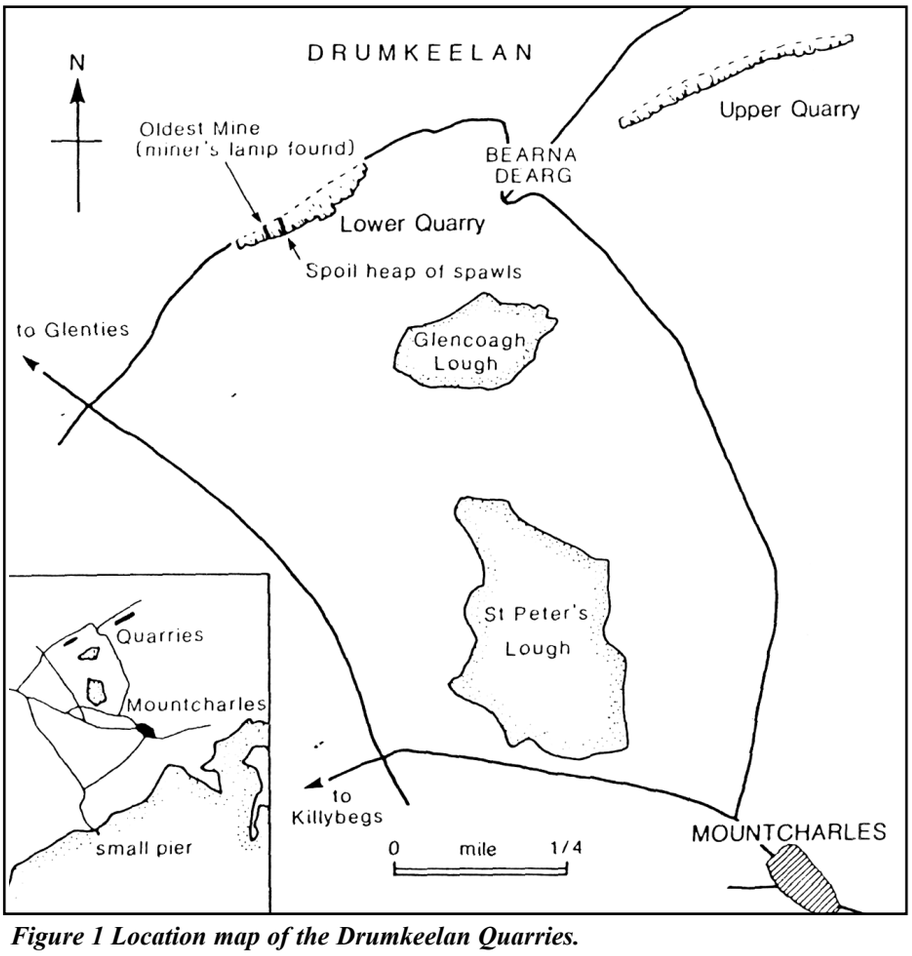

Figure 1 Location map of the Drumkeelan Quarries.

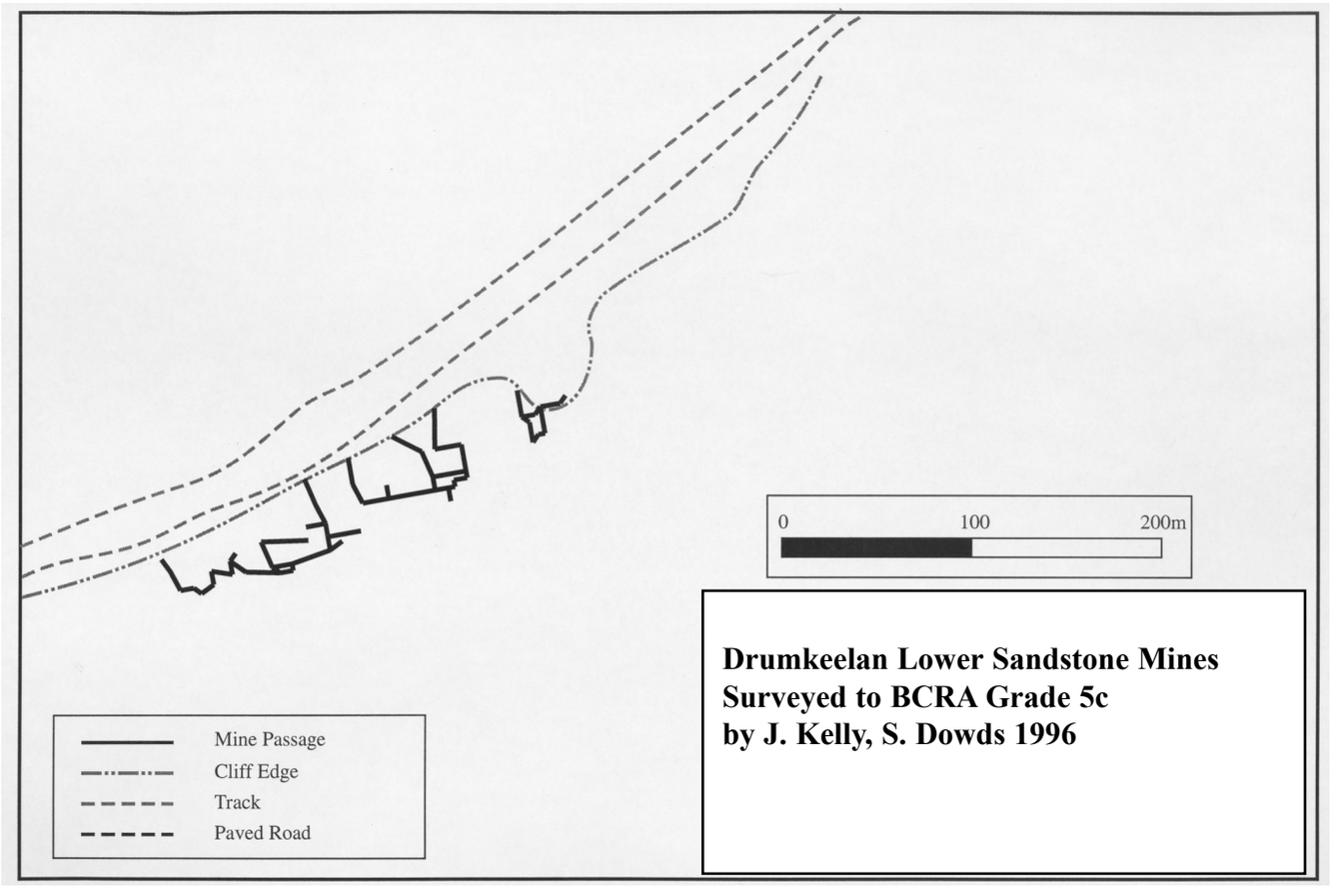

Figure 2 Survey of Drumkeelan Lower Sandstone Mines.

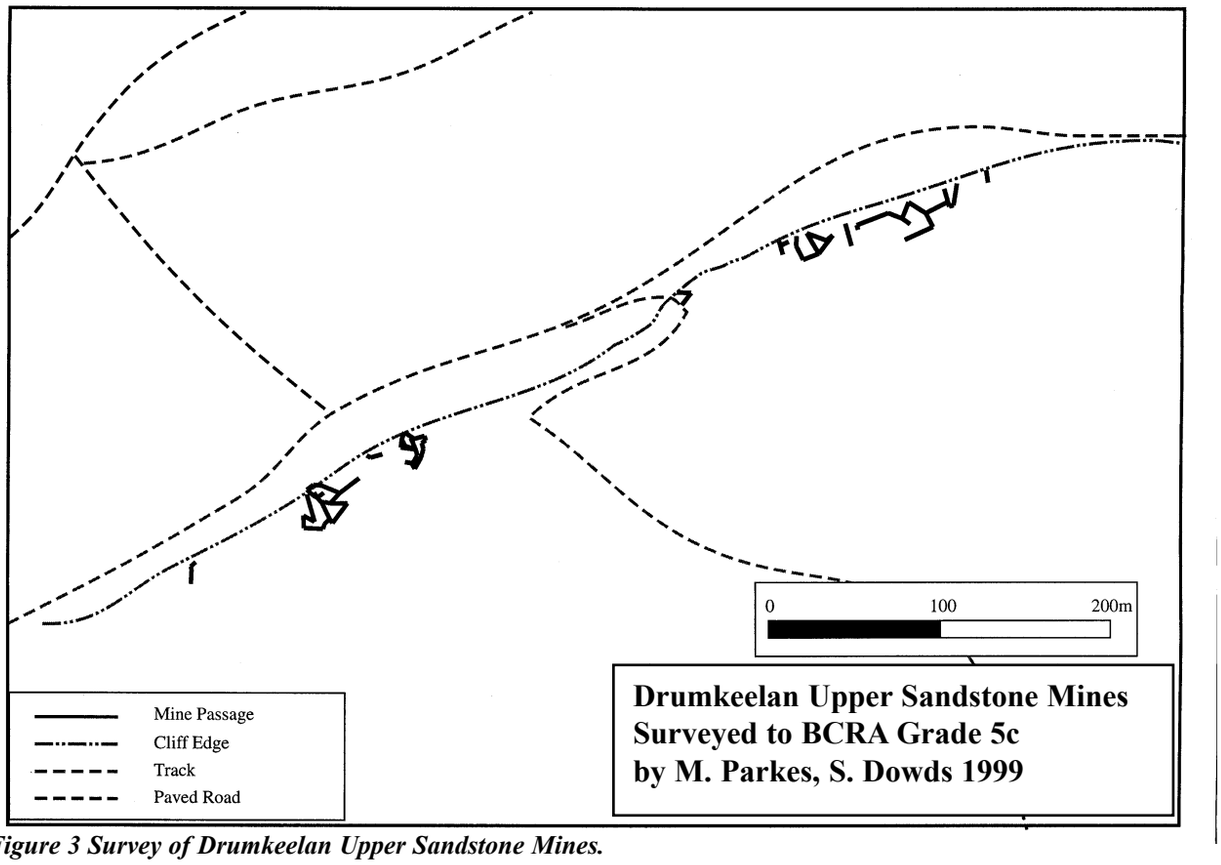

Figure 3 Survey of Drumkeelan Upper Sandstone Mines.

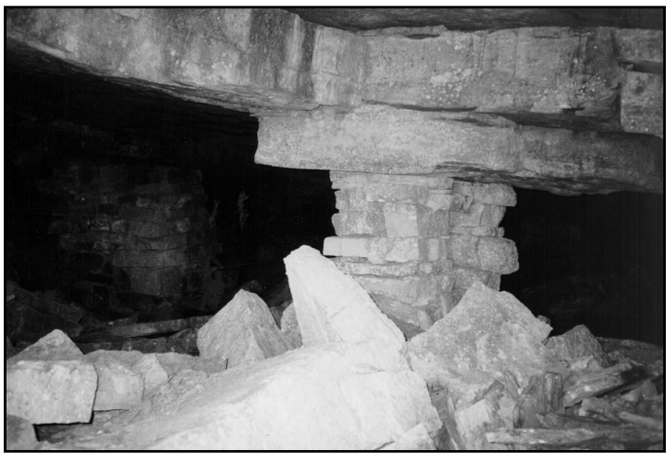

Figure 4 Typical pillar of stone left in the mines (photo by M Parkes).

owned by seven different farm families. The Lower Quarry has always been one large quarry and is possibly the oldest mined. It has at least 7 adits. The initial working must have been open cast, but once the face was worked back to a certain height it became more efficient to mine rather than quarry, since only one horizon was worked.

The mines extend in to the scarp at nearly horizontal levels, and indirectly to a distance of up to around 50m perpendicular to the face (see figures 2 and 3). Several entrances have collapsed, especially at the Upper Quarry where modern bulldozing of ground has occurred associated with current stone removal. A present day mine explorer will soon realise that most of the rock has been removed with only very narrow pillars remaining to support the roof (figure 4). In fact much of the rock separating the underground passages is actually "deads" - the waste rock built up in to walls to form pillars supporting the roof (figure 5).

A major mined chamber is located at the western end of the Upper Quarry, with a long dimension of over 30m, at the face furthest from the quarry face. However this is underneath the main area of modern working and is to be regarded as dangerous. In most other places the adits appear to be sound and relatively safe (Figure 6), although there have been historic entrance collapses, which are now well overgrown. They are often only identifiable by the form of the ground in front of the collapse, since each entrance is marked by a decline path perpendicular to the face to connect with a main track parallel to the face (Figure 7). In the Lower Quarry, one of the paths has some hauling equipment left in place.

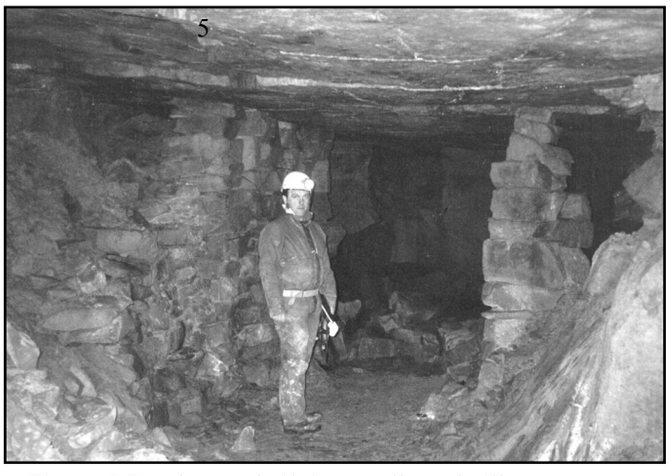

Figure 5 Dead stone built into walls and pillars to support the roof inside the mines (photo by M Parkes).

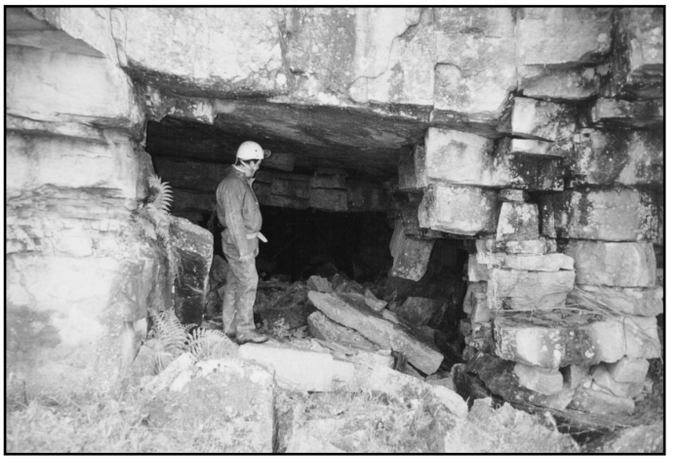

Figure 6 A typical reasonably sound entrance to one of the stone mines (photo by M Parkes).

PRACTICAL WORKING AND USE OF THE STONE

It is very clear that only one or more beds totalling about 2m thick was of interest to the miners, with superficially similar stone above and below left alone. The superior properties of this bed or beds must have been apparent from early working at Drumkeelan, since the underground workings have removed a greater areal extent than the surface quarry. Presumably the bed thickness of upto 2m was a desirable feature for large monumental work, but it is likely that the bed(s) had other properties in terms of strength, durability or workability.

References in the geological literature to Drumkeelan are few. Wilkinson (1845:330) in a succinct tabulation by county of the different building materials then in use, features Drumkeelan under 'Masonry'. "Sandstone at the quarry cost 4 shillings to 6 shillings per ton, and 2 shillings per ton carriage". He also features Drumkeelan (Wilkinson 1845) as No 99 in his table of sandstones, with detailed assessment of the weight and strength of the stone. Although the prized stone was more expensive, it is also reported that "flagging (Wilkinson 1845:332) was available at the quarry, for use 5 miles away in Donegal." "The stones are from 2.5 to 4 inches in thickness, and cost about 1 shilling and 6 pence per yard; they are punched, chiselled or rubbed." Such flagstones are produced as the mainstay of the present day stone quarrying around Mountcharles,

Kinahan (1887, 1889) recycled the same information in two different journals, in a major work on Irish arenaceous rocks. At that time, he claimed the stones near Mountcharles had been brought into notice by the selection of Drumkeelan stone for the new Museum and Library adjoining Leinster House in Dublin. Kinahan (1887, 1889) quotes Mr Cockburn on the properties of the stone and other buildings in which it was used. It was stated:- "It is good and durable, but hard to work; and has been used in the dressing, Town Hall, Sligo; also for quoins and

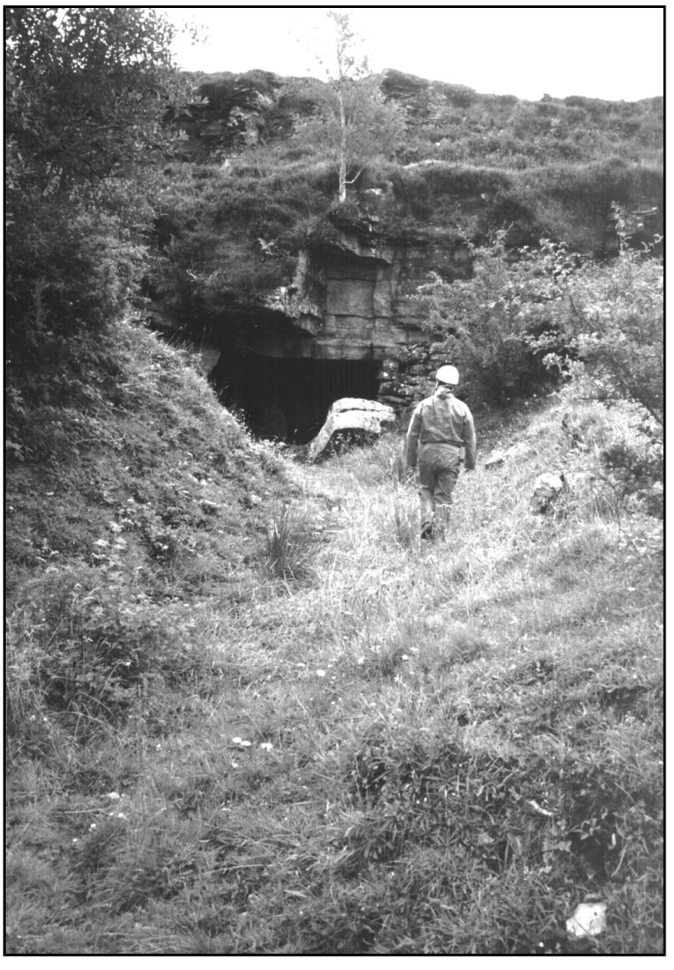

Figure 7 The decline path to an entrance between the outside spoil heaps (photo by M Parkes).

dressing, with other sandstones, in the Killybegs Coast-Guard Station. The Provincial Bank, Ballyshannon, was contracted to have been built with this stone; but, when half up, the supply of good materials seems to have failed, the upper portion being stones from Dungiven, Co. Londonderry." It is also stated (Kinahan 1889:250) that three thousand tons of the stone were shipped by the Messrs. Beckett, to build the Museum and Library for the Science and Art Department, Leinster House, Dublin.

These buildings are now known as the National Museum and National Library. Unfortunately, despite the reported qualities of Drumkeelan stone ("Dresses and cuts well; hardens on exposure." Kinahan 1889:250), the slightly calcareous cement and its other characteristics were not adequate to withstand the pollution of Dublin. The National Library underwent a facelift operation in the 1960s (following some stone replacement in 1932), in which much of the Drumkeelan stone was replaced with Ardbraccan Limestone from Co. Meath. The National Museum has most recently (1999-2001) been the subject of a major stone restoration project, in which removal and replacement of the badly flaking and crumbling Drumkeelan stone was a key feature. Whilst most of the walls are granite, the windows, doorways and other features were sandstone from Drumkeelan. Often the worst affected pieces are those where the internal bedding lamination was put on end, allowing ingress of water. Some Drumkeelan stone has been cleaned and other parts repaired or replaced by artificial composites.

ASSAROE ABBEY AND THE HISTORICAL USE OF DRUMKEELAN STONE

Carville (1984) wrote a detailed history of Assaroe Abbey, which was situated on the Abbey River, a tributary of the River Erne near Ballyshannon. The following account is derived from Chapter 15 of that book, which described the connections uncovered between the two sites.

The Abbey at Assaroe was founded by twelve Cistercian monks in 1179 or 1184 who left the abbey at Boyle, Co. Roscommon to found it. It was built on the standard plan for such abbeys, using local limestone, but clearly incorporating sandstone from Drumkeelan. This was probably transported by sea for a distance of about 20 miles. The pier at Mountcharles is about three miles from the quarries and down gradient.

The number of carved stones and particularly the stones showing very fine lathe work indicate that the Cistercians must have had considerable workshop facilities. A lathe may have been powered by a mill, since the Abbey is sited on an artificial island created by the excavation of a mill race. Equally it could have been a hand or foot powered treadle lathe. Although the present remains of the abbey are scant, a number of the carved stones have been built into the graveyard wall. Lockwood (1901:180) reports evidence of maintenance and repair of buildings in the stone carving, typical of a later date.

Carville (1984:55) considers that the Lower Quarry was the oldest mine worked by the Cistercians. One key piece of evidence is the medieval miner's lamp found in the Drumkeelan Lower Mine (figure 8). The lamp is carved out of the stone. It is circular, three inches in height, three and a half inches in diameter and has a carved bowl one and a half inches deep. The bottom also has a cavity, perhaps to fit onto a support. One side was smoke stained and fire-cracked, presumably where a wick of wool lay over the side, burning sea bird or seal oil.

It is also recorded by Carville (1984) that the Cistercians owned a small grange or lay brothers outfarm at a place near Mountcharles then called Tantalion or Tawneytallen, which included the source of stone for the abbey. This was the mines

Figure 8 The Medieval miner's lamp from Drumkeelan (photo by G. Carville).

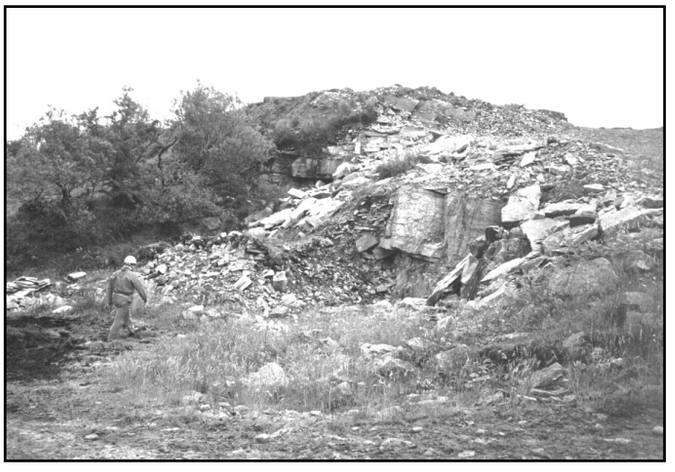

Figure 9 Modern bulldozing and extraction is obliterating the mine adits. (photo by M Parkes).

at Drumkeelan. From the mines there is an old road leading down to a small pier on the coast from which stone could have been transported some 20 miles across Donegal Bay by boat.

One of the families that own and have worked the mines (and now quarries) is called Monaghan, which Carville (1984) notes is the same in Irish (O Muineachain) as the name for monks. They may be descendants of the family who lived on the grange and worked as quarrymen for the monks. In this family there was also an important tradition that one of the sons should be called Brian, the Irish for Bernard, after St. Bernard of Clairvaux, an important Cistercian figure.

A story of some interest is recounted in Carville (1984) concerning the intermingling of echoes of the past with present day events. A former contemporary Trappist (Cistercian) monk had stayed at the Monaghan family home and whilst there had carved a statue in the Drumkeelan sandstone. The figure was of a woman with a child holding a host and chalice. The religious significance of the statue and another carved by this monk are discussed by Carville (1984), but the co-incidence of the 'former Trappist', Karl Hagman, carving Drumkeelan stone exactly as his medieval Cistercian lay brothers had done in the Middle Ages is noteworthy.

THE FUTURE OF THE MINES

The stone industry in Donegal is still thriving, perhaps even more so in recent years of economic boom in construction. This present day success carries the threat of destruction of the historic and interesting stone mines at Drumkeelan. Modern requirements are for stone of all types and the current working at Drumkeelan Upper is taking pieces of the sandstone of all sizes out with a JCB. They are transported out on pallets. No longer is the specific bed required mined, but the quarrying just cuts down, intersecting old mines and collapsing them (Figure 9). Some have already gone, and at time of surveying, bulldozing at the lower level had taken place, presumably preceding future extraction. In other adits, dumping of scrap metal and glass has occurred (Figure 10). It would be very sad to see all historical evidence of this significant local industry obliterated by current economic demand.

Figure 10 Scrap metal dumped in one adit (photo by M Parkes).

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