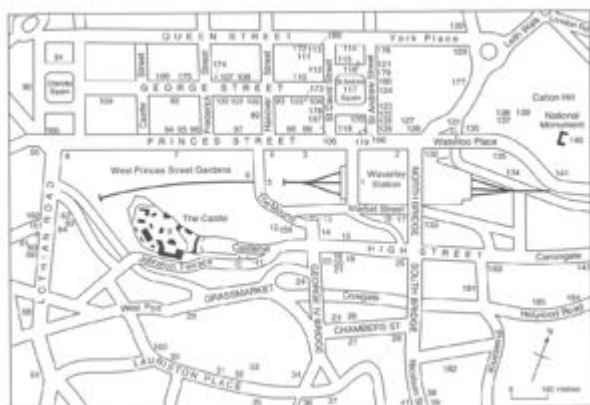


Building stones in Edinburgh from the West Lothian Oil-Shale Formation

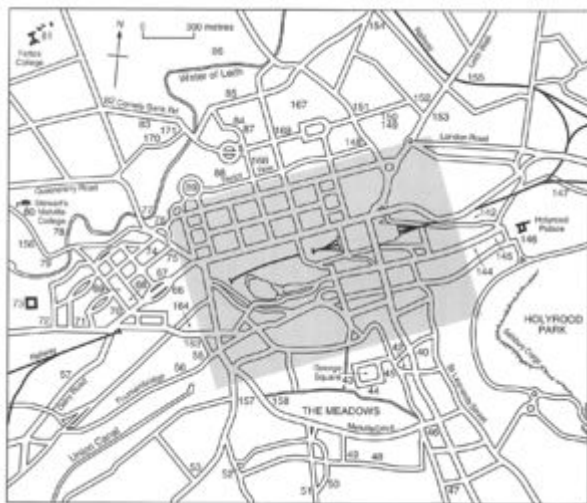
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From: **McMillan, A.A., Gillanders, R.J. and Fairhurst, J.A. 1999 [Building stones of Edinburgh](#)**. Edinburgh: Edinburgh Geological Society.



Edinburgh's buildings - location map, inset (Central Edinburgh).



Edinburgh's buildings - location map.

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Ravelston No. 2 and Ravelston Black

The Ravelston Sandstone lies stratigraphically above the Craigleith Sandstone within the Gullane Formation. It was worked mainly in quarries on Corstorphine Hill in western Edinburgh. Early quarrying of sandstones from this or a higher stratigraphical level may have taken place in and around Leith.

The Ravelston Sandstone, which attains a thickness of 38 m, was worked in a line of three quarries lying to the north of, and stratigraphically below, the Corstorphine Hill dolerite sill. Ravelston No. 2 Quarry, also at one time known as Rosie's Quarry, produced greyish white, pale brownish buff and dark grey stone. The Ravelston Black Quarry got its name from the occurrence of a particularly black sandstone which may originally have been petroliferous. Oil trapped in pore spaces between sand grains in the rock may have been converted into a carbon residue when the dolerite sill was intruded.

The quarries were still active and employing 16 men when the first Quarry List was published in 1895. At that time, the hard black rock found at the top of the westernmost Ravelston Black Quarry was sometimes used for glass cutting wheels. Stone continued to be taken from the Ravelston quarries until 1914, although the number of employees dwindled to five in 1909. Work began again after the First World War in 1920 when Ravelston No. 2 was operated by Thomas Lamb, builder, Blackhall, employing 28 men. Between 1920 and 1939, Lamb built bungalows and villas in **Craigcrook Road** (including his own bungalow, 'Paramount', No.32) and at the top of **Gardiner Road, Blackhall**. Two quarries were working in 1922 but thereafter activity declined, with between nine and eighteen men employed until 1937. The last year that Ravelston appears in the Quarry List is 1939.

Ravelston No.2 produced an excellent building and monumental stone for home and abroad. In western Ireland it was used in the Lusitania Memorial. Craig refers to Ravelston Quarry producing stone for villas at Trinity and it is presumed that the stone came from Ravelston No.2 rather than the old Ravelston Quarry. Ravelston No. 2 also produced 'non-slipping' paving stones, e.g. at the top of Leith Walk. In Edinburgh, notable examples of monuments build of stone from Ravelston No.2 quarry include:

Scottish American War Memorial (7) (1927). West Princes Street Gardens

Corstorphine Old Parish Church War Memorial (1919-23), Kirk Loan.

Leith Hill

This 'lost' quarry is mentioned in the Accounts of the Master of Works for the work done on **Holyrood Palace** (146) in 1529. In August and September of that year the Accounts record payments to parties of quarriers and workmen at this quarry. So far as can be found, it is not mentioned again, and there is no sign of it on any map of the area. The first Ordnance Survey map published in 1853 shows Hillhousefield House, immediately to the south-west of the junction of Pitt and South Fort streets. It is possible that this refers to the hill where the quarry lay. If so, its stratigraphical position is at or above the level of the Ravelston Sandstone.

Wardie

Reference to a quarry, between Wardie House and the Forth, is made by Russell. About 1657 General Monk gave orders to build a fort or citadel in Leith. The location is still called 'The Citadel',

off Commercial Street. Buildings were demolished to provide the stone, but more was required, and was obtained from this quarry.

Hailes

In the West Lothian Oil Shale Formation, the Hailes Sandstone was worked in adjacent quarries at Hailes and Redhall on the south-western outskirts of the city.

However, the stone from the two localities is very different. Hailes Quarry produced a laminated stone of three colours, pink, blue-grey and white, while Redhall produced a massive unlaminated stone. Hailes and Redhall quarries lay either side of the Hailes Syncline, a fold with a NNE-SSW trending axis such that the strata dipped 10-15° eastwards at Hailes and 12-25° westwards at Redhall.

According to colour, the two varieties of stone produced at Hailes Quarry were known as 'Blue' (or 'Grey') Hailes and 'Pink' Hailes. Both are characterised by carbonaceous and micaceous ripple laminae and wispy partings. Silty partings are common. 'Pink' Hailes owes its pink tint to the presence of iron oxide. Irregular micaceous streaks, coloured deep red by iron oxide, are also present but the overall good weathering properties of the stone were unaffected. 'Blue' Hailes was largely used for stone steps in stairs and platts (slabs for stone landings in tenements), for rubble work and for foundations where great strength was required.

In 1882, the quarry was said to have been in operation for 300 years. The stone was interbedded with mudstone bands, the whole being described as 'smooth and level as if they had been dressed by hand'. Now completely infilled, it formerly revealed the following section*

Sandstone, with alternations of blaes	22m
Blaes	21m
'Pink' Hailes Sandstone	46m
'Blue' Hailes Sandstone	at least 9m

At the north end of the quarry, the blue stone was more of a liver rock in which lamination was not discernible. During the first half of this century the blaes (mud-stones) on the east side of the quarry were worked for brick-making.

Hailes Quarry boasted a steam engine, set up in 1787 to pump out water' but this cannot have been entirely successful because in 1805 a large water-driven wheel was being used to drive a water pump to drain the quarry.' By 1845, the quarry was 27.4 m (90 feet) deep. Despite the quarry's proximity to the Union Canal, most of the stone was carted to Edinburgh. At the peak of production in 1825, 600 cartloads of stone were transported to the city at 3/- Sterling per load, 6d for the stone and 2/6d for cartage, but by 1845, it had been reduced to 60 to 70 cartloads per day.

By 1893, the quarry was exporting stone to London. In 1895, 139 men worked in the quarry. Over the next three decades the number of employees fluctuated with as many as 225 in 1899, with regular working continuing until 1914, and as few as 12 in 1928, by which time stone was only being worked intermittently. By 1931 only mudstone for brick-making was being regularly used. Extraction of mudstones continued until 1943-44, when Hailes appeared in the Quarry List for the last time.' At the time of maximum extent, Hailes Quarry excavations were undertaken both north and south of the Union Canal, with a tunnel connecting the two workings. A surviving plan of the quarry in the Scottish Record Office' shows it as it was in 1834 when there was a smithy and engine house at the north end. By the end of the 1970s there was hardly anything to show where this vast quarry had

operated, having been completely filled in with rubbish. The site is now a public park.

George Smith, writing in 1835, described the use of the three kinds of Hailes stone: 'In the top feaks (strata) are found the strong hard flags which are extensively used for the foot-paths of the Edinburgh streets. The middle feaks are the finest, and used generally for stair-steps and plats, inside pavements, and chimney finishings. The under, or what is termed whin-feak, is used very extensively for rubble-work, and in this respect is not surpassed by any quarry in the country'. The stone was unfit for polished ashlar. Hailes 'produced the best rubble stone of any quarry near Edinburgh' and it was emphasised that the stone 'should be placed horizontally in the building, otherwise the action of the weather causes them to separate, and peel off in flakes'. The beds were found of varying thickness, from five or six inches to three feet.

According to James Gowans, a leaseholder of Redhall quarry (see below), Hailes 'owing to its laminated structure, is used greatly for foundations of buildings, plats, steps, etc.'. Apart from these products, the quarry yielded almost exclusively rubble stone, with the exception of a large mass of liver rock quarried c.1820 used to build the front of **Coates Crescent** (67).

The 'pink' and 'blue' stone, found near the base of the quarry, was used after the mid-19th century, in many public buildings. From 1872 onwards, it was used, particularly in the Edinburgh Board schools, as coursed or snecked rubble along with ashlar dressings around doors and windows employing red sandstone from Dumfries & Galloway. For example, **Roseburn Primary School**, (1893) Roseburn Street (Plate 5), is built of 'pink' and 'blue' Hailes with red Corsehill dressings. In the **Royal (Dick) School of Veterinary Studies** (46) (1909-16), Summerhall, 'pink' Hailes was used, together with purplish pink Doddington stone. Together with Binny and Carmyllie stone, 'blue' Hailes was used in the construction of the **New College & Assembly Hall** (12) (1845-50), Mound Place. Other examples of Hailes stone include:

Blue or Grey Hailes

Free Church of Scotland College (159), (1858-63), Mound Place. **Royal Infirmary** (35) (1872-9), Lauriston Place.

Dalry Primary School (57) (1876-77), Dairy Road.

Leith Academy Secondary School Annex (1885-87). Formerly Lochend Road School, Lochend Road.

Sciennes Primary School (48) (1889), Sciennes Road.

Scotch Whisky Heritage Centre (10) (1896). Formerly Castlehill School, Castlehill, The Royal Mile. With Corncockle margins.

Pink Hailes

Cluny Gardens, No.1 (1880). Formerly 'Red House'. With quoins from Corsehill.

St Anne's Church, Corstorphine (1912), Kaimes Road. With ashlar from Cullalo.

Redhall

At Redhall Quarry 500 m to the east of Hailes Quarry, the stone was of quite a different character consisting of massive beds of unlaminated stone. Comparing the sandstone from Hailes Quarry with

that from Redhall in Edinburgh's buildings, it is hard to believe that they belong to the same stratigraphical horizon. Carmichael (1837) pointed to the massiveness of the beds in the quarry and described them in these terms: 'This rock is of unknown depth, with about 200 yards (183 m) of open front, upwards of 100 feet (30 m) perpendicular in one solid mass, exclusive of 10 feet to 30 feet (3-9 m) of tiring (overburden): dip 20° north-west. Gowans (1881) considered sandstone from Redhall to be from the same beds as those at Craighleith for which there is a good match.

Sandstone from Redhall, in contrast to that from Hailes, was much easier to work, especially when fresh, and was particularly suitable for delicate work. To some extent it replaced the very hard Craighleith stone towards the middle of the 19th century. Carmichael stated in 1837 that 'It is chiefly in mass, partly of a dull white and deep buff colour, termed liver stone, both of which are got in blocks of immense size'. The stone long retained its polish. According to Craig the stone was of two colours 'one of which is red, containing a large percentage of iron, and the other white, but which gets discoloured when exposed to the atmosphere'.

Redhall Quarry was first used in 1650 to build Redhall Castle. In 1757, Mr Inglis of Redhall advertised Redhall Quarry as the source of 1.5 m (5 feet) diameter millstones in the Edinburgh Courant. Other quarries in the same area were advertised in 1764 and 1775. An advertisement in the Edinburgh Advertiser in 1781, drew attention to 'the excellent qualities of this stone both for hewn and ornamental work'.

The stone was soft when dug out, making it easy to work. It soon hardened when exposed to the air. Sometimes it contained silica nodules ('white whin' to the quarrymen) which could cause difficulties in working. The quarry was still in the possession of the Inglis family in 1837 when 15 men were employed. The stone was loaded on to an inclined plane with cranes and thence transported to the Union Canal (opened in 1822) which conveniently passed through the middle of the quarry. A steam engine moved the wagons and kept the quarry clear of water. Before 1821 a rent of £40 to £70 sterling per annum was paid. Under the management of George Johnston the rent jumped to £2,100 sterling per annum in 1824 and averaged £1,000 sterling per annum for a while. However, by 1832 Johnston was bankrupt, and although the Inglis family ran operations for some time, this arrangement was not successful and the quarry gradually fell out of use.

In 1847, Walter Gowans took over the lease of the quarry, handing it over to his son James in 1850. James Gowans became a famous architect, Dean of Guild and the mastermind of the International Exhibition in the Meadows in 1886. In 1851, a statue of Queen Victoria, carved by Handyside Ritchie from a block of Redhall freestone, was erected in front of Holyrood Palace at an estimated one-tenth of the cost of marble or bronze.' It was subsequently removed because the Prince Consort did not like it.

In 1857, James Gowans built Redhall Bank Cottages (now **8 and 10 Redhall Bank Road**) for his quarry workers. These cottages demonstrate a cyclopean masonry style employing large stones of irregular form. In 1869 Redhall stone was one of those specified for frontages in the Warrender Estate, the other was Dunmore near Stirling. Redhall Quarry was still being used in the 1870s. For example, Tynecastle High School Annexe, McLeod Street, built as Gorgie School, used Redhall stone in 1876. In the early 1870s a second quarry, north of the old one, was opened. The main sandstone worked here was similar to, but softer than that in the older quarry and at Craighleith. It had the same 'bastard' or 'white whin' nodules. The main difference in the new quarry lay in the abundance and variety of plant fossils which were found there. By 1895, workings at Redhall had closed. Today the Redhall quarries on both sides of the canal have been largely tilled in. One of them forms Redhall Park and here the mounds of 'tin' can still be seen.

Stone from Redhall may be seen in several buildings in central Edinburgh although the detail and

colour of many examples is obscured by more than one hundred years of grime. The former United Associated Synod Church in Lothian Road, now **Film House** (59) (1830-31) is one of the few buildings exhibiting stone from Redhall in anything like its original colour. The slight reddening in the stone may have been caused by the presence of oxides brought to the surface by cleaning in the late 1970s. The ashlar is polished and rusticated on the first floor level. Cracking can be seen in the V-sectioned chamfering of the rustication. Despite slight wear under the window sills, most of the detail is still very sharp after more than 150 years.

St John's Church (8) (1816-18), Princes Street, is built of polished ashlar with no bedding apparent and containing ironstone concretions like Craigeith. It has weathered well, although Craig noted that stones set on edge had deteriorated. Other examples of the use of Redhall stone include:

St Paul's & St George's Episcopal Church, York Place (130) (1816-18)

Randolph Crescent, Nos. 15, 16 & 17 (75) (1820s)

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