BRITISH MINING No.1

MEMOIRS
1975

Landless, J.G. 1975
"Strontian Lead Mines"
British Mining No.1, pp.51-62

NB
This publication was originally produced on a duplicator, and issued in the 10 by 8 inch format then used by the society. It has now been digitised and reformatted at A5. This has changed the original pagination of articles, which is given in square brackets.

STRONTIAN LEAD MINES

J.G. Landless

HISTORY

The mines were discovered by Sir Alexander Murray of Stanhope, Co. Durham in 1722. In 1724 he leased then to a partnership, consisting of Thomas Duke of Norfolk, General Wade, Sir Archibald Grant of Monymusk, a Richard Graham, and Peter Murdock, two well known Glasgow merchants and about seven other people, including Sir Alexander himself. This lease was to run for 30 years at a rent of one sixth part of the lead ore raised. In 1729 having obtained a Royal Charter to work the mines, a member of the partnership was sent to visit them. He was the Honourable Sir Robert Clifton, Knight Of The Bath, it is reported that he arrived in Edinburgh on August 11th 1729, wearing the Badge Of The Order.

Francis Place a mine engineer in the employ of the York Building Co. visited the mine in 1730 and in April of that year sent a report to Colonel Horsey (a director of the York Building Co.) indicating that the mines were under very poor management, but with skill could be made profitable. Francis Place advised that a rent of £2,000 per annum would be extravagant, but on July 31st 1730 the company took over the lease at a rent of £3,600 a year plus a royalty of every sixth dish to the overlord, and also to repay £6,000 outlay by the original partnership, such was the enthusiasm of Colonel Horsey.

In August 1730 The York Building Company sub-let the mines to Grant and Burroughs, who were in fact closely involved with the York Building Company, Francis Place appears to have become the mine manager, for on August 18th he says, "*every day the works grow richer*" on November 4th he visited a new vein, and in less than one hour he broke more than a hundredweight of good ore. At about this time bricks, castings, coals and framed houses were being shipped from London, and a village known as New York was built also a dispensary had been set up in the village.

During the winter months the company came against many problems, not least was the hostility shown to them by the Highlanders, who stole their cattle, forced sheep over precipices, and set fire to buildings, thus General Wade sent a sergeant and twenty men to help protect his interests.

In three years or so the company had spent £40,000, but the sale of the lead produced did not even pay the workmen their wages, on investigation by the Duke of Norfolk and his partners, it appears that only 244 tons of lend had been smelted in four years, in 1735 the miners [51] took possession of the mines as their wages had not been paid, in fact, £1,800 of unpaid accounts were left, This coupled with some jiggery pokery on the sub-lease led one of the members of the company to be expelled from The House Of Commons.

In 1737 Francis Grant a brother of Sir Archibald took over management, and undertook to produce lead at £8 and £8 5s a ton, in one year he raised 658 tons, it was agreed that the company could give Grant his notice at any time, this was done at the end of 1740 and Grant was paid his outlay for tools and stores, a claim which cost the company £3,070. At Christmas 1740 the mines were abandoned and the men dismissed.

Sir Alexander Murray refers to the bad management by the York Buildings Company to Sir Robert Walpole in a letter dated around 1765, he was obviously a very disappointed man. He also attributed the closure of the mines to the replacement of Francis Place in June 1731 by Jerom Horsey.

From 1740 to 1836 the mines appear to have been worked by the men on tribute, the rent being one-eighth of the production, this yielded £1,000 to £1,500 a year. In 1772 the Scots Mining Company took a look at the mines, the report was not favourable, and no further
effort by the company was made. There is mention of the mines being again let in 1836 but to whom is not recorded.

Although the York Building Co. had been proved very poor at management, they sunk most of the shafts now to be seen.

In 1846 it is reported that, after a favourable report by Capt. John Barratt, The Strontian Mining Company was formed, and leased the mines with a capital of £2,000. One John Taylor of Fort William seems to have been the mainstay of the company, however, the company leased only Whitesmith, Middleshop and Bellsgrove Mines. They appear to have had limited success, but did a fair bit of work extending the Grand Level, and sunk the Engine Shaft a further 30 fathoms below the Grand Level, the company seems to have ceased work about 1850.

In 1856 to 1863 Sir James Milles Riddell, Bart., then owner of the land, worked the mines himself, but with very little result, as is indicated by the production figures.

Somewhere about 1865 Corrantee Mine was re-opened and worked until 1871 with only 105 tons of lead being mined, in 1852 The Fee Donald Mining Company was formed, and again worked until 1871 with fairly poor results.

In 1901 Mr Robertson of Glasgow put up £14,000 to attempt to [52] re-open the mines, Middleshop Adit and The Grand Level were cleared, and the Engine Shaft was also cleared to a depth of 60 fathoms, with Mr Robertson's son in charge, alas in 1904 funds ran out without any ore being brought to the surface.

Mr A.J. Brown of Middleton Grange of Leeds obtained a 13 year lease for all the mines in 1914, the agreed rent was £52 10s 0d per annum, and a

Royalty fixed at 1/25th of all mineral raised. In 1918 he disposed of the lease to Messrs Sinclair Ross and Gordon, but they don't seem to have carried out any work at all, in 1921 the Board Of Agriculture and Fisheries obtained the land.

In January 1965 Consolidated Gold Fields Ltd, started a drilling program which lasted until October of that year, the only report to hand is from the *Financial Times* dated January 13th 1966 which indicates that 2m tons of Barytes with some lead, zinc and silver ore is present.

Scottish Canadian Highland Development find Exploration Ltd now have the mineral rights.

From the above it is obvious that the documentation on management is fairly good, but as for the day to day running there is little documentary evidence left. With most of the early workings being open cast, the winter conditions must have been appalling, the only decent report I have is of one John Taylor a Lead Hills miner reputed to have lived 133 years, he died in 1770. He reports living on salt meat and whisky, eventually being forced to give up as he became very ill with scurvy.

The women and children were employed in the 'hat factory', which was accommodated in one of the larger houses making hats for miners. They fashioned them by plaiting two hats out of straw, one slightly larger than the other, and placing clay between them, those were baked in the sun until hard. They are said to be very effective, but rather heavy. [53]

DETAILED DESCRIPTION OF THE MINES

CORRANTEE MINE

The Corrantee mines are situated near the head of Glen Coire Ant-Suidhe about 800 feet above Loch Sunart, and are the most westerly of the workings. The mine is about five miles from Strontian, some 2½ miles of this is on normal road the rest is on cart track long since disused.

The mine appears to be on a westerly extension of the vein which Whitesmith, Middleshop and Bellsgrove mines have worked, but this has never been proved. The Corrantee Vein was well exposed at the surface for around 900 yards. At its most westerly end its direction is 37º south of east. At the eastern end above the upper open-cast, the vein is said to split into two branches, the northern branch is about 5º north of east and the southern branch starts south of east, but curves north-east and they both join up again mid-way between Corrantee and Whitesmith mines.

STRONTIAN LEAD MINES

Mine	Year	Lead Ore Tons	Lead Ore Cwts	Metallic Lead Tons	Metallic Lead Cwts	Silver Ozs.
	1847	50		30		
Bellsgrove	1848	236		141		
	1849	250	15	151		
	1850	290	5	266	10	
	1851	288		255		
	1852	277		208		1000
	1853	310		239		1070
	1854	174		130		536
	1855	100		74		
	1856	31		23		45
	1857	51		39	5	78
	1858	41	5	34		
	1859	44	5	34		162
	1860	21	5	16		64
	1861	39		29	10	59
	1862	142		106		210
	1864	168		119	10	296
Fee Donald	1865	300		217		450
	1867	240		168		672
	1868	25		18	12	74
Corrantee	1868	15		11	5	
Fee Donald	1869	25		18	15	
Corrantee	1869	90		67	10	
	1871	12		9		

The above are the only production figures I have at hand, and by all accounts are the only figures that have survived. [54]

The vein at Corrantee dips south at an angle of 75º and is almost entirely in gneiss. It is exposed in two places in Corrantee burn, the lower exposure is of considerable width and comprises of ribs and strings of barytes with gneiss between them, The other exposure is mid-way between the deep level and the old water wheel house, and is about 1 foot 4 inches wide and consists of calcite spotted with blende and galena, and containing large included fragments of gneiss.

At the mouth of the deep level the foot wall side is entirely gneiss, the hanging wall side is partly a greenish chlorite schist and partly biotite gneiss, The vein at this point consists of calcite with included masses of gneiss, a little pinkish barytes, galena and a good deal of blend, the blend is especially good on the foot-wall; the vein being about 4 feet wide.

At the head of the open cast, at the spot marked X on the map, is a fine exposure 4 feet 6 inches wide, and illustrated in Fig 2 (this is taken from a 1919 report and since then a fair bit of decay has occurred). Further east the

vein is exposed by two trial pits, these trial pits are very limited in nature. In 1852 the vein was said to be four to ten feet wide, and contained much blend near the adit shaft. The early workers mined solely for lead and no blend was sold. The small dump at the mouth of the deep level is rich in blend, and all other dumps contain a fair amount of blend.

The blend is good in quality and of the deep black variety. A sample taken in 1919 yielded 60.3% zinc. This was from the deep level dump. The sand at the crushing mill yielded 8½% zinc. The galena assayed at 80% of lead, and 18ozs 8grs of silver per ton. [55]

There are no early returns from the York Buildings Co, but the 1868 and 1869 returns are in the table.

In the bed of the Allt Tarsuiun burn, near the shallow adit mouth and south of the main vein, a parallel string containing spots of galena can be seen.

The workings so far are purely superficial in character, and consists of a series of shallow open cast workings and trial holes along the main vein. The main open-cast is about 140 yards long, and varying in depth from 6 to 36 feet. The shallow adit is a little west of the main open cast, and has been driven from the south side of the burn, and strikes the vein giving about 33 feet of cover. This level has been driven about 12 feet east on the south or hanging wall side of the vein.

The middle adit has been driven from the Allt Tarsuinn burn for about 70 yards, and it strikes the vein about 70 feet down, it then continues east on the vein for some 60 yards. A shaft was sunk to this level, and the ground around this shaft has been stoped out to the surface. The Allan Cameron's sump is reported to be 42 to 54 feet, but is now water filled.

Between 1865 and 1871, a deep level was driven east on the main vein for about 247 yards. Under the lower open cast this level has been stoped out in two places for 60 and 85 feet. A winze of 30 feet was sunk in the sole of the level under the second lot of ground stoped out. I have yet to explore this level, but by all accounts it should be in good condition.

There is also the remains of a crushing plant, the crushing wheels themselves measuring 18 inches long x 16 inches in diameter. Alas only one remains. There also appears the remains of an aerial ropeway from the mouth of the deep level to the crusher, but no documentary evidence can be found of one being installed. The water wheel must have been quite large, the wheel house measures about 10 feet wide by 50 feet long.

WEST WHITESMITH TRIALS

About 400 yards west of Whitesmith main open cast there are several trials entirely in gneiss. A sketch from a 1919 report shows the relative positions,

but an aerial photo taken in October 1949 shows one further trial shaft collapsed which can be seen on the main location map. Checks on the dumps indicate barytes, and a little galena.

At the western end two pits have been sunk, both now full of water. [56]

The barytes ore is compact and creamy white in colour, 40 yards to the south east a trench has been dug on the vein for some 56 yards having a direction of 8º south of east. At the eastern end of this there is a level full of water, but it appears not to go far, the vein which is exposed in the roof is about 2 feet 6 inches wide consisting of 16 inches of barytes in the centre, flanked by a mixture of barytes with gneiss. Ninety yards to the east a trial bearing 30º south of east is evident, but very shallow. The vein is 4 feet 6 inches wide, and of narrow strings of baryteswith gneiss, it is probably from those trials that the presumed course of the vein has been taken.

WHITESMITH MINE

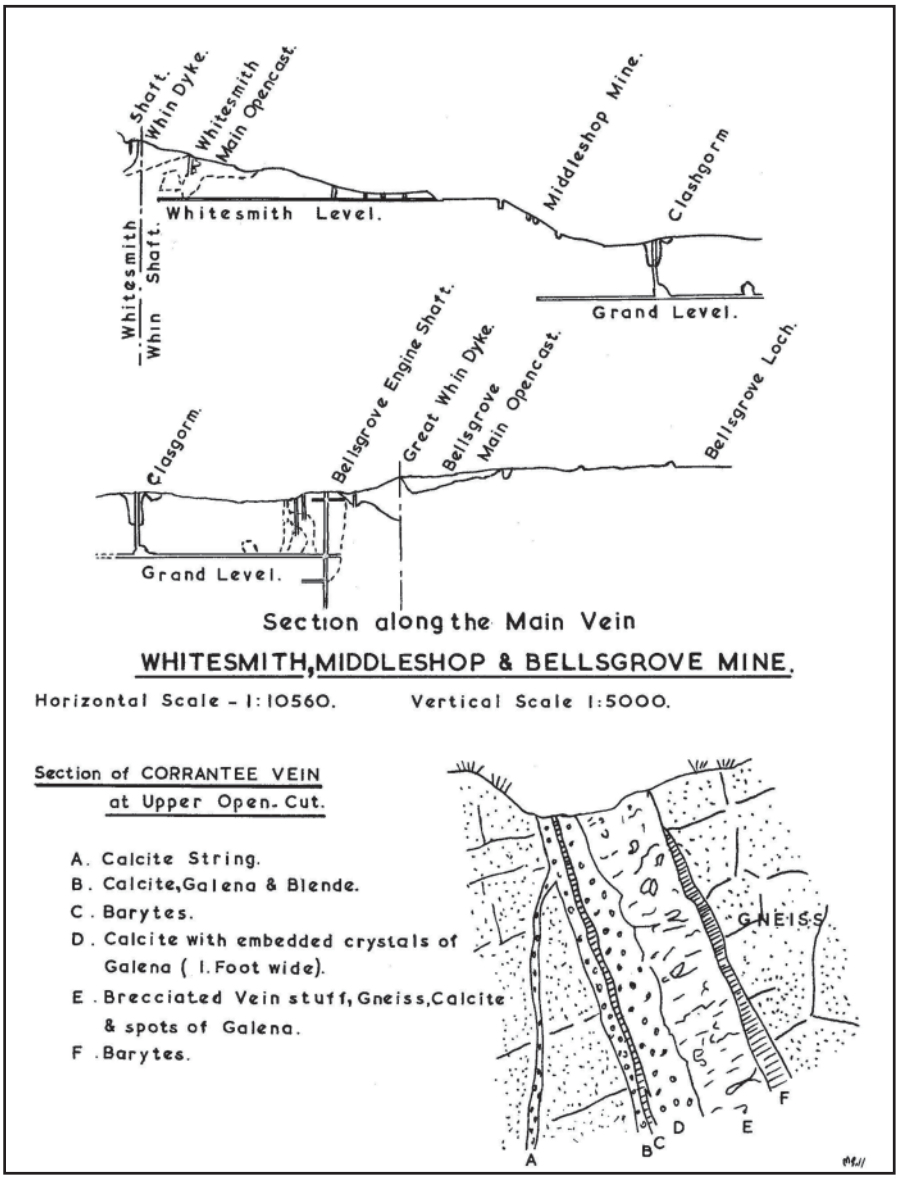
Whitesmith mine is at an altitude of 1,100 feet from Loch Sunart at the west end, and 910 feet at the east end. It is said to be the richest in the whole group, but very little interest has been shown in it since the York Buildings company ceased work there. This could be due to the large amount back filling which has gone on, and the rapid decay of the westerly end of the workings.

It has been worked as an open cast of about 270 yards virtually due east and is 60 feet deep at its western end, getting shallower to the east. The vein being from 4 to 12 feet wide, it is nearly vertical, but in places has a slight dip to the south. Both walls are of biotite-granite. The vein consists of barytes, calcite and ambedded cubic crystals of galena, and masses of gneiss. Practically all the vein has been removed, all that remains is thin ribs of barytes, spotted with galena crystals on the walls.

It is in this mine that brewstorite (hydrous silicate of alumina strontia baryta and lime) is abundant. Also where strontianite (strontium carbonate) was first brought to the surface. Brewsterite occurs as small colourless or slightly brownish translucent prismatic crystals, lining cavities, encrusting and forming the cementing material of brecciated masses of the barytes, calcite and gneiss veinstuff.

Strontianite occurs occasionally in indistinct acicular crystals, but mostly as either green, brownish, or whitish radiating crystalline masses. Strontianite appears to occur only rarely, and in 1800 three people were employed to pick it from the dump for the whole of that year.

Across the open cast are four dolerite dykes (whin dykes). A three foot wide dyke is at the extreme westerly end of the working, and seems to have stopped the miners dead, for although they sank a shaft about 9 to 10 fathoms deep



on the other side of the dyke, and a few yards to the south [57] attempted to drive a level along the suspected course of the vein. No more work has been done, and the dumps of those two trials show that from the shaft no vein stuff was struck, and from the level only barytes is indicated.

About half way along the main open cast another whin dyke of one foot wide runs parallel with the main vein on its south wall, and further east two similar dykes cross the vein. The first is four feet wide, and runs due north of south, the second is also four feet wide and runs 5º west of north.

East of the main open-cast and between it and Middleshop Mine, Whitesmith Level has been driven well beyond the middle of the open cast. Alas, this is now completely collapsed, but is said to have been about 590 yards long, and 115 feet deep at its end. The dumps show the vein consisted of barytes with the enclosing rock of gneissose granite of which pink orthoclase is the most prominent constituent.

Four small shafts now collapsed are on the south or hanging-wall at the western end. An ore shoot six to eight fathoms long appears to have been worked at 110 to 120 fathoms, and de-watered by men for 60 fathoms into a cistern, and the reminder 70 fathoms by two horses working 6 hours per day. This is now totally flooded.

The dumps have been carefully picked, and any ore cobbed out. There is much barytes in the dumps of excellent quality, but very inter-grown with calcite.

MIDDLESHOP MINE

Middleshop Mine lies to the east of, and adjoins Whitesmith Mine, and also appears not to have been worked since it was abandoned by The York Buildings Co.

It is at an altitude of 790 feet above Loch Sunart, with the most prominent working on the main vein a little west of the junction with the Armstrong Vein. The direction of the main vein is practically due east of west, the dip is to the south, and is very steep. The sketch shows the character of the vein as it was in 1919 in an open cast working to the west of the main workings, this is now collapsed and water filled.

The country rock on both walls is granitic gneiss, made up mostly of pink orthoclase and biotite, and has only a very small foliated characteristic. Only a few yards away to the south, normal granite can be seen outcropping as a rocky hummock. A one foot wide dolerite dyke runs parallel to and adjoins the vein on the hanging or south wall side. [58]

The filling consists of seven distinct bands of which two are barytes. The one adjacent to the foot wall is the only one with any lead visible, three appear to be made up of completely altered porphyritic olivine dolerite associated with pink orthoclase. The total width of the vein here is 7 feet 8 inches.

The Armstrong Vein splits from the main vein and takes a direction of 20º west of north with a steep dip to the south, it has a width of four feet with a filling principally of calcite with embedded crystals of galena, some barytes,

and a small quantity of blend, there is also iron pyrites, brewsterite, harmotome, and strontianite, but those occur rarely.

A good deal of work has been carried out in Middleshop mine with the workings on the main vein stoped out to the surface in places. This has also occurred in the Armstrong Vein. There are no old plans of this part of the mine, but it is my belief that the Armstrong Vein workings drain into the Grand Level, and that the main shaft in Middleshop Mine extends to the Grand Level also. The old dumps are uniformly poor, and the remains of the smiddy can still be seen adjacent to the mine.

BELLSGROVE MINE

Bellsgrove Mine adjoins Middleshop on the east, and is at an altitude varying from 606 to 920 feet from Loch Sunart. This, the major part of the workings, lies in the main vein in a direction a little south of east, and north of west up to the great whin dyke, and from there tends south east, it re-appears in the bed of Strontian River just below Ceann a Chreagain, with a width of 8 to 30 feet, and a dip to the south, this mine produced the bulk of the ore.

The western, or Clashgorm, section has been extensively stoped out to the surface, and all the payable ground above the Grand Level worked out. On the main vein gneiss occurs on the north or foot-wall and granite on the south or hanging wall, the vein filling consists mainly of calcite with some barytes much inter-mixed with fragments of country rock and sparse masses of galena.

The fine piece of work known as the Grand Level consists of a cross cut adit (marked as Middleshop Adit on the map) whose portal is 233 yards north of Bellsgrove Lodge, 591 feet above sea level, and heads in a northerly direction, it strikes the main vein in the Clashgorm section at a distance of 420 yards from its mouth, some 185 feet below the surface. From here it branches west for approximately 300 yards to Middleshop Mine and east for 425 yards, this branch ends under the beginning of Bellsgrove open cast workings. The cost of driving this [59] level prior to 1828 was £6 a fathom. The cross cut is in granite and in perfect condition, but is run in at the head, but still passable by crawling.

The dumps opposite Bellsgrove Lodge appear to have come from the Bellsgrove section of the mine, but is very poor in lead content.

The Bellsgrove Engine Shaft which is still in fair condition, was sunk by The York Buildings Company to 60 feet below the Grand Level, and a further 120 feet by Captain John Barratt's Company, giving a total depth from the surface of 355 feet. Nearly all the payable ground in this mine has been stoped out, and Captain John Barratt reported in 1852 that although large quantities of ore had been removed it was of very poor quality, and on extending the Grand Level no ore was met with. The only record of how rich this part of the mine was comes from the Strontain Estate Account Book

for 1854 which gives a figure of 26.6% of galena per cubic fathom from Kennedy's Drift (apparently near the engine shaft).

The dump from Mr Robertson's efforts show very poor results, consisting mainly of greyish - green rock, a completely altered porphyritic olivine dolerite containing nests of calcite and normal black dolerite, this would indicate two dykes of different ages in close proximity. The dumps also contain pink gneissose granite, and brecciated calcite barytes vein - stuff. The vein at the bottom of the engine shaft and in Clashgorm is remarkable for producing beautifully crystallized specimens of Harmotome (Hydrous silicate of alumina, baryta and potash) also calcite in crystals of very varied and unusual habit.

To the east of the Bellsgrove Engine Shaft is the open cast workings of the Bellsgrove Mine, this extends for over 300 yards and varies in depth from 20 to 110 feet, and in one place is as much as 651 wide.

There appears to have been numerous large horses of gneissose granite in the vein, and at the eastern end a dolerite dyke 19 feet wide crosses the vein at right angles, and is of normal unaltered dolerite and does not appear to have effected the direction of the vein in any way.

Harmotome and brewsterite are also found on the walls of the open cast, however brewsterite is much rarer than at Whitesmiths. East of the great dolerite dyke the vein has also been worked open cast, and consists principally of barytes spotted with galena in places, it has been worked in this fashion as far as Bellsgrove Loch (Oliphants Dam), on the south side the enclosing rock is typical gneiss, and beyond the dam and further east the vein ins never been proved, but reappears [60] in the bed of Strontian River.

There is an adit marked on a map drafted 1847 as Bellsgrove Adit, but on investigation only extends 80 feet, and there appears no documentary evidence apart from the map of any such adit being dug.

Near Bellsgrove Lodge (formerly the mine managers house) there was a smelter with two scotch hearths, this was used for the whole group of mines. Later the smelt mill was in the village of Strontian in the building now occupied by the Post Office.

Water was brought to both Bellsgrove and Whitesmiths in the early days by a series of dams on the upper slopes of the hillside, and joined by a long leat, the line of which can still be seen.

FEE DONALD MINE

Nearly two miles north east of Bellsgrove Lodge and on the west bank of the Allt Fee Donald Burn (a tributary of the Strontian River) is Fee Donald Mine. It is about 4¾ miles from Strontian and on the route of a nature walk.

Five veins have been proved and are called Smiddy Vein, Cross Vein, Level Vein, High Vein and Antimony Vein. Smiddy Vein appears to be the only vein on which extensive work has been carried out, but as this is the only one now accessible (the rest are flooded), and as no old plans seem to exist then this is pure conjecture, but by the size of the dump it would tend to be borne out.

The major work was carried out by The Fee Donald Mining Company from 1852 to 1871, and with few records it is difficult to say how they went on, but it appears very little ore was removed.

The Smiddy Vein has a direction of 25º south of east and dips north at an angle of 77½º from the horizontal, with a width of about four feet, it has been worked for about 290 yards, and at the western end is intersected by a vertical dolerite dyke. The other side of the dyke the vein seems to be lost. The enclosing rock is granite with pink orthoclase being much in evidence, and gneiss, which has a strong granitic appearance. The vein filling is galena irregularly distributed in barytes and calcite, some quartz is also present (which is conspicuous by its absence in all other mines). The silver content in the galena is about 2.8 ozs per ton. As with the other mines, barium zeolite harmotome is present and is indicative of hydrothermal action.

The plan and section of Smiddy Vein is dated 1868, and a good deal of decay has gone on, but I have not done a full underground exploration [61] of this section yet. It appears, however, that with such systematic mining all workable ground seems to have been worked out.

Of the other veins all dumps were checked, but very little was found and no antimony at all was traced.

There are signs of the old washing floors, a wheel.house, and sundry other building of which little is known.

ACKNOWLEDGEMENTS

My thanks to the institute of Geological Sciences, The Department of Agriculture and Fisheries for Scotland, The British Museum, Air Photographs Unit, Scottish Development Department, The Scottish Records Office, and to Bill Harvey for providing, some stimulating information.

BIBLIOGRAPHY

1. *Report on the Strontian Mines, Sunart Estate, Strontian, Argyllshire*, Dated 10-1-1919.

2. Murray, D. *York Buildings Co.*, 1883.

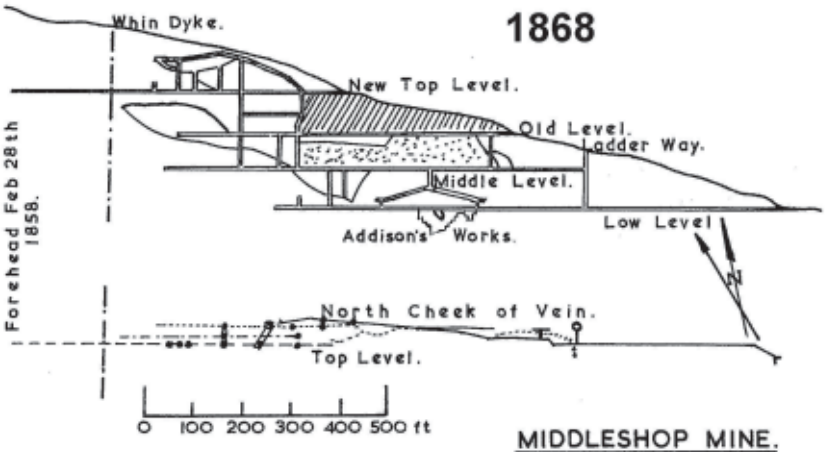
3. Murray, Sir Alexander *The True interest of Great Britain, Ireland and our Plantations*, 1740.

J.G. Landless,
Cliegh Mill Cottage,
Kilmore,
OBAN
Argyllshire

PLAN & SECTION OF

FEE DONALD LEAD MINE

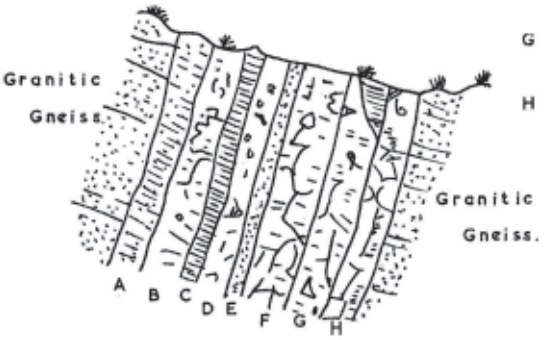
1868



STRONTIAN MINES

SUNART ESTATE

ARGYLLSHIRE



MIDDLESHOP MINE.

A Dolerite dyke(unaltered) 1 foot wide.
B Greenish altered dolerite & pink orthoclase 1ft.6ins.
C Barytes 5inches.
D Pink orthoclase & a little quartz- 8 inches.
E Greenish rotten much altered dolerite 5 ins.
F Highly silliceous rock, containing patches of pink orthoclase 2 feet.
G Greenish altered dolerite containing much pink orthoclase 1 ft. 8 ins.
H Barytes, calcite, greenish altered dolerite containing embedded crystals of galena 1ft.