

# THE NON-FERROUS METAL MINES OF SOUTH-WEST SCOTLAND

by

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## *INDIVIDUAL SURVEY SERIES*

*Publication No. 2*

*Published*

DECEMBER 1967

PRICE 10/-

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Manuscript:

Dated May 1967.

Published by:

The Northern Cavern and Mine Research Society  
5, Calton Terrace, Carleton Road, Skipton, Yorkshire.

Covers by:

Craven Herald Ltd.  
38, High Street, Skipton, Yorkshire.

Plates by:

Cansfield Bros. Ltd.  
140, East Parade, Bradford, 1, Yorkshire.

Published:

December 1967

Price:

Ten shillings  
10/0d.

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## INTRODUCTION

The south-west of Scotland is a somewhat remote part of the country, noted more for its agriculture and scenery than for its industries. It has never been of great importance as a centre of mining, nevertheless the scattered occurrences of metalliferous ores that have been worked from time to time are relatively poorly covered in literature. These notes set out to put on record those deposits which are known to exist and which have been worked or investigated in past times. There is no active mining in the area at present, though some small-scale mining continued as late as 1954.

### **Geography**

The area covered by these notes lies in National Grid 100-km. square NX., the country covered lying to the west of Dumfries and as far north as the northern limit of square NX; the southern limit being the coastline of the Solway Firth and the western limit that of the North Channel. The area covers most of Kirkcudbrightshire, all of Wigtownshire and a part of Ayrshire.

This is largely an area of wild moorland country in which the main roads are generally good, though few in number, the remaining parts of the country being remote and difficult of access. The valleys are fertile and the climate is relatively mild.

Railway communication in the area is not now as good as it was, the main line from Dumfries to Stranraer having been closed down, as have the branches to Kirkcudbright and Whithorn. The remaining lines are, on the east, that from Dumfries to Kilmarnock and Glasgow, and on the west, from Stranraer to Girvan and Ayr.

Much of the country, though being wild moorland, is relatively low-lying, but some of the mountains, especially those in which the granite masses occur, are fairly high. Merrick, near Carsphairn, is 2,765 feet above Ordnance Datum and the Cairnsmore of Fleet reaches a height of 2,329 feet, while the Cairnsmore of Carsphairn is 2,613 feet in height.

Rainfall in the area is high and this fact, combined with the structure of the country has led to the development of hydro-electric power as a local industry.

### **Geology**

The south-west of Scotland is largely occupied by Silurian and

Ordovician rocks, consisting of flags, greywackes and shales. These rocks have been intensively folded and the axes of these folds strike generally to the north-east. Several large intrusions of granite occur in the area, as may be seen from the map attached to these notes.

To the north of the area covered, Devonian and Carboniferous rocks of the Central Lowland area occur, while in the extreme south, along the shores of the Solway Firth, occurs a narrow strip of Lower Carboniferous rocks.

Around stranraer and in the Nith valley, at the west and east borders of the area, the older rocks are overlain by red marls and sandstones of Triassic age.

### Mineralisation

The metalliferous ores and their associated minerals which have been found in the area occur in normal mineral veins, most of which lie along lines of faulting or shear. Some of the faults have also been intruded by dykes of felsite, as at Blackcraig and Cairnsmore mines.

The mineralisation of the area is almost entirely associated with the granite intrusions and it may be seen from the map that the known mines mostly occur around such intrusions.

The primary minerals found in this area are:

Chalcopyrite	-----	$\text{Cu}_2\text{S} \cdot \text{Fe}_2\text{S}_3$
Galena	-----	$\text{PbS}$
Sphalerite	-----	$\text{ZnS}$
Pyrite	-----	$\text{FeS}_2$
Arsenopyrite	-----	$\text{Fe As S}$
Niccolite	-----	$\text{Ni As}$ (and nickeliferous pyrrhotite.)
Quartz	-----	$\text{SiO}_2$
Calcite	-----	$\text{CaCO}_3$
Barite	-----	$\text{BaSO}_4$ (Commercial product, is barytes.)
Dolomite	-----	$\text{CaCO}_3 \cdot \text{MgCO}_3$

In the shallower parts of some of the veins, secondary minerals occur. The commonest of these are:

Cerussite	-----	$\text{PbCO}_3$
Pyromorphite	-----	$\text{Pb}_5\text{Cl}(\text{PO}_4)_3$

Malachite	-----	$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
Azurite	-----	$2 (\text{CuCO}_3) \cdot \text{Cu}(\text{OH})_2$

## History

It is possible that mining for copper ores commenced at an early date in south-west Scotland, but records are lacking. Apart from this possibility metal mining in the area was a relatively late development, and lead mining seems to have commenced during the 18th. century. Lead and copper mining continued at intervals from this time onward until about 1920., reaching a peak of activity between 1850 and 1860. Zinc mining has never been developed to any extent, though some zinc ore has been produced from time to time from the lead mines, and zinc ore is known to occur in some quantity in some of the veins. The mining of barytes commenced in 1856., the barytes being produced as a by-product of lead mining at that time. Barytes alone was first mined about 1880., and the mining of this mineral has been continued intermittently until 1954., though the output from this area has never been large.

## Output

The total output of ores from this area is not known, since records are far from being complete in many cases. The figures given below are therefore considerably short of the actual total, but will give some idea of the scale of mining in the area.

### Recorded Output figures for south-west Scotland

Lead ore concentrates	-----	25,562 long tons.
Zinc ore concentrates	-----	1,339 " "
Copper ore concentrates	-----	242½ " "
Barytes	-----	2,877 " "*

\* In the case of barytes the figures are complete only up to 1920., and production since that date has not been included here.

## The future of the industry

Certain possibilities for further work remain at several of the mines, though no large-scale resources are known to exist. large areas of country which have been somewhat inaccessible remain to be fully explored however, and it is quite possible that some reasonably extensive deposits await discovery in this region. On the other hand those deposits which have been discovered and exploited up to the present time have usually proved to be rather patchy in values, which

has rendered their development a chancy business.

Some resources of zinc ore, together with a little lead ore probably remain at Blackcraig, but in this case bad ground would make further development an expensive process, as was discovered by a firm which made such an attempt between 1917 and 1920. Unexplored ground for lead and zinc ores remains at the Wood of Cree and Bargaly mines. In the latter case a promising deposit was being explored in the 1850's, but wet conditions prevented full development at that time. Pibble mine contains further possibilities for lead-zinc-copper ores, especially since the ores at this mine were reported to be fairly rich in silver, (up to about 70 ozs. per ton of ore,) but the resources are probably only on a limited scale.

Further occurrences of barite are also known, especially at the Cairnsmore mine, where only a very small amount was produced while the mine was being worked for lead ore, though the mineral was reported to occur in some quantity in the vein. Other possibilities for this mineral remain along the Solway coast between Kirkudbright and Auchencairn.

To sum up, there remain fair possibilities in south-west Scotland for further small-scale mining of barytes and lead-zinc ores, while some resources of copper ore also remain, though it is doubtful whether this last ore exists in large enough quantities to be an economic proposition under present day conditions.

## DETAILS OF THE MINES

In the following section each mine is first given its commonly used name, followed by any alternative name or names by which it has been known. Next the area or parish in which the mine is situated is named and the National Grid reference to the approximate centre of the mine area is given. The county in which the mine lies is indicated by an initial, thus; A = Ayrshire, W = Wigtownshire and K = Kirkudbrightshire.

The mines have all been numbered for convenience of description, and the sites are indicated and numbered on the accompanying map.

### 1.) **KNOCKIBED**

Also known as KNOCKIBAE.                      New Luce.                      NX/188664                      W.

The mine lies about 1½ mile north-east of New Luce and about 1 mile north of Burnshanan.

The vein averages about 3 feet in width and strikes north-east in greywackes of Ordovician age. Mineralisation is mainly calcite, in which galena and sphalerite occur.

The mine was first worked in the 18th century, when a few hundredweight of ore was obtained. Some further work was done about 1800., but again little more than limited trials appear to have been carried out. In 1866., a company was formed to work the mine and most of the work was done at about this time.

The mine was developed through a level which was driven for some distance north-eastward along the vein, being connected to the surface at intervals through raises or shafts. The mine was offered as being for sale in the Mining Journal of 2.8.1851., but no further details of its history have been found, nor are any figures of output available.

## 2.) SILVER RIG

Also known as SILVER RIGGS or SILVER RIDGE.

Minnigaff Ph.

NX/377729 (Approx.)

K.

The mine lies about half a mile east of the river Cree and about 2 miles north-west of the Wood of Cree mine.

The vein averages about 5 feet in width and strikes a little north of west. It occurs in greywackes of Ordovician age and the vein filling is mostly broken country rock, with quartz, in which galena and sphalerite occur, associated with some chalcopyrite and pyrite.

The mine was developed about 1870., but the workings are not very extensive. A level was driven to the east along the vein and some shafts were sunk to a depth of about 90 feet. Little remains at the site of the mine now, but the remains of a waterwheel indicate that pumping was carried out by this means. No records of output have been seen.

## 3.) COLDSTREAM BURN

This mine was formerly called WOOD OF CREE, but this name was later adopted for the mine to be described next.

Minnigaff Ph.

NX/387697

K.

The mine lies on the south side of Coldstream Burn, about 600 feet east of its confluence with the river Cree and about 3½ miles north-west of Newton Stewart.