

LANCS

"Coniston" & "Furness" locs
indexed under these headings
Coalfield

RFG Grayson, B. Jolley, & A.J. Chapman, "The Distrib. of
Pb-Zn-Cu-F mineralisation in Lancashire"
The Amateur geologist — (v1978) pp16-21

Iain Williamson:

Alum

Lancs

Alum Scar mine ("alum shale")

Amphibole

Lanes

Oomskirk (greenite?) (Erratic)

Anglesite

Lances

Angleranke
Skeleron M's

Annabergite

Coniston M's

Lanes

Arsenopyrite

Lancs

Coniston M's

Tilberthwaite M's, Con.

Wetherlam M., Con.

Seathwaite M's, Con

Bonser V., Con.

Paddy End V., Con

Levens Water M's, Con

Asbolite

Lanes.

See also wad.

Little Crosby

Liverpool

Augite

Lancs

Apple tree worth

Aurichalcite

Lancs.

Syker (Lortendale Brook)
Anglezarke (?)

Azurite

Lancs

Appletreeworth

Sea wood shafts

Black Scar M, Coniston

Swanley Pot, Nether Kellet, Carnforth

Baryte

Lancs

Anglezarke

Cribden

Goodshaw Hill

Lead mines Clough

Thieveley Farm

Skeleton M's

(? Liverpool (Grimshaw Delf))

Colne

Appletreeworth

Clitheroe

Bismuth, native

Lancs

Coniston Mts.

Bonser V., Coniston

Paddy End V., Coniston

Bismuthinite,

Lancs.

Coniston M's.

Bonser V, Coniston,

Paddy End V, Coniston.

Bituminous minerals,

Lancs

Lancs (Coal)

Alum Scar mine (bituminous shale)

Ormskirk (petroleum)

Wigan, (scleretinite; coal)

Downholland (petroleum)

Churchtown ("jelly peat")

"Blaubleibender Covelline" Lanes

Seathwaite M's, Coniston

Bornite

Lancs

Anglezarke

Seathwaite M's, Coniston

Brochantite

Lance

Paddy End, Coniston

Cadmium sulphide, amorph. Lances

Anglezarke(?) (greenockite-hawleyite)

Calcite

Lancs

Anglezarke

Coniston mines

Stank Fe Mls, Furness

Warton Crag

Skelton Mls

Huyton

Bolton

Applethorpe

Bonser V., Con

Lindal Moor Mls

Silverdale

Swanley Pot

Census site

Lancs

Anglezarke

Skelton Ms

Thirveley M

Chalcocite

Lanes.

Anty Cross M, Furn.

Chalcopyrite

Lancs

Anglezarke

Coniston mines

Bonser & Tridd V's, Con

Greenburn M., Con

Seathwaite M's, Con

Tilberthwaite M's, Con

Paddy End V, Con.

Levens Water M., Con

Appletreeworth

Silverdale

Warton Crag (yed
into haematite)

Swanney Pot

Chenevixite

Lanc

Swanley Pot(?) [very doubtful?]

Chlorite

See also penninite

Lancs

Coniston mines

Seathwaite Mts, Coniston

Applethorpe worth

Bonser V. Con

Chrysocolla

Lanes

Coniston M's

Black Scar M (Coniston)

Cobaltite

Lancs

Seathwaite M's, Coniston

Copper minerals (unspec)

Lancs

Anglezarke

Coniston Mts

Bonsae & Triddle V's, Con ("black oxide" - ? melaconite)

Greenbush M, Con ("oxide of Cu")

Seathwaite M's, Con ("black Cu sulphide")

High Haime, Furness

Sea Wood Shaft, Furness

Warton Crag

Silverdale (Heald Brow?)

Cosalite

Lomcs

Bonser V., Con

Covelline

Lancs

Seathwaite M^ls, Coniston

Cuprite

Lancs

Tilberthwaite M's, Con
[Scout Q - ψ 'd to malachite?]

Warton Crag

Digomite

Lancs

Seathwaite Mls Coniston

Black Scar M, Coniston (?)

Djurleite

Lancs

Seathwaite M/s, Coniston

Dolomite

Lancs

Anglezarke

Coniston M's

Skelern M's

St. Helens

Bonser V., Con

Lindal Moor M's

Erythrone

Lancs

Coniston mines

Paddy End V.

Fluorite,

Lancs

Ulverston, F

Skelton M's

Clietheroe

Galena
(+ = assumed)

Anglezarke

Coniston M's

Bonsere Triddle V's, Con

Cribden

Goodshaw Hill

+ Lead mines Clough

Thieveley Farm

Skelton M's

Thatto Heath

Lancs

Mick of Rendle

Levens Water M, Con

Swanley Pot

"Goethite,"
"Limonite" (L)

Lancs

Anglezarke (L)

Ulverston, F (L)

Skelton M's (L)

Swanley Pot

greenockite

Lance

See also Cadmium sulphide, amorph.

Anglezarke (?)

Grunerite

Lance

Omskirk(?) (Erratic)

Gypsum

Lancs

Levens hulme Clay pit
Medlock Vale
Warton Crag

Haematite

Lincs

(See also Iron minerals (unspec))

Dalton-in-Furness, F

Lindal Moor Fe M's, F

Stank Fe M's, F

Ulverston, F

Warton Crag

Liverpool

Coniston Ms

Seathwaite M's, Coniston

Appletreeworth

greenburn M, Con.
Lindal Moor 'M's
Silverdale

Halite

Lancs

(? Liverpool (St James' Cemetery) - pseudomorphs)
Fleetwood (?)

Hawleyite

Lancs

See also Cadmium sulphide, amorph.

Anglezanka (?)

Hemimorphite

Lancs

Anglezarke

Dinkling Green

Hydrozincite

Lancs

Anglezarke (?)

Elmenite

Lancs

Seacombe Ferry ("Iseline") [Error for Cheshire]

Iron minerals (unspec.)
(+ = assumed)

Lanco.

Anty Cross M, Furn
Askam Iron Mines, Furn
+ Chapmans Lot Pit, Furn
Crossgates Fe M's, F.
Crown Q, F
Elliscales Fe M's, F
Eure Pits Fe M's F
Goldmire Q, F
+ Lindal Core Pits, F

Lindal Moor Fe M's, F
Mousell Fe M's, F
Mouzell Fe M's, F
Newton Fe M's, F
Park Fe M's, F
+ Pennington Pits, F
+ Poaka Open Works, F
+ Rawlinson Pit (Lindal Moor) F
+ Rawlinson Pits (See Lane) F

Pto

Sandscale Fe Mls, F

Stainton-with-Adgarley Fe Mls, F

Stank Fe Mls, F

Thwaite Flat Fe Mls, F

West Newton Fe Mls, F

Whitriggs Fe Mls, F

+ Woodhead Pit, F

Yarlsdale Fe Mls, F

Silverdale (Fe ore " ?)

Joseite

Lancs

Bonser V., Con

Laitakarite,

Lancs.

Bonser V., Con.

Langite

Lancs

Paddy End, Coniston

Leadhillite

Lancs

Anglezante (?) ("leadhillite - susannite")

Lepidocrocite

Lancs

Ulverston, F.

Magnetite

Lanes

Coniston M's

Greenburn M, Con

Bousser V, Coniston

Malachite

Anglezarke

Coniston mines

Tilberthwaite M's, Con

Anty Cross M, Furn

Sea-wood shafts, F

Scout Q.

Warton Crag

Thaith Heath

Seathwaite M's Coniston

Lances

Paddy End, Coniston

Black Scar M, Coniston

Dow Crag, Coniston

Silverdale
(Heald Brow?)

Swanley Pot

Manganese min's, unspecified Lancs

Swan-ley Pot ("manganese sp.") [oxide/s?]

Marcasite

Lancs

Huyton
Coniston M's

Applethorpe

Natrolite

Lancs

Dalton-in-Furness, F

? Ormskirk (Erratic) (Burscough) (→ thomsonite)

Niccolite

Lancs

Coniston mines

Penninite
See also Chlorite

Lancs

Coniston M's

Posnjakute

Lanes

Paddy End M., Coniston

Pyrke

Lancs

Alum Scar mine

Anglezarke

Coniston M's

Tilberthwaite M's, Con

Skelton M's

Huyton

Colling Green

Pendleton

Patricroft

John Pit, Standish

Bonser V, Coniston

Ridby End V, Coniston

Seathwaite M's, Conist

Levens Water M, Con.

Weverston (?)

Pyrolusite

Lances

Apple tree worth (dendrites)

Stank M

Pyromorphite,
Anglezarke (?)

Lancs

Pyrrhokite,

Lancs

Coniston Mts.

Bonser V., Con

Quartz

Lanes

Coniston mines

Greenkenn M, Con

Tilberthwaite M's, Con

Sea Wood shafts, F

Ulverston, F

Warton Craig

Patricroft

Pendleton

Seathwaite M's, Const

Appletreeworth

Bonser V, Con

Lindal Moor M's

Swanley Pot.

Siderite

Lanes

Anglezarke

Skelton M's.

Huyton

Seathwaite M's, Coniston

Smallite

Lancs

Coniston mines

Smithsonite

Lancs

Anglezarke

Dinkling Green
Skeleron M's

Sphalerite

Lancs

Anglezarke

Coniston M's

Bonsere Triddle V's, Con

Skelton M's

Thalfo Heath

Letens Water M, Con

Sphene

Lancs

Butsough

Stilpnomelane

Lanes

Coniston mines
Bonser V., Con.

Sulphur

Lanes

Anglezanke (?)

Susannite

Lancs

Anglezarke (?) ("leadhillite-susannite")

Tennantite

Lancs

Levens Water M^g, Conistone
Paddy End V., Conistone

Tetrahedrite

Lanes

Coniston mines

Tilberthwaite m.

Thomsonite

Lancs

Burscough } same loc?
Omskirk }

Vermiculite

Lanes

Walney Is

Vivianite

Lanico

Toxteth Park
Elswick (?)

Wad

Lancs

See also asbolite

Toxteth

Coniston M's

Witheute

Lancas

Anglezarke

Wittichenibē

Lancs

Seathwaite M's, Coniston

Pleasington: SD 6425 ca SD 64 27

ALUM SCAR MINE, Pleasington, Lancs.

C.W. Loch, Mining Mag. (1946), 74, 290. Full descrip. Very old, overgrown dumps, ca 1 mile N of Pleasington village (W of Blackburn). "Alum shale" dug, from which alum made (not extracted) by chem. process. It is a pyritous & bituminous shale.

195; 101

SD 62-64 16-19

ANGLEZARKE

near Chorley, Lancs

(I) 6" SD 61 NW
1" OS 75

Tooke: "Mineral Topography of grt Britain" (old) p. 46. Witherite in vein of galena. "ANGLESARK"

TM Hall "Mineralogists Directory" (1868) p 63. Pb mines. Baryte; galena; witherite.

Mawe: "Mineralogy of Derbs" (1802) p 131: "Near Chorley, 25 miles N of Wigan (sic!) are lead mines, not now worked, belonging to Sir F. Standish. Produced the witherite, or "aerated barytes". Sunk in the grit or sandstone. Closed ca. 15 yrs ago, now filled with earth running in, or water".

Spec Rep Min Res GB Bantz & Witherite (1916) p 35. Anglezark Moor. Abandoned ^{Long.} lead mine, described in Mem Geol Surv "The Geol of the Burnley coalfield" p 173 (1875). On E side of the Liverpool waterworks, near Chorley. Two lodes. ^{Both fault veins in Millstone grit.}
(i) Northern - along Black Brook, exposed in old sandstone quarry near white Coppice. Lead only, near surface - "mainly anglesite" (!!)

(ii) Southern: NE by SW along River Yarrow. Vein turned over, but workings not extensive. Numerous

Numerous small dumps $\rightarrow$ galena; cerussite; anglesite; a little blende; and copper ore; baryte & witherite (total < 1 ton on dumps). "Barite of fair quality, slightly iron stained, not hard, with some streaks of lead. Witherite extremely good white but occasional specks of blende occur."

Dana 6th Ed., p. 284. Fibrous witherite.

RSWB 11/12/60: See Field notes: Vein trending WSW in N face of White Coppice ^{outcrop} quarry at SD 61 NW 6228189, in grit. Vein is "drusy & cavernous", the druses lined with baryte xls. colourless, rhombic tablets ("witherite-indicator" habit). White Coppice Quarry, Anglezarke Moor, Heapey, Lancs. A few yards E of the outcrop a level ~~run~~ trends N towards the vein from the quarry face.

RSWB 12/3/61. See Field notes, p. 145: LEAD MINES CLOUGH: baryte ("witherite-indicator" habit); fibrous witherite; calcite; traces chalcopryite; galena; ?cerussite; ?anglesite; blende; pyrite. ?Adit at 63051645?

WHITE COPPICE: as before
"TRIAL SHAFTS" at 62x17y. v/s. shallow? (STRONSFREY BANK) Bell P.b.

ANGLEZARKE Lanes (II)

C.W. Loch, Mining Mag. (1946) 74, 290. Descrip. and plan
of the mines from Trans M/c Lit & Phil Soc, 1st Series
Vol 3 p598 (1790) (See Plans File). Lead Mines Drough
group: On dumps, small quantities of galena;
cerussite; anglesite; a little blende & copper ore.
Baryte & withenite, sometimes streaked with lead.
White copper area. Fault vein. Baryte & some
galena on dumps.

Worked: ca. 30 years from 1689.

1781-1790 by Sir F. Standish. Adits driven.

1823 attempt. Abandoned.

I.A. Williamson The Mining Mag (1963) 108 133-9. (with map). Detailed
& photos

history; discov of witherite: Withering's original account (Phil Trans Roy Soc. 74 293-311 (1784)) quotes from a lead mine at Alston Moor (still quoted in Dana), but J. Watt ["Mem Lit & Phil Soc. Manc" 3 598-609 (1790)] says Withering told him the spec. had been coll from Anglezarke - according to De Rance (Geol Mag 10 64-74) from Stronstrey Vein (but no source of inform. given!).

Geol: Veins & joint fillings in R₂ Namurian Middle Grits.

① WHITE COPPICE. 2 E-W veins along Dean (Black) Brook. N vein outcrops in White Coppice Q (623189) - up to 8' thick. Adit in Q intersects vein at 32 ft. Adit from Dean Brook at 628189 to 3' vein of "weathered material with a little galena" Adit goes 82' with a staple shaft at 62' where vein displaced by a N-S fault. S vein up to 3' thick of weathered barytes & gozzan, outcrops of S of Brook at 625188

ANGLEZARKE, Lancs (III)

A short NE vein worked by a group of shafts at DRINKWATERS (635191)

② STRONSTREY BANK. Short NE vein at 623176 with at least 11 shafts. Noteworthy for large xls dolomite & siderite on dumps. Probably continuous with Drinkwaters V, as 2 Ba veins, 1' & 2" thick outcrop between them near 629186 near where a large (ca 18" sq) block of galena found in the stream.

③ LEAD MINES CLOUGH. Most mineralised & mined section. Complex of veins & shafts. Ba minerals zoned, witherite above, barite at depth. Ores distributed in veins in irregular nodules & clusters.

Mineral list. L = Lead M's & W = White Copp; S = Stronst. Bank.

Galena, common, LSW. Sphalerite, common, L S. Pyrite
common, L. Chalcopyrite, f. common, L. Bornite rare
L (small grains). Malachite, rare, L. Siderite
rare, WS. Cerussite, common, LSW. Anglesite
rare, LSW. Smithsonite, rare, L. Hemimorphite
rare, LW. Baryte, common LSW. Witherite,
f. common, LSW. Calcite, f. common, LW.
Dolomite, common WS. rare A [Presumably means L].
Limonite, common, LSW.

RSN (2000) 37, 10

K. Snell (1984) BMSN 12

ANGLEZARKE, Lancs. (IV)

RSN (2000), 37, 10. 26/3/00 H. Critchley - "visual
ident." LEAD MINES CLOUGH: ⁶³⁰163 Witherite,
baryte, sphal., galena, calcite, aurichalcite,
hydrozincite, malachite, greenock-hawleyite,
[amorph CdS], cerussite, sulphur, anglesite,
chalcopry, smithsonite, hemimorphite.
"In the past I have found pyromorphite
and leadhillite-kusaanite".
WHITE COPPICE Q'y: Baryte.

Mining by Moonlight: the Story of Witherite

Witherite is a rare mineral found at Anglezarke. To the early lead miners it was worthless and was tipped on the spoil heaps. By 1700 the naturalist Dr. Leigh was drawing attention to the purgative properties of this "spar" and around the middle of the eighteenth century the celebrated potter Josiah Wedgwood was experimenting with it in the manufacture of his Jasper ware. He attached great importance to witherite and tried to conceal his source. He was not secretive enough, for German porcelain manufacturers soon became aware of the Anglezarke mines.

In the early 1780s two Frenchmen visited the mines and collected witherite from the dumps. Following this visit James Smithells, a local tenant farmer, was often "observed on moonshine nights picking something off the waste". It was found that he had been engaged for some time collecting witherite for despatch to Germany. For this secret trade he was paid five guineas per ton of mineral.



It was not until 1783, when Dr. Withering, a Birmingham chemist, published a paper, that "terra ponderosa", as he called it, was first described in detail. In recognition of his work witherite now bears his name.

Follow the Country Code, and in particular:-
Guard against all risk of fire.
Help to keep all water clean.
Take your litter home.
Use gates and stiles to cross walls and fences.
Fasten all gates.
Respect the life of the countryside.

Further information about the area may be obtained from:-

Great House Barn Information Centre,
Rivington Lane,
Horwich, Bolton
BL6 7SB
Telephone: Horwich 691549

More detailed information about the geology of, and lead mining in, Lead Mines Clough can be found in:-

Loch C.W. 1946. "Forgotten Mines of Lancashire". Mining Magazine, 74, 290-294.
Williamson I. A. 1963. "The Anglezarke Lead Mines". Mining Magazine, 108; 133-139.
Williamson I. A. 1977. "Geological routes around Wigan." (No. 1 White Coppice and Anglezarke). Wigan and District Geological Society.
Ireland R. J. 1984. "Lead Mining on Anglezarke" (in press).

Further information on the minerals and geology of the area can also be obtained from Bolton Museum, where a collection of minerals from the Anglezarke area is on display.

How To Get There

Lead Mines Clough can be reached on foot either along the track from Alance Bridge (at the north east corner of Yarrow Reservoir) or by the track from Jepsons Gate, off Moor Road. The nearest car park is half a mile away at Anglezarke Quarry, and great care should be taken when walking along the narrow roads to reach either access point.

Keep your dogs under close control.

The Rivington Interpretation Team would like to thank Dr. A. Raistrick and Mr. R. J. Ireland for their assistance in preparing this leaflet.

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A GUIDE TO LEAD MINES CLOUGH



Historic Lead Mining on Anglezarke Moor

History of the Mines

The earliest record of mining in Lead Mines Clough dates back to 1692 when Sir Richard Standish of Duxbury, the landowner, signed an agreement with Peter Shaw of Rivington and others. This partnership was against the wishes of Sir Richard's wife Lady Margaret, who thought the miners would cheat her husband.

On the death of Sir Richard in December 1693 Lady Margaret took his place in the partnership. Mining continued for four months during which Lady Margaret made £20–£25 a day profit from the mines. Thinking that she might run the mines herself and make even larger profits Lady Margaret threw the miners out. When the Sheriff complained she is said to have "cut up the engines, tools, etc. and turned a river into the mines". This led to a lengthy lawsuit which went to the House of Lords.

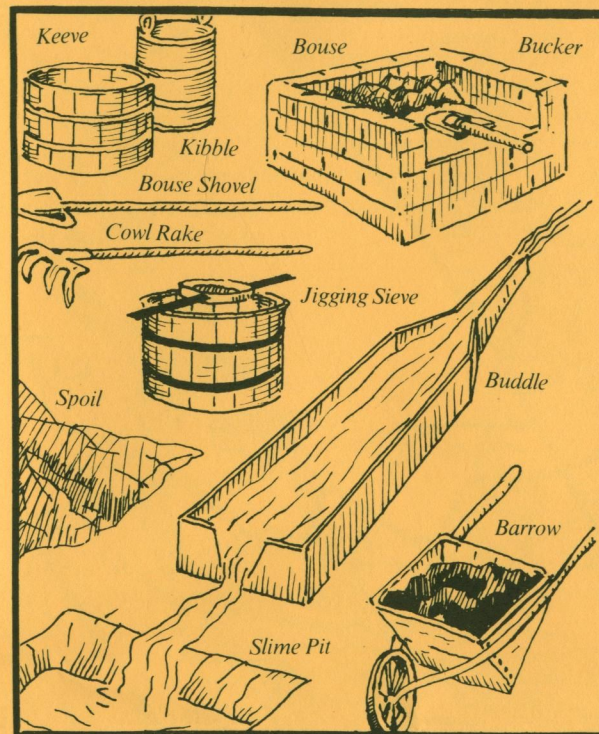
The mines remained closed until 1721 when Sir Thomas Standish (son of Sir Richard) leased them to Sir Henry Houghton of Houghton Tower. This venture was short-lived and by 1729 Sir Thomas was running the mines himself. In 1729 he approached the London Lead Company in an attempt to get them to take over the mines. After receiving conflicting reports from the mine agents they declined his offer; they did however purchase ore from the mines in 1731 and 1732. Little is known of what happened to the mines during the next 20 years, but the Clitheroe Mining Company purchased ore between 1753 and 1766.

Sir Frank Standish re-opened the mines in 1780; he dug a new drainage level and sank new shafts. Around this time there were between 10 and 16 miners employed and 73 tons of lead were produced in the two years 1788-1789. This was probably the most active period in the mines' history but labour problems and attempts to defraud Sir Frank led him to give up the venture.

The mines were not worked and fell to ruin until, in 1829, Frank Hall Standish granted a lease to John Thompson, an iron merchant from Wigan. Thompson spent several thousand pounds digging new deep trial shafts but he did not find new reserves of lead. In 1837 he surrendered his lease. The

mines were not worked again, even during the boom years of the 1850's enjoyed in other Pennine lead mining areas.

The shafts were filled in around 1930 to provide work for unemployed people in Chorley. Since 1982 some of the remaining features have been partially excavated and restored by the British Trust for Conservation Volunteers, under the direction of the West Pennine Moors Area Management Committee.



Processing the Lead Ore

A metal-bearing mineral occurring naturally in the ground in a workable concentration is called an "ore". The main mineral which was mined here was galena (lead sulphide). This occurs naturally in the veins mixed with other minerals including barytes (barium sulphate), witherite (barium carbonate) and calcite. It was necessary to separate the galena from these other minerals and from other waste rock before the ore could be smelted to produce metallic lead.



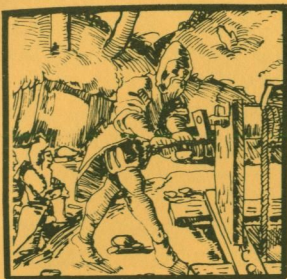
The material brought up from the mine and known as "bouse", was first hand-sorted to collect large pieces of lead ore. The remainder was then crushed to the size of peas using either flat-headed hammers known as "buckers" or by a roller crusher.

Lead ore was separated from the other minerals using a "buddle". This was a sloping surface or trough, over which water was continuously passed; crushed material was fed on to the top of the buddle and the heavier lead ore settled out whilst lighter materials were washed away. A large vat called a "keeve" may also have been used. This was kept one third full of water and material added one shovelful at a time, allowing the heavier lead ore to settle out at the bottom. Further separation of fine material may have been done in a jigging sieve.

Water used for washing the bouse still contained small particles of lead ore and so it was channelled into a slime pit; the lead ore particles settled out near the top of this pit. Periodically the pit would be allowed to dry out and the lead-rich silt dug out. The slime pit can still be seen on the site.

The collected ore had to be smelted with a fuel to obtain metallic lead. Lead may have been smelted in simple open hearths on hillsides around Lead Mines Clough, but during the later periods of working, ore was sold to smelt mills elsewhere.





EXPLORING

LEAD MINES CLOUGH

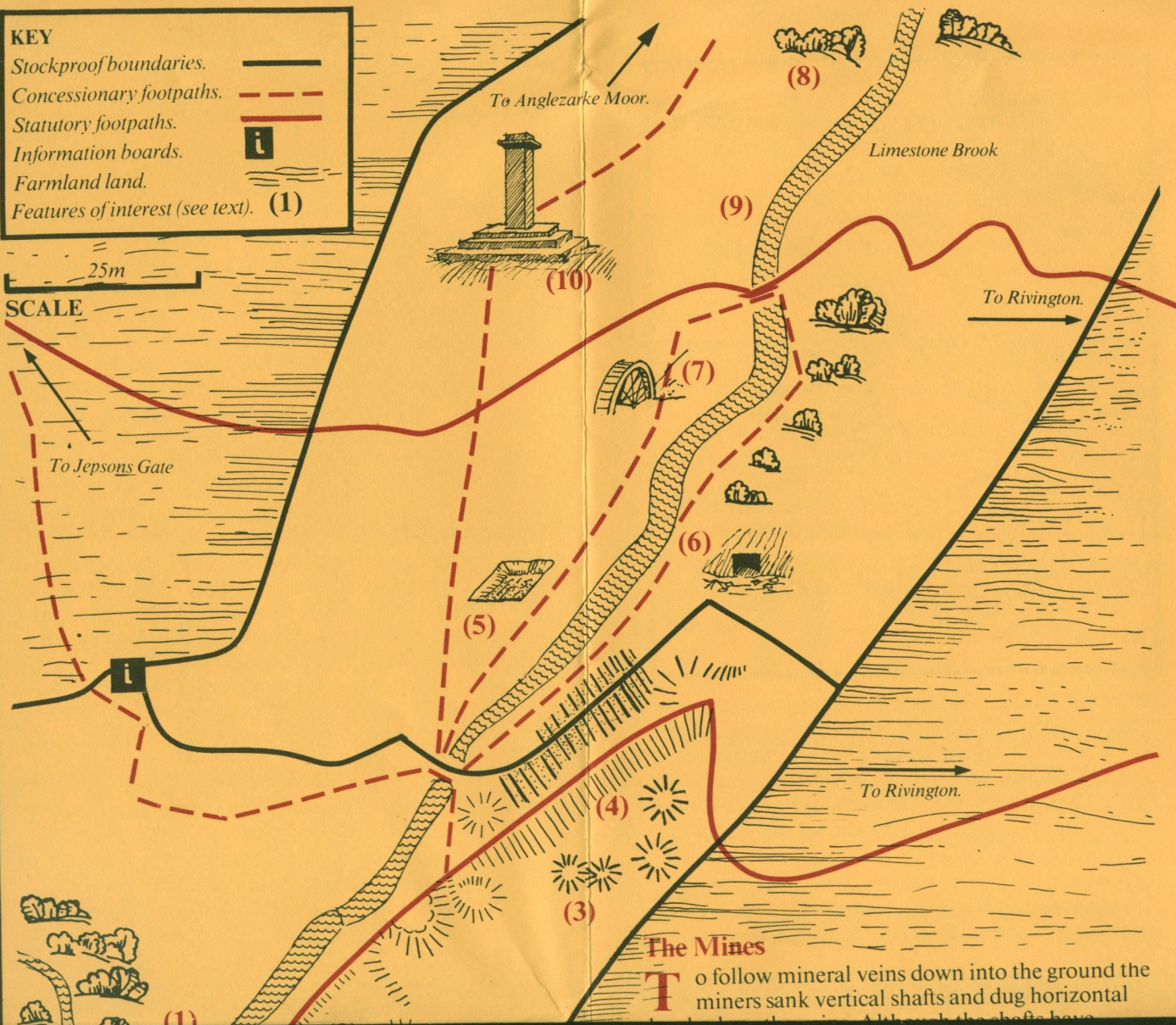


KEY

- Stockproof boundaries. ———
- Concessionary footpaths. - - - - -
- Statutory footpaths. ———
- Information boards. **i**
- Farmland land. ———
- Features of interest (see text). (1)

25m

SCALE



Draining the Mines

Much of the mining activity took place below the level of the brook; because of this the miners had to try to remove large quantities of water from the workings before they could mine the ore. To keep the mines dry pumps were installed to bring water up underground shafts, and then drained away along "soughs" (drainage tunnels) leading outside to the brook. A sough entrance (6) can be seen in the opposite bank of the brook. The sough drained water from a shaft, the top of which can be seen as a mound immediately above the entrance. It is now blocked a short distance from the entrance: please do not go inside as further roof collapses are possible.

The Waterwheel Pit

About 60 metres further along the path from the slime pit there is a fence enclosing a waterwheel pit (7) and a pumping shaft. For your own safety, please do not climb over this fence: old shafts can collapse. The waterwheel pit was probably constructed in the early part of the eighteenth century. It is large enough to have held a wooden waterwheel about 5.5 metres in diameter which was probably used to pump water from the shaft.

Water from a spring (8) was fed to the wheel in a "launder" (wooden trough). This was supported on a low stone wall, and nearer the wheel, on stone pillars to gain enough height to feed the water on to the top of the wheel. The wall (9) and several piles of stones which made up the pillars can still be seen.

The Mines

To follow mineral veins down into the ground the miners sank vertical shafts and dug horizontal

Water was fed on to the top of the wheel which was either overshot (turning in the same direction as the water flow) or backshot (turning against the water

1" 88

SD 24 92

APPLETREE WORTH, Broughton West,
Furness, Lancs

"The Appletreeworth area", "The Lake District" (1982)
106-114 The Cumberland Geol. Soc. p 113:

"Loc 19" - small adit and tip [near 246
928] has kidney haematite, white baryte,
chalcopyrite, azurite, smoky & clear
quartz xls. Unrecorded adit, prob.

pre-19th Cent.

At "Loc 24" [~242 923] Skellgill Beds
exposed, with grapholites & nodules of
marcasite.

Pyrolusite dendrites in nearby quarries

Also in vicinity augite-andesites, with
calcite, & amygdaloidal vesicles filled
with chloride.

BOLTON, Lancs.

Mr Stirrup Tr. M/C Geol Soc (1895) 22 ~~11/10/95~~ 267-268.

Exhibit: Large (1-2 cwt.) clay septarian concretions in roof of Doe Seam, FOGG'S COLL'Y, nr. Bolton, have beaut. x-lisations of lime [calcite] - white, often tinged with pink or rose.

BROWN'S HOUSES, Silverdale, Lancs.

See SILVERDALE

BURSCOUGH,Lancs.

See also ORMSKIRK

Warrington Min Soc members, 12/75 Superb
specimens, from a boulder [↔] erratic
found in a clay or brick pit
at Burscough near Ormskirk —
sphene, yellow xls in vughs; *Thomsonite*
large colourless radiating xls in
big vughs, said to have been
ident. as Thomsonite at L'pool Univ.

1" 100

SD 3618

CHURCHTOWN, Southport, Lancs.

EW Binney, Tr. M/C G. Soc 1862 3 19. "On 'Jelly Peat',
found at Churchtown nr. Southport".

From the moss, ca 300 yds E of the
bailiff's house, on the moss E of Churchtown
[ie. 3718]. Locally termed "Jelly peat" because
black, jelly-like, like coag. blood when first
dug up, but on drying becomes brittle,
black shining, pitchy, conch. fracture. Burns

without flame, unlike the peat with
petroleum from Down-Holland Moss [SD 3606]

D. H. A.

1" 85

SD 74

CLITHEROE, Lancs.

S.

? Priv Comm. ^{1960's-70's?} "Wisgill" (?) (? Oisgill?)
"near Clitheroe."

Fluorite including purple, on baryte

Not in OS gazz or on 1" map.

? Wiswell SD 7437

? Withgill SD 70 40?

CLIVIGER, Lancs.

See THIEVELEY FARM, Cliviger.

COLLINS GREEN, Burtonwood, Lancs.

G. H. Morton, Proc. Liv. G. S. (1885) 5 52-73. "The
microscopic character of the Triassic s'stones
of the country around L'pool". Sands
galore! Mentions nodules of pyritous
sandstone, called "sulphur balls" by miners,
met in sinking coll'y shaft at
COLINS GREEN, SUTTON. [OS 1" - Collins Green,
SJ 5594, Sutton 5292]

1" 95 (cont on SD 8940)
SD 9242

COLNE, Lancs.

JR Earp^{et al} "Geol of Clith & Nels" (1961).

Baryte, 6-in vein at 921425 and in
joints in quarry at 928411.

GS 1" map shows Ba vein at 921425. (NNW).

CONISTON, Lancs.

SD 29

NY 20, 30

1" 88

SD 28-29, 98, 99, 5

CONISTON MINES, Coniston, Lancs. (I)

AR, MM 20 303 (1923-5). Copper mines, ca. 1 mile NW
of Coniston. xls rare in general but Smaltite
silvery cubes w. curved faces, up to 9 mm. xls. vg.
Niccolite Chalcopyrite; tetrahedrite in calcite;
stibnomelane, in quartz & chlorite. Traces
erythrite, annabergite & mixt (sometimes nearly white)
Tr. Erythrite on dumps in the Paddy End section.

Kendall. Trans M/c geol Soc 17 292 (18). Massive chunks magnetite.
origin not known.

Anon Letter Phil Trans 17 (1693).

HO List of Aband Mines (1920). Bonser, E & W. (q.v).

SRMRGB xxx "Cu" (1925). Has MAP of Levers Water area Veins -
see Plans File.

Prob. oldest in N. Engl. worked on large scale early
19th Cent. Aband 1890. little work since.

Country - rock: U. Borrowdales - hornstone, slate,
tuff, breccia, minor trap, & lava. Veins best in
coarse rock, none in slate.

Veins: Nomend. confused. Main veins E to SE with
barren cross-courses, which displace main veins,
eg LEVERS WATER X-COURSE; KERNAL (GREAT, SOUTH, TRIDDLE
FOOT) X-COURSE; GT. SULPHUR VEIN, numerous strings of
qtz. rich in pyrite. At Levers Water the veins

CONISTON MINES, Coniston, Lancs (II)

include: Triddle V (= Bonser?); Belman Hole V; New South V; South Lode; Stephen's V; Paddy Old V; Paddy End V & branch; South V; Sulphur Lode; Brimfell V.

Mineralogy: Lodes have same stuff in diff. proportions. Rock-breccia + subsid. irreg. strings of hard qtz, which bulges locally. Also dolomite (said to have formed 8 in. rib in Paddy End V.) & some calcite. Ore in patches & strings in qtz & breccia. Malachite, chrysocolla etc. rare. In the past, Co & Ni were mined.

Postlethwaite (1913) 114-119. Has sections of Bonser V; Paddy End Mine; Conistone & Paddy End Cu Mines.

Large no. E & W veins & two powerful N-S X-courses - Triddle Foot & Levers Water X-courses, which displace veins. Six ^{ore-bearing} V's stretch between the X-courses

Triddle, Kernal, Hospital, Paddy End, & South V's; & Flemings String. On W of Levers W. X-course & on S side of valley, are Levers Water V & Brimfell V. The Deep Level or "Bonser" V stretches Eward from the Triddle Foot X-course. All have given ore, but last-named most productive & has been most worked. An adit on it ca 50 fms below outcrop & in this ground ore so abundant that its removal left immense chasm - "Cobbler's Hole" [289990]. Two sh's on Bonser V, ca 100 fms apart, the old sh to a depth of 170 fms & the new sh. 205 fms below adit level,

CONISTON MINES, Coniston, Lancs (III)

or 255 fms below surface. Next most import = Paddy End
V (q.v.)

Con. Ms ~~is~~ said to be Roman & even earlier. Vein stone
v. hard & dressing needs lot of labour. Became
less prosperous ca 1874 " of, eg. depth & low price of
Cu ore. & use of Fe vessels in Navy inst of wood
sheathed w. Cu. Kept going by a few men 1877-1889,
then aband.

SRMRGB XXX (1925). Levers Water: Indications of veins with
copper & pyrite & arsenopyrite ca. $\frac{1}{2}$ mi N of
Levers water, along Swirl House Beck & between
Sam Bottom & Levers Water Bottom.
Searching for Bonser at Deep Level, a lead

vein was met several ft. wide, with up to 8 in ribs of galena & blende. Vein prob outcrops below peat moss in Hole Rake $\frac{1}{4}$ mile NE [at 2945993]. Trial hole near Moor quarries [? "Cu level" at 2979997]

Drain. X-cut junct. below Gill Head bridge, at head of Church Beck, abandoned.

TMM (1868) 63 "CONISTONE UNITED MINES" -
calcite; chalcocopyrite.

WFD & NT (1948) Extensive dumps, but v. disappointing, as few traces of minerals. Malachite; chrysocolla; chalcocopyrite. Wad (ident. Dr Bannister) as common weathering product. Penninite - a well x'ed spec. in the Tullie House Coll. at Carlisle

CONISTON MINES, Coniston, Lancs (TV)

CJ Stankey AJ Criddle, Min Mag (1979) 325 103-107
See under SEATHWAITE MINES.

GW Dagger, Geol Mag. (1977) 114 195-202

^(alteration) Quartz-chlorite; ^{early} haematite; pyrite-chalcopyrite-arsenopyrite-magnetite main phase; a carbonate phase. Main phase order: - magnetite arsenopy, pyrrh, pyr, marcas, Cupy, sphal, gal, bismuth, bismuthinite.

CONISTON MINES, Coniston, Lanes. (V)
" CONISTONE UNITED MINES, Ulverston, Lanes.

~~See ~~CONISTON~~ MINES.~~

TMH (1868), 63: Calcite; chalcopyrite.

Probably = Coniston Mines, Coniston. (qv.)

1" 88

SD 27 99

BLACK SCAR WORKINGS, CONISTON M^{ls} Lancs.

OS 2 $\frac{1}{2}$ " SD 29 At 273 997.

F. Ince, Priv Comm (11/91). Nice chrysocolla
abundant, also azurite, malachite,
? digenite! ; all at 275 996

BONSER & TRIDDLE VEINS, Coniston, Lancs (I)

See also CONISTON MINES, etc.

SRMRGB XXX (1925). Outcrop traced by old wk'gs E & W of footbridge. The most productive vein, worked to 170 fms below Deep Level, but said to have good chalcopryite & black oxide in 190 & 205 fm levels.

Triddle V. also much worked.

See map in Plans File.

Postlethwaite (1913), 118. The Deep Level or "Bonser" vein stretches Eward from the Triddle Foot X-course. The most productive vein. An adit on it ca 50 fms below outcrop, & in this ground ore so abundant that its removal left a chasm of immense size, called the "Cobbler's Hole" [at 289990]. Two sh. on Bonser V. ca 100 fms apart,

The old sh, 170 fms deep & the new sh 205 fms below adit level, or 255 fms below surface. [The adit level is "Deep Level"]

Section, p. 115.

SRMROB xxx (1925) (Cont'd). Searching for Bonser at Deep level, a lead vein was met several ft. wide with up to 8 in ribs of galena & blende. Vein prob. outcrops below ~~peet~~ moss in Hole Rake $\frac{1}{4}$ ml NE. Trial ~~hole~~ hole nr. Moor Quarries [? "Cut level" at 297997]
[Outcrop at 2945993]

CJ Stanley & AJ Criddle, Min Mag (1979) 325 103-107.

Chalcopy arsenopy-pyrite w. small amounts of nat. bismuth & bismuthinite, most abundant in magnetite-rich material derived from deep levels

BONSER & TRIDDLE v/s, Coniston, Lancs. (II)

CJ Stanley & DJ Vaughan, MM(1982) 46 343-50

"Mineralisation in the Bonser vein, Coniston, English Lake District: mineral assemblages, paragenesis, and formation conditions"

Details as title; description, age, BONSER VEIN.

Quartz, major gangue, mostly milky, periodically deposited. Chlorite abundant, mostly early.

Stilpnomelane fine acicular & matted aggs (< 1 mm)

Calcite & dolomite early mainly + a late gen.

Magnetite was first ore, 2 habits (i) bladed, some radiating, grains (< 2 mm) (ii) massive,

Arsenopyrite, large fractured grains $\rightarrow$ rhombs

Pyrrhotite, not abundant; large anhedral grains ($< 100 \mu\text{m}$) & aggs $\rightarrow$ 10 mm w/inclus. of other ore sulphides.

Chalcopyrite, massive in stringers in quartz vein & as inclusions.

Pyrite with & later than, magn & pyrrh. Bismuthinite, incl's in pyrite & aggs, some extensive, ass. w. chlonite, cupy, Bi - is replaced by

laitakarite, grains $< 10 \mu\text{m}$ & aggs. $< 50 \mu\text{m}$, & a few minute grains of joseite.

Nat Bi interstitial, up to several mm, w. bismuthinite & laitak.

Galena was last sulphide, one spec has minute incl's of bismuth & larger ones ($< 100 \mu\text{m}$) of cosalite.

Laitakarite is $\text{Bi}_4(\text{S, Se, Te})_3$, reflectance $\text{Bi} \gg \text{lait} > \text{bismuthinite}$.

Sphalerite

BONSER & TRIDDLE V's, Coniston, Lancs (III)

RSN(2000) 37, 16. B. Young (18/6/00).

"BONSOR" M., extensive dumps. Chalcopyr
common esp. where ass w. abund. magnetite;
arsenopyrite, sphalerite, "chlorite,"
stilpnomelane. Supergene minerals
very scarce.

1" 88

SD 2697

DOW CRAGS, Coniston, Lancs

P. Fleming in "Beneath the Lakeland Fells" (1992), 18.

"A fairly strong vein of copper carbonate (malachite) outcrops on the S wall of Easy Gully on Dow Crag, 2 km SW of Paddy End Mines".

GREENBURN MINE, Coniston, Lancs.

SRMRGB xxx (1925). On N side of Beck ca 1 ml WSW of its junct. with Brathay River at Little Langdale Tarn. Refs. to Postlethwaite. Five V's in coarse Borrowdale ashes & breccia. Chalcopryite eqtz. Signs of other workings on banks of Greenburn Beck.

Postlethwaite (1913), 119. On S side of Beck. Five V's: Long Crag V., Pave York V., Gossan V., Sump V., Low Gill V. Opened ca 1850. Two sh. on Sump V, ca 30 fms apart, one to 35 fms & other to 120 fms. The W-ern sh. was sunk on a run of ore 20-30 fms long & ca 40 fms deep, which dipped rapidly to W. The engine

sh. was sunk in a similar run of ore to ca. 50 fm
but below that the ore ground was mainly on
E side of shaft. Ca £25,000-worth of
copper pyrite has been obt. from Sump V. & a
considerable quantity of oxide of copper from
the Pave York V. by pptn. The ppt yielding
50-60% of Cu.

CJ Stanley & J Vaughan, MM (1982) 46 343-50.
p346: Magnetite partly replaces
haematite in LONG CRAG VEIN, ~~at~~
~ 2.5 km N of BONSER V., Coniston [i.e. ~
2802, 2902] [Long Crag, cent on 285 014 ²/₄
with "old level" at 286 085]

LEVENS WATER MINES, Coniston, Lancs.

See also CONISTON M's [espec. (III)]

SRMRGB XXX (1925) Chalcopyrite, pyrite, arsenopyrite,
galena, sphalerite.

Russ Soc. News
(1995) 27

Sunday saw us don underground gear to be guided around some of the darker recesses of the Coppermines Valley. Our first target was the old workings of Livers Water Mine accessible with suitable care and safety ropes through the ancient excavations on the so called, 'Back Strings'. Copper sulphides, including strings of tennantite, were seen in small unworked portions of the veins. Spectacular postmine developments of

complex mixtures of copper supergene minerals were observed in many parts of the workings.

PADDY END VEIN, Coniston, Lancs
Cumb. (I)

See also CONISTON MINES, etc.

SRMRGB. xxx (1925). V. rich. In high ground at SE corner of lake the vein worked to surface, leaving Simon's Nick. NW of here branches into Belman's Hole V. (junction = "CALIFORNIAN BUNCH", very rich).

AR MM 20 303 (1924). Traces erythrite on dumps.

Postlethwaite (1913), 118: Between X-courses on S side of valley the most ancient part of the mine & has produced the most valuable ore. Dr Gibson relates an old legend: "Across the face of the rocks over Paddy End you will observe a diagonal fissure. It is called 'Simon Nick' after the miner who made it long ago. There were fairies in the

land in Simon's time, & directed by them, he found vast treasures in Cu There, where none but himself saw any. It is said however, that at length Simon divulged the secret cause of his success, when it instantly ceased, & vexed at his folly, he became reckless in following out his dangerous occupation & soon became a victim to one of the casualties to which incautious copper miners are so liable".

Two sections given.

CJ Stanley & AJ Criddle Min Mag (1979) 325 103-107

Chalcopyrite-arsenopyrite-pyrite w small amts of
nat. bismuth & bismuthinite mainly as minute
inclusions in Cupy.

B Young et al J. Russell Soc (1985) 1(3) 80. Langite,
posnjakite, with malachite, brochantite. "PADDY
END
MINE"

PADDY END VEIN, Coniston, Lancs (II)

The afternoon was spent exploring workings accessible via the Hospital Level at Paddy End. An invigorating knee-deep wade through the first few metres of the level brought us into a long traverse through spectacular old stopes, false floors and barren cross cuts which took us eventually to beneath the end of the previous day's outing at Levers Water. A notable feature of the afternoon was the finding of abundant erythrite crusts within a sulphide bearing string on the margins of the Belman Hole vein. The identity of this sulphide is under investigation.

RSN (195) 27

RSN(2000) 37, 16. (18/6/00)

B. Young.

On dumps
chalcopryite, tennantite,
colourful supergenes:
erythrite, brochantite
& malachite. Langite,
posnjakite ^{etc} also known.

SEATHWAITE MINES, Coniston, Lancs.

SRMRGB XXX (1925). Four E-W veins, prob. contin. to Coniston. In rough ashes & breccias. The two N veins are 50 yds apart; traced $\frac{1}{4}$ ml; Middle V., $\frac{1}{2}$ ml; South V. $\frac{3}{4}$ ml. South V stopped at W side by Cu cross-course running NE.

Breccia + strings of qtz with ribs & patches of chalcopyrite & black Cu sulphide.

Lowest level nr. Tarn Head Moss driven 100 fms N to the S. vein. Middle level adit nr 1400 ft contour on Tarn Head Beck, driven 100 fms NNE to S. vein & Middle V. Upper lev. 300 yds N by E of Midd. lev. & driven 100 fms. NNW to N. vein.

CJ Stanley & AJ Criddle "Mineralis'n @ Seathw. Tarn, nr
Coniston English Lake Dist: The 1st occur. of wittichenite
in Gt. Brit." Min Mag (1979) 325 103-107.

4 Qtz veins, ~ 2' wide, dip steeply N, have small amts
of sulphides. 2 most N v's worked from Upper Level, driven
100 fm NNW, now collapsed. dump (small) has a variety
of copper sulphides, & wittichenite repl light micro
in pol. section shows digenite, djurleite, & bornite with
smaller amts of wittich, chalcophy, covell, "blaubleibender"
- covelline; arsenophy, cobaltite & pyrite in haematized
qtz-chlorite. Later minerals include botry haem,
siderite, small amts malachite.

TILBERTHWAITHE MINES, Coniston, Lancs. (I)

Postlethwaite (1913), 119: Ca. 1½ ml NE of Coniston Mine.

Six E & W veins, some have yielded consid. qty of ore.
Shallow workings on backs of some v's in v. early times.

Reopened 1850 with deep adit to intersect all veins. Driven 500 fms & some good deposits found. An irreg. sh. sunk to adit lev (65 fms). Two sets of lvs. driven from it & one stoped out. Some parts still have prospects.

SRMRGB xxx (1925). At head of Tilberthwaite Gill near
Dry Cove Bottom. Seven Vs E-ENE in Borrowdaks
[names given]. Ore = chalcopryite + some pyrite &
arsenopyrite.

Shallow adit from the back & a Deep adit from near Penny Rigg slate Q's in Yewdale (1000 yds E); also a shaft. Two dumps, one nr shaft & other round mouth of ~~shallow~~ deep adit - material mostly dead.

Other Cu veins nearby, eg.

- (1) 200 yds S of mine, trials showed some Cupyr in qtz in shale.
- (2) Wetherlam Mine (q.v.).
- (3) Two Cu mines E of peat moss on S side of Tilb. Gill; two old lvs.
- (4) $\frac{1}{2}$ ml ~~NE~~ ^W of Tilb. Mine. Small abandoned Cu mine [³⁰⁰ 015]; misc. old lvs. & shs. Dumps small, mainly dead, with "traces of malachite & cuprite on both rock and quartz".

TILBERTHWAITE MINES, Coniston, Lancs (II)

Stanley CJ & Vaughan, DJ; MM(1981) 44, 257-60
Tetrahedrite from Tilberthwaite
ghyll, near Coniston, at NY 3030 0060

TRIDDLE VEIN, Coniston, Lancs.

See BONSER VEIN.

WETHERLAM MINE, Coniston, Lancs

SRMRGB XXX (1925), Near Tilberthwaite Mines (q.v.),
under Steel Edge, on E flank of Wetherlam.
Worked intermittently ca. 1915-1925; arsenopyrite
present.

CONISTON, LANC'S End of

CRA & FOOT, Yealand Conyers, Lancs.

See WARTON CRA &

CRIBDENLancs~~See also GOODSHAW HILL; THIEVELEY FM.~~SRMRGB

"Ba..." (1916) p 36?: Galena with some baryte
recorded by J. Kerr in "Lead Mining in the Districts of
Stansfield, Holme Chapel, Rossendale & Gr. Hambleton in
NW Yorks & NE Lancs", Trans M/C Geol Soc vol xiii, p 351.

Cribden Hill, Rawtenstall, in at SD 800 240

SD 644 475

DINKLING GREEN, Bowland with Leagram, Lancs

OS 6" map shows "Old Quarry" at 644 475 and
"Calamine Pit" a little to the NNE, at 6445 476

RSWB, TBG, III, 121 (21/7/63). Investigated site. At
"Old Quarry" at 644 475 found old workings
along SE face of a NNE-SW ridge, as small
quarries, rift workings, & signs of old
shafts & adits. In situ found small
brilliant brownish xls hemimorphite on
limestone, also creamy to "dry-bone ore"
smithsonite. At 6445 476 is a deep gorge

or opencast, much overgrown and jungly, from
which a ~~sipke~~ riftly hole in S end leads
to short underground workings, explored
by TBG.

1" 100

Parish, centred on SD 3408.

DOWNHOLLAND, Lancs.

EW Binney, Tr. M/C G. Soc. 1862 3 19. Only fluid
petroleum in peat from Down-Holland Moss,
described @ last meeting of the Society.

ELSWICK, Lancs (?)

N. J. Winch, Trans. Geol. Soc. (1817) IV, 2-101
 Azure iron ore [? vivianite], not
 uncommon in the potter's 'clay' at
 ELSWICK, "Northumb", & in other
 brick fields.

OS gazz: only Elswick is in Lancs SD 4138
 (cf ELWICK Numb. NU 1136)

1" 94

SD 32 47

FLEETWOOD, Lancs.

De Rance, Tr. M/C G. Soc. 1895, 22, 269-302.

Rock-salt [halite] in boring at BRECKELLS,
Fleetwood. ~~There~~ [not found on OS 1" 94 -
is there another Fleetwood other than in
Lancs? NOT in OS gazz.]

FURNESS, Lancs.

SD 27

ANTY CROSS MINE, Dalton-in-Furness, Lanes.

~~See also DALTON-IN-FURNESS~~

"Anty Cross" is at SD 27 ~~22~~ 8736.

SRMRGB xxx "Cum" (1925), p. 82: Anty Cross Mine has a little
chalcocite, altering to malachite.

SRMRGB VII "Fen" () p. 178: Anty Cross Mine, Dalton: massive chalcocite,
altering to malachite. See also p. 196.

1" 88

SD 211 772

ASKAM IRON WORKS(MINES), Dalton-in-F., Lancs.

1" 88

SD 247 758

BACK GUARDS PIT, Dalton-in-F., Lancs

See WHITRIGGS Fe M's; also LINDAL MOOR Fe M's.

1" 88 ca SD 257 754

BERKUNE PITS, Urswick, Lancs.

See LINDAL MOOR Fe M's

1" 88

SD 206

749

BETTY PIT, Dalton-in-F., Lancs.

See SANDSCALE Fe M's

1"88

SD 214 752

BURLINGTON PIT, Dalton-in-F., Lancs

See PARK FEMINES, ~~also~~

1" 88 SD 211 748

CALIFORNIA PITS, Dalton-in-F., Lancs.

See PARK Fe M's; also THWAITE FLAT; SANDSCALE M's

1" 88 SD 211 772

CHAPMAN'S LOT PIT, Dalton-in-F., Lancs

See also ASKAM Fe W'ks; PARK Fe M's

1" 88

SD

248 770

CHARLOTTE PIT, Pennington, Lancs

See also RAWLINSON PIT; LINDAL MOOR Fe M's.

See MOUSELL Fe M's.

1" 88 SD 296 7885

COCKSHOT QUARRIES, Ulverston, Lancs

1" 88

SD 2345 7540

COLORADO PITS, Dalton-in-F., Lancs.

See CROSSGATES Fe M's; also MOUZELL Fe M's.

1" 88 SD 235 751-243 757

CROSSGATES IRON MINES, Dalton in-F., Lancs

See also MOUZELL Fe M's; EURE PITS Fe M's; WHITRIGGS
Fe M's.

1" 88 Around SD 244 728

CROWN QUARRY, Urswick, Lancs.

OS 6" map shows a "cave" in the S part of the quarry, and an "Old shaft (Iron)" to the W.

Around SD 23 74

DALTON-IN-FURNESS, Lancs.

See also ANTY CROSS MINE, STANK MINE, ULVERSTON

TMH (1868), 63. Haematite; natrolite.

Ludler (1905) 151 [Miers, Min Mag ix (1897) 269] Haematite
pseudo - after fluonite

1" 88 SD 247 769

DERBY PITS, Dalton-in-F., Lancs.

See MOUSELL Fe M's; also LINDAL MOOR Fe M's

1" 88 Around SD 249 728

DEVONSHIRE QUARRY, Urswick, Lancs.

See also STANTON QUARRIES

1" 88 SD 255 7625

DIAMOND PIT, Pennington, Lancs.

See LINDAL MOOR Fe M's

1"88

ca SD 227 748

ELLISCALES IRON MINES, Dalton-in-F., Lancs.

See also ELLISCALES QUARRY; MOUNZELL Fe M's

1" 88

SD 224 748

ELLISCALES QUARRY, Dalton-in-F., Lancs

See also ELLISCALES IRON MINES

1" 88

SD 202 752

ETHEL PIT, Dalton-in-F., Lanes.

See SANDSCALE Fe M's

1" 88 SD 23 8 753

EURE PITS IRON MINES, Dalton-in-F., Lancs.
and QUARRY

See also CROSSGATES Fe M's; MOUZELL Fe M's.

1" 88 SD 226 744

FISHER QUARRY, Dalton-in-F., Lancs

1" 88 SD 247 760

FRANK PIT, Dalton-in-F., Lancs.

See WHITRIGGS Fe M's

1" 88 SD 290-2 764-7

GASGOW QUARRY, Ulverston, Lancs.

1" 88

SD 2315 7245

GOLDHILLS PIT, Dalton-in-F., Lanes.

See NEWTON Fe M's

1" 88 SD ~~219~~ 219 740

GOLDMIRE QUARRY, Dalton-in-F., Lincs.

OS 6" map: shows "Iron mine (dis.)" immed. W
of the quarry

1" 88

SD 266 759

GREENLANE PITS, Pennington, Lancs.

See LINDAL MOOR Fe M's

1" 88 SD 221 760

GREENSCOE QUARRY, Dalton-in-F., Lancs.

See also HIGH HAUME

OS 6" map: "granite" quarry.

1" 88

SD 250 746

GRIEVSON PITS, Dalton-in-F., Lanes

See LINDAL COTE PITS

1" 88 SD 240 7605

HIGH CROSSGATES PIT, Dalton-in-F., Lancs.

See WHITRIGGS Fe M's, also CROSSGATES Fe M's

HIGH HAUME, Dalton-in-F., Lancs.

See also GREENSCOE QUARRY

6" GS Lancs 15 (1850) shows "Copper Mine (Old Shaft)"
at 223 758, on High Haume. (2 shafts shown)

RSWB 12/69 (I, 149). Site is in a field. No
sign of shafts, dumps or any relevant
thing.

HODBARROW MINE, "Furness"

Is in CUMB (q.v.)

1" 88 SD 248 756

JAMES PITS, Lindal, Dalton-in-F., Lancs.

See LINDAL MOOR Fe M's, also WHITRIGGS Fe M's

1" 88

SD

207754

KATHLEEN PIT, Dalton-in-F., Lancs

See SANDSCALE Fe M's; also PARK Fe M's.

1" 88 ca SD 247749

LINDAL COTE PITS, Dalton-in-F., Lancs.

See also LINDAL MOOR Fe M's

Haem. Calcite. (pyrite
some spec.

1" 88, Around SD 2477-2575

LINDAL MOOR IRON MINES, Dalton-in-F., Lancs.

See also MOUSELL Fe M's; LINDAL COTE PITS; POAKA
OPEN WKS; WHITRIGGS Fe M's

Rudler (1905), 151. LINDEL-IN-FURNESS: cubic
pseudomorphs of haematite after fluorite
or pyrite.

Rudler (1905) 151. Lindal-in-Furness: cubic ϕ -morphs
of haem. after fluorite & pyrite.

PTO

R. Soc. N. (1994) 25
Lindal Moor, Lindal, Cumbria -

Saturday 9 April 1994

Leader: Harry Critchley

At 10.30am all members had arrived at the meeting place - except one, who has something of a reputation for being late. We entered the site through a quagmire of mud and having safely negotiated this we proceeded to learn something of the site from the leader, Harry Critchley and the President, Brian Young. Members then scattered over the site praying that the weather would remain dry and bright after the downpourings of the day before. The usual hematite and calcite - some very large crystals - were soon discovered and, with some persistence, dolomite, smoky quartz and specular hematite were also found. By lunch time, it still being dry and bright, a few of the party went off to see if they could find anything more at Stank Mine - where we had been all but washed out the day before.

1" 88

SD 264 739

LONG RIGG QUARRY, Urswick, Lancs.

1"88 ca SD 260 760

LOWFIELD PITS, Pennington, Lanes.

See LINDAL MOOR Fe M's

1" 88

SD 237 747

MAIDENLANDS QUARRY, Dalton-in-F., Lanes.

1" 88

SD 235 723

MILLER PIT, Dalton-in-F., Lancs.

See NEWTON Fe M's

1" 88

SD 245 771

MOUSELL IRON MINES, Dalton-in-F., Lanca.

[NOT = MOUZELL IRON MINES, q.v.]

See also LINDAL MOOR Fe M's; POAKA OPEN WKS.

1"88 ca SD 23₃ 75₂

MOUZELL IRON MINES, Dalton-in-F., Lancs.

[NOT = MOUSELL IRON MINES, qv]

See also ELLISCALES Fe M's; CROSSGATES Fe M's;
EURE PITS Fe M's.

1" 88

SD 237 719

NEW PIT, Dalton-in-F., Lancs.

See NEWTON Fe Mls

1" 88 Around SD 235 723

NEWTON IRON MINES, Dalton-in-F., Lancs.

1" 88 SD 232 723

NORTH NEWTON IRON MINE, Dalton-in-F., Lancs.

See NEWTON Fe M's

1" 88

SD

214 755

NORTH PIT, (Park Iron Mines), Dalton-in-F., Lancs.

[cf NORTH PITS (Lindal), Dalton-in-F.]

See PARK Fe M's

1" 88 ca SD 25, 750

NORTH PITS (Lindal), Dalton-in-F., Lancs

[cf NORTH PIT (Park Iron Mines), Dalton-in-F.]

See LINDAL COTE PITS

1"88

SD 237 720

NORTH STANK IRON MINES, Dalton-in-F., Lancs.

See NEWTON Fe M's. cf STANK Fe M's

1" 88 SD 21 75

PARK IRON MINES, Dalton-in-F., Lancs

See also SANDSCALE Fe MINES

1"88

SD 246 760

PARROCK PIT, Dalton-in-F., Lancs.

See WHITRIGGS Fe Mls

1" 88 SD 202 751

PEGGY PIT, Dalton-in-F., Lancs.

See SANDSCALE Fe M's

1" 88

SD

266 768

PENNINGTON PITS & Pennington, Lanes.

See also RAWLINSON PITS (Seg Lane)

1" 88 SD 210 755

PLUNGER PIT, Dalton-in-F., Lancs.

See PARK IRON MINES

1" 88 SD 243 772-4

POAKA OPEN WORKS, Dalton-in-F., Lancs.

See also MOUSELL Fe M's; LINDAL MOOR Fe M's.

1" 88 SD 249 770

RAWLINSON PIT (Lindal Moor) Pennington, Lancs.

[cf RAWLINSON PITS (Seg Lane) Pennington]

See also CHARLOTTE PIT; ~~See~~ MOUSELL Fe M's;
LINDAL MOOR Fe M's

1" 88 SD 262 768, 264 768

RAWLINSON PITS (Seg Lane) Pennington, Lancs.

[cf RAWLINSON PIT (Lindal Moor) Pennington]

See also PENNINGTON PITS

1" 88 SD 205 751

ROANHEAD IRON MINES, Dalton-in-F., Lancs.

See SANDSCALE IRON MINES, also PARK IRON MINES

1" 88 SD 2195 746

ST. HELEN'S QUARRY, Dalton-in-F., Lancs.

1"88

SD

201

752

SANDSCALE IRON MINES, Dalton-in-F., Lancs.

See also PARK Fe M's

1" 88

SD 293 737 - 296 737

SEA WOOD SHAFTS, Aldingham, Lancs

OS 6" map shows three "Old Shafts (Copper)" in an E-W line along N edge of Sea Wood.

RSWB 12/69 (V, 149) E-most shaft open - level visible ca 10' down. Other shafts partly filled with rubble. Country rock = limestone, also sandstone. Limestone quarries occur just N of the shafts (not mineralised). Dumps completely

overgrown, but wall yielded a spec. of
malachite, compact mass of blades, on
sandstone, with euhedral quartz xls, espec.
in vughs (RSWB 69-318)

RSWB 84-308, ex Grove House Gallery, Keswick
Azurite, small xls, with malachite,
black & iron staining on pink crystalline
sandstone/quartzite. "Seawood mine,
Bardsea, Cumbria"

1"88 SD 218 757

SHEILA PIT, Dalton-in-F., Lancs.

See PARK IRON MINES

1" 88 Around SD 248 727

STANTON QUARRIES, Uxswick, Lancs

See also DEVONSHIRE QUARRY.

1" 88 Ca SD 251 726

STANTON-WITH-ADGARLEY IRON MINES, URSWICK, LANCs.

1" 88 Around SD 232708

STANK IRON MINES, Barrow-in-F., Lancs.

See also YARLSIDE; WEST NEWTON Fe MINES.

OS maps: Just SE of YARLSIDE IRON MINES, & the S-most of the STANK group of mines.

Classical loc. for v.g. trigonal-scalenohedral clear, pointed sometimes iron-stained groups of Calcite xls (eg Museums - M/C, GS, etc Rayners Cat. (1960), Kudler (1905) 149;

Kudler (1905) 151 [Miers, MinMag ix (1897) 269] Haematite
pseudo- after fluonite

R. Soc. N'lr (1994) 25

Stank Mine, Barrow-in-Furness, Cumbria -
Friday 8 April 1994

Leader: Harry Critchley; Reporter: Bob
Bristow

The day was typical for the area and time of year when at 11.35am some 21 members met Harry Critchley at the appointed roadside causing congestion in what was for the area a major road - ten feet of tarmac surface bounded on either side by three or four feet of mud.

For the next few minutes, whilst we all sat in our dry cars sipping coffee, poor Harry paraded up and down collecting rain down his neck and in his boots as well as signatures on the usual disclaimer form. Eventually we joined him and set off across the field to inspect the mine dumps in the delightful setting of a country field. Thank goodness for the rain, it kept the aroma down.

After a brief explanation of the location and what we could expect to find we all set to heaving boulders around and breaking them open. Slowly everyone collected calcite and hematite specimens although all identification had to be performed by those who did not wear glasses. Mineral collectors need mini-wipers, perhaps we should invest in some.

The team of Gary Morse and Mike Brooke turned up hematite pencil ore about two feet into a pile of rubbish while I dug a boulder out of the 'pond' near the gate and found fully terminated water clear calcite crystals to 8mm covered in pyrolusite and its variety 'polianite'. This was declared the best find of the day by Harry as he went muttering off into the rain and sleet impersonating Scott of the Antarctic, (or should that be Captain Oates?).

At about 3.00pm we were all wet, cold and pleased with our treasures, and having thanked Harry (who had returned after emptying his boots for the third time) left for the University - to shower, dry off and talk about wet minerals and the perfect choice of weather.

1" 88

SD

211 743

THWAITE FLAT IRON MINES, Barrow-in-F., Lancs.

See also PARK Fe M's;

SD 2978

ULVERSTON, Lancs.
See also DALTON-IN-FURNESS, etc

TMH (1868), 63. Iron mines. Fluorite; haematite;
limnite; rock xl.

G+L (1858): Fluorite, colourless xls with limonite;
rock xl with haematite.

Rudler (1905) 147 Haematite pseudo-after crested
baryle xls. p 148. Lepidocrocite

RSWB 157 Ex Old coll (£2 lot). Pyrite
cubes to ~ 1 cm + a cubo-octah.
"Ulverston". [?]

1" 88

SD 2075 7490

VIOLET PIT, Dalton-in-F., Lanes.

See SANDSCALE Fe M's.

1" 88

SD 16, 17, 26

WALNEY Is.

Lancs.

Parke, Proc. Yorks. G. S. (Dana 6. p 665).

"Vermiculite-granite"

1" 88 SD 247 782

WALTHWAITE MOOR QUARRY, Pennington, Lancs.

1" 88 SD 245 773

WASTE OPEN WORKS, Dalton-in-F., Lancs.

See MOUSELL Fe M's; LINDAL MOOR Fe M's

1" 88

SD 228 719

WEST NEWTON IRON MINES, Dalton-in-F., Lancs.

See also STANK; YARLSIDE Fe MINES. cf NEWTON Fe M's

OS maps. The N-most mine in the STANK group.

1"88 ca SD 242 760

WHITRIGGS IRON MINES, Dalton-in-F., Lancs

See also CROSSGATES Fe M's; LINDAL MOOR Fe M's

1" 88 SD 207 763

WOODHEAD PIT, Dalton-in-F., Lancs

See also PARK Fe M's.

1" 88 Around SD 228 712

YARLSIDE IRON MINES, Barrow-in-F., Lancs.

See also STANK IRON MINES; WEST NEWTON Fe MINES.

OS maps: just W of STANK IRON MINES [qv].

FURNESS, End of

LANCS

GOODSHAW HILLLancsSee also CRIBDEN; THIEVLEY FM.SRMRGB

"Bar..." (1916) p 36? : galena with some baryte
 recorded by J. Kerr "Lead mining in the District of Stansfield,
Holmes Chapel, Rossendale, & Gt. Hambleton in NW Yorks & NE Lancs"
Trans. n/c. geol. Soc. vol xiii, p. 351.

"Goodshaw" is at SD 810 257. The hill concerned is
 probably that to the W of the village, i.e.
 near 80 26, the N continuation of Cribden Hill

HEALD BROW, Silverdale, Lancs.

See SILVERDALE

1" 100

SJ 44 91

HUYTON, Lancs.

See also LIVERPOOL, etc.

G. H. Monton, Proc. Liv. G. S. (1872) 91. Pyrite;
marcasite; siderite, in Coal Measures, Huyton.

Calcite in Coal Measures, Huyton Quarry
[SJ 453 907].

JENNY BROWN'S POINT, Silverdale, Lanes

SEE SILVERDALE

1" 100

SD 5 0, 5 1

JOHN PIT, Standish, Lancs.

Mrs B. Hinde, Lergh Girls' Grammar School; Ident R508
Pyrite, radiating fibrous in coal shale;
from old tips of John Pit, Standish, nr.
Wigan.

1" map: Standish itself 5810

SD 96 16

LEAD MINES CLOUGH, Littleborough, Lancs.

Gf. LEAD MINE CLOUGH, Blackshaw, Yorks. & LEAD MINES CLOUGH,
ANGLEZARKE MOOR

On W flank of Blackstone Edge, near Rochdale; and
above the hamlet of Lydgate. [cf CATHOLES CLOUGH,
Todmorden, Yorks]

Roch. Mus. Spec. Baryte, white platy.

1"101 Near ST 883 935
LEVENSHULME CLAY PITS, Manchester, Lancs

P. Smith, priv. comm. ca 1962.
clay pit

Gypsum xls in the

LITTLEBOROUGH, Lancs.

See LEAD MINES CLOUGH, Littleborough

1" 100

SD 31 01

LITTLE CROSBY

Lanes

See also LIVERPOOL etc

CC Moore, Proc Liv. GS (1898), 241 [Asbolite],
specimens with both Ni & Co found in
old quarry near Little Crosby. ~~Warr~~

1" 100, 109 Cent. on SJ 34 90

LIVERPOOL, Lancs.

See also TOXTETH PARK; LITTLE CROSBY; HUXTON.

CC Moore, Proc. Liv. G.S. (1898) 241. [Asbolite],

specimens with both Ni & Co found:

Foundations of Technical Schools, William Brown
St. [SJ 349 907].

G. H. Morton, Proc. Liv. G.S. (1872), 91. Haematite in

Bunter sandstone, Liverpool. Halite pseudomorphs,

in Keuper sandstone, St James' Cemetery [? ? he!]

Baryte in Mill. grit, Grimshaw Delf [many not he!
in Lpool!]

1" 101

SJ 90 99

MEDLOCK VALE, Woodhouses, Lancs.

Trans. M/C Geol & Min Soc. (1862) 3 361 gypsum
in boring near Medlock Bridge [? 903997],
Medlock Vale, Manchester.

1" 101

SJ 90 99

MEDLOCK VALE, Woodhouses, Lancs.

Trans. M/C Geol & Min Soc. (1862) 3 361 gypsum
in boring near Medlock Bridge [? 903997],
Medlock Vale, Manchester.

1" 95

Near SD 770 385

NICK OF PENDLE, Sabden, Lancs

JR Earp et al "Geol of Clith. & Nelson" (1961)

Galena-baryte vein, just W of the Nick
of Pendle

OS old series 6" map shows "Old Lead mines"
hereabouts.

ORMSKIRK, Lancs.

TMH (1868), 63. Petroleum

G+L (1858): Petroleum

Jerry Cotter, Priv. Comm (1975); spec → RSWB [75-351]
 Superb radiating thick clear xls "natrolite"
 in igneous erratic from near Ormskirk (!!)
 This looks exactly like the material
 from BURSCOUGH (q.v.) [$1\frac{1}{2}$ ml NE of Ormskirk]
 It is = QUIRANG ZEOLITE = THOMSONITE (IR, supported by G)
 Spec's → RSWB 5/76, from D. Charlton also have
 a green-brown zoned clinoamphibole much
 like the grunerite from Thurstaston, Cheshire.

The Thomsonite sinks in CH_3I ($G = 2.279$)
as does Quirang zeolite [Thomsonite $G = 2.33$].
Epistilbite, Faroes, floats [$G = 2.25$]

PATRICROFT, Eccles, Lancs

EW Binney, Mem Proc M/C Lit Phil Soc (1851) Ser. 2 9
306320. "A descrip. of some supposed meteorites
found in seams of coal"

Quartzose concretions with small xls
pyrite; - coll'y at Patricroft.

PENDLETON (COLLY) Pendleton, Lancs.

EW Binney, Mem Proc M/c L. Ph. Soc. (1851) Ser 2, 9, 306-320.

"A descrip. of some supposed meteorites found in
seams of coal"

Quartzose concretions with small xls
pyrite, from Pendleton Colliery

ROCHDALE, Lancs.

See LEAD MINES CLOUGH, Littleborough

55 31, 90

SEACOMBE FERRY, "Liverpool, Lanes."
See SEACOMBE, Cheshire

TMH (1868), 63. Iserine, in sand. (Iserine = a var. of
ilmenite), Seacombe Ferry, "Liverpool, Lanes"
Seacombe Ferry is in Cheshire [qv]

1" 100

SJ 50 95

St. HELENS, Lances

See also THATTO HEATH.

G. H. Morton, Proc Liv. G. S. (1872) 91: Dolomite,
in Coal Measures.

SCOUT QUARRY, Warton, Lancs.

See also WARTON CRAG.

M/C Mus spec. "Malachite pseudomorphous after cuprite,
 Scout Quarry Carnforth, Lancs" Specimen on
 calcite matrix & is v. similar to the
 BM spec. from "Warton Crag, Lancs" (g.v.)
 [Is the "cuprite" actually mal. in cuboidal calcite?]
RSWB, Graham Frost 19/11/61 I, 217 [As RSWB 96-2, Warton Crag, Cu incline]
 Now a caravan site.

RSWB, JIW, Mark College. 17/1/96 Now a holiday
 bungalow site. No access

1" 89

SD 45 75 (Village)
46 73, 46 74

SILVERDALE, Lancs

See also WARTON CRAG

OS 6" map shows 3 "old shafts" at 461 737-8.
According to a local, an old OS map
indicates "Iron Ore"
"Old quarry" at 462 734.

RSWB Field notes I (1961) 217-221. Old shafts
at 461 737-8 not visible - overgrown?
Old quarry at 462 734 is limestone.
Met local who told us that an old OS map
indicates that the shafts were for iron ore,
and told us of a copper smelting

chimney on the shore near Brown's
Houses "which processed ore from mines
on Heald Brow" [4673, 4674; summit ~ 4673]

RSWB, JIW, M. Colledge (17/1/96). "Old shafts" area
built over (bungalows). Examined
chimney at 4665 9350 near Brown's Houses.
Clean, well-preserved with opening at its
base (on E side); on shore; no dumps;
some slags nearby. Tiny fragments
coll. near base included chalcopryite xls
with minor malachite in calcite & well-xlined
malachite with haematitic calcite (cf Warton
Crag material). Two boulders on foreshore
of bright orange compact columnar xline calcite
with haemat. inclusions (NOT fluoresc UV, SW).

SKELETON MINES, Twiston, Lancs.

See under Yorks. for details.

Mineral list: Argent(?) galena; baryte; calcite;
fluorite; dolomite; sphalerite; pyrite;
cerussite; anglesite; smithsonite
(and "calamine"); "limonite" gozzan; siderite;

Standish, Lancs

See John 'Pet

1"89 SD 524 678
SWANLEY POT, Nether Kellot, Lancs.

E.G. Holland (1967) ^{2nd ed} "U'ground in Furness", Dalrosmann
pubs.

"Swanley Pot", a nat. cave ~ 25 ft. deep

Don Blake (1999) BMS Newsl. 54, 12.

Is a small gully eroded out of the top of
a ~ 10 m high crag on E side of a shallow
N-S valley. Infilled w. sandst. blocks to
protect animals. Mineralis'n on S face just
above boulders: good xls azurite; malachite;
chalcopryrite; quartz; calcite; galena;
goethite; "manganese sp." [? Oxides];
"chenevixite (?) " [??]. [Intack Fm., Mr. E.J. Ward]

SD 627 519

SYKER, Lancs.

BMSN (2000) 55, 10. W. Mason → BMS Coll.
2156, autichalcite, LORTENDALE BROOK
(627 519)

1"100

SJ 49 93

THATTO HEATH, St. Helens, Lancs.

See also ST. HELENS

G.H. Morton, Proc Liv. G.S. (1872), 91: In Coal Measures, at Thatto Heath: Malachite, galena, sphalerite.

OS 6" map (1956) shows a "shaft" at Thatto Heath, at 499 933, presumably for coal.

1" 95

Around 870 278 (SD)

THIEVELEY FARM (Liviger, Lancs.

See also CRIBDEN, GOODSHAW HILL

1A Williamson. Proc Yorks Geol Soc. 30, 396.

Thieveley lead mine
fault E-W across N slopes of Dearplay Moor for $\frac{1}{2}$ mile.
with old tips & bell-pit. Behind Thieveley Scout
Farm (873 278), old tips yield baryte & galena, & below,
at foot of Dean Scout, an adit. 400 yds W of farm
beside a gate (870 278) baryte struck. Near
Black Clough (866 278) lead bell-pits. ~~the~~
Mine worked early, again in 1755 - not since.

1A Williamson "Nottingham Univ. Survey" (1956) "The Thieveley Pb
mines, an ill-ending adventure". With map (PTO)
Discovered ca 1626 but possibly also Bronze Age. A number

SJ 375 ~~88~~ 88

TOXTETH (~~POOR~~) Liverpool, Lancs.
See also LIVERPOOL, etc.

TMH (1868), 63. Vivianite, in alluvium. Toxteth Park

G+L (1858). Vivianite, Toxteth Park.

OS 6" map: "Toxteth Park Cemetery", cent. on 374 890

GH Morton Proc Liv GS (1872) 91: Wad, in
Keuper, Toxteth, Liverpool.

AN Tate Proc Liv GS (1863) 4 16. MnO₂ in black s't.
TOXTETH PARK, FLAYBRICK, etc.

↳ [Not in OS 6" map Not found on 1" maps]

WARTON CRAG, Warton and Yealand Conyers, Lancs. (II)

Overgrown old workings; no dump material exposed. Looks as though many old shafts adits, bell-pits etc but mostly blocked & overgrown. A few open shafts, loosely covered. Entered an adit, dry, at 4810 7375 going initially N ESE via an open shaft, to rambling tunnel complex quite extensive. winzes leading down to lower levels (to gated adit). Sparkling xline stal. calcite flowstone (rich in 0.1-0.3 mm rhombohedra) common. Otherwise mostly barren haematitic limestone - little sign of

mineralisation or justification for the extensive tunneling. Some cavities with mucky rhombohedral calcite xls to ~ 1 cm. Much haematitic & ochrey mud. In a very few places a little malachite, in patches in haematitic calcite; much included within calcite (some rhombohedra being "cuboid" may give rise to so-called "pseudomorphs after cuprite" ??); also with haematite pseudomorphs after chalcopyrite xls. One spec (J1W) also has a little cuprite (cones to malachite)

1" 89 Warton, also Yealand Conyers SD 48 73
WARTON CRAG, Lancs. (I) SD 49 73

See also SCOUT QUARRY, Warton; SILVERDALE;

BM: malachite

OS 6" map SD 47 SE shows:

"Old shafts (Copper)" at 482 738, just N of Warton Crag, Yealand Conyers PH.

"— " — (Iron Ore)" 484 734 and 488, 724, Warton Crag, Warton PH.

cf "Old shafts" at 460, 738 S. of Silverdale (see SILVERDALE)

DSWB 19/11/61. Field Notes, p. 217-221 with photos: No trace of Cu minerals but plenty of old workings eg at above refs. Mostly for iron. Dumps & ruins at 483, 735 gave bladed calcite and red & colourless quartz on haematitic limestone. ~~Stalagmite~~ Stalagmite collected from old level at 486 739. Fine chimney at 480, 737, (Cu smelting?)

ES 1" map 98 (O. Series) shows mine at Crag Foot as "Lower Mine (Copper)".

Geol. Mus. spec: soft red haematite chunks from Warton Mine.

RS10B 95-105, ex "Isis Minerals" Excellent malachite, rich, crystalline, on calcite & gypsum, said to have been coll. recently, underground, from "Warton Crag mine".
Mal: Dil HCl $\rightarrow$ efferv., then AMTC $\rightarrow$ Cu only, no Zn.

RS10B, TIW, Mark Colledge, (17/1/96) Explored wooded, brambly area behind chimney.

WARTON CRAG & vicinity, Lancs.Wednesday, 17/1/96With Ike Wilson and Mark Colledge

Drove to Crag Foot, and parked in layby of track. Having received permission, explored the wooded area behind the chimney (see RSWB Field Notes, I, 217-221, of 19/11/61). Very brambly - not recommended for summer trips, but reasonably accessible in winter. Much hummocky ground, with complex overgrown workings and dumps, and evidence of many probable shafts, adits, bell pits, of Warton Crag copper mine, Yealand Conyers. Some shafts still open (but loosely covered), at least two adits open, though one gated (a lower level one, not seen from the outside, with a locked gate).

Entered dry adit at SD 4810 7375, going in initially approximately ESE, to an open shaft after about 30 metres, then branching to two main branches, which lead, particularly the LHS branch, to an extensive rambling series of workings, twisting and turning for no obvious reason, through apparently barren limestone, most of which is stained with haematite (little "solid" haematite was found). The LHS branch leads downwards through slopes and winzes, to a "T" junction to a lower, partly wet level, one end of which (the RHS) leads out to the locked gated entrance referred to above, and the other end of which leads to a beautiful grotto lined with sparkling stalactitic flowstone, and a small zone relatively rich in cavities, some lined with calcite crystals, and with a little crystalline malachite, some with haematite pseudomorphs after chalcopyrite crystals, in a calcite-with-goethite ("limonite") (checked by FTIR) ochre matrix, and much yellow to red-brown haematitic and ochreous mud; one specimen, collected by Ike Wilson, showed clusters of good malachite crystals on calcite crystals, the cores of some malachite clusters showing a little cuprite. The calcite crystals are rhombohedral, and the order of 1 cm. across, but usually mucky-looking. Similar, weakly mineralised zones are found irregularly in other parts of the workings, but the most common mineral phenomenon is the sparkling calcite flowstone, which is widespread; a sample taken shows the sparkle to be due to coatings of tiny (usually 0.1 to about 0.3 mm) transparent colourless steep rhombohedra, often "cuboid" of calcite. Narrow "rabbit-hole" tunnels and cavities off the workings abound, but none of these were seen to display obvious mineralisation apart from the glittering flowstone. Some were not explored, and side-tunnels blocked with "deads" abound, so further workings undoubtedly exist. We examined all the easily-accessible parts, but found no stopes, apart from the small cavity-workings alluded to. From what we saw, it appears that a lot of work was done, but for little or no return, and we were very disappointed at not finding the rich patches of malachite expected from the appearance of old (rare) specimens.

Left the adit, wet and red with haematitic mud, and after lunch, drove to Brown's Houses, Silverdale, where parked. RSWB and MC walked along the shoreline to the ENE for a couple of hundred metres, to a nicely-preserved white limestone chimney (at SD 4665 7350), with an opening at the E side of its base, the only other signs of constructions in its vicinity being a footbridge and the remains of the base of something (looking like a small wharf - but hardly believable as abuts onto mudflats, adjacent to Warton Sands, the nearest water channel being nearly 4 km distant!) a few metres to the S. No dumps found, and no evidence of tracks, apart from the shoreline and footbridge path; nothing significant observed on its landward side either, just a limestone outcrop a metre or two high to a hedge, then a field leading to a wooded slope. Careful examination of the immediate vicinity of the chimney turned up a few tiny fragments of interest, one with chalcopyrite crystals in off-white calcite, and four with malachite, some in very nice crystals on red haematitic calcite! A few metres to the S, near

the "wharf", some slags were found, of various type, glassy, limonitic, blackish and ashy grey, none seen to be copper-stained, but which smelled strongly of H_2S on breaking up, and some with rounded bubble cavities - but NO crystals seen, though some cavities had small, sparse whitish blobs. On shoreline, limestone outcrops display narrow calcite veinlets (no cavities or crystals seen), trending E to ENE (note that the Warton Crag mine chimney lies approximately ENE of this chimney, and that in an almost straight line to the W, across the bay, in similar limestone, lie the other small copper deposits of Sea Wood, S of Ulverston, and that near High Haume, about 1 mile N of Dalton-in-Furness). Two loose blocks on the shoreline were of bright orange compact radiating-columnar calcite (not fluorescent in UV, SW; the colour seems to be due to haematitic inclusions).

The evidence suggests that this might well have been the chimney of a small smelter, for some kind of sulphide ores (the H_2S smell), probably copper ores (fragments found, although the slags were not copper-stained). Why there? There is already a chimney at the Warton Crag site, and the journey from there to this site is an awkward one for transporting ore. Was there another source of ore in the vicinity, or was it there for some kind of accessibility reason, *e.g.* for fuel? The veinlet direction trend favours the local ore source theory, which is supported by the distribution of iron workings. Above, to the E and SE, of the Warton Crag copper mine, are the remains of old iron mines, and the OS 6" map shows "Old shafts" less than a km. to the NW, N of Jenny Brown's Point, at SD 460-461 737-738 (not seen, the area has bungalows now). A local, met on the 1961 expedition, told RSWB that:

- (i) These shafts are marked on an "old OS map" as being for iron ore.
- (ii) The chimney was for a copper smelter.
- (iii) There were old copper workings on Heald Brow (the hill N of the chimney, summit at SD 467 742).

It could well be that he was right.

1" 100

SD 5¢ 0¢

WIGAN, Lancs.

TMH (1868), 63. In coal-measures: Coal; Scleretinite (a resin).

G+L (1858). Good Cannel coal near Wigan;
scleretinite from coal measures near Wigan.

YORK and LANCASTER MINES, Twiston, Lancs.

See SKELERON MINES, Yorks