# BRITISH MICROMOUNT SOCIETY

**NEWSLETTER NO.28 APRIL 1990**


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## A NEW COMPETITION

**Mick Wolfe**

At the last Leicester Symposium the BMS was given a trophy by the Russell Society. This trophy was previously awarded for their annual micromount competition which was discontinued in 1987. Their committee thought it appropriate that it be passed to us. Following a meeting of the BMS committee we have gratefully accepted the trophy and detailed below are the rules of the competition we intend to run for it. They follow, in outline, those used by the Russell Society, as we thought this would be appropriate in view of their kind donation.

Micromount competition rules

1 Entries will be judged on micromounting technique, labelling, and specimen quality.

2 A maximum of two entries per member

3 All specimen material to be British and collected by the entrant.

4 Each entry to be contained in a box no larger than 25mm cube.

5 Each entry to be permanently mounted and oriented for viewing, by microscope, in the horizontal position.

6 Each entry to be labelled with the name of the mineral and its source location as a minimum.

7 All entries are submitted at the owners risk and must reach the judge two months before the symposium start date. Each specimen must be accompanied by a fully completed entry form.

8 The judge will be appointed annually by the committee and will not be eligible to enter the competition that year.

9 All entries will be returned to their owners at the symposium. Please note that non-attendees need to organize collection of entries on their behalf.

It is expected that a small prize will be awarded in addition to the trophy. The winner will be announced at the symposium.

The judge for the first year will be Peter Braithwaite, 34 Field Close, Hilton, Derbyshire DE6 5GL.

Please remember that the closing date for entries is 22 July. Entry forms are enclosed. The judge assures me that the inclusion of folding money or spare specimens will in no way influence his decisions.

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**COLLECTION VISITS: PUBLIC AND PRIVATE** **Mick Wolfe**

Nine possible visits were available to members (see newsletter 27, p10-11) but it looks as if only four will actually take place. The visits to Wollaton Hall, Nottingham, and Mike Leppington's home had little support at the symposium and in consequence nothing was organised. The museum visits to Liverpool, Sheffield, and Edinburgh all had to be cancelled due to drastic reductions in numbers of potential visitors once the dates had been established. This was unfortunate, but the possibility of new dates are still open to us. The visit to Oxford University Museum had to be postponed because of storm damage to the roof of the mineral gallery. It is expected that this visit will take place later this year. Those who indicated their interest will be notified as soon as a firm date is known. Roy Starkey's "at home" was on Sunday 13th May: so far there has been no report of its success or otherwise...

The date for Pearl and Sid Freeman's "at home" has yet to be finalised, but Shirley Adrian will be receiving visitors on June 23rd and 24th. She has made both dates available to enable as many members as possible to see her collection. If you were not on the original list, but would like to attend anyway then contact Shirley direct on 03224 32224.

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**BRITAIN'S OLDEST METAL MINE**

Recent radio-carbon dating of remains from an ancient metal mine on the Great Orme, Gwynedd has established that the mine was working in the Early Bronze Age, about 1700 BC, making this the earliest metal mine known in the British Isles. More than 300 yards of galleries have been found, running as much as 50 yards below the original surface. Many of the miner's stone tools have also been found in excavations carried out by the Gwynedd Archaeological Trust. Fire-setting was used to break up the rock at the working face.

Independent 2 Sept 1989

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**MINERAL COLLECTING IN THE SNOWDONIA NATIONAL PARK** **Roy Starkey**

During the course of a recent visit to Snowdonia I had the opportunity to discuss the problems of mineral collectors and other resource users with Gareth Davies, Head Warden for the Snowdonia National Park. Discussion centered around the well-known locality of Fron Oleu at Prenteg near Tremadoc, where considerable damage has been done by removal of material from outcrops high above the main road, undermining tree roots and de-stabilising vegetation. In recent months, irresponsible over-collecting [this is not to imply there is such a thing as responsible over-collecting - Ed.] has drawn the attention of the land owner and the National Park management, and it is important that responsible amateur mineralogists and societies are aware of the situation.

The National Park in conjunction with the landowner has embarked upon an important scheme of tree planting and fencing to regenerate the natural oak woodland on the slopes around and above Prenteg. The project is linked to the Government sponsored 'Set-Aside' scheme and involves a funding agreement spanning ten years.

Several points emerged:

1 No-one should visit Prenteg to collect geological specimens without first contacting Gareth Davies at the Snowdonia National Park Office, Penrhyndeudraeth, Gwynedd, LL48 6LS (tel. 0766-770274). It is my understanding that permission will not be unreasonably refused, subject to agreement by the land owner and an undertaking of responsible behaviour by the collector.

2 Serious damage to the woodland project will result if fences are breached, but currently no stiles have been provided into the collecting area. It follows that great care should be exercised by individuals when entering the site.

3 Preferably, please leave the locality alone for a few years to allow the situation to cool off and vegetation to become established.

4 On the positive side, the National Park Office maintain a database of landownership for the whole of the National Park, and will be pleased to assist in tracking down relevant contacts to assist visiting amateur mineralogists and geologists seeking collecting permission.

5 There are a great many environmental pressures on the National Park from user groups such as motor cycle rallies, auto-cross, mountain bikers, rock climbers, university field parties, undergraduate and postgraduate researchers, as well as the amateur mineralogical and geological community. The management authorities are seeking to maintain a delicate balance, so far as is reasonably practical to allow visitors to pursue their particular interests. However, in the case of the earth sciences, excessive damage to outcrops and destruction of exposures is viewed in a serious light and there is a real danger that irresponsible behaviour may result in a 'No hammers' ban, like that which exists on National Trust property. This is clearly not in the best interests of amateur mineralogists and I would therefore urge a policy of restraint, and particularly stress the need to seek permission in advance for field meetings.

Your assistance in this matter is of great importance to ensure that collectors and landowners may continue to enjoy a reasonable relationship, aided by the National Park authorities. [A similar situation applies in all National Parks, and a policy of restraint and prior permission should be applied by all collectors at any site - Ed]

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**PENBERTHY CROFT, CORNWALL**

Your assistance is requested by BMS member John Betterton (21 Linkway, Edgcumbe Park, Crowthorne, Berks, RG11 6ES) who is researching information on the mine and its minerals for a future article on the locality. John is particularly interested in data concerning pyromorphite-mimetite series minerals that occur there. John also reports **mottramite** from Penberthy as dark olive green crystals on bayldonite (members attending the last Symposium may have seen this material).

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**ERRATA**

John Betterton points out that the blue mineral associated with birnessite from Penberthy Croft (BMS specimen no.772) is woodwardite and not chrysocolla as incorrectly stated in the last BMS Newsletter (27, 13).

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**MISSING**

Specimen no.35, epidote from Loanhead, from the BMS Reference Collection went missing at the last Leicester Symposium. Would the person who has unwittingly and quite innocently mislaid it amongst his or her own collection please return it to Max Wirth or confess it has been thrown away.

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**GEEVOR MINE, CORNWALL**

Following yet another slump in the price of tin (brought about by vast amounts of cheap ore from a newly opened Brazilian deposit) , Geevor mine has again been forced to close down. Most of the work force has been laid off, but many forecast a return to work and regard the lay-off as only temporary. But with a tin price currently below £4000 per tonne, prospects are not too good.

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**BMS REFERENCE COLLECTION** **Max Wirth**

An important element is missing from the BMS catalogue: namely a list of literature references. If any members - perhaps the donors of the original specimens? - are willing to search for or otherwise supply references for specimens in the Collection, would they please contact Max Wirth. Further catalogues could then contain a bibliography and thus become very useful sources of information for members. It would help this project if future donations to the Collection were supplied along with all relevant references. Thank you.

The latest list of Additions to the Reference Collection contains quite a few interesting specimens:

A field trip with Kemp Meikle to Gairnshiel near Ballater yielded a variety of specimens. It is a granite and pegmatite area, remarkable for the fact that both cassiterite and scheelite are said to be present. A small crystal of cassiterite has been added to the Collection (863) amongst other pieces. Specimen no. 860 contains some small white sharp bipyramidal crystals at first thought to be scheelite but having the wrong optical properties. Neil Hubbard suggested they may be wulfenite and this is a possibility for they are soluble in acid and contain lead.

Several sites in the Caldbeck Fells have yielded specimens for the Collection:

Mike Leppington has contributed a representative selection of minerals from a small site in Silver Gill (851-859). Two of these are very good: wulfenite as a very thin square plate and langite crystals of typical colour and habit. Nether Row Brow has yielded some cuprian adamite (866, 867) as pale blue-green crystalline spherules in a matrix of baryte and quartz [confirmed by XRD at the NHM - Ed]. From Dry Gill, Mike Rothwell has also contributed a

fine example of plumbogummite (868) as a very pale blue crystalline crust setting off yellow mimetite [probably pyromorphite - Ed]. From the Deer Hills Baryte mine I have contributed a very rare, very ugly [I've seen worse - Ed] very small mineral called schultenite (883). The less worse part of the specimen has been lodged with the NHM who identified it.
At our last Leicester Symposium, John Dickinson was offering schmeiderite and I have added a specimen to the collection (876). The mineral forms very small sprays of linarite-blue silky needles. Most photogenic.

From Scotland Kemp Meikle has donated an unusual strontianite (881) forming distorted stepped hexagonal prisms on baryte and quartz. Kemp has also supplied us with a specimen of native silver from Boyleston Quarry showing an encrustation of minute acanthite crystals (889) which appeared on the silver some months after its collection. [A similar occurrence of acanthite forming post-collection was confirmed at the Leicester Symposium on a specimen from Red Gill mine, Caldbeck - Ed]

Isabel Geldart has given us a nice selection of antimony minerals from the Knipe (897-900), some of them, including zinckenite, confirmed by the NHM.

Finally, I have been writing to dealers to try to locate species missing from our collection. Corrie Minerals have sent a piece of 'djurleite' which I have promised to buy (expensive!) provided the NHM can confirm it and Nick Carruth has sent us - free of charge - three interesting specimens: well crystallized bornite, cosalite, and johannite (886-888). I call that a good deal. Thanks Nick.

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**'MINERALS OF THE ... CALDBECK FELLS'** **Mick Cooper**

After many months of slow, but deliberate, progress and many different predictions ('september 89', 'autumn', 'before christmas', 'after christmas', 'spring') NHM Publications have finally committed themselves to an actual publication date: May 31 (1990) for this long awaited tome (by me anyway). I give this information not as sales promotion but to save any more 'when is the book coming out' phone calls! Only one thing worries me: the final page and colour proofs were only approved by me at the beginning of May; between then and May 31 it all has to go to the printers in Singapore...and back. Final sales price for this 160 page book will be £14.95 though an advance bulk purchase would enable a good saving for society members. Contact me if interested.

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**BMS SYMPOSIUM 1990** **Ken Luff**

This year the symposium will again be held at Leicester University on the weekend of 22/23 September. The format of the proceedings will be similar to that of previous years. Those who have not attended before should note that there is a prominent educational theme to the Symposium as well as being a get-together of old friends. Indeed, in the mineral world it is one of the few educational symposia available. There will be a competition (for the silver cup recently given to us by the Russell Society) and an auction again

this year - provided you supply the material. Although the auction has been specimen orientated in the past, other artefacts used by mineral collectors will be acceptable provided they cannot be classified as 'junk'.

Registration forms and further information will be sent out at the beginning of June.

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**BMS FIELD TRIP TO THE CALDBECK FELLS, May 5-7** **Mick Cooper**

Some 15 members braved the heat and brilliant sunshine of the recent May Day weekend to trek over the Caldbeck Fells, most arriving on the Friday to join myself and Neil Hubbard who had spent the previous two days in the area away from the clamour of the crowd. The sites visited on the field trip proper had to be carefully planned to allow access by the less mobile members of the group; in general two routes were proposed to each site - the hard route over the fell and the easy one around it.

**Saturday.** Our first day took us to Red Gill mine where but a few specimens of immediate interest were found: a couple of specimens of possible mattheddleite (Peter Wallace and Neil Hubbard), some small leadhillite plates (Ralph Sutcliffe), and an attractive combination of acicular malachite with cerussite (Mick Cooper). The party then split up, some going over Yard Steel to the top of Silver Gill where a small dump around an old shaft has previously yielded wulfenite: Neil Hubbard reported one small specimen found this time. The remainder of the party returned to Dale Beck and proceeded to the 90 fathom level dumps of Roughton Gill. Some of this group later climbed to the 60 fathom level dumps in Roughton Gill proper, mainly to admire the scenery. The first party arrived here later, having gone over the head of Silver Gill to the higher reaches of Roughton Gill. Find of the day at Roughton Gill was made by John Shepherd (who was visiting the site independently of the Society): a remarkable specimen of 3 small transparent cherry red wulfenite crystals on pyromorphite; a most unusual colour. In the local pub that evening our party was graced (or disgraced, depending on your point of view) by Cornish dealers Nick Carruth and David Lloyd, en route for Scotland.

**Sunday.** Another beautiful day. Main target was Dry Gill, the easy route being along the old mine road up the Carrock Beck valley via Driggith mine. Even so the journey between Driggith and Dry Gill was not deemed easy enough and most of that party stayed at Driggith. Here, on the 30fm level dumps, several specimens of a pale peppermint green sugary or globular mineral were found. I suspect that this will turn out to be a copper or zinc arsenate (I'm hedging my bets on this one). On some specimens found by myself this mineral was associated with a minutely botryoidal green encrustation. This mineral dissolved in hydrochloric acid without effervescence - always a promising sign - watch this space for results of XRD analysis of these minerals. Also found were some pretty pyromorphite specimens in bright yellow globular crystals with colourless cerussite; and some pearly masses of aurichalcite blades.

The more mobile group climbed Brandy Gill and crossed over Carrock Fell, arriving in Dry Gill way before their field leader who had accompanied the slower group (who had not visited the area before). This proved to be,

mineralogically speaking, a bad mistake: the first arrivals at Dry Gill had mopped up all the plumbogummite to be found on the dump before I got there. This was probably the find of the trip: many hand specimens of plumbogummite-coated baryte were found in the scree, several of which promised to be good pieces once the mud could be removed. After spending several hours at Dry Gill the majority of the party returned over Carrock Fell, calling in at the Brandy Gill Lead mine on the way down. Here, a few specimens of mimetite were found in the vein outcrop: attractive sprays of minute yellow crystals on drusy quartz.

**Monday.** Refusing to be daunted by a forecast that threatened a dramatic change in the weather, we spent the morning on the dumps of the Deer Hills Baryte mine. Since most of the party were too impatient to wait a few minutes for their field trip leader, the easy route was missed and most had to climb the fell alongside Ingray Gill. A few members dropped into this gill to investigate the old trials near its head. Little was found. Unfortunately, little was found on the Deer Hills Baryte mine dumps either: one or two specimens of the agardite group mineral reported from here recently but no obvious adamite, the only other note-worthy species known from here. One small specimen from the largest dump (the Deer Hills Level) showed attractive sheaves of pale blue hemimorphite, but specimen-quality material is very sparse here. From here we proceeded up the fellside to an exposure of the Deer Hills Quartz vein which has been known to yield a few small specimens of micro crystals of carminite and pharmacosiderite, with crusts of scorodite, beudantite etc. When I first visited this site a couple of years ago there was almost no evidence of collector activity. Now the site is devastated: discarded chunks of vein material cover the site to a depth of nearly 2 feet and a large hole has appeared in the outcrop. There is so little material here of collector quality that large quantities of barren vein quartz have to be broken up to find anything worth keeping. Ask yourself whether it is really worth the effort before you mess up this site any further.

At this point, the long journey back home through Bank Holiday traffic looming, the field leader had to leave. Before finally leaving the area though, I visited the new Mining Museum in Priest's Mill, Caldbeck (see separate entry for this below). The remaining members were then taken to Nether Row Brow by Neil Hubbard. Two trials have been made here: the 'Dumpy Stone level' and the 'Farm Level' (these are not the old men's names; just modern epithets derived from nearby landmarks). The Farm level was visited and some nice, but small, pharmacosiderite crystals were found; Neil also reports some respectable (for the area) specimens showing a fibrous grey sulphosalt (several species have been reported from here). On leaving the site the party were caught in a severe hailstorm, so vindicating the earlier weather forecast. All in all though, the weather had been very good to us and the weekend trip was a very enjoyable, and an occasionally productive one.

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**CALDBECK MINING MUSEUM** **Mick Cooper**

The Caldbeck Mining Museum is the latest addition to the Priest's Mill complex in Caldbeck village, Cumbria, alongside previously established craft shops and workshops, a second-hand bookshop and an excellent coffee bar/ restaurant. The minute museum was set up by Ian Tyler, proprietor of a sports shop in Carlisle and one of Lakeland's most determined and experienced mine explorers. Its display includes photographs of many Lake District mines, especially in Caldbeck, along with mining tools - some dating back to the sixteenth century - and other memorabilia found in the workings and dumps or uncovered during research in old archives. Some larger items (such as mine trucks) are displayed outside the mill. The shop associated with the museum stocks, amongst other things, a good selection of books on mines and mining in the Lake District and the north of England. Ian is hoping to publish a book list in the future. Depending on the success of the venture Ian is hoping to extend the museum somewhat as space becomes available. The museum also organises guided walks around historic Lakeland minng sites. Do support the museum if you are in the area. Opening hours are Jan-Feb: closed; Mar-Sept: Tues-Sun 11am-5pm; Oct-Dec: Sat & Sun 11am-5pm.

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**CARROCK MINE - SITE ACCESS** **Mick Cooper**

On a recent trip to the Carrock mine, Mosedale, Cumbria we found an al fresco meeting of the Lake District Special Planning Board in progress on the dumps. A couple of points arose from our discussion with them. Firstly that the bulldozed tailings slimes at the eastern end of the dumps were to be grassed over. The original plan had been to seed the entire site but nothing had been done about this after the mill had been cleared. The present intention will leave the main portion of the dumps open to collectors. Secondly that the landowner wanted to close the access road from Grainsgill Beck bridge to the mine to prevent cars from parking on the old mine site. This means that collectors will have to vie for parking space with day-trippers and others presently using the area near the bridge. This parking space can be very crowded on a sunny day as the Caldew here offers some very popular swimming pools. Apart from these points we were happy to note that the ranger's tolerance of mineral collectors continues to be good. Long may it continue thus.

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**PSEUDOMORPHS** **Trevor Bridges**

'Pseudomorph' is the term used to describe mineral specimens where one mineral has adopted the crystal shape of another. The name is derived from the Greek words for 'false' and 'shape'.

It can be very difficult to be sure a specimen is a pseudomorph and even more difficult to know what the original mineral was. In fact certainty is only possible where residues of the original mineral are still present. Pseudomorphs are characteristically opaque with rough and corroded surfaces

and rounded edges. Sometimes growth patterns of crystallites of the pseudomorphing mineral can be seen within the original crystals.

There is no generally accepted nomenclature for pseudomorphs, but a useful (and old) one is:

**Infiltration pseudomorph:** a cavity infilling. Particularly common are the pseudomorphs of clay after halite from the Permo-Trias.

**Incrustation pseudomorph:** an overgrowth of one mineral upon another. Where the original mineral has been subsequently removed the resulting hollow pseudomorph is sometimes known as an epimorph or, more rarely, a perimorph.

**Alteration pseudomorph:** where a chemical reaction or series of reactions has effected the change. A special case of alteration pseudomorph is the **paramorph** in which the chemical composition stays the same but the crystal structure changes; such changes are commonly found of low temperature forms of a compound after a high temperature form, e.g. acanthite after argentite.

**Replacement pseudomorph:** where no apparent chemical reaction has taken place.

**Examples:**

**Goethite after pyrite:** an alteration pseudomorph

$$2FeS_2 + 5H_2O + 7\tfrac{1}{2}H_2O \rightarrow 2FeO.OH + 4H_2SO_4$$

**Quartz after fluorite:** replacement

$$CaF_2 \rightarrow SiO_2$$ no obvious reaction

**Chrysocolla after malachite:** incrustation or alteration

This pseudomorph often occurs by incrustation. If it really is an alteration pseudomorph it is the result of silicic acid acting on the malachite. The oxidation and weathering of shales often release the necessary silica and aluminium.

**Malachite after azurite:** alteration

Azurite is only stable in the presence of enhanced carbon dioxide levels (over the atmosphere). If the carbon dioxide goes then the azurite can change to malachite (therefore all azurite in collections is in a metastable state).

$$2Cu_3(CO_3)_2(OH)_2 + H_2O \rightarrow 3Cu_2CO_3(OH)_2 + CO_2$$

**Kaolinite after orthoclase:** alteration

Can occur as a hydrothermal or weathering process.

$$KAlSi_3O_8 + CO_2 + H_2O \rightarrow Al_2Si_2O_5(OH)_4 + SiO_2 + K_2CO_3$$

(as an exercise, try balancing the above equation)

**Cassiterite after orthoclase:** replacement or infiltration

$$KAlSi_3O_8 \rightarrow SnO_2$$

No obvious reaction. The result of hydrothermal tin-bearing solutions.
**Chrysocolla after vesselyite:** Alteration. The result of silicic acid solutions or colloids upon the original crystals.

**Galena after pyromorphite:** alteration. The result of the action of sulphide-rich reducing solutions on pyromorphite probably following from a rising water table.

**Wolframite after scheelite:** alteration. This reaction, and its reverse, is the result of calcium-rich (or iron/manganese -rich) hydrothermal solutions.

$$CaWO_4 \rightleftharpoons (Fe,Mn)WO_4$$

Further reading [Ed.]:

Frondel, Clifford (1935) Catalogue of mineral pseudomorphs in the American Museum of Natural History. Bulletin of the American Museum of Natural History 67, 389-426 [contains an interesting discussion on the genesis of pseudomorphs, a historical bibliography, and many examples]

Schaller, Waldemar T. (1932) The crystal cavities of the New Jersey zeolite region. Bulletin of the US Geological Survey, 832 [very fine descriptive paper on the many remarkable moulds, incrustation, and infiltration pseudomorphs from this classic area]

Miers, Henry A. (1897) On some British pseudomorphs. Mineralogical Magazine 11, 263-285 [describes then-new pseudomorphs in some detail and lists all other pseudomorphs then recorded from the British Isles.]

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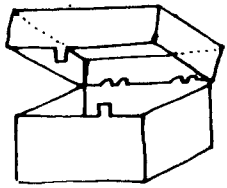
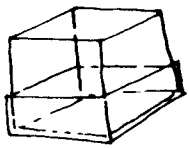
**MICROMOUNT BOXES**

Neil Hubbard has offered to supply micromount boxes to members attending the Leicester Symposium. The styles of box available and their prices are illustrated below. Cash with order please to Neil at 122 Cordery Road, Evington, Leicester, LE5 6DF, as soon as possible.

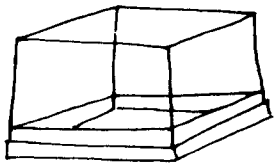
Hinged lid, black base, colourless lid. ⟶
25mm square with 12mm or 7mm deep lids.
Both sizes £9.20 per 100.





⟵ All-clear push-on-lid type.
Approx 25mm cube. £5.50 per 100

'Jousi'-type, thin white base
with high top, approx 40x30x30mm
£6.00 per 100



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**RECENT PUBLICATIONS OF INTEREST** **Mick Cooper**


Braithwaite, R.S.W., Paar, W.H. & Chisholm, J.E. (1989) Phurcalite from Dartmoor, Southwest England, and its identity with 'nisaite' from Portugal. Mineralogical Magazine **53**, 583-589

Johnstone, G.S. & Mykura, W. (1989) British Regional Geology: The Northern highlands of Scotland. 4th ed. BGS

Nicholson. Keith (1989) Manganese minerals in Scotland. Sottish Journal of Geology **25**, 125-142

Nicholson, Keith (1989) Manganese minerals from the British Isles. Mineralogical Magazine **53**, 637-638

Raistrick, A. & Jennings, (1965) A history of lead mining in the Pennines. [this classic work, along with several others on the northern minng districts, has recently been reprinted by George Kelsall, Littleborough]

Searle, Alison (1989) Saddle dolomite: a new view of its nature and origin. Mineralogical Magazine **53**, 547-555

Wood, D.N., Hardy, J.E., Harvey, A.P. (1989) Information sources in the earth sciences. 2nd ed. Bowker-Saur (Butterworth), Sevenoaks.

Zwaan, P.C., Arps, C.E.S & De Grave, E. (1989) Vochtenite...a new uranyl phosphate...from Wheal Bassett...Mineralogical Magazine **53**, 473-478


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**NEW MEMBERS**

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Stephen Paul Plant - our first member from Wales? 20 Llwyon Close, Energlyn, Caerphilly, Mid Glamorgan,Wales. Tele 885234

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