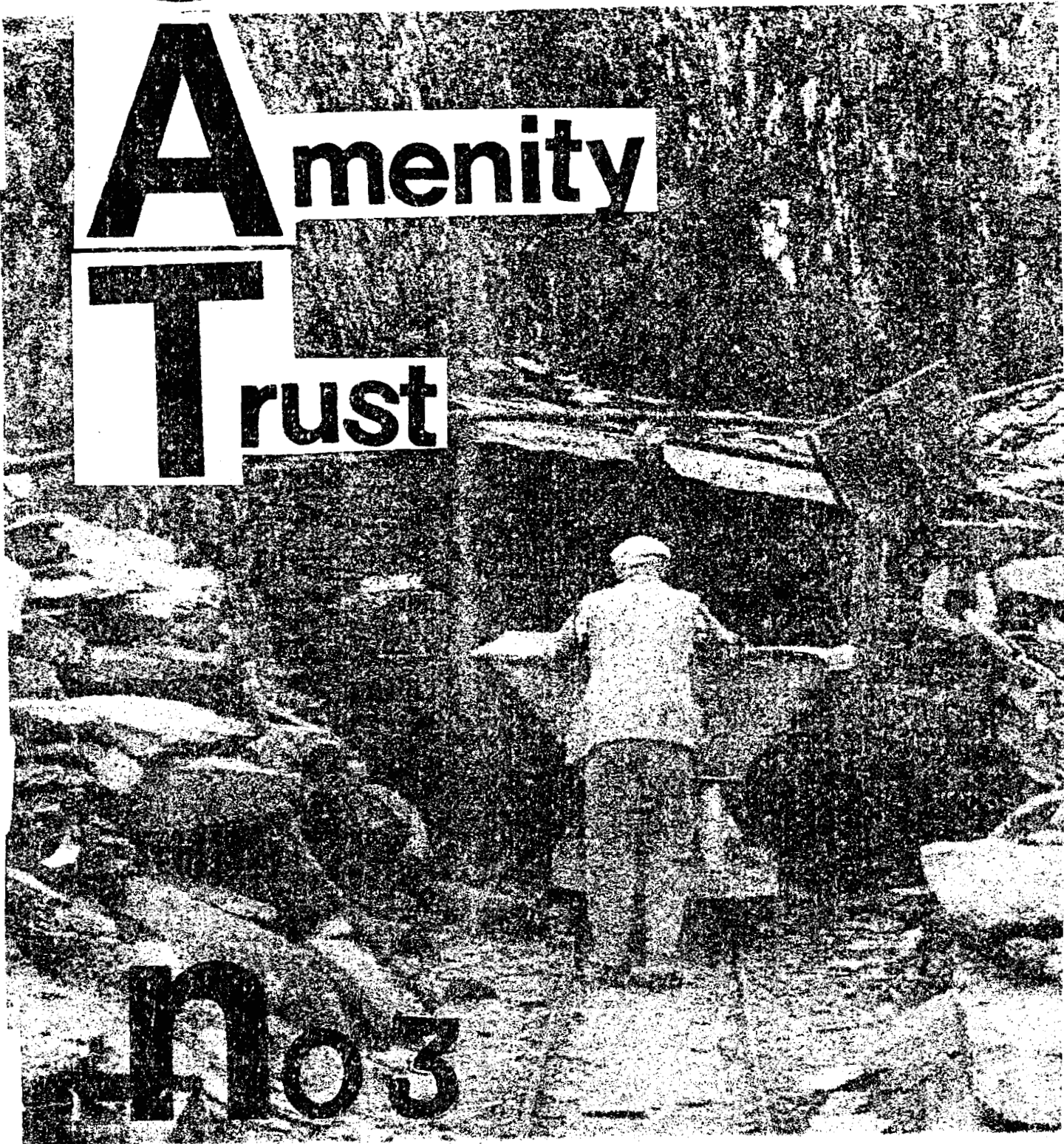


Cumbria

1983

Amenity

Trust



No 3

newsletter

EDITOR'S COLUMNS.

Well here I am again folks snowed under with contributions, though except for one, they all seem to have been contributed by the same bloke i.e. ME! However, to give variety I refer to meself as 'writer' 'Hon. Sec' 'Holland' or 'Eric'. If there are any complaints that this newsletter is "frivolous", well I heartily agree - - parts of it anyway. But it is to be my last and thanks to those who, in the past, have complimented me upon my efforts. However, I understand that there is to be a feast of newsletters, and a journal is to be of a very high standard. This one was to have been longer but had to be curtailed due to reproduction problems. Still 33 pages isn't too bad is it? There is a page 27A. Cheerio.

Compliments of the Season to all.

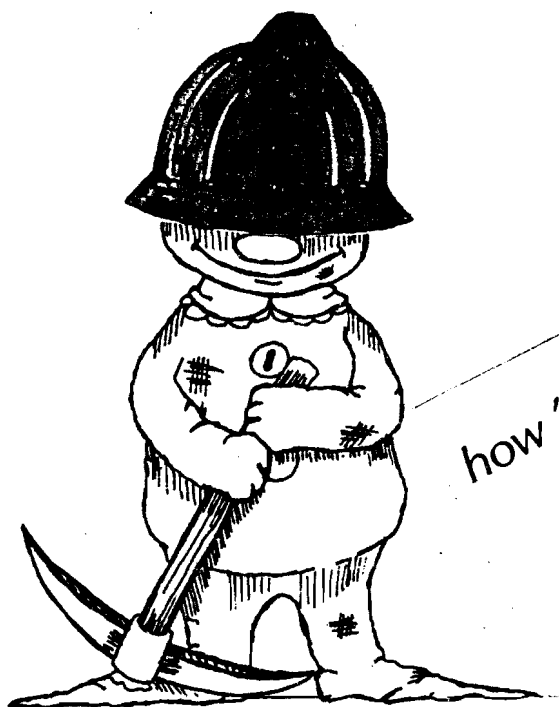
E.Holland
December 1983.

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how 'bout contributing to the delinquency
of a minor

Courtesy of MAX
& CLAIRE DOBIE!

CHAIRMAN'S REPORT

The end of another year is once again upon us, and I am pleased to record that it has been an eventful and successful year when measured in terms of new discoveries, a broader spectrum of meets and a further increase in membership.

The Coniston Mines yield their secrets and will continue to do so for some time to come. The biggest find this year was the upper reaches of what is believed to be "Cobbler's Hole" and a new length of Deep Level. Elsewhere we re-opened the old copper mine on Dalehead, which has still to be fully explored and Goldscope revealed new finds. Nenthead has also received much of our attention, numerous deep shafts having been descended and new extensions to the more 'popular' mines discovered. This neglected area has a lot of potential.

In March, fourteen members attended a joint meet with the Red Rose Potholing Club, who took us through the Lancaster Hole Easgill system. It proved most enjoyable and very sporting, especially as the stream passage was in spate.

In May/June, CAT had its first overseas meet. This took place in Southern Ireland and proved to be very successful. There is now talk of a meet in Greece in 1984. Later in June we acted as host to the Red Rose and the Barrow Mountaineering Club when we took them into Coniston Mines. More recently the meet at Greenside lead mines broke all records when no less than 32 members and guests descended the ladderways to Lucy Tongue level on what is always a long and arduous day out (or is it in!)

Early in the New Year, our first journal (as mentioned in the minutes circulated in November) should be available. It will be titled "The Mine Explorer" and is to be issued free to paid-up members. The Editor, Chris Jones, would be pleased to hear from anyone who could sell copies. Perhaps through their friendly local bookshop. The journal will contain much original research, plans, sections and photographs, almost all in Cumbria. It is in fact our CATalogue of explorations

Stemming from the publication of the journal, future Newsletters will be a much slimmer affair, but should be issued more frequently under the joint editorship of Chris Jones and Alen McFadzean. I should like at this point to record our thanks to Eric Holland for the three annual newsletters to date. Since taking up his university course and commuting almost daily to Lancaster time has not been on his side, nevertheless, CAT affairs have not been neglected in his capacity of either secretary or newsletter editor.

The ladies have again given support with fundraising activities, and our thanks are given to them. Maureen Stone deserves special mention for the cool efficiency with which she holds down her post of treasurer/membership secretary. Well done Maureen!

Stalwart, unyielding work and support comes from all other officers and the Committee, who all contribute to keep the Society going from strength to strength. Thanks to you all, and Best Wishes for 1984.

Peter Fleming

An outline of the origins and development of the Furness iron mining and smelting industry until the 16th Century.

The Furness District possessed an iron industry which came to an end during November 1983 with the closure of the Barrow Steel Works. The continued operation of Caird's Foundry must not be overlooked but this smelter concerns itself with the re-smelting of scrap metal.

Furness was found to be richly endowed with the red haematite iron-ore whilst good veins are found amongst the fells and mountains of the hinterland. In the Furness Fells, and those of South Lakeland, hundreds of bloomery sites have been located few of which possess any form of written record. The beginnings of the industry cannot therefore be dated though radio-carbon might one day provide at least some of the answers. The early Scandinavian settlers were well skilled in the art of iron manufacture and forging yet to lay the origins of the industry upon their shoulders is but speculation.

Simple though these early hearths were, the modus operandi is still not completely clear and modern attempts to emulate the craftsmen have often led to failure despite modern refinements such as fan blowers and pyrometers.

In Ethiopia where iron is still produced by primitive method a smelt was observed and recorded. Failure to produce a good yield was attributed to the taking of flash photographs - lightning during a smelt was regarded as a bad omen. Menstruating women were not allowed to assist at the process. In the smelt witnessed only enough iron was produced to make 2 or 3 sickles.

Attempts in upper Ghana were made in 1971 at two villages. At Zanlerigu the process had been discontinued c. 1914 and was revived from memory but a great deal of effort failed to produce any iron. The reason given was the "strength of the ore". A musician attended to assist the bellows man to maintain a regular rythm. At Jefisi iron making using ore has only in recent years been given up in preference for the re-melting of scrap metal. Success in the Jefisi experiment would probably be attributed to the sacrifice of a chicken at the commencement of the operation. At both places the tree from which the charcoal was made was kept a strict secret.

This aspect of secrecy may have a parallel in the Lakeland Fells. There is evidence that deliveries of raw material were deposited a little distance from the actual hearth. This may

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have been an attempt to prevent hauliers from gathering too much knowledge of the reducing process from close observation.

Not until after the Conquest, and the establishment of a great religious house in the Furness 'Vale of the Deadly Nighshade', do we notice the emergence of a proto-iron industry although the possibility of its active existence before that date must not be ignored. It was a pattern of development to be found wherever the industrious Cistercian monks rooted themselves. The abbeys of Rievaulx, Fountains, Byland, Durham, and of course those in France, all possessed forges in the 12c., and as we shall see the Abbey of Saint Mary of Furness proved no exception.

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It was normal practice for the Cistercian monks to involve themselves mechanical and industrial matters - this need occasion no surprise. Indeed it may be considered that they saw in the lessening of human toil a provision of more available time to concentrate on the matter of salvation. It was policy to acquire land, and where possible, minerals in that land. There is no evidence that the choice of site for the Furness Abbey was influenced by the presence of iron ore though its existence must have been agreeably noted by the precursors of the religious order. It was Stephen, Earl of Bologne and Montain, who having obtained much land in the region by 1125 granted large tracts two years later to the foundation of an order of monks and St. Mary of Furness. The location probably owed its choice because of the nearness of the sea; the fertility of the soil; and the rich and extensive (at that time) woodlands which swept up into the Furness Fells.

There was no shortage of willing donors of land, many doubtless seeking to acquire merit, and the guarantee of a worthy resting place upon death within the abbey precincts, with the hope of heavenly favour towards their departed souls. The most significant of these land transfers concerned territory at Oregrave - a place name believed to be derived from the Anglo-Saxon and meaning a trench, grave or groove, from which ore was worked. This might well imply evidence of mining prior to the Conquest though caution must be exercised in this. It is no longer possible to identify the location of this early working. It is clear however, that any such would be upon an ore-body which was thinly covered and thus easily exposed by

by stripping off such cover and such a location would need to be unhindered by water. There would have been a number of possible sites in the Oregrave, Marton, or Crossgates areas. The working in question might well have been upon the Eure pits Vein which strikes from Crossgates on a line running easterly to southern end of the Lindal Railway Tunnel.

We must turn to the Furness Coucher Book for the first authentic references to iron ore, and by analogy its mining. Here, in a grant which must have been made soon after the establishment of the abbey, say c.1199, Roger the son of Orme de Oregrave confirmed the earlier gift (and ownership of land) to his brother William, made by his father, but saving all mineral of iron (*mineria ferri*) in that land to the monks of Furness forever. An appendix declares the consent of Roger's wife to give to the abbot and the monks all of the rights which he could have "in all the mine of iron which was in the field of Oregrave". Roger later provided a quit-claim in perpetuity to the abbey of all the iron ore in the common-field of Oregrave together with the use of water from the stream passing through his land (which we now know as Poaka Beck) for washing the ore in readiness for the furnace. The monks were quite prepared to pollute this beck despite their own use of the water nearer to and at the abbey. Nevertheless the redness of the water did not mean that it was poisoned. Indeed the rich colouration may have in some strange manner provided evidence and pleasure symbolising their industry. For this privilege of *purgatio minerii* the abbot gave Roger 20/- of silver "in his hand". Later Harmo de Oregrave was to unsuccessfully contest the validity of these gifts by his father.

Subsequent to the above grants Orme de Kellet, son of Adae de Kellet, gave lands and quitted his rights also at Oregrave. In all of these gifts, and sales, the ore appears to have been won from diggings open to the sky. In one grant of 6 acres it was clearly being dug down upon and laid bare (*fossam ubi foditur mineria*), in the form of a wide trench.

In this same period Thomas le Fleming confirmed a grant to the abbey of the iron ore underlying his land at "Alinscales" which appears in the ^mDomesday Survey as Chiluestreuc(o.e.) to be renamed Killerwick by the abbey. Not all of Alinscales (now known as Elliscales) belonged to le Fleming however, for duly Hugo de Moreseby (heir of Symon de Boiville of the rich Cumberland land owning family) also granted mineral rights

at Elliscales to the abbey. A second grant by Hugo yielding up mineral rights, also at Elliscales, refers to a furnace for smelting owned by him, and he reserved the right to obtain ore for this notwithstanding the rights to the mineral he had conferred upon the abbot. Later one Robert de Laybourne was appointed attorney to receive such ore and this authority was shed upon the demise of Hugo.

Significantly Thomas le Fleming incorporated in his transfer a proviso that no damage was to be caused to his buildings by raising of the ore below. The implication here is that deeper mining was not unknown, that pits were being sunk, and that the effects of subsidence were making themselves apparent. It might well mean that damage to property had taken place as a result of injudicious mining.

Now all of these acts and transfers (and others not here mentioned) are dated pre-1235. It was at this period that Harmo took the abbot Robert de Denton to task over the grants to the abbey made earlier by his father. The outcome however was not beneficial to any mining entrepreneurial designs which Harmo might conceivably have cherished and he was forced to accept that the minerals at Oregrave did legally belong to the abbey and that he had no rights in the matter.

A mandate from King Richard II to the Duke of Lancaster queried whether it would be to anyone's prejudice if exclusive rights to the ore in "Merton" (Marston) and elsewhere, were to be granted to the abbey. After consideration by 13 jurors Royal Assent was given but some of those rights were held by Willemus de Merton who was forced to Chancery at Lancaster where his claims were upheld.

There is yet more evidence of early mining and smelting given in a grant, by William de Lancaster during the reign of Henry III (more precisely between 1220-46), to the house of "Conungeshewed and the Bretheren dwelling there", of one acre of land for a forge and associated buildings. The dead wood at Blawith was given, wherever it could be found, to make charcoal for the furnace and allowance was made for unhindered access for men and horses, and grass for the animals. There was clearly a mine at Plumpton from where the ore could be won easily and the abbot of Conishead Priory in this grant obtained the right, though not the ownership, to take ore as he needed. Later an inquisition during 1333 by Edward III indicated that the profit of iron made upon land at Plumpton,

Blawith, and Newland, was worth 33/- a year.

perhaps the earliest reference to iron works is one made earlier than 1199 providing evidence that Baron Gilbert Fitz Reinfrid acted as a rudimentary iron-master taking ore from Oregrave with the grace of the abbot but allowing that he himself possessed no claim or right to any such without the convents gift and will.

It has been shown then, that the abbey became the owners of a great deal of territory and much of it with hidden mineral wealth under the soil. Just how much ore there was they could never even have guessed at but even had they known the technology did not exist to allow deep exploitation in wet ground. This was of no consequence to the fortunes of the abbey. The region's demand was not high for iron metal and the mining method then applied allowed the demand for ore to be competently met. Neither was there, at this stage, any serious problems over the supply of charcoal for the small but voracious hearths.

Dating the first mineworkings in Furness carries serious problems in that no evidence of such has survived. We have seen that the 12c. and earlier witnessed the exploitation of ore from shallow openworkings after the removal of overburden by hand. Nevertheless the grant by Thomas le Fleming sometime before 1235 was carefully worded to forestall the possibility of damage to his building by the removal of underlying ore. It has always been assumed that the progression of method was the open work as described, followed by the bell-pit stage, graduating into the deeper mining with horizontal workings along the ore. It might be argued however, that depending upon ground conditions, the competency of the country rock, and the nature of the ore, all three may have operated simultaneously. In addition to this the term 'bell-pit' requires some discussion.

The bell-pit is to be found where a horizontal bedded deposit (this would include flint bearing layers in chalk), or a mass of ore, lay only about 10ft. to 30 ft. below the surface the superficial cover being of a sedimentary nature which in Furness is generally glacial boulder clay. Through this a shaft, perhaps six feet across, is sunk until the sought after stratum is reached. This is then worked away laterally in all directions until, one might safely theorise, the place becomes unsafe when it would be abandoned. A fresh pit would be put down close-by - its debris being dumped into the previous. A number of these pits may be working at one

time - the controlling factor being that of demand.

The local haematite ore is, by its nature, friable and not readily self-supporting. Nor indeed is the overlying material sufficiently homogenous to hold up. Quite certainly wooden shoring would be frequently required not only in the access shaft but in the heavy ore itself to maximise output from the working..... to cover, perhaps, the capital outlay of prospecting, sinking, and for the failures brought about by coming up against large glacial boulders and/or bed-rock, or a poor choice of location. The water-table would be known but might rise in wet weather causing temporary abandonment. So that in order to take out as much ore as possible risks were doubtless taken frequently. Despite the use of wood for roof or side support accidents may have been frequent though no records of such exist - they may simply never have been written down.

The bell-pit then, would be concentrated on the tops of wide shallow deposits and it can only be regarded as a wasteful means of extraction, a fact which must have been painfully obvious to the operators. To minimise the amount of ore left unworked the pits were kept as close to each other as possible, but this created a weakened strata fraught with potential hazard.

Access to the pit was by rough ladder, and ore was hoisted to surface either hand-over-hand using a coarse rope, or by simple, that is non-g geared, windlass. But clearly the bell-pit method skimmed off part of the summit of an ore mass leaving most of the ore untouched below. Mined by a different system in later years, near total extraction has resulted in subsidence, on a large and often spectacular scale, obliterating the evidence of these much earlier workings.

Where veins existed in limestone however, the method was at once mining in its truer sense. Even here the first workings were upon the outcrops by open-cast methods. As these deepened however, it would be an obvious matter of course to employ wood to restrain the sides where these were weak; to support those portions of the vein too poor for economical removal; and for platforms to work from. The likelihood of discovering at least remnants of early workings in the Stainton/Urswick/Bolton Heads areas is quite high but would require excavation. It was in this region (these areas are adjoining) that numerous veins up to 20 ft. in thickness. The thinness of the cover

would have ensured their early discovery and it is possible that the first mining in Low Furness started here.

The Iron Age settlement of Urswick Stone Walls, at Bolton Heads, sits almost astride old vein workings which appear to have been worked early on by open top methods with deeper mining to follow. Unfortunately 1983 saw most of the old surface evidence, southerly of the settlement, obliterated in an agricultural improvement. Bloom^{ing}ery sites have been found in the district but to locate one and identify it with the settlement would be of utmost importance.

Posing its own set of problems was the discovery in 1870 of a pair of polished stone celts, or hand axes/hammers, found with a crude iron tool against a breast of ore in an old working broken into by a drift driven off from the foot of a shaft at Stainton. The description of this find is insufficiently authoritative and leaves many questions unanswered. Nevertheless one is forced to draw conclusions from the find but because of the overlapping of innovation between regions, and often a deliberate resistance to new methodology, together with here in Furness, a remote area not provided with incentive to introduce new ideas, the difficulties are clear. Clearly however, the discovery of stone tools (iron tool notwithstanding) pushes the frontier backwards and inevitably we are forced to conclude that deep mining had been known long before the Conquest. However, it is needlessly optimistic to imply as one writer has done, that iron works existed here at the end of the Stone Age, misquoting in the process his source of information. A knowledge of the use to which the ore was put would be invaluable. Was it for iron making or the manufacture of paint ('redde')? A paint mine such as this dated to 80,000 \pm 5,000 B.C. is reported in Hungary.

It is clear that whatever the state of the local iron industry prior to the Conquest and its continuation (or commencement) during monastic times, the establishment of the abbey stimulated and improved the whole region. The monks had iron made for their own purposes and it may be considered that eight or so bloomeries in the Low Furness supplied these needs of approximately 8-10 tons per year. The gradual erosion of the Low Furness woodland, partly for the manufacture of charcoal, but also as a result of agricultural clearance, made the High Furness Fells increasingly attractive with their thick forest cover. As the Low Furness bloomeries became starved of

fuel Edward III gave licence to the abbey to enclose woods and create parks. Three of these on the east side of Conistone Water were virtually adjoining - Parkmoor, Water Park, and Lawson Park. Bloomeries were established within them. These would, in the first instance, be fuelled by the clearance of the enclosed woodland. It has been claimed that cattle and sheep were pastured until the wood had grown sufficiently to be cut again. This can not have been correct for grazing animals would effectively prevent any natural regeneration. After the first wood had been consumed it would have to have been obtained from elsewhere albeit at a higher cost.

During the monastic period perhaps some 40 bloomeries were at work at the outlying settlements and hamlets. These operated under the aegis of the abbey which bestowed one ton of "livery iron" to the tenants of each settlement having cost the abbey 8d. a stone to produce. This was for the purpose of plough and implement repair. The tenants paid their rents to the abbey in tithes of grain, lambs, calves, and so on but derived in return, iron, bread, wood, beer, and manure. It must be assumed that the more distant bloomeries delivered to a central collecting point from where distribution would take place by abbey representatives reserving surplus to the abbey. It is not clear how the bloomery operators were rewarded. It can be considered that some sort of supervision of the iron making needed to be provided by the abbey in order to prevent deception.

It has been noted that the abbey drew no less than one-sixth of its temporalities from mining revenue in 1292. About this time it is disclosed the abbey forges yielded a profit of £6/13/4 against a profit from the flocks and herds of £3/11/3. Certainly the abbey exported both iron and ore out of the region but it is clear that most of the production was absorbed by local requirements. From about 1400 to the Dissolution no reference to mining appears to exist. There is no mention in the Ecclesiastical Survey of the abbey profits in 1517 nor in post-Dissolution Ministers' Accounts. Annexed to the Duchy of Lancaster certain lands were sold off or otherwise disposed of. Three such properties which became free-hold by the process became famous 19c. ore producers.

Nevertheless the absence of recorded evidence of mining should not be taken as irrefutable evidence that none was taking place. Mining has been seen often to take place under the

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terms of a simple verbal agreement, or even clandestinely. In matter of fact the first proper mining lease to come to the notice of historians was dated 1542 though no proof of working is offered. The lessee William Sandys, who had also taken over one of the three abbey bloomeries, was demised the rights to dig for ore within the King's Lordship of Furness.

To-date over 300 bloomery sites have been located in the South Lakeland Fells, perhaps only half of the number which have existed. Obviously not all would operate at any one time, and many would perhaps be worked by itinerants only staying in one place as long as timber was conveniently available. It has been estimated that some 30 acres of woodland was needed for the continuous operation of a typical bloomery which would produce in a year 1 ton - 14 cwt. of iron from $14\frac{1}{2}$ tons of ore. It was considered that a Norwegian bloomery site employing two or three men (making their own charcoal) might have produced two melts a week - say 70 lbs. of iron. Thus a full year of operation, allowing for festival close-downs, would produce only about $1\frac{1}{2}$ tons. Ore might have been supplied by 60 packhorse loads, but charcoal approx. 1,500 such loads!

The primitive bloomery were never able to reach the melting point of iron. The first hearths are believed to have been supplied with natural draught only - concentrated by shuttering and a special funnel shaped mouth. However reliance upon the wind must have been somewhat irksome and failures must have been commonplace. The introduction of the single, and eventually double bellows for a continuous blast of air enabled slag to run off molten for a short distance but the ore was reduced simply to a pasty mass containing entrapped slag, cinders, and unreduced ore. This mass, or bloom, required repeated re-heating and hammering to eject the unwanted material. This was carried out on a separate hearth the bloom being shaped into a wrought bar of good quality for further attention by a smith. Dud Dudley considered that even after the introduction of the foot bellows the cinders from the process contained about half of the original iron and were worth re-smelting in improved furnaces. This has been confirmed more-or-less by an estimate of 40 per cent. of the iron lost in bloomery slags.

It has been suggested that the quality of the iron was good, perhaps needlessly so for the purposes to which it was to be put. This writer provides a good description of a 14c. bloomery and smithy operating in Weardale and owned by Bishop

Langley - one of the Earls Palatinate of Durham. Those in control of the plant were a collier (charcoal burner), a bloomsmith who must have controlled the furnace, and the subsequent hammering and smithing being performed by a skilled man operating a "strynghearth". A foreman supervised a number of labourers, and his wife and the wife of the smith assisted in sizing the ore in readiness for the furnace and attending to the bellows. The workers were provided with wooden dwellings and were paid on a piece rate. This concern was clearly no ordinary bloomery for it produced nearly two tons of iron in a week, more than the Lakeland bloomery was expected to deliver in a year! This may well have made extensive use of water power, both for powering large twin bellows, and possibly the operation of a mechanical or tilt-hammer. A works of this nature could well afford to supply ale to the workers with extra for festive occasions when the furnace was temporarily shut-down. Not until the latter half of the 16c. were such improved methods introduced into Lakeland. Instead, the old methods survived, and despite the introduction of the water-powered bloomsmithies in perhaps the early 16c., a suggestion has been made that some survived in use into the 18c.

Throughout the Medieval period it has been computed that the approx. output of iron in Britain was 900-1,000 tons, allowing 2-3 tons per annum for about 350 active iron-works. There was no shortage of iron despite such a low figure - the economy did not suffer from low production since it itself was limited and undemanding. The shortfall was made up by imports which were cheaper than the British product. It may be suggested that the position was not assisted by an unwillingness to invest in water power for blast bellows and heavy trip-hammers. Iron making tended to remain more of a craft nature and so far as Furness is concerned the state of the market caused no great need, as has already been explained, for any early expansion in mining or iron manufacture. This pattern was to change violently during the 18c. On a national basis however, we are informed that despite widespread deposits of ore England became an importer of iron as early as the 13c. with a great dependency upon Spain. Lack of documentary evidence however, makes accurate computing difficult. The British industry was always a high cost producer. Even Durham Abbey, despite the readily available Weardale carbonate

ore, purchased raw material from Spain with the cost of shipping it was more expensive but its quality tipped the balance in favour when considered against the lower grade local material. At least isolationistic Furness did not have to suffer this indignity.

Powerful Shoe Flashlight Is Recharged by Foot Action Works with boots.



A handy helper for night watchmen, tunnel dwellers, the infirm, the near blind, outdoorsmen, explorers, bat-keepers, and the like is this novel shoe fitted with its own "toe-light," patented by a New Jersey man. Unlike earlier models that utilized a simple flashlight mounted on the shoe toe, this clever invention is designed to harness the natural power of the foot and leg in walking or running motion. An insulated clamp fits over the leg just below the knee, holding in place an asbestos sock with open-toe construction to allow six wires, three positive and three negative, to coil around the bare toes. A simple generator under the foot arch is linked to the big toe and hooked up with these wires as well as to the 2-watt bulb of the shoe light by a short insulated cable. Back-and-forth movement of the foot and pumping motions of the leg are sufficient to direct steady current to the bulb, and electrocution while running is rare.

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IT HAS BEEN OVERHEARD THAT
THERE ARE MEMBERS WHO STILL
DO NOT BELIEVE IN KNOCKERS!
What do they say to the
article below then?

WHISTLING AIR CRASHES

Would you worry if you heard the pilot or crew members of an aircraft whistling during a flight? Some aviation-accident investigators think that perhaps you should. Debate on the question began in the mid-1970s when Robert Rudich, an air transportation consultant to the Federal Aviation Administration, first raised the issue.

More than two hundred cockpit voice recorder tapes removed from aircraft involved in accidents ranging from the minor to the catastrophic since 1966 have shown 10 percent have a recording of one of the pilots whistling during the fatal crash. Rudich attributed the whistling to a sense of relaxation and a lack of pilot alertness, and urged pilots to be alert enough to make critical errors. Other experts, such as Gerald Bragg, former director of the

Society of Air Safety Investigators, questioned this interpretation, saying whistling can also have stressful connotations, including an attempt "to create an atmosphere of confidence in conditions of uncertainty or fear."

Paul Turner of the National Transportation Safety Board, who went through the tapes to count the number of whistlers, and himself a pilot, cautions against worrying too much about it.

Many times, Turner says, things are always moving audibly in the cockpit. "Your ears are always active. Then, when things get quiet, you whistle. I guess pilots just don't like quiet." Turner admits, however, that whistling is a reaction to stress in some cases. Citing one incident in which pilots pucker up while a fire raged in the rear of the plane.

One researcher noted the debate raises the important question as to whether pilots have too much to do at some times and too little at others, either of which might adversely affect performance.

The question cannot be dismissed lightly in any event. Rudich, who first raised the issue in a speech to the Lawyer Pilots Bar Association, ended his presentation by playing a composite tape from several aircraft accidents.

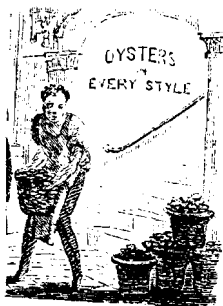
Rudich said that the tune one captain was whistling just before his Boeing 707 crashed was the first few bars of "The Battle Hymn of the Republic."

Allan Maurer



Impending disasters have been related to whistling pilots.

CHILD LABOUR IN COLUMBIA



THE YEAR OF THE CHILD COAL-MINERS



BENOIT GYSEMBERGH in Medellin, Colombia

MENTION child labour in Bogota and the replies are evasive.

'It exists in the countryside. When a father is hired to harvest coffee, he gets the whole family to help.' But small boys in the mines? 'It doesn't happen.'

I made my way to El Estadio mine in the village of Clarita, near Medellin, the second city of Colombia and capital of a mining region. The bus leaves from a part of the city here 13-year-old prostitutes look like tired old women.

On the way it crosses richly fertile country and passes lorries loaded with coal. Then it stops amid a collection of poor houses. Small piles of coal are distributed along the village street.

At the end of the village mules ply to and fro between the road and a little river. This is where the mine is.

A path made slippery by clogs leads to the entrance of one of the galleries, a black hole five feet high cut into the rock. You hear the noise of picks and voices.

A body, breathing heavily, climbs slowly up the clay steps inside. An old man, his upper body naked, puts down at hundredweight sack of coal.

I follow him and enter a gallery with my only light, a candle, in my right hand. With my left I feel for the rough surface of the ceiling to guide me. The air becomes heavy. The steps stop short in a small lake—it has rained heavily in recent weeks.

Because of the water a spare gallery has been cut on the right. There are no pit props, no ventilation.

Then the gallery narrows. You hear, 30 or 40 ft below, the voices of children. Where we are, only boys of eight to 12 can work. Grown-ups are too big.

10p a sack

Child labour: A boy drags sacks of coal in a Colombian mine—one of 52 million children under 15 who, according to an International Labour Organisation report yesterday, are being exploited in the Third World.

The boy, who is under 12, gets about 10p for each sack—and working nine hours a day earns £11 per week. Only children are small enough to work in the mine's narrow galleries



Heads between their knees, 13-year-olds hack coal in an un-propped gallery that can collapse any moment.

The first children I meet are dragging sacks of coal on small sheet-metal sledges to the exit. They start at 5 a.m. and finish at 2 p.m. They have a half-hour lunch break. The five who are hauling the hundredweight sacks are paid seven pesos (10p) per sack.

Others are at the bottom, cutting the coal. These earn a little more: 10 to 12 pesos. To reach the end of the gallery I have to crawl 50 yards along the sodden floor, protecting my candle. It is impossible to turn about until the bottom is reached. There boys of 13 are hacking coal, lying on their sides or squatting with their heads between their knees.

Accidents? First, fire — in which case they abandon the gallery and start digging elsewhere. Next, the collapse of unpropped galleries. Then there are pockets of water that break through and flood everything. And, of course, fire-damp — undetectable without proper equipment.

These dangers are constant. Every family is affected sooner or later. But when you ask questions in the villages, everyone stays tight-lipped. The only accident mentioned, because everyone has talked about it, even the national Press, was a fire-damp explosion in La Corona mine three years ago. Forty-eight died.

Otherwise there is a conspiracy of silence. To talk is to risk the arrival in the valley of government work inspectors. The children are the first to obey orders. When you ask their age they reply without hesitation: 'Fifteen.' How long have you worked in the mine? 'Since 15.'

The school mistress says she is helpless. A child comes regularly to school. Then, one day, there's a job for a 'hauler' in a mine, and the family says the boy's sick.

He returns sometimes, but then he leaves school for good.

The parents themselves have gone down the mine at eight. Why shouldn't their children? After all, it's an income of 800 pesos a week (about £11) for the household.

The Colombian Government, which could clearly forbid such slavery, closes its eyes to avoid trouble with the mining families. In the coal-mining valleys of Colombia it is not school which is considered the children's right, but the mine.

It is the law of the adults. The children have no idea that there could be any other and continue to take their recreation, a half-hour every day, at the bottom of the galleries where death waits and watches.



WOMEN

Coal face values

Why should American women choose to enter the mines? One reason must be that it means breaching the ultimate bastion of male authority. It is also far better paid than other jobs. Angela John traces the progress women have made underground



Women who work in mines at Pittston, West Virginia: pictures by courtesy of the Pittston Post

IN BRITAIN women were prohibited by law from working in coal mines in 1842. Today their employment as miners is still illegal, and no suggestion of a resumption of women working below ground has ever seriously been entertained in this country. Even the Sex Discrimination Act recognises mining as an exception to the rule. A woman may now work in disused mines and occasionally in active mines (for example as a medical officer) providing her job does not ordinarily take her below ground for a significant proportion of her time.

Today schoolchildren continue to learn about the boys, girls, and women who, harnessed by belt and chain, pulled tubs of coal through tiny, damp subterranean passages. Such tales help to ensure that Britain will not readily adopt a "retrogressive" policy towards its workforce.

The United States lacks a similar tradition. Women never worked in the mines (excepting those few who helped work the small country bank mines of Appalachia during the depression) so the concept of having women as miners is linked to notions of progress and anti-discriminatory legislation.

In December 1973, six years ago next week, the first two women were hired at the mine in Jenkins, Kentucky. By mid 1979, there were over 2,500 women working in union mines and they now constitute just over one percent of the nation's coal miners.

Why should American women choose to enter the mines? One reason must be that it means breaching the ultimate bastion of male authority. The Tennessee-

based Coal Employment Project (CEP) has described American coal mining as "probably the most blatant discriminatory industry in the country today." The legal battles of the last six years have been witness to this but are also proving that, in one interpretation of the word, "progress" is gradually being made. Initially some coal companies hired a token number of women so that they were seen to be complying with the law.

Recently however the entire coal industry has been earmarked for a concentrated review of sex discrimination. Once in the mine, the women are able to prove their ability and as one of the first women delegates to a United Mine Workers national Convention pointed out, "If there's something physical that you can't do, there's a whole lot of those guys that can't do it too."

Yet the recruitment of women to coal mines must also be seen in the context of the backward Appalachian economy. Most women miners are needing rather than choosing this work. They are faced with few alternatives. If money is to be made in states such as West Virginia,

then it lies in coal. Other jobs (mainly in sewing factories and waitressing) are badly paid. In contrast entry level wages for trained miners are now 69.98 dollars a day (about £35).

Sandy Bailey had been a factory worker and bus driver but just about tripled her income on entering the mine. One 21-year-old Virginian woman with a disabled husband was earning 2.35 dollars an hour (18.80 dollars a day) in a sewing factory before turning to mining. Many women have dependants. A survey of entrants to the industry in 1975 revealed that over 53 per cent of the women miners with children were providing the only support for those children.

Virginia Chapman began working in the mines at the age of 48. Five of her 11 children were at home, their father had died, her second husband was disabled and "I just decided that I wanted my children to have as much as anyone else."

The money is not earned easily and the women find themselves in a particularly vulnerable position. Carol Jean Naland recalled her first day underground: "I went tippy-toeing around in there and I got stuck in the mud. I was mortified. I got wet, my clothes got stiff and I thought I was going to die but I kept saying to myself '57 dollars a day, 57 dollars a day' — that gives you a little incentive." Nearly two years later she remarked that what initially seemed like a horror movie, "is my world now."

All those entering the mine for the first time have to experience the shock of absolute blackness, the lack of sanitary arrangements and a gnawing tiredness. The



"I AM a drawer and work from 6 in the morning to 6 at night... I worked at drawing when I was in the family way. I know a woman who has gone home and washed herself, taken to her bed, been delivered of a child, and gone to work again under the week. I have a belt round my waist, and a chain passing between my legs, and I go on my hands and feet."

Woman Miner of Lancashire, 1842

women also have the men's reactions to worry about. As one woman put it, coalmining is "rough on men and downright abusive at times for women." Many have already alienated themselves from family and friends: "They don't know if you're a freak, a celebrity or just plain crazy." They can find themselves in a peculiarly isolated position.

Older miners, imbued with the traditional superstition that a woman in the mines heralded a disaster, are suspicious. The women have noted, however, that they nevertheless treat them more courteously than do the young miners. Aware of their image, the latter test the women for their reactions, trying initially to shock them by their stories and expletives. Not until both the male and female stereotypes have been challenged can the situation be relaxed. "Once they recognise that you're not there as a sex symbol or a big joke but to earn a living like anyone else, it's OK."

A study of 15 Appalachian women miners has shown that they at least felt under some pressure to work extra hard at first in order to prove themselves. Many women have not progressed beyond being General Inside Labourers (GI's), the entry-level work which includes such jobs as shovelling the belt-line, laying track, dragging power cables, and rock-dusting (spraying the walls with ground limestone to keep down the dust level). Once again they have found themselves the fetchers and carriers of the community, though the more prestigious section jobs (at the face) for which a miner has to bid (put in an applica-

tion which is judged on skill and experience) are actually less physically demanding and often easier than "GI" work once the technical skills have been mastered.

There are, however, an increasing number of women shuttlecar operators who transport coal on buggies and others who bid successfully to work on the Longwall (where all the coal is taken out progressively as the

"I GET UP at 4.30, I get home from work about 4.30 and I usually cop out about 9 o'clock. I worked for just over three months when pregnant, on the midnight shift. It was just a whole endurance test. The first three months of pregnancy you are exhausted, you want to cat-nap all the time but as faceman you are a jack of all trades, and carrying five gallon cans of oil, cribbing and hanging brattice cloths, and when your roof of your mine is eight feet up and you are trying to hang brattice cloth which is clogged with mud, it's extremely heavy... the baby was born November 1. Six weeks later I reported back to work."

Woman Miner of West Virginia, 1977

workings advance). Some women perform highly dangerous jobs as chocksetting (moving supports or chocks after they have been cut) and cribbing (placing timbers in a criss-cross pattern on top of the chocks to provide extra support).

Women are also entering other areas of mining work such as welfare and the inspectorate. They play an active role in the union and are becoming Presidents of

UMW "Locals." This summer the first conference of women coal miners brought together 250 women miners and their supporters from eight states.

A coal mining women's support team now exists and recently the CEP piloted a 20-week training programme for prospective women miners. The future also augurs well. President Carter's energy programme concentrates on promoting the domestic production of coal and it has been estimated that 45,000 new entry level jobs will be created in mining every year to 1985. Tough anti-discrimination laws will ensure that the implications of this for women will be significant. Last year, the country's second largest coal producer eventually agreed to train at least one woman for every four men until women constitute 33 per cent of the workforce.

The fact that women have asserted themselves as capable mine workers cannot but fortify the women's movement. It proves a point. It has also given women access to the only well-paid jobs in the rural — not to say depressed — Appalachian economy. But the decision to enter the mines inevitably involves balancing the prospect of good wages against a constant threat to health and life for both women and men.

On October 2 a new statistic was added to the history of sex equality in the United States: Marilyn McCusker of Pennsylvania became the first woman miner to be killed underground.

WE'LL KEEP A WELCOME IN CROESOR!

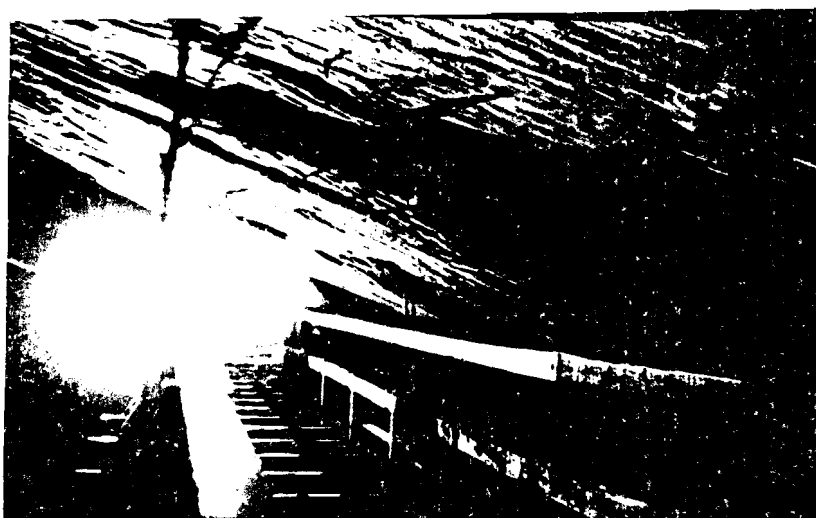
This tale really continues from the account of our earlier investigations outlined in C.A.T. Newsletter No.1.

The underground slate quarries in the Croessor Mine are reached by a long tunnel which eventually arrives at a large underground siding or station. From here an incline slopes steeply up to the foot of a deep shaft. At the top of the incline a 'window' opens into the side of a great cavern seen to run (on the right hand) parallel to the incline. From this 'window' a continuation can be seen in the opposite wall but, alas, out of reach. A 'window' on the left opens into the side of an enormous chamber strewn with the frightening evidence of terrific roof falls.

The mine (rather parts of it) had for many years been used as an explosive store for military and commercial material. Large quantities were once stacked in chambers which had been cleared of rubble, and gravelled, making them appear even larger than they were. On the mountain there was also the high dam for the Trawsfynydd Power Station and to the official mind there existed a potentially hazardous situation—clearly one of them had to go....it was the store!

On a visit in 1980 it was discovered that scrap men had been dismantling the place. The mine not having a drainage level from its bottom, electric pumps had been used to keep the place dry. These had been stopped and the mine was slowly filling up with water.

The incline continued down below the main level and some distance down this the first level ran off left and right. The floodwater was rising up the incline towards Level One as we shall call it. To the left strong girder and timber bridges ran across great chasms with the floodwater gleaming inkily what seemed a great distance below.



Strong timber and girder bridges crossed great chasms with water gleaming inkily far below.

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The bridges and all of the mine up to the main level would eventually be under water.

On the incline Level One also ran off to the right, past a brick-built cabin, and on, passing through quarry after quarry, some of immense dimensions. After the Easter 1981 trip (see Newsletter No.1), M. Wickenden and the writer made another visit (see again Newsletter 1), and found the water had risen quite a lot but had not reached Level One. It was still possible to enter all that we had earlier got into though at one point we almost got our feet wet! We managed to cross five of the quarries to a point where we scratched the date on the side. This level was driven from the incline on a gentle up-gradient to assist drainage down to the pump. Consequently as we crossed the quarries on piles of rubble, or rotten timber bridges, the level of the water fell lower and lower. We were stopped by a missing bridge and the water level was some 15-20 ft. below.... the tunnel could be seen in the opposite wall. At the incline the water was about 6 ft. below the Level One. It was on this trip that the writer performed his remarkable acrobatic feat at the foot of the incline!

Yet another trip was made in Autumn of 1981 by Wickenden, Holland, and Colin Horne - this time we took with us a good strong dinghy. As it turned out however, the water was but 18 inches deep on Level One at the incline and due to the gradients the dinghy soon grounded. In fact with thigh boots there was no problem - still it was possible to float about in the great flooded chambers spanned by the partly submerged bridges. As the water began to flow into the great storage caverns at bridge level, its rate of climb had slowed down as a result.

Another visit was to be made in the winter of 1981 this time by the writer, Wickenden, and Max Dobie. The heavy dinghy was lugged up the mountain and into the main level. At the incline it was discovered that Mark Wickenden had left the pump adaptor in the hotel room. The inflatable could not be inflated! The water stood about three feet deep on Level One at the incline.



In Autumn the water stood 18 inches deep on Level One.

Now it may be asked why all this interest in rising floodwater? Well the writer considered on his first lone visit there that as the water rose, the gradient of the Level One notwithstanding, there would be a particular depth when it would be possible to canoe along the right hand branch to establish a link-up with Rhosydd Quarries about a mile away. Maureen Stone informed us about the link but it was not Level One, it was a lower level, now well under water. No one had ever been able to make the journey that Holland thought should be possible.

It was on this trip that we decided to climb down into the great chamber reached from the 'window' at the top left of the incline. The abseil was about 60 ft. with the side of the chamber rather loose in places. The floor of this gigantic cavern was covered almost entirely with great blocks fallen from the roof. It was a frightening place and we spoke in whispers as we followed the walls round. We discovered access into another great chamber beyond but tackle would be needed to get into it - this could be a new trip when the water had cut off access from the incline and Level One. One wellington boot tread in dust showed that someone had been here before us, but there was only the evidence of that one foot mark. We do not know how he got in. Was there another route that we never found? There had been a way in from about half way down the incline - this was now blocked by rubble.

We decided to go up into Rhosydd and make a thorough search for the connection with Croessor. We found it, see below, and were able to squeeze through.

After a search we found a route down through a system of passages and chambers, to a final chamber which was part filled with water. A ledge led to a tunnel in the side. Was this the other end of Level One? The water level was about 12 ft. below the floor of the tunnel.



The Croessor - Rhosydd junction.

We did more exploration in this remoter part of Rhosydd and amongst other things found a second incline with a winding assembly at the top. Apart from the possibility of a remarkable through trip to Croessor, it was going to be worth while the society having another visit to see the place

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It was reckoned that some time early in 1982 the water might well have reached to roof level at the Croesor (I am going to spell it correctly from here on) incline, and this, to put it mildly would tend to make things a little awkward. It was not possible however, to get a trip together before Easter.

CROESOR SUBMARINERS.

Saturday was chosen for the attempted through trip. No check was made of the water level at Croesor end. Eight set out but two of them made a last minute discovery that they had hydrophobia, and went off at a tangent.

Getting kitted up at Rhossydd Quarry.

Colin brought his good strong dinghy, but there should have been two for safety. Have you ever attempted to buy such a thing in Wales. We got one for about £30 at Woolworth in Bangor, and we also obtained two incredibly ancient car inner tubes and we later discovered that the only difference between the tubes and the dinghy was that they held their air but the dinghy upon which our lives might depend was like Hissing Sid.



Left to right.

Alan McFadzean, Mark Wickenden, Colin Horne, Chris Jones (most people prefer their face in a photo) and Max Dobie. Eric Holland took the photo.

Even after its pumpture outfit was used it still fizzed. Whilst the ships were being inflated several of us went off up the second incline to see the winding gear used for letting down the trolleys carrying the waggons of slate to the haulageway. These inclines are self-acting, the heavy load pulling up a second trolley, or, a heavy counterweight. The winding gear was an arrangement of sheaved wheels, around which the wire rope passed, and which was fitted with a strong brake. When we returned we found the boats had been taken down into the first flooded chamber, along the loose ledge into the tunnel and lowered into the water in the next flooded chamber or quarry. The water was 10 ft. down from the tunnel. This meant that at the far end it would be at least 5 ft. deep! Chains left by the quarrymen proved very useful in what

would otherwise have been awkward spots but we had our own ropes and electron to help us. The greatest difficulty was getting the tackle into the dinghys and ferrying it and the bods across - two in a boat and both dinghys were fizzing merrily! As the tunnel was graded downhill in the direction we were going the climbs up and down soon became of no problem and at last we were able to step from dinghy into tunnel. In one stretch we saw the date we had scratched on the earlier visit - that caused a little excitement. Then came a longer section of tunnel in which the water rose from about 6 inches to 2ft.-9in. Large baulks of timber had floated in and Max and I pushed them ahead and out into the next quarry ever mindful of spikes and nails and the fragile nature of our hissing boats.



Underground Navigation.

After crossing the next chamber we entered the tunnel which had about 4 ft. of water rising steadily with the gradient. It now became necessary to lie down and pull the boats along being careful not to drag any slabs off the side or roof and into the boat with us. Helmets scraping the roof we emerged into what was the 2nd. chamber in from the incline. Jones and McFadzean were left perched on a rock in No.3 awaiting a lift. A shuttle service was put into operation which was made awkward because of the low roof. Now as we entered the 2nd. chamber our hearts sank - the water was 1ft.-6in. from the roof of the exit stretch of tunnel and it could be seen reducing to a foot or so. We could never get the boats through! Colin Horne and Mark Wickenden selected themselves for a swim through to reconoitre. Plunging into the very cold water, using the inner tubes for safety, they surged noisily out of sight. Colin had no wet suit on but then he's a

strong lad! After a while a cry echoed errily back through the flooded tunnel. I strained to hear - "....the cabin....gurgle...splash the cabin " the voice called, this time a bit nearer,"....splutter...choke..gargle..." Then there was silence while to two did a bit of further exploration. After what seemed an interminable wait, which must have seemed a lot longer to Jones and McFadzean for in fact the shuttle service had not by this stage been set up to get them. Then splashing came nearer, and louder, and suddenly the pioneers gasped back into chamber 2 where Max and I waited. Max was looking a little pale and worried but that was probably with having nothing to occupy his mind. The two had gone past the cabin where the water was about 5 ft deep, found the next stretch of roof came down to water level for a few feet and there ahead was the incline.

Max being the smallest was sent back with the big dinghy to rescue Jones and McFadzean. Wickenden 90 per cent. deflated the Woolie boat and pulling out a long rope as a guiding line set off for the incline. Dobie came back, in a perilously soft vessel, and the other two. This was then deflated. We then set off one by one into the 200 ft., or so, stretch. Max who was looking very pale, finally lept into the water clutching an inner tube with which he wret^stled like some Moby Dick and a small whale..... almost, as he came up for the fourth time, as though they were in mortal combat. The last through was Horne and myself (Holland). Swimming, while guiding the big dinghy out, our helmets scraped the roof. I had a full wet suit on but boy was it cold! Colin had been in the water a long time, and Mr. Dobie only had on $\frac{1}{2}$ a wet suit. Actually I expected to pass him partly devoured by the inner tube - but he got out.

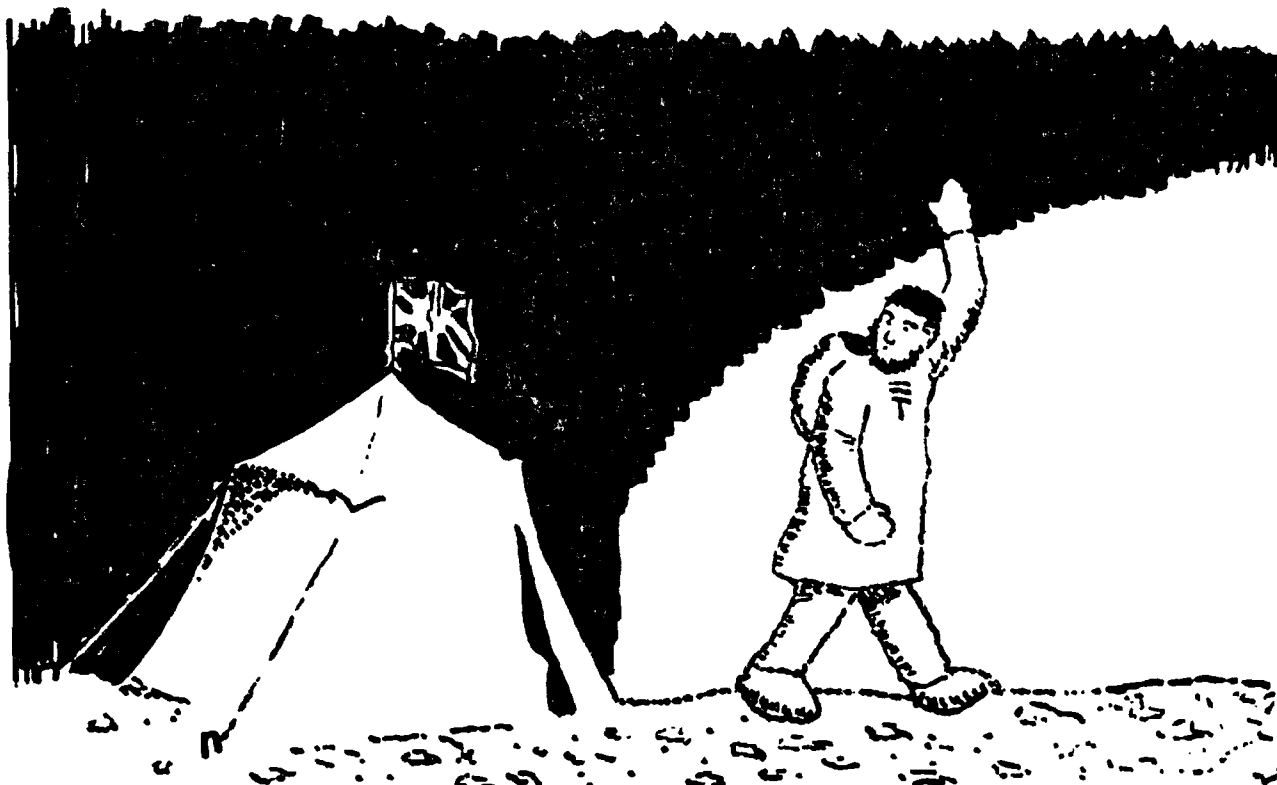
Max discovering with HORROR that the roof was only 12 inches above the water.

The brick and corrugated roof cabin appeared to glide slowly by - it was an odd sensation. The water was about 18 inches from the top of the walls. Probably no one would ever see that cabin again.

Well then there was a very low section, not really a duck, but near enough with your face under water - and there

was the incline. We were the FIRST and the LAST to do the trip. Perhaps as the water rises as high as it can it may allow access into other, at present, inaccessible parts of the mine - in a few years!





'DON'T WAIT UP FOR ME, LADS,' EXCLAIMED CAPTAIN OATES SOMEWHAT GUARDEDLY, 'I MAY BE RATHER MORE THAN A JIFFY.'

Rumours of a new disease linked with mine exploration have been substantiated this week by a leading scientist Dr. Gerald De Barrey. Dr. De Barrey, an eminent sociologist responsible for pioneering research into ergophobia and the mental stresses imposed by industrial environments, issued a report stating that as many as one in ten mine explorers are susceptible to the effects of Captain Oates' Complaint, a serious mental disorder which renders its victim insensible.

Said Dr. De Barrey last night in his Monmouthshire home: "The main symptom is an overwhelming reluctance to be associated with the removal of tackle from the mine, be it ropes or electron ladders. The victim will go to astonishing lengths to ensure he does not carry anything but his own personal gear, even if it means he has to scramble back to the surface before anyone else, and disappear into the night. Usually he will fabricate some excuse like - My God, I don't think the oxygen will last much longer so I'll drop out and let you stout chaps carry on the good work."

Dr. De Barrey has been studying Captain Oates' Complaint - COC for short - for several years now. Periodically his work has taken him into the field.

"Ideally, it's best if my guinea-pigs, as I prefer to call them, are unaware of my observing them. That is why I chose a group of people whos mental agility was a little below par. Incredibly, I discovered this lack of marbles made them more susceptible to COC. Yes the Cumbria Amenity Trust were the perfect study group."

Early in his preliminary work Dr. De Barrey came across his first COC victim, a Mr. C.D. Jones of Marton, Ulverston.

"The victim cracked up during the first descent of the Tilberthwaite Shaft," said the doctor, "He certainly wasted no time in prussicking out, and left his two mates to de-rig three hundred feet of S.R.T. pitches."

Secondary symptoms of COC are rather more subtle and are less easy to interpret. The main symptom is merely an utter abhorration of touching tackle, a sort of gear-phobia; while these secondary symptoms usually take the form of a) an all-out attempt to push to the front while exploring level ground, b) a tendency to skulk at the back of the queue while waiting to descend a new shaft, and c) a curious desire to insist one's father is the wealthiest farmer in the whole of Herefordshire.

Earlier in the week a C.A.T. spokesman, Mr. Pedro Blezario, a rather latin looking type who claims to be the smallest man in Ravenstonedale, said: "There are quite a few Captain Oates' Complaint victims in the Trust and it's up to us sane ones to weedle them out and help them. Either that or double their subs. By the way, anyone interested in donating a quid or two so I can mount an expedition the silver mines of the Greek islands?"

During October of this year the second COC victim was observed prussicking furiously out of the South Shaft, at Paddy End, Coniston. This unfortunate man was a Mr. C.D. Jones of Marton, Ulverston. It was noted that he was the last to descend the shaft and the first to climb out. An irate bystander, who was left to de-rig the pitch said: "The sod got to the top and skulked off out. Left me and Martin to coil up the rope. To cap it all the sod came back in just when we finished and said he couldn't find the can of ale he had left in MY car."

Later that night Mr. Jones' wife said: "My husband is under sedation in the New Inn. He is totally incapable of issuing a statement."

According to Dr. De Barrey's notes the worst outbreak by far of COC, which reached epidemic proportions, occurred during the Greenside Mine meet of November the 25th 1983, when no less than seventeen members contracted the disease. Worst affected were three less agile members, a Mr. C.D. Jones of Marton, Ulverston; Mr. M. Maher of Preston (not to be confused with Mr. M. Maher of Stainton, Kendal, who is taller and better looking); and Mr. D. Blundell of Staveley.

Said Mr. Blundell, when confronted by Paul Foot of the Daily Mirror: "It's not fair. There is nothing wrong with my brain. I had a big bag of personal tackle to lug up those bloody ladders without carrying ropes and God knows what else. So climb on somebody else's back, mate."

Mr. Maher was more forthcoming. In a statement scribbled on a petrol receipt for £19.50 he said: "My God, it was awful down there. I can't bear to think about it. We just cracked up.....Chris and me.....cracked up. Chris was worst. He's been under a lot of financial strain lately. He's just forked out a large sum of money for an old clapped-out rot-box of a landrover. I tried to console him.....told him that only last summer I paid a hell of a lot more for one that's in a far worse condition."

The situation became so intolerable in Greenside Mine that the meet leader, a rather pleasant chap who is at this moment laughing his socks off, was obliged to call out the Mines Rescue to help remove the COC victims who were staggering deliriously towards the Travellers' Rest in Glenridding. By the time the rescue team arrived on the scene the victims had vanished.

Said Mr. Mitch Michael, the Rescue spokesman and oldest man this side of the Ukraine: "We have a unique situation here. Two of the men we were dispatched to rescue are infact active members of the rescue team. They must have realised we would be undermanned and therefore assumed they would have had to carry their own stretchers. So they've buggered off without us."

Curiosity aroused by the findings of Dr. De Barry, this publication decided to embark upon some research of its own. We went direct to the horse's mouth and asked the tackle-master of the Cumbria Amenity Trust just what, in his opinion, was the cause of this phobia inherent with the removal of ladders and ropes from old mines. The tackle-master, a Mr. C.D. Jones of Marton, Ulverston, said: "As far as I can see there is nothing to talk about. The whole thing has been blown up out of proportion. Me and my mates think it is a left-wing subversive plot instigated by a bunch of namby-pambies we met in a pub in Nenthead."

To demonstrate his familiarity with electron ladder he uncoiled a 700ft length along a garden path designed specifically for such a task, exhibiting complete ease of movement and unconstrained technique.

"There," said Mr. Jones, "I haven't cracked up. That proves Captain Oates' Complaint is a load of bull."

Then glancing at his watch he uttered: "My God, is that the time? I'll miss last orders at the masonic social club. Sorry chaps but I'll have to dash. Important business you know. Do us a favour and coil those ladders up - By-ee."



DING DONG

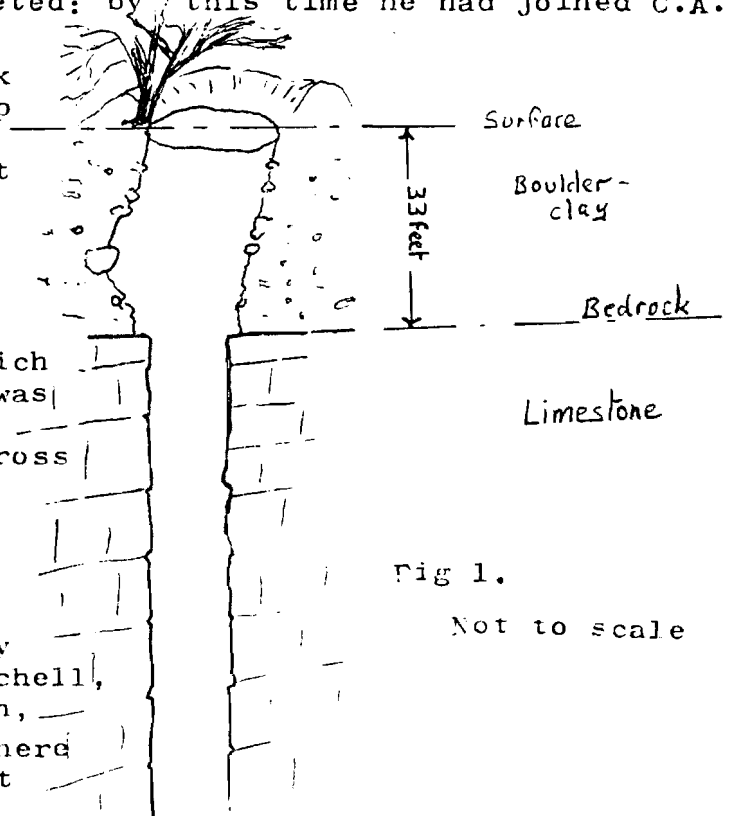
THE BIGGEST DEEPEST DIG IN THE WORLD!

This shaft, about 110 ft. deep, is one of scores which operated in connection with the Lindal Moor Mines, almost all of which have collapsed at their weakest points - where they passed down through the overlying boulder clay. Ding Dong falls through about 33 ft. of superficial material which is however, quite tough, though one side has frittered away rather alarmingly leaving an overhang. All traces of woodwork have long gone.

First exploations were made in the late '50's by the Furness Spelaeological Group when the shaft was found to enter a large chamber which gave access into quite a length of passages and other chambers. It is in an area which has been extensively mined. First reports of those expeditions are found in 'Underground in Furness' by E.G.Holland. Later in the 1960's the shaft was filled to the top with old car body parts and other debris and the mine was considered lost to the mine & cave exploring fraternity.

Several years ag a party of schoolboys, including Mark Wickenden, began to dig out the shaft - it was a task which was to run on for a great length of time with several falling by the wayside. As the hole deepened the work became more and more arduous and despite a pulley at the shaft top it became obvious that human power was not sufficient. Cumbria Amenity Trust came onto the scene and our offers of help were welcomed - our first task was to run a barbed wire fence around the site. A winch brought by C.Jones proved too light and was returned to its owner a little distorted. A Land-Rover was used with limited success. In the end it was the farmer's tractor which saved the day but all the way there was much hard work involved - buckets had to be filled with clay..... someone had to be down the hole to tie on the car parts. All in all it was a pretty dangerous task at the bottom - good lad Mark. Eventually the original group was down to 2 or 3 only, and there is no doubt that had it not been for the perseverance of Mr. Wickenden, the job would never have been completed: by this time he had joined C.A.T.

The arrangement now became that C.A.T. would carry out work intended to secure the shaft top and, where it passed through the glacial cover, to prevent it from collapsing in the future. The farmer was eager that we should proceed with this work being not too happy about the open shaft. Accordingly a Ding Dong committee was set up to which Holland submitted a plan which was accepted. The idea was to place a reinforced concrete 'floor' across the shaft but sitting on the bedrock ledge. This was then to be surmounted with a strong reinforced concrete framework. Wickenden & Holland cleaned and prepared the ledge. Later a party including Mark W., C.Jones, M. Mitchell, P. Fleming, A. Westall, A. McFadzean, P. Blezzard & Ann Danson - (was there anyone else? Sorry if I miss out



anyone's name) met to cut to length numerous boiler tubes supplied by Messrs Maher and delivered by Mike Maher. These were lowered down to Holland & Wickenden who positioned them side by side on the bedrock to form a floor which would carry the concrete. Corrugated sheets were obtained by Alan McFadzean and these laid over the pipes. Reinforcing mesh had been supplied very kindly by Murphy, the pipelaying experts, and this was placed ready for the concrete. Mike Mitchell supplied a concrete mixer several times during the project and gratitude must be expressed to him. The concreting went smoothly and was simply shovelled over the edge to be positioned by Holland, and Mark Wickenden.

More sand, chippings, and cement (these were bought by C.A.T.) were obtained ready for the next stage. Holland was contracted to build the shuttering and place the reinforcing steel in position. This took $17\frac{1}{2}$ hr over 2 days. Dowsett Construction gave us the bars and more went into the job than was ever planned for. Messrs Maher gave us two lengths of old standard gauge rail - delivered by Michael (ta!). Fig. 2 provides an impression of the structure which ended up thicker than ever intended.

The final stage of the work was carried out by Mitchell, Maher, Wickenden, and Holland (down the hole). We ran out of material towards the end and made a mad dash to Ulverston, using Mike Mitchell's trailer, for sand, chippings, and cement. But the job was completed and towards the end A. McFadzean, and later C. Jones, came over to offer a hand.

Eric's persuasion also earned us a gift of about 33 ft. of 42in. dia. steel gas piping from British Gas. Many thanks to them. Murphys again did us a great service this time transporting the piping from Flookburgh right to the shaft! Thanks also to the lorry driver for getting them as near as he was able. The pipes are of $\frac{1}{2}$ in. steel and are dammed heavy! Being in segments, however, we should be able to handle them.

These will be stood on the concrete, over the manhole, each segment welded to the one below until the column reaches the surface. The shaft will then be back-filled around it.

It is hoped that when the job is at last completed we shall be able to have a GRAND OPENING DAY with other clubs and societies invited.

Once again, thanks to all those who have played a part in the project, not forgetting the entertainment when A. Westall drove his car into a subsidence crater

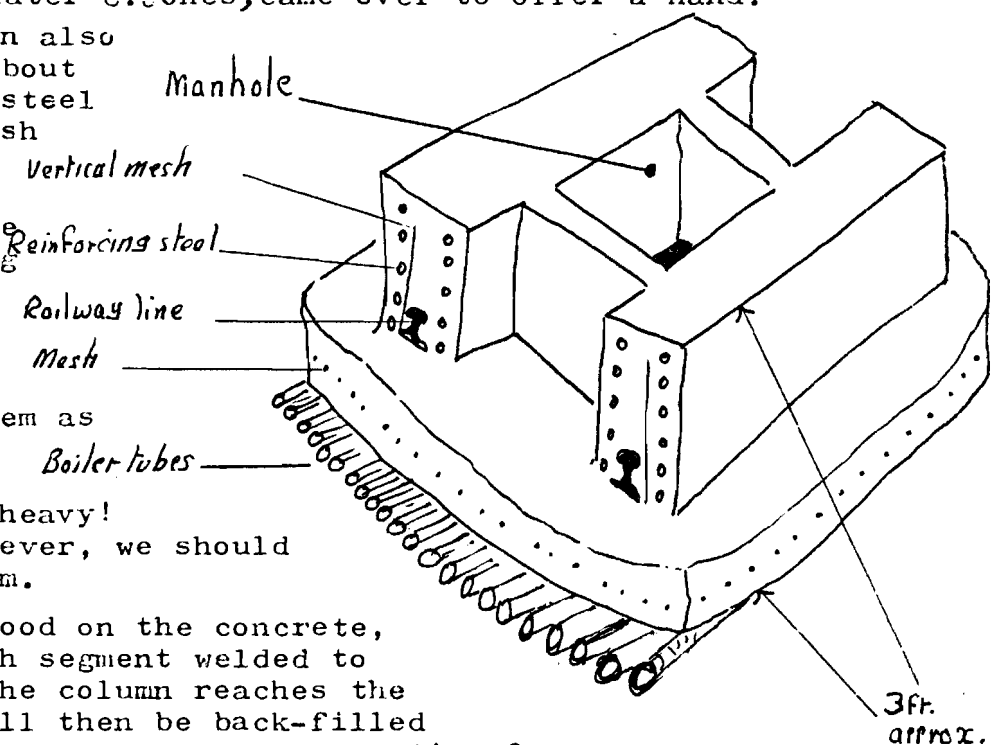
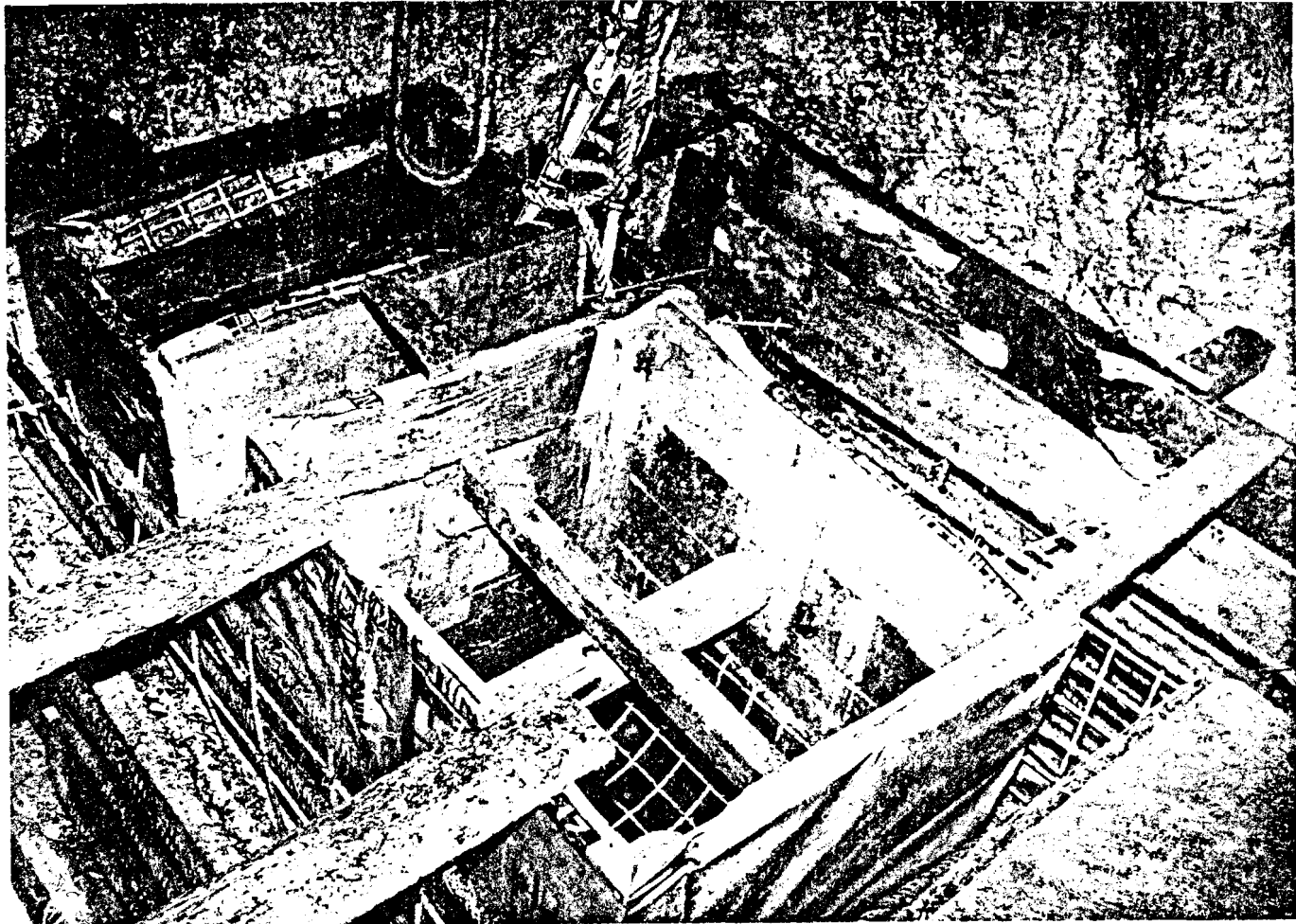


Fig. 2.

Not to scale.



*Detail of shuttering and reinforcing in
DING DONG*

MORE ABOUT WALES

See Newsletter
No. 1.

Mountain of mystery

MEMBERS of Parliament who penetrated the heart of Britain's most mysterious mountain — the closely-guarded Manod in North Wales — yesterday called on the Government to open the underground caverns to public inspection.

Their visit followed reports that the caverns are earmarked as a nuclear shelter for the country's leaders in the event of war. The MPs — members of the Parliamentary Select Committee on Education, Science and the Arts — visited the mountain under the leadership of Mr Christopher Price, Labour MP for Lewisham West, and committee chairman.

Mr Price, Mr Dafydd Elis Thomas (Plaid Cymru, Merioneth) and Mr Harry Greenway (C Ealing North) spent an hour deep inside the mountain, which towers above a lonely valley near Blaenau Ffestiniog.

Decades of slate mining have left huge chambers protected overhead by more

than 100ft of solid rock. The Crown Jewels and paintings from the National Gallery were stored there during the war to protect them from air attack.

Accompanied by a posse of civil servants, the MPs, wearing safety helmets and carrying powerful lamps, walked nearly half a mile into the mountain along a tunnel big enough to take a three-ton truck.

When the party reached a huge white door press representatives were told by officials that they were forbidden to go farther. After the MPs emerged from the restricted area, Mr Price said that the Select Committee would be meeting shortly and may report on the visit.

Later he added, "As a personal view, I believe it would be sensible to invite interested parties to see what is going on. The Government should reveal the purpose for which the buildings constructed inside the caverns are intended."

Mr Thomas, in whose constituency the Manod is situated, said, "Any speculation has been brought about by

the Government's addiction to secrecy."

"Open discussion is now inevitable," Mr Greenway added.

Inside the Caverns there are known to be several large brick buildings measuring more than 100ft by 40ft. Labels bearing the names of artists, including Rubens, Titian, and Constable, are fixed to the walls. The Government's lease has expired and a quarry company, whose land includes the site of the mountain, is hoping to regain possession — if necessary through the county court. Mr Glyn Williams, a director of Cwty-Bugall Slate Quarries, said, "There is excellent material waiting to be quarried, but we are unable to get at it."

Last autumn, Mr Frank Allaun, Labour MP for Salford East, alleged that the Manod was being kept ready not only for art treasures. "I suspect important people are going to be sheltered there."

Sir George Young, Environment Minister, told him: "The Department is not engaged in the work described by you."

Plan to blow up Royal bunker

A WELSH quarry owner wants to blow up what could be the Royal Family's nuclear war bunker.

The lease on the shelter — a labyrinth of caverns deep in a North Wales mountainside — was held by the Environment Department.

Now it has run out, and quarry boss Owen Glyn Williams hopes to blast the mountain apart to recover slate.

He is to ask Porthmadoc County Court to evict the Government men from Manel Mountain, Gwynedd, where works of art and the Crown Jewels were kept during the last war.

Daft

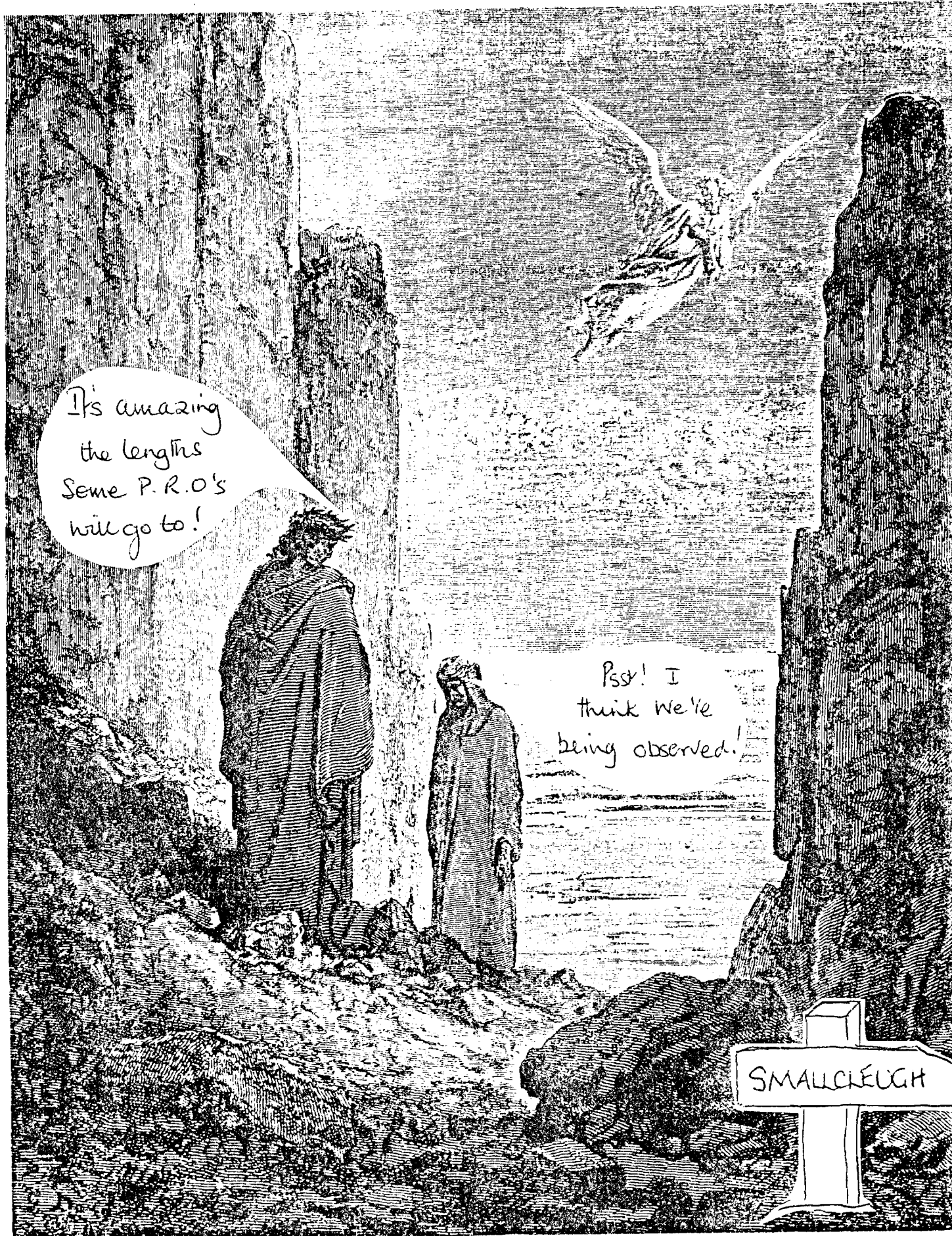
Mr. Williams said yesterday: "I'm not being unpatriotic, but the shelter is a daft idea."

"The snow was so heavy recently that the Royal Family would never have made it."

Labour MP Frank Allaun supports Mr. Williams, but said: "I suspect the mountain is being kept ready for art treasures in the event of war."

NENTHEAD BLUES

It appears that a certain club which operates in the North Pennines has taken a dislike to our activities in the Nenthead region. It has been suggested that jealousy is involved but that can't be true, after all we are dealing with adults who should be above that sort of thing. However, the fact is there appears to be a smear campaign in progress against us. We have been approached by N.A.M.H.O. and the Hon.Sec. has



I really
do think in
future we must
secure all shaft
tops!



been forced to write a letter of protest to N.A.M.H.O., and several members who have been personally involved, and who are indignant about the whole thing, have also written letters of complaint. Copies of these letters may be had for a photocopying fee. Certainly some of the allegations made by this club (is it GORTEX) are not true and we recommend that they get their facts straight. One thing is for certain, we have been visiting the N. Pennines and Nenthead since the early 1960's and we have every intention of continuing to do so. It is a sad fact that most sports and associations have political issues. These are almost always damaging and create unwelcome publicity and public attention. We would suggest that GORTEX, or whoever they are, bear this in mind. We are however, open to their apologies. It is a sad fact that before this little lot blew up we, at a business meeting, passed a motion to once again invite a club up to the Coniston Mines, this time in 1984.

The invitation was to be extended also to this other club - Cortex, Floortex, or whatever, in the interests of inter-club friendship. Sadly, but not surprisingly, some of our members are not very happy about this.

BAGE MINE AT WIRKSWORTH

P. Blezzard, Ann Danson, M. Dobie, M. Wickenden and E. Holland attended the invitation weekend. It was all quite efficiently done. A winch lowered bobs through an very small manhole into a shaft about 300 ft. deep. First stop was a staging (see Fig. 1) at the 190 ft. level. From here it was a tortuous system of very old hand worked tunnels some about 18 in. in width - one had to force one's way through in places. Mostly about 4 ft. in height. Quite a lot of people were lowered down, but they were quite thinned out in the tunnels. Interesting examples of stone roof support were seen (see Fig 2) and the place was generally



190 ft. landing.

dry and dusty. It was interesting to note the number of leather shoe soles and heels lying around. Some of these had clearly been on young feet. There were not very many places from where ore had been got and the general impression was that at this level, at least, it was rather poor. With such narrow passages it is difficult to visualise the ore handling procedure. Bags or baskets of it must have been manhandled through the workings - possibly from hand to hand in the form of a relay.

After we had had a good look around the 190 horizon, we began to search for, and at last found the shaft down to the 300ft. workings, which had been equipped with electron ladder. I remember that the shafts down were equipped with climbing stemples. They were very dusty indeed.

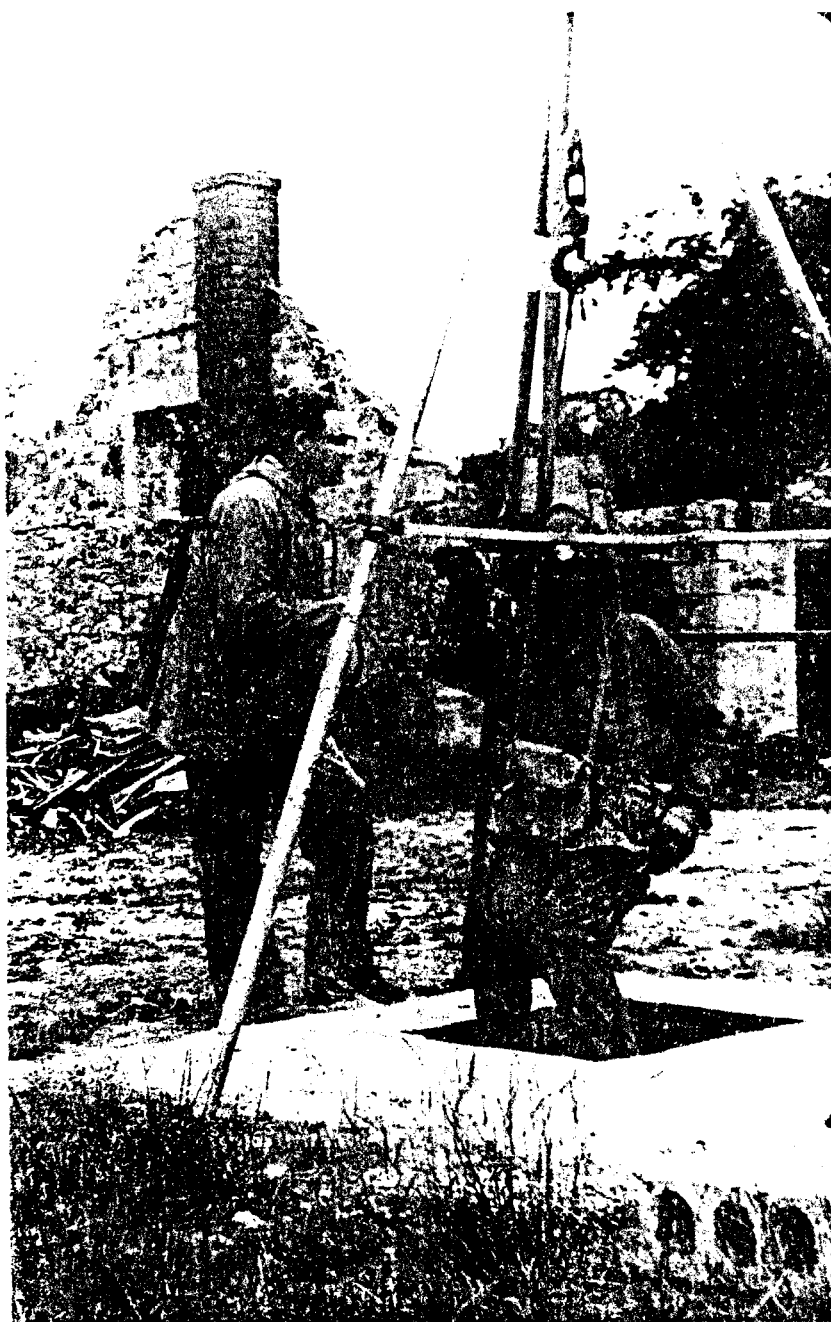
The mine obviously went ^u below the 300 ft. level for we observed several flooded holes. In fact it was a deal wetter down here. Rails were seen in position and were of quite an early type. The tunnels were wider and it was clear that this part of the mine was not as old as the 190 level. In fact it was probably 19th. century - excuse me if I am not correct there.

At last we found the bottom of the shaft and after a short wait were hoisted back to surface and it was as interesting going up as it was down. We had been assured that the wire rope was of the very best and had a good safety factor.

More photographs on page 31.



The Winch —↑
 ← Bage Mine Top



Suggested new logo for a certain club operating in the N. Pennines. Pushed through the ed's letterbox by some coward who wishes not to be named.



"This is
your chance
Alan, to get
yourself a
bird!"

"I hope
it won't fax
me too much."