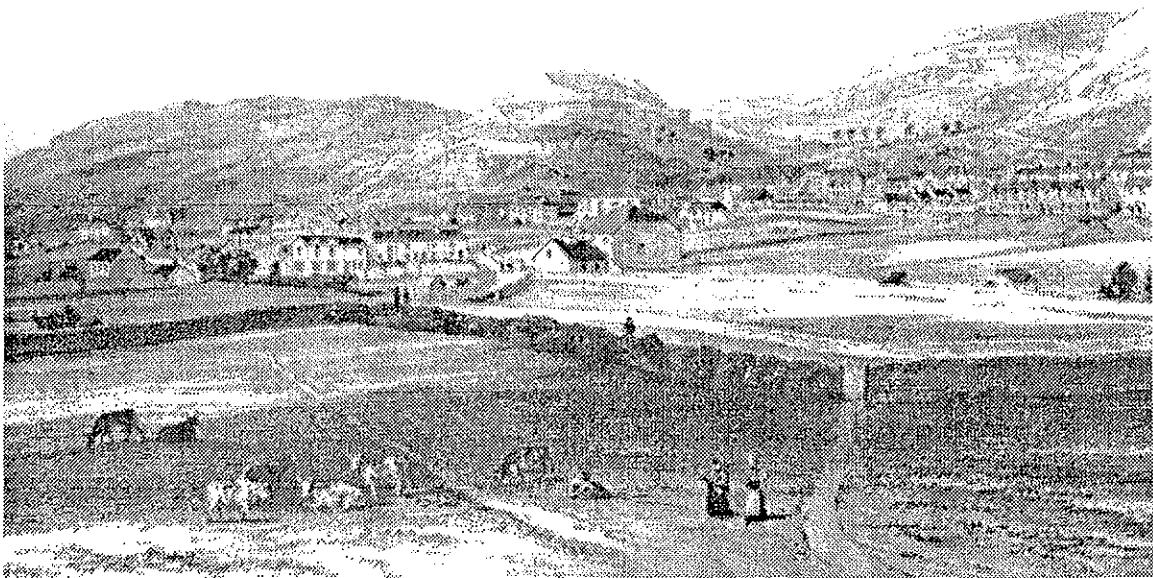


JOURNAL OF THE GREAT ORME EXPLORATION SOCIETY



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1995(2)

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NEWS ROUNDUP

CONFERENCE: Prehistory of Mining and Metallurgy, 13-18 September, 1995.

This conference started at the British Museum on the 13th and moved to North Wales on the 15th for the field component. Proposed sites for visiting included the Great Orme, Parys Mountain and Cwmystwyth. I look forward to receiving a report for the next issue from one of our members (hint!).

GREAT ORME MINES

Not to be confused with Great Orme Mines Ltd, Great Orme Mines is Chris Williams' revised edition of his authoritative history of mines previously published under the title, the Llandudno Copper Mines. Again it is published by Northern Mines Research Society from whom it can be obtained for about £4.50. Edric also stocks the book at the mine and the Society also holds a copy as a member of NMRS.

J GOES E-MAIL Kelvin Lake of the Shropshire club has enquired if I could contribute to an INTERNET service to promulgate mining history articles. Is it your wish I contribute suitable articles to him which may in turn be relayed worldwide?

NAMHO 1995, LILLESALL

I attended as the Society representative where the NAMHO committee informed us that NCA insurance had been renegotiated with BCRA at half the previous rate. Radon monitoring is now applicable to sporting as well as commercial activities underground (cf NMRS August Newsletter). The 1996 field meeting will be hosted by the Plymouth group and the 1997 conference will be held in Derbyshire. The meeting closed with a plea for member societies to forward copies of their newsletters.

BRITISH LIBRARY

When visiting the library to find one of William Vivian's works I trawled their index for other Llandudno related material and came up with *'An account of Human bones found within the lime-stone mountain of the Great Orme's Head at Llandudno in North Wales.'* A short snappy title if ever you've heard one. The account describes the finding of a human skull, maxilla and teeth, lumbar vertebrae, a rib, femora, tibiae and fibulae set a calcareous mass with animal bones. Among the debris above the skeletal remains was found a copper Roman coin bearing the name and bust of Domitian, circa 96 AD.

The (Skeleton) cave entrance is described as measuring 5' wide by 2'6" high with a chimney rising upwards a few feet inside the entrance. The location was described as 350 feet above sea level in Conwy Bay, the approach is so precipitous as to be accessible only with difficulty and the mountain above it is described as being almost perpendicular. No further details were provided, however, the site might be close to Gogarth. Is it logged on the Orme's Day project or does anyone know anything more about it?

OGOFIAU TUDNO

Last year saw the publication of Tom Stone's account of Great Orme cave archaeology in which some of the features of the Ogof Tudno system were described. Since Tom's work, the system has been left very much alone though the consensus of opinion within the Society was that it was an ancient mine of indeterminate age (Bronze Age-Medieval) which had been reworked to some extent by 19th century miners. With renewed interest it has become clear the system has ancient origins, probably in the Bronze Age, though object evidence is at present lacking. The system has been surveyed and work on the system continues. Dave Chapman and Don Smith represented GOES at the NAMHO meeting where recent developments were presented and were well received.

TY GWYN BEACH ADIT

Although this project is in abeyance, it would be helpful to record the work done and the progress made so far. The adit is situated below the east toll gate of the Marine Drive just above high water. It is driven through dolomite along a fault line, hanging wall to the right and foot wall to the left. At ~15 metres the faultline deviates necessitating a dogleg left to clear faulted ground before resuming the drive along a similar bearing. A partial blockage at this point caused flooding to four feet in the far section which was blocked by a run in of clay.

When the project started the debris left behind by previous excavations caused a serious handicap to entry since the far section remained flooded by a combination of damming, and accumulation from condensate, sea water and fresh water seepage. This prevented effective work on clearing the clay and perhaps entry into the older parts of the Ty Gwyn Mine.

Over many months more than 30 tonnes of sand, gravel, clay and rocks were cleared by hand and wheelbarrow from the near section of the adit with the intention of clearing the dam, draining the water and tackling the clay beyond. The floor of this section is now down to 19th century levels awaiting an engineering solution to the dogleg and the adit has been gated.

NORTH WALES CAVE RESCUE ORGANISATION

The NWCRO is becoming an independent body aiming for charitable status. An inaugural meeting on July 5th was held at Pen y ffordd Scout HQ to discuss constitutional issues and elect a committee which will need ratification at a NAMHO meeting. Four local groups have been proposed for membership, North Wales Caving Club, Grosvenor, Gwynedd Pot Holing and GOES, subject to an official proposal from each society's committee. Society membership will be £20.00 and individual membership £5.00; callout team membership will be free though this form of membership alone will carry no voting privileges. Enquiries about membership should be directed to Tony Smith on 01978 861156.

NORTH WALES CAVE RESCUE

NWCRO held an underground practice in Owen's Shaft on Sunday July 2nd which was attended by Erik and Alison. By all accounts it was a hard days work. We have talked about the issue for some time but now it appears to be here and I hope

our involvement continues.

NWCRO Training sessions: Surface: Trefor Quarry, Panorma Road, Llangollen, Clwyd. SJ 234433. 13.00-25.09.95 This will be followed by the NWCRO BBQ
Underground: Moel Fferna, Glyndfrdwy. SJ 126398. 10.00-12.11.95 Slate mine search and rescue

AERIAL PHOTOGRAPHS

Last year I made enquiries about aerial photographs of the Great Orme (SH 771831, sheet 115) and was directed to the Welsh Office in Cardiff from whom I got the following information:

SORTIE	SCALE	DATE	CAMERA POSITION	FRAME No	TOTAL
CPE/UK 1939	1:9800	20.01.47	RS	4218 Neg	1
CPE/UK 1996	1:9800	13.04.47	FS	2005 Pos	1
1PRU RAF 0734	1:25000	24.04.85		Welsh off	
J A Story	1:10000	1984/85			
ADAS	1:20000	1,2.05.90			
OS 90-047	1:5100	06.04.90			
Georex H9267	1:10000	1992			
Georex H114	1:10000	1992			

Viewing may be arranged by prior appointment. I have details of addresses and costs if anyone is interested.

CARN BRAE GROUP

We have been invited, once again, to visit Cornwall and if possible speak to their group on matters concerning the Great Orme. Their idea of old is Tudor, we have other ideas of which they would like to hear. They are a keen and hospitable group so the prospect of a weekend down there looks good. Jan/Feb?

NEW AUTHORS, MORE ARE WELCOME

Welcome to two new authors to the Journal, David Edwards, David Haynes. Despite their best efforts this issue is again a little thin. Are there any other budding authors out there who could give me an article for the next issue, a club trip, a dig report, an anecdote, almost anything at all.

THOMAS TREVITHICK, MINING ENGINEER, 1818-76

While on the trail of William Vivian I came across a single reference to a Captain Trevithick in Reverend Crump's account of the establishment of English Methodism in Rhyl and Llandudno. Crump states that he was assisting William Vivian in teaching Sunday School but does not go into any other detail and in fact doesn't give his first name. This was the only reference to Thomas Trevithick I found in the local literature but later, when I went to UCNW manuscript rooms, I found a reference in newly deposited material which indicated that he had moved to Parys Mountain at the same time as William Vivian, presumably from Llandudno.

Thomas was not a literary man like William and has not left behind him a paper trail, at least none which I have found. Fortunately my paper trail, letters in the Cornwall Family History Society Magazine and Newsletter of the Trevithick Society, stimulated a response from a Trevithick family historian in California providing a first name and positive identification with links to both Parys Mountain and Tuolumne County, California.

Thomas was born in Stithians, Cornwall, January 14th, 1818 and married Sarah Holman August 9th 1848 in Gwennap, Cornwall. Based on UK census information (1841) and documents in UCNW he appears to have been an engineman like his 'kinsman' Richard Trevithick though I have discovered no direct relationship other than a surname in common. He appears to have been in Tuolumne County in 1850 (US census) and in all probability was working with William Vivian who seems to have escaped the US census. You will recall William's link with Tuolumne County and his accounts of that part of the Californian gold field.

On his return to Britain he, William and their wives went to Llandudno and then moved to Parys Mountain in 1860 where he and Sarah remained for some time after William and Jane left for Llantrissant. At Llandudno and Parys Mountain Thomas and William worked for John Taylor and sons. His will was written in Amlwch in 1867 and he next appears in Frampton Cotterell in the Bristol area in the 1871 census in which he was described as a mining agent and engineer. In Stephen Vivian's photograph album were photographs of the Trevithicks taken in Bristol but where he was working is not established. He died July 14th 1876 and was buried in Gwennap, Cornwall. Sarah survived until October 1900 and died in London. They appear to have had no children, the estate passing to various nephews and nieces, Holman.

Don Smith, Bristol, June 1995

DAWN PATROL

Reminiscent of early forays into the Penmorfa level with Marcus and Edric, it was an early start on Saturday August 12th when we embarked from the Deganwy slipway at 05.30 to catch the tide. Not the high tide I might add, but one of the lowest ebbs of the season that would allow us a good look at 'Llys Helig' and a good exposure of 'Caer Gonwy'

In charge was a bearded individual with more than a passing resemblance to Captain Pugwash who, escorting two learned men of letters from Bangor University, led the way, from well astern, over the bar to the site of Llys Helig, the reputed ruin of the Bishop's Palace. Ahead, at a sedate pace, glided Gwylog, skippered by Tom Parry. There are three things one should never allow onto small boats and Gwylog had three of them, all Naval Officers, but despite this obvious handicap the only groundings were deliberate. By the time Gwylog arrived on station the 'Yar-hoos' from the diving club, in their Decca-equipped orange 'rigid raider', were in the water and soon began laying out the weighted survey line which would be used in the months to come.

Llys Helig was awash when we arrived, with just a line of kelp gently washing to and fro in the glassy swell. Most of those who ventured into the water did so in kinky black rubber of one sort or another and snorkelled the 'reef'. Not so Marcus who stepped over the side and waded 'ashore' as if in days of old to claim the land for England. For his trouble he was rewarded by being attacked by an indignant crab who mistook his bare foot for breakfast. Ill-advised though this action was the crab lived another day to tell the tale.

As to Llys Helig, is it an inundated ruin or just moraine? The linear distribution is unusual and might indicate a building. The rocks seen were heavily kelp and weed covered though they did look square in contrast to Caer Gonwy. Until more detailed survey work has been completed any opinion must be guarded. Things not found included communion chalices and crucifixes. Caer Gonwy on the other hand does appear to be a natural phenomenon, probably a glacial remain. This opinion is based on the random distribution of the material which is rounded and geologically similar to the hammer stones used in the mines, but very many times larger. No Roman coins, no Roman helmets, no Roman spears, in fact nothing at all Roman was found.

At this point the tide was marching in and once again we took to the boats making for the north deep hoping to run the channel but it wasn't to be. Gwylog, temporarily with engine trouble, was taken in tow towards the fairway but was soon under power again after Marcus gave the outboard motor a firm talking to. Needless to say, our diving friends were back at the slip long before any of us. It had been a good morning out and after recovering the boats we went our various ways at about 1030 to a bath, breakfast and bed.

Don Smith, Chester, August 1995

THIS COULD HAVE BEEN YOUR ARTICLE!

TRY YOUR HAND AT WRITING,
PLEASE SEND ME YOUR ARTICLE

RADIOCARBON DATING: A Layman's introduction

This is a method of dating organic material by measuring their residual carbon 14 (C^{14}) radioactivity. It is of great importance to the archaeologist because it enables pre-historic dates to be established, back to 70,000 before present (BP, i.e. 1950), for animal and vegetable remains. Beyond this limit, radiocarbon dating is inapplicable for reasons given later.

The method is based on Libby's Nobel Prize winning work conducted in Chicago in 1947. It is based on the fact that cosmic rays bombarding the earth's atmosphere convert some of the naturally occurring isotope of nitrogen, N^{14} , into C^{14} , which is an unstable isotope and therefore radioactive. This C^{14} is oxidised to form (radioactive) carbon dioxide (CO_2) which mixes with the ordinary CO_2 (based on C^{12}) naturally present in the atmosphere. Photosynthesis incorporates both forms of CO_2 into plant cellulose where it may remain or then enter the animal food chain when grazed and the animal consumed in turn. Therefore, C^{12} and C^{14} will exist in all life, locked up in a myriad of complex organic compounds, such as fats, proteins and carbohydrates.

The essential fact is that the ratio of C^{14} to C^{12} is the same for all living matter and is the same in the atmosphere (with slight periodic variation). Throughout the life of the living matter C^{12} and C^{14} are constantly re-cycled by natural metabolism and thus the ratio remains constant. However, when living matter dies the re-cycling process ceases. The atoms of C^{14} , residual in dead matter begins to decay by emitting beta particles leaving behind a stable isotope of nitrogen. By measuring the amount of C^{14} present, compared to C^{12} gives a basis for estimating the age of the specimen since C^{14} decays at constant predictable rate. Its halflife, the time taken for the radioactivity to fall to half its original rate is 5730 years, ± 40 . By way of comparison, plutonium has a half life of 24,360 years, whilst radon's is only 4 days. After 70,000 years C^{14} has become a weak and erratic beta particle emitter making this dating technique unreliable.

It should be borne in mind that hard and fast dates cannot be obtained for a number of reasons briefly touched upon below. The method depends on 'counting' the beta emissions, or disintegrations per minute from the sample. A 1 gm sample may for example yield 13 per minute but this can vary for reasons not considered here but which nevertheless brings about errors regarding the statistical interpretation of the data obtained. This difficulty can be illustrated by considering the following exercise. Flipping a coin 10 times does not necessarily produce 5 heads and 5 tails but with a larger number of trials, eg 10,000, the ratio would be almost exactly 50:50.

Another problem that affects the accuracy is that the amount of C^{14} in the atmosphere 5730 years ago was twice what it is today. This has been caused by variations of the earth's magnetic field which influences the path of cosmic rays entering the atmosphere and therefore affects the formation of C^{14} . Yet another problem is man's burning of fossil fuels which is diluting the C^{12} : C^{14} ratio. For example, plants growing in 1890 had 2% more C^{14} than the same plant type

growing in 1950. These and other variations must be accounted for when interpreting and calibrating a radiocarbon date.

As a general rule, accuracy is adversely affected as the age of the specimen increases (Table 1). In some cases the dating can be corroborated by referring to or comparing with known historical or natural history data, as shown in table 2. It is, however, interesting to note the apparent disparity in C¹⁴ dating between the two tables with regard to the quoted experimental errors.

Table 1

Age, BP	Error, years
2885	± 60
5130	± 150
10,200	± 200
12,050	± 400
27,500	± 1,200

Table 2

History Tree ring, yrs BP	C ¹⁴ date, years BP	Specimen
444 ± 25	450 ± 150	mammalian remains Inca temple
1,900 ± 3	2,030 ± 200	Roman ship wood
2,280 ± 0	2,190 ± 450	Pharaoh's coffin

Radiocarbon dating is expensive and has the disadvantage of destroying the sample, large or small, depending on the carbon content. If high then as little as 1 gm may be sufficient and if low, as in un-charred bone or antler, then 100 gm or more may be required.

The inherent statistical problems referred to above can sometimes be offset by testing a larger number of specimens but this is not always possible. The temptation to accept figures obtained by radiocarbon dating techniques as spot on and inviolate should be strongly resisted. Radiocarbon dating is undoubtedly a useful and remarkable tool in the hands of an expert who may also have other data to draw upon in order to reach a conclusion. Whereas, the keen amateur historian or archaeologist should, in the absence of other information, regard it for what it is, a good estimate.

David Haynes, July 1995

THE BRONZE AGE AND OTHER NORTH WALES COASTLINES

As members of the Society and others are looking at this subject, I have compiled a list of points to consider. Note some of this is legend rather than hard evidence. Sometimes it suggests a lower sea level and other times a higher sea level.

SUNKEN FORESTS AND PEAT DEPOSITS

Tree trunks and peat deposits can be found on Llandudno's north and west shores, at Rhos on Sea, the Conwy Morfa and Rhyl (unconfirmed).

ERODED COASTLINES

On Llandudno's west shore the Two Sister's Rocks were part of Gogarth farm until about 1800 and can be seen thus in an old painting which may be in the library. The farmer at the time cursed having to plough around them. The Bishop's Palace is even now crumbling into the sea and almost certainly would not have been built in such a precarious position (c 1300). As a rough guide, the shoreline has been eroded about 100 yards in 200 years.

At Penrhyn Bay, well out to sea and known to fisherman are Y Muriau (the walls). The coast here is still been eroded and has been protected by expensive beach defences. On low tides at Colwyn Bay and Rhos on Sea tumbled down field walls and a possible fish trap can be seen. However, these may relate to a hall which stood north of Rhos promenade (F Jowett). A short stretch of wall on the promenade, which may represent the gate house, is still to be seen. There is also supposed to be Shepherd's Rock upon which the shepherd stood to call his flock. At Rhos a fish trap, formerly owned by the monks of Conwy (pre 1300), can be seen high on the beach.

In the Abergele church cemetery lie the remains of a man who 'lived 7 miles north of here' i.e. out in what is now sea. I believe in the 1600s the town council were arguing whether to repair sea defences on fields which are now gone. The gates for these fields can be seen in the railway fence line. It is said that in Llandrillo Church are hundreds of skulls buries which came from the beach area below the church. However, from the Dark Ages it was custom to bury people in the church. Hence any church, e.g. 800 years old, would have a large number of bodies interred if as few as one parishioner died a year. This was demonstrated archaeologically last year at a deconsecrated church near Corwen.

DOCKS

Prince Madoc is said to have sailed for America from Rhos on Sea, presumably from a little stream which ran out to sea in the middle of the town. However, there are alternative places, e.g. Afon Ganol near the Polytechnic which was supposed to be navigable up to the farm in the 1600s. There is also the remains of what could be a dock near the golf course at Penrhyn Bay.

DOCUMENTS AND MAPS

The Bishopric of St Asaph included Puffin Island which was part of Flintshire. This was also linked, in legend, by a causeway to a lost chapel at Dwygyfylchi and then on to the Bishop's Palace. The Llandudno-Llanrhos parish boundary is very eccentric.

The Lewis Morris map of 1748 includes Caer Gonwy in the middle of the Conwy estuary, near Bwrlingau, and the John Speed map of 1610 has Sinadon Castle also in the estuary. This is spelled elsewhere as Sinnodune. A description of a journey made by the Mostyn family setting off from Mostyn Hall, Flintshire, around 1600 has them starting off in the morning by coach on the beach, heading straight for Penmaenmawr, i.e. the implication being that could go at least most of the way along the sands (F Ron Williams). Elsewhere there is a suggestion of a Roman road out at sea (Evolution of a Coastline).

NAMES

Hwylfa Ceirw on the Great Orme suggests a route for deer which is now impossible and there is no land for them to go to. Gorad Maelgwyn is marked on old maps as a fishing weir, presumably owned by Prince Maelgwyn Gwynedd. It was roughly where Black Rocks were on the west shore but, as there is no trace of it high up the beach, may be some of the rocks were part of it. A sea defence groin has been built over this site.

Dave Edwards, August 1995, Llandudno

IN THE BEGINNING

The recent discovery that three of the flint flakes from 'Upper Kendrick's Cave' are of Creswellian pattern indicates that occupation began a great deal further back than was first thought. The fossilised bone fragments from 'Ogof Pant y Wennol' have also been identified as being earlier than Mesolithic as was first thought, and whilst increasing our knowledge, it will not alter our view of history to any great extent. It is worthwhile to try and imagine what sort of environment this part of the coast provided 15,000 years ago.

Perhaps the most important observation is that there would not have been any coast as we know it today. The sea level was still very low, the last ice had not yet retreated fully from the far north of Britain, and it would be several thousand years before any significant inroads were made by the rising sea level. Snow and ice was still present in the highlands and cwms of Snowdonia, lower down in the valleys the rivers were in full spate and the climate was damp and chilly even in the short summers.

How distant the coastline was from Llandudno, compared to today, is difficult to say. What land was visible would have been tundra with small shrubs and scrub struggling to exist in the permafrost. Cold climate animals such as woolly rhinoceros and red deer were present as the bones from Pant y Wennol show us. The two headlands of the Great and Little Ormes would have had different contours from what we see today. The steep cliffs we see now would have been more gentle, covered with a layer of boulder clay deposited by the melting ice. The Great and Little Ormes would have remained the same until, under the influence of rising global temperatures, the sea level also started to rise. Over many thousands of years the sea crept over the exposed land until it reached its present level. Gentle slopes were eroded away leaving the precipitous cliffs we see now.

Man, the hunter, soon followed the early animals whose numbers were increasing rapidly as the climate slowly became more conducive to plant and grass growth. Wild horse, pig, ox, goat etc made good pickings for the hunter's pot and eventually trees grew which gave him timber to build shelters, temporary ones in the beginning, so the only remaining evidence of their existence would be the kitchen midden. This was probably comprised of animal bone and as the sea was near mollusc shells now buried under many feet of mud and water. A point of interest here is that in Pant y Wennol cave mollusc shells start to appear in small quantities about 1.5 m down and gradually increase in number to 50 cm below the present surface. One can almost say that the occupants at 1.5 m had been to the seaside for the day, a long walk!

It was perhaps at this time that the occupants of 'Upper Kendricks Cave' struck the flint flakes that have been identified as 'Cresswellian'. They may have been the first humans to occupy the cave, having perhaps to evict an animal to do so. Evidence left on ledges on the eastern side of the cave gives indication that the floor level was more than a metre higher on that side so considerable work would have been necessary before habitation was possible. A recess half way along the

eastern side shows that it was a well used domestic site with no evidence of a hearth but with many bone fragments, limpet and winkle shells but only a few mussel shells.

When ill-health stopped my excavating Mr M. Davies took over and excavated the western side where he found a hearth, some large flint flakes plus human bones. A midden was discovered when a modern hotel below the cave cleared an area to make a car park. If that material can be located it might give us a good deal of information regarding the economy of those people. Their standard of living must have been high for that period with plenty of animal life, fish, shellfish, berries and above all, water, which was in abundance on the hill we call the Great Orme.

The cave meant they had shelter with a solid roof over their heads. A double bonus was that they faced south so the sun gave them heat and light during the day while the southern aspect gave them a first class view over their larder, the plain below. From the cave every movement below could be seen, not only the animals but any hostile approach. Anyone visiting the cave or its vicinity today should look down and in their minds eye remove the town. They will see a totally different picture. They should imagine a large stretch of land to the east with a few groups of round huts or temporary shelters made from tree branches. The discovery of copper on the Great Orme brought many more people here either to mine it or to trade in it. Eventually the 'Beaker People' arrived, with the secret of making bronze. There is no doubt they would have carried out their trade close to the source of its basic material, copper.

Originating from the continent, their movement around this country can be followed mainly by their pottery in the form of decorated beakers which were buried with their dead. Fragments of these pots have been found in cave sites around this area proving that the 'Beaker People' were indeed living here. One can assume that they lived on the low lying ground which supplied them with food, timber and possible trade routes.

It is this area now covered by the sea that the Great Orme Exploration Society (GOES) intend to examine with the co-operation of the University of Bangor Extra-mural Department using the boat owned and skippered by the chairman of the GOES, Nigel Bannerman. With all the mining activity there must be a location where the metal ore from the Great Orme was smelted. The latter would have required a great deal of heat and therefore a considerable amount of timber to generate it, plus a large number of people to cut and deliver the timber. It is possible that the plain to the east and north east of the Great Orme could have supplied the timber. Perhaps the settlement site high above Pant-y-Wennol and the village of Penrhynside may have helped, as part of that area was heavily wooded and the inhabitants may have traded timber for copper.

It is also my belief that the area not yet inundated around the bay and to the north of the Great Orme was forested. I base this conjecture on the presence of fossilised tree stumps in Llandudno Bay. Bronze Age artifacts and Roman coins have been found in clay under the sand which is in places only a few centimetres

deep. If the coins were placed or lost in the clay where they were found it suggests that there was dry land where there is now sea. Copper smelting sites are a possibility just off the coast. If by diving these sites could be located it would increase our knowledge not only of the Bronze Age but also our own local history. If the sites are buried very deep in the mud and sand they may be difficult to find but their depth may have helped to preserve them, depending on how fast they were inundated. The bronze axe found in clay under the sand at low water was in excellent condition. Charcoal could give us a lot of answers such as an approximate date of the last inundation which brought the present sea level to the point where it formed the bay we know so well. Information regarding the construction of any huts found and materials used would be of great interest. If any evidence does remain it will be interesting to see how they compare with remains of huts on the Great Orme, which were of course much later.

From the remains of the round and long huts on the Great Orme and surrounding countryside it is not possible to tell what they were roofed with so one has to surmise what material was available. Unless quantities of reeds grew on the marshes between the two Ormes to thatch the huts as shown in many archaeological papers only two alternatives remain, animal hides, or turf. From the large number of occupational sites on the Great Orme and other sites around the area I would suggest that turf was used. It was the most convenient commodity to hand, as animal skins would most likely have been used as clothing especially by those involved in mining.

Only low walls and possibly post holes, now filled up with mud and sand, will be found. Posts used to support the roofing supply a lot of information to archaeologists, as seeds and fragments of domestic life tend to gather around the base of the post. Should any underwater sites be located it will be very difficult to collect any evidence once they are opened to the sea water and the tidal currents. Expensive marine vacuum cleaners would be required to prevent material being swept away. Even so just the fact that these sites could be located and identified would give immense satisfaction to the seekers of Llandudno's prehistory.

The coming of the 'Iron Age' changes any thoughts we had about the tranquillity of the Great Orme's Head population. The weapons made of iron were easier to forge and were harder and sharper than bronze. A larger population in the surrounding countryside meant that small family quarrels turned into tribal feuds, raiders from the sea came ashore and the Great Orme very quickly became a fortress. Their defences were the steep cliffs and slopes and the wet marshland to the south. Above the town is a large cliff, the south face of Pen y Dinas, known locally today as the Craig. On this large outcrop of limestone there are a large number of round huts, all in a dilapidated state and badly overgrown. Efforts are being made to ascertain whether the site was a fortified location or a short term place of refuge. My view is the latter as there is no water supply and insufficient room for any farm stock they wished to save from invaders. Only a small section of a bank or wall remains today situated on the north east of the site at its lowest point. Again it may have been a barracks for the workers in the ancient copper mines.

Tom Parry is carrying out an investigation of the site with a group of volunteers: it is an arduous task as bushes and roots are embedded in between the rocks forming the base of the circles. Also the site is very exposed to wind and rain in the winter months not at all like the summer victors see it! With the invasion of the Romans, 'Prehistory' ceased and 'Recorded History' in these Isles began.

Moving out of Deva, or Chester as we know it today, the XXth Legion built a road along the coast and into the Conwy Valley pausing to build a fort called Canovium (Caerhun) on the river bank. Having established themselves they then constructed a small dock which would have enabled the fort to be supplied by sea. One of their aims in trying to conquer Wales were the minerals to be found in the mountains. Copper certainly and as the Great Orme mines were close we must assume they took advantage of this fact. There is no definite evidence of Roman occupation in the Creuddyn area, so perhaps they would not risk being trapped on the wrong side of a marsh with the native inhabitants firmly ensconced on the higher ground. However, there is not much doubt they would have traded for copper, paying in their own coinage, using local tribes as go-betweens, and using the dock at Canovium to export the mineral for which they traded. I now draw this discourse to a close as the Romans are another part of history.

Tom Stone, Llandudno, August 1995

CLUB EQUIPMENT 1995

Item	No	Location
Survey compass	1	Survey Store
Clinometer	1	Survey Store
Oldham lamps	8	Equipment Store
Oldham lamp	1	Erik Sellors
Lamp brackets	12	Equipment Store
Lamp spares, various		Equipment Store
Lamp headsets	3	Equipment Store
Lamp headsets	4	Equipment Store
Battery charger	1	Equipment Store
Helmets, bracket	3	Equipment Store
Helmets	13	Equipment Store
Rope	300'	Equipment Store
Rope	200'	Equipment Store
Rope	180'	Equipment Store
Caving bag	2	Equipment Store
Belts, belay	6	Equipment Store
Belt	2	Equipment Store
Belt, belay	1	Erik Sellors
Belt, material	1	Equipment Store
Sit harness	3	Equipment Store
Sit harness	1	Equipment Store
Sit harness	1	Equipment Store
Body harness	1	Equipment Store
Harness legs	1	Equipment Store
Strap, troll	1	Equipment Store
Malion, D	1	Equipment Store
Malion, oval	8	Equipment Store
Caving ladder	10'	Equipment Store
Fixed pulleys	3	Equipment Store
Rescue jammers	2	Equipment Store
Metal hangers	6	Equipment Store
Bolt, exp, 10mm	10	Equipment Store
Bolts, eye, large	2	Equipment Store
Bungy	1	Equipment Store
Exhibition boards	set	Lesley Markham
Exhibition boards	set	Don Smith
Accrow	5	Tony Davies
Accrow	1	Penmorfa
Accrow	1	Ty Gwyn
Crow bar, heavy	1	Tom Parry
Electric winch	1	In store
First Aid Kit, large	1	Equipment Store
First Aid Kit, small	1	Equipment Store