

Newsletter



Mining Heritage Trust of Ireland

No.69 Summer 2015

**URANIUM MINING:
A HOT TOPIC IN GREENLAND**
Special Feature by Sharron Schwartz
and Martin Critchley

Pennsylvania Mining Heritage
Ewan Duffy

UPDATE

Remediation Works at the Avoca Mines

FORTHCOMING EVENTS

Members' Medley

NAMHO 2016, Dublin

11th IMHC, Linares, Spain, 2016

FIELD TRIP REPORTS

Sliabh Aughty Iron Mines & Furnaces

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Iontaobhas Oidhreacht Mianadóireachta na hEireann

DATES FOR YOUR DIARY

2015

Sept 19, Connemara minerals. Galway Geological Association fieldtrip led by Prof Martin Feely. <http://www.galwaygeology.net/>

Sept 29, An introduction to industrial heritage for professionals. One day course in Dublin. €100. <http://www.ihai.ie/events.htm>

Sept 30, IGA lecture on “Ireland’s mineral heritage - the agony, the ecstasy, and the future” by Dr Patrick Roycroft at the Geological Survey of Ireland, Haddington Road, Dublin, 18:30-21:00. Coffee & biscuits from 17:30. <https://www.facebook.com/events/699251426874006/>

Sept 30-3 Oct, The XVII International Conference of Industrial Heritage, INCUNA 2015, *The Legacy of Industry: Factory and Memory*, Gijón (Asturias), Spain. www.incuna.es

October 21-23, The ERIH Annual Conference 2015: *How to attract new Audiences? New Ideas and Innovations for the Interpretation of Industrial Heritage*, Pilzen Brewery, Czech Republic. Further details on the ERIH Website: <http://www.erih.net/>

November 13, Board meeting (Friday)

November 14, Annual Members’ Medley and Dinner, Collins Barracks (Dublin) AV Theatre, 2-5pm. Drinks/Dinner afterwards at Nancy Hands Pub, Parkgate Street <http://www.nancyhands.ie/> See p. 6 for more details.

Nov 14, Visit to Kingscourt Gypsum Mine by the Galway Geological Association. <http://www.galwaygeology.net/>

2016

Feb 19, Glens of Antrim Historical Society lecture on “A century of the limestone industry in Glenarm” by Gerard Muldoon. 8:30pm in St Mary’s Parish Centre, Cushendall. <http://antrimhistory.net/lectures-20152016/>

March 10-12, Raw materials exploitation in prehistory: sourcing, processing and distribution. Faro, Portugal. <http://www.rawmaterials2016.com/>

May 6-11, A celebration of the tinworking landscape of Dartmoor in the european context – prehistory to the 20th century. Tavistock, Devon. <http://dtrg.org.uk/>

9-12 June, Mining History Association Annual Conference, Colorado, USA. <http://www.mininghistoryassociation.org/>

17th-19th June, NAMHO 2016, ‘Mining and Social Change’, Dublin City University. See p. 6 for more details

6-11 September, 11th International Mining History Congress, ‘Mines: History and Influence in Industrial and Social Development of Mining Communities’, Linares, Andalusia, Spain. See p. 7 for more details.

Check with organisers of meetings before making any travel bookings in case of change of dates or arrangements. MHTI lists events in good faith but is not responsible for errors or changes made. For MHTI field trips please register your interest, without commitment, so the organiser can keep you informed.

MHTI MEMBERS' BUSINESS

Appointment of New Director

Paul Rondelez has very kindly agreed to become a Director of MHTI. He has been a member since 2014. In 2009 he contributed a very useful article entitled "The internet: a mine of information" to Journal No.9, and in 2013 contributed an article to Journal No.13 on "Early silver mining in Europe: an Irish perspective" jointly with Peter Claughton. He became our Bibliographer in January 2014, and gave a talk at the Members' Medley later in the year. In July he led a very successful field trip looking at the iron mines and furnaces of counties Clare & Galway (see report on pages 8-10).

Paul's interest in mines started because he spent most of his childhood holidays visiting mines and quarries with his father who is an enthusiastic mineral collector. Paul gained a doctorate from UCC for his thesis on *Ironworking in late medieval Ireland, c. AD. 1200 to 1600*. In 2014 he was instrumental in forming the Sliabh Aughty Furnace Project. Since then he has organised a Furnace Festival, a meeting of the Historical Metallurgy Society and events for Heritage Week.

Newtownards Consultation Meeting

Following on from the very successful post AGM seminar at the North Down Museum, Bangor, County Down and the field trip to the Newtownards Mines in early May, Martin and Sharron have been contacted by a member of the Geological Society of London (Northern Ireland Regional Group) seeking to organise a meeting in order to set up a stakeholders' group to seek ways to stimulate the enhanced management of the mine sites. The meeting is being arranged for a date in October.

The exhibition about the history and heritage of the mines that ran for the entire month of May at the North Down Museum attracted many visitors according to the museum manager, some of whom came specifically to see it. Comments left in the visitor's book included the following: 'Very interesting and informative. I knew nothing about lead mines at Conlig/Ards'; 'Learnt something new about local history. Well done!'; 'Amazing facts!'; 'Excellent exhibition, any chance of a booklet on this subject?'; 'Fantastic display - well done!' and 'very informative displays - all very well illustrated'.

Sales of MHTI publications, including Journal 13 with an article on the Down Silver-Lead Mines, that were displayed for sale in the Museum shop during June, raised £55 for MHTI funds.

Congratulations

The MHTI send their warmest congratulations to Matthew Parkes on his recent marriage to his partner, Michelle, and to Brian Jones and his wife Fiona, on the recent birth of their baby girl, Zara.

Our Mines from Above

Member, Barry Flannery, has been reaching for the skies with superb high definition aerial footage of the Ballycumisk and Mount Gabriel mines, County Cork, captured by GoPro Hero4 Black and a DJI Phantom 2 quadcopter with Zenmuse H4-3D Gimbal mount. Check out Barry's two short films on his YouTube channel:

<https://www.youtube.com/channel/UCXwrjPJUIMKTmBbCKu-JaHQ>

MHTI Website: Your Help is Needed!

Our website is currently in dire need of updating and modernising in view of the fact that we are to host NAMHO 2016 and will be expected to publicise this event online. Ewan Duffy is currently very kindly hosting the site on a Word Press interface, but we have to rebuild it from scratch which entails a considerable amount of work. A website working group consisting of Ewan Duffy, Sharron Schwartz and Martin Critchley has been set up to progress this as a matter of urgency. Sharron Schwartz has designed a site map which will serve as a framework for a web designer, and a scoping document setting out our requirements that will guide the designer is currently being progressed.

Paul Rondelez has kindly offered to help, but there will need to be considerable input from many people in order to populate the site with relevant information, such as potted histories of each mine across the country and a selection of good quality photographs of mine sites, buildings, and other relevant material. Can you help with providing information on any mine site in Ireland or do you have suitable images that could be included on the site? Please get in touch with anyone from the website working group to discuss how you can help.

NAMHO 2015



MHTI members manning our display table at the highly successful Nenthead meeting. Thanks to all those who represented and supported the MHTI at this event.

The Avoca Mines Remediation Works, County Wicklow: An Update

West Avoca

In early 2015, CDM Smith on behalf of the Minister for Communications, Energy and Natural Resources (DCENR) applied for planning permission in relation to shaft capping at Ballymurtagh, West Avoca, Co. Wicklow. The Mining Heritage Trust of Ireland made a submission to Wicklow County Council in relation to this application and made number of observations concerning the lack of detailed archaeological investigations during the proposed works, concerns about flora and the lack of a detailed bat survey. Wicklow County Council sought further clarification from the applicant in relation to these issues and granted planning permission on xx subject, amongst other things, to the retention of an archaeologist during the works. The board of the MHTI decided not to oppose the awarding of planning permission.

Tigroney, East Avoca

In May 2015, CDM Smith on behalf of the Minister for Communications, Energy and Natural Resources (DCENR) applied for planning permission in relation to remediation works at Tigroney, West Avoca. Much of the site is listed in the Record of Protected Structures in the Wicklow County Development Plan. The proposed works consist of re-profiling the mine waste, laying of a pipe in the 850 level to direct water outflow, sealing of the 850 level, conservation works on the ore bins and sealing of the mine waste by a membrane and vegetation cover.

The MHTI made a submission to Wicklow County Council in relation to the proposed works. We objected to the re-profiling and capping of the spoil as this would affect the authenticity and visual integrity of the site. We objected to the pipe in the 850 level as it would affect the precipitation of native copper in the level and could impede future tourist development. We objected to the proposal to dismantle the ore bins for offsite conservation and their rebuilding as isolated structures without the context of the surrounding waste tips.

Wicklow County Council sought clarification in relation to works in July 2015 and in particular requested consideration of the waste tips by water spraying to create a ferracrete surface; preservation of the native copper in the 850 level and on-site conservation of the ore bins. A response from CDM Smith dated 17th August 2015 rejected these requests and was accompanied by a further archaeological report from Rob Goodbody.

The board of the MHTI has examined CDM Smith's response in detail and were not happy with their reply. In particular made the following observations (item numbers are those used by Wicklow in their request to CDM for further information).

Item 1 – Ore Bins

Wicklow Council Request: Conserve the orebins in-situ

CDM Smith Response: The orebins are poorly supported and unsafe, they plan to dismantle the wood cribbing and replace with new and/or salvaged wood. Remove all spoil and replace

with orange coloured grit.

MHTI Observations: The visual integrity of the ore bins after consolidation works should be in keeping with the present day. This would include the retention of the spoil behind the ore bins and the ground level to the 850 level

There is no detailed method statement for the consolidation/restoration works to be undertaken on the orebins. Such a method statement should cover at least photogrammetric surveying prior to works, labelling of parts upon dismantling (to aid reconstruction), nature of new supports beneath the ore bins, proposed treatment of metal surfaces, wood to be used or re-used on cribbing (and type of preservative to be used), reuse of spoil for infill of cribbing.

Item 2a – Adit Survey

Wicklow Council Request: Request for an survey of the 850 level prior to works

CDM Smith Response: Offered to produce a 3D laser scan of the level

MHTI Observations: We welcomed the proposed 3D laser survey of the adit. However, the extent of workings to be surveyed is not stated. A photographic record of the workings should accompany the survey along with an assessment by a suitable mining archaeologist. There are known archaeological remains underground (such wooden pump rods in Farmer's shaft and an underground chemical lab) and there is no mention how these will be recorded and if necessary conserved.

Item 2b – Entrance Portal

Wicklow Council Request: To ensure adit portals are in keeping with historical context

CDM Smith Response: Design will be sympathetic

MHTI Observations We accept the commitment to construct a replica portal to the 850 level. However, there is no mention of reconstruction of the entrance portal to the Decline Adit.

Item 3 – Native Copper

Wicklow Council Request: Request to protect underground geological heritage; especially native copper

CDM Smith Response: Disputed any native copper underground

MHTI Observations: There is known native (secondary) copper underground in the 850 level, both as coatings to steel structures and in metal rich brine pools. It is clear that the applicant has not undertaken a detailed geological assessment of the 850 level nor were water samples from inside the adit analysed. We maintain our assertion that this rare occurrence of native copper should be protected.

Item 4 – Regrading of surface spoil

Wicklow Council Request: To justify need for re-profiling

CDM Smith Response: Only suitable method was regrading

of spoil profiles

MHTI Observations: The proposed regrading of the surface spoil will have serious consequences for the site. These include: Removal of the visual context to levels and ore bins; Potential for the destruction of mining archaeology. We know from historical photographs that there is the potential for buried archaeological features on the site. These could include the tramway system from the 850 adit portal and wooden launders and boxes for the precipitation of copper. In fact some of these wooden launders have already been damaged during the previous works undertaken by the applicant. Our preferred approach is not to regrade the profile of surface spoil. If the permission is given to regrade then there should be methodology to record the archaeology and if necessary reconstruct any features.

Item 5 – Environmental Issues

Wicklow Council Request: Request to look at alternative of spraying to create artificial ferro-crete seal instead of vegetating the site

CDM Smith Response: Only suitable method was to put a liner on the spoil and sow vegetation

MHTI Observations: The applicant has not made a very clear case for the need for capping of the spoil. In light of the theoretical (low) risk only to visitors to the site, then this could be prevented by controlling access to the site (through stock-proof fencing) without the recourse to capping. The contribution of metals from run-off and percolation through the spoils and bedrock have not been quantified in detail. It should be noted that two boreholes quoted to have high levels of copper and aluminium are not on the Tigroney spoil site but on the site of the river side of the railway (the site used for

accommodation during the 2014 works).

In light of this lack of knowledge of sub-surface water flows then we believe the application for the removal of spoil and capping should be refused and more detailed tracing of water flows from the Tigroney spoils be undertaken. Furthermore, the effect of the proposed culverts may be sufficient to reduce surface water flow across the site and metal leaching.

Item 6 – Archaeological Survey

Wicklow Council Request: Request for an archaeological assessment

CDM Smith Response: An archaeological report by Rob Goodbody was submitted

MHTI Observations: We note the report of Rob Goodbody and welcome the proposed presence of a resident industrial archaeologist during any works. However, the following issues have not been addressed:

- Potential of the uncovering of buried tramways
- Disturbance and destruction of buried launders and wood boxes associated with the precipitation of copper
- Recognition of the conservation value of the Decline Adit
- Potential threat to buried portion of the Flat Rod Tunnel due to spoil removal and regrading.

In light of the clear deficiencies in the planning application we believe that approval should not be given without the supply of additional information and modification of designs.

Martin Critchley



Copper precipitation launders near the 850 Level, Tigroney, an area likely to contain significant buried archaeology. Image, courtesy Gerry Clear

EVENTS AND NOTICES

2015 Members' Medley

This year's Members' Medley will be held from 2-5pm on Saturday 14 November in the Audio-Visual Theatre at National Museum of Ireland - Decorative Arts & History, Collins Barracks, Benburb Street, Dublin 7. The venue is on the Red Luas line, at the 'Museum' stop and there is paid car parking on site.

Provisional Programme:

- 2:00: Martin Critchley - MHTI concerns and responses to the ongoing remediation by the DCENR at Avoca.
- 2:30: Nick Coy - 'Nearly made it Mines': Irish mineral deposits that did not make the "grade" and have never seen the light of day.
- 3:00 *Break to inspect and discuss minerals and other items of interest*

- 3:30: Stephen Callaghan - 'A comparison of the sedimentary record of the Upper Lake Glendalough, Co. Wicklow, with the historic lead mining records of the area' (based on his article in Journal 14).
- 4:00: Paul Rondelez - Proposals for a "From the archives" series in the MHTI Journal.
- 4:30: Alastair Lings - Slideshow of MHTI field trips in 2015
- 6:00 Join us for a meal at the *Nancy Hands Bar & Restaurant*, Parkgate Street, Dublin

Please bring along any interesting rocks and minerals, books, documents or equipment for discussion and display on the day. If you would like to attend the meal, please contact Martin Critchley asap. We look forward to seeing you!

NAMHO 2016, Dublin

Next year's NAMHO Conference is being hosted by the MHTI on the 17-19 June 2016 to coincide with our 20th anniversary and the 1916 centenary celebrations. The meeting will be based at Dublin City University, which is handy for the airport in the north of the city.

As this coincides with our 20th anniversary, we hope that MHTI members will wholeheartedly support this conference which will be an opportunity to showcase the good work undertaken by the MHTI over the last two decades.

Registration will open late Friday afternoon. In the evening the conference will be formally opened and there will be two lectures by keynote speakers on mining in Ireland and 20 years of the MHTI, followed by a buffet dinner.

On Saturday there will be a day of lectures with the theme *Mining and Social Change*. The conference dinner will be in the evening, followed by musical entertainment.

On Sunday we have organised field trips to the copper mines of Avoca, Wicklow, which have been much in the news lately due to consolidations works, and the silver-lead mines of the Wicklow Uplands, where recent research and survey work has made major new discoveries.

Post conference (Monday 20th) we hope to be able to offer visits organised to working mines, but there will be a very limited number of spaces available. Information will be made available for those wishing to travel to and explore, other mining areas in Ireland.

Abstracts for papers (300 words) are sought on the theme of *Mining and Social Change* which include the following topics:

- Regional identities
- Migration
- Urbanisation
- Industrial housing
- Education
- Gender and the mining industry
- Self improvement societies/social philanthropy
- Sport and leisure
- Industrial action
- Mines and quarries during the Troubles
- Changing attitudes in favour or against mining

The deadline for abstracts is Friday 26 February 2016.

Please send these to Sharron Schwartz: sschwartz@era.ie.

Details of how to register for the conference will be made available online in due course. You are responsible for booking your own accommodation. We recommend that available at Dublin City University: <http://dcusummeraccommodation.ie/> Further information will be published in our Autumn newsletter (NL70).

Organising a conference of this magnitude requires a willing and hard working team of people to make it a success. We are looking for members to help out with its organisation, to act as stewards during the conference and as guides on field trips. If you think you are able to help, then please get in touch with any of our directors.

11th International Mining History Congress, Linares, Andalusia, Spain, 6-11 September, 2016

The International Mining History Congress (IMHC) is an event to encourage and coordinate the functioning of periodic international meetings where persons and organisations wishing to promote mining history can gather to discuss matters of common interest. Previous congresses have been held in historic mining areas of Germany, Japan, USA, Australia, Greece, Cornwall, Mexico, India and South Africa and have facilitated wide networking among mining history enthusiasts on all continents.

The Colectivo Proyecto Arrayanes, a nonprofit voluntary organisation devoted to the conservation and valorisation of mining heritage, prepared a formal application to develop the next congress in the Linares – La Carolina lead mining district, and finally has been entrusted by the International Committee to organise the event with the support of the Linares Town Council from 6th-11th September 2016.

Mining, as one of the most ancient industries, has shaped cultural landscapes and influenced the evolution of civilisations in many parts of the world. Human settlements, traditions, cultures, beliefs, economic and social systems have been characterised by the impact of mining throughout history.

The theme of the 11th Congress is ***Mines: History and Influence in Industrial and Social Development of Mining Communities***. Papers are welcome on all aspects of mining history and will be included in following themed groups:

- Growth and decline of mining activity. Impacts of mining history on past, recent and future generations
- Relationship between the development of mining, and mining related, industry and technology

- Gender topics in mining activity through the centuries
- Mining heritage as a resource for cultural, social and economic development (including tourism)
- Mining history in the light of human, landscape and industrial aspects
- The evolution of Health and Safety legislation with respect to mining
- Mining personalities
- Labour issues and its bearing on the success of mining operations
- The relevance of foreign investment and the introduction of new technology for mining development
- Mining – a linkage between the cultures

Several MHTI members will undoubtedly have visited the Linares and La Carolina Mining District as the Colectivo Proyecto Arrayanes was involved with both the MINET and Europamines projects. The breadth of industrial monuments and heritage in the region is astounding and several trips will be run to various sites and features during the congress. Post conference visits to the UNESCO World Heritage Sites of Granada (Alhambra Palace) and Córdoba are being offered.

A website to disseminate information about the congress contains a preliminary registration form (expression of interest of attendance etc.). Filling this in ensures you will be kept abreast of all future developments.



The well preserved engine houses at Mina Las Angustias

To find out more, visit the website: www.mining2016linares.com

The Furnaces and Iron Mines of East Clare and Southeast Galway, July 11-12

A very enjoyable weekend field trip was held in July, introducing a rather unusual set of features to MHTI members. Accustomed to historic remains of former base metal or coal mines, members this time were ably led by Paul Rondelez to a part of the country where iron mining and smelting were carried on during the 17th and early 18th centuries. The area lies to the south and west of the Sliabh Aughty Mountains, in Counties Clare and Galway. The scenery along the western shore of Lough Derg is stunning, but the weather was showery and this concentrated the minds of those attending on the furnaces and mines themselves. On Saturday, 13 people attended, and this grew to 14 on the Sunday.

Paul has recently completed a Ph.D. in University College Cork (UCC) on the late medieval iron industry in Ireland. Discovery and documentation of blast furnaces in Clare and Galway is an interest Paul developed during his research, and the present endeavours to preserve some of these features go under the title of the Sliabh Aughty Furnace Project.

Saturday was devoted to viewing sites in an area to the south of the village of Tuamgraney. The first stop was to a mine site at Ballymalone. Though sadly overgrown, an open cut could be discerned, measuring some 30m x 10m x 6m (deep), alongside which was a substantial tip heap. Members searched for an adit reported to be associated with the workings. Haematite and limonite from Ballymalone and nearby Bealkelly are thought to have supplied furnaces in the Tuamgraney-Scariff area in the past.

The second stop of the day involved a hearty walk across

fields to an early blast furnace at Ballyvannan, the group being joined by the enthusiastic owner of the lands on this occasion. Nestled in broken woodland, a tall corner portion of the original building shows solidified smelter slag on the interior slope. The furnace is tentatively dated to a venture in the 1610s. In relation to this, it was pointed out that of the few reliable dating techniques that might in the future be employed, the most precise is dendrochronology. The hope would be to find original foundation oak beams whose growth rings could be identified by comparison with the internationally established chronology database for oakwood. To do this would involve excavating the ruin, i.e. exposing it through a careful dig. At the moment, Ballyvannan is probably the oldest standing remains of a blast furnace in Ireland.

The topography of the site suggests that power to a bellows was provided by means of water in an overshot (wheel) system, and accordingly the group proceeded upslope to where a short stretch of retaining wall indicates a dam or pond. After a lengthy and interesting discussion, authoritatively mediated by Colin Rynne, lecturer in the Department of Archaeology in UCC, it was concluded that the water source had been ponded in a natural depression on the hillslope, and released through a narrow sluice in the wall. The vertical and unbuttressed style of the retaining wall that we saw would not have resisted the pressure of water had the flow from the feeder streams been dammed. While the cut/sluice in the wall (and earthen bank extension) was clearly visible, the course of the launder to the furnace downslope could only be surmised. Time was also devoted to examination of the many clumps of charcoal in the litter of the surrounding forest, evidence of the devastation of



Inspecting the extant remains of an early blast furnace at Ballyvannan. Dated to a venture in the 1610s, it is probably the oldest standing remains of a blast furnace in Ireland

former woodland caused by the needs of the smelting works. Finally, pieces of drippy, iron-rich slag found at the site suggest refining of iron was also carried out at Ballyvannan, a process by which carbon is removed to produce wrought iron. The first phase cast iron has many uses in diverse objects, but is a brittle finished product; wrought iron on the other hand can be forged into any shape by reheating in a smithy or forge.

The third and last stop of the day was to Bealkelly Furnace, totally obscured by ivy, but well worth the visit when found. The ruin is situated several fields distant from the Tuamgraney-Killaloe road, on land sloping down towards Lough Derg. Bealkelly has an intriguing structure, with an outer buttress on its north side to prevent too much shaking during blasting. The gable or high west wall has a deep water wheel pit outside it. The wheel diameter appears to have been about 4m, and was probably of overshot type. By means of a right-angled gear system, power was supplied to a massive bellows housed under an arch in the south wall. A second arch, now serving as an entrance to the building in the east wall was the location of extraction of molten metal and slag from the bottom of the furnace. Bealkelly dates from around 1700, and the arched openings, with roofs sloping inwards were a feature that the field trip group became familiar with at the different furnaces over the course of the two days.

After repairing to their respective lodgings, the members reconvened for a very enjoyable meal in *Peppers Bar*, near Feakle. The discussions were “peppered” with some whoops, but mostly moans and groans from the bar as Clare yielded to a stronger Cork hurling team on the television in a Munster decider at Semple Stadium. At nine o’clock, an illustrated lecture was given by Paul on the economic role played by the iron mines and blast furnaces of the locality, and their place in the history of exploitation and processing of iron in Ireland. The talk was delivered in the period-themed bar of *Loughnane’s Hostel* in Feakle - the period being the 1960’s in this instance!

Sunday morning saw the group depart at 9:30 for Glendree Mine, several miles east of Feakle. Our leader Paul was effusive with apologies at this being the only tangible mine he had to

present, among a host of furnaces. Fair dues were expressed to him by everyone for having cleared the adit mouth before our visit, and cut a drainage channel. Access was impossible as orange and brown mud had silted the floor up to within 25cm of the roof. Members with torches could see some 4m inside, to where the roof appeared to dip down and become obscured by the mud. Haematite ore which would have fed a furnace at Feakle was mined here.

Leaving the midges behind, there was then a good drive across some lonely but beautiful upland, with stands of state forest, as the cavalcade of cars crossed the Sliabh Aughty Mountains to Woodford. After viewing the location of a long lost furnace near the bridge in the centre of the village, the MHTI group patiently waited for the pubs to open ...

Not particularly to slake our thirst, however, but rather to see the “Woodford Iron Bar” in the back yard of one public house. Embossed delicately with the date 1681, this rare relic would have supported an arch in the Woodford furnace. There are plans in the village to give it a more honourable resting place at the Woodford Heritage Centre. Next, the group visited Derryoover Furnace, which Paul and fellow volunteers had pre-cleared of vegetation. With the two arches characteristic of blast furnaces, this small operation is set deep among low-lying rushy small fields. The reasons for the curious locations of these furnaces were discussed, and it seems availability of wood for burning may have taken precedence over proximity of iron deposits. At Derryoover, both lode ore and bog iron ore are thought to have been available. There was no upper stone course at the building, however, suggesting it may not ever have been finished.

Other themes, such as conservation were discussed, and after much arm waving and exposition, the party moved on to the last ruin of the day, the pièce de résistance in fact in Paul’s armoury: the Whitegate iron furnace. By far the largest of those we had seen, the interior of the smelter is now in a rather hazardous state, with high partly broken stone walls. Dating from c. 1742, the edifice has a robust tunnel requiring bending to pass through, running beneath and behind the furnace proper. The tunnel makes a right-angled turn along its course,



The ochreous entrance to the Glendree Mine, recently located and cleared by Paul



The Woodford Iron Bar (1681), will shortly be displayed at the Woodford Heritage Centre



The Derryoover Furnace which Paul and fellow volunteers had pre-cleared of vegetation. There is no upper stone course at the building suggesting it may not ever have been finished



The Whitegate iron furnace dating from c. 1742, although dilapidated, is still an impressive building and has a curious tunnel running through it

acting as an access passage between a pair of openings on opposite sides of the building.

Adjoining the north wall of the furnace is a level area, now grassed over, where all appearances point to a works or manufacturing area. Truly in its day this site must have been a

hive of noisy activity, between workshop labour, a waterwheel, a large bellows blasting regularly, and heat and smoke a-plenty. Many thanks to Paul for giving the members a weekend with a difference.

Phelim Lally

Reports of this Year's Heritage Week Events, 22-30 August



National Heritage Week is a part of European Heritage Days which is celebrated in over 40 countries across Europe. In 2015, 23 countries have agreed to come together to share a common theme to help raise the profile and awareness of the value of industrial and design heritage to people across Europe.

Our shared industrial past is a story of change, development and creativity and of the men and women who were a part of that story whether as mill worker, a dock worker or the proud owner of a motor car. Industrial heritage engages all of us and has left a legacy in the buildings, records and memories of people across Ireland, a legacy that paved the way for how we live today.

Below are short reports of some of the events that were organised by MHTI members around the country along this year's theme:



Paul Rondelez of the Sliabh Aughty Furnace Project, conducted a guided tour of the extant remains of the iron industry in northeast County Clare. Paul notes that 'a very interested and interesting group of people showed up and kept on firing off a barrage of questions!'



Nick Coy, an authority on the history and heritage of the Avoca Mines, County Wicklow, attracted the usual large crowd for his annual guided walk around the historic mining landscape of the East Avoca mines. The mines have been much in the news recently due to the on-going remediation works at Tigroney. 'The walk went well considering the weather,' noted Nick.



Martin Critchley & Sharron Schwartz drew a large crowd to their guided walk of the Glenmalure Mines, County Wicklow. Sales of their article, published in MHTI Journal 14 and donations on the day, raised €160 for MHTI funds. 'We were very pleased with the attendance and it was good to see so many local people keen to know more about the glen's history,' said Martin.

SPECIAL FEATURE

Uranium Mining: A Hot Topic in Greenland

Sharron Schwartz and Martin Critchley

We fortuitously escaped the damp squib of an Irish summer for the Arctic and enjoyed an unanticipated hot and sunny month of trekking in some of the most remote parts of southwest and western Greenland. The world's largest island, surprisingly green and balmy in its southern fjords with chocolate box pretty scenery, is also a geologist's paradise, containing some of the world's oldest rocks and rarest mineral deposits. Needless to say, Martin was soon busy chucking rocks around and working out how we could visit a mine without breaking the bank (transport by helicopter or rib boat to remote areas being prohibitively expensive).

Fortunately, we had planned to do a trek near Narsarsuaq that would take us from the site of the earliest Norse settlement, Brattahlíð, founded by Erik the Red in the late tenth century near the present day farming village of Qassarsuk, to the fishing port of Narsaq, some 50 plus kilometres away. Our intended route through what is known as Erik the Red's Land, would take us across the world renowned Ilímaussaq igneous complex – a series of rare intrusive igneous rocks - that once formed the cores of volcanoes resulting from continental rifting (much like the present day Eastern African Rift) and which erosion has subsequently revealed.

For a geologist, the Ilímaussaq igneous complex contains many exciting and unusual rock types and minerals but it is also of great economic interest as in some areas it contains uranium ores and several important rare earth elements (REE) including yttrium, lanthanum, dysprosium, europium, terbium, praseodymium and neodymium, which are in short supply worldwide, the market for which is largely monopolised by the Chinese. At Kvanefjeld in the northwestern part of the Ilímaussaq complex, a deposit containing uranium and thorium in lujavrites was discovered in 1956 and subsequently investigated by drilling programmes. An exploratory mine was dug in the late-1970s's, but was abandoned shortly after. Studying a map of the area, we could see that a short deviation from our intended trekking route would enable us to visit this abandoned mine.

To mine, or not to mine uranium, that is the question

We soon discovered that uranium mining is currently the hottest topic in this cold, Arctic country and the Kvanefjeld Mine has been much in the news. A former Danish colony, Greenland was granted home rule in 1979. Thirty years later, the Arctic country assumed self-determination including full rights to exploit and administer its abundant natural resources, plus the right to full independence from Denmark should the people of Greenland so choose. The currency, however, remains the Danish krone and Greenland is still subject to the Danish constitution and to Denmark's foreign and security

policies. Greenland joined the European Common Market along with Denmark in 1973, but left the European Economic Community (EEC) in 1985 over fishing quotas.

Since the 2009 self-rule agreement, Greenland has chased the resulting opportunities. With a population of about 57,000 people, the country is poor and the size of the annual subsidy from Copenhagen, some €457 million, currently covering half of Greenland's budget, has been frozen since 2009 and new sources of income are badly needed. Therefore the extraction of uranium ores was put back onto the political agenda by former prime minister, Aleqa Hammond, of the social democratic party, Siumut, in 2013, after 25 years with a 'zero tolerance' policy to mining of radioactive substances and oil drilling.

The issue has split Greenlandic society. On the one hand there are those who wish to promote mining and oil exploration in order to bring large profits to stimulate the country's sluggish economy, deeply dependent on fisheries and tourism, which might pave the way to independence from Denmark. They are pitted against those who do not wish to see environmental contamination and degradation from potentially toxic minerals, and a large and possibly destabilising influx of foreign workers (especially the Chinese) with the leftist opposition party Inuit Ataqatigiit, the main voice of those who say 'Naamik' (no) to uranium mining. The mining of uranium, a heavy metal which can be both toxic and radioactive is highly controversial, not least because of its potential health and environmental risks, but also because it is used as fuel for nuclear power plants and can be enriched and weaponised.



We sighted this 'Uranium No Thanks' slogan in Greenlandic on cars and buildings in many parts of Greenland

The most important task for us is to make sure that Greenland has a sustainable economy. It's not important whether it's this generation which will experience independence or the next one

***Kenneth Rasmussen,
Siumut Party Spokesperson***

To complicate matters further, the Danish government opposed both oil drilling and uranium extraction for environmental reasons, believing this could threaten the Arctic region's pristine ecological system, but there is also considerable disquiet that a large-scale exploitation of uranium could lead to eventual independence. The Danish government first claimed that Greenland is not legally in charge of its commodities, as the question of uranium is related to foreign and security policies. But when a consultancy report proved otherwise, the government was forced into an embarrassing U-turn, saying it would not try to block Greenland's wishes.

In October 2013, the Greenland government voted in favour by 15-14 votes to the mining of radioactive materials after a very heated debate. But after only 18 months in power, Hammond was forced to resign amid a scandal and the question of uranium once again took centre stage. Inuit Ataqatigiit, the 'no-to-uranium party' wants a referendum on legalising uranium mining and made it a main theme in their election campaign of 2014. Siumut, which narrowly won the election bringing Kim Kielsen to power, has since softened its stance on the necessity of exploiting uranium in Greenland as a means to obtain independence, in order to placate the Danes.

Although all major political parties in Greenland support the development of a mining industry, the two main parties remain divided on the issue of uranium mining, with the opposition Inuit Ataqatigiit party firmly opposed on environmental grounds. Following the election, Siumut successfully negotiated a coalition government, bringing together rival parties (the Democrat party and Atassut) that support uranium mining. But the government is facing some difficult decisions. Some MPs are pushing for Southern Greenland to be designated a UNESCO World Heritage Site entitled *Church ruin at Hvalsø, episcopal residence at Gardar and Brattahlid (A Norse/Eskimo cultural landscape)* for its 1000 years of agriculture dating back to the time of Erik the Red. This was included in the World Heritage Tentative List in 2003.

But mining for the wealth of minerals - including uranium - in the area would preclude that designation. Large areas around Narsaq and Qaqortoq were included in the World Heritage bid, which unleashed protests from interested parties because the Raw Materials Directorate had already issued numerous drilling licences within those areas. Now the government is proposing that only five small 'islands' be included as a potential World Heritage Site to avoid conflict with the mining



Uranium deposits in Greenland (2015). The Kvanefjeld (Kuannersuit) Mine is shown in the far South West of the country

companies and other interested parties.

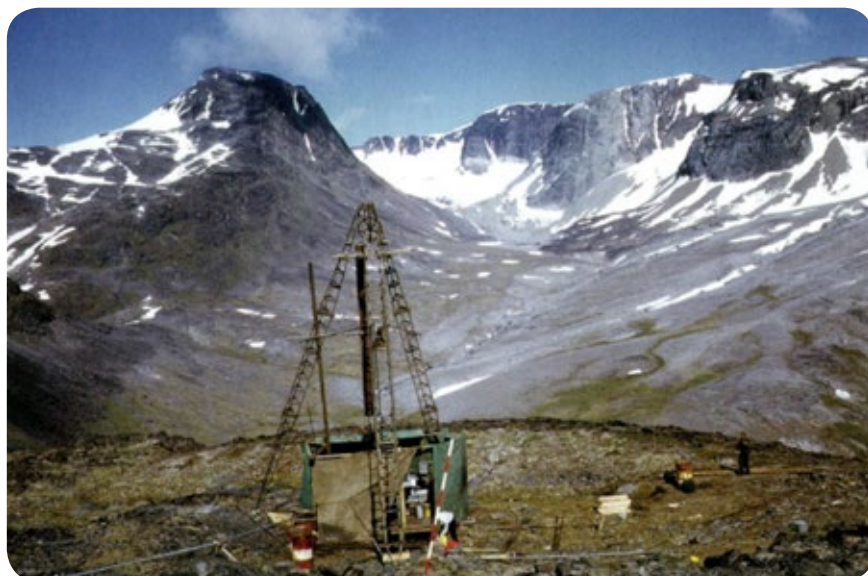
Security concerns expressed in Denmark over the mining of uranium and REE have not yet been resolved. A working group established in early 2014 between Greenland and the Danish government to resolve these issues was scheduled to conclude in late 2014, but these talks were interrupted by the change in government. While the new coalition supports uranium mining, these issues will have to be worked out with the Danish government before mining can move forward.

The Kvanefjeld (Kuannersuit) Uranium Mine

Occurrences of uranium and thorium in lujavrites were discovered in 1956 on the Kvanefjeld Plateau in the northern part of the Ilímaussaq complex. Here lujavrite, a type of nepheline syenite, is in direct contact with the volcanic roof of the Ilímaussaq complex, contrary to elsewhere, which means that the lujavritic magma was emplaced at a very high level in the complex in which volatiles and many rare earth elements were concentrated. The magma consolidated as lujavrite rich in the mineral steenstrupine, the main carrier of uranium in



The entrance to the Kvanefjeld Adit in 1979. Note the ventilation system which kept the level of radioactive emanation at a very low level in the workings. The adit is now sealed to prevent people accessing the workings and being exposed to harmful levels of radioactive air (Image courtesy of GEUS)



Drilling operations in the Kvanefjeld area in 1969. Note the Narsaq glacier between the Ilimaussaq & Nakkaalaaq Mountains (Image courtesy of GEUS)

the ore.

Drilling programmes investigated these occurrences in 1958, 1962, 1969 and 1977 with total core lengths of 12km. In 1982 it was concluded that the examined part of the Kvanefjeld deposit contains 20,400 tons of uranium in 136 million tons of ore (grade 365gm/ton) and contains the world's single largest thorium deposit, possibly as much as two million tons.

However, it was discovered that the Kvanfjeld ore cannot be treated by conventional methods of extrating uranium ores and new methods had to be developed. A pilot plant, set up at the Danish National Laboratory at Risø, discovered that when the pulverised ore is treated with a sodium carbonate solution at 280° and a pressure of 120 atm., more than 80% of the uranium can be recovered from the ore. This ore was extracted from

a 970 metre long adit driven through the central part of the Kvanefjeld deposit. The opening of the adit can be seen in the north wall of the Narsaq Elv Valley, 100-150 metres below the surface of the plateau.

On the valley floor below the adit, approximately 15,000 tons of ore were placed in a series of piles awaiting shipment to Risø. These were never transported. Although a detailed plan for exploitation of the ore body was published, including an examination of the environmental and social impacts of mining, plans to mine at Kvanefjeld were put on ice when Denmark decided not to pursue a nuclear power programme and opinion hardened against uranium mining in Greenland.

Today the valley is eerily quiet, the piles of black ore bear all the hallmarks of being

avidly picked over by mineral collectors and the dusty zig-zag track leading up to the adit is a challenge even for a 4X4. We reached the adit entrance which is sealed by concrete and a steel door covered with graffiti, after a brisk twenty minute climb up the track. We also spent a good hour fossicking on the abandoned piles of ore searching for minerals and were delighted to find augite, steenstrupine and a few specimens of tugtupite $\text{Na}_4(\text{AlBeSi}_4\text{O}_{12})\text{Cl}$.

First discovered in 1962 at Tugtup agtakôrfia and derived from the Inuit word 'tuttu' (reindeer) and meaning 'reindeer blood', this predominantly pink coloured mineral is extremely rare worldwide, being confirmed in two other locations in Quebec and Russia. Tugtupite is sought after by mineral and gemstone collectors. It is often polished and fashioned into items of jewellery, an interesting feature of the Greenlandic economy.



Martin inspecting mineral specimens on the piles of ore extracted from the Kvanefjeld Mine in the early 1980s that were never transported to Denmark



The sealed adit entrance to the Kvanefjeld Mine



The rare pink coloured mineral, tugtupite, first discovered in the Kvanefjeld area

The Kvanefjeld Rare Earth-Uranium Project

The license for mining rights at Kvanefjeld is currently held by Australian mining company, Greenland Minerals and Energy Ltd. (GMEL), that has been collaborating with Chinese company, China Nonferrous Metal Industry's Foreign Engineering and Construction Co., Ltd. (NFC) in methods of ore processing. The Kvanefjeld Project area is centred on the northern Ilímaussaq intrusive complex, an area measuring approximately 8x15km. Three large rare earth-uranium deposits have been established in the project area, named Kvanefjeld, Sørensen to the south of Lake Taseq, and Zone 3 in the eastern part of the complex. Collectively, these deposits account for a global resource base of 1.01 billion tonnes containing 11.14 million tonnes of rare earth oxide, and 573 million pounds of U_3O_8 . The Kvanefjeld deposit is the best constrained with 'measured' category resources established and is the start point of proposed operations. A Prefeasibility Study on a multi-element mining operation was completed in 2012, a follow-up 'Mine and Concentrator Study' completed in 2013, and a comprehensive Feasibility Study has recently been completed (May, 2015).

GMEL plans to develop an opencast at Kvanefjeld utilising a standard drill - blast - shovel - truck operation. With a crusher feed target of 3.0 Mtpa and an average waste to ore strip ratio of 1:1, the average total material movement from the mine is 5.9 Mtpa. The mining fleet will include six 100-tonne mining trucks and one excavator and will be performed by a mining contractor who is expected to employ 66 people. The main product stream to be produced from Kvanefjeld is a mixed critical rare earth concentrate (neodymium, praseodymium, europium, dysprosium, terbium, yttrium), with by-production of U_3O_8 , lanthanum and cerium products, zinc concentrate and fluorspar. Plans to develop an offshore refinery, either in Denmark or China, were dropped in favour of processing the ores in the vicinity of the mine. A concentrator and a refinery



Martin and Sharron trekking past Lake Taseq in the mountains above the fishing port of Narsaq (population in 2013, 1,503) where GMEL has proposed to create a flotation tailings storage facility for the Kvanefjeld Mine

are to be built at the upper end of the Narsaq Valley and the gangue materials left behind after flotation will be dewatered and stored in a tailings facility to be sited at Lake Taseq. The recovered water will be recycled back to the concentrator, where it will be treated to remove fluoride as fluorspar (CaF_2), which can be sold, along with the zinc sulphide concentrate, to international customers. A small quantity of excess water will be produced that cannot be recycled to the concentrator. This water, once treated to remove fluoride, will be returned to the environment at a discharge point adjacent to the concentrator.

Unsurprisingly, there has been considerable opposition to GMEL's plans, including demonstrations in Copenhagen against uranium mining in Greenland, one of which we saw broadcast on local TV in early August. In order to extract REE, GMEL will mine uranium as a by-product, which supporters claim is the only way to deliver a long-life, cost competitive venture, but this has raised fears, particularly among farmers, sheep farmers and those making a living from tourism, that dust from the opencast facility will taint the region's soil and water, and in the process destroy its image. Environmental groups, Avataq, Urani Naamik/Nej Til Uran, VedvarendeEnergi and the Ecological Council, do not believe that GMEL's plan for an opencast mine at Kvanefjeld is justifiable and the only way to abate local population decline and subsequent economic depression.

However, they reserve their fiercest criticism for the company's plans to deposit 56 million tons of tailings from the proposed mine into Lake Taseq, which will still contain the thorium and half of the uranium initially present in the ore. They argue that such a solution would not be a possibility if Greenland was an EU country, as it would be contrary to the Union's robust environmental regulations. Furthermore, they claim that REE do not have to be mined at Kvanefjeld, as there are several other REE deposits devoid of uranium in Greenland, not least at nearby Kringlerne, where the bedrock contains more than four billion tons of ore, and suspect that the real incentive for the Kvanefjeld project is to extract uranium. They argue that

“We’re told that without a mine out at Kvanefjeld, Narsaq will die. We say that Narsaq will die if they build a mine.”

Mariane Paviasen, Urani Naamik representative

there are no compelling economic reasons to abolish the zero-tolerance policy for uranium mining in Greenland and they therefore demand that an independent study looking into the mine's environmental impact be conducted. Anti-uranium group, Urani Naamik, together with Inuit Ataqatigiit, the main opposition party, have recently put forward 17 alternative proposals to uranium mining which they claim will help to stimulate job growth in other sectors of the economy, including agriculture, fishing and bottling of glacial meltwater.

GMEL hopes to commence mining operations in 2017, but it remains to be seen whether this will happen, given the strength of opposition and unresolved political issues over uranium mining with Denmark. Greenland is on the horns of a dilemma: whether to promote mining of uranium with concurrent, much sought after REE, to raise its GDP, potentially straining relations with Denmark from which some Greenlanders want independence; or to preserve its pristine and fragile Arctic wilderness and potential UNESCO World Heritage historic landscapes by eschewing the lucrative income from uranium mining in favour of developing alternative, sustainable, environmentally friendly industries which might not raise the necessary capital required to become financially independent of Denmark, let alone to improve its small, mixed and vulnerable economy. See the HD video of our trek through the Ilímaussaq igneous complex:

https://www.youtube.com/watch?v=5fSwxha_wvg

Pennsylvania Mining Heritage

I was recently on holidays in Pennsylvania in the eastern United States of America. Historically, north east Pennsylvania was a significant anthracite mining region with the first recorded mines there dating from the 1760s. The war between the USA and the UK in 1812 closed off regular supplies of coal from Britain and saw Pennsylvania anthracite come into demand. The development of canals and later railways in the region expanded markets for the product.

The popularity of anthracite peaked in 1917 and declined thereafter due to the availability of alternative power sources such as electricity and oil. The Knox mine disaster in 1959 accelerated the decline and by 1987, deep anthracite coal mining accounted for a mere 11.8% of coal produced in the USA. (http://www.msha.gov/District/Dist_01/History/history.htm)

As I was based in Scranton, I took the opportunity to visit the Anthracite Heritage Museum and adjacent Lackawanna Coal Mine. The former sets out the history of mining in/around Scranton and the associated anthracite coalfields, with emphasis on the miners, transportation of coal, the Knox mine disaster and industrial relations. Whilst these were interesting, I felt the Anthracite Museum was too unwieldy and tried to be too many things to too many people with additional displays as diverse as silk manufacture and women's military uniforms in WW2. Whilst these would be appropriate for a museum of north east Pennsylvania, they are of no relevance to anthracite.

Adjacent to the museum (with separate payment required), is the Lackawanna Coal mine. Tours of this former mine are accessed by an inclined railway with an enclosed carriage lowered/raised on the incline. The levels in the mine were generally bigger than those that applied in Arigna, due to the coal seam being larger, although the mines did have some seams as small as those common in Arigna. The tour guide noted that if a miner annoyed the boss, he was put to work on his back in those seams!

As the mine is entered and exited via the one passage, there is



The barge trip at the National Canal Museum in Easton, PA, makes for an interesting tourist experience

an emergency exit via one of the ventilation shafts. There is a capsule maintained above ground, which our guide described as similar to that used in the evacuation of the miners from the 2010 Copiapó mining accident in Chile, albeit larger. This has been used in practice when an axle on the incline railway carriage broke, stranding visitors underground.

The following day, I visited the National Canal Museum in Easton PA. This is based on a rewatered section of the abandoned Lehigh Navigation, the latter built by the Lehigh Coal & Navigation Company to carry coal to Philadelphia and beyond. As 'national' museums go, it was a bit of a disappointment, focusing on canals in Philadelphia. I have seen better local museums in Britain.

Associated with the museum (and included as part of the entrance fee) is a trip on the canal on a horse drawn barge, which is supposed to emulate the days of coal carrying on the canal. The modern era barge is the most unusual contraption I have ever been on. In addition, with the tour guide on the boat and the mule captains on the towpath in period clothing, this made for an interesting experience.

Ewan Duffy



Statue of a collier, erected as a tribute to anthracite miners inside McDade Park in Scranton, PA

IRISH NEWS AND PUBLICATIONS

‘An Klondike’ Hits our Screens!

The first western made in Ireland, ‘An Klondike’ tells the story of the Connolly’s — three Irish brothers who journey from the silver mines of Montana to the Klondike Valley in the Yukon in the hope of striking it rich. They seek their fortune in Dominion Creek, a town built on greed, where the Connolly’s become embroiled in a deadly feud with Jacob Hopkins, the man who runs Dominion. When Séamus Connolly shoots Jacob’s son in a duel, Jacob vows revenge. For the production, the mining town of Dominion Creek was constructed on the grounds of the Glengowla Mines near Oughterard in County Galway. Produced by Galway-based company, Abú Media, ‘An Klondike’ will air as a four part series on TG4 from Tuesday, 8th September. Catch the trailer here:

<https://www.youtube.com/watch?v=Q0R-nbXSAls&app=desktop>

Carrowscaltia Quarry, Kilkelly, Co. Mayo (11/06/2015)

Sadly Joseph (Joe) Harrington died while operating a crusher at the quarry on Thursday 10th June. It is believed that he was killed instantly. The Health and Safety Authority are investigating the fatality. Mr Harrington, aged 27, had worked at the quarry for about a year. He lived in Sonnagh near Charlestown and a neighbour said “Joe was very helpful around the area. He was good natured and made time for people. The family are well known and liked in these parts”. He leaves a partner and son, Sean.

<http://www.irishtimes.com/news/ireland/irish-news/man-who-died-in-mayo-quarry-incident-named-1.2247154>

Cavanacaw Mine, Omagh, Co. Tyrone (11/06/2015)

Environment Minister Mark Durkan MLA has approved the development of an underground gold mine, beneath the existing openpit near Omagh. The workings will extend for a distance of 600 m and to a depth of 350 m. Galantas expects to spend £17-20 million on developing the mine, and anticipates employing 130 people. Roland Phelps of Galantas said “our strategy is to establish the underground mine as soon as finance is available”.

<http://www.galantas.com/news/galantas-receives-planning-permit-for-omagh-underground-gold-mine/>

<http://www.northernireland.gov.uk/index/media-centre/news-departments/news-doe/news-doe-110615-minister-approves-omagh.htm>

Minerals Development Bill (07/07/2015)

This Bill was presented to Seanad Éireann on the 7th July. The Explanatory Memorandum describes the main purposes of the

Bill as:

- (a) to provide a modern regulatory regime for exploration and development of state minerals,
- (b) to provide for regulating in accordance with the principles of social justice the exercise of private rights in respect of minerals and ancillary rights with a view to reconciling their exercise with the exigencies of the common good,
- (c) to provide for the continued vesting in the Minister for Communications, Energy and Natural Resources the exclusive right of working, selling or otherwise disposing of private minerals which are not in course of development, subject to payment of fair compensation,
- (d) to provide for preparation and implementation of rehabilitation plans for abandoned mine sites, and
- (e) to provide for consequential amendments.

Chapter 6 relates to “Safety at Closed and Abandoned Mines”. The Explanatory Memorandum says “Section 100 permits the Minister to erect and maintain fencing, erect warning signs and undertake works as necessary at abandoned or closed mine sites to prevent accidents to people or animals.

The Minister is not under any obligation to undertake any such works and no compensation is payable to landowners where such works are undertaken. It will be an offence to obstruct the Minister or his agents in exercising his powers under this section or to interfere with any works undertaken”

<http://www.oireachtas.ie/viewdoc.asp?DocID=29299&&CatID=59>

Research at Tynagh Mine (July 2015)

Dr Tiernan Henry of NUI Galway is studying the chemistry of the flooded pit at Tynagh Mine. Water samples will be collected at various locations and depths in the pit.

<http://www.gsi.ie/Programmes/Groundwater/Groundwater+Newsletter.htm>

Curraghinalt Gold Project, Gortin, Co. Tyrone (17/08/2015)

Progress reported by Dalradian Resources Inc. in the second quarter of 2015 includes: substantial completion of surface works for the underground program; receipt of the explosives storage licence; six of 12 underground drill bays completed and development on mineralized material in the T-17 and No. 1 veins is ongoing; and completion of approximately 11,000 metres of infill drilling. During the first six months of 2015 the company spent C\$14.9 million on asset evaluation (£7.4M, €10M).

<http://www.dalradian.com/news-and-events/news-releases/default.aspx>

Primitive Mine found on Lamb's Head, Caherdaniel, Co. Kerry

MHTI member, Alastair Lings, has managed to relocate a spoil heap and flooded mine on the Lamb's Head peninsula that he found in 1989, but could not find in time for the MHTI field trip to the area in 2014. In July 2015 he succeeded in rediscovering the site and saw numerous examples of broken stone mining mauls on the 20 m² spoil heap, but no mineralisation. With appropriate permissions he dewatered the peaty pool above the spoil heap.



Broken stone mining maul on spoil heap

The pool turned out to be a trench cut in bedrock, 2 m long by 0.6 m wide at surface. The trench gives access to a partially backfilled underground chamber approximately 2 m high by 2 m wide by 3.6 m + long. No drillholes were seen in the trench or chamber, and this primitive mine was probably unknown to the prospectors who worked in the area in 1908. There may be further primitive workings at the base of a cliff, 70 metres to the southeast.



View of primitive mine after pumping, with pier in the distance

The mine is recorded on the Archaeological Survey database with the SMR number KE-106-144----
<http://webgis.archaeology.ie/NationalMonuments/FlexViewer/>

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Paul Rondelez's PhD thesis on iron production in late medieval Ireland (2 volumes) is now available for download from the Cork Open Research Archive (CORA) website: <http://cora.ucc.ie/handle/10468/1944>

New publications

A miners reunion: a commemoration of the closure of the collieries in 1990.

This book has been produced by The Miners Historical Society to commemorate the closure of the Aughacashel and Arigna Coal mines in the Connaught Coalfield. The book is mainly peoples' memories, with some more formal histories and many excellent photos. The book is A4 size, soft cover, colour-printed and contains 148 pages. It is available for €10 in the Gibbons Centra and other shops in Drumshanbo, and from committee members. For more details contact: coalmining25@gmail.com

OTHER NEWS

Cornish Gold in Ireland

Archaeologists at the University of Southampton have found evidence of an ancient gold trade route between south-west Britain and Ireland. This new study suggests that people were trading gold between the two countries as far back as the early Bronze Age (2500 BC).

The research, in collaboration with the University of Bristol, used a new technique to measure the chemical composition of some of the earliest gold artefacts in Ireland. Findings show the objects were actually made from imported gold, rather than Irish. Furthermore, this gold is most likely to have come from Cornwall.

Lead author Dr Chris Standish says: "This is an unexpected and particularly interesting result as it suggests that Bronze Age gold workers in Ireland were making artefacts out of material sourced from outside of the country, despite the existence of a number of easily-accessible and rich gold deposits found locally. It is unlikely that knowledge of how to extract gold didn't exist in Ireland, as we see large scale exploitation of other metals. It is more probable that an 'exotic' origin was

cherished as a key property of gold and was an important reason behind why it was imported for production."

The researchers used an advanced technique called laser ablation mass spectrometry to sample gold from 50 early Bronze Age artefacts in the collections of the National Museum of Ireland, such as basket ornaments, discs and lunula (necklaces). They measured isotopes of lead in tiny fragments and made a comparison with the composition of gold deposits found in a variety of locations. After further analysis, the archaeologists concluded that the gold in the objects most likely originates from Cornwall, rather than Ireland – possibly extracted and traded as part of the tin mining industry.

Dr Standish says: "Perhaps what is most interesting is that during this time, compared to Ireland, there appears to be much less gold circulating in Cornwall and southern Britain. This implies gold was leaving the region because those who found it felt it was of more value to trade it in for other 'desirable' goods – rather than keep it." It would be fascinating to know what the Irish traded with the Cornish for the gold...

<http://www.southampton.ac.uk/news/2015/05/irish-gold-trade.page>

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Waterford & Wexford: Post currently vacant, contact Nigel Monaghan

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[COUNTRY CODE FOR IRELAND IS +353, AND THE FIRST ZERO OF AREA/MOBILE CODE IS OMITTED]