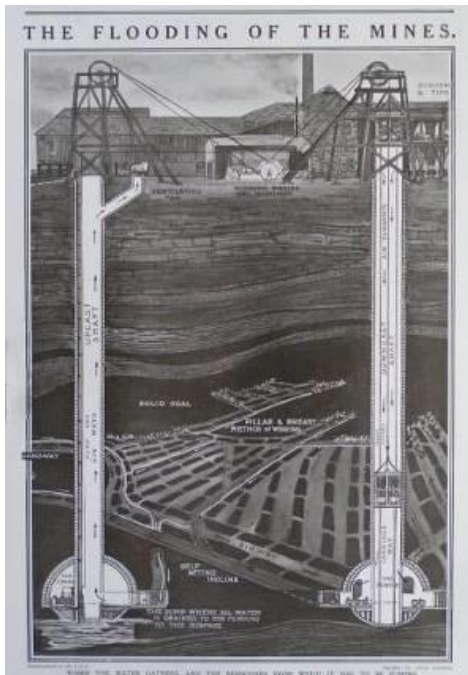


# ASPECTS OF THE HISTORY OF COAL AND ITS MINING

Thursday 22nd November 2018 (including HOGG AGM 2018)

Burlington House, Piccadilly, London

09.30 for 10.00



This meeting is concerned less with the history of geological ideas or concepts and more with the things that geologists and other professionals do, or did, or didn't do when working in the coal sector



Room and pillar workings discovered in foundation excavations for Cowglen Hospital, Glasgow, 1937

# Aspects of the History of Coal and its Mining *plus* the HOGG AGM 22 November 2018 at the Geological Society Burlington House, Piccadilly

Registration starts at 09.30am. Tea, coffee and pastries will be available before the start at 10.00am. As previously, the AGM of the History of Geology Group will be held as part of this meeting. It commences at 13.00 and will be preceded by a sandwich lunch at 12.15pm.

The topics to be presented relate to coal mining including some of those who were concerned with its exploration; it also marks the end of the Coal Geology Group.

The meeting starts at 10.00am and the AGM will follow lunch; the meeting will end at 5.00 pm.

The programme is:-

- 10.00 Introduction - Geoffrey Walton
- 10.10 Richard Noy Tounson *'The Coal Acts 1938-1943; the forgotten nationalisation'*
- 10.50 Geoffrey Walton *'Development and decline in British Opencast Coal Mining'*
- 11.30 Larry Thomas *'The evolution of Coal Mining in the Far East'*
- 12.10 Buffet lunch for registered attendees
- 12.50 History of Geology Group AGM
- 13.30 Ted Nield *'The Mountain that Moved – how Aberfan dethroned King Coal'*
- 14.10 Leucha Vener *'Local geologists on the Great Northern Coalfield, 1790-1840'*
- 14.50 Tea and coffee
- 15.10 Alan Cobb *'Coal mining subsidence; some aspects of its history'*
- 15.40 Hugh Torrens *'John Bateman Longmire (1785-1858), the mining engineer who went to Russia in 1817 to look for coal, instead of William Smith'*
- 16.25 General discussion to include long term legacies.
- 17.00 Meeting ends



**Coal exploration East Wemys, Fife, 1944**

## SYNOPSIS OF PRESENTATIONS

### 10.00 – 10.10 **Introduction - Geoffrey Walton - Deputy Chair History of Geology Group**

*This meeting is on aspects of the history of coal mining. Originally suggested as a topic to note the winding up of the Coal Geology Group it may be a somewhat different meeting since most of the speakers work or worked in the related service sector or are discussing professional practice or practitioners in connection with the coal industry. This programme is perhaps concerned less with the history of geological ideas or concepts, than with things that geologists and other professionals do, or did, or didn't do when working in the coal sector.*

### 10.10 – 10.50 **'The Coal Acts 1938-1943; the forgotten nationalisation' Richard Noy Trounson (DAL Piper)**

*The nationalisation of the coal industry by the post-war Labour Government, which established the National Coal Board, is well known. Much less well known, is the prior nationalisation, or "unification", of interests in unworked coal and coal royalties, which was carried out before and during World War II. It may be partly because the earlier nationalisation was much more technical in character, and partly because it does not fit in so well with the narratives of either of the two main political parties. This work of a Conservative-dominated National Government, was one of the achievements etc. of a reforming Chamberlain administration now better remembered for the policy of Appeasement.*

*A relatively uncontroversial recommendation of successive Government inquiries into the coal-mining industry between the wars, it was intended to address issues relating to coal ownership, and the right to withdraw support to work coal, which this presentation will seek briefly to explain. However, its implementation was postponed by the political difficulties of securing agreement on the organisation of the industry, against a background of declining markets and embittered industrial relations. The legislative package, of which it formed part, anticipated in many respects the current framework for the regulation of the industry. However, the transfer of proprietary rights in coal to the Coal Commission was pragmatic rather than absolute, and left some issues unresolved. Furthermore, it could not anticipate a number of significant later industrial and regulatory developments.*

*It is an irony that the present framework was only achieved following a still greater decline, so that the role of the Commission's ultimate successor, the Coal Authority, is of necessity as much focussed on the management of the environmental heritage from the past, as on the development of a contemporary industry.*



**Brick pits such as this at Buckley, North Wales, often contained workable coal used in the brick manufacturing process. Such coal was often alienated by the Coal Commission; it may not have been appreciated at the time that this coal could profitably be worked on its own as a fuel source for sale on the open market.**

**10.50 – 11.30      ‘Development and decline in British Opencast Coal Mining’    Geoffrey Walton (DustScan Ltd.)**

*The history of British opencast coal mining is presented from its wartime introduction in 1942 to the present day when output has fallen to the same level as that in 1943. Its peak output was more than 20Mt a year. Opencast or surface mining was set up under the aegis of the Ministry of Works; it moved to the Ministry of Fuel and Power in 1945, was taken over by the NCB in 1952 and has been regulated by the Coal Authority since 1994. Opencast mining was largely separate from the Deep Mine section of the NCB since the working operations were undertaken by private contractors who developed their own mining methods.*

*The 76 years of this type of mining in Britain has provided a significant opportunity for the employment of geologists. Initially geologists were conscripted from university to work for the Directorate of Opencast Coal Production at a time when Defence of the Realm Regulations and statutory powers were the norm. At one stage in the 1980s nearly 100 geologists were working in opencast coal, almost all for the Opencast Executive. Together with those employed by the Geological Survey, they comprised most of those employed on the mainland for much of this period. The paper outlines the duties of these opencast geologists who often had little contact with the academic world.*

*The writer’s own experiences as an employee and then working as a consultant for both sides of the industry are given, noting the technical importance and contributions to the understanding of surface coal mining geotechnics which the industry provided. Concluding observations are made as to whether alternatives to nationalisation would have been viable and might have been better for the profession and the suppliers to the industry.*



**Tamping a horizontal blast hole in a sandstone above the Fenton Seam in South Yorkshire. 1945**



**1988 St Aidan’s Extension Opencast Mine. The sidewall collapse brought the River Aire and the Aire and Calder Canal into the mine workings. In spite of downplaying its significance this collapse, which cost many tens of millions of pounds, altered geotechnical practice in surface mining and quarrying across Britain and led to changes in the law. Similar large collapses have taken place subsequently.**

**11.30 – 12.10**

***'The evolution of coal mining in the Far East' Larry Thomas (Dargo Associates Ltd)***

*Coal mining has been an industrial activity in several countries in the Far East for over a century. In recent years however, in some countries coal mining has either been severely reduced or abandoned due to economic and/or technical difficulties. In others, notably Indonesia, the coal mining industry has progressed over the last 38 years from a very small domestic coal supplier to the fifth largest coal producer in the world, mining over 430 million tonnes in 2016.*

*This enormous increase has been due to the advent of large scale opencast mining operations, chiefly in the province of East Kalimantan on the island of Borneo. Indonesian coal being sourced both for domestic consumption and as an export product. A recent development is the re-activation of coal mining in some of the traditional areas in the Far East, influenced by the growing need for electricity, economics of importing fuel and difficulties in the nuclear power industry.*



**Surface coal mining in Borneo**

**12.10 – 12.50**

***Buffet lunch, teas and coffee***

**12.50 – 13.30**

***History of Geology Group AGM***

**13.30 – 14.10      ‘The mountain that moved - how Aberfan dethroned King Coal’ Ted Nield (formerly editor of Geoscientist)**

*Subsidence, flooding, landslides, earthquakes, volcanoes, tsunamis – all these phenomena and more may, or will have, a geological element. Historically, this is often how the public and their representatives first encounter geological constraints.*

*But how does a 'risk' turn into a 'hazard' where harm may arise? This talk takes as a case history what happened during the Aberfan Disaster of 1966 which took place in my mother's home village and at my great grandfather's mine. A waste tip failure occurred which killed 144 people, 116 of whom were children my age – showing how a how a series of geological risks become hazards largely thanks to human agency. Many disasters come about when one or more of the many different forms of human negligence encounter uncompromising geology.*

*It is suggested that the effects of the disaster were by no means confined to Aberfan itself, or to the practice of Engineering Geology as applied to spoil heaps, or even to national legislation. The Aberfan Disaster set the stage for a societal shift that ultimately led to the abandonment of deep-mined coal, and growing reluctance to pay the environmental and safety costs of all kinds of mineral exploitation.*



**The Aberfan tip failure that occurred at 09.10 a.m. on 21 October 1966. It demolished the village school and killed 144 people including 116 children**

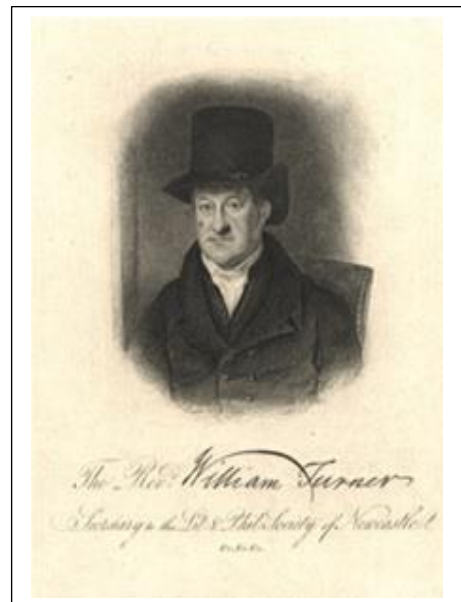
*In the late eighteenth and early nineteenth centuries there were two institutions based in Newcastle-upon-Tyne with philosophical and scientific interests in coal mining. These were the Newcastle Literary and Philosophical Society (f. 1793) and the later Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne (f. 1829). One of the main moving spirits behind both these societies was William Turner, who in 1793 drew up a Plan of the Literary and Philosophical Society of Newcastle upon Tyne, emphasising the fact that the two most important local productions were coal and lead, so a society to facilitate the exchange of information between mining professionals on the one hand and philosophers on the other would be beneficial to both parties, improving both the fund of local geological knowledge and the exploitation of local coal.*

*In spite of all of Turner's efforts, however, the interest the Newcastle Literary and Philosophical Society (NLPS) showed in furthering local mining knowledge was sporadic at best, though in its early years there were a number of papers on mineralogy, many from Turner himself. Another of Turner's early initiatives was a plan to circulate a list of queries regarding coal mining and the geology of mining areas to mine proprietors and colliery viewers in the area. The proposal was quickly taken up by the society, and in early 1795 a document, comprising an introduction and a list of questions, was drawn up, no doubt by Turner himself, and circulated amongst 'Gentlemen concerned in Coal-Works'. Turner and the society were sensitive to the possibility that co-operation would not be easily obtainable if they appeared to be requesting practical mining information that owners and viewers might consider a trade secret: the introduction made it clear that they did not want this kind of data, but rather geological and natural historical information. The document made it clear that the final goal was to illuminate the natural history of coal and to produce a mineralogical map of the Newcastle coal district. How widely these queries were circulated is not clear, but the project met with at least some success. Nevertheless, the NLPS was never more than half-hearted in pursuing mineralogy and geology, and in 1829 Turner and other like-minded naturalists founded the Natural History Society of Northumberland, Durham and Newcastle-upon-Tyne.*

*This society was much clearer and more focused on its final goal of producing a geological map of the area, and Turner continued to push on both local and national levels for access to Ordnance Survey maps and for funding, and some very localised mapping was completed. However, it took the growing professionalisation of science and the foundation of the Royal School of Mines in the second half of the nineteenth century for such efforts to become mainstream.*



**Newcastle upon Tyne Literary and Philosophical Society building**



**Rev William Turner 1781-1841**

**15.10 – 15.40      ‘Coal Mining subsidence; some aspects of its history’    Alan Cobb  
(GWP Consultants)**

*That underground coal mining could lead to subsidence of the surface has been known for a very long time – indeed it probably started to occur shortly after coal mining commenced. The roof over the workings invariably collapsed sooner or later, leading to breakage and settlement progressing upwards from the workings. Depression of the surface often caused damage to buildings or structures, canals were particularly affected. As mine workings became deeper, it became apparent that damage could extend well beyond the area of working, often into third party land. The cost of repairing subsidence damage could put 1d to 5d on the price of a ton of coal.*

*Subsidence was also responsible for several disasters, where workings were taking place beneath water when the broken rock zone intersected the base of the water.*

*Research into subsidence started early in the nineteenth century. The definitive work had to wait until the mid-twentieth century and the work of Shadbolt and others, funded by the NCB. A major problem was the variability of subsidence effects, due in large measure to the variability of the ground being undermined. The type and timing of subsidence depends on the type of working. Room and pillar workings (provided enough pillars of sufficient size were left to support the roof) generally only gave rise to crown holes (sub-circular depressions in the ground). These can occur at any time, from immediately after working to many centuries after working, but are generally restricted to shallow workings, with depth no more than 10 times the seam thickness. Longwall working gives rise to much larger areas of subsidence, that nearly always leads to lowering of the ground level. This usually occurs shortly after working.*

*Although large scale underground coal mining has ceased, mining has left a legacy of subsidence effects. Old pillar and stall workings can still collapse and affect the surface. The gradual flooding of workings can lead to renewed movements, albeit on a much smaller scale than when first worked. The fissuring and stretching of the ground caused by mining subsidence drastically alters the permeability, allowing for softening of mudstone and shale strata. Such effects lead to the Bolsover landslide, some 30 years after mining had stopped.*



**Subsidence damage from  
longwall coal mining  
Measham, Leicestershire,  
1968**



**15.40 – 16.25**      **'John Bateman Longmire (1785-1858), the mining engineer who went to Russia in 1817 to look for coal, instead of William Smith'**    *Hugh Torrens (Madeley, Staffs)*

*How William Smith might have been rescued from his financial predicaments by an 1814 or later invitation to Russia has been explored in a recent issue of Earth Sciences History. Little was known of the Englishman who replaced him, or what happened to him there. John Bateman Longmire was born at Troutbeck, Cumberland. His uncle John Bateman (1749-1816) was a mining engineer, based at Whitehaven since 1774, who took John under his wing in 1794 and trained him. Whitehaven soon had the deepest (275 m.) and most extensive (30 km of tramway) coal mines in Britain.*

*Their mines were owned by the Lowther family, and Bateman was their steward from 1781 to 1791, when he was fired after severe subsidence appeared in Whitehaven. He soon sent a paper, recording the stratigraphy of these mines, to the Royal Society, and the Newcastle Literary and Philosophical Society, in hope of election, but was only made an Honorary Member of the second. In 1802 after a change of ownership their new owner re-instated Bateman, with Longmire, now 17, as his assistant on a salary of £150 a year. Between 1804 and 1811 William Pit was sunk there, the best equipped in Britain, to work coal under the Irish Sea. In 1806-1807, and again in 1811, Longmire attended geology and mineralogy lectures given by Robert Jameson at Edinburgh University. In 1811, not having been given permission to attend by the autocratic Lord Lowther, Longmire was dismissed, as was Bateman for a second time, after trying to defend his nephew. Longmire now turned to publishing articles on mining and its engineering, and so was available to the two Russians who, from early 1814, were seeking a coal prospector to hunt around the main armament factory at Tula, Russia. Longmire was now appointed at the salary of £800 a year (which would certainly have rescued William Smith!) and left England, with equipment and a team of seven, in July 1817. The paper will describe Longmire's work there till 1822, and his papers in Russian, read to the St Petersburg Mineralogical Society, but which sadly do not survive. Unsurprisingly, in view of the problems then facing mineral prospectors in such a faraway country, Longmire met with little success. He did publish further articles in 1822-1826 after his return home, and could now afford to refuse an invitation to go metal prospecting in Peru in 1825. Longmire finally settled, as a yeoman farmer, at Orrest, Applethwaite, and died aged 73 in 1858, leaving his mineral collections to Kendal Corporation, where again they have not survived. Only his red sandstone grave survives in Whitehaven.*



**The William Pit,  
Whitehaven**

**16.25 – 16.55**      **General discussions including on long term historical legacies**

*Discussion will start with considering the presentations and any wider or linked issues.*

*Environmental concerns over groundwater and built development in coalfield areas will only grow with time. Continuing small scale mining and other uses of the remaining mines and coal resources implies that there is likely to be a continuous requirement for the understanding of coalfield geology and the interpretation of historical documents including plans and records. Are these appropriately managed and accessible?*

**Richard Noy Trounson** is an employed barrister. Following a history degree at Oxford, and studies and training for the Bar, he worked as an in-house lawyer in the Headquarters Legal Department of the National Coal Board, subsequently re-named the British Coal Corporation. He was in the Mining branch, which dealt with issues in the fields of mining law, planning, environmental, and health and safety law, and also with Government relations and Parliamentary business relating to Private Bills. Following the privatisation of the industry, he went into private practice, and now works part-time as a member of the Safety, Health and Environment Team of DLA Piper. His spare time interests include geology and its history, having taken an earth sciences degree with the Open University.

**Geoffrey Walton** has a PhD in mining engineering and, since 2004, has run DustScanAQ a dust and air quality consultancy. He joined the Opencast Executive of the NCB as a prospecting officer in 1966. Following Aberfan he was seconded to work in the mining department at the RSM, eventually becoming the opencast geotechnical engineer. He left in 1973 to set up GWP Consultants dealing with geotechnical and surface mine design issues and contributing to the 1999 Quarries Regulations. For 10 years from 1993 he was on the advisory Board of the BGS and from 1995 he was visiting Professor of Mining at Leeds.

**Larry Thomas** obtained a BSc (Hons) Geology (1964) and PhD in Coalfield Sedimentology (1967) from the University of Wales (University College of Swansea). He commenced his career with the British Geological Survey during which he undertook coalfield mapping in South Wales followed by coalfield investigations in South Korea and Indonesia. He then joined BP Coal Ltd as a senior geologist concentrating on South East Asia supervising coal projects in Indonesia, Vietnam and Brunei. In 1988, he set up Dargo Associates an international coal consultancy and has been involved with worldwide coal projects. These have included projects in Brazil, China, India, Eastern Europe, Pakistan, Russia, Turkey, UK and USA. Dr Thomas is the author of the text book 'Coal Geology'

**Ted Nield** holds a doctorate in geology and worked for 21 years for the Geological Society of London as editor of the monthly magazine *Geoscientist*. He is a past Chair of the Association of British Science Writers and was Director of Outreach and later Goodwill Ambassador for the United Nations International Year of Planet Earth. He is a Fellow of the Geological Society. He is the author of *Supercontinent* (2007), *Incoming!* (2011) and *Underlands* (2014), published by Granta Books.

**Leucha Veneer** Leucha is the Engineering Outreach Officer for the University of Central Lancashire in Preston, having moved into engagement and outreach work following doctoral and postdoctoral research work in history of science. Her PhD on economic and practical aspects of late eighteenth- and early nineteenth-century geology, examining the activities of both provincial geological societies and the Geological Society, has led to ongoing research into the work of Geological Society figures such as William Daniel Conybeare, who were hugely influential in their day, but on whom there has been little focus more recently.

**Alan Cobb** read geology at Durham University and has a PhD in geotechnical engineering. He is a senior partner in GWP Consultants. Alan has been involved in much coalfield work since 1978 and many issues involving the stability of old mine workings. He is a leading authority on the impact of old, recent and projected mine workings on slope stability and of subsidence on roads, bridges, canals and railways. He is a highly regarded expert witness on such matters and gave the EIG Ansel Dunham lecture in 2016.

**Hugh Torrens** is an emeritus professor at Keele University and a leading authority on William Smith. With many books, papers and articles to his credit, he has published his research widely across both geology and history including the life and accomplishments of many of Smith's contemporaries. In 2012 he was awarded the inaugural V.V. Tikhomirov Medal for his work, one of the International Union of Geological Sciences awards, established to reward outstanding original contributions to the earth sciences.