

Number 25 (1998)

The identification, commercial evaluation and initial exploitation of alum shale deposits in the British Isles, A E Rout 1 – 17

Alum, used mainly as a mordant in dyeing, was produced from early times around the Mediterranean from deposits already containing the required precursor, aluminum sulphate. In the 15<sup>th</sup> century and later, a process spread through Northern Europe based on shales which contained no aluminum sulphate and no constituents not commonly found in shales. What mattered was a complex balance between iron pyrites, carbonates and the cations in the clay minerals. Such special requirements could not have been understood, still less quantitatively identified, at that time. It is not clear therefore how suitable shales could not have been recognized. This paper offers explanations and discusses contemporary evidence in support of them.

The shale process was introduced into the British Isles in the second half of the 16<sup>th</sup> century, but it took over 40 years of heavy financial losses by a series of operators to put the process onto a commercial basis. The history of the period is examined and explanation is offered for the long delay, and for the eventual success of the process in North Yorkshire at the beginning of the 17<sup>th</sup> century.

Roseberry Mine tramway : thoughts concerning details at the incline head,  
J S Owen & R Pepper 18 – 20

Our knowledge of Cleveland ironstone mining industry and its auxiliary services owes a great deal both to the late John Owen and Richard Pepper. In 1992 John Owen sent this explanatory note and diagram concerning Roseberry mine tramway situated near Great Ayton. The material is published here at Richard's suggestion.

The other Warden Law haulage engine house (A surviving structure from the Seaham and Rainton Railway), S A Chapman 21 – 28

Hydraulic machinery at Hutton Home Farm, near Guisborough, J K Harrison  
29 - 42 plus 4 plates

During the nineteenth century improvements on landed estates were often pioneered on what were named Home Farms, in other words those tenanted farms which were nearest to the manor hall, big house or castle. Many of these farms were provided with the latest in agricultural equipment and some architectural pretensions. It can hardly be claimed that architectural pretension was a feature of the Home Farm on Joseph Whitwell Pease's estate at Hutton near Guisborough in north east Yorkshire (NZ 596143). Nevertheless there were building extensions in the late nineteenth century and the farm was equipped with a hydraulic hoist and two water turbines, installed in brick-built extensions to the old farm. A planning application in 1997 to convert Hutton Home Farm into an equestrian park concentrated attention on these machines.

Number 26 (2000)

Evidence of the alum industry on the foreshore at Ravenscar,  
Green 3 - 11

David

The remains of the alum house at Ravenscar are regarded as being the best preserved of their kind in the North East, itself the major centre for alum production in Britain between the early 1630s and 1850. The cliff-top Peak Alum works (Ravenscar was formally called Peak on account of the height of its cliffs) operated from c1650 until 1862. The site was excavated in the late 1980s and has since become one of Ravenscar's major tourist attractions. Although there is a wealth of information regarding the alum house there is scant mention of the remains on the adjacent rocky foreshore or scar, where the all-important exploration of the alum crystals, plus essential imports such as coal, kelp (seaweed) and urine, took place. This article to re-address the balance.

Sir Joseph Banks 's account of alum making at Kettlewell, North Yorkshire,  
Clifford E Thornton 13 – 18

The author describes the circumstances of the visit to the Mulgrave Castle estate by Sir Joseph Banks FRS in 1775 and he outlines the long collaboration between Banks and the estates owner, Captain Constantine Phipps. Bank's detailed description of alum making, which was retrieved from a manuscript copy in the papers of his contemporary, Dr Charles Blagden, is followed by the author's comparison with Colwell's account written nearly a century earlier. Also included is a brief description of the quarrying of the alum shale, published 55 years later.

A medieval bloomery at Tarn Hole in Bilsdale in the North York Moors:

A re-assessment of an excavation of the 1970's,  
19 - 34

J K Harrison

This paper consists of a report on excavations carried out in 1975 and 1976 on an early medieval bloomery site in the North York Moors with a discussion of important findings. The two key features discovered were protective unfired clay covers over the two furnace bowls and standing stones adjacent to the furnaces which, it would appear, had been set up to mark the site. From these it is deduced that the iron makers intended to return to this site after an interval, perhaps, of several years. This raises the possibility that work on such medieval sites may have been carried out to a planned cyclical schedule.

Hydroelectricity generation in the Yorkshire Dales,  
35 - 53

T T Hay

The subject of hydroelectric generation in the Yorkshire Dales is dealt with in two main sections. The extensive first section provides accounts of production facilities and proprietors at more than fifteen places which extend eastwards from Kirkby Stephen, the Ingleborough Estate at Clapham and Pen-y-Ghent House all lying outside the confines of Wensleydale and Swaledale through the two dales to Leyburn and Easby Abbey near Richmond. The second section consists of a gazetteer giving detailed locations of sites where relics exist, together with additional data concerning some of the turbines. A short postscript outlines a set of field trials which was active through the 1990s/ Published sources of information are listed.

Number 27 (2002)

A matter of topography, geology and land ownership:

Frederick Greenwood's Royalty (Eston Mines) 1853-1870. Richard  
Pepper 3 - 22

Following the early working of the main seam of Cleveland ironstone on the north face of Eston Hill by Bolckow and Vaughan in 1850 – 53, the partners directed attention to opening access to the stone lying under the southern slope of the outlier. Having secured a royalty agreement for the land owned by Greenwood, attempts were made to reach ironstone from surface by means of boreholes, drifts and shafts, but local geology thwarted their efforts. From around 1860 to 1863 determined work was done to gain access by means of both a vertical shaft, Upsall No.1, and intersecting the shaft, a southern extension of the Trustee draft from the north escarpment. The author has had access to diaries kept by two employees, Thomas and George Lee, and for the period July 1863 to January 1870 he presents relevant entries as five extracts which outline: (1) the initial development at pit bottom, Upsall (July 1863 – March 1865); (2) the sinking of No.2 shaft, Upsall, (Sep 1863 – Dec 1864); (3) the initial removal of 'Upsall' ironstone (Dec 1864 – July 1866); (4) further developments in the removal of Upsall ironstone (Oct 1866 – Jan 1869); and (5) the final solution for removing ironstone from Upsall Pit (Dec 1868 – Jan 1869, Dec 1869 – Jan 1870). The later part of the text consists of a commentary and interpretation based upon this documentary evidence, supplemented by information from other services.

The Blckett Hutton Cleveland Steel Foundry, Guisborough: the final years.

John McConnell 23 - 26

A brief history is given of the foundry from the end of World War 2 to its closure in 1997.

The Eston blacksmith's workshop and cottage.

Walsh 27 - 32

Deborah

A description is given of the unoccupied and derelict blacksmiths workshop and cottage High Street, Eston near Middlesbrough (NZ551186), recorded in early 2000 prior to redevelopment of the site. This account is a shortened version of a report by Deborah Walsh of The Brigantia Archaeological Practice, Barnard Castle, which is deposited with Tees Archaeology.

Steelfounding in north-east England: an inside view.

Scott 33 - 46

Austin W

The nature of the steelfounding industry is described and contrasted with the ironfounding industry. Brief histories are given of some of the principal steel foundries in the north-east England, and of the melting processes they used. The productivity problems of the post war industry are discussed.

Number 28 (2003)

Thomas Allinson's geological excursions during the 1850s:  
 principally in the North York Moors J K Almond 3 - 25

Thomas Allison, 1813 – 1885, was one of at least four successive generations of his family to be involved with the extraction of minerals in NE England. In the 1850's scramble for Cleveland ironstone he was engaged in the opening out of resources near Guisborough where he had charge of the Belmont mine and also, from the 1860s, of the nearby Spawood mine. In the years around 1870 their combined output of ironstone exceeded 200 000t. A transcript of a diary in the possession of the Allison family contains observations and comments in connection with visits Thomas Allison made between 1854 and 1859 to examine various mineral occurrences. Some of the dozen entries reproduced are supplemented by brief comments, and a postscripts added. It is clear that Allison was gathering information about ironstone outcrops in the North York Moors during a time of great speculation combined with incomplete understanding. The diary extracts reproduced here are by kind permission of MR J J S Allison, great-grandson of the diarist, Thomas Allison. He has also provided details of the Allison family.

Ironstone mining in Scugdale near Swainby, south west of Stokesley Carol  
 Cook 27 - 42

Two significant 19<sup>th</sup> century mining ventures for ironstone are identified, both on land owned by the Marquis of Ailesbury. The ailesbury Estate records describe surveys and negotiations, beginning in 1851, with a view to exploiting ironstone in Scugdale for which purpose a branch railway line through Sawinby was opened in 1857. The first venture, the Swainby or Blink Bonny Mine, located in an area south of the village, seems to have involved activity between 1857 and the early 1860s. The other development, the Ailesbury mine, lay to the southeast of Calcinations of the mined ironstone appears to have been practiced in connection with both the mining sites. Methods of working the mines are touched upon, and the effects of the industry on the rural community are considered.

In the valley of Scugdale there are signs of early iron working on the hillsides at Harfa House (NZ 499 001) with an associated field name of 'Cinder Hill'. Further towards the head of the dale may be seen the remains of an odd bloomery, where a circle of slag lies bare in the winter months. Nearby there are shale heaps beside a small spring which feeds into 'Piper Gill' a name often found in association with other iron-working sites in the North Yorkshire Moors. Charcoal was the fuel used to create sufficient heat to extract the iron. This area abounded in woodland, making it an ideal location for industrial activity. The very name of 'Coalmire', the woodland, making it an ideal location for industrial activity. The very name of 'Coalmire', the woodland running up the hillside to the south of Coalmire Lane, conjures up charcoal burning.

Ayresome Ironworks, Middlesbrough, and Klenshyttan Ironworks, Sweden;  
 evidence if the divergent careers of the brothers John and Samuel Gjers J K  
 Harrison 43 - 54

John Gjers was born and educated in Gothenburg in Sweden and made a highly successful career in the Cleveland iron industry as an engineer and then as an ironmaster in his own right. John Gjers was most famous for Ayresome Ironworks in Middlesbrough which was demolished in 1966. His half brother, Samuel, remained in Sweden and also

built a successful career as a partner in the Qvist and Gjers engineering works at Arboga. The Klenshyttan ironworks, Ayresome and Klenshyttan, is presented in this paper with comments on the contrast between more or less contemporary blast furnace practice in the Cleveland iron-making district and in the Bergslagen district in Sweden.

Views of the Blackett Hutton Foundry:  
by A M Burgess

55 - 63

Photographs by Dennis Wompra. Captions

ISSUE 29 2004Why Stockton-on-Tees did not become a Newcastle, nor Lemington-on-Tyne a Middlesbrough.

pages 3-16

Stafford M Linsley

The paper considers the differing histories of the Tyne and the Tees. It highlights the importance of readily available raw materials: coal in Tyneside and ironstone, discovered somewhat late, near the Tees. It also shows the importance of overland mass transport systems for handling heavy and high bulk commodities; in particular it emphasises the part played by the railways in the growth of the iron industry along the banks of the Tees from the mid-nineteenth century.

*Illustration - none*The Middleton Ironworks: Survey of the blowing engine house. pp 17-30

J S Wheeler

The Middleton Ironworks (or Dinsdale Ironworks) was located at Middleton St. George, near Darlington. The works was largely demolished in 1947, but the engine house, actually the second of two engine houses on the site, survived until 2004. This building contained the last fragment of a Victorian blowing engine house in the Tees Valley. The paper contains measured drawings, photographs and description of the surviving structure. It also contains the results of the author's investigations into the history of the building and of the blowing engines used by this works.

*Illustration - Fig 4 North elevation, April 2004, after demolition of modern buildings.*

ISSUE 30 2005Sir George Colebrooke's attempted alum monopoly and the Great Ayton Alum Works. pp 3-14

Ian Pearce

The article outlines the chief features of the British alum market in the 1770s and in particular the business environment in North East Yorkshire. Two earlier attempts to control the supply are described. Colebrooke's attempts in 1771-1773 are described in detail using several documentary sources, one of which was written by Colebrooke himself. Some events in Colebrooke's subsequent life are noted briefly. A short section discusses what can be learnt concerning the Cockshaw alum works at Great Ayton from the surviving correspondence of John Ridley who managed the works in 1772-1773.

*Illustration - none.*Ayton banks Alum Works pp 15-27

Robert H de Wardt &amp; David W Taylor:

This works, also known as Cockshaw works, at Great Ayton in North Yorkshire, opened in 1766; from 1772 it was in the hands of Sir George Colebrooke and other London speculators. It seems to have closed in 1775. The geological setting and the contemporary alum process are described. The site, with a plan prepared by English Heritage, is described and discussed. The site of the boil house has not been established and several possible locations are considered. The authors suggest that the remains of activity are distinctive because of the short period of working and the apparent abandonment of some partly processed material in a roasting clamp.

*Illustration - Fig. 4 Block diagram of Ayton Banks alum works.*Boulby alum works' tunnel revisited pp29-45

Charles H Morris &amp; Simon Whitlock

The Boulby alum works were sited at the top of a high, steep, sea cliff 2km west of Staithes in North Yorkshire. To provide access between the works and the foreshore with its coastal shipping, a combination of vertical shaft and horizontal tunnel was excavated through the cliff. This report records structures and artefacts observed in 2004-5 at the foot of the cliff in connection with the tunnel, and then goes on to suggest a sequence of construction phases based on field observation supplemented by documentary evidence. The Boulby alum works opened in 1672 and finally closed in 1871; some significant dates in relation to the works' activity are given. In the 1850s the shaft-tunnel system was proposed as a means of moving ironstone from workings near the cliff top to the beach for shipment.

*Illustration - Photo 2 Tunnel entrance and associated structures on shale platform at base of cliffs.*A jet mine in Chapel Wood, Ingleby Arncliffe. pp 47-50

Peter F Ryder &amp; Ernie Shield

The article describes a surviving set of jet workings under the Cleveland escarpment and provides a map of them. It is believed that this is the first accurate modern survey of such a jet mine to have been undertaken.

*Illustration - none.*A 1900 steam-driven overhead travelling crane and a circa 1900 12 feet diameter faceplate lathe.

pp 51-70

D Whitfield

These items were used at Brown's Foundry (Portrack Ironworks), Stockton-on-Tees, which closed down in 1978. They are now in storage at Preston Park Museum. The paper provides photographs and brief descriptions. The crane appears to be a standard product, made by Booth of Leeds. It is steam-powered, with its own boiler travelling overhead with the winding machinery. The lathe appears to be specially made by its users for their heavy engineering products.

*Illustration - Plate 1, if practical. Otherwise photo 1 (Crane boiler & end of crab) or photo 8 (lathe)*

ISSUE 31 2006Seaton Carew Ironworks: John Henry Proud's reminiscences in the early 20th Century with commentaries and notes.

pp 3 – 47

John Henderson Proud &amp; J K Almond

John Henry Proud retired in 1958 as assistant blast furnace manager at the Hartlepool works of South Durham Steel & Iron Co Ltd. In 1962 he submitted his 'Observations and reminiscences...' to the company, following his long experience of the Seaton Carew Ironworks Site. The major proportion of his account concerns the blast-furnace iron making plant which operated until 1925, with shorter sections on briquetting, pan sintering, and making coke in closed ovens which were charged from one end. Among other topics and activities noted are the production of 'refined malleable iron' for the foundry industry, the screening of ore for sale to annealers, and slag granulation.

Comments on some of the statements have been added by the present authors, together with two supplementary sections and selected illustrations. The added introduction outlines the history of the Seaton Carew Iron Company up to its absorption in 1928 into the South Durham Company, notes the close links between the Seaton Company and the Carlton Iron Company, and offers biographical details of the company's leading personalities, Walter Morrison and William Thomlinson, as well as of John Henry Proud. A postscript sketches the later history of the iron-making site.

Walkers Detaching Hook.

pp 49 – 56

Tony &amp; Cath Lynn

The following is as much a detective story as it is an investigation into the use of a piece of mining equipment. The story of the discovery and identification of a model of Walker's Detaching Hook is followed by an outline of William Walker's working life together with a short technical description of the hook which was intended to prevent accidents caused by overwinding.

ISSUE 32 2008The wooden bridge over the River Tees at Sockburn, 1838 –c1890

Pp 3 – 13

Don Whitfield

This paper gives the background in 1837-8 of a large and important timber bridge across the River Tees at Sockburn near Darlington (NZ 351071), followed by a description of its construction and, finally, field recording of the abutments and cast iron sockets for the timber members – the only features surviving today.

Local archives and a recently located technical documents from The Civil Engineer and Architect's Journal of 1838 have enabled the following description of the bridge to be compiled. Later a suspension footbridge was constructed between the old abutments.

William Jones and the first Chemical Factory in Middlesbrough

PP 15 – 30

Ian Pearce

The first recognizable chemical works on Teesside was that of William Jones in 1859. Not only did Jones lay the foundations of what would become one of Teesside's major industries throughout the twentieth century, he also developed one of the first mechanized chemical plants, incorporating his patented furnace for the manufacture of alkalis. His pioneering role has been largely forgotten, and some histories of the Teesside chemical industry ignore him. He probably built Undercliffe Hall in Great Ayton, commonly ascribed to the Pease family. This paper aims to restore the reputation of William Jones as a founder of Teesside chemical industry and as an important figure in Great Ayton society in the late nineteenth century.

Tees Bridge Watch 118 – 2007

PP 31 – 52

Charles H Morris

The author's intention is to provide a supplement to his account of 'Bridges over the Tees', which was published as a research report for this society in 2000. He describes bridge works which, during the last ten-year, have taken place in two discrete sectors along the length of the River Tees: the Stockton area and Upper Teesdale. For the Stockton area information is provided on six structures: two footbridges, two road bridges, one rail bridge and one rail tunnel. Also two sites are identified where footbridges may be built in the future. For Upper Teesdale short accounts are given of these three footbridges which have been reconstructed and of one completely new footbridge. In all cases the structures require considerable engineering skills in order to carry out their construction. In particular the complex sequence of steps involved in replacing the A66 Surtees road bridge with a new structure outlined. The author presents an updated list of 'Construction dates for crossings of River Tees' containing fifty-seven sites of which forty-five remain in place today.

RESEARCH REPORT No 9 (2009) ISBN 0-905728-06-8

Boulby Alum. The Works Diary of George Dodds. 1772 - 1888  
illustrations

Kevin Quinn 76 pages with

### Abstract

George Dodds' account of operations, organization and events at Boulby Alum Works during the final quarter of the eighteenth century is transcribed here directly from records covering two and a half centuries of alum making. Dodds was agent/manager at Boulby for over 50 years and most of the following alum records relate to this period.

The Diary notes, written by George Dodds for his own use and that of his employers, provide an eye-witness account of work and life in an early industry.

When he became manager in 1772, Boulby Alum Works, manufacturing alum from alum shale, was one of several such works in North Yorkshire, many of which were situated on the coast. The area, between Scarborough and the Tees, which was the main site of such manufacture in England at the time.