

Domestic and Industrial Peat Cutting on North-Western Dartmoor, Devonshire:

An archaeological and historical investigation

by Phil Newman

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South-West Landscape Investigations



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Summary

An archaeological and historical investigation of peat cutting on northern Dartmoor has been undertaken. Historical research has focussed on a collection of almost 1300 documents in the possession of the Duchy of Cornwall, which discuss the day to day affairs of domestic and industrial peat cutting, as managed by Duchy officials in the 19th and early 20th centuries. Other material consulted includes the work of contemporary 19th- and 20th-century writers, newspaper items, and record office sources. The historical research focusses on the period from the mid-1840s to c. 1930 for which a revised and expanded narrative is offered for both domestic and industrial peat exploitation.

The major issue for the Duchy stewards in this period, with regards domestic turf cutting, was the regulation of border residents and others who cut turf outside of any customary rights that existed for Duchy tenants and residents of some venville settlements. This they attended to by a system of licensing to accommodate the needs of the poor, for whom there was no other source of fuel, and the commercial cutters who sold turf in the Dartmoor borders and in-country and were required to pay dues on the turf they cut. Enforcing the rules sometimes proved problematic for the stewards when residents wrongly assumed they possessed customary rights or they took advantage of whatever privilege they did possess by selling turf without licence. A rise and fall in activity associated with the enforcing of regulations and licensing by the Duchy, coincides with variations in national trends regarding fuel supplies and their distribution networks.

From the 1840s onwards capitalist companies invested in Dartmoor's peat resources as a means to procure a profit from the manufacture of value-added fuel products including charcoal, naphtha, briquettes, gases and other sundry fuels. Commercial peat setts were established at Blackabrook Head and Brent Moor in the 1840s and Walkham Head and Rattlebrook Head from the 1870s. At all of these sites experimentation and attempts to manufacture peat fuel products took place. None, however were commercial successes and failure may be attributed to a number of causes, not least the speculative basis that the capitalist companies were created around, which is highly representative of entrepreneurial activity elsewhere on Dartmoor within the granite, clay and metals industries in the 19th century. The experimental nature of many of the operations, the very real problems of the Dartmoor environment and the remoteness of the peat deposits all worked against success, driving the operations into the margins of economic viability. But Dartmoor was not the only place where such struggles took place and this scenario is found also in Ireland where potentially wealthier peat bogs faced the same commercial problems.

An archaeological survey has been undertaken to examine three key areas of peat cutting; Rattlebrook Head, Walkham Head and Blackabrook Head. The survey has utilized LIDAR data flown in 2009 as a basis for mapping the evidence of peat cutting, followed up by field investigation. This has established the extent and level of complexity to be found within areas of peat cutting and has led to the identification and/or mapping of associated drainage systems, tramways, trackways and buildings. Fieldwork has enabled confirmation that out-ricking of dried peat using steads, of the type numerous in Cornwall, was much less common or has left little field evidence. Charcoal burning however, using meilers, has proved to be more common than formerly realised. Close examination of some of the ruined buildings has provided clarity to their purpose, appearance and in some cases their construction date. Others sadly are too ruinous for this to be viable.

As a result of this seminal programme of research, the frontiers have multiplied and priorities for further work are highlighted.

1.0 INTRODUCTION

Peat is a natural substance that has formed on the wetter high ground of Dartmoor, through a build-up of partially decomposed plant material accumulating over several thousand years. In the correct conditions it can exist to a depth of several metres and recent measurements have demonstrated that in uncut areas of Dartmoor, near where peat has been extracted, it is from 1m to approximately 7m deep (R. Fyfe *in lit* Aug 2010). Peat is highly water retentive and has capacity for storing the rainfall on the high ground where large, wet peat bogs hold on to water and provide the source of several Devon rivers.

The upland fens and the blanket bogs of Dartmoor have long been valued by palynologists for the unique insights they provide into past environments through a combination of pollen analysis, radiocarbon dating and the study of macro fossils (see Casseldine & McQuire 1994; Fyfe 2008a and b). They also have a more immediate historical and cultural significance that has been somewhat overlooked by past researchers, providing information about the human relationship with the peat as a resource, through the physical and material landscape that survives. When extracted from the ground by slicing it into shaped blocks then air dried, peat transforms into a solid material that burns slowly with a distinct aroma. The deeper the peat deposit the more compressed it has become, providing a dense black substance of high calorific value. In an area with few trees to provide firewood and no access to coal, dried peat has been burned on domestic hearths within and around Dartmoor for centuries. Cutting and removing it from the moor was a key privilege possessed by some tenants and commoners since at least the 13th century (Gill 1970, 98). Peat was used for a number of industrial purposes, including smelting lead and firing medieval pottery and brick kilns (Blair & Ramsey 1991, 203). It is readily transformed into charcoal, for which it was much in demand in the medieval and post-medieval period for tin smelting and iron smithing. Charred peat and peat ash were valued as a soil additive for improving the fertility of the land and its deodorizing properties made it ideal as a means of assisting with urban sanitation in the Victorian period. Through a process of distillation it could be converted into liquid fuels, volatile gases and even candles. However, the economics of some of these processes were of questionable viability, especially when operating in a wet, remote environment such as upland Dartmoor.

1.1 The work of previous writers

Peat or turf cutting on Dartmoor, both domestic and industrial, has not previously been the focus of a specific archaeological or historical study, although some aspects have been covered to a lesser degree by several authors of monographs, journal articles, magazine articles and contributor volumes.

R H Worth was fascinated by the natural aspects of peat and its formation. He also mentioned in passing some historical aspects of medieval peat working, though he referred little to the operation of cutting peat, its associated traditions and uses. Apart from the production of gas at the prison, he was not drawn to discuss any of the industrial processes that had been tried on Dartmoor, although many had been ongoing during his lifetime (Worth 1930). However, Worth did publish and comment on material gleaned from the papers of John Andrews (1750-1824), which provided some key historical information from a period in which peat cutting is generally poorly recorded in the late 18th century (Worth 1941, 207-9).

Helen Harris was the first modern writer to devote a chapter of a book to Dartmoor peat. This work covered domestic and industrial usage, based on primary documentary sources, including documents held by the Duchy of Cornwall (Harris 1968). Within the chapter Harris also provided the most detailed narrative, until now, of the Rattlebrook Head peat works, covering the entire period that it was operational; her work on this topic has been repeated by several subsequent writers (Gill 1970; Wade 1982).

The topic of Medieval peat cutting has attracted little research energy but Harold Fox provided some important historical detail about the *Carbonarii*, a class of workers that produced peat charcoal on the high moors to service the smelting requirements of the tin industries in Devon and Cornwall (Fox 1994, 149-71). The study of the archaeology associated with this activity is limited to Woolner's short paper of 1968 which draws attention to the existence of charcoal burning platforms (meilers) on Wild Tor Ridge (Woolner 1968, 118-20).

For the more recent past, two articles in *Dartmoor Magazine* have recorded the memories of those who recall peat being cut for domestic use and reminiscences of the tail-end of activity at Rattlebrook Head peat works in the mid 20th century (Greeves 2000, 8-10; Amhof 1988, 4-6). These were important articles and very timely because the cutting of peat as an essential part of Dartmoor life is, today, just about beyond living memory.

1.2 National and regional context

In other areas of Britain, similarly endowed with exploitable peat deposits, the topic has been approached at various levels. On Bodmin Moor in Cornwall, Herring *et al* (2008) have provided one of the most detailed studies of the archaeology and traditions of peat cutting in the West Country so far. Although Bodmin Moor and Dartmoor share many topographical similarities, in terms of the exploitation of peat, there are demonstrable differences. Charcoal production was less frequent on Bodmin Moor probably because of the unsuitability of the peat. Also, there was

no 19th-century 'peat industry', probably for the same reason, so Herring *et al* focussed on domestic use of turf. Domestic turf cutting took place more recently on Bodmin Moor than on Dartmoor, and this has provided a wealth of oral information as well as a photographic record from those who used it.

Early observers of Cornish peat cutting such as William Borlase in the 1750s, could only do so because the area was more accessible than the uplands of Dartmoor where commentaries having a similar level of detail came much later. There are also subtle differences in some aspects of field evidence from Bodmin and Dartmoor, some of which will be discussed below.

In other parts of the south-west, where peat cutting has occurred, recent general studies of Exmoor (Riley & Wilson-North 2001) and the Quantock Hills (Riley 2006) have not approached the topic. In general it is difficult to place Dartmoor within a national context because so little work has been undertaken elsewhere although peat cutting traditions and field remains exist within most of England's national parks. Within the Yorkshire Dales, folk studies such as Hartley and Ingleby (1997) have recorded an intriguing variety of traditions within the individual Dales in connection with domestic peat cutting, while the use of peat in lead smelting is frequently referred to in Yorkshire mining studies (Gill 1993; Gill 2001). However, fieldwork dedicated to the cutting of peat has barely begun in the Dales (M. Johnson YDNPA *in litt* Oct 2010). For the Peak District, Ardron's work (1999) represents the only doctoral study to have focussed on human exploitation of peat. He has provided a broad overview and identified categories of field evidence attempting to date them. The thesis also contains a summary of work on the topic before 1999, although with an understandable northern bias. Dartmoor is discussed in the thesis though only with reference to

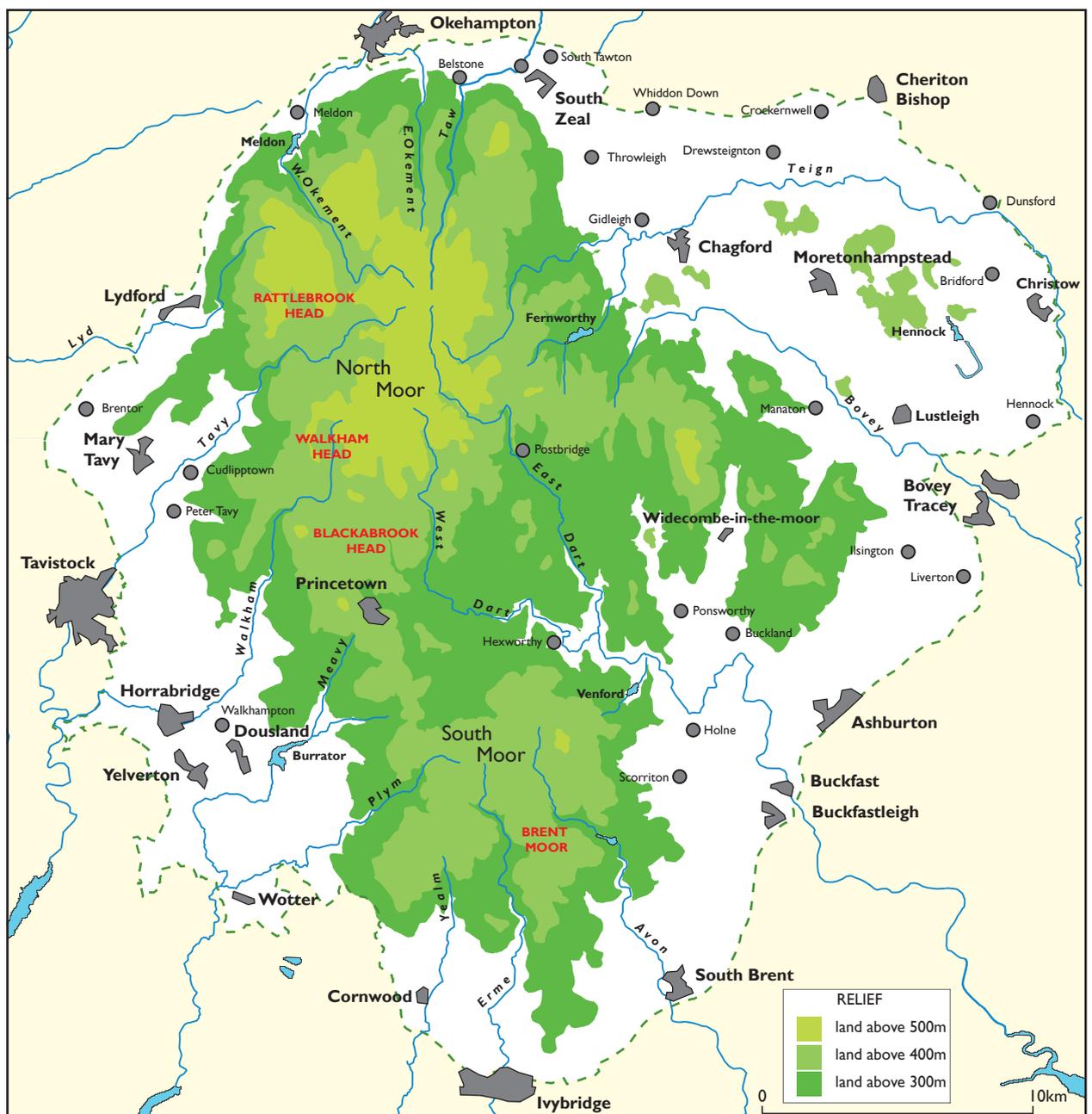


Fig 1. 1 Map showing the boundary and topography of Dartmoor National Park and the location of the four industrial peat setts (nb Brent Moor is not included in the following study)

the previously published information available such as Harris (1968) and Gill (1970). Other recent regional studies include Wells' investigations of post-medieval turf cutting in Norfolk (Wells 2000), supplementing what was known from earlier medieval studies in the area. A very fine study of peat cutting has been published for Ireland which explored the history and social context of both domestic and industrial peat cutting (Feehan & O'Donovan 1996).

A good general introduction to peat cutting in the British Isles has been produced by Rotherham (2009) but its content serves well to illustrate the point that most research to date has been in the form of folk history studies. The concept of human interaction with this natural product having potential for landscape study or historical archaeology is novel. Dartmoor is seldom mentioned in any detail within this or other works that refer to peat cutting as a source of cultural information.

1.3 Aims of the current study

There has been no focussed historical or archaeological study of the human exploitation of peat on Dartmoor that takes advantage of contemporary accounts and primary sources to complement the field archaeology. This report addresses this issue but follows targeted themes of study. The emphasis is on two previously untapped sources of data.

- An archive of documentation concerning the cutting of peat within the Forest of Dartmoor and certain parts of the commons of Devon, held by the Duchy of Cornwall at Princetown. This covers the period c. 1847-1930, which has not previously been examined in detail.
- LiDAR data of the central Dartmoor uplands captured in 2009 as a means of evaluating the field evidence.

Other material assembled includes a re-evaluation of previous studies and the anecdotal material collated by Crossing (Le Messurier 1966; 1967), Harris (1968), Amhof (1988) and others. A range of material from contemporary newspapers, writings and parliamentary papers also proved rewarding and limited fresh oral information has been recorded. Fieldwork and recording has been undertaken specifically for this brief at Rattlebrook Head, Walkham Head and Blackbrook Head (Fig 1. 1). The study has concentrated on the 19th and early 20th century, for which documentation and field evidence are the most plentiful, however, earlier periods are considered. Like most research, once frontiers are opened and lines of questioning become developed, the potential for further investigation increases exponentially. The report therefore is not exhaustive and themes for further study that have become highlighted as a result of this work are discussed in the conclusions.

1.4 Terminology

Dartmoor peat terminology is confusing for the uninitiated. It has developed and altered over several centuries to describe the variations in the substance and its products. Also there are vernacular elements within it specific to Devonshire, although many terms used have equivalents, or are similar, in other peat districts of England.

The people who cut peat on Dartmoor rarely referred to it thus and the most frequent term used by moorland people was *turf*, and once cut, collectively it becomes *turves* or *turfs*. This word, or its Latin equivalent *turba*, has been in use from medieval times and from which the term 'right of turbary' – the right to cut turf – was derived; this terminology is found in many regions of Britain.

Peat, on the other hand, refers to the material itself rather than the product once cut but the word 'peat' wasn't excluded, particularly by the literate, in the 19th century. It was frequently used in correspondence to and from the Duchy officials, especially with reference to commercial peat works, which were never referred to as turf works. In the account book of Richard Spry, proprietor of the Brent Moor Peat Works, for 1846-9, 'Turf Peat' and 'Peat Earth' are described separately (DuCoPr/acc bk/1846-50). It is likely that this difference was based on the depth of the peat cut, which affected what the material was to be used for. The peat earth, probably obtained from the lower levels of the peat bed, was ideal for charcoal and for distillation. R H Worth described these stratigraphic differences, mentioning 'top peat' which is the fibrous upper layers; 'middle peat', which is dark brown in colour; 'bottom peat' is black and at a depth of 6ft is typical of the best developed peats on Dartmoor (Spooner & Russell 1967, 11). Whereas the fibrous upper and middle layers were suited to use on the domestic hearth, it was the denser bottom peat that was most sought for the industrial processes used to produce charcoal, compressed peat fuel and naphtha.

In 1789 the term *Blackwood* was used by John Andrews to describe peat, i. e. the 'Blackwood Ties between Aune Head and Petre's Cross', and the Smith's Shop (a probable tin smelting house) at Two Bridges, which used 'charred Blackwood (peat charcoal) for Coal' (Worth 1941, 207). He also refers to 'turf and blackwood' so it is likely that the latter was the deeper peat whereas by turf he referred to the upper layers, though probably not the surface layer (see faggs below). At the end of the 19th century, William Crossing claimed that the Dartmoor man never referred to peat but used the term 'turve or black 'ood' (Le Messurier 1966, 48).

However, in this context, turf should not be confused with its normal usage and does not describe the upper layer of the peat ground, indeed quite the opposite. The cut pieces of grassy vegetation, roots and humus of the top layer,

were termed *faggs*, pronounced and occasionally written, *vaggs*. A similar word *flags* was adopted in Norfolk and (possibly) *flaughts* in Cumberland (Wells 2000, 470) but on Bodmin Moor the term *skimmies* has also been recorded (Herring *et al* 2008, 117). Although valued as a fuel by some, notably the poor who often had no access or rights to areas where peat could be cut, the lower calorific value of *faggs* made them of secondary importance to the turves. In theory, *faggs* did not have to be cut from the peat grounds, but anywhere the grassy and rooty surface material could be pared off. Mr Cyril Abel of Peter Tavy recalls border residents in the 1930s removing 'vaggs' from the area near Stephen's Grave on Peter Tavy Common (C Abel *oral inf* Aug 2010).

Once cut, according to Eden Phillpotts, the slabs or sods of cut peat were called *scads* (Phillpotts 1904) although Crossing referred to 'slabs of peat' simply as *turves* (Le Messurier 1974, 56-7). When stacked into small mounds the result was known as a *stook* (Le Messurier 1966, 49). John Swete in 1797 mentions cutting peat to a depth of two *spits* (Gray 2000, 65). The generic term often used to describe all domestic peat fuels collectively was *fireing*.

In the following discussion, *peat* is used to describe the resource as it lies *in situ* in the 'peat bogs' 'peat grounds' and 'peat beds', and as a material to be exploited in the case of the 'peat industry'. *Turf* describes the product of cutting peat, as in a 'licence to cut turf' or 'cutting and drying turf' and a 'turf rick'.

1.5 Dartmoor Turf in literature and contemporary accounts

The cutting and use of turf as a domestic fuel has provided a fertile source of material for those writing accounts of Dartmoor; both factual and fictional, but the earliest descriptions of these activities can take us back only to the 1790s. Devon's earlier historians made only passing reference to the cutting of turf. Risdon, writing before 1630 for example, mentioned that Dartmoor 'was richer in its bowels than in the face thereof yielding tin and turf, which, to save for fuel, you would wonder to see how busy the by-dwellers be at some seasons of the year'. He referred also to Dartmoor's venville tenants who had a right of turbarry but he included no details (Risdon 1810, 223). Westcote, at about the same time, described only the process of burning turf as a means of producing a manure, though it is uncertain whether he was including Dartmoor when he stated that this was taking place 'In very coarse and barren heathy and furzy ground, remote from the sea' (Oliver 1845, 56).

It is to Bodmin (Fowey) Moor in Cornwall that we have to refer for an earlier brief description of turf as a fuel in a West Country moorland context when, in 1758, William Borlase described differing types of Bodmin Moor turf and its uses as a fuel from his own observations (Borlase 1758, 59). It is likely that a dearth of reporting on the use of turf on Dartmoor in the same period was due to the lack of such visitors. The peat beds lay on areas of the high moors that were inaccessible to all but those who travelled there in the course of their occupations, restricted mainly to graziers and peat cutters. It was not until the 1790s that learned travellers began traversing the uplands and recording their observation, though even then only a few, such as John Andrews (Worth 1941) and John Swete (Gray 2000) strayed far enough from the road to witness turf being cut.

By the late 18th century the movement for agricultural improvement in Britain was gaining momentum. On Dartmoor this was driven by powerful figures such as Judge Buller of Prince Hall and his supporters, who proposed dividing and enclosing the whole of the Dartmoor 'wastes', draining and 'improving' the land. This idea was endorsed by Arthur Young, one of the most influential agricultural writers of the time, who it seems could not praise Buller and his attempts at 'improvement' enough. Young proclaimed that 'Dartmoor at present is a disgrace to the kingdom' (Young 1797, 578). Had this plan been implemented, it would have spelled a rapid end to the peat grounds and the resources they provided. Robert Fraser, another writer on matters of agricultural improvement who supported this scheme, observed that turf was a useful, if expensive fuel for residents of the northern and western quarters of the moor where coal was unavailable. He hoped that improved transport systems, such as canals, would soon allow these people to obtain pit coal but conceded that turf for fuel was a 'great comfort to the neighbouring poor and the most considerable advantage they derive from the Forest' and that it should be preserved for their use in any plan to improve the Forest (Fraser 1794, 54).

In 1796 William Marshall also acknowledged the importance of peat bogs as a source of fuel for the border inhabitants and that some of Dartmoor's peat was of suitable quality to make a form of charcoal used by Blacksmiths, which, apparently, was not the case in Cornwall. Among the improvements Marshall proposed for Dartmoor was sod-burning (previously recorded by Westcote and Risdon elsewhere in Devon) as well as the draining of the peat bogs and using the charred peat as a soil improver for the poorer pasture areas (Marshall 1796, 25-6). Indeed, Buller had already set up a kiln for burning turf to produce charcoal for precisely that purpose. The establishment of this kiln was perceived as highly significant because several contemporary writers, including Andrews, Swete and Young mention it (Gray 2000, 80; Young 1797, 572; Worth 1941, 207). According to Swete it was located in a bog to the south of Crockerntor, probably Muddilake.

But any threat to the future of peat as a fuel source resulting from 'improvement' was opposed by others such as John Andrews (Worth 1941, 203-225). Scarcity of fuel, he claimed, led to the 'poorer sort', who cannot afford to buy coal,

plundering the hedgerows for wood.

At present the turf and blackwood are articles which tis' supposed the poorer dwellers cannot live without; and are found very serviceable at the distance of many miles, even to people in good circumstances the Rage for Improvement of poor lands seems of late to have been carried too far (1788)(Worth 1941, 208).

It was the Rev John Swete in his search for the 'picturesque' that provided the first eye-witness account of the cutting of turf when he accompanied a 77-year old man whom he referred to simply as 'Old Cator' to his 'peat pits' somewhere near Blackbrook Head. Swete described some of the techniques used by the old man as well as the different types of peat at various depths. He also gave some insight into the landscape of turf cutting, referring to numerous ricks of drying peat not far from Cator's cottage (Gray 2000, 66).

By 1808, the main concern of Charles Vancouver in his *General View of the Agriculture of Devonshire*, was the means of efficient transportation for those who cut peat-fuel to remove it from the moors. Deficiencies in the system of tracks, he claimed, was causing great inconvenience to farmers and those who earned a living by providing peat to the border settlements. Vancouver suggested the parishes might be held responsible for keeping the existing turf roads maintained (Vancouver 1808, 284). Peat was still clearly considered a mainstay of Dartmoor's domestic economy in the first decade of the 19th century but Vancouver then went on to suggest further ways of draining and cultivating the bogs of Dartmoor, which would certainly have led to the rapid demise of the resource.

The use of peat by the residents of Dartmoor and its borders by the mid 19th century was perhaps of such utility that the topic did not inspire much reporting. However, by the end of the century, writers began employing a more nostalgic tone to their discussions of peat fuel and additional detail from this period is available. Baring Gould (1900, 180) and Eden Phillpotts (1904) have both provided some comment on the topic with a slightly romanticized and nostalgic leaning in their writings. Among the most significant written accounts of turf cutting are the several published works of William Crossing, writing just before the end of the 19th century and into the early 20th (Le Messurier 1966; 1967; 1979; Crossing 1909). Cutting turf for domestic use was certainly in decline during William Crossing's lifetime (1847-1928), he said as much himself (Le Messurier 1966, 48), and industrial-scale peat working was limited only to the operations at Rattlebrook Head, where several companies had failed within his memory. Crossing's writing provides an important link between the memories of men who had been associated with turf cutting much earlier in the century at places such as Walkham Head and Brooks Head, with whom he had conversed. Also, there are his own invaluable observations of techniques used by residents of the moorland and its peripheries who were still actively cutting and burning turf on their domestic hearths. Indeed, in 1885 William Crossing himself enquired of the Duchy as to the possibility of a grant to cut turf near Redlake (south), whilst residing in Splatton, South Brent (DuCoPr/let/15-Apr-1885).

Two novels, one fictional and one semi-fictional, have provided useful observations specific to later episodes at the Rattlebrook Head peat works. In *The Whirlwind* (1905) Eden Phillpotts used the peat works as the backdrop for a chapter, in which the decline and partial dereliction he describes has a ring of truth about it, when compared with what is known from documentation (below). The account was clearly based on personal observation of the place, but there is also astute human observation in the character of Gregory Friend who embodied the misplaced optimism of some of the people associated with peat 'adventure' on Dartmoor. Amhof (1988) and Hemery (1983a) believed this character to have been based on William Rich who served as caretaker, among his many other tasks at the works, from the 1880s into the early 20th century.

Log Hut (1956), a memoir by Thomas Firbank, is a probably accurate account of the author's time as manager and co-owner of the Rattlebrook Head peat works in the late 1940s. Although revealing not much about the appearance of the works, it does provide insight into the struggle to make a profit at this remote and often weather-beaten site.

1. 6 Turf cutting techniques and tools

The techniques for cutting turf in the 18th to 20th centuries are well recorded, thanks to various writers since John Swete in 1797. These methods apply to both the domestic turf cutters, who used the dried raw peat as fuel, and most commercial users who subjected the cut turf to a variety of industrial processes described below. The techniques used are more or less standard when compared with those used elsewhere in Britain, Ireland and northern Europe, though the tools and terminology developed with regional variations. Unfortunately there is no way of knowing how long ago the Dartmoor traditions we are familiar with from the 19th and 20th centuries were developed.

The vertical limits of the area to be cut, known as the tie, were defined using a *slitting iron*. This tool, William Crossing described as a long knife or blade of about 2ft(0.6m) long, 4 inches in breadth 'like a straightened scythe' (Le Messurier 1966, 52) although Phillpotts claimed that indeed it was 'generally an old-style scythe' adapted for the task (Phillpotts 1904). It was mounted on a long wooden handle. With this implement, the roughly cut edge of the tie from the previous season would be cleaned off and a second cut was made parallel with it approximately 14 inches into the uncut peat. Interestingly, the use of this implement does not feature in descriptions of turf cutting on either Bodmin

Moor (Herring *et al* 2008) or the Irish bogs (Feehan and O'Donovan 1996) though variants, usually known as the *turf knife* have been recorded in other districts (Rotherham 2009, 39).

It was then necessary to remove the furze, grass and roots together with the upper layer of soil, known as *heading*. According to John Swete in 1797 these were discarded and Greeves has recorded a similar practice for the early 20th century (Greeves 2000, 9). However, William Crossing stated that this material was carefully replaced after the turf was removed 'by rule of the Duchy' (Le Messurier 1974, 56-7), though no mention of this is recorded among Duchy documentation. Mr Cyril Abel of Peter Tavy has no recollection of the top surface being replaced in this manner in the 1930s.

The tool used for this task was known on Dartmoor as a *budding iron*, but regional equivalents elsewhere are the *paring spade* and *flatcher* (Rotherham 2009, 37-8). This was a flat, shovel-like tool which was heart-shaped or triangular, providing an angular point on the blade to give minimum resistance as it sliced horizontally through to loosen the upper surface. Mr Abel's father created his own device for this purpose constructed from the forked branches of an ash tree with an iron blade fixed between the branches. A piece of wood or cross bar was fixed to the single end so that a man could push the device with the blade just beneath the surface-cutting through the turf, rather like a breast-plough. A second man would drag the device from the front using a rope attached to the blade end, which also prevented it digging in too far (C Abel, *oral inf* Aug 2010). Similar devices have been described used elsewhere in the British Isles (Rotherham 2009, 36).

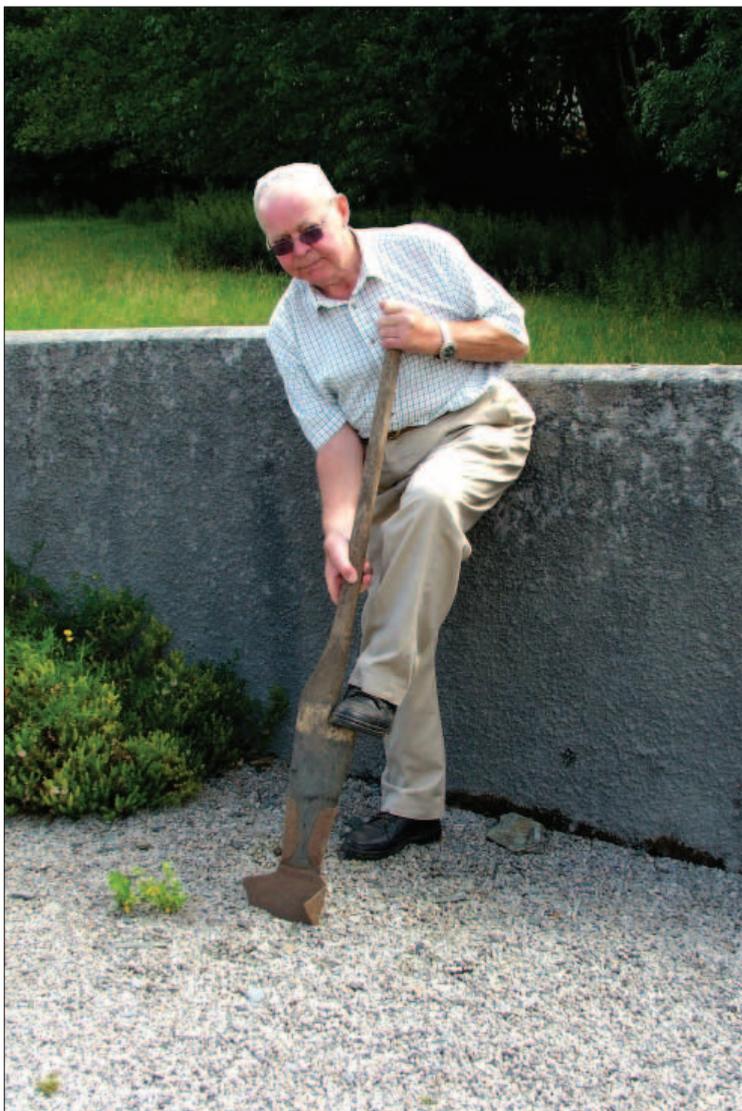


Fig 1.2 Mr Cyril Abel of Peter Tavy demonstrates the cutting action of a left-handed turf iron typical of the type used on Dartmoor in the 19th and 20th centuries.

The sods or turves of peat were cut using a tool known in the West Country as a *turf iron*. Once again this type of tool was used widely in Europe although the design varied greatly. The Irish and Scottish equivalent is the *slane* (Feehan and O'Donovan 1996, 17) and in east Anglia the *beckett* is the term used but elsewhere they are simply referred to as a *turf spade* (Rotherham 2009, 36). In the Yorkshire Dales, each Dale had a different tradition in the shape of turf spades used (Hartley & Ingleby 1968). Although the Cornish turf iron (Herring *et al* 2008, 119) is different to that of Dartmoor, known examples within the latter district show limited variation (see Harris 1968, 125; *examples may also be seen in the High Moorland Visitor centre, Princetown and Ashburton Town Museum*).

The turf iron (Fig 1.2), as used on Dartmoor, resembles a long-handled wooden paddle with an iron blade fixed to the lower end. The wooden section is flat at the bottom and approx 6-7inches (15.5-18cm) wide then higher up, the shaft is shaped into a slender handle. At the base of the handle a step is carved into the flat section onto which foot pressure can be applied. The favourite timber used was pitch-pine due to its resistance to the acidity of the peat (C Abel, *oral inf* Aug 2010). The iron blade sits flat against the wooden surface, clamped to the front of it, but extends for another 4-6 inches beyond the bottom terminal. The cutting edge is rounded and a pointed wing, formed by bending the blade at right angles, extends forwards from the tool so that two surfaces of the square-sided turf were cut in one action. The wing and step could be on either side of the tool depending if the user was right or left handed. The iron was forced vertically into the peat, applying pressure with the foot to a depth of up to 2ft (0.6m) and the turf was parted from the body of peat by levering backwards then lifted while still on the turf iron and deposited either on the top of the tie baulk or within the disused section of the tie.

Turf would be cut in May, then allowed to dry beside the ties. They were left lying flat and then in about June they

would be turned over. Sometimes three or four turfs would be stacked upright against each other to form stooks. The turves would be transported back to the farms and cottages of the users in about August, where they were stacked in ricks close by the house, and thatched with furze, (C Abel *oral inf* August 2010). In particularly bad years, the turf was unable to dry sufficiently before the winter and would be ruined as a result. R H Worth noted that 'summer does not always come to Dartmoor and I have known seasons in which practically all the turf cut for domestic use has been abandoned, as not worth carting in' (Worth 1930, 62).

2. 0 HISTORICAL EVIDENCE

[Documents held by the Duchy are sorted into folders of date range or theme but are not catalogued other than some having the original item number written by the clerk to denote the order they were received or posted when recorded in letter books. Many of the documents do not have these. In the following report all references to the Duchy of Cornwall Princetown archive are preceded with DuCoPr followed by the type of item abbreviated (acc = peat account (return); let = letter; letbk = letter book; lic = licence ; not = notice, pd = printed document; sch = schedule) and date of origin. Summaries of these documents in date order are in the catalogue attached to this report.]

2. 1 HISTORICAL CONTEXT - 13th TO EARLY 19th CENTURY

The origins of cutting peat or 'turf' on Dartmoor are obscure but it was certainly occurring by the 13th century. The 'Turbarium de Albershevede' mentioned in the Perambulation of Dartmoor in 1240 (Rowe 1896, 143) confirms that turf was a valued substance in the mid-13th century and that certain turbaries were the property or right of individuals. It is not possible to know on what terms this particular turbarry was held, or for what purpose the product was used, either dried turf for domestic use, or charcoal for tin smelting.

The production of the latter is well documented from the 13th century, recorded in the Account Rolls of the Duchy of Cornwall, of which a synthesis was published by Fox (1994). This source specifically mentioned the *carbonarii*, who were defined as persons 'digging turf for charcoal in order to sell it' (Fox 1994, 162). The main use for peat charcoal at that time was as a fuel for smelting tin and in 1222, in the reign of Henry III, an order from the king requested that the tanners of Devon should be permitted to take turves from Dartmoor as they were accustomed to do in the time of King John (r. 1199-1216) (Fox 1994, 162). From this document it may be stated with confidence, that the exploitation of Dartmoor turf has been occurring from the very early 13th century. It was in the mid 20th century that the practice finally ceased, within living memory, a total period of at least 800 years. It is of course very likely that the origins were much earlier but this is beyond the known written record and is yet to be proven archaeologically.

There were two types of *carbonarii*. Some were residents of Devon, probably farmers or tanners, who produced charcoal as a seasonal income. There were also itinerant *carbonarii*, who, by the 15th century included a number of Cornishmen taking advantage of Edward IV's charter allowing them to dig turves and make charcoal on Dartmoor (Worth 1930, 64), to be transported back across the Tamar to the Cornish tin blowers. Despite Cornwall's much larger tin reserves, the county was less well endowed with peat lands and in places like Bodmin Moor where peat cutting did occur, it was less suited for making charcoal according to 18th-century writers (Marshall 1796, 6), although earlier documentation confirms that charcoal was produced there in the 14th and 15th centuries (Herring *et al* 2008, 117). Further documentary evidence and implications of medieval peat charcoal production on Dartmoor, specifically to supply tin smelters has been discussed by Greeves (1981, 245-8).

The scale of peat cutting during this period must have been immense. Fox noted that between 80 and 100 *carbonarii* were recorded in the Forest of Dartmoor by 1400 and questioned what the environmental impact of this level of activity must have been (Fox 1994, 163), particularly over the extended period that tin was smelted in Devon and Cornwall using peat for fuel. Although on the decline in the 17th century, tin smelting may have continued on a small and sporadic scale into the 19th, with a commensurately reduced requirement for fuel.

In 1966 Woolner presented a short paper in which she drew attention to a series of mounds and other features on Wild Tor Ridge which offered archaeological evidence for the charcoal burning process (Woolner 1966, 118-20). Although the field remains do confirm that these are very likely examples of charcoal burning platforms, or meilers, they are as yet undated.

It is possible that '36 Colliers' recorded as late as 1785 digging turves to make 'coal' for sale, were producing charcoal (Rowe 1896, 304), although such is the ambiguity of the terminology that 'coal' was used sometimes when referring to dried peat.

The origins of domestic turf usage are a little less certain, but it is likely that this source of warmth would have been taken full advantage of by the earliest settlers in the parishes bordering the commons from early in the medieval period, and within the Forest from the 13th century onwards. It is recorded in 1382 that privileges enjoyed by tenants of the venville parishes included coal [charcoal] and turf (i. e. right of turbarry) within the Forest for which they did not pay (Fox 1994, 163). This would also have applied to the ancient tenements located within the Forest of Dartmoor. Similar rights existed for the Commons of Devon, for those dwelling within the border parishes, and

indeed elsewhere in Britain and in Ireland the customary right of turbarry has much the same meaning (Feehan & O'Donovan 1996, 30). The principle of this right was that householders who possessed it, would cut annually only what they required for their own consumption. Fox has suggested that during the medieval period, all peat cutting for domestic use (possibly including urban users) was undertaken without charge. However, abuse of rights or privileges was punishable: in 1468, Walter Bradmore was 'amerced for entering the King's Moor without a licence and digging for turves and coal for eight years last past, and selling the same and carrying it off from the moor to places without venville' (Rowe 1896, 307). And in 1604 Richard Richards was fined 1s 6d for 'cutting turves in the forest, for one inhabiting out of venville, against the custom...' (Rowe 1896, 307). Clearly there was never a free for all and regulations had to be observed; those tenants who possessed the right of turbarry for personal domestic use were not to sell the turf, and those without that right had to pay to cut and remove it.

The right of turbarry which accompanied the tenancy of the Forest farms and those certain tenants of venville parishes was highly valued. As William Crossing expressed it:

Deprived of many of Nature's bounties the Dartmoor man has nevertheless a few compensating advantages, and excellent fuel, to be obtained for the labour of cutting it and in any quality, is not among the least of these (Le Messurier 1966, 48)

Once these rights were established, domestic turf usage probably continued in a state of equilibrium, as appears to be so when Rev'd John Swete reported his observations in 1797. The scene that he described of a Dartmoor cottager with his own nearby turf ties, ricks of dried turf and the sale of the surplus to residents of the border towns (Gray 2000, 63), may not have changed for several hundred years and probably remained until the early 20th century when William Crossing and others provided similar reflections on the topic. On what basis Cator was selling turf is not mentioned by Swete. It is possible he paid some dues of which Swete was not informed, or that regulation of the type recorded in the 17th century was not being enforced in the 1790s.

Contemporary with Swete and his 'search for the picturesque' there was a growing movement in England towards agricultural improvement. In the West Country this was manifest in the published surveys (discussed above) of Robert Fraser (1794), William Marshall (1797), and Charles Vancouver (1808) each of whom had opinions on what was necessary to improve what they termed the 'wastes' of Dartmoor and in the opinion of all, peat should have a role to play.

However, during the 19th century, with which this report is mainly concerned, changes to the traditions of domestic turf gathering occurred, and as new pressures were placed on the resource from domestic and commercial users, tensions were unavoidable.

Access to new material in the Duchy Archive and additional sources from elsewhere has thrown more light on this period than any other. The following historical account is a summary, based on the cataloguing and assessment exercise.

2.2 DOMESTIC TURF CUTTING

Although the continuity in the right of turbarry possessed by Forest and venville tenants had remained unbroken, the system of entitlement to cut turf within the Forest of Dartmoor in the 19th century was revised and clarified. This was probably due in part to the increased commercial pressure on the peat beds from the 1840s (below), compelling the Duchy to regulate the industry more closely and ensure that those who were actively cutting turf within both the Forest and within other commons controlled by the Duchy, including Bridestowe and Sourton, were either entitled to do so or were paying for the privilege. Such regulation was not new as may be seen in the above examples of 1468 and 1604.

In April 1842 a number of notices or posters were issued by Preston Wallis, senior steward to the Duchy. These stated, that within the Manor of Lydford and Forest of Dartmoor:

That any person, Whether a Tenant or not of this Manor, who shall cut or remove any Faggs or Surface Turf from the Forest or Commons of this Manor; and any persons not being a Tenant of the Manor who shall cut any kind of Turf on the said Common, without the previous consent of the Renter and payment of his demand, will be prosecuted, and the Turf will be seized and destroyed. (DuCoPr/not/29-Apr-1842).

It is not known if this was the first notice of this type but it is clear that although the tenants of the Forest of Dartmoor maintained their rights to cut turf under this decree, those rights did not extend to Faggs or Surface Turf, for which permission would in future be necessary. Also within this paragraph, the term 'previous consent' does not specifically refer to a licence and could signify verbal agreement as well as any rights associated with tenancy.

Three years later, on 4th April 1845, a licence was granted to George Frean and John Bennett 'to cut and raise Peat and Turf for sale in and throughout all such parts of the forest as are now in hand'. They were to pay £50 per year dead

rent on top of which 4d per load was due on any amount of turf in excess of 3000 tons in a single year. (DuCoPr/lic/4-Apr-1845). Contemporary with this grant another series of notices was erected on and around the moor, which informed the public of Frean's position and stated that from that time onwards:

all other persons whosoever, are hereby enjoined and prohibited from cutting or raising for Sale or for any purpose other than domestic consumption as Fuel, any Peat or Turf either within the limits aforesaid or within any other parts of the Forest of Dartmoor, without the Special Licence of His said Royal Highness for that purpose first obtained, under pain of prosecution according to the Law' (DuCoPr/not/24-Apr-1845).

Although Frean and Bennett were probably setting grants and collecting the dues from small-scale sellers of turf for domestic fuel within the Forest, there is no evidence that they collected from the commercial setts, such as British Naphtha at Princetown (see below), which were dealt with directly by officials of the Duchy of Cornwall. From the late 1840s the Duchy Bailiff for Dartmoor was Charles Barrington who was installed in about 1847. Among the first items of correspondence on this topic from his superiors was a memo instructing him in his duty collecting royalties due from turves cut by the British Patent Naphtha Company (DuCoPr/memo/14-Jul-1847) who held a commercial peat sett at Blackbrook Head.

Frean and Bennett's first surviving peat return or account, records tonnage for the year of 1847 which totalled 1,130 tons. By 1850 the total figure had fallen to 566 tons (DuCoPr/acc/Dec-1850), and in their return of 1850-51, in which the figure had fallen to 450 tons, a note from Frean in the remarks column implies that the fall in income collected was due to the expansion of commercial companies 'the principal part of the ground being occupied by Companies who have received grants from the Duchy office' (DuCoPr/acc/Jan-1852). He was probably referring to the Blackbrook sett and the South Quarter or Brent Moor sett which were granted in 1844 and 1846 respectively. Although the number of enquiries received by the Duchy concerning commercial setts was increasing in the early 1850s, only these two are known to have been granted by 1851 for certain. Although unrecorded, it is likely that Frean and Bennett's association with the Dartmoor Forest peat setts was discontinued soon after 1851 as no further returns or correspondence from them exists in the archive. Thereafter, applications for licences were dealt with directly by Barrington. It is known that a further notice was posted around the moor in 1856 concerning the need to possess a licence to cut turf (DuCoPr/let/09-Jun-1922) but no copies of this notice survive in the Duchy's Princetown archive.

One of the first paper records of an application for a licence is from George French of Postbridge requesting to cut turf at 'Routor (Roughtor) turvary' in March 1856 (DuCoPr/let/28-Mar-1856). French later agreed to pay £2 10s for 100 tons of turf from Roughtor (DuCoPr/let/15-Apr-1856) and this turf would have been for sale.

At around the same period John Edmonds of Lydia Bridge, South Brent, was acting for the Duchy in some semi-official capacity, to monitor the cutting of turf in the South Quarter, where he also had the role of Agister. A series of correspondences from Edmonds from 1856-7 report incidents of un-licensed cutting and other peat-related matters. Other individuals operated in a similar capacity in the 1850s and 60s, probably representing different quarters of the Forest and the commons of Devon, where owned by the Duchy. These included Capt William Doble, a well-known mine agent, who frequently acted in a similar role on the NW side of the moors, around Bridestowe, Sourton and Lydford and Richard Arscott, who also held a peat grant of his own near Taw Head from 1st May 1857. The conditions of the grant stated that he alone could cut turf for sale within this sett, for which he paid a rent of £6 per year and 6d per ton of turf and had a maximum quota of 240 tons per year. Anyone else cutting turf for sale within this sett would need Arscott's permission and would pay him the dues which he then passed on to the Duchy. His sett of over 5000 hectares had the following boundary:

On the North by Chapel Ford, on the East by Thornworthy Tor, on the South by East Dart's Head, on the West by Brattor. (DuCoPr/letbk/14-Apr-1858)

John Brock of Belstone took over Arscott's sett in the 1860s. This he did unwillingly it seems at first, as he claimed he had a large farm to run and did not have the time (DuCoPr/let/13-May-1864), but he later agreed to accept 'the turfage of Okehampton, Belstone and South Zeal', paying £2 per season (DuCoPr/let/30-Jun-1865).

On more than one occasion Barrington was forced to write to persons known to be cutting turf for sale without permission. In 1858 he inquired of Thomas Hicks of Rundlestone by what authority he was raising a large amount of turf and 'I hereby forbid you at your peril to remove the same before you have obtained permission to do so' (DuCoPr/letbk/10-Jul-1858). The Duchy carried out their threat to prosecute in at least one case. In 1862, William Kelly of Halstock, Okehampton, was brought before a meeting of the courts Leet and Baron, where he admitted to and was found guilty of trespass by cutting turves and faggs on the commons of Devon. For this he was fined £1. It would appear that he was made an example of because his confession was printed as a notice, signed by Thomas Woolcombe deputy steward, to be posted where others would see it (DuCoPr/not/8-Oct-1862).

From the 1850s and 60s Charles Barrington had to respond to an increasing volume of licence applications from

residents of the border parishes. Nuns Cross Mine for example lay just outside the Forest boundary in Walkhampton and in 1864, William Horsewill, who actually resided in Bere Alston, requested 'four or five journeys of turf for our little mine' for which he was required to pay (DuCoPr/let/27-May-1864).

Many were unwilling to pay: John Brock informed Barrington on several occasions of the miscreants he had to deal with. Mr Beavens of Halstock, for example, has been cutting turf but refused to pay, and he reported that Mr Ball of the White Hart Okehampton had said he would not pay anything (DuCoPr/let/6-Nov-1865).

Abusing the rules clearly offended some residents too. In November 1864 an anonymous informant wrote to Barrington: 'I write to you for to let you know hew cuts turf and sill them' . . . 'W May, W Endacott, Thomas Endacott, George Endacott, William Northcott' (DuCoPr/let/20-Nov-1864).

In 1860, there occurred an incident where an employee of Barrington, who was cutting turf on his behalf, was assaulted by Joshua Tuckett of Dunnabridge Pound Farm, who claimed the turf rights for the area being cut were his and that the Duchy had no right to interfere. Barrington complained to his superiors that too many people residing on the moor who have no right of turbarry, were under the impression they had a customary right to cut turf, and failed to understand that their doing so was in fact through privilege or favour on the part of the Duchy not through any right. Barrington suggested that in future all persons wishing to cut turf within Duchy lands should be required to apply for permission (DuCoPr/letbk/14-Jun-1860).

Licences

It is not known if Barrington's request initiated any immediate action but in 1866 a fresh series of notices was erected around the moor, stating the Duchy's insistence that permission was needed to cut peat on Dartmoor.

DARTMOOR

NOTICE

NO UNAUTHORIZED PERSON will be allowed to cut or take Peat from any lands on Dartmoor parcel of the Possession of the Duchy of Cornwall, but applications from deserving Residents on the borders of the Moor for permission to get a supply of Peat for fuel for home consumption may be made to the undersigned.

All persons found contravening this Notice will be dealt with according to Law

Dated 25th April, 1866.

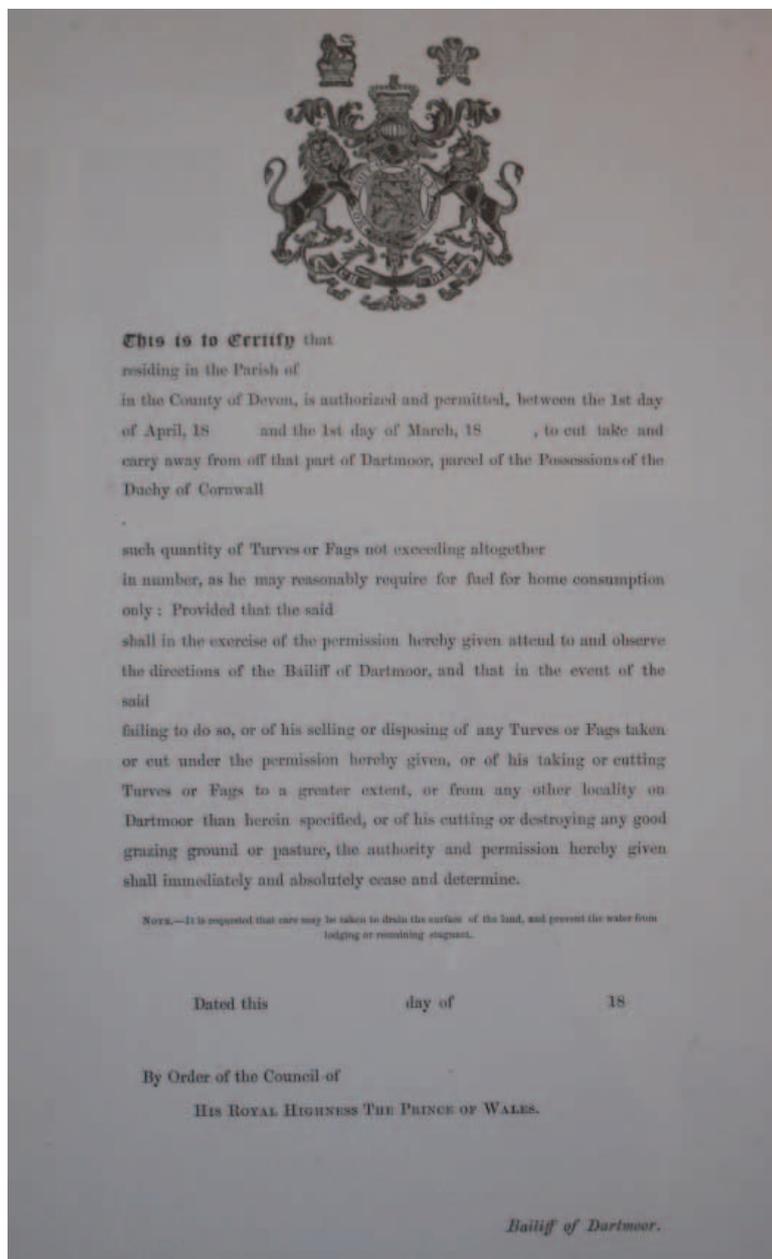
The wording of the document was slightly ambiguous as the term 'deserving residents on the borders of the moor' was a little vague. Did it mean deserving in as much as residents felt they had long-established rights to cut turf or did it simply refer to the deserving poor? This was not immediately clear at the time. The term UNAUTHORIZED PERSON clearly included those without the right of turbarry – through venville or through Duchy tenancy – or those not in possession of a licence. Also, the wording was at variance with the notice of 1845 (above) where it was implied that turf cut for domestic consumption required no licence. It was a reminder that cutting turf on Duchy land, which included the Forest and several of the commons, was not a free for all and in a letter to one of his superiors, Barrington's intentions were quite clear. - licences should be given (i. e. free) to those residents of the borders who were in the habit of procuring fuel from the commons. But he needed to know who they were and their parish of residence in order to confine them within specific peat grounds in a way that would avoid damaging good pasture, the latter being one of his main concerns with the situation that prevailed (DuCoPr/letbk/23-Apr-1866).

It is implicit in much of the correspondence received by the Duchy in the period that followed the publication of this notice that, not only did this regulation cause confusion amongst the border residents as to what their entitlements consisted, but also quite a lot of resentment. However, it has provided a highly informative paper record of the domestic turf cutting activities in 1860s and 70s, including who was involved and in some cases where they were cutting turf. It also provides an indication as to the level of trespass or unlicensed cutting and the problems of enforcing the licensing system. What it does not reveal is the level of cutting by Forest and venville tenants who possessed a right of turbarry and whose activities, unless involved in disputes, went on without written record.

Within days of posting the notice on 25th April 1866, there followed an avalanche of applications from border parish residents wishing to cut turf 'for their own consumption'.

Applications were received from individuals, or small groups applying together, possibly neighbours. Alternatively they came from an individual who would apply on behalf of a number of people, who were perhaps illiterate. George Vicary, agent of Sourton Quarry for example applied for licences for 15 residents of Bridestowe and two each from Sourton and Lewtrenchard (DuCoPr/let/24-May-1866). Between 21st May and 24th June 1866 George Seymour of Okehampton wrote to Barrington on ten occasions requesting licences for lists of men residing in the parish, totalling 98 individuals (DuCoPr/let/24-Jun-1866). John Dawe (Jnr) whose father was foreman at Sourton Quarry, represented five men from Bridestowe and twelve from Sourton, including ten quarrymen (DuCoPr/let/20-May-1867). And

Fig 2.1 A blank licence of the type issued in the 1860s to border residents wishing to cut turf and faggs within Duchy lands for their own consumption. The blank spaces awaited the name of the applicant, place of residence, the location where permission to cut turf was granted and the quantity allowed (© Duchy of Cornwall, with permission).



Thomas Hext of the 'Granite Works, Princetown' applied on behalf of what must be assumed were three of his colleagues or employees, assuring Barrington there will be no trouble about the money (DuCoPr/let/5-Jun-1866).

Some applicants were refused a licence. R Williams of Foggintor was refused because he resided in Walkhampton parish 'where there is an abundance of peat' (DuCoPr/letbk/31-May-1866) and the men of Lewtrenchard in Vicary's application were declined a licence because it 'had not hitherto been the custom for residents of that parish to take turf from the moor' (DuCoPr/letbk/29-May-1866).

In total there was about 270 individual recorded applications for licences in the first season following the notice of April 1866 but in the second year the number had fallen to about 97. The overwhelming majority of the applicants resided in Sourton, Bridestowe, Lydford and Okehampton but there were others from Chagford, South Zeal and Sticklepath. Requests were for between 1 and 10 journeys of turf, the average being about 7. Some measured their requirements in loads, some in journeys and others in tons. Many requests were for a combination of turf and faggs.

Copies of two issued licences (Fig 2. 1) remain in the Duchy archive, for Charles Kellaway of Bridestowe and John Axford of Mary Tavy. They show that a licence was issued for one year only from April 1st and it specified where the licensee was allowed to cut and what quantity. Kellaway for example was allowed to take 5 tons of peat and 2 tons of faggs from near Rattlebrook 'as he may reasonably require for fuel for home consumption only' (DuCoPr/lic/12-May-1870). Axford was allowed 6 tons of turf but no faggs, to be cut in the vicinity of Redlake (DuCoPr/lic/23-Apr-1870). A hand-written note at the bottom of the page on Kellaway's licence reminds him to drain the ties properly and only cut faggs where it will not damage the pasturage. The licences could be determined if the licensee was found to be selling any turf or cutting in quantities that exceeded those specified.

The notice had clearly come as a surprise to some. John Friend of Longash for example, asked permission to remove

some turves he had cut before he found out he needed permission (DuCoPr/let/25-Jul-1866), and William Mitchal seemed somewhat bemused in his letter:

Sir i have roat you these few lines for to inform you that i have a cut tow or three load of turf on the Forest but i did not know when i cut it that thaire would be enney thing a ginst taking of it a way so i have a roat to you Sir for to know if that you could a low me for to take it a way this time i should feel very much obledge to you Sir if that your honour would send me back a few lines by the return of Poast just for to tell me wat i ham for to doo wave i can take it a way or no (DuCoPr /let/23-Jun-1866)

Such deference was lacking in some of the applicants for whom resentment of this officialising is perceivable in the tone of their applications. H Aggett wrote on behalf of 'The labouring class of Chagford' who 'have been inconvenienced by the stoppage of peat cutting'. He was writing to know what terms they could obtain. He stated that they wished to know if they could cut fuel for themselves and how much if anything there was to pay (DuCoPr/let/19-May-1866). William Brown in his application stated that he has cut for many years and wished his liberty to continue (DuCoPr/let/20-May-1866) and George Gidley of Throwleigh proclaimed bluntly in his letter that he intended to have some turf cut as he had for many years and thereby gave notice of that intention (DuCoPr/let/12-Jun-1866). Several applicants made this point, expressing the fact that cutting their winter fuel on Dartmoor was something they had always done. The implication from some of these correspondences is that the Duchy may previously have had a more lenient approach to licensing, only enforcing it with those who cut turf commercially and overlooking the small domestic cutters, as is implied in the 1845 notice. It also reveals that perhaps some border residents were ill-informed as to the nature of turbarry rights.

This was a busy time for Messrs Doble and Edmonds. Doble had advised Barrington on suitable areas for the inhabitants of Sourton, Bridestowe and Lydford to cut their turf and faggs, before the notice had been issued (DuCoPr/let/21-Apr-1866). It was then his task to insure that only those with rights or permits should be cutting. Less than a month after the notice was posted he corresponded with Barrington, reporting several men by name whom he had caught cutting turf with no licence. He believed there was a determination amongst Lydford people to defy the Duchy's authority on this matter, and had heard that a group of men were sending some labourers to cut turf and to 'cut down the posts &c'; these were the posts to which the notices were attached. Also, a contact had informed him of who had been responsible for knocking down other boards and notices (DuCoPr/let/21-May-1866). Worse was to come three days later when Doble claimed that John Hill of Lydford, who had refused to get a licence, raised his turf iron at him and his language was 'most blackened and dangerous', and in an altercation with another of the Bridestowe turf cutters, who claimed to possess a licence but would not show it, 'his language was too bad with the awful threats I ever heard out of the mouth of anyone' (DuCoPr/let/24-May-1866).

Those who rightly or wrongly believed they possessed turbarry rights may have been indignant but regulation affected all residents of parishes not in venville such as Mary Tavy, who were required to pay the same fee of 6d per journey as those cutting turf for sale. However, there was some relief for the poor in these parishes, apparent in the April 1866 notice with the clause regarding 'deserving residents'.

Nevertheless, when granting a licence to James Maunder of Mary Tavy, who styled himself 'moorman' Barrington would not guarantee future renewal because he claimed it was 'the intention in this matter only to give the turf to poor persons residing in the border of the moor who cannot provide for other fuel' (DuCoPr/letbk/27-May-1869). A clear indication that border dwellers who had the means were expected to purchase fuel from elsewhere.

However, it wasn't just the poor needing fuel who applied for turf licences. Many better off members of the community requested permission to cut turf, often for horticultural purposes. In 1862, Henry Terrell asked if he may take five cart loads of black peat from the moor, because he was 'making a bed of rhododendrons' (DuCoPr/let/19-Sep-1862). Terrell's was the first of many applications by wealthier residents of the border country requesting peat for garden use.

In the years that followed the 1866 notice, the number of applicants requiring a licence recorded in the Duchy records fell year on year. This may have been the reason why, on 3rd July 1874, Barrington was instructed to re-issue the notice, a copy of which was sent from Buckingham Gate, the Duchy's principal office in London, with pencil corrections by his superior George Wilmshurst. The only alteration was the removal of the following:

but applications from deserving Residents on the borders of the Moor for permission to get a supply of Peat for fuel for home consumption may be made to the undersigned.

This implies that the Duchy were trying to reduce the number of people cutting turf for free, which indeed they were, but mainly due to the problem – which Barrington frequently referred to over the years – of a number of residents surrounding the moor who claimed to possess venville rights who in actual fact did not. The number of such people had increased in the 1860s and '70s as a result of coal scarcity and price increases according to Barrington. However, he was mindful that the poor relied on this free supply hence the 1866 and 1874 notices were intended to limit free turf cutting to those who most needed it (DuCoPr/letbk/15-Jan-1874).

From the 1880s onwards, there are very few written applications surviving in the Duchy records, by comparison with the mid 1860s – less than half a dozen a year but for some years none at all. There is no explanation for this within the records but it could be to do with documents not surviving, though, judging by the Duchy archive as a whole, nothing was ever discarded. Alternatively, the selling of turf as a domestic fuel to the in-country was becoming less important as coal became more available and the need for licences and regulation became less pressing.

2.2.1 Faggs

The cutting of faggs or vaggs presented its own set of administrative and conservation problems for the Duchy officials. Like turf, faggs were among the privileges bestowed on the tenants of Dartmoor Forest and the venville farms, as described in the findings of a Survey Court for the Forest of Dartmoor in 1609 (Rowe 1896, 313). By the 19th century the practice was discouraged anywhere that it would have a negative effect on pasture, as may be seen in the document of 1845 (above). It was allowed in some areas but only with customary right or license and residents of the borders who applied to the Duchy for permission to cut turf for domestic use, would usually apply to also cut faggs.

The destruction of pasture by vagg cutting on the eastern side of the moor, so enraged the Rev'd John Ingle of Chagford, that he felt obliged to report the matter to Barrington on two occasions.

It grieves me to see the way in which the moor continues to be destroyed by the cutting of faggs. I have counted 100 carts this week between Crockernwell and Okehampton laden with what ought not to be cut at all. (DuCoPr/let/29-Jun-1869)

He also claimed that a man near where he lived was storing faggs in a shed by the road and that this was only one case in hundreds. 'The destruction of pasture from this cause is frightful'. He was also concerned that the practice would lead to the destruction of relics including hut circles and tracklines (reaves) (DuCoPr/let/7-Jul-1869).

Dealing with unauthorized cutting of faggs was among Doble's responsibilities. In June 1867 he reported that there were six men cutting 'vaggs' on Lynx Tor (DuCoPr/let/22-Jun-1867) and on 17th August he witnessed unauthorized cutting of faggs on Okehampton Common by James Taverner and James Horn. He stated that Halstock Down was becoming 'stripped' by Okehampton people digging for faggs. Lydford and Bridestowe were not so bad but for one or two people cutting from the grazing land (DuCoPr/let/17-Aug-1867).

Halstock Down was a particular target for vagg cutters. In 1868 Barrington conceded that many of the people cutting the faggs were the poor of the border settlements who would have no fuel if prohibited to cut there. He therefore began negotiations with his superiors to have an area of Duchy land set aside for these people to cut their fuel. Unfortunately this did not stop the vagg cutters of Halstock Down and Barrington was forced to write to several of them warning that they would jeopardize his proposal if they persisted (DuCoPr/letbk/4-Oct-1865).

Damage to Okehampton's pastures was continuing in 1870 when J G Maxwell, Mayor of Okehampton, claimed a serious daily trespass was being committed by persons from the parish of Inwardleigh cutting turfs and faggs and damaging pasture where the people of Okehampton have a right of common. He claimed that Pengelly, Rich and Melhuish were frequent transgressors (DuCoPr/let/28-Jun-1870). He later stated that he witnessed a great number of people drawing turf from the moor that 'could have no possible claim, license or right to do so' (DuCoPr/let/30-Aug-1870).

Although after 1870 there are less of these occurrences recorded in the documentation, it is clear that the problems surrounding faggs were not resolved and over 50 years later, in May 1922, the Duchy posted another notice. A copy of this notice has not yet come to light, but inference from other documents referring to it, suggests that it simply reminded border residents about the restrictions on cutting faggs, as announced in earlier notices, including one of 1904; i. e. only those with customary privileges or a licence could take faggs from the Forest of Dartmoor and the commons of Devon, managed by the Duchy (DuCoPr/let/22-May-1922). Once again, the appearance of a notice implying regulation angered a small but vocal group. J Endacott who was now the Duchy's man on the ground in these matters reported instances of deliberate trespass to cut faggs by residents of Belstone (DuCoPr/let/02-Jun-1922). Among other reactions was a veiled threat of a legal challenge by a solicitor called T H Ormstone Pease, claiming that the terms of the notice contravened a 'charter of 1609' (above)(DuCoPr/let/15-May-1922). Interestingly, in a letter from Barrington's superior, Sir Walter Peacock, in which he reacted to this prospect, he stated that while the venville tenants claimed this right, the duchy will not admit to it, though he acknowledged that if challenged in a court it was doubtful they could resist such a claim (DuCoPr/let/16-May-1922).

2.3 DISCUSSION: A SOCIAL CONTEXT

Although cutting turf and faggs for domestic fuels is known to have continued in the 20th century, the primary documentary record held by the Duchy extends no further than the late 1920s. Additional anecdotal material has

been compiled by Greeves (2000), who recorded recollections of a number of people during the 1970s and 80s who had in the past cut turf on Dartmoor. This has provided some useful goblets of information about the final years of the turf cutting tradition. Hemery stated that 'Almost thirty years have passed (from 1983, i. e. c. 1953) since I last saw a moorman using his peat irons, his freshly-cut turves spread on the ground; this was Jack Phillips of Nun's Cross Farm, whose tie lay at the head of Nun's Cross Brook' (Hemery 1983a, 73). Such vivid oral testimony is almost impossible to record in 2010. Mr Cyril Abel of Peter Tavy, informed the present author that as a child in the early 1930s, his father taught him to cut turf, but he never needed to use the skills he had learned and his father stopped using peat fuel before the Second World War. More striking are the memories of Mr John Edmonds, Agister of the south quarter since the 1950s, and a descendant of John Edmonds of Lydia Bridge. He has no personal recollections of turf being cut on the south moor in his own lifetime, and believed that within the south quarter, the last turves were cut in about 1942. Mr Edmonds made the observation that coal was available much earlier on the south moor than on the NW side, due to the earlier arrival of the mainline railway (J Edmonds, *Oral Inf* 27-Aug-2010). The tradition of burning turf would therefore have been less enduring than in areas where coal became available later. By 1909 and the publication of his *Guide to Dartmoor*, William Crossing made the similar point that although turf was still used in the Forest and some border farms, very little was consumed by the surrounding villages as coal had become available with the arrival of the railways (Crossing 1909, 38). With the lessening in demand, those who cut turf for sale declined in number leaving the peat beds to those for whom it remained a free resource; e. g. those with a right of turbarry who lived close enough to the peat and could use their own labour to cut and transport it. These were the people who continued the tradition into the 20th century. The decline in domestic turf cutting by border residents in fact had even earlier origins, according to Charles Barrington the Duchy steward in a letter of 1874, but he believed the trend was temporarily reversed by the coal shortages of the 1870s, when turf had a brief renaissance (DuCoPr/letbk/15-Jan-1874).

In the 19th century the role of the Duchy of Cornwall's officials in the management of Dartmoor's peat resources may be seen simply as one of trying to maintain order for the overall benefit of the estate and the tenants and commoners whose lives were intimately linked to it. This included ensuring that those who had rights to cut turf did so without abusing the right; that those who had no rights but desperately needed the free fuel for their survival were able to obtain what they needed, under supervision of the bailiffs; and that anyone with any commercial interest in peat, selling it to residents of the border country, paid for and did not abuse the privilege. Also, that those who lived on the borders of the moor who possessed the means to pay for fuel should either buy turf from a licensed cutter or use coal. The issuing of licences and posting notices was not an attempt to impose draconian restrictions but was simply an estate official's method for tackling the problem of keeping this order. In particular, during the 1860s and 70s, Barrington was responding to an increase in the demand for turf, brought about through the scarcity and high price of coal. Unfortunately because turf and faggs had been utilized for hundreds of years by a diversity of people - some with and some without rights - the line of distinction between customary right and favour had become blurred, some border and moorland dwellers believing either that they possessed rights, which in fact they did not, or that the moors were a free for all resource. The imposing of a perceived officialdom was therefore resisted by some.

This research has thrown new light on two previously neglected groups of 19th-century Dartmoor turf users. The activities of the commercial cutters, who provided domestic fuel to the border parishes and beyond, had been regulated since at least the 16th century, but it is not until the 19th century that we now have some indication of its scale and the Duchy's role in managing it. As to the 'poor' of the border parishes, their role in exploiting peat would have remained largely un-noticed were it not for the introduction of licensing for all getters of turf who were not in possession of turbarry rights, and the resulting paper record. Future studies of Dartmoor's social history will be better informed in the light of this new data which reveals detail of how peat fuel was as essential to the subsistence of border dwellers as it was to those residing on the upland, particularly when other forms of fuel were in short supply.

2. 4 INDUSTRIAL PEAT WORKING

Parties working peat commercially on Dartmoor were divisible into two groups. Traditionally there were individuals who cut, dried and transported the turf off the moor to meet a local domestic market in the border country surrounding Dartmoor. Although some, such as George Frean in the 1840s, and Arscott and Brock in the 1860s, had designated peat setts or 'turvaries' (turbarries) for which they paid rental, most people cutting fuel to sell locally did not. Instead they paid dues on every ton of turf they removed from the moor. The dues were paid through one of the above agents, working on behalf of the Duchy bailiff.

From the 1840s the scale of commercial peat exploitation expanded as companies intending to manufacture charcoal, naphtha and a range of other value-added secondary products began to invest in Dartmoor peat setts. The episode commenced with the formation of the British Naphtha Company, who worked peat ground at Tor Royal, Blackbrook and Holming Beam. This was the first of a series of capitalized enterprises that came into existence with the intention

of exploiting the resource to make profits for investors who were situated outside Dartmoor.

The word 'sett', frequently used to describe the areas of ground designated to individual companies, has origins within mining terminology and the legal basis of the agreement between the Duchy and the peat companies was very similar to that used for metal mines, with which the Duchy had long experience. These companies were granted licences by the Duchy to work specific defined setts. An annual rent was payable on these setts, known as 'dead rent', which was supplemented by dues or royalties paid on the tonnage of turf cut and processed at the works. The licensees were also expected to pay a fee to contribute to the wages of a Duchy Bailiff, among whose duties, or those of his agents, was to monitor peat cutting on the moor and prevent encroachments.

Peat sett grants were usually taken out by individuals or partnerships, as in the case of the Mathews brothers at Rattlebrook Head. The grantees could either attempt to form a company and work the peat themselves, or sub-lease the sett to a third party willing to raise the necessary capital. This would be done by persuading investors in the merits of the proposed enterprise, and when a sufficient number of such shareholders or 'adventurers' willing to invest had been assembled, a company would be formed. Without exception, the companies formed to exploit Dartmoor peat were short-lived and unprofitable, their usual fate being voluntary liquidation, which would leave the door open for the licence to be passed on to a new lessee and a new company could be formed, often from the ashes of the previous one. The Duchy officials, although usually sympathetic to the hardship of companies in the early stages of development, tried to take a firm hand in such matters, often insisting that all arrears of rent, royalties and bailiff's fees were paid before an exchange could take place, though they did show leniency on at least one occasion. For the Dartmoor Peat Company (Rattlebrook Head), the Walkham Head Peat Works, and Hinton's Condensed Peat Co (Blackabrook) the end was more abrupt when the properties were re-entered by Duchy agents, whereupon liquidation became compulsory.

Once a sett was granted, the licensee had exclusive rights to the turf within it. This occasionally caused problems if the area had previously been a site of domestic cutting. In 1877 WT Jennings, who held the licence of the Walkham Head sett, complained that three parties were cutting turf from inside his sett and said that when Capt Symons, manager of the works, challenged Doidge of Cox Tor Farm he claimed to have a right to cut turf which he paid for and that Barrington had told him 2 years ago to cut as much as he liked. Jennings then made threats if the Duchy did not stop these people cutting or 'I will summon them to Plymouth and you will appear to prove my rights' (DuCoPr/let/24-May-1877)

Only a limited number of commercial peat setts were created, though it is unclear whether the Duchy would have allowed more, had those that did exist been more successful and lead to a greater demand. Of those setts known to exist on paper only four have evidence, historical or archaeological, for any commercial activity having taken place. Between 1855 and 1893, over 30 applications were made to take on commercial peat setts. Some developed no further than a general enquiry, while others, despite negotiating with the Duchy, failed to obtain a grant. Only a few successfully took possession of a peat sett (see Appendix).

2. 4. 1 Blackabrook Head

[nb. The early years of the Blackabrook peat sett were not represented among the papers made available by the Duchy for this assessment, though it is possible that further documents exist in the Duchy's main archive in London]

The first company to operate the Blackabrook peat sett was the British Patent Naphtha Company (BPNC), set up in 1844 by Jacob Hall Drew (Harris 1968). Although the works was originally sited at Bachelor's Hall (Crossing 1989, 49-51), by May 1846 they had moved to the a range of buildings on the north side of the prison at Princetown, which at that time was disused, where it was reported that they installed 'chemical apparatus' to extract 'naphtha, ammonia, tar &c' from the peat (RCG 8-May-1846). A tramway was installed running from the peat sett at the head of the Blackabrook, down to the works at the prison. The manager of these works was Mr Stocker and with him were associated several well-known Plymothians of the day (Crossing 1989, 49-51).

By 1849 the work had halted and a newspaper correspondent claimed that this venture had been a failure, with £20,000 lost and that his 'brother tradesmen right and left have suffered' (*Dundee Courier* 18-Aug-1849). All the property of this company was put up for sale in late August 1850, when it was reported:

... the property realised good prices, considering the state of the iron market. The railroad and waggons, which cost the company nearly £6,000, were the only articles left unsold, and these probably the government may see the proprietary of purchasing. Col. Jobb, and Mr Gardiner, (the representative of the Duchy) as well as several other persons connected with the government, were at Princetown inspecting the prisons, which are very nearly ready for occupation. (PDWJ 5-Sep-1850).

The processing operation was probably then taken over by the prison authorities, when the prison was re-occupied as a convict gaol in November 1850. In the first report of the prison governor in 1851, the fact that 2000 tons of turf was cut between June and September, used for fuel and to produce gas for lighting confirms this point (HoC

1852[1524]). In the 1853 report 2,279 tons of turf had been cut and detailed statistics as how much gas was produced were included (HoC 1854[1825], 164).

It is unclear what role the British Peat Charcoal and Manure Company, launched in June 1851, would play in this episode. Their press release claimed they possessed Roger's patent to produce 'highly fertilizing peat charcoal manure' and would be selling peat for sanitary purposes. They also claimed to have secured a grant from the Duchy and were in negotiations with the convict jail to use the 3000 convicts as labourers (*Daily News* 14-Jun-1851). It is possible that they intended to purchase peat from the prison though nothing further is known of this company and their plans may not have materialised.

It is likely that the prison authorities remained in control of the gas plant throughout the 1850s and 1860s as the governor's reports continue to list the tonnages of turf produced. In 1875 Ure's Dictionary reported on the gas system implying it was still viable (Hunt 1875). Although the location of the peat beds is not recorded they were probably within the boundary of the prison estate and in the Blackabrook area. Repairs to a tramway form a regular entry in the prison accounts but this may refer to a contribution towards the upkeep of the Plymouth and Dartmoor Tramway; it is debatable whether the Blackabrook tramway was used by the prison because it is known that in the prison's lease it was reserved for use by those extracting peat and minerals on the moor, i. e. any future grantees of the Blackabrook sett (DuCoPr/let/10-Feb-1874), and by the 1870s it was in a dilapidated state.

In August 1861, Thomas Drew of Birkenhead, whom it has to be assumed was a relative of J H Drew, announced that he intended to re-commence operations on Dartmoor, following some experiments with samples of peat. He had raised funds from a 'group of gentlemen of standing and capital' and wished to apply for a lease (DuCoPr/let/20-Aug-1862). For reasons which are not entirely clear Drew believed that he would be able to resume his former rights regarding the tramway, which he had originally laid down for the British Patent Naphtha Company, subject to agreement with the prison authorities (DuCoPr/let/ 25-Aug-1862; 26 Oct 1863) who were now in control of much of the land that it ran through. However, Morrish, the prison governor, disallowed Drew access to maintain and repair the tramway and he also forbade the construction of a temporary shed within the prison lands (DuCoPr/let/ 24-Sep-1864). Drew's response was to attempt to get the Duchy to arbitrate claiming that unless these terms were reversed he and his associates would have to cut their losses of £1000 and abandon the enterprise (DuCoPr/let/28-Sep-1864). It is probable that this is indeed what happened as there is no further correspondence on this matter in the Duchy archive. Morrish may have had a personal axe to grind on this issue as it is known that in 1860, he had applied for a licence to work part of the set formerly held by BPNC (DuCoPr/let/07-Mar-1860). However, the matter of the tramway would remain an issue in future attempts to work the Blackabrook sett.

The next known lessee was Major Frederick Hinton in 1874, who was granted ground within the following limits:

On the north by the ancient road or trackway leading from Lydford Tor, on the west by the eastern bank of the watercourse known as the prison leat, on the south in two parts by the open forest and on the east in two parts first by the western bank of the Black Brook River and in the other part by the open forest. (DuCoPr/grant/22-May-1874)

The lease was inrolled in 1874 but it is not known if the boundary of this set resembles the original one of the British Patent Naphtha Co, details of which are not available. Rent was set at £62 17s 6d and dues were 3d per ton on fresh dug peat; 1s per ton on air dried peat; 1s 3d per ton on artificially dried peat; 1s per ton on refuse fibre sold. Bailiff's wages 10s per week (DuCoPr/let/23-May-1874).

The tramway was soon causing Hinton problems as he explained in various letters to Duchy officials. First because the tramway itself was in a state of some decay, due, according to Hinton, to its construction with longitudinal sleepers, causing water from the hillslope to accumulate, rotting the sleepers and as a result requiring most of it to be re-laid (DuCoPr/let/17-Mar-1874). A further problem was its distance from the 'quarry tramway' (by which is assumed the Plymouth and Dartmoor Tramway) making it unable to provide access to transport off the moor. If he used the Blackabrook tramway he would have to tranship the material twice to move it onto the other tramway (DuCoPr/let/23-Jun-1874). Maintaining the tramway was a condition of the lease which Hinton requested be changed so that he could use the trackbed for either traction engines or possibly an aerial ropeway. Although the Duchy had no objection, the prison commissioners, who leased the land through which part of the tramway ran, were unwilling to allow any deviation from the wording of the lease which specified a tramway to run along this track (DuCoPr/letbk/26-Mar-1877). Ultimately Hinton hoped to build a trackway to the quarries via Little Mis Tor (DuCoPr/let/23-May-1874) but this certainly never happened.

By October 1875 rent was falling behind and Hinton requested that it could be allowed to stand over for a while; he stated that he was about to make arrangements with 'parties of ample means who will take to this matter and work it for me on favourable means' (DuCoPr/let/13-Oct-1875) and that a company was being formed. This was to be known as Hinton's Condensed Peat Fuel Company of which little is known other than its name and address in Victoria St London (DuCoPr/let/11-Jul-1876). Hinton then tried to strike a deal with the prison whereby the tramway was

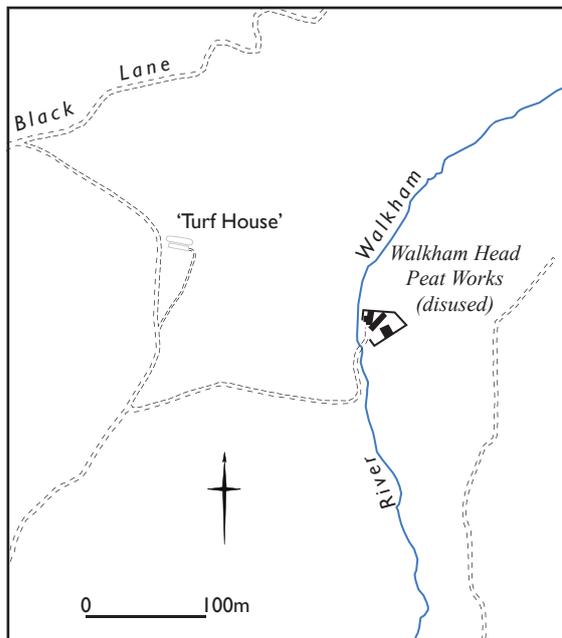


Fig 2.2 OS 6-inch depiction of the Walkham Head Peat Works in 1890.

who represented the West of England Compressed Peat Co Ltd (WECPL; see Rattlebrook Head below) wrote that they would be applying for the sett. Nothing came of this (DuCoPr/let/2-Aug-1877), after which the sett would see no further activity. This company (WECPL), in 1878, took over the Rattlebrook Head peat sett and Frederick Hinton was among its directors (DRO 4242 B/A1) until his death in 1879, which, according to his wife, he went to insolvent (DuCoPr/let/18-Oct-1880).

The total peat return for Blackabrook between 25th March 1875 and 29 September 1879 amounted to only 1 ton patent fuel sent to Mr Stewart Blackwall; 2 ton patent fuel sent to Messrs Wilkins of Tavistock and 160lbs as samples for fuel (DuCoPr/acc/n. d.).

2.4.2 Walkham Head Peat Works

The earliest Dartmoor writer to mention the working of peat on an industrial scale at Walkham Head was William Crossing in *Dartmoor Worker*, who asserted that within the memory of people with whom he was acquainted, peat was removed from here to fire the smelting of lead at the mines of Mary Tavy, particularly Wheal Betsy (Le Messurier 1966, 49). So far Crossing is the earliest known source for this activity and later writers, including Harris (1968), Booker (1970) and Hemery have all cited his account. Hamilton Jenkin elaborated slightly when discussing Wheal Betsy, stating that 'gangs of 24 men being commonly employed in cutting this [peat] in the surrounding wastes' (Hamilton Jenkin 1981, 29), although he was unspecific as to the location of this activity. Further research into archival material for Wheal Betsy, or perhaps earlier Duchy records, not held at Princetown, may provide confirmation of this activity.

However, Crossing's account is probably reliable: peat was used extensively in the smelting of lead, in conjunction with coal, and Wheal Betsy was in possession of a lead smelter, which was most active in the first three decades of the 19th century (Brook Index, Mary Tavy, WCSL; Hamilton Jenkin 1981). The peat resources at Walkham Head would have provided the most convenient supply for this purpose when brought in via the turf roads around Lynch Tor and along the lanes past Wapsworthy and Horndon to Mary Tavy. This activity would certainly have been discontinued by mid century with the demise of smelting at the mine. It is curious that in his *Dartmoor Worker* account Crossing makes no reference to the later phase of commercial activity at Walkham Head (below), which was within the period of his own explorations of the moor in the 1870s and 80s, although he does mention its location briefly in *One Hundred Years on Dartmoor* (Le Messurier 1967, 56). In his later *Guide to Dartmoor*, published in 1909, Crossing differentiated between the two turf roads that encircle Lynch Tor leading to the peat beds at Walkham Head, the northern of which he stated 'descends to the deserted Walkham Head peat works' while that on the south of the tor is older and 'was used in the days of Wheal Betsy Mine' (Crossing 1909, 50). And in his description of the 'old peat track' which crosses the Walkham, he mentions that on the far (east) side of the river the track extends from the point where the 'now disused peat works' is located. Whereas the site known as 'Turf House' represented remains of the earlier peat store used by the Wheal Betsy peat cutters (Crossing 1909, 170). The only map evidence for the Walkham Head Peat Works is the OS 6-inch series 1890 (Fig 2.2), which depicts three small buildings within a (?)fenced enclosure at SX 5725 8068. The 'Turf House' is not depicted on any OS map.

In the 1860s and 70s the peat beds surrounding Walkham Head were exploited for domestic cutting when frequent

lifted and stacked beside the line so the trackbed could be used for carts. He would undertake to keep the gates locked at both ends of the prison enclosures to prevent others using it. (DuCoPr/let/27-Jun -1876).

The prison authorities did not agree to this and following the liquidation of the company in 1877 through 'exhausted financial resources', Hinton laid the blame on the Duchy's lease condition to repair the tramway, which he believed was unreasonable if the prison governors would not allow access to it. The Prison authorities were 'acting Dog in a manger'. However, he was hoping to induce a fresh investor to purchase the affair from the company and hoped himself to concentrate on charcoal making (DuCoPr/let/20-Mar-1877). Later that year Duchy officials decided to levy a distress order on the Blackabrook sett and Barrington re-entered the premises in June (DuCoPr/30-Jun-1877). Most materials had already been removed but a large timber shed remained *in situ* and was sold to the prison for £20 (DuCoPr/let/29-Aug-1877). Negotiations for another firm to take over the sett were put in motion but agreement on terms could not be reached (DuCoPr/let/23-May-1877) and Frederick Thomas,

requests were made to the Duchy for licences. It may not be a coincidence that Benjamin Gorman (DuCoPr/let/16-May-1868), James Harris (DuCoPr/let/25-May-1868), James Maunder (DuCoPr/let/21-May-1869), John Axford (DuCoPr/let/18-Apr-1870), James Dawe (DuCoPr/let/22-Apr-1873) and George Ball (DuCoPr/let/9-May-1876), all of whom applied for licences to cut turf in this area for domestic use, were residents of Mary Tavy and were perhaps following a tradition for the men of this non-venville parish to cut turf at this location, as had the cutters from Wheal Betsy, also in Mary Tavy.

By 1873 the Duchy was in discussions with three separate individuals and partnerships who had applied for commercial setts at Walkham Head. These were A Glanville of Tavistock, Joseph Morecombe, and the partnership of Lake and Nichols (DuCoPr/memo/23-Apr-1873) all of whom considered the Duchy's demand for dues of 9d to 1s per ton on peat was unviable and were negotiating to bring the figure down before committing to a lease. However, there is no further evidence that any of these applicants were successful and it was William Taylor Jennings who first took possession of the Walkam Head peat grant, together with partners Hunt and Hickman, who 'planned to turn peat into coal' (DuCoPr/let/5-Nov-1873). Earlier in 1873, Jennings had confidently claimed in a letter to Charles Barrington, that the Admiralty had tried the peat fuel he proposed to produce and he implied that they would be placing an order for thousands of tons (DuCoPr/let/29-Oct-1873). The lease ran from 25th December 1873 and the term was set to 21 years at a rent of £89 pa and royalties of 3d per ton on raw peat and 1s per ton on dried peat (DuCoPr/lease/29-Apr-1874). The bounds of the sett were as follows:

On the North by a straight line drawn from a stone post marked T. H. to be set up at Tavy Head to another stone post marked W. H. to be set up at Walkham Head. On the West by the River from the last mentioned post to another post marked L to be erected at the confluence of two streams at a point about 330 fathoms South of the said post marked W. H. On the south by a straight line drawn from the said post marked L to another stone marked C. H. to be erected at Cowsic Head – and on the East by a straight line drawn from the last mentioned post to the first mentioned post marked T. H.

Although work was due to start in April 1874, by June no progress had been made as Jennings complained of being hindered by the suppliers of machines, which were being built to the specification of the patentee James Hunt, one of the partners in the peat works (DuCoPr/let/04-Jun-1874). By August Jennings reported to Barrington that his city backers were asking awkward questions about issues such as the depth of the peat and transport facilities from the turf ties and stated that a survey would be required (DuCoPr/let/12 Aug 1874). Upon delivery of the said survey report, undertaken by Fewins of Tavistock, Jennings came to realise that the isolation of the site and the difficulties he would face with transport were going to be problematic (DuCoPr/let/18 Aug 1874). It is quite clear from his letters to Barrington that neither Jennings, nor any of his partners, had actually visited Dartmoor before taking on the Walkham Head sett. Indeed Jennings states this fact in another letter to Barrington, in which he forewarns of a visit by one of his city backers, a Mr Crosbie, and requests that Barrington does not mention to Crosbie that both himself (Jennings) and Hunt were yet to lay eyes on the site (DuCoPr/let/9-Oct-1874). By November, operations had still not started and Jennings requested to be relieved of the Bailiff's wages, which he claimed were unnecessary given the dearth of activity (DuCoPr/le/18-Nov-1874). He claimed that one of the problems in forming his company had been the collapse of the Dartmoor Peat Co at Rattlebrook Head which had failed in October 1874 (DuCoPr/let/21 Jan 1875; see below), making it difficult to inspire enthusiasm for Dartmoor peat among investors. The Duchy provided him with the few months grace he required and by May 1875 he reported that he had concluded arrangements with a large firm to buy the charcoal and that 'vigorous operations' would shortly commence (DuCoPr/let/18-May-1875). But in July 1875, Jennings made his first trip to the peat sett having held the lease for over 18 months, only to discover that the difficulty of transport was 'greater than he had been led to anticipate' and that he would need to either install a tramway or pay for carting at his own expense as his backers would be unwilling to cover it (DuCoPr/let/4-Jul-1875).

Despite this setback, six months later Jennings enquired as to the status of other peat setts on Dartmoor with a view to leasing them, as 'my people may wish to exclude any new comers' (DuCoPr/let/3-Mar-1876), including Rattlebrook Head. Notwithstanding his ambitions, Jennings continued to argue for reduced rent and no royalties as he was still not selling any peat (DuCoPr/let/14-Nov-1876), although in November 1876 he estimated about 1200 tons was cut and stored at the works (DuCoPr/let/21-Nov-1876). By January the following year Jennings again requested a reduction in rent, claiming he had now spent over £4000 on the property and was just about to make some returns (DuCoPr/let/12-Jan-1877). However, in April, Symons, who was acting as caretaker, needed to assure Barrington that the Walkham Head Peat Works was not abandoned, merely that work had been suspended (DuCoPr/let/26-Apr-1877). In August, Frederick Thomas of the West of England Compressed Peat Co Limited (WECPL at Rattlebrook Head) visited Walkham Head and claimed to be in negotiations with Jennings over an amalgamation (DuCoPr/let/13-Aug-1877). Jennings' financial problems were by then exacerbated by heavy losses from the failure of his 'Capitalist Firm in Glasgow' (DuCoPr/let/29-Oct-1877) of which we possess no further details.

In January 1878 a warrant was served under a Distress for Rent and the sale of plant and effects occurred on 21st

WALKHAM HEAD PEAT WORKS

DARTMOOR,

6 Miles from Marytavy Railway Station.

MR. FEWINS

WILL SELL BY AUCTION,

At the above Works,

On Monday, the 21st of January inst.,

At 2 o'Clock in the Afternoon,

THE WHOLE OF THE

PLANT

And Effects

Of the above Company, taken under a Distress for Rent; comprising

6 Retorts 12 feet by 15 inches, 5 Do. 5 feet by 14 inches, Pug Mill for pulping peat, 4 Tons of Charcoal, Patent Weighing Machine and Weights, 400ft. Wrought-Iron Inch Pipes, large quantity of Bricks, 2 Patent Pulley Blocks & Chains, Iron Tram Waggon, 6000 Turf Trays, about 1000 Tons of Turf in stacks, a large quantity of Shedding, about 8000 feet of Galvanized Corrugated Roofing, 180 feet of Tram Rails, 4 Wheelbarrows, Screen, Grindstone, Vice, Work Bench, Iron Scoop, Pick, Wood, Square Table, 3 Chairs, 3 Copper & Brass Sieves, Stove, Cupboard, 2 Saws, Ropes, Hammers, Turf Knives, 4 Turf Barrows, 2 Ladders, Charcoal Barrow, Pail, Timber, empty Barrels, Sacks, &c.

Dated Sticklepath, January 16th, 1878.

Simmons, Printer, Okehampton.

Fig 2.3 The sale notice of the Walkham Head Peat Works following the compulsory liquidation of William Taylor Jennings' company in 1878. (© Duchy of Cornwall, with permission)

January (Fig 2. 3). The list of items included at the sale provides the only indication we possess as to the extent of activities at Walkham Head and includes six retorts of 12ft by 15 inches; five retorts of 5ft by 14 inches; iron tram wagons; 6000 turf trays; 8000ft of galvanized corrugated roofing; 180ft tram rails; 4 tons charcoal, and many sundry items. The sale realised only £129 and the major buyer was Howard of WECPL, who purchased several of the retorts, wheelbarrows, tram wagons and many hand tools (DuCoPr/sch/21-Jan-1878).

In Jennings' final communication to Barrington he stated that he would have succeeded had his own people not failed and that it had been most disastrous. 'I have lost my all and don't know exactly what steps to take' (DuCoPr/le/02-Mar-1878).

By May, a new lease for the Walkham Head Peat Works was being drafted in favour of the WECPL, which already held the Rattlebrook Head sett (DuCoPr/let/21-May-1878) and from then onwards the affairs of the two setts were tied into the vicissitudes of that and subsequent Rattlebrook companies. By October the rent had already fallen into arrears and in November the Duchy was threatening proceedings if the bailiff's wages were not paid (DuCoPr/let/17-Oct-1880; 26-Nov-1880)

At some point during the tenure of WECPL, the Walkham Head sett was sub-let to George Symes. Following a shake-up of the WECPL in 1881 (see below), the new Chairman, Rev Fletcher laid the blame for rent arrears at Walkham Head squarely on Symes, whom he claimed was given the lease by the late board and who would 'neither work the site nor pay the rent nor surrender the lease' (DuCoPr/let/29-Aug-1881).

With the winding up of the affairs of the WECPL in 1882 the premises at Walkham Head, together with those at Rattlebrook Head, were re-entered by the Duchy and the lease transferred to Cox's Patent Prepared Peat Litter Company Limited (CPPPLCL) (DuCoPr/let/15-Dec-1883). Little activity is recorded at the site thereafter, with peat returns for 1884-5 all being entered as nil, and in June 1886, the company secretary, F Wood, requested that the rent for Walkham Head should be withdrawn for the present as the works was currently worthless. The company could then direct more cash towards developing Rattlebrook Head with a view to making both sites profitable (DuCoPr/let/01-Jun-1886). The Duchy accepted this but allowed only a reduction in rent, down to £20 per annum and £5 Bailiff's wages (DuCoPr/let/19-Nov-1886).

The demise of the buildings and plant at Walkham Head began in 1887 when S D Cox had parts of it carted away to serve at Rattlebrook Head though he wished for the remaining sheds to stay intact, and objected to some unauthorized robbing that was occurring (DuCoPr/let/14-Jan-189). In June 1889, Millman and Vogwill builders of Peter Tavy purchased the wood, brick and galvanized iron at the site for £10 (DuCoPr/let/11-Jun-1889) and this marked the beginning of the dispersal of the remaining buildings at Walkham Head which were slowly broken up for the materials. By 1894 Millman and Vogwill had still not removed the materials they had purchased and reduced their offer to £2 as the site had become so destroyed and robbed. The last of the bricks and iron were removed by Millman and Vogwill in early 1895, though they complained that much had already been removed by others and 'could mention names' (DuCoPr/let/28-Aug-1894; 25-Feb-1895).

Following the final abandonment of commercial peat cutting at Walkham Head, occasional interest in developing the peat cutting was received by the Duchy. In 1893 for example, Capt Kerr of Torquay expressed an interest in taking on the sett, proposing a railway to cart peat and to cultivate areas where peat has been removed (DuCoPr/let/27-May-1893). But, like Jennings twenty years earlier, he was less keen once he realised how remote the site was and the length of the railway that would be required. In 1900, Hughes Dunn and Co of Grampound expressed an interest in the sett though possibly they were interested in the clay potential rather than the peat (DuCoPr/let/25-Aug-1900).

The remoteness and lack of a made up road or tramway, which had so confounded Jennings' efforts in the 1870s, prevented further attempts to rework the site of the type that endured at Rattlebrook Head and it is likely the only peat cutting that occurred in the vicinity of Walkham Head after the collapse of CPPPLCL, was domestic.

2. 4. 3 Rattlebrook Head Peat Works

The following narrative focuses on the years c. 1864 to 1931 the years covered by the DuCo Princetown documents. For some periods it has been possible to include more detail than others.

In a letter from Capt William Doble dated October 24th 1864, among other peat issues mentioned, he reported being 'very busy in preparing to put in machinery at Rattlebrook'. In Duchy records, Doble frequently appears to be representing the Duchy for the collection of peat rents on the north/or west quarter of the moor, probably in the capacity of a bailiff. However, in this case, it is likely he was referring to Rattlebrook Tin Mine not the peat works (DuCoPr/let/24-Oct-1864).

It was not for another two years, on 1st January 1867, that the Rattlebrook Head Peat sett licence was granted to Joseph and William Mathews (DuCoPr/grant/01-Jan-1867) when they were also granted the Doe Tor Sett on the same terms (DuCoPr/grant/01-Jan-1867), although in a revised, renewed grant of 1869 (DuCoPr/lic/22-Mar-1869),

the two setts were combined with the following bounds:

On the East by a line drawn parallel to the Rattlebrook at a distance of 400 fathoms Eastward thereof. On the South in part by the Tavy Cleave, in the other part by the lower Rattlebrook and for the remaining part by the Southern limit of that portion of the Common of Devon which lies Northward of Hare Tor and Doe tor. On the West by a straight line drawn through the centre of Doe Tor to the centre of Arms Tor and continued thence northward to the River Lyd and On or towards the North in part by the course of the said River Lyd – in the other part by a straight line drawn due west from the Rattlebrook Head to Sandyford by the Forest boundary.

Joseph Mathews had interests in many other industrial activities in the vicinity, especially mines, including Wheal Mary Emma, Doe Tor and Rattlebrook, Lydford Consols, Rattlebrook, Battishall, North Dartmoor Tin Streams, New Birch Tor and Vitifer, Cascade, Wheal Frederick, Wheal Russell (Brook Index, WCSL). Exactly what level of peat working activity if any, the Mathews brothers were carrying out at Rattlebrook during this period is not recorded but the grant was renewed in December 1871 when Joseph Mathews stated that he would soon be starting work in earnest (DuCoPr/let/09-Dec-1871). However, by February 1873 Mathews was in discussion with a third party regarding leasing the Rattlebrook sett (DuCoPr/let/13 Feb 1873) although elsewhere it was stated that he had already 'expended unsuccessfully a good deal of money upon them' (DuCoPr/let/22-Apr-1873).

Thus the first known commercial attempt to work the Rattlebrook peat beds was soon underway by a London company, The Dartmoor Peat Company, under the leadership of Capt William Engledue RE. Engledue, who was also a director of the North Dartmoor Tin Mining Co Ltd in 1872, (Brook Index, Lydford, WCSL) was probably known to Mathews. He planned to construct a 'Wire Tramway' (aerial ropeway) using Hodgson's Patent and made enquiries about constructing a processing plant on waste ground at Bridestowe close by the Okehampton to Plymouth railway which was under construction (DuCoPr/let/13-Feb-1873, DB567). The intended site for this was probably on Southerly Down. Engledue proposed the use of Box's patent for the manufacture of peat fuel, though later documentation suggest that this was not pursued and a Clayton system was favoured. It is possible this change of mind was induced after the publication of a paper in an 1873 technical journal, which questioned the validity of claims that surrounded Box's system whilst praising that of Clayton (Richardson 1873, 59).

The portion of the above sett granted to William J Engledue, Milton Bradford, James W Sherman on 1st Jan 1874 had boundaries as follows:

On the west and north by the eastern side of the Rattlebrook from its junction with the Tavy Cleave to Rattlebrook Head and thence by the Forest Boundary to Sandyford. On the south by the northern bank of Tavy Cleave from its junction with the Rattlebrook aforesaid to a point distant 400 fathoms thereupon and on the east by a straight line drawn from the last mentioned point to Sandyford aforesaid

The terms of the grant were £52 rent pa; 10s Bailiff's wages and 6d per ton royalty.

The plan to build a works at Bridestowe was superseded and the site finally chosen for the peat works was in low-lying ground near the head of the Rattlebrook where the remains survive today. In March, Engledue also requested permission to build a cottage, close to the peat road to Lydford as it crosses the Rattlebrook near the works. This was in an artificially levelled area of old tin streamworks. (DuCoPr/map/24-Mar-1874). Although there is a ruined turf-covered structure at this site (SX 5592 8662) it appears to be of a much earlier type and probably has origins as a shelter for peat cutters or possibly tanners. The Duchy could not permit a building at this location as it was outside of the Forest, within the commons of Devon, which would have incurred the wrath of the commoners. Therefore, the site finally chosen for the cottage was downstream on the eastern bank of the Rattlebrook, marked on the modern map as Bleak House but alternatively known as Dunna Goat Cottage, where the ruins of the building survive (SX 5596 8647).

By August the rent due to the Duchy for the Rattlebrook sett was in arrears. Engledue managed a part payment but implied in a letter that he was struggling to get his partners to pay their share (DuCoPr/let/10-Aug-1874). On 30th October, the peat works at Rattlebrook was seized, owing to the failure by the company to pay the suppliers of the machinery they had installed, and the assets were ordered to be sold (DuCoPr/let/30-Oct-1874). Thus the first attempt to exploit peat commercially at Rattlebrook failed after less than one year.

The sale of all The Dartmoor Peat Company's equipment at Rattlebrook, by Fewins the auctioneer, took place at the sett on 2nd November 1874. Among the assets for sale were: A ten horse-power portable steam engine by Clayton and Co; 2 Peat machines; 8000 peat trays – said to have cost £300; 6 wagons; 5 stacks of peat; pulleys, wire, Smith's bellows, anvils, shedding, 15 wheelbarrows, tarpaulin, iron rails. The sale realised £611 7s. (DuCoPr/sch/02-Nov-1874).

This list provides some idea of the extent of operations at Rattlebrook in the early stages of development at the works. The presence of a Clayton engine and 8000 peat trays is a strong hint that Dartmoor Peat Co was using Henry Clayton's process as described in contemporary reports (*Chemical News* Feb 27 1874, 98; see below). Ironically the purchaser of the peat machines is listed as 'Clayton', buying back machines that had not been paid for. The

wagons and iron rails would have been used for transporting the cut peat from the ties to the machine area, which was protected by the shedding. No description of the extent of the works survives for this episode but it is known from descriptions of the Clayton process that the cut peat was moved in 'squeezing trucks' between the bog and the plant to reduce the moisture content. After, shredding and compressing in Clayton's machine, the briquettes were laid onto trays and placed in drying sheds where they air dried for three weeks. It is likely that much of the plant was also housed in temporary sheds. It is not known if these were retained by later operators though it is likely. It would appear that the aerial ropeway proposed in February 1873 had not come to fruition judging by its absence from the sale particulars.

Meanwhile Dunna Goat cottage had been completed, as reported to Barrington by a Mr Simmons, who said that he had possession of the key though the property remained empty (DuCoPr/let/18-Aug-1875). In August William Escott wrote to Barrington stating that he understood that the stoves Engledue had purchased from him, and never paid for, were still *in situ* at the house and asked for permission to remove them to 'lessen in some small degree the loss I sustained thro Capt E and the Peat Works' (DuCoPr/let/18-Aug-1875).

For the Duchy, legal proceedings in pursuit of the rent arrears continued and was still ongoing in 1876, final payment being retrieved in February. With this settlement, Mathews, the holder of the peat grant, was free to conclude business with new lessees.

Following the collapse of the Dartmoor Peat Company, Mathews negotiated with several other parties, including William Taylor Jennings of the Walkham Peat Company (above), but the next group of adventurers to take on the Rattlebrook sett, The West of England Compressed Peat Company Ltd (WECPCCL) was in formation by late 1877. On 16th November of that year, Frederick Thomas informed the Duchy office that he was in the process of forming the company, for laying down a tramway and working the Rattlebrook sett and was about to submit a formal application. He proposed to use Howard's process which, together with a light tramway, will put the probabilities of success on a different footing. (DuCoPr/let/17-Nov-1877). Thomas, who along with John Howard already had possession of the Taw Head peat setts, also made enquiries in 1878 about taking on the Walkham Head peat works (DuCoPr/let/29 Mar 1878). It was Howard who had purchased much of the material at the Walkham Head sale on 21st January 1878 (DuCoPr/sch/21-Jan-1878).

The proposals for the railway met with some opposition; firstly by Mr W F Collier who reported on behalf of the Devonshire Association's Dartmoor Committee in the *Transactions* for 1878. The objections were two-fold: first that the right to cut turf belonged to the venville commoners and the committee doubted the power of the Duchy to grant such rights. Second, that the cutting of large areas of peat would seriously damage Devon's water supply (TDA 1878 10, 110). Howard was outraged at what he regarded as 'antique thinking' and contended that clearing away the bogs 'would improve Dartmoor' (DuCoPr/let/1-Aug-1878). There was also some resistance from the Lifton Highways Board, who apparently had objections to the railway crossing the main Okehampton to Tavistock road via a level crossing. Pressure was put on Barrington, from both Howard and one of Barrington's superiors, to represent the company in a positive light with the highways board. (DuCoPr/let/2- and 3-Sep-1878).

A group of men who styled themselves the 'Memorialists' of Bridestowe and Sourton presented a petition or 'memorial' to the Prince of Wales, signed by 55 individuals, all 'small farmers'. They believed that the Duchy had granted parts of Bridestowe Common to the West of England Compressed Peat Company which they claimed would seriously damage areas of pasture where they had grazing rights, and that the railway would also impinge on their rights of access on the commons (DuCoPr/memorial/26-Mar-1879). However, this problem was later resolved in an agreement by the company to pay £90 to a committee of the commoners and to provide the commoners of the two parishes with peat fuel at a reduced rate of 10%, in return for which the commoners would not interfere with the workings or railway belonging to the company (DuCoPr/let/3-May-1880).

The West of England Compressed Peat Company Ltd was launched in September 1878 and its directors included Major Hinton (formerly of the Blackbrook sett). John Howard, owner of the patent, was company engineer (DRO 4242 B/A1). The first sod of the Railway was cut on 23rd September 1878 whereupon honoured guests were treated to a luncheon with speeches at Bridestowe Station. According to the company prospectus Howard's process 'is simple, inexpensive in its working and requires no expensive machinery. The peat is cut from the head and thrown into an ingenious apparatus and almost immediately passes out pressed and prepared.' This sounded too good to be true and almost certainly was.

At a shareholders meeting in Feb 1879 it was voted to pay dividends on shares and the Directors were paid £100 (*Bristol Mercury* 02-Feb-1887). It was during this period that the large kiln and ovens, which survived at the site until demolition in the 1960s, were constructed and it was reported at another meeting in February 1880 (*EFP* 04-Feb-1880) that the railway was almost complete and the locomotive and trucks passed over it daily. However, in a letter to the Duchy of 8th October 1880, it was claimed by Head, the company secretary, that despite 'a very large number of orders' they were unable to deliver any peat until the trucks ordered from the Bristol Wagon Co were delivered. By November 1880 the partnership was in trouble and payment of rent had fallen into arrears. Joseph Mathews, joint

owner of the peat grant had died, and Frederick Thomas's affairs were in liquidation. The Duchy called on Samuel Mathews to cover the arrears of rent and a reduced figure was negotiated.

A newspaper article of 19th March 1881 (*Berrows Worcester Journal*) headed 'Serious Charges Against Directors', made allegations about the financial management of this company. In the article, it was claimed by a committee of shareholders, that the company had purchased the licence to cut peat at Rattlebrook from Frederick Thomas, paying him £8000 for it in shares. They then paid Howard a further £8000 for his patent peat drying and compressing machine, although it was reported that no such machine was present at the works. The patent was later found to be worthless. Thomas and Howard had then sold to the company the peat ground at Walkham Head, for which they had only paid £89 annually, for an equivalent of £10 000 in shares. Most of the directors of the company were Exeter businessmen but in the article it was claimed that the majority of the shareholders were based in the Midlands.

The West of England Compressed Peat Company was clearly an elaborate ruse on the part of Thomas and Howard who had begun purchasing the necessary components to create a plausible peat fuel company, as early as 1877; e. g. leases on peat ground, second-hand machinery and a supply of charcoal from Walkham Head. They then sold these resources, along with Howard's patent, to the company they were responsible for creating in exchange for shares, though notably they were not directors of the company themselves. They then undoubtedly disposed of the shares as quickly as possible to buyers as far away from Dartmoor as could be found. The directors had also received over £50 000 in salary since the company had started despite the lack of profits. If the claims by other shareholders that Howard's patent was worthless are true, then the scam is even more serious. To put the activities of Thomas and Howard into further context, both were involved in the Great Wheal Eleanor Tin Mining Co in North Bovey, a company which newspaper reports of the period suggest had an equally reckless business model (Broughton 1968-9).

The WECPL committee, which was chaired by the Rev J Fletcher, later concluded forlornly, that although the directors had been reckless, charges of fraud or dishonesty could not be proven and after a vote of 'want of confidence' was taken; a new board headed by Fletcher, was appointed (EFP 16-Mar-1881).

Despite the rather dubious foundations on which this company was operating, some work had clearly been taking place at Rattlebrook, as shown on the peat return form for 4th April 1881, which recorded that:

3800 tons remained in the works on 25th Dec 1880

198 tons converted to charcoal

36 tons sold

66 tons consumed at the works

Total 300 tons

3500 tons remained 31 March 1881

and for 24th June 1881

3500 tons remaining on the works on 25 March

500 tons converted to charcoal

304 tons sold

300 tons consumed at the works

1500 tons destroyed by flood and frost

On 29th June 1881 Fletcher, the company chairman, was tasked with settling all matters of the WECPL, which was clearly floundering. It was not a happy company as may be perceived from an Exeter shareholders meeting of March 1882. One man claimed he had lost everything through this company and another expressed regret that there was a number of widows on the shareholders list (EFP 8-Mar-1882). On the positive side it was stated that the company did not owe a penny and had avoided compulsory liquidation. However, it was in dire need of capital and therefore the assembled shareholders voted for a voluntary wind up, to which end Rev Fletcher was appointed as Liquidator. In January 1883 the Duchy received an application from Fletcher for the liquidation of WECPL and a request for a new grant to be given to Campbell, Dews and Cox (DuCoPr/let/17-Jan-1883).

It was not until December 1883 that the licence was determined and a new licence for Cox's Patent Prepared Peat Litter Company (CPPPLC) Ltd was to run from the previous month (DuCoPr/let/07-Dec-1883).

During 1884 peat was being produced at Rattlebrook and the Duchy was at last receiving some income from these setts, albeit very briefly (DuCoPr/acc/30-Aug-1884). On the 8th November, Samuel Deadman Cox announced the prospect of selling the entire output as part of a sewage filtration scheme he was working on, which depended on certain borough authorities adopting the scheme (DuCoPr/let/25-Apr-1885). This strategy failed, which was a major setback for the company and Cox requested a reduction in the rent while he tried to get things moving. According to a letter from F Wood, secretary of the company, the system was tested at Tottenham sewage works but it seems that no orders were placed. By September Cox enquired of Barrington as to the possibilities of using the peat as horse litter, wondering if this had been tried before (DuCoPr/let/24-Sep-1885). By October the company was submitting nil returns of peat and reported that none had been sold and the Duchy again granted a remission on the

rent (DuCoPr/let/28-Jan-1886). By June 1886, Wood requested that the rent on Walkham Head be withdrawn as with so little business, he considered the property to be worthless. (DuCoPr/let/1-Jun-1886). No towns had taken up the sewage filtration system by July and he reported very few workers at the Rattlebrook site, those that were there were cutting peat for charcoal for Mr Cox's sewage filtration system or repairing deep turf ties at the request of local graziers. In a director's report of July 1886, it was stated that the company had hoped Cox's peat filtration system would be adopted by towns and that the patent could be sold along with the peatworks. Although they were hopeful that Leicester would take up the scheme, negotiations had become protracted so the directors recommended that no further money was expended on upkeep at Rattlebrook (DuCoPr/CPPLC rep/20-Jul-1886).

Cox's sanguine hopes, and indeed all previous schemes at Rattlebrook, were derided in a paper presented to the Devonshire Association in 1885, which asserted, quite prophetically as it turned out, that the peat on Dartmoor was too wet and the transport costs too high, for any of the commercial attempt to exploit it to provide a profit (Parfitt 1885, 369-70).

By May 1887 the company's position was desperate and Wood apologised to Barrington for not paying the rent or the Bailiff's wages but reported that the company's funds were exhausted. They had paid £12,832 for the works in 1883 and laid out £5000 on machinery and buildings. The plan to produce horse litter had failed, hence the stoppage, and only two employees remained on site to maintain the machinery (DuCoPr/let/02-May-1887).

In an even more desperate move, Cox applied to build a dynamite manufactory on the Rattlebrook site and provided a plan of the works with the proposed position of the manufactory several hundred metres to the south (DuCoPr/map/08-Jul-1887). A formal application to that effect was made on 21st September 1887, in which it was proposed to transfer the lease of CPPPLC to a new company to manufacture dynamite. The Duchy council however, rejected the application at a meeting in December (DuCoPr/let/12-Dec-1887).

Undeterred, Cox and Wood then announced that they were to form a company to manufacture brown paper using Dartmoor peat, and they were proposing to utilise the granite rights, which they also held on the Rattlebrook sett. They also made enquiries about the water rights, should they wish to erect a stone-crusher and polisher powered by a waterwheel (DuCoPr/let/20-Jul-1887). This scheme went no further than the proposal stage, meanwhile, winding up orders for Cox's Patent Prepared Peat Co Ltd appeared in on 15th August 1888 (*Liverpool Mercury* 15-Aug-1888).

As none of these proposals came to fruition, on 27th October 1888 Cox announced it was his intention to sell the property and thus enable him to pay the considerable amount owing to the Duchy in back rent (DuCoPr/let/27-Oct-1888).

However, by January Cox was back with a proposal to raise the capital needed to form a company to manufacture 'electric candles' using Rattlebrook charcoal. He also intended to install turbines powered by the Rattlebrook to generate electricity for a number of towns including Plymouth, Devonport and Tavistock (DuCoPr/let/30-Jan-1889). The Duchy offered no objection but warned that any abstraction licences would be revoked if other water users objected (DuCoPr/let/01-Feb-1889). Cox then applied for a licence to the Board of Trade to produce electricity. In December he wrote that a syndicate of gentlemen has arranged to buy the lease for the Cox company for making charcoal and the water power which was to be utilized in the making of electric lighting in the three towns. The large stone-built kiln at the Rattlebrook works was to be used for storage. He claimed that the syndicate was a strong one with 'very fine Gentleman' in it (DuCoPr/let/23-Dec-1889).

In August it was again proposed to liquidate CPPPLC to pave the way for a new company and following months of complicated proceedings the new company, headed by Cox, was set to take over the lease. It was to be called The Devon Granite and Peat Litter Works (DGPLW) Ltd, with a registered office in Fenchurch St, London (DuCoPr/let/13-May-1891). However, S D Cox died the day before the CPPPLC lease was surrendered preventing transfer to any new company until such time as R C Hanrott, Cox's partner, could nominate a co-licensee, with appropriate credentials (DuCoPr/let/24-Feb-1892).

The DGPLW would never work the sett as a result of this setback and in August 1892 the company was reformed under the title of The Dartmoor Peat and Iron Smelting Co (DPISC) Ltd and took over the lease at Rattlebrook. Chairman of the company was Sir John Astley and Theodore Bouwens was the secretary. Their prospectus contained ambitious claims about the new process they would use for manufacturing charcoal, developed by another of the directors, J Dickinson Brunton, and the potential to use the charcoal in the production of iron (DuCoPr/Prospectus/16-Aug-1892)

History was repeating itself at Rattlebrook as Brunton was paid 1000 £10 shares for exclusive rights to his new process, and 832 shares worth £8320 were paid as part-payment for the property.

This company, like its predecessors, was soon struggling financially and within only seven months of its inception an application was made to the Duchy for relief of the rent and bailiff's fees (DuCoPr/let/10-Mar-1893). There was also a problem with the peat licence which had never been properly transferred to DPISC by Hanrott, the licensee of the

sett (DuCoPr/let/13-Dec-1893). In February 1895, the company was being sued by Slaughter, the solicitor who had formerly represented it, and Sellsby Willson was appointed as receiver. This perplexed the Duchy representatives who feared that in a case of forced liquidation, their Landlord's Distress Order would be void; DPISC owed the Duchy £465 14s 7d in rent and Bailiff's wages at that time (DuCoPr/let/22-Feb-1895).

Sellsby Willson, who had business interests elsewhere (including The Fish Utilization Syndicate Ltd), then began to form another company to work the Rattlebrook sett, writing optimistically to A E Barrington 'I believe I shall make the old works go yet' (DuCoPr/let/01-May-1895). However, he would require a 'liberal abatement of rent' and that his gentleman investors would be willing to provide capital but not cover debts of the past company (DuCoPr/let/29-Jun-1895). He also requested a reduction in the dues to 10% and the rent to £50 per year together with relief on the bailiff's wages. The Duchy representatives insisted that the arrears of rent and bailiff's fees of £247 9s 9d has to be paid. However, eventually they accepted a much reduced sum of £100 to clear the debt (DuCoPr/let/10-Feb-1896). The new lessee was Reginald Moreshead of Tavistock.

Sellsby Willson, who was also negotiating with the Duchy for the clay rights in the area, proposed to establish a brick making concern at the site, fired by peat (DuCoPr/let/21-Mar-1898). Alas, progress with the peat works was slow and Moreshead reported their process was not working although a new machine imported from Norway was under trial and if it worked, capital would be made available (DuCoPr/let/04-Jul-1898).

Although Moreshead and Willson continued to request reductions in the rent to help cover the costs of developing the site, A E Barrington (Charles Barrington's son who had taken over as Duchy Steward) warned his superiors against further remissions. The rent had been reduced two years previously from £100 to £50 but remained unpaid. He felt it was unlikely that this company would make a success of the works, although he acknowledges the need to keep the site under grant as they would be unlikely to find a new tenant. (DuCoPr/let/15-Jun-1899). However, the Duchy council agreed to give Willson *et al* more time to mature their plans and allowed a 2/3 remission on arrears (DuCoPr/let/16-Jun-1899). This was paid almost immediately (DuCoPr/let/16-Jun-1899).

By January 1900 (DuCoPr/let/19-Jan-1900) another new company was in formation – the Machine Drying and Peat Fuel Co (MDPFC) Ltd, although the peat licence remained with Moreshead. Not a great deal has come to light about this company but Messrs Drimmie and Crawford were directors and FW Drury corresponded on their behalf and was probably therefore the company secretary. Willson was also involved but in what capacity is uncertain. He continued to negotiate for the Rattlebrook and Doe Tor clay licence, finally agreeing at 1s 6d per ton (DuCoPr/let/14-Nov-1900). However, the clay grant was turned down by the Duchy council for which they did not give a reason (DuCoPr/let/30-Nov-1900). Although not stated in the letter to Willson, this may have been due to the negotiations they were having with the military at that time regarding the firing ranges. Unperturbed, Willson announced that the peat operation was to resume (DuCoPr/let/03-Dec-1900), although by this time there was a dispute over the access right of the railway. It was during 1900 that an anonymous correspondent of the *Exeter Flying Post* reported that although the sheds had recently been tarred and generally smartened up the works were in 'ruinous idleness' (EFP 04-Apr-1900).

In February 1903, Willson sent a letter of introduction to A E Barrington for his friend Mr Peter Bann, who he claimed was interested in peat (DuCoPr/let/13-Feb-1903), adding that he hoped he will be more successful than he was. Negotiations then began for Bann's company, the Electro-Peat Coal Co Ltd, to take over the lease at Rattlebrook. Judging by the company name, Bann was proposing to experiment with a new process whereby electric current was passed through the peat blocks as an aid to charring it. A company using a similar technique (the Electro-Peat Syndicate) was set up in County Kildare, Ireland in 1906 but was short-lived (Feehan & O'Donovan 1996, 88). There was clearly very little activity at the Rattlebrook works during this period. William Rich of Lake was employed as a caretaker, though complained that he had not been paid his wages for two years (DuCoPr/let/13-Mar-1904) and in November a correspondent made enquiries of the Duchy about the 'abandoned peat workings on the moor near Bristestowe' (DuCoPr/let/22-No-1904) which hints at inactivity.

It may have been at about this time, or shortly before, that Eden Phillpotts, the writer of Dartmoor-based novels, observed the works at Rattlebrook and used his description as the setting for a chapter in *The Wirlwind*, published 1905. The chapter was entitled 'A Theatre of Failure', in which the works were described as being in an state of dereliction. This description was no doubt exaggerated as an authorial device, but in the context of other contemporary comments some of it does have a ring of truth to it.

Negotiations were protracted and despite Moreshead's claims that everything would soon be in place, nothing seems to have transpired. On 22nd March 1905 Bann wrote again to the Duchy expressing his desire to take on some peat ground, from which it has to be assumed he was still not leasing the Rattlebrook Sett. (DuCoPr/let/22-Mar-1905). Legal wrangling continued because the lease could not be inrolled to the new company until the rent arrears of the previous operation were settled and no-one could agree who should pay. This was probably never resolved as by 1911 the peat and clay grants and railway were held by Messrs Sigismund Moritz, and Arthur Schiff of 501 Salisbury

House EC (DuCoPr/let/03-Apr-1911). Peter Bann had no further known role at Rattlebrook.

This new company, probably the Devon China Clay and Mineral Co Ltd, also appears to have left little in the way of a paper trail but by the 8th February 1918 over four years rent was owed amounting to £428 10s (DuCoPr/let/18-Feb-1915).

With the imminent demise of the company the Duchy officials, in the form of Sir Walter Peacock, took the extraordinary step of purchasing all the machinery for the value of the arrears in rent amounting to £467 plus £300, then giving Moritz *et al* the option of purchasing it back at the price paid plus 5 per cent. This represents an unusual level of intervention by the Duchy officials but was intended to avoid the machinery and materials being dispersed (DuCoPr/let/06-May-1915). Sellsby Willson was tasked to remove all the brass and copper from the site while it was mothballed, though what his role was by this time remains unclear (DuCoPr/let/20-May-1915). On 29th May 1915 William Rich was to be retained as caretaker for one week and await further instructions. Over a year later he was still in post when Charles Turner, was carrying out experiments at the works and complained to Barrington that Rich was being obstructive (DuCoPr/let/12-Sep-1916). It is uncertain what Turner's role was at the works, but following the failure of Devon China Clay and Mineral Co Ltd to re-purchase the machinery and work the sett, by 1918 the Duchy's officers appear to have attempted to develop the sett themselves in partnership with others; the headed stationary of the Rattlebrook Peat Works has 'Duchy of Cornwall' as a sub-heading. The works was under the direction or management of Julius Moeller who, on 26th August 1919, was about to commence with experiments on the peat at Rattlebrook. The nature of the experiments is not recorded but Moeller had, in the 1890s, been associated with the development and promotion of incandescent gas lighting (*The Standard* 19-Dec-1896), so it is likely that he was experimenting with chemical processes to produce gas. Julius Moeller was an Austrian and former director of an Austrian lighting company (*The Standard* 18-Dec-1896). His presence at the works may explain a local tradition of a 'mysterious German' at the works during the Great War (Harris 1968, 111; Amhof 1988, 6), although Moeller resided in a cottage on Vale Down.

The years 1918 – 1932

[The period of activity at Rattlebrook Peat Works between September 1918 and Dec 1929 is recorded in great detail within four folders of documents. Most of this comprises correspondence between the manager, Julius Moeller, and various suppliers of equipment and materials, to establish costings or place orders. An additional two folders of correspondence cover the closure of the Rattlebrook Peat Works in 1930-32, which also involved much detailed negotiation with various companies. Only documents directly relevant to the narrative are included in the catalogue (appendix) of which the following is a summary]

During the period that Julius Moeller was managing the works, it is clear from the documentation that new equipment was being sought for the experiments, but also the materials needed to make good and maintain the existing buildings and plant at the works were also a concern. There is a mass of correspondence between the Rattlebrook Peat Works and companies all over Britain, and in some cases Europe, requesting information and quotations for all manner of materials, including:

cement, asbestos, firebricks, lime, Beaver Board, steel, leather, roofing tar, steel girders, tubing, screws, spanners, optical pyrometer, osram lamps, oxy-acetylene cutting gear, temporary huts, stills, pumps, 100, 250, and 500 gallon tar stills, second-hand boilers, manila rope, roofing glass, a spiral conveyer, various boilers, 2ft gauge track, lighting, various chemicals, air compressor, timber, Avery scales, creosote, asbestos corrugated roofing, galvanized sheeting, a saturator for making sulphate of ammonia, pulleys and line-shafting, RSJs, 300ft chain, ducting, anthracite, bricks, stationary, galvanized tanks and cisterns, gutters, windmill pumping plant, belts, water valves, fire extinguishers, distemper, peat shovels, gas valves, compressed hydrogen, electric 110v generator, a Marconi telephone telegraph set, sleepers, heat proof paint, wood preservative, vacuum pumps, fullers earth, railway wagons, drawing instruments, 500cc distilling flasks, moisture meter.

Larger items for which quotes were obtained included a 20BHP 2.5ton Simplex petrol loco at £585; various second hand engines and many quotes were sought for a suitable second hand gas engine. Also swivelling tip wagons made by Willcocks of Buckfastleigh. In May 1922, Moeller made enquiries about the purchase of a redundant chemical works at Yiewsley in Middlesex, probably with the intention of obtaining some of the equipment. A quotation for peat shovels was provided by Hattersley and Davidson of Sheffield, to be made to the specification of a sample sent to them from Dartmoor.

The company rented two cottages on Vale Down, 'Kirtonia' and 'Telde', one of which was occupied by Moeller. Enquires were made regarding the installation of Post Office telephones at Telde with an extension to the peat works.

The context of all this activity appears to be an extended period of experimentation. There is little evidence that many of the trade enquiries were ever followed up, although by 1923 some orders for materials were being placed. Moeller received many samples from companies, including paint, coal etc. Experiments continued and in July 1928, a

letter from Moeller implied he had made a breakthrough (DoCoPr/let/14-Jul-1928). In November 1929 results were still being reported by Moeller, though the extent of other activities is not recorded.

But on December 18th 1929, the Duchy, represented by McCormick of Buckingham Gate, unexpectedly, announced that they were withdrawing support, and Thomson, who was superintending at the works was to receive 3 months notice.

Much paper activity occurred in March 1930 regarding the sale of the works and disposal of machinery for which tenders from various companies were submitted. This had to be postponed because of a problem of the railway tenure in the lands of Calmady Hamlyn and all tenders had to be resubmitted. A mechanic was retained at the works for £2 per week to look after the machinery. The portable engine (12 BHP Clayton and Shuttleworth portable) which belonged to, and was on hire at £1 per week from, Hodges Bros of Exeter posed particular problems in the transit from the works to the level crossing as no suitable trolley to run on the rails was available. Under the terms of hire this expense fell to the Duchy. Eventually Hodges allowed the engine to be sold for £60 to whoever purchased the other materials. Most of the other machinery was acknowledged to have little value other than for scrap. ThosWard Ltd of Sheffield put in the successful bid at £940 for the buildings, machinery, stock in trade and railway to Nodden Gate.

Notice was given to the Calmady Hamlyn estate that the railway was no longer required as from 29th Sept 1930, but this date was postponed to 24th June 1931 as the demolition gradually fell behind schedule. Arbitrators were appointed in 1931 to agree the amount needed to reinstate Hamlyn's land. The Duchy objected to the agreed amount because Hamlyn claimed he would continue to use his section as a railway and it needed to be fully repaired but they reluctantly paid-up on 10th October 1931. Tucker, a Duchy representative, wrote to the Southern Railway Oct 1931 requesting a termination of the agreement for renting the peat siding.

Frank Thompson, the manager of the works, announced he was leaving Vale Down Cottage on April 3rd 1930 and was moving to Cheshire. Even as the dismantling of the machinery began a Mr Drayton of Lustleigh was attempting to persuade the Duchy to let him take the works on as a viable business, though the Duchy abruptly declined the proposal.

So ends the Duchy of Cornwall Dartmoor archive sources for Rattlebrook, but activity continued, much being recorded by historians and writers from oral information.

After 1930

Helen Harris has provided an outline of further activities at Rattlebrook in 1936-43 when Holford Processes of London proposed the production of oil, charcoal and chemical by-products. Although activity commenced in 1943, and was said to have included production using retorts, it was short-lived (Harris 1968, 114).

During the later 1940s was the period that Thomas Firbank operated the site, from about 1948, described in his book *Log Hut* (1956, 184-94), which provided some insight into the difficulties of making a living from this site. His company, and that which succeeded it, were cutting peat for horticultural purposes. After cutting, it was thrown into a lorry then driven down the trackbed of the former railway to an old blister hanger, that had been acquired from a disused airfield and erected on Nodden, where the peat was shredded, dried and bagged. Some of the characters involved at Rattlebrook during this period have been remembered in more recent magazine articles by Amhof (1988, 4-6) and Greeves (2000, 8-10), though little light was shed on the nature of the operations.

Despite further sporadic attempts to make the site pay, Rattlebrook Head peat works was finally abandoned in 1955, bringing to an end over 100 years of industry at Rattlebrook Head. Demolition of the, by then, very derelict buildings was requested by the commoners and executed by the army in 1961 (Harris 1968, 115) to a high level of thoroughness.

2. 5 AN INDUSTRIAL CONTEXT

The value of converting peat into concentrated fuels such as charcoal and the manufacturing methods needed to do so, had been known from at least the time of the medieval tin smelters. However, producing these fuels on a massive industrial scale was not contemplated on Dartmoor until the 19th century when capitalised enterprises began to explore the commercial potential of a number of products which could be derived from peat. From the 1840s and into the 1870s, attempts were made to produce peat charcoal, liquid and gas fuels. As early as 1820, a newspaper article had noted the newly-discovered potential of gas made from peat and its bi-product, charcoal. Dartmoor, the article claimed, had an 'inexhaustible supply' which could illuminate the towns around the moor and provide employment as 'a great number of children of the poor will derive a living from raising the peat' (*Royal Cornwall Gazette* 13-May-1820). Gas was later produced from peat on Dartmoor from the 1840s though usually in conjunction with other products such as charcoal and naphtha.

Naphtha was a cause of some activity on Dartmoor in the 1840s and later. This is a volatile liquid hydrocarbon distillate which can be extracted from petroleum, wood or peat, and has a variety of uses; in the 19th century these included lamp oil, candle manufacture and naphthalene moth balls. The process to produce it involved burning peat in a retort and collecting and condensing the volatile products. Charcoal was also produced as a valuable bi-product.

Despite the above 1820 reference to the production of gas, it is unlikely that commercial experiments occurred on Dartmoor until the 1840s. Henry de la Beche, while acknowledging that Dartmoor produced large quantities of peat as a domestic fuel, did not list it among the topics in his section on 'economic geology', which implies that its commercial potential was still not realised in the late 1830s (De la Beche 1839, 476).

Peat charcoal had been produced since medieval times as a fuel for tin smelting and from the late 18th century was valued as a manure. It was also preferred by some smiths for the forging of iron and it is reported that most of the smiths around Dartmoor were using it in the early 19th century (Burt 1834, 123). By that time it was claimed by some as a viable alternative to pit coal and coke, despite its tendency to burn rather rapidly. But with coal steadily rising in price, entrepreneurs were compelled to experiment with peat, particularly during the so-called 'coal famine' of the 1870s. In 1873, R Richardson wrote a treatise on the matter, the premise of which was, that coal prices were rising at an unreasonable rate and peat could be utilized as a substitute. However, after describing various ways of manufacturing fuel from peat, the author pointed out that much of the technology that had been previously attempted had failed commercially due to the problem of reducing the moisture within the fibres of the peat. Nevertheless he drew attention to the new system introduced by Clayton and Co. in 1873, which was adopted at Rattlebrook in 1874 and is described below. This process does not strictly speaking produce a charcoal because no burning took place. It is more correctly referred to as compressed or concentrated peat fuel, sometimes referred to as 'peat briquettes', although later developments at Rattlebrook included charring the compressed blocks in an oven or kiln. Richardson claimed that, at the time of his writing, the uses of peat charcoal included powering steam locomotives, for which he cited several companies actively using peat, steam vessels, and the smelting of iron, for which purpose it was superior to coal due to the lack of sulphur (Richardson 1873, 14). Peat charcoal was also considered by some to have use in 'deodorizing purposes' (Sullivan 1854, 195-207) and attempts were made to use it as a means of treating sewage in towns. Following the public health act of 1848, when urban authorities were developing their sewage systems, much experimentation with peat charcoal took place. The British Patent Peat Charcoal Company, who operated at Princetown, claimed they would manufacture four grades of charcoal: 'granulated charcoal for agricultural and sanitary purposes; lump charcoal for purifying water sewage & & dense charcoal or peat coke, and compressed peat or peat coal for smelting, steam boilers, locomotives and domestic fuel'. Also 'tar for preserving timber &' (*Daily News* 28-May-1851).

There is a small possibility, which may be inferred from certain pieces of documentation, that peat charcoal could have been experimented with as an ingredient of gunpowder by Freat and Bennett, who held a peat grant in the 1850s. The address from where they managed their peat cutting interests was the Counting House at Postbridge. The most likely location for this was at the Gunpowder Mills, established in 1844, also by George Freat (Pye 1994, 224). Although the connection has not previously been made by writers on the topic of the Gunpowder Mills, peat charcoal could have been tried as an ingredient. Pye stated that alder or willow charcoal was brought to the site (Pye 1994), which was the norm for gunpowder, but several 19th-century writers claimed that peat had equal or superior properties to wood charcoal for this purpose (Leavitt 1866, 125). There is no proof that Freat intended to use peat charcoal, but considering this was an age of experimentation and Freat had access to a good supply of peat, this must surely have been something that he contemplated.

The first commercial peat enterprise on Dartmoor was the British Naphtha Company (BNC), which commenced work in 1844 (Crossing 1989), located at Bachelor's Hall, though later it was moved into the disused prison at Princetown. This was likely to have been the earliest 'chemical plant' to utilise peat in Britain, set up 5 years before the Irish Peat Company's operation at county Kildare which started in 1849, and is claimed to be the earliest such manufactory of its type in the world (Rynne 2006, 102). So novel were the processes used by the BNC that they were described in scientific journals of the time (Taylor 1848; Anon 1849).

It [the peat] is cut out into cubes of 8 to 10 inches diameter, and immediately carried to a powerful press, where it is reduced about two-thirds in bulk and nearly deprived of its water. It is then loaded in the trucks and is conveyed to the works, where it is boiled in a mixture of coal-tar, pitch, peat naphtha and other hydrocarbons. After saturation and drainage, the peat is fit for charging the retorts, composed of fire-clay, 9ft long and 5ft in diameter, holding two tons of saturated peat each, and capable, when in full operation, of working 8 tons each in 24 hours. The gaseous products from these retorts pass much after the mode adopted in ordinary coal gas works along a hydraulic main, and through a long set of condensers, whence after being deprived of all its condensable adjuncts, the purified gas is brought, by means of pipes, beneath the retorts where it serves as a very powerful fuel. The condensed matter from the peat contains an immense proportion of stearine or vegetable tallow, oil and naphtha. When the retorts are discharged the charge requires to be drawn into a close iron chest on wheels, with a tightly fitting lid, which must be immersed in water, as the charcoal retains its heat for a very long time; and if quenched with water, as is the case with gas-coke, it imbibes so much of that fluid as very materially to deteriorate its quality.

PLANS of PEAT - CHARRING WORKS
at CROWLE near DONCASTER

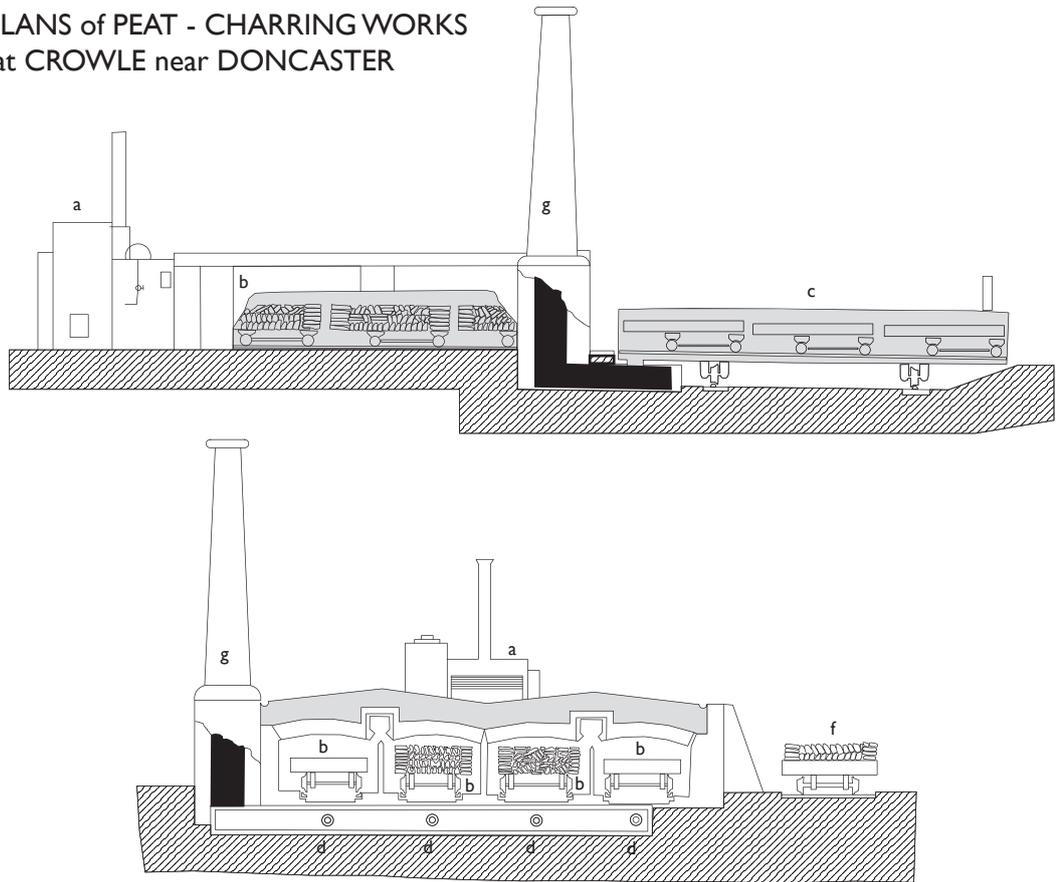
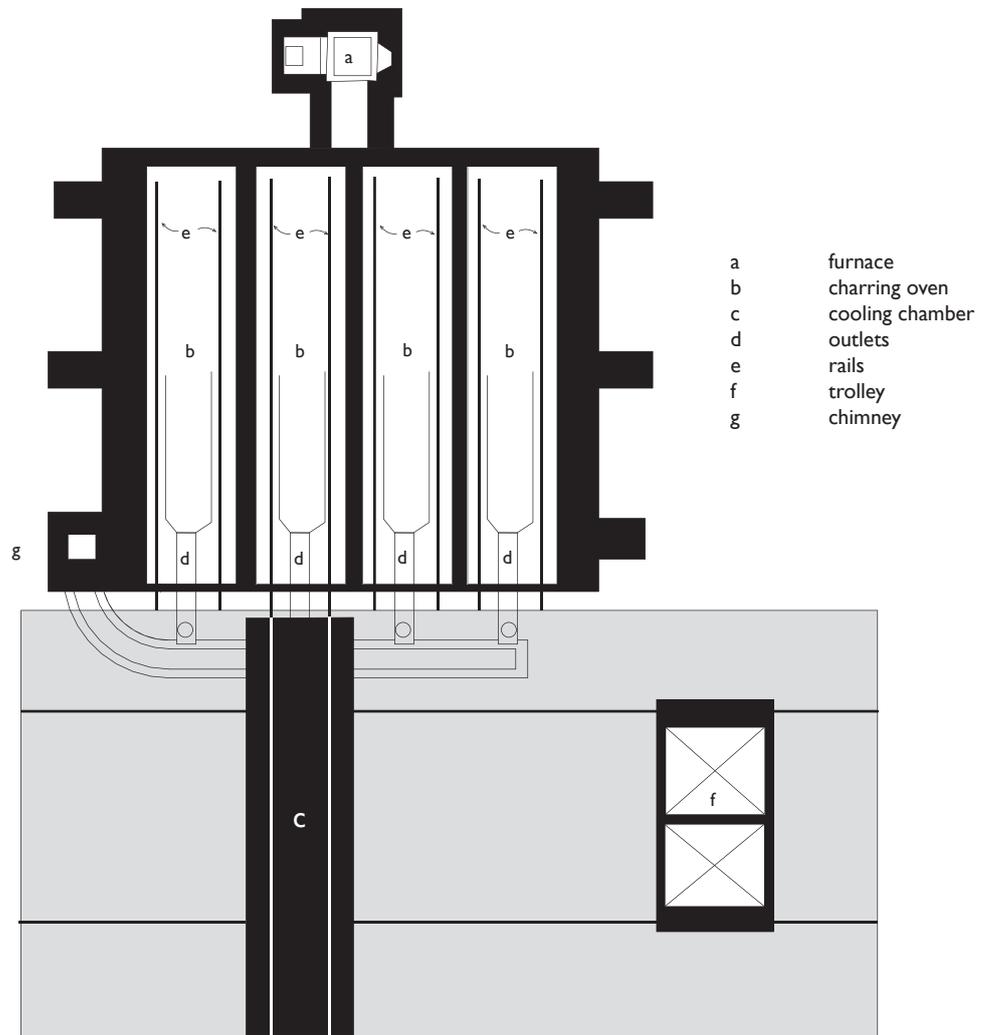


Figure 2.4 Plans of the peat charring ovens installed at Crowle in Doncaster which used Kidd's process to produce peat charcoal. Although having several design differences, the ovens at Rattlebrook worked on the same principle as this installation and would have had similar appearance internally though lacked the tall chimney and was a slightly taller building.



Another account of this early Dartmoor enterprise claimed: 'Two kinds of oil are obtained from this substance [peat], one of which is used as a substitute for camphine'. . . 'A species of manure is also made from the prepared peat. It is dried in the open air, before placing in the retorts; the coke produced is said to be of sufficient solidity for the smelting of iron ore. It is sold at the rate of 18s per ton' (Taylor 1848, 322).

At a later date the gas produced as a bi-product was used to provide light to the prison. This process was described in *Ure's Dictionary of Arts and Manufactures* in 1875 and by this time the production of naphtha was clearly considered unviable:

On Dartmoor the peat is cut by the convicts, working in gangs; and, being dried, it is carefully stored in one of the old prisons. From this peat, by a most simple process, gas is made, with which the prisons at Princetown are lighted. The illuminating power of this gas is very high. The charcoal left after separation of the gas is used in the same establishment for fuel and sanitary purposes, and the ashes eventually go to improve the cultivated lands of that bleak region. Attempts were made here many years since to distil the peat for naphtha, paraffin, etc., but the experiments not proving successful, the establishment was abandoned (Hunt 1875)

The manufacture of peat charcoal by this method was not as straightforward as might be surmised from these articles however, and there followed a rush of engineers attempting to produce more effective machines and apparatus to do the job. By 1875 about 100 patents had been taken out on machines to turn peat into concentrated fuel (Worth R N 1875, 230), and a variety of methods were attempted on Dartmoor.

There are two essential methods of producing true charcoal from peat, both of which rely on the principle of Pyrolysis, to concentrate the carbon within organic matter such as wood or peat, through thermochemical separation in an oxygen free environment.

The first of these was the meiler as used probably by the medieval *carbonarri*. Bricks of partly dried peat were stacked in concentric rings around a central stake, diminishing in diameter as the stack gained height and forming a mound or 'meiler' of hemispherical appearance. The bricks would be stacked in such a way as to provide air channels radiating from the centre allowing ample internal ventilation, then covered by moss and soil. Controlling the burn depended on the qualities of the peat and the results could be somewhat random. It was reported that extinguishing the burn was quite difficult and if over-burned the product was useless (Ronalds & Richardson 1855, 98).

A number of raised, flat-topped mounds on Wild Tor Ridge, amidst an area of extensive peat cutting, were identified by Woolner in the 1960s as the remnants of meilers (Woolner 1965). Woolner suggested that these features represent evidence of medieval charcoal burning activity which may be related to tin smelting, as described in various documents of 13th to 15th centuries. The mounds, of which more than a dozen have been identified on LiDAR plots, are in a cluster on the southern part of the ridge. They are all approximately circular and comprise raised platforms with flat or slightly sunken upper surfaces of 3-6m diameter and up to 0.8m high. Woolner claimed they were constructed from moorstone but this may not be so, as on several of the platforms, the surface has been eroded away revealing a sectional view and demonstrating that the fabric is of peat with many fragments of charcoal trapped within them. As a result of the current project, further examples have been identified and confirmed at two additional sites: at Greena Ball and Blackabrook. The dating of these features is so far unproven, although Woolner's correlation with the high level of tin smelting in the medieval period, in both Devon and Cornwall, may not be too far off the mark. This technique may not have been considered viable by the time Dartmoor peat was receiving serious attention as a commercial proposition in the 19th century and there is no documentary evidence to support its use at that time. However, meilers for carbonizing peat were still in use in other parts of the world in the 1850s, though usually associated with specialist iron works (Sullivan 1854, 195-207).

In the 1790s, Judge Buller, the occupant of Prince Hall, was recorded in several accounts to have been experimenting with a peat charcoal kiln, apparently to produce manure as a means of improving the land (Gray 2000, 80; Worth 1941, 207). The site or nature of his kiln have not been investigated but it is likely to have been around Muddilake where evidence of peat cutting exists.

Charcoal could also be produced in retorts, as described above in use at the British Patent Naphtha Works at Princetown. The Walkham Head Peat Works were certainly also experimenting with this technique in the 1870s when in 1878, at the closure of the property, six retorts of 12ft by 15inches and five retorts of 5ft by 14 inches were included in the sale (DuCoPr/sch/21-Jan-1878). These were very much smaller than those reported used at the British Patent Naphtha Company's works 30 years earlier. It was stated in 1855, how similar the retorts used for this purpose were to those used in the production of lighting gas (Ronalds & Richardson 1855, 97).

To produce compressed peat fuel, or briquettes, the first operation was similar to that of the retort method in that the cut peat was compressed in a machine to squeeze out as much moisture as possible. It was then necessary to dry the peat and this could be done by air-drying in large covered sheds, which were sometimes artificially warmed, or it was performed in a kiln or both. The biggest problem faced was that peat is so moisture retentive that compression

often proved insufficient to remove enough wetness and the process would have to rely on artificial heating in a kiln to dry the stuff sufficiently, thus adding cost. The challenge for the engineers was to remove as much water as possible before the compression and drying process commenced and a number of systems were devised. One way of doing this was developed in Ireland whereby the upper surface of the peat ground was loosened by a machine, then allowed to dry in the wind and sun, after which the peat dust was gathered up to be compressed (Hodgson 1865, 147-65). This system would not have worked on Dartmoor due to the high altitude and damp climate.

An alternative method was to cut the peat in bricks in the normal way then after an initial squeezing, to place it into a shredding machine.

At Rattlebrook Head in the 1870s, the first company to operate the site commercially, The Dartmoor Peat Company, used the system devised by Henry Clayton and Sons, which was of the latter type and was described in detail in a contemporary industrial journal of 1874:

the peat is filled (as dug) into squeezing-trucks, and during its conveyance from the bog to the machine much of the "free water" is pressed from the raw peat by a simple and easy means. From the trucks the peat is discharged into the machine, which, in its action continuously cuts up minutely the fibrous portions of the peat and produces a perfect admixture of the cut up fibre and rooty matter with the pulpous portion, thereby utilising the whole mass of the bog and entirely destroying its original character and natural spongy nature. In its travel through the machine the material further undergoes a moderate amount of pressure and acquires a density and form permitting it to be discharged and deposited upon portable trays in blocks or briquettes of convenient size, and thence conveyed to the drying sheds, where after three weeks' drying (during average weekly weather), the prepared peat becomes hard, compact marketable fuel (Chemical News 27-Feb-1874)

There is no way of knowing whether all these stages of the process were adopted at Rattlebrook, but the existence of a tramway, six wagons, a Clayton portable steam engine, a peat machine and 8000 peat trays, at the time of the sale in 1874 certainly provided the components for most of them (DuCoPr/sch/02-Nov-1874). On a map of the works dated 1884, a large rectangular building is labelled the 'Store and Drying Shed', which were another element of this system (DuCoPr/map/Nov-1884). These drying sheds were made from timber, well ventilated with louvers all round and openings in the roof and glass so that sunlight could assist with the process (Richardson 1873, 30). It would be interesting to know whether the term 'average weekly weather' could have applied to a cold, damp climate such as the high moors of Dartmoor and if air-drying in this way was ever effective.

When the West of England Compressed Peat Company took on the Rattlebrook peat works, they claimed that they would use a method patented by Howard their company engineer. As has been discussed above, the business plan of this company was somewhat dubious, as were the claims made about Howard's patent of which, all we are told is: 'The peat is cut from the head and thrown into an ingenious apparatus and almost immediately passes out pressed and prepared' (DRO 4242 B/A1).

In 1875, Arthur Barff made enquiries of Barrington about the prospects for peat charcoal from Dartmoor and claimed he held the patent for Kidd's process, which produced charcoal in a tunnel type oven or kiln (see below) and that a peat works using this technology was being installed at Crowle, near Doncaster in Lincolnshire at that time (DuCoPr/let/30-Jan-1875). Two years later a brochure depicting the Crowle building, was sent to Barrington for his information and it was stated in the accompanying letter, that this was of a similar type as that proposed for Rattlebrook (Fig 2. 4) (DuCoPr/let/12-Feb-1877). However, the intention to use a kiln or oven for charring the peat was not stated on the WECPC company prospectus of September 1878 (DRO 4242 B/A1) and under Clayton's process, used by the Dartmoor Peat Company (DPC), the use of artificial heat was explicitly excluded on the grounds of cost (Richardson 1873, 33). Indeed, Barff had approached Engledue of the DPC but without result (DuCoPr/let/3-Feb-1875).

Whatever the precise date, an oven of this description was installed at Rattlebrook Head in 1878-80 (Kerr 1905, 283). Although the building suffered badly at the hands of 20th-century demolishers, enough remains to interpret its purpose, and its design has many similarities with that depicted at Crowle (Fig 2. 4). Kidd's process was described thus in 1874:

Kidd's process for carbonizing peat consists of a large chamber or drying-room connected with a boiler which supplies super-heated steam; from the boiler a steam-pipe passes through the furnace, and from thence into the flue; the steam, in its passage over the boiler fire, becomes super-heated and together with the smoke, passes into the drying chamber; the peat, cut into pieces the size of bricks, is put into a framework which runs upon wheels, so that it easily runs into the drying chamber, and is run out again when finished, thus saving a great deal of labour. The object of Kidd's process is the collection of the heated gases referred to in the heated chamber, where they may be usefully employed in charring peat, or converting it into charcoal; an artificial draught is created by jets of superheated steam, and the whole products of combustion from the furnace are forced into and retained by the closed chamber (Chemical News 27-Feb-1874).

The oven had four internal lengthwise divisions, each with a low brick-vaulted roof and rails running along their length. The tracks extended to the exterior of the building where flatbed trolleys were loaded and unloaded. These tracks were depicted on a plan of Rattlebrook Head dated 1884, where they were shown extending outwards from both ends of the oven, though at Crowle they were on one end only. Additional tramways running either side of the building may have serviced the chambers, supplying raw peat and carrying away the product.

The Crowle example was capable of containing three trolleys per chamber, total twelve, and the Rattlebrook structure may have had similar capacity. Heat was provided by steam superheaters attached to the exteriors of the two remaining walls, where openings survive today and it is probable that a tall chimney was attached. The original height of the Rattlebrook building is not known though a photograph taken before demolition in 1961 (Greeves 2000) shows the walls standing well above the level of the ovens and it was reported that sometimes these structures had an upper floor for drying peat.

Also depicted on the 1884 plan is a separate building described as a kiln which has a structure attached containing a boiler and another described as the Pressing and Storing shed. These were so totally demolished that the layout and functional details of the building cannot be determined on the ground and no description of the interiors survives. Despite the evidence from a remarkable photograph of the structures when intact in the 1920s (fig 4.16), the 1884 plan (Fig 4.17) is the only indication as to the purpose of these buildings. It would appear also that the layout was complete by this date.

2.6 DISCUSSION

The 19th-century industrial context of peat fuel companies and their formation has not been considered in previous accounts of Dartmoor's peat industry. As a result the explanations for the causes of failure have tended towards over-simplification, especially at Rattlebrook Head. Harris (1968) for example laid much of the blame on the excessive cost of the railway for the failure of WECPL and Booker pointed to the poor combustion rate of the peat by comparison with rival products, for the collapse of charcoal production (Gill 1970, 130). To these may be added the fact that the wet climate inhibited the air drying needed for most of the processes tried. These are valid practical reasons for failure but must be seen within a more general context of 19th-century capitalist endeavour. Businesses like WECPL were not simple attempts by solid local businessmen with sound ideas as to how they could make money by supplying the world with peat products. Indeed, they are better regarded as a response by opportunists to convergences in circumstance, locally and nationally. The companies attempting to produce processed fuels, chemicals and gases on Dartmoor and elsewhere in the 1840s, were responding to breakthroughs in the world of chemistry and to the availability of investment capital through limited liability joint stock companies. With the development of new techniques and new products, groups of individuals were inspired to form companies with seemingly attractive prospects in which others could be persuaded to invest. Novel and lucrative sounding schemes, based on exciting technological advances could be read about in the technical journals and commercial media of the period, and companies would embrace these ideas often without considering the risks, and in some cases not caring.

W T Jennings clearly considered his enterprise at Walkham Head in the 1870s as an investment opportunity, attempting to be among the first to ride on the tide of new methods of producing peat fuels, for which there was a rising demand brought about in part through coal shortages. Unfortunately, he failed to do his research regarding the remote location of the peat sett, which made transport prohibitively expensive at a site which was already challenging for a number of other reasons, and he failed to sustain the capital needed to overcome the problems. It would seem that a similar fate befell Capt Engledue's attempts at Rattlebrook Head during the same period, which closed after less than a year, starved of capital. No such problem was felt by the West of England Compressed Peat Co Ltd, in their early days of formation, who had capital aplenty. Unfortunately, due to the dubious practices of the company's founders and an unrealistic business plan, which did not come to the attention of investors until it was too late, this company was also destined for failure, accelerated possibly by the unprecedented cost of the railway, as suggested by Harris. However, it was probably the connection of the railway between Rattlebrook and the main railway network which sustained an interest in the place by future investors who may have felt their business proposals were more realistic because the transport problems at this site had already been solved.

Another constraint in the free flow of profits from peat fuel companies was the fact that most of the technologies being invested in were experimental and untested, either technically or in terms of economic viability. The optimism that surrounded these schemes very quickly faded upon the realisation of production, labour and transport costs. Insufficient information is available to analyse the causes of failure for the British Patent Naphtha Company but its short-lived operation could be partly due to its pioneering 1840s technology which failed to meet the economic expectations of its founders. Hunt (1875) certainly considered the naphtha 'experiments' to have been a failure. The use of kilns and ovens at Rattlebrook requiring fuel to heat them as a means of drying further supplies of fuel for the

Fig 3.1 Map showing landscape features associated with peat cutting on north-west Dartmoor, including Rattlebrook Head, Walkham Head, Blackabrook Head. Plotted from LIDAR data flown in 2009. The map includes turf ties and drains which are visible on the plot and trackways used to provide access to the peat grounds.

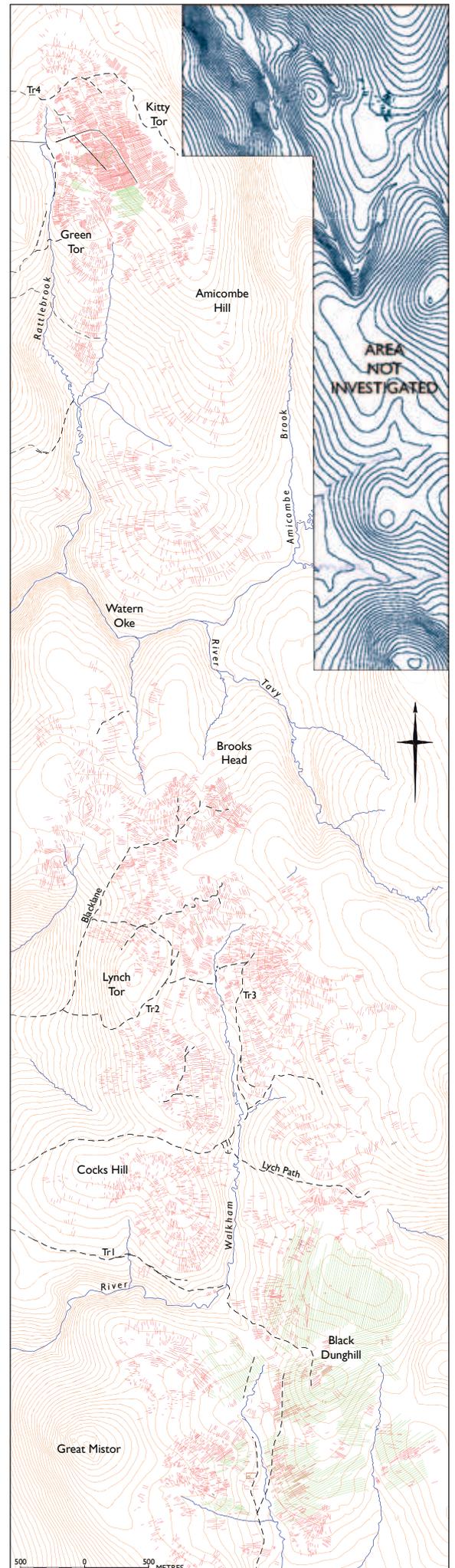




Fig 3.2 Aerial view of Black Dunghill and Holming Beam looking south towards Princetown, showing parallel drainage ditches and evidence of turf ties. (NMR 249651025; © English Heritage. NMR).

briquetting process was also self defeating, pushing the cost of the product beyond economic viability. This scenario has been recognized in similar enterprises of the period in Ireland where many ambitious schemes were tried but most proved non-enduring (Feehan & O'Donovan 1996, 73-114).

Although all the commercial exploits of the 19th century were financial failures, at Rattlebrook Head in particular efforts continued into the 1950s. It is likely however that attempts to subject the peat to chemical processes in order to enhance its burning properties and value were abandoned with the termination of Moeller's experiments in 1929, much of the plant having been removed. The continuation of operations at Rattlebrook Head, long after the demise of other commercial setts on Dartmoor, may have been due solely to the existence of the peat railway. Although after the rails were removed it was reduced to a graded track, the railway provided the only efficient vehicular route off the moor to the border country from a productive peat ground anywhere on Dartmoor. Not surprisingly therefore, as long as there was a need for peat then this track/tramway would be the key to movement of the product. The Walkham Head works had no such tramway hence its short-lived commercial episode. The Blackbrook tramway was abandoned in the 1840s; its course ran through prison lands, which after 1850 prevented it from ever returning to use.

3.0 ARCHAEOLOGICAL INVESTIGATION

Investigation and survey has been undertaken to gain an overall assessment of the physical character and extent of peat working, domestic and industrial, within three defined study areas, Blackbrook Head, Walkham Head, Rattlebrook Head. The main component of this investigation has been a rapid assessment of a LiDAR dataset covering the northern and southern upland of central Dartmoor, where the majority of peat cutting took place. Some ground truthing has been undertaken and limited level-1 surveys of buildings.

3.1 METHODOLOGY – EVALUATION OF LIDAR DATA

A desk-based survey of the three peat cutting areas was undertaken based on LiDAR data collected in 2009. Figs 3.1, 4.1, 4.7, 4.12 are derived from images generated from the LiDAR. Detail has been graphically digitized using Global Mapper to produce a vector graphic. This method has been used to provide a rapid assessment of the LiDAR, gauge its usefulness as a survey tool and provide an overview for the landscape impact of turf cutting in the project zones. The main constraint with this technique is the limited level of detail and for this reason the plot scale is limited to 1:2500. The product is not claimed to be definitive but a basis for further investigation. Ground truthing has been

carried out at selected target zones using a portable tablet computer containing the LiDAR data and interpreting the images in the field. Although a more detailed line drawing resulted from this work at Rattlebrook Head, this form of evidence does not lend itself to conventional line-drawn graphics at larger scale.

The result of this rapid survey (Figs 3. 1) includes all linear features associated with turf ties that are visible on the plots. The illustrations show only cut features such as edges of ties, ditches, mounds and trackways. It has not been possible to ascertain the depth of cut areas using this technique; areas lowered by peat cutting, where containing few changes in level, show few details. However, an attempt has been made to plot the limits of all areas affected by cutting. This too is not straightforward, because the edges of some areas have degraded and melded into zones affected by natural peat erosion. Determining the difference at such a small scale is a somewhat subjective process.

Putting caveats aside, the product provides a far more detailed and more accurate visualisation of peat cutting within the defined areas than has been available before. Although there are problems in producing a 2D interpretive graphic from the LiDAR images, the images themselves should serve as a useful a basis for future investigation. Additional information could certainly be gained through 3D modelling in a GIS environment to gauge the depth of heavily worked areas such as Walkham Head. The LiDAR data has also been instrumental in the identification of new meiler sites near Blackbrook Head and the recognition of a dismantled structure adjacent to the Blackbrook tramway.

3. 2 ARCHAEOLOGICAL EVIDENCE: CATEGORIES

3. 2. 1 TurfTies

Turf ties are the main field evidence resulting from the act of cutting turf. The cutting process created negative earthworks and their visible attributes represent the edges of the hollows from where turf has been cut and taken away.

Domestic turf ties frequently survive as single earthworks, usually in association with many others, closely spaced, where each represents the turf cutting efforts of either an individual or a household. The evidence for this activity comprises an elongated, rectangular, flat-bottomed depression or trench. The depth varies, depending on the original depth of the cut, but all turf ties have become partly back-filled with a build-up of vegetation or bog. Some ties survive to less than 0. 5m deep, others are considerably more where up to three individual strata of peat have been cut. The ties originally had vertical sides and in many cases these survive (see Fig 4.9), though for others the definition is becoming lost as erosion and the re-growth of vegetation is slowly disguising them.

Turf ties were formed by cutting peat in a series of long, adjoining, narrow strips. In Dartmoor literature (Le Messurier 1974, 56; Harris 1968, 103) and within Duchy documents, the standard measurement for these strips was the 'journey'. In all sources this measured 120ft (36. 5m) long but, depending on whose version we choose, the width of a journey was 16in (0. 4m) (DuCoPr/let/23-Dec-1857) or 14in (0. 35m) (Le Messurier 1966, 52) wide (being the width of two turves) and between 15 and 20 inches deep. Rarely would only one journey be cut at a location in a season. It is known for example that in the 1860s inhabitants of the border parishes would apply for permission to cut between five and ten journeys in the summer months, representing the annual requirement of a single household. Those cutting turf for sale would have cut many more. The turf ties would therefore be multiples of this width and in following seasons they would expand in width and depth. However, measurement of randomly selected field remains has demonstrated that these dimensions were not universal, and the ties vary greatly in length and width.



Fig 3.3 A turf road known as the Black Lane leading from Baggator to Brooks Head. View shows the gentle gradient heading east before turning north to cross the contours of Lynch Tor.

Size variants are known: William Crossing recorded that at the commercial peat sett at Rattlebrook Head, the ties were 60yrds long, i. e. 180ft (54.8m), although he did not state if this system was associated with one or more of the companies that worked the site. It seems likely that the standard 120ft journey may have applied only to those with rights to cut domestic turf or paid to remove turf from the moor and its use was not necessary at the commercial setts.

Multiple individual ties, forming zones, are found anywhere peat was exploited. They are usually closely spaced, often with baulks of less than 0.5m separating them. Collectively these ties have altered the character of the terrain where the baulks and other uncut spaces define their edges.

Where peat deposits are deeper, so too is the evidence of peat cutting. In such areas the accumulated depth and close proximity of the cuts has frequently left an escarpment defining the interface between undisturbed ground and exploited ground. Such escarpments may be 1 - 3m in height (see Figs 4.5). The depth of the peat dictated both the intensity of exploitation and the appearance of the field evidence. Deep deposits are reflected in the density of the cutting. At Walkham Head, where the peat is particularly deep, the landscape has been radically altered with little of the top surface peat remaining exposed. Whereas at Blackabrook, where the peat is seldom deeper than 1m, the landscape is characterised by individual ties, and much of the top surface survives.

3.2.2 Land drains

Large areas of commercial peat setts have been scored by systems of parallel linear ditches running up and down, or obliquely across, the sloping ground. They are visible to the naked eye of the ground observer but show up particularly well on LiDAR and aerial photographs. (Fig 3.2). The ditches were cut to drain the peat beds of as much water as possible prior to harvesting. Land drains have so far been recorded only at commercial peat setts where they were particularly necessary if compressed fuel products and charcoal were to be manufactured, as this process was severely hampered by the excessive retention of water within the peat. Also, it was probably desirable to speed up the processes of de-watering for these setts to be economically viable. Domestic cutting had always relied on draining individual ties and on air drying, the latter being dependent on the weather. Examples of extensive drain systems survive at Quickbeam Hill on the south moor, associated with the Brent Moor peat works, Blackabrook Head and Rattlebrook. At Walkham Head, there appears to be few drains, either because they were less common here or because they became effaced by the progress of the cutting operation. However, in one area of uncut ground to the NE of the stream head, silted ditches are visible as narrow swards of lush grass (see Fig 4.6). These do not register on the LiDAR plots but are visible on satellite photographs and on the ground. (See descriptions of peat setts at Blackabrook, Rattlebrook Head and Walkham Head for further details).

3.2.3 Tie drains

Narrow linear ditches were sometimes cut to drain individual ties. Narrow ditches of approx 30-40cm wide, define the side and head baulks of the ties. Examples have been recorded at Walkham Head but others certainly exist.

3.2.4 Turf roads and tracks

Transporting a bulky product like dried turf across the moor presented an arduous task for the peat cutter. This was a particular problem in the immediate vicinity of the peat bogs where the ground was too soft for larger wheeled vehicles. The answer was to cut narrow tracks or 'turf roads' through the peat. Small carts could then be driven from the border settlements, right up to the peat grounds. A network of these turf roads exists connecting some of the more remote parts of the moor where peat was cut such as Brooks Head, Walkham Head and Amicombe Hill.

The roads are simple narrow cuttings, some as narrow as 1m at base, which originally would have been cut down to the old land surface, though they are often now becoming backfilled by encroaching bog and vegetation. Some are still useful to the foot traveller such as the Black Lane which extends from Baggator to Brooks Head, with branches to Walkham Head.

Most of these tracks probably date from the 19th century, though this statement should not preclude the existence of much earlier turf roads in other districts of the moor. The tracks which negotiate the slopes of Lynch Tor for example served the Walkham Head peat works and the Wheal Betsy Turf House, which were both in use in the 19th century, though the origin of the tracks could have been earlier. William Crossing claimed to have interviewed 'old men' who had used this track to transport turf though 'very little has been cut in recent years'. Crossing considered the Black Lane (Fig 3.3) to be more recent than the Wheal Betsy track, which would give it origins in the mid-19th century, assuming Crossing's information was correct (Crossing 1909, 55-6).

A track that ascends the ridge between Brat Tor and Arms Tor and continues east across Dick's Pits was cut in 1864 by William Doble (DuCoPr/let/01-Jun-1864), and would later have served the Rattlebrook Head Peat Works before the railway was installed, although it was probably created to serve Rattlebrook tin mine.

3. 2. 5 Tramways, railways

For industrial-scale peat cutting, movement of the large quantities of material around the works, and transportation from the works to meet with distribution networks needed to be more efficient than the turf roads were capable of providing for, and tramways were the usual solution. Small narrow-gauge temporary tramways were set up at both Rattlebrook Head and at Walkham Head peat works, used for moving turf from the ties to the processing works, which in both cases were sited near the turf ties. At Blackabrook and Brent Moor, the turf ties were some distance from the works. Here, tramways or railways designed with more permanence in mind were constructed to move the material off the moor.

The main field evidence of a tramway is the levelled earthwork trackbed on which the rails were lain, and remains of any engineering solutions needed to negotiate the terrain as it crossed the moor, including shallow cuttings and embankments. The rails of some of the narrow-gauge tramways at Rattlebrook Head were bedded on lengths of timber and some of these also survive in places.

At Rattlebrook Head, once processed, the product still needed to be conveyed off the moor to connect with further transport networks, and a standard-gauge railway was laid from Bridestowe to Rattlebrook Head in 1879. This was a more permanent solution constructed using conventional railway engineering methods including a bridge, a level crossing, a trackbed surfaced with ballast and an impressive embankment conveyed the tramway across the low-lying valley floor of the Rattlebrook. Although the rails were removed in 1931, the trackbed survives as perhaps the most enduring monument to the Dartmoor peat industry.

3. 2. 6 Rick steads

Raised platforms upon which ricks of previously dried peat were stacked for storage. Although it was normal practice to retrieve and transport the turf from the moor as soon as possible once dry, on occasion it was necessary to build ricks in the locality of the ties if transporting was to be done at a later date. One reason for this may have been that carts were not available during haymaking season, as haymaking took priority (Herring *et al* 2008, 123).

Out-ricking is known to have occurred on Dartmoor and it was recorded by John Swete in the 1790s (Gray 2000), although Swete is the only writer to have offered such information. Mr Cyril Abel of Peter Tavy recalled temporary stacking of the turf in July, before it was retrieved from the moor in August (C Abel, oral inf Aug 2010). However, what was described was unlikely to have left enduring remains.

Convincing field evidence is scarce and possible candidates do not conform with the types found in other regions such as Bodmin Moor, where 1,172 steads have been identified. On Bodmin, turf was stacked directly on the ground or on a stone base, then a ditch was cut around it to drain away the water. The Cornish rick steads were usually sub-rectangular or square (Herring *et al* 2008, 124).

On Dartmoor such numerous and clearly-defined field evidence has not been identified, although a handful of raised mounds of different character may be candidate sites. Circular mounds, if made from turf, are often designated as turf stacks or steads in the NMR and HER, if the recorder was not convinced as to their authenticity as prehistoric barrows. The use of circular steads has not been widely recorded elsewhere, most regions favouring the rectangular form. However, what appears to be high conical stacks were photographed in Somerset, so there is some precedent for this practice within the west of England (Rotherham 2009, 35).

Circular turf mounds have been recorded at Rattlebrook, Greena Ball, Blackabrook and Walkham Head though none have visible ditches. There is also a growing body of evidence that many of these examples are the earthwork remains of meilers for manufacturing peat charcoal (see below). Field evidence for rick steads is more likely to have survived in the vicinity of the homestead and settlements where the turf was burned.

3. 2. 7 Meilers

Peat charcoal was prepared by carefully stacking the turf blocks onto a circular platform then covering with moss and soil before undertaking a controlled burn. The field remains associated with the use of meilers comprises flat-topped, circular turf mounds; examples identified so far have been found in clusters on ridge tops. Where the fabric of the mound has been exposed by erosion, fragments of charcoal are visible deposited within the turf. The best known and clearest examples of meilers is a large cluster on Wild Tor Ridge, first recorded by Woolner (1966). Others have now been confirmed as a result of this survey on Greena Ball (SX 5687 7785), where three out of six of the mounds previously recorded as 'tumuli' have provided charcoal samples, and Blackabrook where several mounds in a cluster (centred SX 5801 7835) have also produced samples. Others certainly await re-discovery.

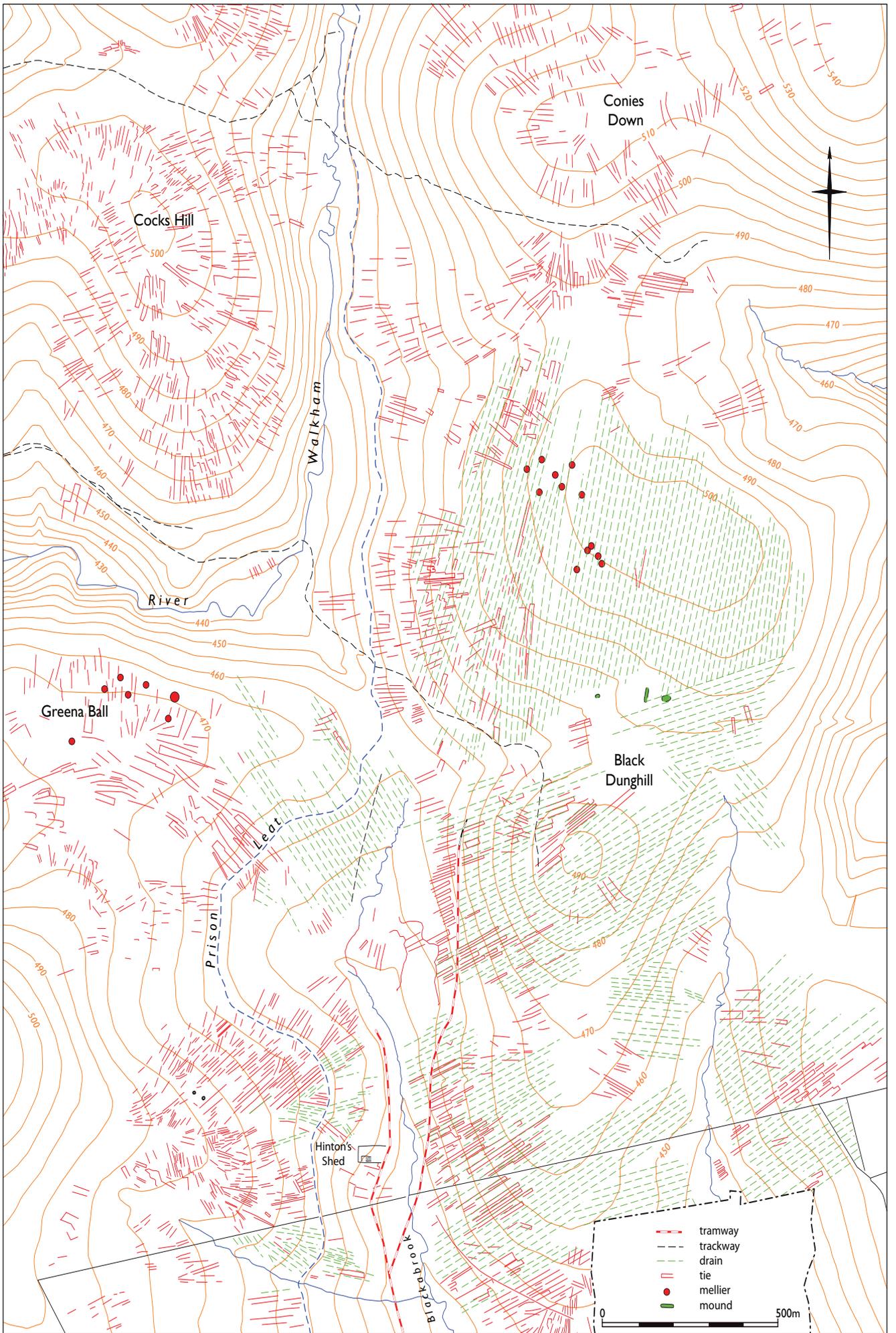


Fig 4.1 Peat cutting, turf ties and drains within the Blackabrook Valley, Black Dunghill and Greena Ball. Plan based on a transcription of 2009 LIDAR coverage.

3. 2. 8 Peat stores

Peat stores consist of roofed, ventilated structures in which previously dried cut turf could be stored until needed. In northern Britain, many such structures were associated with the lead smelting industry, and extremely large examples survive at Old Gang and Surrender lead mills in Swaledale, in the Yorkshire Dales and elsewhere in the Lake District. These comprise double rows of evenly-spaced stone pillars which supported a roof, within which the dried turf could be packed and stored until needed. The example at Old Gang is 120m long with 36 pairs of pillars. Two very much smaller examples were constructed on Dartmoor; one at Walkham Head, usually referred to as the Turf House, and a newly recognised example at Blackabrook was constructed from timber (see below).

3. 2. 9 Shelters

Certain isolated stone structures located on the high moors of Dartmoor are often assumed to be turf cutters' shelters (Le Messurier 1979, 63). Nineteenth century writers such as Crossing and Rowe mention Mute's Inn as a peat or turf cutter's hut, and Statt's House, by its location amid turf ties, is usually assumed to have been constructed by turf cutters. Hemery also mentions 'Will May's House' in the Valley of the North Teign which 'tradition provides both the name of its builder and his profession' i.e. 'peat cutter' (Hemery 1983a, 819). William May of Murchington is recorded in the Duchy records as having paid £2 dues for peat cut in 1868 (DuCoPr/let/3-Dec-1868) so this appears to be accurate. For a description and gazetteer of this class of monument see Le Messurier (1979).

4. 0 THE SITES

4. 1 BLACKABROOK HEAD

Blackabrook is one of the River Dart's larger upland tributaries. Its source is to the north of Black Dunghill from where it flows in an approximately SSE direction passing the eastern outskirts of Princetown, before converging with the West Dart River near Prince Hall. Within the catchment and surrounding slopes of this tributary are extensive peat beds which have been exploited for both domestic and industrial purposes. The areas affected are spread along the eastern slopes of Mistor and Greena Ball, Black Dunghill on the north, and along Holming Beam on the eastern ridge (Fig 4. 1).

It is certain that these peat beds once extended much further south, but the area now contained within the former prison enclosures was drained and improved from the 1850s onwards as part of the agricultural expansion of the convict prison. This area now consists mostly of enclosed pasture. The gradual expansion of the prison enclosures was recorded by the prison authorities on an annual basis; it commenced in the year the prison re-opened for convicts in 1850 and continued for much of the 19th century (HoC 1852[1824] – 1867-8[4083]). By the 1880s, when the 1st edition OS 25-inch map was surveyed (OS 25-inch map 1884), only the lands to the west of the Blackabrook were affected by the encroachment of farmland but by 1908 most of the prison enclosures existed, although several that are present today on the Holming Beam side were still not depicted on the OS map of that year (OS 25-inch map 1908).

The result of this programme of improvement was that a great deal of peat was removed as the lands were drained. Before 1818, a Duchy enclosure map shows only the land south of the Moretonhampstead to Tavistock road was in the possession of The Commissioners of His Majesty's Transport Service; the land to the north was in the name of William Bough (DuCoLo/map of customary freeholds and enclosures 1805-18). This land was bounded on the west by the Forest boundary, on the north by the old Holming Beam track (an old track extending west to east from Mistor Farm and later adopted as the course of an enclosure wall), on the east by the Blackabrook and on the south by the Tavistock to Two Bridges road. It is known however that additional lands were leased to the prison after its inception as a convict prison in 1850 (HoC 1852[1824]).

Domestic turf cutting certainly occurred around the upper Blackabrook long before any commercial activity commenced. It was hereabouts in the 1790s that John Swete recorded his encounter with 'Old Cator' who demonstrated turf cutting to him, and according to the writer resided 'just by the head of Blackabrook' (Gray 2000, 63). The landscape described by Swete surrounding Old Cator's farm was 'covered' with turf ricks. Many other individuals are likely to have obtained domestic supplies from the Blackabrook area. Indeed within living memory occupants of Higher Godsworthy were cutting turf in the vicinity of Black Dunghill (Mr Cyril Abel Peter Tavy, *oral inf*, Aug 2010).

The industrial cutting of peat commenced at Blackabrook in 1844 with the activities of the British Patent Naphtha Co, described above. The bounds of the sett have not been established with accuracy, but in-keeping with contemporary peat setts in the Forest for which the bounds are known, such as Brent Moor, it is likely to have covered a commensurately large area. After 1850 the prison cut and consumed a very large quantity of turf for heating and



Fig 4.2 Turf ties and drains on Black Dunghill viewed looking east from Great Mistor.

lighting. Some of this may have been procured from within the areas undergoing improvement, but much of it must have been cut on the open moorland. Unfortunately the records do not specify the location of the ties.

4.1.1 Drains

The most notable feature of this sector of the upland is a series of parallel drainage ditches which extend across Black Dunghill, Holming Beam and the eastern slopes of Greena Ball, covering a combined area of approximately 250ha. To the south, within the prison enclosures, cropmarks on satellite photographs, indicate a southern extension of this scheme of drainage, now disguised by the improved pasture.

The drains are most visible on the open moorland. On the sloping ground surrounding the head of the Blackabrook the ditches are between 12 and 17m apart. They are very straight and their alignments and spacing were accurately set out to run down the slopes. They are uniformly parallel and extend to over 970m long in some cases. The surviving width of the ditches is between 1m and 2m. It is not known how deep the drains were when first cut but they could have penetrated to the depth of the old land surface and they may have had battered sides to prevent collapse. This was the character of drains at industrial peat workings in Ireland, which were described in the 1850s, where it was also common practice for a conduit or groove to be cut along the base of the ditch, covered by turves, then the ditch was backfilled with peat (Hodgson 1865, 149). It is not known precisely if this was what occurred at Blackabrook Head but the ditches have become re-filled with vegetation, almost to the surface in some cases. Some were certainly not backfilled as small mounds of upcast can be seen spaced at intervals to one side of the ditch's exterior.

Clues as to the chronology of these drains are few but their alignments on the slopes of Greena Ball, indicate that they were cut after the prison leat, which has its origins with the early phases of the prison, completed in 1809. The leat certainly existed by 1818 when appearing on a Duchy map (DuCoLon/map of customary freeholds and enclosures 1805-1818). Some of the drains appear to have continuity in alignment on both sides of the leat, while others below the leat do not have a counterpart above. Some appear to be slightly offset after transecting the leat. It would appear that the drains were carefully set out as a scheme. The layout was probably established quite simply using alignments of ranging poles and land measures or chains. By surveying in this way, the leat was not an obstacle so most of the drains align on both sides, but it is these few anomalies that suggest the more likely sequence.

A tramway or cart way on the west slope of Dunghill cuts an oblique course across one area of the drains, slighting them as it does so, and must therefore be later. Another negative, linear earthwork, which could be a further extension of the main tramway, or perhaps a cart way, also cuts obliquely across the ditches which run down from Greena Ball, just north of the Blackabrook.

This system of ditches covers an extremely large area, far in excess of that covered by peat working. Pre-draining of peat beds was not uncommon, especially where the peat was destined for compressed fuel products, but it is questionable whether a commercial company such as the short-lived British Patent Naphtha Company (BPNC) would have expended so much resource in advance of cutting the peat. It would be more likely for effort to have focussed on smaller areas. Any one of these drained flanks would have provided an enduring supply of peat so there was little need to drain all at once. If cut by BPNC this drainage system represents the commencement of an ambitious program of peat cutting and later lessees of the sett were unlikely to have had the resources to have done this work. Although, it is known that in Ireland, drains were cut up to two years in advance of requirements.

An alternative explanation could be that these drains were part of a more general system of improvement associated with the prison enclosures. The record of improvement activities by the prison authorities included the cutting of drainage ditches as part of the reclamation of 'rough wastes' and vestiges of very similar drainage systems survive in patches within and around the prison enclosures. However, these systems extend well beyond the land known to have been leased by the prison from the Duchy and documentation would be needed to confirm this idea. Further information from either Duchy or prison records could shed light on how much land it was agreed that should be improved in this way.

Given that several reports claim that the convicts were used as labourers by peat companies (*Daily News* 14-Jun-1851; *Morning Chronicle* 15-May-1851), it is also possible that this large system of drains was dug in advance of peat cutting by convicts, either working on behalf of the prison authorities or a private company to whom the prison contracted the labour of convicts. However, there is no confirmatory evidence that the latter ever occurred.

4. 1. 2 Turf Ties

Within the upper Blackabrook valley, evidence of turf cutting is visible on most of the hill slopes as well as the more level areas of the higher ground (Fig 4. 1). Discrete concentrations of ties are found on the eastern slopes of Mistor, Greena Ball and Black Dunghill (Fig 4. 2). By comparison with other areas where industrial scale cutting took place, such as Walkham Head and Rattlebrook Head, the level of intensity is much lower here. There may be a number of reasons for this. Firstly the peat is not particularly deep around Blackabrook Head, rarely in excess of 1m (Fyfe 2008a, App 1), a fact that is visible in the depth of the baulks of surviving ties where the old ground surface has been exposed. Also, the industrial activity was short lived, lasting only five years, and, given that it was not a commercial success, it may not have involved high volumes of turf. It is difficult to determine which of the evidence relates to the industrial episode and which to domestic, later or earlier. The journeys of domestic cutters and those who sold turf were supposedly 120feet long. Ties of this size are not common and a random sample measured on the west slope of Dunghill, revealed that some were much less than 120ft and others were much longer.

During the industrial episode, it seems likely that once the two branches of the tramway were established, turf in its near vicinity would be targeted first, which would include those on the near flanks of the Blackabrook and on the lower slopes of Dunghill, but as work progressed the cutting expanded to more distant areas. This is confirmed by the many ties located on the lower and mid flanks of Dunghill (Fig 4. 2), distributed along its west flanks, between the head of the river, and into the outer newtake of the prison. These ties have parallel sides and are on average 0.5m deep. They appear to have close association with the land drains described above as they have been cut coaxially between the drains. Many of the ties have drains incorporated into them running along the length. This provides the strongest evidence that the ditches were cut to pre-drain the peat beds. Other examples of ties having the same alignment as the ditches also survive on the lower slopes of Greena Ball above the prison leat. An area with particularly large ties is the SE slope of Greena Ball, has one individual tie of 95m by 21m. To the north of Blackabrook Head many ties have been cut with an orientation that is counter to that of the drains, which appear to cut across them. Most of these are probably earlier than the drains.

4. 1. 3 Rick Steads

There are three possible rick steads near the head of the Blackabrook although none have the appearance of the more certain examples found elsewhere such as Bodmin Moor (Herring *et al* 2008). There are also various amorphous mounds amidst the peat beds though these are unlikely to have been steads and may, in most cases, be explained as upcast from the ditch system.

SX 5828 7783 This is an elongated bank constructed from turf with parallel, sloping sides and rounded ends. It stands to 0.9m high and has a flat top. The overall length is 35.5m and it is 5.5m wide at the base. There is no visible trace of a surrounding ditch.

SX 5833 7782 A sub-rectangular mound of 1m high. The basal measurement is 21m x 15.5m and the mound, which has sloping sides is approximately 1m high. Vestiges of a possible associated ditch survive around the southern base of the feature.

SX 5814 7783 A denuded mound which may once have had a similar appearance and dimensions to mound 1 but much of its substance has become eroded and only a portion remains on the eastern end.

4. 1. 4 Charcoal Meilers

On the shelf of Greena Ball, as it faces north, there is a cluster of at least seven flat-topped mounds, centred SX 5683 7779 (Fig 4. 3). Three of these features have been previously recorded by the OS as 'tumuli' (prehistoric burial mounds), though in more recent re-appraisals they have been explained as steads (see NMR 439590) or abandoned turf ricks (Gerrard 1997, 93). Of the seven, three are better preserved. These mounds are irregular circles at base; the sides are sloping, the tops are flat and they are more accurately described as platforms rather than mounds. The



Fig 4.3 Charcoal meilers on Greena Ball looking east towards Lydford Tor.

largest has a diameter of 15m and stands to approximately 1m high at the lower end of the slope. The other examples are all smaller and lower.

Several of the platforms have erosion damage on the north side, including the larger three. A superficial examination of the erosion hollows has revealed the presence of fragments of peat charcoal lodged into the fabric of the platform. This confirms that these features are the remains of meilers where peat was converted into charcoal. The platforms and their location share similarities with the only other site of this activity previously recorded on Dartmoor at Wild Tor Ridge (Woolner 1966).

A second spread cluster of at least 12 meilers of very similar character to those on Greena Ball is located on the flat ridge-top between Black Dunghill and Conies Down (SX 5803 7835). Charcoal has also been retrieved from several of these features.

4.1.5 Access

Turf Roads (Fig 3.1)

Domestic cutters who sourced their turf from Black Dunghill and the area to the north of Blackbrook Head, some of whom resided in the western parishes of the moor, gained access to the peat grounds via a track (Tr1) described in part by William Crossing as the route from Peter Tavy to Princetown (1909, 127). It is likely that the major purpose of this route was the movement of peat in which it may have had its origins. This is a branch of the east-west Lych Path from which it bifurcates near the head of Langston Brook, then runs ESE crossing Dead Lake to meet and cross the River Walkham at Shallow Ford (SX 5732 7820). From there it heads SE for 750m before crossing the Blackbrook and heading south across Black Dunghill for 300m before fading out within the turf ties. The track, which is in the form of a narrow cutting, is clear over most of its course though is gradually becoming more boggy.

The Tramway

The Blackbrook tramway ran from the NW perimeter wall of Dartmoor Prison to the area of turf ties near the head of the Blackbrook. It survives over its entire course as an earthwork, though sections of it run through the private lands of the former prison enclosures. The track commences at the Prison Farm on the north-west side, then follows a serpentine course through the pasture fields to the north of the prison, where in places the track has been embanked and to form an upstanding earthwork. Upon reaching the modern road the track has been breached. At this point the course of the granite wall defining the south side of the road is kinked inwards on both sides of the tramway and gated. On the north side of the road the track bed recommences from another gated opening with granite posts from where it continues as a ribbon-like terrace cut into the slope, extending north through the remaining prison enclosures. The track emerges onto the open moorland at SX 5751 7659 between the Blackbrook and the Prison leat and terminates at SX 5731 7700. At the terminus, a granite structure probably represents the front revetment of a loading platform, or possibly the site of the press recorded in 1848 (Taylor 1848). It is possible that this tramway once continued beyond this point to connect with a further section of linear earthwork running in a near straight line along the western flank of Blackbrook Head. However, any trace of the trackbed between the loading platform and the surviving stretch to the north has been overwhelmed by bog.

An eastern branch of the tramway heads NE from a junction at SX 5755 7642 across a marshy area before crossing

the Blackabrook and heading obliquely across the lower slopes of Black Dunghill. The subtle earthwork survives as a shallow linear cutting which follows an approximately straight course and terminates at SX 5775 7746.

A branch tramway extending across the prison enclosures at right angles to this tramway claimed by Hemery (1983b, 42) to be the 'Omen Beam Tramroad' is an unlikely candidate, and appears to be a track providing through access within the prison fields. There is no trace of this feature on the OS 25-inch map of 1880 and its straight course across moderate slopes defies the usual conventions for the construction of a horse-drawn tramway.

4. 1. 6 Peat store

Subtle earthwork evidence of a structure survives at SX 5748 7671 on the western side of the tramway, adjacent to a small quarry pit. This probably represents the remains of a building described as a 'shed' and installed by Hinton's Condensed Peat Fuel Company Ltd in the 1870s, although the layout resembles that of a peat store as recorded elsewhere and described above. Following liquidation of Hinton's peat company in 1877, the materials were sold to the prison authorities and removed (DuCoPr/let/11-Sep-1877), leaving only earthworks.

A level area of ground was created by cutting a rectangular platform 11m wide and approximately 15m long into the slope and removing the resulting spoil to the eastern end to form a flat-topped heap. The total area is approximately 50m long but evidence of the building is restricted to the western half of the platform. Remains of the structure comprise four parallel alignments of postholes, arranged into two paired rows. The post holes survive as round hollows of up to 1.8m diameter and 0.4m deep, though most are now partly silted and filled with rushes. There are seven pairs in each double row, total 28 postholes. The space between the holes within each pair is 3m and the rows are 5m apart. The overall length of the structure was approximately 20m. Each posthole would have contained a timber post, all 28 of which were removed when the building was sold and dismantled. Some pieces of granite lie on the ground in the SW corner of the feature and may have formed part of the structure but have become displaced. The posts supported a roof of either timber, thatch or possibly corrugated iron, and the structure probably resembled a low, open-sided hay barn. It is possible that the central aisle created between the two double alignments was left clear for access and for a free flow of air. The building was protected from surface run-off by an enclosing ditch forming a three-sided rectangle of approximately 78m by 38m. Water was channelled from the ditches under the tramway via stone-built conduits.

4. 2 WALKHAM HEAD

Evidence of peat cutting survives on the hillsides flanking much of the upper River Walkham north of Greena Ball, but activity was particularly intense near the head of the river where the more moderate slopes and wetter environment of the head basin have resulted in deeper peat deposits. These deposits have been worked to a considerable depth and extent where many hectares of conjoined ties form a vast, artificially lowered landscape (Fig 4. 6). It is not possible to apply a measurement to this expanse because the ties meld with those of Brooks Head to the NW and Baggator Brook Head to the NE. However, Fig 4. 4 demonstrates the intensity of these ties in the area north of Spriddle lake and east of Lynch Tor, focussing on the head of the River.

Much in evidence at these peat beds, perhaps more than any other area, is the depth to which peat could be cut. Preliminary results by Fyfe suggest that the depth of peat surrounding the cut areas at Walkham Head could be 3 to 5 metres (R. Fyfe, in litt 28-Oct-2010). Around the edges of the tie zones, escarpments mark the outer limit of cutting. These survive often with a drop of between 2 and 3m in places, though the edges of the workings are unlikely to represent the deepest parts (Fig 4. 5). Reports of peat being cut to a depth of 12ft (3.69m) are not exaggerations, although this would be the accumulative depth of ties, not individual examples.

Although Walkham Head was leased from the Duchy of Cornwall as a commercial sett in the 1870s and 80s (above), all the companies that occupied the site failed, which resulted in only moderate quantities of peat being cut during that episode. When the assets were sold off in 1878, the company possessed only 180ft (55m) of tram rails, suggesting an undeveloped cutting and conveyance system. This peat sett was located exclusively on the east side of the river where only one short cartway existed and would have been used to carry the turf back to the retort houses. The peat for this enterprise must have been cut in a limited area to the east of the buildings. However, unlike the Rattlebrook Head works (below), zones of uniform field remains, reflecting systematic and chronologically separate cutting regimes are not in evidence within the Walkham Head sett. Although some areas of cutting go deeper and encroach into earlier shallow-cut areas, particularly around the southern head tributary (centred SX 5781 8080), no statement can be made about their date.

It is likely that the use of turf by the Wheal Betsy lead smelters, recorded by Crossing as occurring in the first half of the 19th century, accounted for a larger amount of turf being cut. Unfortunately, the precise location and quantity eludes us but given the location of the Turf House (see below), just over 300m west of the river, it is probable that the turf was cut from the extensive peat beds in the close vicinity. A particularly intense zone of ties lies 200m to the NE of the Turf House.

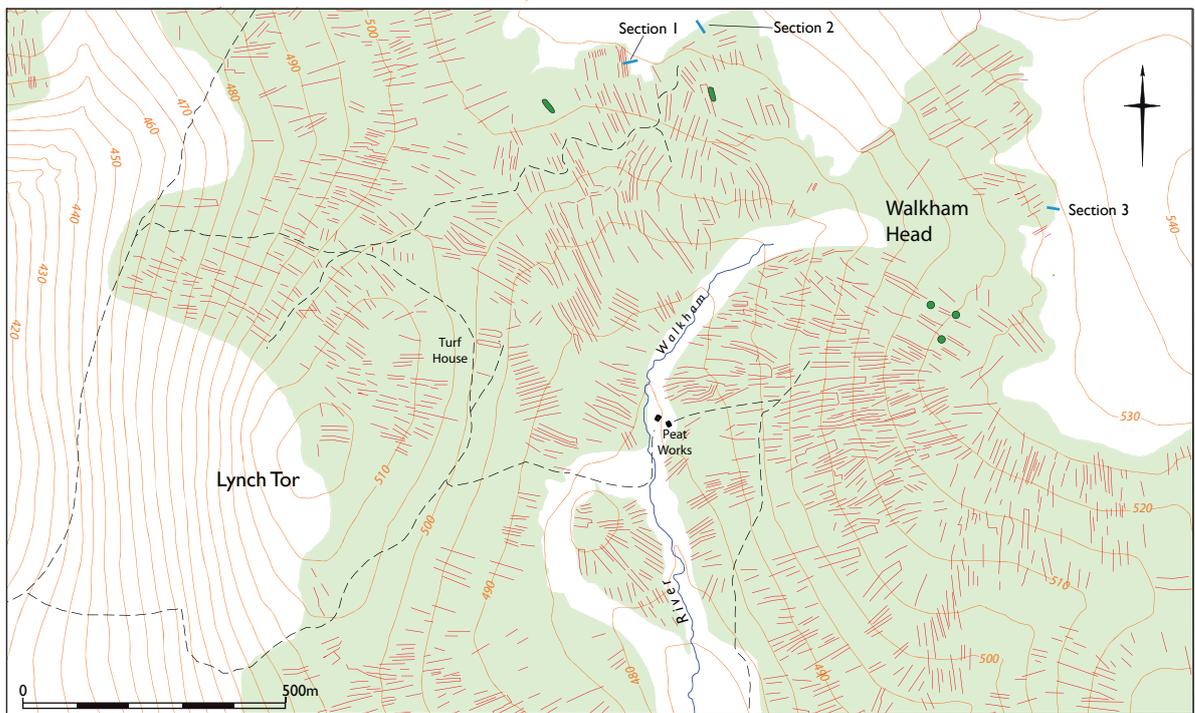


Fig 4.4 Peat cutting and turf ties at Walkham Head based on a transcription of 2009 LIDAR coverage. The green shaded area represents the limit of ground disturbed by peat cutting.

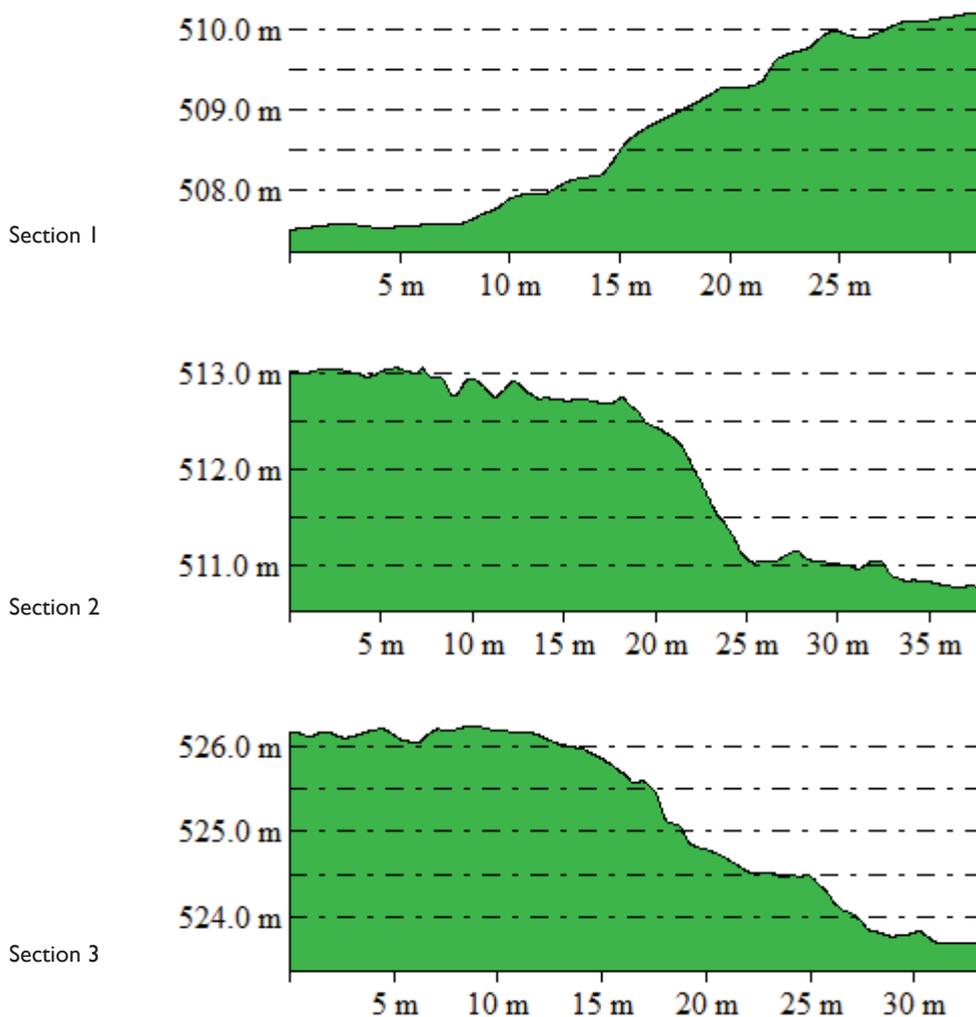


Fig 4.5 Sectional views of the scarps on the edges of the peat ground at Walkham Head showing the drop in height of up to 3m. See Fig 4.7 for positions of sections.



Fig 4.6 A drop in height and altered vegetation marks the edge of a large area of cut ground at Walkham Head.



Fig 4.7 A linear drain at Walkham Head has become naturally backfilled and survives as a lush grassy sward.



Fig 4.8 A solitary standing stone post marks all that remains of the peat store or 'Turf House' structure at Walkham Head. To the right of the post is the pronounced earthwork of a raised platform.



Fig 4.9 A small, probably recent turf tie near Walkham Head.

4.2.1 Drains

Drains cut on the scale of both Blackabrook and Rattlebrook Head, are not present at Walkham Head, although it is possible that all evidence of the drains within the cut zone has become effaced due to the depth of the cutting. Alternatively drainage was dealt with on a more localised level rather than using an expansive drainage scheme, as many piecemeal narrow drains are found within the cut areas which served individual ties.

However, vestiges of a drainage system may be traced within the uncut area at SX 5674 8122. Two parallel linear ditches extend for about 170m, just outside of the cut zone. The ditches have no earthwork form, and are therefore not visible on the LiDAR plots, but they survive as straight narrow swards of lush grass (Fig 4.7).

4.2.2 Peat store

The 'Turf House' at Walkham Head (Fig 4.7)(SX 5692 8083) was first recorded by William Crossing in 1903 (Le Messurier 1966, 49). All that remains of the structure is a row of granite pillars, which functioned as roof supports. In 1851, eleven of these pillars remained in place (Murray 1851, 81) though only one remains standing today. Coaxial with the line of these posts on the south side, is a long, raised earthwork with parallel sides and rounded ends. The mound is 43m long and surrounded by a ditch. This layout suggests that

the peat store comprised a stead, or rick base, similar to those recorded in Cornwall used for turf ricks (Herring *et al*, 2008), but in this case covered by a pent roof, supported on the north side by the granite posts. A similar mound, with a partially surviving ditch lies parallel to the first, just over 8m to the north. Although no support pillars survive for this northern mound it seems likely that this was a pair of turf houses, rather than a single structure, or perhaps an aisled structure as described above for Blackabrook. The two sides were separated by a sunken trackway which runs west to east. On leaving the vicinity of the building the track turns south to connect with the turf road running around the slopes of Lynch Tor. This, according to Crossing, was the road used by the Wheal Betsy peat cutters, whom he also claimed built and used the Turf House.



Fig 4.10 A large open turf tie at Walkham Head located on the east side of the River within WT Jennings' peat sett.

4.2.3 The Peat Works

The retort houses recorded in the 1874 sale of Walkham Head Peat Works were located on the east side of the river at SX 5725 8068. Although depicted on the OS 6-inch map of 1890 (Fig 2.2) demolition was well under way by that time and most of the bricks, timber and galvanized corrugated roofing had been removed. Two small heaps of rubble and a section of brick chimney breast are all that survive. Since abandonment the area has become very boggy and access to the remains is limited.

4.2.4 Access

Of the three commercial peat setts on north Dartmoor, Walkham Head is the most remote in terms of distance from the in-country road network, although at similar altitude to Rattlebrook Head – roughly 530m OD – it involves a less arduous climb to reach it. It was this remoteness that helped confound Jennings' efforts to achieve commercial success with this sett not having a tramway. Nevertheless, the area is well served with turf roads. The Wheal Betsy

turf operation and the later peat works were able to use the tracks that encircle Lynch Tor (Fig 2. 2), providing manageable gradients for carts and safe passage through boggy ground. The extension to the peat works is no longer usable where it meets the River Walkham having become overwhelmed by bog, though was in use within living memory (C Abel Peter Tavy, *pers com*, Aug 2010). Other parts of the peat grounds were also reached by tracks cut into the peat. Track 2 (Tr2), although now overwhelmed by boggy vegetation in places, can still be traced branching from Blacklane to the northern sector of the Walkham Head peat grounds. Track 3(Tr3) provided a route from the peat grounds on the east side of the River Walkham, running south parallel with the river then crossing the river at the confluence of Spriddle Lake at SX 5747 7950 eventually joining the Lych Way, to provide a route across Langstone Moor to Peter Tavy.

4.3 RATTLEBROOK HEAD

Rattlebrook Head was the most enduring of the commercial peat setts on Dartmoor, its period of operation extending from 1874 until the 1950s. Despite limited commercial success, the activities resulted in the most industrialised of Dartmoor's peat cutting landscapes and the most complex set of field remains. The peat works at SX 5598 8709 and c. 5350D, comprises a range of totally demolished buildings sitting within an extensive area of peat beds on the western slope of Amicombe Hill to the east and around the head of the Rattlebrook (Fig 4. 11). This commercial area is divisible into zones of differing character (zones a-k Fig 4. 12) which certainly represent chronological variation. Much domestic turf cutting was also recorded in this area within the Duchy records prior to the commercial phases. The surviving domestic ties, recognisable by their discrete locations, are situated around the peripheries of the commercial sett, and south of Green Tor. It is likely that others were effaced by the commercial working. Zone K, to the north of the works, where the cutting lacks depth and appears unsystematic, may also be dominated by domestic cutting. The valley and tributaries of the Rattlebrook have also been worked for deposits of stream tin, the evidence for which is the steep escarpment forming the edge of the river valley and the undulating ground of the spoil dumps. Recent probe measurements taken on the flanks of Amicombe Hill in the main industrial area of peat cutting have established a depth of peat deposit between 1.81 and 2m (Fyfe 2008b, 4).

4.3.1 The main zones – drainage and ties

Zone A

Much effort was spent on draining the slopes of Amicombe Hill and the area north of Green Tor prior to cutting the peat, where parallel ditch systems have scored the hillsides. On the southern sector of the working area is a large expanse of ground (zone A) where straight, parallel ditches have been cut, aligned down the slope. For the greater part, the peat was never removed from this zone, so the ditches survive. However, they have become re-filled with vegetation and remain only as subtle indentations, visible mostly by the lush grass they support, and appearing as linear stripes across the ground. These ditches are more densely spaced than those surviving at Blackabrook. On average they are 4m apart, though for some the distance is greater. Their width and depth are not known, due to the accumulation of bog within them, but the grassy swards that are visible are about 0.8m wide.

The western terminal of these drains at the lower part of the slope, is defined by a low escarpment which delineates an area of lowered ground to the west, containing turf ties which have made inroads onto the ditched area of zone B.

Sitting on the surface amidst the drains of zone A, is a series of narrow linear mounds, arranged in an alignment and equally spaced. The mounds are of similar appearance and only one was sampled for dimensions. It measured 16m long by 2.5m wide and 0.6m high, with straight sides, rounded ends and a flat top measuring approximately 1.3m wide. Their purpose is uncertain. They may have been raised as rick steads to store cut turf before transportation back to the works, and may therefore have never been used as none of the tramways extended this far south. However, they are rather narrow for this purpose and do not conform to any known examples elsewhere. It is also possible that they were unconnected with the peat industry and perhaps have military origins.

To the north of Green Tor, a second, smaller zone of drains (part of zone B) has survived, containing less fill, with sharply defined sides and depths of up to 0.6m. These ditches are approximately 7m apart and peat cutting has taken place between them in places, creating changes in level defined by the line of the ditches.

Zone B

A large expanse of turf ties forms the southern zone of peat cutting, just north of Green Tor. This zone has the most random appearance of any at Rattlebrook Head and may reflect a mixture of commercial and domestic peat cutting. However, the random layout of the turf ties and the lack of evidence for a tramway or trackway to move the material back to the works, suggests that the domestic activity was more dominant here. There are some parallel drains on the western slopes (Figs 4. 20, 21) but they are not present on the scale of those in the major commercial zones. It is notable however that zones A, D and G have all been truncated by the cutting activity on the northern end of zone B, which clearly post-dates them all.

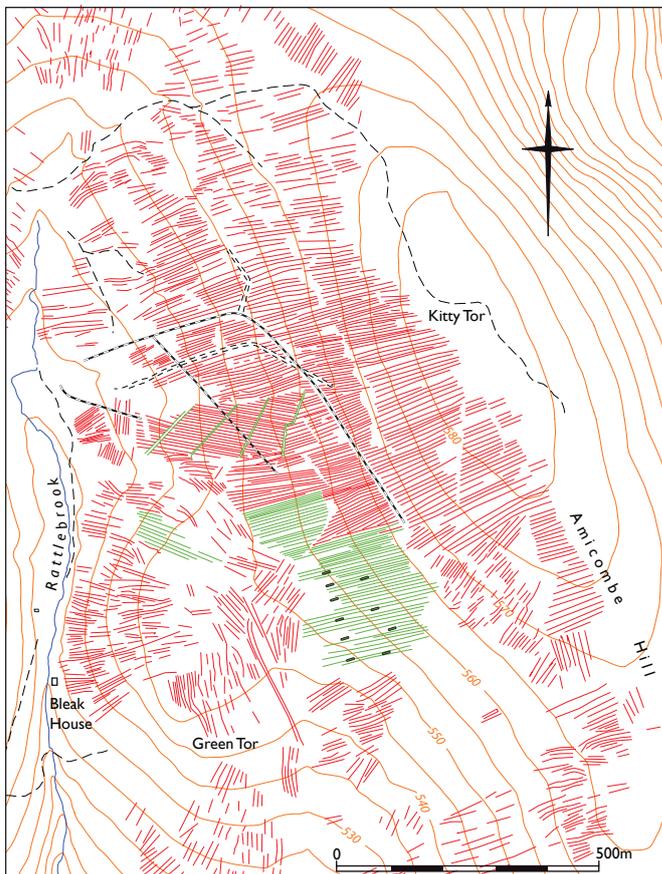


Fig 4.11 Plan showing turf ties and drains at Rattlebrook Head and the west side of Amicombe Hill. Based on a transcription 2009 LIDAR coverage.

approximately ENE. The cuttings are 2.5 - 4m wide and between 0.4m and 0.6m deep, with clean square sides, separated by baulks of uncut ground approximately 2.3m wide. They are very uniform in appearance, perfectly straight and parallel, the longest is approximately 275m. These features are cross-cut by four ditches (a - d) set 70m apart.

All these features were present on this zone (D) before zones B, C and E expanded and partly encroached onto it. This suggests that zone D is among the earliest of the peat cutting features to survive from the industrial episode at Rattlebrook Head, although a date for it cannot be established. It is likely however that these parallel cuts and ditches once covered a much larger area. The straightness, parallelity and length of the cuts, in contrast to the more random nature of domestic cuts, suggests they formed part of a designed system of cutting the peat. They are too wide to have served as ditches but the deliberately uncut, evenly-spaced baulks that separate them are counter to conventional peat cutting techniques.

Zone E

Zone E is immediately west of zone D and certainly represents a later episode of cutting. This zone covers an area of 0.636 ha, defined by curved edges denoting a substantial vertical drop in levels of 2m. The flat-bottomed interior of this teardrop-shaped cutting shows little in the way of standard turf tie evidence and it may not have been worked using traditional methods. It is very likely that this is an area described by Thomas Firbank during his period managing the site in the late 1940s (Firbank 1956, 184-94). His company was harvesting peat to be used for horticultural purposes for which it was unlikely that the material needed to be neatly cut in regular curves for drying. Indeed it is recorded that the traditional turf iron and its product, the tie, were dispensed with during this operation when spades were used to cut the peat (Amhof 1988). Once cut the material was transported along the old railway track in lorries to a distant shredding shed on Great Nodden. Assuming Firbank's descriptions were genuine, he described installing a tramway with an elevated section from the peat 'bank' down to the firm ground where the lorries could be loaded. He mentioned that the tramway had a Y-shaped layout where it entered the cutting area, and subtle remains of this layout are visible. The hollow cutting of the southern branch from the Y junction cuts across the linear trenches of zone D, and converges with its counterpart at the open western end of zone E. Within zone E a slight hollow runs

Zone C

It is common for the lower section of the drainage ditches to have survived in place after the upper levels of peat have been removed and this is apparent in Zone C, which is the largest expanse of cut ground on the Amicombe slope, extending almost to the summit. The massive scale of the peat cutting here has resulted in an area of uneven ground containing many lowered, roughly rectangular ties, some of which are better defined than others (Fig 4.15). Within this general zone are patches containing deeper ties, but in general it appears that this entire zone was a result of systematic removal of the peat over a sustained period, as the cuttings all follow a more or less uniform orientation, which, with exceptions, roughly coincides with that of the drains that are visible in the floors of the ties. Cutting within this zone was progressing south when it came to a halt, leaving the remaining drained ground (zone A) untouched.

Zone D

Zone D (Fig 4.13) is of a very different character to others on Amicombe Hill. The ground surface is higher than the surrounding zones to the north, west and east and a scarp of 1.5m defines the interface between the northern edge of this zone and zone C. The latter was clearly encroaching onto zone D as cutting progressed south, and this scarp represents the termination of that phase. Zone D therefore clearly survives in an earlier form.

The surface of zone D is scored by very straight, linear cuttings running obliquely across the slope

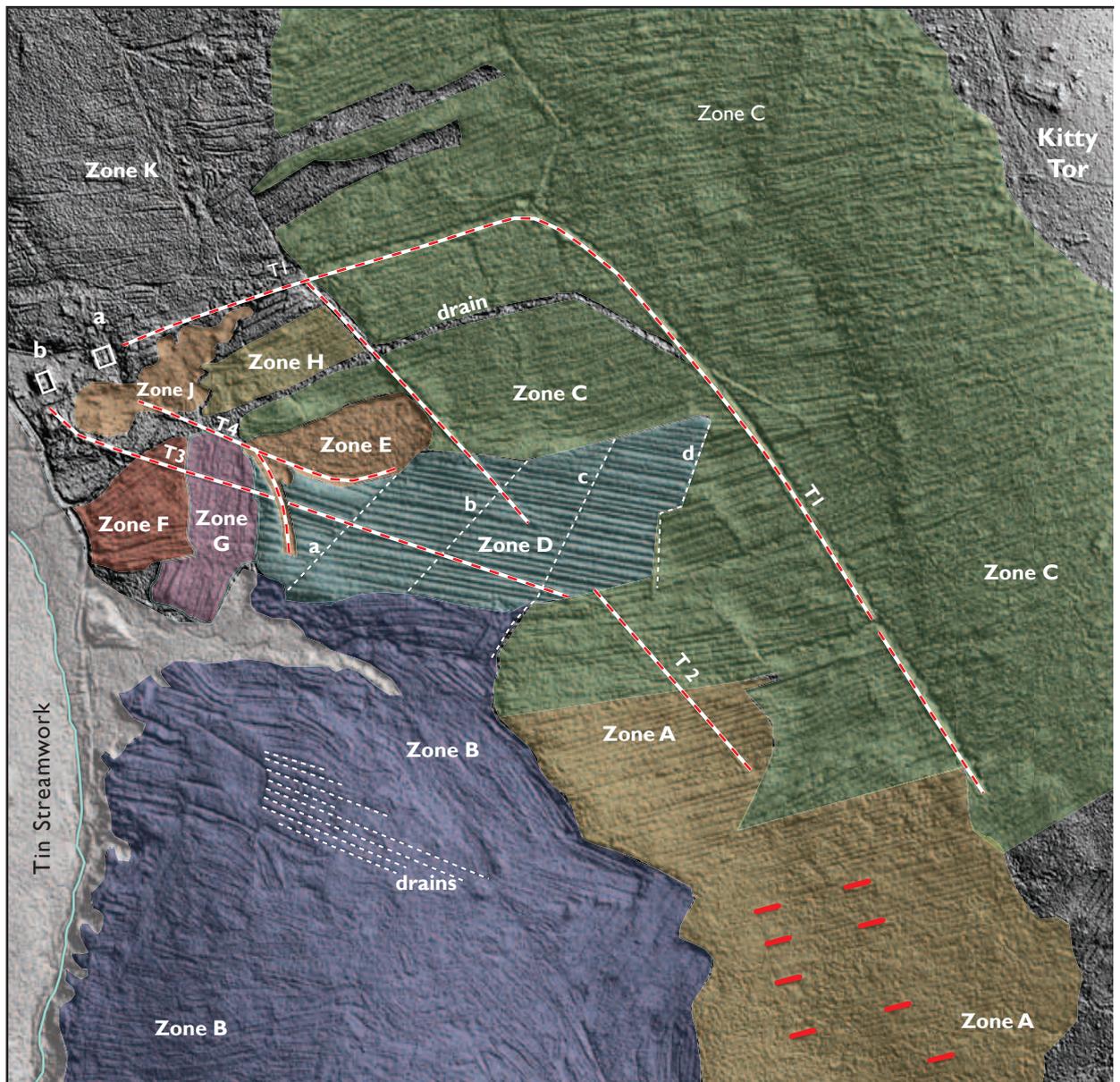


Fig 4.12 LIDAR coverage showing Rattlebrook Head peat works and Amicombe Hill. Chronologically separate peat cutting zones are highlighted using shading. White pecked lines depict drains; red and white lines depict disused tramways.

close by the foot of the steep bank, which reveals the position of the northern branch. After converging, a single line continued NW and was raised on a short embankment where timbers have survived on the top surface which once supported the rails, though they are now covered by turf (Tramway 4). This layout could have been achieved with the reported c. 300yds (277m) of track that Firbank had purchased for the purpose.

Zones F, G, H, J

Before opening up zone E, Firbank stated that he was cutting peat from a bank where he was able to drive a lorry for loading. The only place that this would have been possible was to the east of the ovens where the ground was firm. A portion of Zone J, also a deeper unsystematic cutting, is therefore probably associated with Firbank's activity.

Although less detailed accounts of other mid-20th century cutting episodes at Rattlebrook Head are available, it is probable that a lot of the cutting occurred quite close to the buildings complex, where peat has been removed to greater depth than anywhere else. Graham Amhof has recorded recollections of his family members who worked at the site in the 1940's and they remember mainly working to the south of the buildings complex (*pers comm* G Amhof). Zone F is a small island of linear ties, of similar character to zone D, though on a different orientation. Zone F, along with zone D, have both been cut by zone G, a deeper cut. Another zone of probable later cutting is zone H, east of the building complex, where removal of peat has lowered the ground by 1.3m, encroaching into part of zone C.

4.3.2 Tramways

From the commencement of commercial operations at Rattlebrook Head, tramways were essential to move cut peat from the beds on the slopes of Amicombe Hill to the drying/processing works, situated on the east side of the



Fig 4.13 Ground photograph of zone D at Rattlebrook Head showing the narrow ties and wide bualks.

Fig 4.14 The edge of a raised tramway(T2) earthwork on Amicombe Hill, demonstrating the depth of the peat. The range pole is standing on the old land surface



Fig 4.15 A turf tie within zone C on Amicombe Hill.

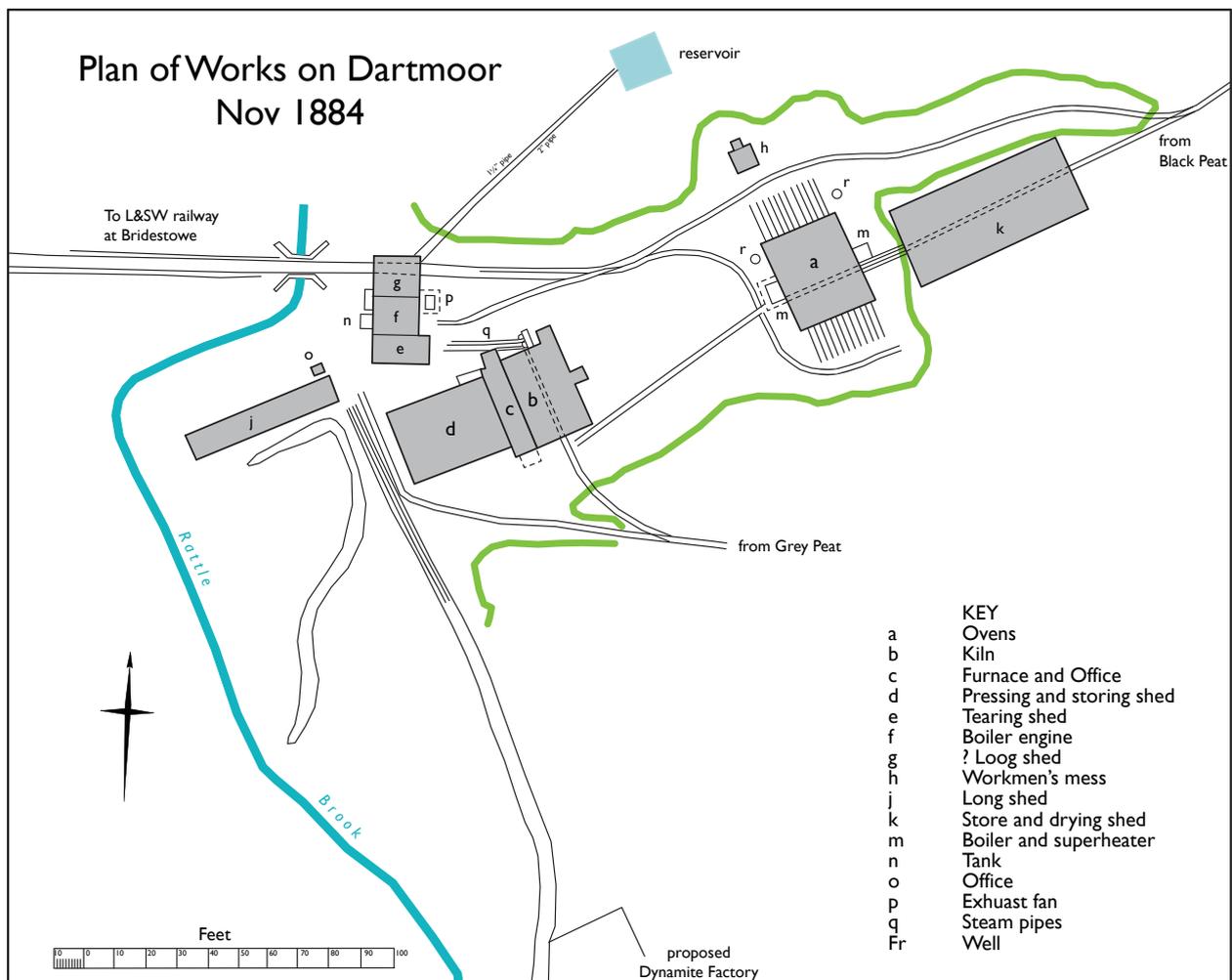


Fig 4.16 Plan (redrawn) of Rattlebrook Head peat works, dated Nov 1884. The plan defines the purpose of each building and the layout of the tramways at the time. This includes the oven (a) with boilers and superheaters and what appears to be tramways leading into both ends of the building (see Fig 2.4 for comparison and similar layout). (© Duchy of Cornwall, with permission)

Rattlebrook. The first of these was established by the Dartmoor Peat Company in 1874, whose sale schedule later in the same year included six wagons and iron rails, though the precise location of this system is not recorded. By 1884, two tramroads are known, depicted on a map of the works (Fig 4. 16); one led from the 'Black Peat' and the other from the 'Grey Peat'. And, as discussed above, there is the evidence from Thomas Firbank's account of the short tram system that he installed in the 1940s (Tramway 4 (T4) see above).

Tramway 1 (T1) (SX 5601 8710 – 5663 8678)

The most easily recognised of the tramways is probably that described in 1884 as leading from the 'black peat', although what remains today may be the result of alterations and extensions over the life of the works. However, it was depicted on the 1889 OS 6-inch map (Fig 4. 22) having approximately the same course and extent as the evidence today. It survives for most of its course, consisting of an upstanding linear earthwork of on average 7.5m wide at base and up to approximately 1m high. Its final extent was 850m, and its course ran for 316m ENE from the eastern side of the works up the slopes of Amicombe hill before heading SE, extending down through the zone C turf ties. Timbers, which supported the iron tram rails, survive in place running along the top of the embankment. These are likely to be survivors of the 20th-century re-use of the tramway. The course of the tramway transects pre-existing turf ties whose evidence clearly runs beneath the embankment. It would appear therefore that the tramway would be extended gradually over recently cut ground as work progressed south, rather than pre-installing the tramway to serve a large area from the start. Its southern terminal is near the interface between zone C and zone D. Had work progressed further south into zone D, then the tramway certainly would have extended further south. Near the works, the tramway terminated just to the west of the ovens (Building 2) where a large drying shed once stood on the raised ground.

Tramway 2 (T2) (SX 5614 8715 – 5631 8697)

A second section of raised linear earthwork which runs parallel with part of tramway 1 and joins at a Y junction,



Fig 4.17 A photograph of the building complex at Rattlebrook Head peat works. Date and photographer unknown but it is likely to date to around 1920, though possibly earlier. It was certainly before the rails were removed in 1931-2. Original in possession of G Amhof (© copyright G Amhof, with permission).

almost certainly supported a tramway. It transects zones C and D and a very faint continuation is visible on the LiDAR plots running across zone A.

Tramway 3 (T3) (SX 5597 8706 – 5646 8679)

Earthwork fragments of a tramway, which ran from the large building at the works (building B), then south-east to terminate at the edge of zone A, transects zones D, F and G and clearly post-dates them all. But it was itself cut by Firbank's activities in the 1940s. The course of a tramway is marked in the vicinity of the building following this approximate course on a map of 1884 (DuCoPr/plan of Rattlebrook works on Dartmoor/Nov-1884; see Fig 4. 16), described as coming 'from Grey Peat'. Although not present on the 1889 OS 6-inch map (Fig 4.22), it is clear on that of 1906, where it extends as far to the east as the remains today suggest.

The course of a third, shorter tramway, depicted on the 1906 map running between the two existing tramway earthworks, has not survived.

4.3.3 Buildings

Although several substantial buildings and many temporary structures once stood at the Rattlebrook Head peat works, demolition in 1961 was particularly thorough; stump walls, rubble and patches of concrete floors are all that remain. Fortunately, some photographs (Fig 4. 17) taken earlier in the 20th century survive and a plan of the site in 1884, (Fig 4. 16) with explanatory annotation, has come to light within the Duchy of Cornwall archive. Although the two main buildings remained intact until 1961, this was before the inception of interest in industrial archaeology and the buildings were not properly recorded or analysed prior to their destruction.

Remains of the two stone-built structures have been examined as part of this project although the results are somewhat uninformative, due to the thoroughness of the demolition.

Building A (SX 5600 8710)

Of the two buildings, the oven described on the 1884 map is the better preserved and enough remains to establish its function and appearance. Although part of the building when intact appears on the early photograph (Fig 4. 17), the lower portion housing the oven openings does not show. This was the building designed to utilize Kidd's process and its layout has some similarities to the 'peat charring works' described and depicted above at Crowle near Doncaster, for which an illustration has survived (Fig 2. 4). Like the Crowle example, the main building at Rattlebrook had low, lengthwise chambers with arched brick-vaulted ceilings. There was probably four chambers though possibly six. On the two surviving stumps of outer walls, which stand to a maximum height of 1.8m, an internal, horizontal line of bricks set at an angle represent the bottom course of the vaults for the outer arches and are all that remain of them. Sections of collapsed partition walls of the chambers and parts of the vaulting now form a rubble heap on the floor of the structure. Some of the bricks bear the moulded inscription 'Martin Lee Moor', their place of manufacture being on SW Dartmoor. The end walls have not survived but it is likely that at least one end housed the portals to the chambers so were not walls as such (Fig 4. 18).



Fig 4.18 Remains of the ovens at Rattlebrook Head peat works. The top surviving level represents the lower section of the building which contained the vaulted ovens (see Fig 2.4). An upper level present in the photograph (Fig 4.17) in which the building still stands, may have contained a further drying area though nothing of this remains.



Fig 4.19 The remains of Dunnagoat Cottage or Bleak House, built by the Dartmoor Peat Company in 1874.



Fig 4.20 Ground shot of a system of narrow drains on the slopes of Amicombe Hill.



Fig 4.21 An example of one of the narrow drains on the lower slopes of Amicombe Hill, north of Green Tor.

The layout of the Rattlebrook ovens, as depicted on the 1884 plan, differed to that at Crowle in several respects. There appears to be two sets of boilers and super heaters as opposed to the single installation at Crowle. These were set centrally on the exteriors of the two surviving walls. There is also what appears to be tram rails entering both ends of the building depicted on the plan, whereas at Crowle the trucks entered and exited from one end only and the rails did not extend beyond the building. Instead a moveable cooling chamber with its own internal rails received the heated trolleys one chamber at a time. This would place the mobile cooling chamber as depicted on the Crowle example, a crucial component of Kidd's patent, on the south side. There appears to be six pairs of rails to carry the trolleys through the building, suggesting there was six chambers, but probably only eight of the lines depicted were tram rails serving four chambers. The position of a chimney is not depicted on the plan but is just visible on the early 19th-century photograph on the east side. No trace of it survives.

Although this structure is in a sorry state, several additional diagnostic features may lie buried, including a series of ducts which ran beneath the chambers, the footings of the trolley way inside the chambers and evidence of the external cooling chamber, if one existed.

Building B (SX 5595 8709)

The other large stone building depicted on the 1884 plan has two compartments. The larger, on the east side was a kiln, whilst the smaller section contained a furnace and offices; the latter were probably on the first floor. The large kiln section had a tramway leading from within it, which leads off to the SE towards the 'grey peat' and survives as a subtle earthwork (T3 on Fig 4. 12). A tall chimney was attached to the northern end of the furnace, though nothing of this survives, while a small building to the NW (f) contained a boiler and had steam pipes connecting to the kiln. The boiler house also had a tall chimney, though a small mound of rubble is all that remains. The buildings were constructed from dressed granite, of which the amount surviving in the rubble is not of commensurate mass to the structures in the photographs. A quantity appears to have been removed since demolition, leaving diminished rubble heaps. Unfortunately, no description of this building's interior has survived.

4.3.4 Other remains

Of the other buildings known to exist at Rattlebrook Head from cartographic and photographic sources, little survives on the ground. The workmen's mess (h) lay in an area north of the ovens, now filled with rushes. A large drying shed (k) was located east of the ovens and was entered by the main tramway. The pressing and storing shed (d) west of the kiln had stone walls but little of its fabric survives.

Reservoir (SX 5598 8713)

One feature of the main complex that does survive is the earthwork reservoir to the north, which stored water for the boilers. Although silted, the earthwork is still traceable. The reservoir was an approximate rectangle of 15m by 12m surrounded by an earth bank. Pipes supported on piers may be seen on the early photograph (Fig 4. 17) extending from the reservoir into the boiler house.

Dunnagoat Cottage (SX 5596 8647)

The cottage built by the Dartmoor Peat Company in 1874, lies 610m south of the peat works, set onto an area of disused streamworks on the east bank of the Rattlebrook, 200m west of Green Tor. The ground surrounding the house is stony and uneven where no attempt to clear it has been made. There is no associated garden, yard or enclosure and its success as a home is questionable. It is now a total ruin, though the walls on the north end are still

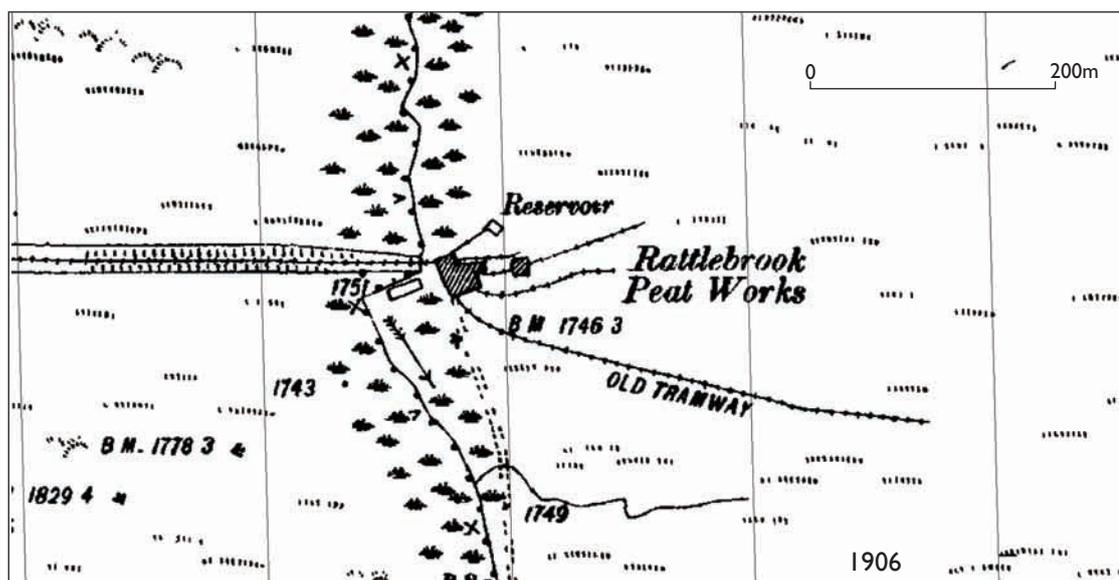
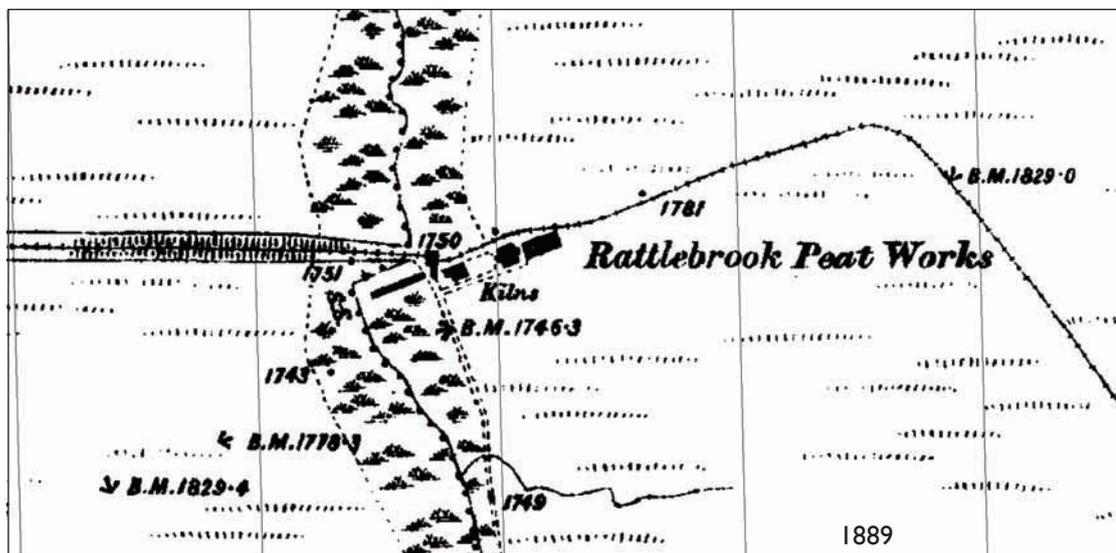


Fig 4.22 OS 6-inch map depictions of the Rattlebrook Peat Works in 1889 and 1906, showing different layouts of buildings and tramways.

upstanding to over 4m. The house was built from granite with cement render, and a photograph of 1939 (Dartmoor Archive da000145) shows a tile roof. The chimney on the south end has collapsed as a complete entity, and the two fireplaces are intact although the two stoves that had caused such anxiety for Mr Escott (above) have been removed. The precise date of abandonment is not known but it is likely that William Rich the caretaker at the peat works was among the last residents in the first decade of the 20th century. However, writing in 1909, William Crossing refers to 'the walls of a building', implying it was already ruinous (Crossing 1909, 180). By this time the house had acquired the name locally of Bleak House. In the photograph of 1939, although parts of the structure appear to be sound, the southern section was roofless and the remaining roof was in poor condition.

4.4 DISCUSSION

The archaeological resource for historic peat cutting on Dartmoor is vast, covering many square kilometres of the upland and demonstrating considerable complexity. For the majority of this evidence we will never know when the peat was cut, for what purpose, or by whom. However, by establishing a broad context for the domestic and industrial exploitation of this natural material through historical documents, it has become easier to offer an analysis of what remains on the ground, particularly for the 19th century and especially the industrial evidence. The fieldwork undertaken as part of this project has broadened our knowledge in the following ways:

- I. Establishing the extent of turf cutting within the project areas plotted from LiDAR. This has allowed for more detail to be recorded than has previously been possible by aerial photo plots or terrestrial survey.

2. Recognition and recording of drainage systems at Rattlebrook Head, Walkham Head and Blackabrook Head. Although at Blackabrook the chronology still requires confirmation, it appears that drainage was a prerequisite of all industrial scale peat cutting on Dartmoor. Additional examples are known to exist on the south moor at Tor Royal and Brent Moor, though they fall outside the brief of this report and are yet to be explored.
3. Interpretation of peat store remains at Walkham Head and Blackabrook. The appearance and layout of the Turf House at Walkham Head was not previously known, but comparison with peat stores elsewhere in the UK have suggested it comprised an open, roofed structure of stone posts. The recognition of earthwork remains near the Blackabrook suggest a further building of similar type constructed from timber and dateable to the 1870s.
4. Interpretation of the remains of the ovens at Rattlebrook Head, which were almost certainly constructed to the specification of Kidd's patent of which known examples existed elsewhere.
5. Mapping the courses of former (in some cases lost) tramway systems at Rattlebrook Head. One of these has been established through information gained from documentation.
6. Identification of chronologically distinct peat cutting zones at Rattlebrook through interpretation of LiDAR images.
7. Mapping turf roads of north-west Dartmoor. Some turf roads exist on OS maps but lesser examples have been recorded using the LiDAR images, revealing a network of access routes leading from the peat beds.
8. Identification of charcoal meilers at Greena Ball and Blackabrook Head. Analysis is ongoing but samples retrieved so far have suggested that evidence of charcoal burning on open meilers may be more common than previously thought.
9. It has been possible to infer that out-ricking, using purpose-built turf steads on the open moor may not have occurred on north Dartmoor in the way that is known on Bodmin Moor.

5.0 CONCLUSIONS

The landscape of domestic and industrial peat cutting on Dartmoor is more complex, more extensive and better documented than had previously been supposed. This research has established the historical context for peat cutting before the 19th century, discussed the various uses of peat as an exploitable material and provided a new historical framework for domestic and commercial peat cutting within the lands managed by the Duchy of Cornwall from the 1840s to the early 20th century. In addition, fieldwork has enabled quantification and characterization of landscape remains within the project areas, which may be interpreted within this expanded context. However, this work marks only a beginning and its success has highlighted many further lines of research which will certainly expand our knowledge of domestic turf cutting and the peat industries on Dartmoor.

5.1 Further research priorities

1. Within the brief of this report it has been possible only to touch the surface of the documentation recorded from the Duchy archive to provide a very basic narrative. Although other sources have been researched, this has not included the main Duchy archive at Buckingham Gate. The priority for the historical research should now be to search out and integrate more documentation from wider sources and attempt a more refined historical narrative for both domestic and industrial peat cutting, which extends geographically beyond the lands controlled by the Duchy.
2. Further fieldwork is necessary, especially within areas of Dartmoor not covered by the brief of this report. This would include detailed work particularly on the eastern sector of the north moor around Hangingstone Hill and Wild Tor and on the south moor Brent Moor, Tor Royal and Skir Gut areas. It would also be desirable to establish the extent of peat working for the whole of Dartmoor. Although these areas extend beyond the current LiDAR coverage, if additional LiDAR cannot be obtained, it may be possible to utilize existing satellite photo coverage to assist with this work.
3. A detailed investigation of the Brent Moor/Shipleigh Bridge peat works is needed to complement those contained in this report. Documentary evidence for this site has been unearthed as part of the current brief but further documentary investigation and a field survey of the works would complete the quartet of Dartmoor's industrial peat sites.
4. The potential for widespread existence of peat charcoal burning sites on upland Dartmoor has been highlighted as a result of this survey and a programme of field reconnaissance and recording should be considered essential to advance this topic. This needs to be complemented by residue sampling at a number of potential sites identified in addition to those discussed above. Establishing the extent of charcoal meilers and their relationship with the peat resource would be a major archaeological step in understanding the medieval and post-medieval impact of

this industry on the upland landscape. However, dating of these features remains a problem and a science-based element will need to be incorporated into the work to overcome this.

5. The Bachelor's Hall phase of the British Patent Naphtha Company is not documented in the Princetown archive and further investigation is needed to establish which elements of the field remains at this site, if any, relate to the naphtha production episode. This episode coincides with a particularly important phase of chemical experimentation in the UK and this plant may prove to have been the earliest of its type to be installed. It would be useful to know what role this particular company played in the early development of peat fuel distillation.
6. More work on national context and comparison with other areas of the country is required. Unfortunately, the topic has been largely neglected in much of England and there is a need to establish further inter-regional dialogue with professionals working in other historic peat producing areas. This could be possible through networking by national parks archaeologists conducting seminars etc as a start. Similarity and difference in traditions, methods and field evidence needs to be established.
7. An etymological study is needed to test some past assumptions concerning place names that included the words 'cut', 'black' and 'turf'. For example Cut Hill, Black Hill, Black Ridge, Turf Hill etc are all traditionally believed to have been so-named because of turf cutting, yet there is insufficient archaeological evidence to confirm this assumption.
8. Publication of results. The data retrieved through this exercise is mostly new and, along with the product of any future work, deserves wider dissemination, either through a monograph or academic papers, or both.

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Abbreviations

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DCNQ – *Devon and Cornwall Notes and Queries*

DRO – Devon Record Office

HoC – House of Commons (with date and [ref no])

RCG – *Royal Cornwall Gazette*

WCSL – West Country Studies Library, Exeter

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APPENDIX ONE

Enquiries and serious applications to the Duchy for peat setts between September 1855 and May 1893 (Source DuCo Princetown, letters).

1. 24 Sep 1855 G Babb – between Tor Royal and Brent
2. 23 Mar 1856 J Arscott – between ‘River Taw and Oakhampton Comen that is Blackefen Hill on Dinger’
3. 27 Jul 1859 G Bower – general enquiry re peat setts and their suitability for making naphtha
4. 16 May 1870 J Blatchford – general enquiry re Brent Moor
5. 27 Nov 1871 William Harvey – West of England Blue Lias Lime Portland and Roman Cement and Plaster Works
6. 27 Apr 1872 Thomas Gregory – negotiating on behalf of a third party (Erme Huntingdon, Sourton)
7. 30 Jul 1872 William Ancrum – Brent Moor Sett
8. 10 Aug 1872 Polyplank, Newton Abbot – general enquiry
9. 15 Nov 1872 William Engledue – Rattlebrook
10. 31 Jan 1873 William Cripser – general enquiry re boglands in Okehampton, Tavistock area
11. 03 Feb 1873 J Buckingham – general enquiry, Kitty Tor, Doe Tor Rattlebrook area
12. 08 Feb 1873 Thomas Barnard – interested in a sett at Rattlebrook west of Mathews’ sett
13. 06 Feb 1873 A Granville – enquires about Walkham Head and later about Bridestowe Common – intends to lay out a ‘considerable sum’
14. 20 Feb 1873 J B Lans – enquires about a large sett to the north of Two Bridges
15. 23 Feb 1873 Joseph Morcombe – enquiry about Rattlebrook, Walkham Head and British Naphtha Co’s old sett (Blacka Brook)
16. 21 Mar 1873 Edward Parry – enquiry re peat sett around Petre’s Cross, Erme, Avon
17. 24 Apr 1873 W D King – requires the largest peat sett available
18. 13 May 1873 Henry Luxton of Tavistock - Ockment/Cranmere Pool
19. 17 Jul 1873 Major Fred Hinton – a large peat sett near a railway Hinton’s Condensed Peat Fuel Co Limited Blackabrook
20. 08 Sep 1873 A Ormsby – enquires about terms for the largest extent of bog available; later inquires about Spry’s old sett
21. 8 Oct 1873 Mr Keating – part of Spry’s peat ground
22. 17 Nov 1873 William Hosking – general enquiry as to peat lands
23. 21 Nov 1873 William Taylor Jennings – wishes to apply for Walkham Head sett and later, in 1876, the Rattlebrook sett
24. 11 Dec 1873 Mr Challen – application for Ancrum et al’s former peat sett.
25. 21 Feb 1874 F Markin – general enquiry about peat setts. Near a railway if possible
26. 16 Feb 1876 Frederick Thomas – application for Taw Head sett and Rattlebrook – later took over Walkham Head
27. 7 May 1877 Marshall Stephens – wishes for a small peat ground to experiment (Blackabrook)
28. 17 Mar 1879 J Epps – enquiry about a peat sett for horticultural peat
29. 27 Apr 1881 C Miles – interested in Bridestowe peat sett
30. 08 Feb 1884 E T Wakefield – general enquiry about vacant peat plots
31. 24 Sep 1885 R J Curson – enquires about a sett for making horse litter
32. 23 Apr 1892 Thomas Vosper – enquires about a sett formerly worked near Okehampton
33. 17 May 1893 Scott Smith – seeks 600-1000 acres of good bog
34. 27 May 1893 Capt W A Kerr interested in Walkham Head