

5. THE LAST YEARS OF MANUAL PEAT WINNING

5.1 Introduction

The following details depict the evolutionary limit of manual peat winning, and are based on the personal accounts of former workers. The notes describe methods under the British Moss Litter Co. and – marginally – by Fisons, during the years from World War II until the beginning of the 1970s. Remembered detail from earlier years (not necessarily at first-hand) is included where available, and so indicated. The middle years of the 1960s marked the transition from graving to mechanised peat removal. The former, being inevitably unable to compete with the newly introduced machines, was finally abandoned in 1970 (1972 on Crowle Moor). However, manual stacking for drying continued, modified to cope with the dictates of the new machines and associated working practices.

5.2 Organization of the sections

On the moorland surface, within the respective works ‘territories’, peat working was spatially organized into ‘sections’. These were paired on either side of a permanent tram, with several sections undergoing active working at any one time. Each section was subdivided into parallel ‘flats’, at right angles to the tram, these averaging perhaps 35 or more in number per section in a given year. The permanent tram, and a parallel drain only yards away, marked one section edge. Another edge, at a right angle to the tram, was demarcated by a drain, as was the edge parallel with the tram on the opposite side of the section. The remaining side was not delimited, to allow the extension of the section in that predetermined direction, when required in future years. A section was of no defined area, only having an operational and topographic convenience. Although the width of a section along the permanent tram was variable, its length tended not to exceed 15 chains, with a known range of 12-18 chains. This length was broadly determined as the maximum distance that men could realistically push individual wagons, laden with cut peat on temporary lines to reach the horse-worked permanent network.

5.3 Preparing the sections

The very first action on the section was to clear trees and scrub from its entire area, using axes, hatchets, hedging-knives and graving spades. This was generally a winter

job, undertaken when the peat workings elsewhere on the moors were flooded or frozen. In addition to creating the three peripheral drains, as necessary, another (sometimes two, 5 chains apart) was formed across the section (the single one centrally), this being generally a job undertaken in the spring. All new drains were initially cut in the same way, as a trench-like 'gullet', and then were gradually deepened over the next three or four years, as required by the expanding peat cuttings. Deepening beyond this period was not usually necessary. These drains ultimately needed to be at least 2ft below the base of the original gullet. When the peat was very wet, which was particularly so when enlarging drains, it was simply dug out by spade or shovel, as practical. However, as far as possible, the peat was won by graving knife as usable turves. Almost all of these were processed for drying in the way described for gulleter peat, and were eventually incorporated into the nearest stacks being built for the dried gulleter turves on the flats. The only exception was the peat from deepened drains, which was put into rudimentary storage rows and eventually was incorporated into stacks directly from the storage rows. Once the section had been cleared of vegetation, existing drains reactivated, or gulleter dug to originate new ones, it was left until adequately dry and the resource needed. This was usually in the spring of the following year, but sometimes later, when newly-invasive vegetation had to be cleared.

5.4 Gulleting

All the peat was cut with a graving knife. This was a tool apparently adapted from the more familiar hay-knife. It is claimed that from c.1910 [1], individual workers no longer had to provide their own tools, as from that time, the British Moss Litter Co. (and later Fisons) issued tools to their workers. With bulk and repeat orders to specified patterns, this tended to promote standardization, although minor variations still occurred that sometimes required modification [2]. The dimensions of the parts of the graving knife could vary in at least one respect, but the steel blade, with one known exception, seems to have been consistently 5in wide, shaped as in Figure 20. The best knives were made from a single piece of steel, except for a steel ferrule on the inner side of the wooden handle, into which the latter was fixed. However, during at least the 1930s and early 1950s, it was remembered that the tangs of some knives were riveted to the blade. The very last batch, in the latter decade, not only had the tang riveted to the blade, but also had a more oval-outlined cutting edge with a maximum width of 6in.



Figure 20. A typical 'one piece' graving knife from Thorne Moors.

The total height was 32in, and the length of the handle (including ferrule) was 15.5in. The shoulder of the blade was occasionally removed in an effort to lessen the weight of the knife without compromising its effectiveness.

In general, the riveted knife was the thinner of the two types in cross section at the side opposite the cutting edge, and was thus the easiest to push into the peat. However, this advantage was tempered by the wearing of the rivets before the blade had worn out, the blade being thus forced from the tang where a rivet had been lost. The rivets could not satisfactorily be replaced, hence the riveted knives were only superior when new, or relatively so. The knives could last for up to four years, though often much less, depending on usage.

Each graver generally had a pair of knives in simultaneous operation [3]. His newest, which he was 'breaking in', was kept for marking out his work and helping to clear, or 'bare', the vegetation. The older knife – more worn and therefore thinner and sharper with a more fragile edge – was employed for graving. The knife was used in all peat cutting, and when held, one hand gripped the wooden handle and the other grasped the metal angle opposite. Cloth was wrapped around this angle for comfort during use.

To keep the knife blade honed, it was sharpened with a stone two or three times a day. When the blade had become buckled during an impact, for example by heather stems and roots, the cutting edge was again whetted, and even hammered, to straighten and

restore it. If knives were damaged on frozen peat, the foreman would stop the work. In severe winter weather, after work the knives and other tools were thrust as deep as possible into the “lockspit bottom”, and covered with bracken and other vegetation. This prevented wet peat freezing on to the tools, which could be difficult to remove.

When the section had been cleared of scrub, and was less wet, it was opened out by gulleting (Figure 21). This tended to be done September-October (at the start of the

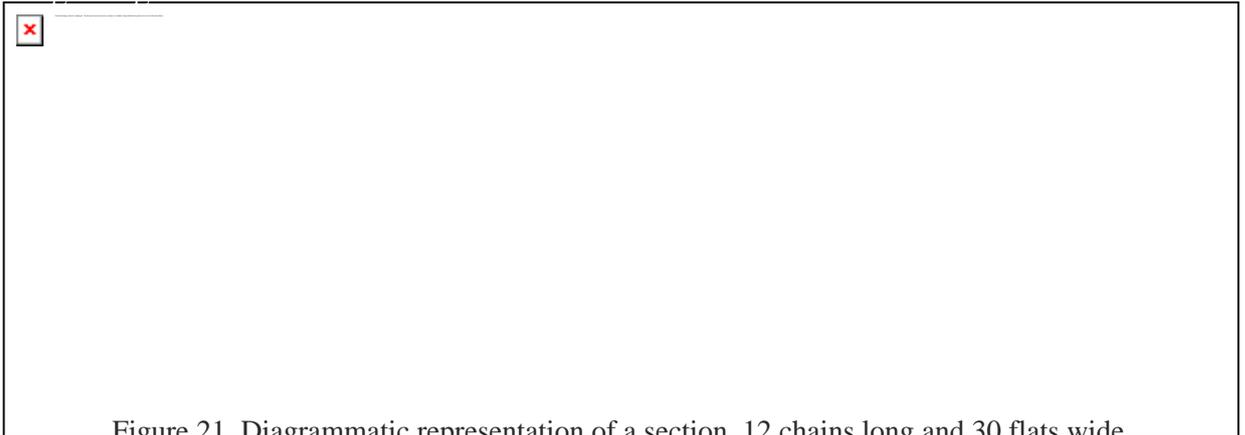


Figure 21. Diagrammatic representation of a section, 12 chains long and 30 flats wide.

graving season) or April (at the end of it), but was nevertheless flexible, and could, if necessary, occur at any time of the graving season. If done in the autumn, the resultant storage rows remained until the following spring when walling etc. commenced. These gullets were made at right angles to the permanent tram and the drain on the opposite side of the section, and were usually commenced at the tram end. They were created at 1 chain intervals, which was usually regarded as the most practical distance, though one moor foreman in the 1930s decided on 1.25 chains. All were parallel with the drain running the length of the other edge of the section. The area between this ‘end’ drain and the first gullet, and the areas between successive gullets, constituted the individual ‘flats’. The men working on the section – numbering perhaps ten – commenced and gulleted the whole of the section in one season. Having begun and then completed his gullet, each worker moved to the next available site for one on the section, or to another section if the existing series was completed or well advanced.

Although in the years after World War II workers operated individually when gulleting, hitherto each gullet had been formed by two men, acting together: one graving and one carrying and placing the turves. In those pre-war years, when drainage was, in general,

less advanced, the turves were often so wet and pulpy that they had to be put into place immediately, before they lost further cohesion. This required the simultaneous co-operation of two workers. Additionally, working in pairs had been frequent in earlier times, as an operational norm, with many tasks achieved jointly that in later years, as described here, were performed singly.

Where a gullet was to be formed, its edges were measured and pegged out, and the 'baring' within these limits – the fronds, leaves and roots of bracken, heather, cottongrasses, etc. – was sliced away with the graving spade. Relatively recent examples of these spades, though apparently typical through a longer timescale, had a steel, two-sided, undished blade around 10in wide, with a rounded mouth, though somewhat more angular at the vertex of the cutting edge. They had a closed socket, and with a lift for added leverage. The socket was developed into two straps, the upper one extending c.4in further along the wooden shaft than the lower. Three rivets secured the upper strap to the shaft, the lowest of them also piercing the lower strap. The shaft had a wooden T-handle fixed to it (Figure 22). As with the graving knives, two graving spades were often kept by a worker. The newest, less sharpened by usage and therefore not so highly prized, was employed in baring. The severed mat of vegetation and root-filled peat was laid on the surface along one side of the pegged area, almost invariably on the same side as it was eventually intended to place the turves for drying. The baring was removed in stints, known as 'lifts'; a stretch was removed to allow the same extent of gulleting to be achieved beneath. In practice, baring to the length of five turves was usually undertaken, as longer stretches below would begin filling with water by the time the worker came to finish the gulleting of that stint. This was repeated perhaps ten times in a day.

The turves were theoretically 14.5in long x 9in wide x 6in thick. When cutting with his knife, the worker extended down 12in at a time, thus being able to take off two turves by that action, one after the other, severing the undersides with his best graving spade. However, almost invariably in the earlier years, the 12in could be replaced by 6in or 18in, depending on the wetness and nature of the peat. For example, good quality peat, which had not dried and become solid, allowed a depth of three turves to be cut at once. But whatever the depth cut by the knife, the eventual floor, the 'bottom', was always 3ft in a gullet (4ft in subsequent cuttings). Thus combinations of depths had to be devised,

for example two depths of three turves, followed by one of two. Nevertheless, the procedures to be explained here assume the post-war standard of 12in depth.

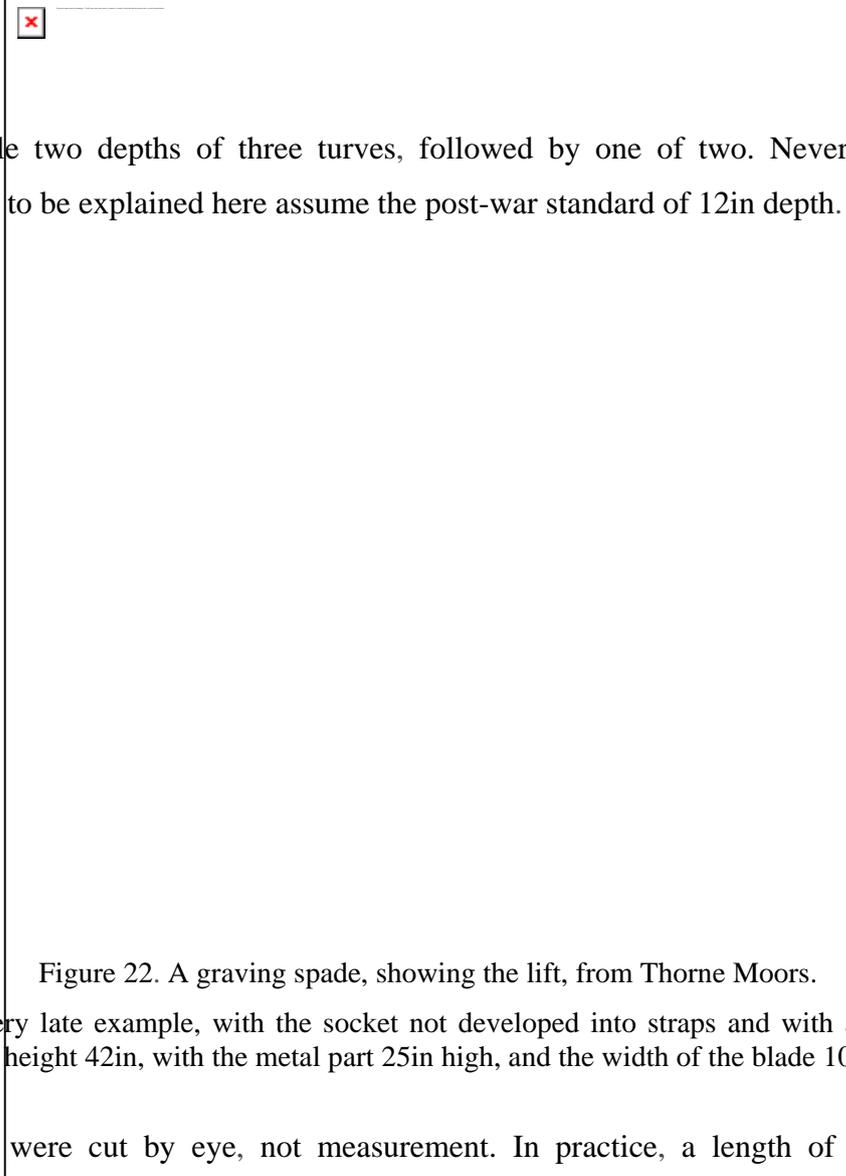


Figure 22. A gravingspade, showing the lift, from Thorne Moors.

This is a very late example, with the socket not developed into straps and with a single side rivet. Total height 42in, with the metal part 25in high, and the width of the blade 10in.

All turves were cut by eye, not measurement. In practice, a length of 14.5in was regarded as minimal, with 15-16in more usual. However, new employees were instructed to cut 14.5in, which was derived by dividing a chain length into 55 ‘benches’ [4], though the most convenient range, as they would discover with experience, was that as noted above. This latter allowed fewer turves per chain of peat to be dealt with subsequently. But any length above 16in caused disproportionately greater effort when continually lifting, these turves also being rather heavy in quantity when handled in the later drying processes. They were additionally more likely to break. Turves that were below 14.5in were too small. Too much exertion was required for what would be relatively small amounts. In addition, the 6in measurement was also liable to some variation, being sometimes reduced to increase the number of turves graded per day. If this occurred, the depth of the cutting was slightly diminished; this could easily be checked by the moor foreman using a measuring pole.

Each gullet, which drained into the peripheral drains and that/those crossing the section, was graded 3ft deep and 3ft wide (6 x 4 turves), with vertical sides and a three-stepped

working face. In the 1930s, conditions were generally so wet that it was only possible to cut 2ft deep, which was probably then (and earlier?) the normal gulleting depth. This dictated, for example, two-stepped working faces and shorter storage rows.

The post-war worker, operating singly, usually commenced gulleting from the 'inner' side of the drain that lay closely adjacent to the permanent tram balk. It was initially difficult to sever the undersides of the turves, as the worker had to straddle the drain to give him both balance and force. The vertical cuttings to initiate the formation of the turves were undertaken by graving knife, within the bared area, usually in the sequence given in Figure 23, and repeated as shown in the diagram, at the two lower levels. In this, the cuts to mark out the surface into incipient turves were numbered sequentially i-x, the order of the removal of the pairs of turves being numbered 1-20. In the latter progression, and having cut down 12in at a time, turves were removed two deep, the horizontal severance by graving spade, so that, for example, the top turf was taken from position 1, followed by that immediately below it. Then the upper turf from 2, and its congener below, were removed, with this pattern maintained, until the two turves had been taken out from position 20. With all these pairs of turves removed and laid out, the



Figure 23. Diagrammatic representation of the initial lifts to commence a gullet by a right-handed man.

It shows (left) the sequence of cuts (i-x) on the surface, to begin the gulleting from the drain side, and the order of the removal (1-20) of the vertical pairs of turves. To the right is the sequence of cutting (i-ix, i-viii), and the order of removal (1-16, 1-12) of the second and third lifts respectively, to complete the three steps.

next level was graved (i-ix), and the turves lifted in the sequence shown, but only those pairs of the latter from 1-16. The peat from positions 17-20 was left, not being cut at all. After the removal of the former, the lowest pairs were graved and taken out in the same

sequence as the level above, but only from 1-12. This created the three-stepped working face, which allowed the worker to stand on the steps to grave the peat in front of him more conveniently. After these initial series of turves had been removed, all future stints of gulleting were, as far as possible, in lengths of five turves, right down to the 3ft base, thus maintaining the three steps. These latter were only eliminated at the end of the gullet, when the graver cut into the side of the peripheral drain. Thus, the sequential differences in graving/removing, between the top lift and those below it, were maintained as the gullet lengthened.

When removing the first pair of gullested turves, having severed the base of the upper one by graving spade, it was moved on the spade to the surface alongside, on the same side as the deposited baring, and laid on it for as long as there was room on the baring. In so doing, the spade was twisted so that the top turf hit the ground upside down. The second turf of the pair was put on top of the first, also inverted, thus the previously upper and drier turf became the lower of the two forming the pair. Sometimes, one pair was put on top of another, to minimize both the distance the second pair had to be moved, and the time it took.

The sequence of five surface rows (40 turves) was deposited in pairs alongside, those from 1 alongside 4, those from 2 on the far side of the first pair, until those from 4 were the furthest of the deposited pairs from the gullet. Then pair 5 was placed alongside 8, until all five rows were alongside the gullet. The five surface rows thus formed were then removed, as pairs of turves, by fork, to form five parallel storage rows, each aligned at a right angle to the gullet.

The forks, wooden shafted and with a wooden T-handle, comprised four steel tines, slightly curved and either round or square in cross-section. If the latter, they quickly wore into a more rounded shape. The metal socket was generally closed, developed into two straps, the upper of equal length to the lower, or up to c.3in longer than the lower strap. Two rivets secured the two straps to the shaft. The socket, between its straight part that held the wooden shaft, and the point where it was fixed to the connected tines, was sometimes curved inwards. Thus, when the line of the shaft was extrapolated above the tines, the two were more-or-less parallel rather than in a continuous line. However, other examples of forks were much straighter, and lacked straps, though again had tines

curved inwards (Figure 24). The metalwork of both examples depicted is c.19in in height, and the height of the shaft is 37.5in. The width between the tips of the outer tines is 6.5in (example with shaft) and 7.75in (shaftless example), but these are measurements from well-used forks. Like the graving knife and spade, the fork became very worn and sharp, though unlike the two former, it was not deliberately sharpened, with one exception. If a worn tine snapped, it was filed to a point, and the others were also filed down to match it.

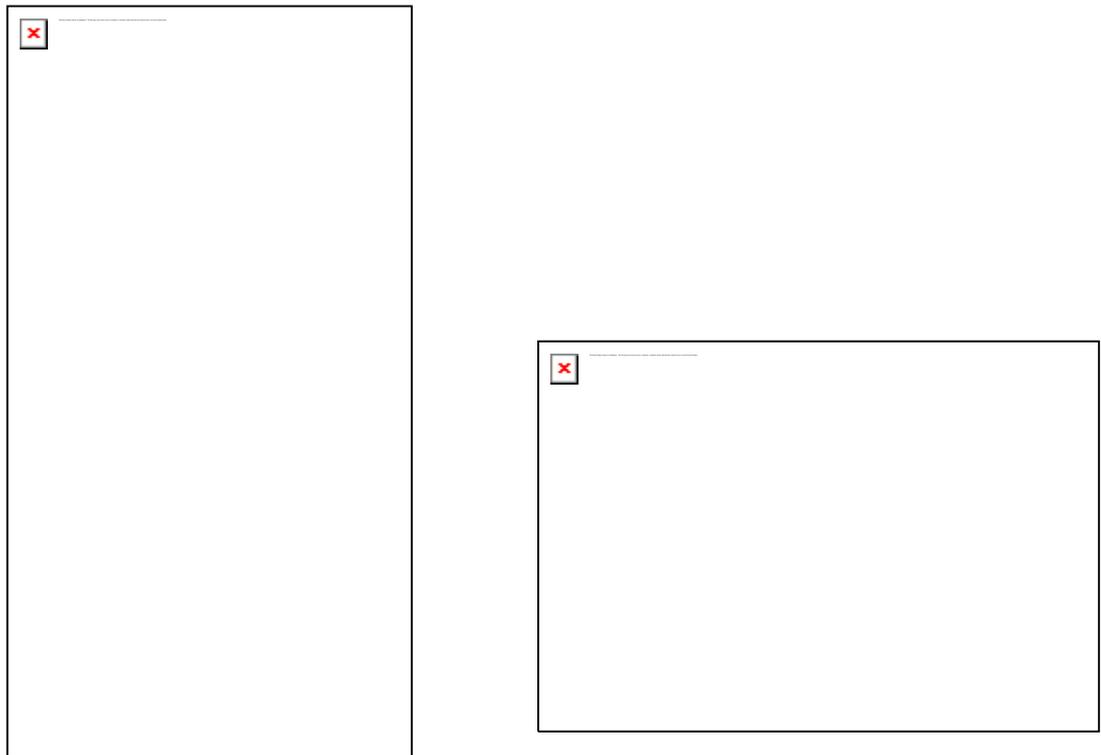


Figure 24. Two examples of fork from the later years of hand graving on Thorne Moors.

Two turves were lifted by one fork action. The fork was thus thrust at an angle into the side of the lower of the two turves. Experience dictated how far from the gullet the first sequence of turves for each storage row should be placed, to leave sufficient room for the rest later, which would occupy the line between these outer turves and the edge of the gullet itself. With the upper sequence laid out in five storage rows, the turves from the next level down, four turves in length (32 turves), were removed and laid out in the same way (pairs and then rows), contributing to, and therefore extending, the storage rows, advancing them closer to the cutting face. The basal sequence, three turves in length (24 turves), was not first laid out as pairs, but placed immediately to form the proximal length of the storage rows. This extended the rows almost to the edge of the gullet.

The actual transfer from the paired turves alongside the gullet, into the storage rows, had a definite form. Within any intended storage row, the first two turves at the furthest end from the gullet were placed by fork, one being manoeuvred by it to lie flat against the ground as a support, the other leaning upright and against it. The next three pairs were carried by fork and each pair thrust off to lean against those turves already positioned (Figure 25) [5].

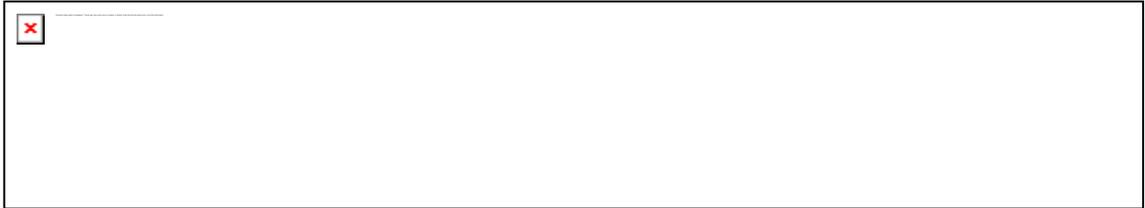


Figure 25. Side view of a storage row associated with gulleting.

When the next batch of eight, from lower in that section of the gullet, came to be added later, they were forked singly and thrust into position in the storage row. The final, lowest, eight turves, when moved to complete the storage row, were transferred on the graving spade as they were cut out, and put straight into the row, which by then had become extended within the reach of the worker. Subsequently, all the pairs of turves from the later (all five turf) lifts further along the gullet were placed alongside, and then formed into storage rows, in the same way, except the lowest pairs in each lift, which again were placed directly into the rows. The residual six turves were removed when the steps were eliminated on the completion of the gullet at the peripheral drain side.

The storage rows were laid out with sufficient space between them to step between, and allow access to the wind on all possible sides. As the supporting turves on the ends of the storage rows were laid out in the same alignment as when they existed in the gullet, they had, more-or-less, to touch their flanking counterparts to ensure that there was enough room for them. Although the rows were mainly storage for convenience, limited drying was achieved in them. From the rows, the turves were then successively walled, pyramided and stacked, within a year of graving the gullet, in much the same way as the peat graded subsequently from the flat, and described later.

Lockspitting was undertaken in the gullet, and in all subsequent cuttings. Lockspits were cut, using a graving knife and shovel, to remove an extra line of turves, below the 3ft (or subsequent 4ft) level, creating a channel to facilitate drainage. However,

conditions were often sufficiently wet in the pre-war years for lockspits to be two turves deep. They were taken from the floor at the base of one face or – at least in the late 1930s – were cut one turf distant from the base of the face, presumably to facilitate measurement of the depth by the moor foreman at that time. (Plate 2). When the gullet was started, a line of three lockspits was removed, because of the creation of the stepped working face, but subsequently, they were cut and removed as a series of five in each lift. Although lockspits were cut with a graving knife, they were always basally severed, and removed, by shovel. The extra harvestable peat generated was added to the storage rows. Thus the 24 turves in each row was increased to 25, each additional turf being leaned against the others, placed virtually next to the gullet.

5.5 Subsequent graving: completing a seven year process

In the year following gulleting, these initial cuttings were expanded, being widened on each side, though not necessarily exactly contemporaneously. In later years, this process of enlargement and removal was continued, by taking annually two lateral strips of peat, which gradually broadened each cutting. Each year's baring was tossed into it. By graving on both sides, the derived storage rows, and the structures formed from them, were also placed on their respective sides. The gullet had been created by a single worker in the post-war years, but with one exception, the next widening was achieved by a different person along each side of the old gullet. The direction travelled by each man depended on his handedness. However, the same worker always graved the face on each side of the flat he was operating on in that year. When he had graved the strip from each side of his flat, paired the turves alongside (except, again, those created from the basal lifts), and laid them all out in storage rows, he moved on to the next available flat. In subsequent years, that person did not grave the same flat during each one, so that over usually seven years, different men (except by chance) slowly eliminated each particular flat to the depth of 4ft.

Thus, when eventually cleared of the stacked gulletered peat alongside, the widening of the gullet in the following spring (or occasionally late in the previous year), could begin. In this and the ensuing years, baring and peat removal continued to be done in stints known as lifts, of five turves in the first season after gulleting, six or seven in the succeeding year, and an average of about nine thereafter. As the peat became gradually drained and the cuttings did not fill with water to the same extent, or so quickly, the

later lifts could sometimes be of up to 12 turves. In the first years after gulleting, graving still had to be undertaken during the same day as the baring had been removed, as the ground quickly became saturated, particularly as graving was not a summer job. By about the second or third year after gulleting, the peat had become drier, so graving did not have to be done immediately after the baring of that particular lift. By then, a bared surface left overnight (but not longer) need not be detrimentally wet next morning.

When the first worker came to widen the gullet, he did so on the side opposite to that with the baring laid out on it during the earlier gulleting. Having pegged out his strip from the edge of the gullet, he removed and put the 'new' baring alongside him, on the surface furthest from the gullet. All the turves he removed that year from the cutting were placed on this baring as far as possible. When the second worker reached that task on the other side of the original gullet, he first removed the baring previously laid out during gulleting, followed by the living vegetation beneath it. He tossed it on his fork (the old gullet baring) or graving spade (the baring being sliced away that year) on to the available space in the 'bottom' (the floor) of the other worker's cutting, just completed. Each man, having taken out a lift of baring five turves in length, and deposited it alongside, partly on the baring (first graver) or entirely on the growing vegetation in situ (second), removed the peat immediately beneath. Then further lifts of alternate baring and graving were undertaken, perhaps five or six before the end of the day.

As two workers widened the gullet on each side, and others the same cutting in ensuing years, each successive cut was measured, pegged out, and removed in a series of lifts, to the depth of 4ft. Lockspits were necessary each year. Taking the cutting down to 4ft initially left a step 1ft higher at the base of the old gullet, which, because of the relatively wetter ground at that time, had only been graved to 3ft. The extra 3ft x 1ft was gradually removed as the first year's cutting progressed on one side of the gullet, and then on the other, to even out the cutting floor. The 'step' was shared by both gravers, taking one half each, which added four turves to some of the storage rows that year, above the number laid out from the new cutting itself. This 3ft x 1ft layer was cut by knife, in stages, when the lift alongside had been removed. When severed horizontally

by graving spade, these extra turves were placed, one by one, straight into the storage rows, that had been accordingly positioned to take them.

The peat derived from gulleting, and the next two seasons' work, was placed each year for drying, and then storage, on the uncut 'top'. From the fourth year, some, and eventually all, was placed in the 'bottom'. The flat was eliminated, to 4ft depth, usually after a total of seven years. In the 'bottom', lighter, less humified, surface peat was preferred, as being so, it was easier to get it in and out by plank and wheelbarrow. In drier years, some surface peat became so light that the turves would even stand being thrown in or out without breaking.

The uniform 4ft depth ensured that all cuttings comprised four-stepped working faces, created in much the same way as the three-stepped faces. However, in the years after gulleting, the graved strips were not necessarily of unvarying *width*, but were the same in each year on either side. After the third year of working (gullet and two subsequent annual cuts), the widths were always 4ft 6in. These turves were laid out, as before, in pairs (though again not the basal turves, for which this stage was foregone), and then as storage rows (of 48 turves and one lockspit). But in the two earlier years, the graver was instructed to cut 2ft 3in (24 + 1), 3ft (32 + 1), or 3ft 9in (40 + 1), depending on the prevailing conditions, with 3ft the most common. When the two latter widths were undertaken, they were measured out on either side of the gullet or later cutting. However, the much less frequent 2ft 3in, being invariably undertaken in the year following gulleting, was measured only alongside a gullet, along the side opposite to the deposited earlier baring. It was thus done, by only one man, as in Figure 26. He both

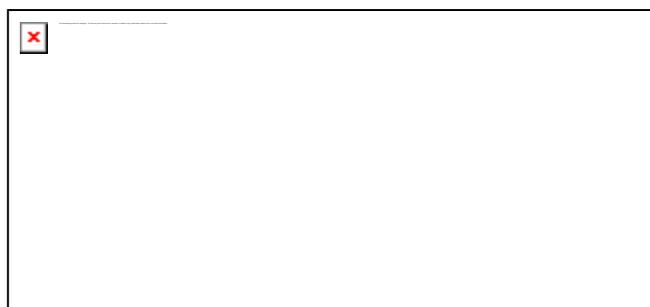


Figure 26. Diagrammatic representation of a lift of five turves in the year after gulleting, eight turves deep, and three turves (2ft 3in) wide.

It shows the sequence of cuts (i-viii) on the surface to commence the cut, by a right-handed man, from the drain side. It also gives the order of the removal of the vertical pairs of turves (1-15).

removed the extra 2ft 3in, and deepened the gullet by 1ft, this extra peat lengthening the storage rows beyond 24 turves, to 32 turves. Because of the existence of a cutting along one side, the worker did not have to straddle the peripheral drain as before, but could stand in the ‘bottom’ and thrust in the graving spade horizontally to sever the undersides of the turves. When 3ft or 3ft 9in widths were taken, in the two years before the full 4ft 6in width was achieved, their sequence need not be constant. In conjunction with the 2ft 3in width, the six possible combinations in the two years after gulleting were: 2ft 3in + 3ft; 2ft 3in + 3ft 9in; 3ft + 3ft; 3ft + 3ft 9in; 3ft 9in + 3ft; 3ft 9in + 3ft 9in. However 3ft + 3ft 9in was by far the most frequent. As noted, the combinations with a 2ft 3in component were exceptional. At 3ft and 3ft 9in widths, the turves were removed in the same manner as that for the 2ft 3in cut, but modified for scale (Figure 27).

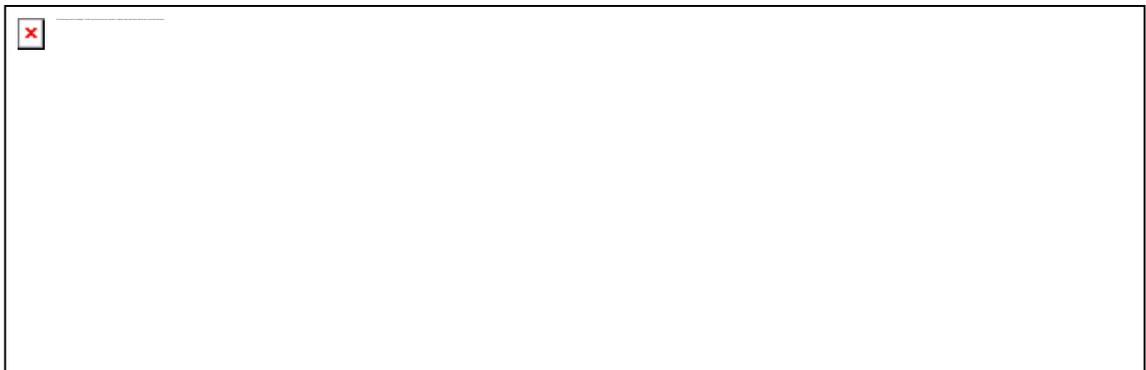


Figure 27. Diagrammatic representation of lifts of (i) five turves at four turf (3ft) width; and (ii) six turves at five turf (3ft 9in) width, using the same conventions as in Figure 26.

As space on the unworked part of the flat diminished as the years passed, the storage rows had eventually to be split between ‘top’ and ‘bottom’. This began with the fourth year of graving (including gulleting), at 4ft 6in width. In taking these and all subsequent lifts, the sequence of cuts did not alter, though the pattern of the removal of pairs of turves from the ground was not rigidly set out.

However, the details that follow, visualised in Figure 28, are of the most common example. Deviation from this still provided the same result. Having marked out the entire lift (i-xv) on the surface in the fourth year, pair 6 was removed, then 5, followed by 12, 11, 18, 17, etc., to 54, 53. They were put in the ‘bottom’ on the graving spade, which was twisted during the thrust, to result in each being inverted when positioned on the ground. They were placed to form paired turves, one on top of the other, as in earlier years, and in all subsequent pairings, which were also inverted. Next, the turf pairs 4, 3,

2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49, were graded and similarly positioned by spade into pairs, on the unworked top. Once in the pairs, all these turves on the top were then



Figure 28. Diagrammatic representation of a lift of nine turves, eight turves deep.

It shows the sequence of cuts (i-xv) on the surface to commence the cut, by a right-handed man, from the drain side. The vertical pairs of turves are numbered 1-54, though this does not necessarily signify the order of their removal. See text.

formed into storage rows (eight turves in each). The next level of turves was then marked out and graded, putting pairs 6, 5, 12, 11, etc. to 54, 53, in the 'bottom' as pairs; then 4, 3, 2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49, on the 'top' as pairs, and adding these to the storage rows there, to make the latter 16 turves in length. Next, *all* the pairs placed in the 'bottom' were formed into storage rows (of eight turves each). The third level of turves was then cut and removed, in the order of 4, 3, 2, 1, 6, 5, 10, 9, 8, 7, 12, 11, etc., to 52, 51, 50, 49, 54, 53. All these turves were placed on the 'top' as pairs, and then were put in the storage rows there. The fourth level was taken in the order 6, 5, 4, 12, 11, 10, etc., to 54, 53, 52, formed into pairs on the 'top', before being put into the storage rows there. Then pairs 3, 2, 1, 9, 8, 7, etc., to 51, 50, 49, were severed and thrust directly by spade also into the storage rows on the 'top', the latter finally comprising 40 turves (with a further eight in each row in the 'bottom'). In effect, as many turves as possible were fitted on to the drier 'top', with the excess put in the 'bottom'. This was also true, though at a larger scale, for storage stacks. Finally, the lockspits were cut, one turf being added to each storage row, immediately next to the cut peat face, by which the latter was lengthened.

In the fifth year, the next lateral cut, successively marked out in the same way as before, both longitudinally and at depth, was graded and removed. Pairs 6, 5, 12, 11, etc., to 54, 53, were placed in the 'bottom'. Then pairs 4, 3, 2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49,

were put on the 'top'. When the whole lift had been thus extracted, those pairs on the 'top' were formed into storage rows (eight turves in each). The next level of turves was then graved and transferred. First, pairs 6, 5, 12, 11, etc., to 54, 53, were placed in the 'bottom', and were then formed into storage rows of eight turves each. This was followed by the graving of pairs 4, 3, 2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49, put on the 'top', first as the usual inverted pairs by spade, then into storage rows (16 turves). From the subsequent level of turves, pairs 6, 5, 12, 11, etc., to 54, 53, were severed and moved directly into the storage rows on the 'bottom' (12 turves). Pairs 4, 3, 2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49, were located on the 'top', and then repositioned into the storage rows (24 turves) there. From the foot of the lift, pairs 6, 5, 12, 11, etc., to 54, 53, were placed with the spade into the storage rows on the 'bottom' (16 turves). If the worker had sufficient reach, pairs 4, 3, 2, 1, 10, 9, 8, 7, etc., to 52, 51, 50, 49, were moved by spade into the storage rows on the 'top' (32 turves). If he did not, 4, 3, 10, 9, etc., to 52, 51, were placed, on the 'top', as pairs, and then into the storage rows, and 2, 1, 8, 7, etc., to 50, 49, positioned by spade directly into these storage rows. Lockspitting completed the operation.

The sequence continued in the sixth year. On the surface, pairs 6, 5, 4, 12, 11, 10, etc., to 54, 53, 52, were placed in the 'bottom' as the accustomed inverted pairs, then pairs 3, 2, 1, 9, 8, 7, etc., to 51, 50, 49, were put on the top. The next level was then worked on, pairs 6, 5, 4, 12, 11, 10, etc., to 54, 53, 52, going into the 'bottom', and 3, 2, 1, 9, 8, 7, etc., to 51, 50, 49, on the 'top'. All the pairs on the 'top' and in the 'bottom' were then put into storage rows (12 in each). Next, the third level – following marking out – was graved: pairs 6, 5, 4, 12, 11, 10, etc., to 54, 53, 52, went in the 'bottom'; 3, 2, 1, 9, 8, 7, etc., to 51, 50, 49, on the 'top'. All were then put into storage rows ('top' and 'bottom'), to give rows of 18 each. At length, the fourth level was taken out. Pairs 6, 5, 4, 12, 11, 10, etc., to 54, 53, 52, were placed directly into the storage rows in the 'bottom'. Then pairs 3, 2, 1, 9, 8, 7, etc., to 51, 50, 49, were also put directly into the storage rows, on the 'top', giving 24 turves in all of them. Lockspitting followed this.

The seventh year involved the removal of the 'cutting out piece', which as the residual 'top', was often c.6ft wide, and was preferably taken as two 3ft strips. It was all that was left after the flat had been narrowed between the original gullets by successive annual widening. From the first of these 3ft strips, all pairs of turves in all levels were taken out

in the sequence 6, 5, 4, 3, 12, 11, 10, 9, etc., to 54, 53, 52, 51, and placed as the inverted pairs alongside, except the lowest, which were placed directly into the storage rows. Each level of the pairs was formed into, or added to, storage rows, these building up over the four levels from eight to 32. The remaining 3ft strip was then removed, in exactly the same way, successively adding these newly-generated turves to the existing storage rows, which had been placed to fit in these new turves in front of them. The basal pairs again, because the worker was so close, were placed directly by spade into the storage rows, which then amounted to 64 turves, each being subsequently increased by one after lockspitting. Putting all the turves into the same rows on one side of the 'cutting out piece' ensured that they were in a more convenient location for the building of the later drying structures and storage stacks. If the 'cutting out piece' was wider than 6ft, the breadth of the two strips was improvised. No peat was left for the next year. It was already so dry and hard by the seventh year that graving had become relatively arduous.

In the later years of graving, the 4ft 6in width was occasionally replaced by two contiguous and parallel 3ft widths, done to increase the amount of peat available (64 + 1) from that season's work. When these two 3ft strips were being formed, they were both cut, by the same worker, in the same direction, at the same time and rate, so they remained more-or-less level as the cutting progressed day by day. The extra long storage rows had to be fitted in as feasible, sometimes also putting turves on top of others in the rows, by graving spade.

There were occasional examples of peat winning beyond the usual 4ft depth, though the general pattern of such removal did not materially differ from the established system. For example, in later years in the south of the moorland, after a 4ft cut had been taken from an entire section several years earlier, reinvading vegetation was removed, the drainage system was reactivated, and some further cutting was undertaken, again to increase the amount of peat obtained. These cuttings were 4ft 6in wide and 2ft deep, plus lockspits (storage rows of 24 + 1). Other instances centre on the removal of more than 4ft of peat during one graving season. Thus on one occasion c.1967, peat to the depth of 10 turves, plus lockspits, was taken out of Goole Moor. However, these cases were exceptional and not repeated.

The so-called 'black' peat, used as fuel, was obtained *as part* of the described peat winning process. It was the more humified, lower peat, but did not demand removal from below the 4ft depth, being often available in the lower half of the latter profile. Having been won and dried with the other peat, the 'black' peat turves were then picked out from the storage stacks for separate removal.

When gravings, especially during gulleting and in the following year, the cuttings were relatively wet, and pattens were worn, improvised by the individual who needed them. In these and other years, each worker only graved as much in a day as he could physically remove i.e. reach the appropriate normal depth (3ft or 4ft) which marked the base of the cutting. This was done as groundwater, frost and ice could hamper the resumption of the unfinished work next day. There were, however, two minor exceptions. First, as explained, the steps need not be eliminated at the end of each day. Second, it was sometimes acceptable to take off a depth of two or four turves if some residual working time remained towards the end of the day. The remaining six or four turves could then be left for the next day.

5.6 Drying the turves

From the storage rows, all turves, derived from gulleets or later cuttings, were moved into 'walls'. These were, as their name betrays, linear structures, built in parallel at right angles to the cutting, on the 'top' or in the 'bottom', as available space dictated on either side of the working interface. If in the 'bottom', some of the walled turves were, like the storage rows, put on the baring tossed in. Here, this layer of insulation separated these turves, as it did in other structures, from the relatively wet floor, and thus kept these basal turves a little drier. In the walls, drying was significantly effected. Each wall was formed from two storage rows, its length depending on the length of row available on the 'top' or in the 'bottom'.

The first storage row was tipped sideways from its original position, to create a course of turves with their longest faces adjoining, and no gaps between. On top of these, the second storage row was placed by hand, usually as three further courses, the turves within each being laid lengthways, as in Figure 29. The gaps between the turves within each course were called 'pigeon holes'.

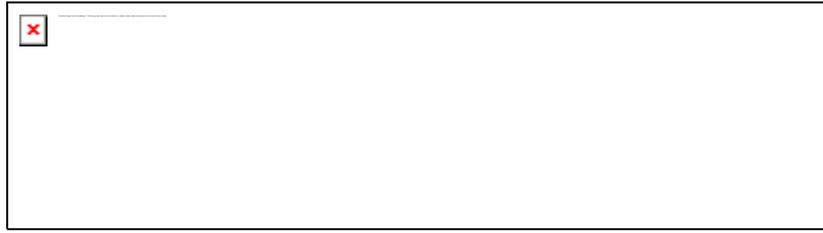


Figure 29. Side view of a typical wall.

A month or so after walling, the turves were re-arranged into ‘pyramids’, colloquially referred to as ‘piddies’, the process being known as ‘piddying’. Sometimes, gullested peat turves, being more sponge-like than the later, increasingly hard, turves, were sufficiently dried out during the duration of walling for subsequent pyramiding (and even occasionally stacking) to be dispensed with. There were even remembered instances of gullested peat in storage rows becoming so dry that it could be loaded directly into wagons for removal.

Pyramids are depicted in Plate 2 (lower photograph). They usually consisted of a base of five turves, arranged lengthways in a circle, with a gap between each. The upper turves in the walls were placed lowest in the pyramids, thus reserving the drier, upper positions for the wettest, previously basal, walled turves. On top of the initial five turves, successive courses of five, five, four, four, three, three, two and one turves were placed, in circular shape as far as possible, with gaps between each turf within a course. The total height was 4ft 6in. The centre of each pyramid was hollow, to give drying winds maximum access to each individual turf. Thus a pyramid contained 32 turves, all laid lengthways, the amount that could be placed on a stacking-barrow [6], whose overall length was 6ft 8in.

Normally, the barrow-load of turves – each component being laid across the wheelbarrow – was up to four turves high, and two turves wide. Two upright slats were, however, sometimes nailed on to the vertical board to help carry more than the four turf height when the peat was very light in a dry year. The usual load of one pyramid could then be increased to about one and a half pyramids. After the stacking season, the wheelbarrows (and hand-barrows) were collected for storage and repair at the works, though within the years of the British Moss Litter Co. in the early 1960s, they were left

out on the moorland, and repaired as necessary there. No wheelbarrows were made at the Moorends Works after the mid-1950s.

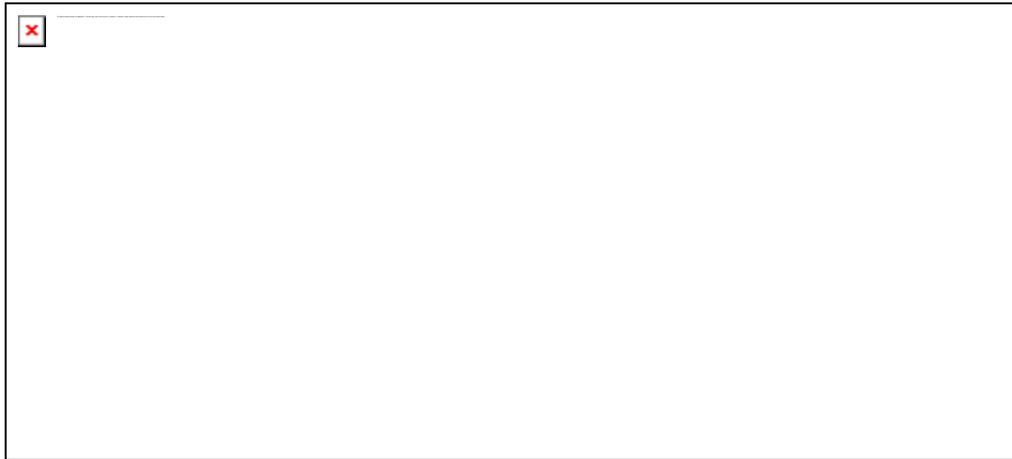


Figure 30. A stacking-barrow from Thorne Moors.

Very rarely, during only the most extreme seasons, pyramided peat was unable to dry sufficiently, and then it had to be ‘repyramided’. By this, two existing pyramids were incorporated, supposedly by moving each turf, to form a new, larger, pyramid, 12 turves high. Shaped like the more familiar pyramid, it comprised courses of eight, eight, seven, seven, six, six, five, five, four, four, three and one turves, a height of 6ft [7]. It was important that the basal pyramided turves were positioned at and near the top of the repyramided structure.

5.7 Storing the turves

When the pyramided (or repyramided) turves were acceptably dry, they were moved into large storage stacks [8]. Occasionally, it was feasible to fill wagons directly from pyramids and thereby dispense with stacking. If this happened, some pyramids had to be knocked out of the way to get the portable tram into position. However, normally, a series of storage stacks was built lengthways on a flat (Plate 2, lower photograph), towards the middle of the uncut part of each for as many years as possible, though in the cut ‘bottom’ when eventually necessary (Plate 3, lower photograph). To make it worthwhile to put down a gantry and tram, storage stacks tended to be entirely on the ‘top’ or in the ‘bottom’. However, sometimes in the year *before* storage stacks would be placed in the bottom, some smaller stacks were nevertheless constructed there. This was because there were fewer turves to make larger stacks practicable, with stacks of normal size involving the movement of turves over too large a distance. These smaller stacks

were then left until the following year, when larger stacks were built around them, so that they formed the core of these newer structures.

The number of stacks was often determined by the length of the flat. In this way, for example, a 12 chain flat was expected to support 10 stacks. If stacking at the end of the life of a flat, the stacks were built on the side of the 'cutting out piece' nearest to where the temporary tram would be laid to remove the dried peat. Each stack was c.36ft long, 10-12ft wide at its base, and 12ft (24 turves) high, thereby containing c.12 tons of peat.

Smaller stacks than this were sometimes built, largely depending on the amount of dry peat. This was particularly true of the initial, gullested peat, because there were fewer turves [9]. The smaller stacks of gullested peat were, by their origin, formed of difficult peat removed under the worst ground conditions. They were therefore characterized by relatively irregularly shaped turves, even broken turves, and thus had less 'tidy' courses. Although these latter stacks were formed in the same way as their later counterparts, they were only about one-third to one-half as large. Each of these stacks usually comprised gullested turves from two gullests: one at either side of the flat, the turves being thrown, and taken by wheelbarrow, to the middle of it. In the following season, when the gullet came to be widened, this later peat was stacked in the accustomed way, but around the existing relatively small stacks of gullested peat, thus encasing ('casing') and incorporating them.

Stacked peat remained on the section until required, usually after one, or at the most two, years. It was rare for stacks – as a vulnerable asset – to be abandoned, but fire or flooding could lead to this. It was always intended that there should be two years' stock of peat on the moors, divided between that undergoing drying, and the storage stacks. The turves were only taken to the works as required, so unexpected difficulties like adverse weather, or fire, necessitated this buffer of extra supplies to be readily available.

Each stack position was marked by placing a single row of nearby turves, with their long axes pointing inwards, around the intended perimeter of the future stack. Any pyramids existing within the area marked out were simply built around as the stack grew. The turves from the adjacent pyramids (or walls, if pyramiding had not been necessary), were thrown to the stack site, or as close as possible if a little more distant.

The furthest were moved by stacking-barrow or hand-barrow (Figure 31), and then either placed by hand, or tipped, as necessary.

The hand-barrow, known colloquially as a 'crate' [10], comprised a slatted box, whose precise measurements are not recorded. It was, however, 3ft – 3ft 2in long, and 3ft – 3ft 3in wide at the top, and 2ft 6in – 2ft 8in high. It sloped inwards to a base c.3ft long and c.2ft 6in wide. There were four slats (each c.4in wide) on each of the four sides. On the two lateral sides, these were given added strength externally by each having a centrally-placed upright wooden support. The hand-barrow also had a slatted base, to which shafts were fixed for two-man operation. Hand-barrows, like the wheelbarrows, were coach-bolted together. Their rigidity was heightened by two iron rods, each threaded at either end, and secured by washers and nuts. The rods spanned the width of the hand-barrow beneath its body.

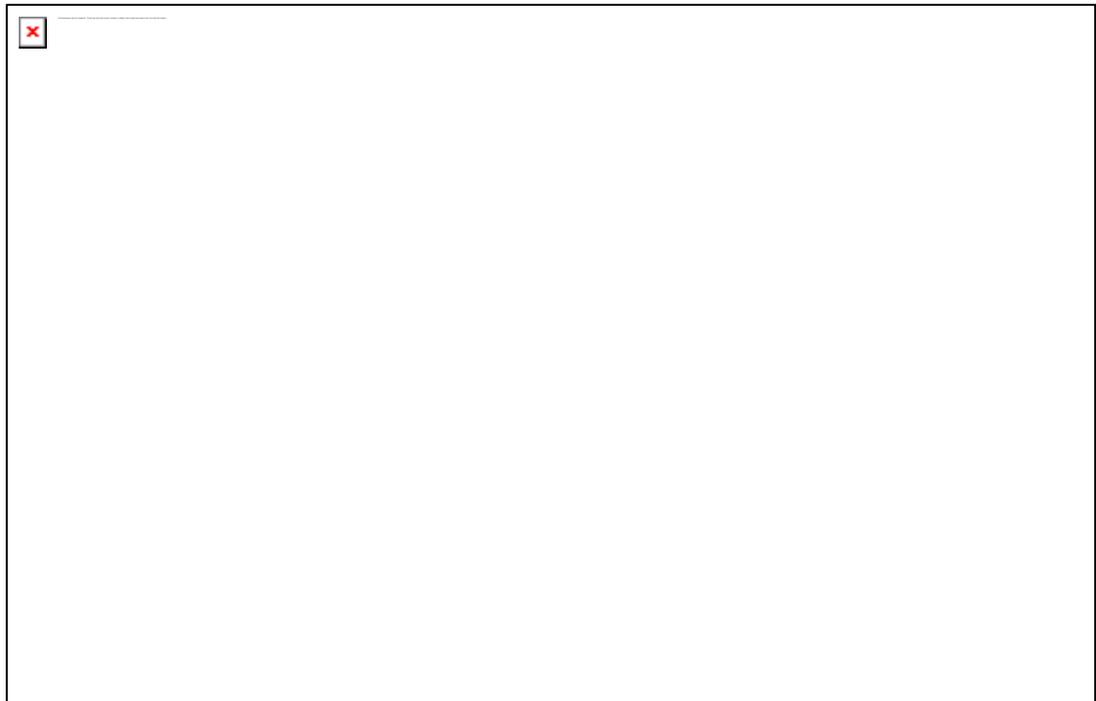


Figure 31. A hand-barrow, reconstructed from verbal evidence.

The two operators pushed a pyramid into the hand-barrow, and then subsequently tipped out the turves at the stack site. Hand-barrows could be used if two men or youths were working together (i.e. individuals of approximately equal and adequate strength). Men or youths working singly, or with families, used wheelbarrows. In boggy areas, two workers could operate more quickly using a hand-barrow than struggling with wheelbarrows and planks. Hand-barrows became increasingly replaced by

wheelbarrows as the moors became drier and firmer, as family employment diminished, and therefore as workers increasingly preferred to work (and earn) alone. If, however, two men or a family were using wheelbarrows, two of the latter could be deployed: one being loaded while the other was wheeled away and back. Obviously, single workers only had a need for one wheelbarrow. All the joinery for hand-barrows and wheelbarrows, and other woodwork, was carried out at Moorends Works. Hand-barrows were certainly in use by the 1890s, and presumably had a much longer history. They remained in use to the last in the early 1950s (to 1954 on Crowle Moor).

The turf-thick casing of the stack was constructed around turves thrown or tipped as filling. It was built gradually into successive courses, each of which was placed to slope further inwards than the one below it. Thus the stack gradually narrowed on all sides as it grew upwards. The basal two or three courses were assembled successively and relatively quickly, usually around half of the perimeter at a time, but creating both halves in the same day. By contrast, the higher courses were built as expedient, being for example raised up at one end where turves happened to be readily available, the turves always being conveyed the shortest distance to where they could be used. These higher courses did not have to be rigidly formed as complete sequential courses, all the way around the growing stack, as one job.

The turves of the courses of the casing were aligned like bricks, approximately end-over-middle, with only a slight gap between the turves comprising each course. The corners of the stack were rounded. As the stack progressed, the space within this outer casing was gradually filled with roughly-placed turves, packed tightly behind the casing to give maximum solidity. If the casing was not adequately packed, the accumulated weight eventually forced stretches of it to collapse outwards, or 'belly'. After further infilling, the casing was built to converge, to close and seal the stack. The worker stood on a wheelbarrow to place the higher turves and throw in the last of the filling. He threw the final outer turves, lengthways inwards, on top of the existing stack, finally climbing on the stack side to position the last turves more accurately. These comprised the flat top, packed together to complete the seal. Once thus stacked, the peat did not significantly dry further.

When a stack came to be dismantled a year or so later, this was started at one end, and not from the top downwards. This preserved as much of the outer waterproof casing on all but one (short) side for as long as possible, and also ensured that the potentially wetter outer turves were evenly distributed with the drier inner ones in the wagons. To strip the stack, the workers initially clung to its sides to start removing the turves, but then often worked from the ground. By avoiding the structure itself as much as possible, they minimized both the creation of dust and the fragmentation of the turves.

When the stacks were to be removed and the turves transported after particularly wet or cold seasons, the turves from the tops of the stacks and the casing could be too wet or frozen. When eventually possible, these turves were separated and placed in 'pikes' or 'stocks' [11] on the ground alongside. This condition was particularly relevant to smaller stacks, which had a greater surface area of casing and roofing turves in relation to their volume, and thus potentially had a greater percentage of difficult turves. Sometimes, only the base of the casing was too wet or frozen and thus in need of 'piking'. Later, when adequately dry, the piked turves were reincorporated into stacks, by the latter being built around them in the following year, in the same way that stacks of gullested peat became part of subsequent larger stacks. Pikes are visible in Plate 2 (upper photograph).

The individual pikes were merely miniature stacks, their size depending on the amount of peat to be dealt with. They tended to be 4ft 6in wide, and 6ft high, but of variable length measured in yard multiples. The centre of the pike consisted of turves tipped from a wheelbarrow and then placed by hand. They were not thrown, as being relatively wet and heavy, they were liable to break. The casing built around these had fairly sharp corners, each course comprising pairs of turves with their long axes pointing inwards, alternating with single turves aligned lengthways in the course, all level on the outside. A small gap existed between each individual turf in a course. The top of the pike was flat, with this roof sealing the stack, the individual turves of this last course being packed tightly together.

If the regular large stacks had not been removed by a '[wagon] filling' (i.e. loading) gang because their contents had not been required at the time, the subsequent cuttings were still made on either side of the flat. The turves for which there was no space had

to be put in the 'bottom'. Once drying of these latter had been achieved, the new peat was added – by wheelbarrow and hand-barrow – to the existing stacks. This was done by encasing (casing) each stack, one turf in thickness, each aligned lengthways inwards. This shell was upright at the sides, the space between it and the sloping casing of the existing stack being packed with other turves. The ends were then extended, for as far as necessary, with extra layers of the inward-facing turves.

A quantity of temporary rails was laid by the 'filling' gang on the cleared peat surface alongside the stacks, on the 'top', or in the 'bottom' when the latter was eventually required. This line was often laid on the side of the stacks sheltered from the prevailing wind, to avoid, as far as possible, throwing dusty turves into the wagons against the wind. Alternatively, in summer, when wind could be less of a problem, the line could be laid on the side with the most level surface. Any unavoidable hollows, and the rail joints, were packed with turves for stability during use. Drains were crossed using plank- or sleeper- (or both) bridges. The laden wagons were pushed singly to the permanent line, from where horses, and eventually diesel locomotives, took the wagons away. From 1964, lightweight Lister locomotives began to replace human muscle-power in getting the wagons to the permanent lines (Limbert & Roworth 2009).

The whole length of the temporary tram was not placed at once. Units of perhaps 4 chains were laid as necessary, until the length of the flat was finally achieved and the most distant stack could be reached [12]. A three-man gang filled 30-34 wagons daily for the Medge Hall Works. The Swinefleet Works had a four-man gang loading 40 or more per day. The difference was determined by the capacity of each works. Once a gang had removed the dried peat, the temporary line was taken apart and physically carried to the next flat, there being only one set of portable metals available per section. The turves employed as packing beneath the rails, as well as any others left residually on the flat, were formed into diminutive pikes, their size determined by the number of turves to be dealt with. They could be as small as 3ft in length and breadth, and 3ft-4ft in height. Once the section was finished, the rails were conveyed away on wagon bogies, with the furthest end of the track taken out first.

5.8 Peat working

The time of walling and pyramiding depended on the character of the season. An 'early' spring allowed walling to commence at the beginning of April. This activity, and therefore the walls themselves, lasted four to six weeks, with pyramiding following directly – often during May – if the weather remained propitious. Pyramids took about six weeks to dry sufficiently. However, if wet weather prevented the walls from drying, a break of two weeks or so could occur between walling and pyramiding, when the workers had to return to graving. Stacking followed pyramiding, and lasted until September i.e. until all acceptably dry peat was stacked, and the weather held. Graving occupied the year between the end of stacking and the commencement of walling in April. In very dry years, good mossy peat graved early in the autumn could be walled and even pyramided within that same year. It was then left until stacked, or pyramided and stacked, as appropriate, in the following year.

Almost all work on Thorne Moors was paid by the chain i.e. piece-work. This included vegetation clearance, pyramiding and stacking, where the chain payment was for the length cleared, or the peat structures created from the original worked chain [13]. The hardest – although not most remunerative – task was that of (baring and) graving, and this earned the best rate of payment per chain. However, per day, more money could be earned when pyramiding or stacking. Average men could grave 0.75 chain per day. Fox (2007) recorded the evidence of Ernest Hibbard:

It was a skilled job. You had to have a good back and all. A lot of people did three quarters of a chain every day. And if you were strong and you were a bit wild you could do the chain.

The worker, in addition to undertaking his own baring, usually also did his own 'dry work' (walling, pyramiding, stacking), although he might also work with a partner, or his family. Women were employed as seasonal workers to undertake 'dry work', taking children with them if necessary. Fox (2010) has briefly referred to this, emphasising the hard graft involved and sometimes difficult conditions (though apparently describing some memories from the more recent Fisons years). Fox (2007) also recorded thoughts from the graving years offered by Anne Hibbard:

The cut turf blocks were laid out in a row, often by the graver's wife working with him as a team, to begin the drying process. Ernie used to cut it then I'd carry it off...He cut these squares then I'd put the fork in two at a time and put 'em in rows...It was heavy...but you're used to it with working on the farm.

In the early 1930s, workers were assigned 'dry work' not their own, but this was atypical.

In addition to piece-work, day workers ('daymen') were employed on the moors. They were paid a daily rate to undertake piking, drain cutting, repairing trams, tree clearing, fire watching, and generally working as required.

5.9 The transition to mechanisation

In 1962, the Moors Manager of the British Moss Litter Co. travelled to Germany to assess the suitability of cutting machines, for white or moss peat, manufactured and in use there. In August of that year, an order was placed for a cutting machine, for delivery to Thorne Moors in May 1963. It was a *Weißtorfstechmaschine* Steba (*STechmaschine BAckers*) manufactured by Hermann Backers GmbH of Twist, south-west of Meppen and close to the Dutch border. Steba cutters had been first manufactured in 1955, with the earliest in Britain being a Steba I imported in 1960 by Richardson's Moss Litter Co. of Carlisle. The Steba II was launched in 1961, and one was delivered to Fisons' Eclipse Works at Meare, Somerset, in 1962. This was followed by a second Steba II, the machine to Swinefleet in 1963. Other British orders for Stebas (including Fisons) followed from 1965. As a direct consequence, hand graving became quickly discontinued at Thorne.

Although the first Steba II had been ordered by the British Moss Litter Co., its successor, Fisons, was intent on expanding the application of mechanisation to peat winning. This would ensure that a labour-intensive industry became transformed into one that was much more capital-intensive. The enterprise would remain based on German technology, and sod-peat may be regarded as the first phase of mechanisation on Thorne Moors. It is described by Limbert and Roworth (2009).

In the earlier, graving years, peat working within each respective works territory was spatially organized into sections. These were paired on either side of a permanent tram, with several sections undergoing active working at any one time. A section was subdivided into parallel flats, each 1 chain in width. These were defined by the initial peat cuttings, which formed a parallel series individually 1 chain apart. Gradually, in

later, consecutive, years, these workings were progressively widened until that cut of peat had been completely removed and the surface lowered.

When Stebas were first introduced, they were inevitably employed in areas previously graded, since very little untouched upper peat was then available. As the manual workings had extended down to 4ft, these new machines, by having a routine maximum cutting depth of 90cm (3ft), did not take what was regarded as a full cut. Thus, where a Steba had been used, an extra 2ft or 2ft 6in was graded, which was processed for drying in the traditional way. However, as grading became gradually eliminated, and the practicality of ultimately taking more than one cut of peat by machine became accepted, the earlier perceived necessity to take some by hand was superseded.

Initially, there were no planned modifications to the layout of the sections, though they were no longer worked in pairs. The boundaries and features familiar during the grading years were often retained, although change was inevitable. When the flats became worked by the newly-introduced Stebas, and for about three years after, the old spatial pattern of flats was retained, with parallel workings commenced 1 chain apart. With one temporary tram put down the centre of each flat, this proved too far to throw all the dried sods from each side into the wagons. Before mechanisation, the temporary line had been laid alongside large storage stacks built centrally on the flat. However, with the launch of the Stebas on the workings, the wagons on this medially-placed line had to be filled from the new sod structures, c.9yd distant from the line on either side. This necessitated relatively laborious, and therefore more expensive, transference. The problem would obviously lessen in succeeding years as the cutting on either side of the flat gradually widened inwards. Nevertheless, there was a need for an overall modification to accommodate the changed circumstances. An alternative way was the laying of extra lines, but this too would have been comparatively expensive and wasteful of effort. Eventually, a solution was worked out whereby flats 0.5 chain wide, again with one central tram, was found to be the most practical. An average section therefore comprised up to 100 or so flats.

These temporary rails remained entirely muscle-powered until 1964, when relatively lightweight Lister locomotives were introduced to begin taking over wagon conveyance

to the permanent network (Limbert & Roworth 2009). Here, heavier locomotives had already been in operation for a decade.

Compared with the graded sections, those of the later years tended to become larger, as redundant – but hitherto permanent – tram banks could be eliminated by Steba cutter. This allowed some of the existing sections to be merged.

5.10 Notes

[1] The financial ‘Day Books’ of the British Moss Litter Co. 1904-12 are held at Doncaster Archives, referenced DY.BML 2/4-2/5. They contain orders for graving knives and other English tools 1904-10, by implement makers in Thorne (Charles Sanderson, Benjamin Sanderson & Co.), Ranskill (Skinner & Johnson) and Sheffield (C.J. Skelton & Co.). All were for the British Moss Litter Co.’s operations in Cheshire. Curiously, Thorne (and Hatfield) Moors are not referred to. The issue of tools by the British Moss Litter Co. only for Cheshire 1904-10 seems unlikely, despite this surviving evidence. However, the anomaly between this and the remembered date of c.1910 remains unresolved. It should be recalled that Dutch tools were being imported in quantity from 1894 (Griendtsveen Moss Litter Co. and then the British Moss Litter Co.) for use at Thorne. In an earlier ‘Day Book’ spanning 1894-1900 (DY.BML 2/3) there are no references to any English tools, though the first part of the ‘Day Book’ was concerned solely with Griendtsveen Moss Litter Co. orders. The succeeding ‘Day Book’ is not known to have survived. English tools were certainly being provided by the British Moss Litter Co. on Thorne Moors by 1912. The check-book of tools marked and issued 1912-16 (DY.BML 4/3) gives details for the Thorne Moors works, listing graving knives, graving spades, forks and shovels, in addition to specifically Dutch tools

[2] The size of the graving knives being ordered 1904-09 for the Cheshire workers, from C.J. Skelton & Co., was specified as a 24in blade and a 10in tang (per DY.BML 2/4-2/5). It is almost inconceivable that the knives in use on Thorne Moors at that time would have been different. If knives of varying size and/or weight were being used in the two counties, one of them would have been demonstrably superior, becoming the preferred pattern, and therefore promoting uniformity. More recent examples of graving knives from Thorne (and Hatfield) Moors, held by Doncaster Museum Service, have measurements of ± 18 in blades (5in wide) and ± 15 in tangs. The wooden handles (plus ferrule) are $\pm 15\frac{1}{2}$ in long

[3] Photographs of graving knives in action (though actually posed), apparently on Hatfield Moors in the 1960s, appear in the *Doncaster Star* of 4 July 1986, 31 July 1989, 28 September 1993, 27 March 2002 (all the same image); 7 April 1993, 3 October 1997, 31 August 1999, 27 March 2003 (all another image)

[4] Each chain of cut peat, when worked at a depth and width of 4ft and 4ft 6in respectively, was divisible into 55 benches (though in practice only 50-51). Each of the 55 benches had 48 (6 x 8) turves and one lockspit, amounting to 2640 turves and 55 lockspits = 2695 per chain

[5] Storage rows are depicted in the published photographs referred to in note 3

[6] Pyramids are illustrated in photographs from Thorne Moors in Anon. (1946), one of them also appearing in Rawcliffe History Group (1991). This photograph also displays a lockspit left after a cut of peat had been taken out, as does the photograph in the *Doncaster Star* of 7 April 1993, 3 October 1997, 31 August 1999, 27 March 2003

[7] Tall “pyramids”, superficially appearing as repyramided turves, are photographed in Hobson (1984). This plate purports to depict a Thorne scene. However, it shows Somerset peat ‘ruckles’, apparently at Ashcott, near Glastonbury, undertaken in 1948 or earlier by employees of the Eclipse Peat Co. (later acquired by Fisons). This provenance and date definitely apply to the other peat winning photograph included in Hobson (1984), and subsequently reproduced in Bothamley (2009). The latter photograph, although of a Somerset moor, does illustrate how the fork was thrust at an angle into the side of a pair of turves for carrying. See Anon. (1949)

[8] Storage stacks are visible, though apparently on Hatfield Moors, in photographs that appear in the *Doncaster Star* of 4 July 1986, 31 July 1989, 28 September 1993, 27 March 2002 (all the same image); 7 April 1993, 3 October 1997, 31 August 1999, 27 March 2003 (all another image). In Anon. (1946) and Rawcliffe History Group (1991), photographs show storage stacks beyond foreground pyramids. Storage stacks may also be seen in a photograph (dated 1911) in Tuffrey (1999) (lower photograph p.110), van der Sleen (2000) (lower photograph p.26) and Limbert (2000), reproduced here as Plate 5 (lower photograph)

[9] A single, rather small, stack, which may be one of gulleated peat, is depicted in Hyde (1967). The photograph was taken on Thorne or Hatfield Moors, but probably the latter in the 1950s

[10] The name ‘crate’ is a corrupted form of ‘cratch’, a midland and northern English term for inter alia a movable sparred frame or box (Wright 1898)

[11] A common dialect word, especially for a small stack of hay

[12] Several lengths of temporary track, alongside storage stacks, are visible in the photograph published in Tuffrey (1999), van der Sleen (2000) and Limbert (2000), reproduced here as Plate 5 (lower photograph). The extremity of the track laid is marked by a wooden underframe used to convey the prefabricated lengths of portable rail, one of which is on board. The wagons are being loaded from one of the stacks

[13] A typed sheet, giving new rates of wages commencing July 1963, exists in the British Moss Litter Co. archive held by Doncaster Archives (DY.BML 4/5). This notes that graving, lockspitting, walling, pyramiding and stacking were all still paid per chain on Thorne Moors