10. Stem teazles

Teazles passed through a number of stages on their way from grower to cloth dresser or finisher, and the methods, practices and terminology connected with these form a rather neglected part of the history of the stem teazle trade. These related to the physical handling of teazles; the counts and the systems for buying and selling teazles; the procedures for clipping and sorting into sizes; and the methods of setting teazles for use either by hand or by machine. During the period from the eighteenth century onwards, there was an uneven process of change at work amongst these, not only on the procedures themselves, but also in the organisation and the responsibility for the various parts of the operations involved. Many of the earlier usages were derived from the English growing trade, which was itself not totally uniform in its procedures, but the increasing significance from the mid-Victorian period of the import trade, from France especially, brought into use elements of a different system. Other alterations took place as a result of the changes from dressing shop to factory; from dressing cloth by hand to by machine; and as a consequence of the shift from conditions of high demand and high usage in the mills to conditions of decline.

(a) Handling and counting stem teazles

Traditionally, English teazles were made up for the trade by the growers in the form of stavs, cylindrically-shaped packages up to about 2 ft 9 in or so long, containing a given number of teazles of a particular size or quality, fastened together by their stalks round a central stick, the staff or stav. In the mid-sixteenth century, the cloth-workers of Bristol bought their teazles in stavs,[1] and in Leeds in 1684, the teazles in the 'Working Shop' of the late Richard Wright consisted of two stavs of teazles.[2] Up to 1914, West of England, Yorkshire and Essex teazles sent to the West Riding were nearly all in stavs, and up to about 1930, it was still the practice for the Somerset growers to send their teazles to the Yorkshire merchants made up into stavs. As stavs, the teazles could be handled easily, put onto packhorses, or piled lengthways on wagons, or stacked up the same way on the floors of dressing shops, mills or warehouses. Although the top ends of the teazles round the outside were exposed, the sides, which did the raising were protected by being pressed against each other. The number of teazles in the stav, and the number of stavs formed the basis for the larger unit of count of the pack. Kings, teazles and buttons were made up separately from each other, as were some other classes, so that the type, quality, condition, and also in some cases, the growing district of origin could be ascertained on sight. The main precaution necessary was that they had to be protected from getting wet, and needed, like all teazles, to be stored in a cool and airy place. Stavs were remembered by some of those who had been familiar with them in the West Riding mills as having been something of a work of art for the skill and care that went into making them up, and for the neatness of the layers and of the rows of teazles running up and down the sides.[3] By 1938 in Somerset, however, it was said that the art had practically died out, only a few older men then still having any knowledge of it.

Stavs were usually made up in the winter when the teazles, still in the bunches in which they had been cut from the crop, had dried out thoroughly. The bunches were opened out on the floor, and workers, usually women at this stage, cut off the sepals with scissors and cut the stalks to about 10 in. As the teazles on the plants came ready for cutting in sequence, from the top downwards, the cutters' bunches were already to some extent in the main qualities or sizes in which the stavs were sorted and made up. These were 'kings', the largest teazles, of which one grew on each plant at the top of the main stalk; 'queens' as the cutters in Yorkshire, for instance, called them, and which were the range of

sizes forming the main part of the crop, called variously ‘teazles’, ‘best’ or ‘middlings’; and ‘buttons’, sometimes called ‘small’, the smaller basal growth. There were other classes such as ‘seconds’ and ‘scrubs’, the latter consisting of the worst misshapen and otherwise inferior teazles, which were nevertheless all cut and made up and sold.

The next stage in making up was usually carried out by a man, often, but not always, an older man. It involved taking a set number of teazles and fastening them together by their stalks into a fan-like bunch. This was done seated or kneeling, the maker-up first arranging the teazles on the knees, a long apron of leather, or some material that would not catch the teazles being worn. The stalks were held in place with the forearm, on which was worn a sleeve, also of material which would not catch the hooks, so that the fastening could be put round the stalks, and then tied. In Gloucestershire, Essex and Yorkshire, and possibly therefore also in Somerset, this bunch was called a ‘glen’, short for ‘gleaning, though in Somerset the word ‘fan’ was used by growers. There were, however, variations in the way these were made up. In the main West of England tradition, the process was to take twenty-five teazles and tie the stalks together. When enough of these had been made, the first was pushed down onto a hazel rod or stav about 3 ft in length, split almost to the bottom. This fan, opened out, made a circle. The next fan was put down on top of this, the individual teazles being aligned above each other in the fans. Others were then built up on top of them until there were twenty altogether in layers, giving a total for the stav of 500 teazles.[4] The top of the split stick was then fastened to keep them all in place. Forty of these stavs of 500 made up the West pack of 20,000.

When teazle growing was introduced into Yorkshire from the West of England, for reasons that are not specifically recorded anywhere, but which may partly at least have been intended as a means of distinguishing Yorkshire teazles from those coming from the West of England, a different procedure was followed. The glen consisted of only ten teazles, the heads of which formed about one third of a circle. These glens were composed of a selection of six larger and four smaller teazles, with two large ones together in the middle, and then alternating small and large on either side. The particular arrangement of the Yorkshire glen, made up with six larger and four smaller teazles, was referred to in a general way in the *Cyclopaedia of Useful Arts* (1854), III, and uniquely, was employed on the front board of Edward Hailstone’s 1885 Leeds edition of Walker’s *Costume of Yorkshire.* The arrangement was also described from first-hand knowledge by William Bradley of South Milford. The heads of the smaller teazles were set back, so that they were not in a row, but formed an indented arc. As the glens were put onto the stav and gradually built up in layers, the indentations of the glens on top of each other resulted in the Yorkshire stav having deeply ribbed sides. Thirty glens made up the stav in the Yorkshire count, with forty-five stavs forming the basis of the Yorkshire pack of 13,500 teazles, the count for which is first identified in the sources in the first decade of the nineteenth century.

Kings and buttons were made up differently, though the only detailed account of this comes from the way followed in Gloucestershire in the early nineteenth century in making up kings. Being larger, these were put together in glens of ten, of which there were thirty to a stav. Thirty of these stavs of 300 made a pack of 9,000 kings.[5] Buttons were perhaps made up in greater numbers together, in Yorkshire apparently with the heads in a double row. At any rate, making up buttons, because they were smaller, was a fiddly and unpopular job, and one man who made up teazles for a Church Fenton grower before World War I, and who preferred working on buttons, was given the nickname of ‘Button’ as a result.[6]

Up to the time when teazle growing started up in Yorkshire, the count used in the supply trade was that of the West of England dealers who brought teazles to Leeds. It can probably be assumed that the stavs of teazles in the working shop of Richard Wright in Leeds in 1684, and the teazles listed in other Yorkshire inventories up to the second half of the eighteenth century were, therefore, in stavs of 500. However, as a result of the rapid

expansion of the Yorkshire growing trade in the latter decades of the eighteenth century, and into the nineteenth, the Yorkshire count became the count followed in the West Riding woollen trade. At Bean Ing in Leeds around 1810, the teazle count was expressed as:

10 Teasels make a Gleaning
30 Gleanings " a Stave
45 Staves " a Pack
10 x 30 x 45 = 13,500.[7]

The same count was followed in the Saddleworth finishing trade by the early 1830s. However, West of England teazles in stavs of 500 continued to arrive in the West Riding in huge quantities, these being recalculated as Yorkshire packs for sale to the cloth finishers at the rate of twenty-seven stavs of 500 to make a Yorkshire pack of 13,500. With two systems in use alongside each other, it was clearly not impossible to become mixed up, and a dealer such as William Bean or a mill bookkeeper sometimes made a note against the record of a consignment or a purchase to say whether it was twenty-seven or forty-five stavs to the pack (of 13,500).

* * *

With the appearance of foreign, and particularly French, teazles in the West Riding market around the middle of the nineteenth century, a further system of handling teazles and of selling them, was introduced and was eventually integrated into the existing pattern of transactions. French teazles were historically sold not on the basis of a numerical count, but by weight, the late seventeenth century French export levy, for instance, being based on a bale of 150 lb of teazles, whereas the United Kingdom import duty was on teazles by the thousand. The weighing system, however, could produce a notional numerical quantity that was seen as desirable for the purposes of the customers. In the American weighing system followed at one time in the nineteenth century, and which probably derived from the French import trade into the United States in the earlier nineteenth century, it was reckoned, for instance, that 10 lb of mixed kings, teazles and buttons, untrimmed as they had come in from the fields, though presumably dried, was the equivalent of 1,000 teazles.[8] The conversion rate to a numerical equivalent would have varied according to whether they had been clipped, and also on what size of teazles was involved, where they had been graded.

Although in the seventeenth century, French teazles were packed into cloth bales, by at least the later nineteenth century, the practice of exporting them in wooden boxes, or 'cases', had become normal. These French cases, made of laths, were fairly large and hefty affairs. Mrs P. M. Smith of J. Sloman Ltd., recalled them as having been 6 ft square boxes. In America, in the 1870s, for instance, J. McLaughlin & Sons were sending out their teazles, clipped and sorted to size, in boxes, which the latter-day retired Skaneateles merchant Henry W. McLaughlin described as having measured 6 ft x 4 ft x 4 ft, weighing an 'unwieldy' 800 lb when full.[9]

Apart from these two differences, the use of selling by weight, and the transporting of teazles loose in wooden cases, the French import trade seems to have introduced a third variation into the Yorkshire teazle market. Whereas English teazles in stavs still required further trimming and sorting, the French and Normandy exporting growers or merchants, especially those in the south of France with their substantial production of the larger sizes, were probably in advance in being able to supply teazles already fully prepared and sorted to whatever size was needed, a great advantage for the customer in the mills, as it enabled them to economise on their own labour costs.

The effects of the introduction of the French system can be seen by comparing two different Batley mill purchase records, already referred to, one for 1876-77 and the other for 1897-1900. In the first of these, the initial two purchases, from Thomas Bruce Cornock, were clearly of English teazles, mostly, or all, Yorkshire, in stavs, noted by the bookkeeper as '45 in pack'. The remaining deliveries, from Charles Yendole, were all in round numbers

of packs, but these too, were ‘teazles’ or ‘buttons’, one consignment being of Yorkshire seconds, so that they were fairly certainly also all English, in the form of stavs. By contrast, in the later record, out of ten transactions, nine involved cases, the exception being a small purchase of Essex teazles and buttons in stavs. The cased teazles were supplied by three different merchants, J. Sloman, James Bortoft & Sons, and McLaughlin Brothers, who accounted for seven, one and one case respectively. Not all of the purchases were recorded equally in detail, but the May 1897 case from J. Sloman was of best French teazles, all already sorted to the ‘O’ size, a medium-large stem teazle. One other case ordered from J. Sloman was also described as containing O teazles, and it is probable that all of the cases of teazles specifically from J. Sloman were French O teazles. J. Sloman also supplied a case noted as containing American buttons, and another case of buttons was probably also of American.

In five out of these nine purchases of teazles in cases, the quantities in round thousands was given, the figures being 27,000 once, 28,000 three times, and 30,000 once, whilst other cases seem to have held numbers close to these. These quantities, which vary, but only within a certain range, may have been the result of a French weighing system, and the cases themselves may have been designed physically to take double the amount of teazles from a basic unit of weight used by the French exporters, a single unit producing a quantity varying roughly between 13,500 and 15,000 according to the stated contents of these cases. Evidence that this may have been so can be found in two other sources. An article of 1913, which surveyed the Somerset growing business made a mention not only of the West pack of 20,000, and the Yorkshire pack of 13,500, but of an otherwise unknown ‘Normandy pack’, of 14,400 ‘ “or thereabouts” ’,[10] which fairly clearly indicates a number arrived at through a weighing system, the actual numerical quantities or equivalent being dependant on the exact size of the teazles, and the degree to which the stalks had been clipped. Secondly, in the twentieth century, at the two Sloman merchant firms in Leeds, which had a common family background in the French and Normandy import trades, the pack of 13,500 was known, not as the Yorkshire pack, as elsewhere, including at the firm of Edmund Taylor (Teazle) Ltd., but as the ‘French’ pack.[11] It may, therefore, have been that by coincidence or design, the basic unit of weight used in the French teazle trade produced a figure somewhere in the region of 13,500, though varying above or below it, and that the amounts in the cases supplied to the Batley mill in 1897-1900 were based on this.

All of these purchases, however, not only in 1876-77 of English teazles in stavs, or in 1897-1900, of cased and sorted French and American teazles and buttons, were priced and paid for by the mills according to a rate for the pack of 13,500. With the English teazles in stavs, this was straightforward. Where the teazles were in cases in an actual or notional number, loose and sorted to a size, a rate per 13,500 was still applied, being noted alongside the record of each transaction in the mill purchase ledger, though the rate itself presumably varied according to the amount of preparation and sorting that had been carried out, and to the size and quality of the teazles. There was in fact not a great difference in the nominal price per Yorkshire pack between the two mill records. In 1876-77, packs of English teazles in stavs cost between £4 15*s*. 0*d.* and £5. In 1897-1900, the rate was from £5 to £5 15*s*. 0*d*. However, these were not only better protected in transit in their cases, but were already all fully clipped and sorted to the size wanted, and these differences were the measure of the cheapness of the French teazles compared with the English.

Although the mills of the West Riding continued to buy stem teazles from the merchants by the pack of 13,500, irrespective of their source or physical state or degree of preparation and sorting, the merchants, when buying teazles from the Somerset or Gloucestershire growers, did so according to the West pack of 20,000. The West pack was the basis of the system introduced at least by the 1930s, of ‘two to one’. This was aimed at encouraging the growers to look after the crop, and produce more of the larger and more

useful sizes. According to this, once a price per pack had been agreed between the merchant and an individual Somerset grower and his farmer partner, the teazles were subsequently bought in lots of two packs of 'best' and one of 'small', the latter at half the price of the former. In a later version of two to one followed by Edmund Taylor (Teazle) Ltd., a premium was offered above the rate per pack for any that were above a certain size.[12] By the 1960s, however, this firm simply agreed with the remaining Somerset growers to buy all the teazles they produced, at a set rate for all of the teazles, by the pack of 20,000, though they did not give the growers a forecast price. Instead, each year, before a director went down, they would decide on what they could afford, based on the demand at the time, and the price also depended on the quality of the crop, based on the amount of waste when the teazles were processed.

The buying of teazles from the West of England in West packs did not cease, therefore, when in the Depression years the Somerset growers stopped making up their teazles into stavs. Instead, in order to transport the teazles, the merchants sent down to the growers from whom they had arranged to buy the crop, large cloth bags or 'sheets', as they were called at Edmund Taylor (Teazle) Ltd., and these were also used to give a count. These sheets, which when full must have looked much like the bales of French teazles in the seventeenth century, were filled with the cutters' bunches as taken from the standing crop, and which were each, theoretically at any rate, of forty teazles, at the rate of 200 bunches to a sheet. This gave a count of 8,000 teazles to the sheet, so that five sheets were the equivalent of two West packs. These were latterly sent up to Edmund Taylor (Teazle) Ltd., not always completely dry, so that they had to be kept in the cool conditions of the warehouse or store to dry off further.

As teazles in stavs were nearly always clipped and sorted by the teazle merchants, the merchants used cases, which their own workers sometimes made, for sending orders of teazles out to customers. However, by or around the 1960s, cartons replaced cases for both incoming deliveries from France, and for general use by the merchants. These cartons held much less than half of the quantities of the cases. Into the post-1945 period, orders of stem teazles to the woollen mills were still quoted as the rate for the pack of 13,500, though J. Sloman, when doing any business in stem teazles with customers abroad, sold these in thousands, as they did their spindle teazles. Around the 1960s, Edmund Taylor (Teazle) Ltd., by then the main firm in the stem teazle trade, gave up the selling of these in Yorkshire packs and also went over to selling in thousands, much of their traditional West Riding mill stem teazle market having disappeared.

(b) Clipping, sorting and setting stem teazles

The preparatory work of clipping and sorting was at one time partly carried out by the growers when the stavs were made up, but it had to be completed by the buyers in the dressing shops or mills; and in the twentieth century, once teazles were no longer sent up from the West of England in stavs, the whole of the work had to be undertaken by the merchants who bought the crop. The procedures involved were basic, and varied only in detail, and in the West Riding were aided only to a marginal extent, in an isolated case, by the use of machinery. The methods for setting the teazles ready for use did change as a result of the evolution from raising by hand to raising on the teazle gig, but the work of setting itself was still a hand craft. Although these various operations were not themselves much altered, there was a steady shift in their position in the chain of supply, and in the responsibility for them, the work gradually being separated from that of the cloth dresser or finisher, and then progressively moving out of the woollen mill and into that of the teazle merchant, so that in the second half of the twentieth century, as has been seen, even some setting was carried out by one of the merchants.

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In the West Riding dressing shops up to the start of the nineteenth century, a good deal

of the work on the teazles seems, generally, to have been carried out by boys who were in the first stages of apprenticeship as a cropper. One such was the preemer boy of George Walker's well-known illustration, part of whose job, as well as fetching the beer and sweeping up, was to clean the teazle handles of flocks after they had been used, with a small tool called a preem. It is probable that the other routine preparatory work of trimming and sorting the teazles was also undertaken by a boy or boys. Although there are no direct details about how this was done at the time, once the glens from the stavs had been cut open so that the teazles were loose on the floor, the stalks would have been cut with scissors to whatever length was considered appropriate for setting the teazle handles. The teazles would have been sorted for size, that is length, probably using one of each size as an example, the teazles maybe being thrown onto piles on the floor, or into baskets. Kings, if they were needed for coarser cloths, and buttons used for packing the larger teazles in the handles, would have been taken from the separate stavs in which they were supplied, and treated similarly.

The setting was quite probably also done by an older boy with some experience and steadiness, at first under supervision. The mid-Victorian lithograph of 'The Old Cropping Shop', based on an earlier painting of an idealised scene in the interior of the cropping shop of John Wood at Longroyd Bridge, Huddersfield, shows that the setting was carried out at a small table on trestles in the light of a window next to the pile of stavs of teazles in the corner of the room.[13]

The handle used in raising was in the form of a cross, about 8¾ in from top to bottom, and about 9¼ in wide, the lower part of the vertical piece being held in the hand.[14] The crosspiece was in the form of two thin slats mortised through the solid upright part, with a space between them for the teazle stalks. A length of twine was tied round one outer end of the slats of the crosspiece, and this passed through a small hole bored in the top of the upright. This could be brought down along the top of the teazles to stop them coming free in use, its loose end being hitched to the far end of the slats once both sides of the handle had been set.

The vertical clearance on an original handle that has been seen, was about 3½ in, sufficient for a teazle and a button or for kings. Setting would have begun on the side where the twine was tied, with a button first probably, up above, next to the upright, its stalk perhaps being left long enough to go down between the slats. The teazle would have been put in, resting on the slats, with its stalk between them. The setting continued so that there was a row of perhaps three or four teazles with the buttons above and between them. The same would have been done on the other side and then the twine pulled down across the top of the buttons, and its end hitched at the end of the slats, which were notched slightly at either end. The stalks projecting below the slats would then have been cut away with scissors.

Handles were set in 'courses' such as the '8 course of handles' listed in the probate inventory of 1576 of John Pawson of Leeds, the number in a course possibly having been twelve.[15] The courses were most probably kept together as they were successively used, cleaned of flocks, dried and re-used, so that they had the same degree of wear, some stages of the raising process needing variously, the very worst of the old teazles, old teazles or new ones. In the dressing shop, the courses of handles were sometimes put, as seen in 'The Old Cropping Shop', in a small moveable rack, the handlebrake, or simply piled on the floor where the croppers worked, as Walker shows. The preem, which was used to clean the handles of flocks, after both sides had been used, was a small wooden implement set with iron prongs, the word itself going back in the Leeds woollen trade to at least 1576, when two 'premes' were listed amongst the contents of John Pawson's premises on Kirkgate, Leeds, such small items otherwise seemingly not generally being taken notice of when inventories were made. After the cleaning of the handles, which were usually used on cloth that had been wetted, they had to be dried so that the hooks would regain their stiffness, and so that the teazles would not go mouldy. In John Wood's

dressing shop this was done by putting them in a long wooden rack on the wall above the open windows at the rear of the main room.

As the factory system advanced, and larger numbers of croppers were employed in one place, the work of clipping, sorting, setting, preeming and drying became a separate function from that of finishing the cloth, although the specifications of the cloth dressers in the selection of teazles needed, would have been followed. At Bean Ing in Leeds in 1813, when the cloth was still raised by hand, the ninety-two croppers and their eight apprentices were supported by a handle setter with two boys and five 'premajers', mainly using their preems to clean the enormous number of handles used in such an establishment.[16] By that time, however, in parts of the West Riding, as in Gloucestershire and elsewhere, teazle gigs were in use, and these were set with teazles through an adaptation of the method used with the hand-held handles.

Gigs had been around for centuries. The basic model was probably always a drum, with teazles round the outside, and arrangements for the cloth to be drawn across the drum or barrel as it turned. There were, however, clearly differences in size and in the various mechanical details, as there continued to be into the nineteenth century. As far as the fixing of the teazles is concerned, it is only in the nineteenth century that there is a sequence of evidence, from pictorial and documentary sources, and actual examples, about the way this was done.

The illustration of 1815 in Rees's *Cyclopaedia* of a teazle gig, shows the raising surface of the drum or barrel of the machine to have consisted of a series of fixtures like open-fronted trays seemingly filled with teazles, running along the length of the drum.[17] In the picture, there are twelve of these, with spaces between them, so that there was not, as later, a continuous raising surface presented against the cloth. This relatively sparse information from the illustration can be supplemented from the specifications given in 1823 by William Partridge, based on his experience in the woollen trade in Gloucestershire, and provided as a model for cloth manufacturers in America, where he had gone to live. The long 'frames' or 'handle frames' as Partridge called them,[18] each contained a row of individual teazle handles similar to those used by the croppers by hand. The lower part of the handle, previously held in the hand, was, however, squared off, and slotted into a space covered with thin sheet iron in the frame, the top of the handle being held secure to the frame by a hook on a spring. The handles were about 9 in wide, roughly the same as the earlier ones, but they were higher, to give a bigger raising area per handle, with three rows of teazles.

It is evident that for these, the stalks would have had to be cut to about 2 in or so. In setting these, the bottom row was put in first, the stalks going between the wooden slats of the crosspiece. The next row was put in above these, the stalk of each going between two of the teazles below. The third row was similarly placed above the second. There were two other differences, which were clearly intended to deal with the far greater amount of force that was put on the whole arrangement when installed in a machine. A wooden rod was fitted to run across the top of the teazles on both sides of the middle upright, above the third row, to hold the teazles. This avoided having the length of twine over the tops of the teazles lying across the line of travel of the drum of the machine, and taking the full force of the movement. The other difference, though, was that as a result, there was not just one, but two lengths of twine, at either outer end of the handle, to hold the teazles from moving sideways, each tied between the end of the slats and that of the top cross-rod.

A surviving gig fitted with handles, from Longfords Mill at Minchinhampton in Gloucestershire, and now in the Trowbridge Museum, dated to the 1860s, provides an actual example for comparison both with the Rees illustration of 1815, and with Partridge's ideal specifications of 1823. The gig has twelve handle frames, each with six handles, recessed and held along the lower lip of the frame in a neat arrangement. The handles are different in two ways from those described by Partridge. Instead of having three rows of teazles, they have two, and they are far wider than the 9 in that Partridge recommended.

However, otherwise, the handles conform to the details of Partridge's account. They have a rod across the top of both sides of the central upright to prevent the teazles being driven out by the force of the machine. They have the two lengths of twine at the outer ends, to hold the teazles in, and lying roughly in line with the travel of the drum. There is a third loop of twine, through a hole drilled sideways through the top of the central upright of the handle, and this goes over what looks like a springy curved metal hook just within the drum, corresponding with the hook and spring of Partridge's account, to hold the top of the handle in place.

The variation from Partridge's requirements can probably be understood. Although he was most severe in condemning the practice of having handles with two rows of teazles, and recommending three, his objections were perhaps coloured by the fact that in America, the gigs that he saw 'generally' had no more than one. Nevertheless, it seems to have been the case, that despite his strictures, since then, most gigs for ordinary work have had no more than two rows of teazles, this giving a sufficient degree of raising for most purposes, though, as will be seen, some gigs have carried a greater weight, for heavier cloth. The other difference in the detail, the greater width of the handles on the Trowbridge gig, was perhaps intended to reduce the number that had to be dealt with, or possibly it may have been intended to reduce the number of spaces between them along the handle frame, so as to avoid lines in the cloth, though on the Trowbridge gig, and on a matching gig from the same mill, in store at the Stroudwater Textile Trust, the handles are staggered sideways a little on alternate handles frames, so that they do not overlap all the way round the barrel.

The gig shown by Rees corresponds with the type later described by Partridge, having a top roller and a bottom roller for the cloth. Generally, the operation started with the cloth on the bottom roller, the head end being led up to the top roller, so that the cloth stretched between them, ideally in contact with nearly one half of the barrel. When put in gear, the top roller slowly drew the cloth up whilst the teazles on the barrel of the machine came downwards against it. When the length of the cloth had been raised, the drum was stopped and the cloth wound back down onto the lower roller. Six raisings, or 'runnings up' were given, and these were presumably enough to clog the teazles with flocks, because all the handles were then taken off and turned, and the cloth was given another six runnings up, but this time, from the top roller to the bottom. These twelve raisings were called in Gloucestershire a 'course'. With both sides of the handles stopped up with flocks, they all then had to be removed, and 'cleaned from the flocks with an iron comb, by a small boy'.[19] After that, they were dried according to an elaborate idealised procedure in special drying sheds, 'handles and sheds [being] cheap and durable, and…teazles…dear and soon worn out'.[20]

The gig, therefore, needed to have more than just a single set of handles. According to Partridge, who was describing the best practice for the benefit of his American readers, each gig needed, 'at least three sets of handles, each set containing ten courses, that is thirty times as many as will fill the barrel of the gig-mill once'.[21] Although his account does not say how many handle frames were involved, it can probably be assumed to have been the twelve shown by Rees, and seen on the Trowbridge gig. If this was the case, and on a barrel 6 ft 3 in long, as recommended by Partridge, with the handles 9 in wide, so that each frame would have held say seven handles, the gig might have held eighty-four handles. Thirty times that gives the enormous total of 2,520 handles to meet Partridge's specifications for one gig. The Trowbridge machine, which with six handles to each handle frame, actually holds seventy-two, would have required 2,160 handles to reach the number suggested. In practical terms, under any circumstances, this clearly implied a very large number of individual items and parts to deal with and to maintain on a frequent basis.

The weakest part of this arrangement of numerous small items, and of the frames, with their own intricate pieces such as the hook, or loop of string, and spring for each handle, was probably the twine holding the teazles. Despite the fact that this lay in the line of travel

of the drum, breakages must have been incessant, whilst there were now two separate pieces of twine to each handle. Setting the teazles tightly in the fixed space between the slats and the top rod may have been more difficult, and according to Partridge, a further defect of the system was that without careful attention to make sure that the handles in the frames were properly supported from behind, the teazles did not come into contact with the cloth sufficiently well, a drawback that was recognised, for instance, by a patent of 1828 for an arrangement to press the cloth against the teazles. In addition, the removing, turning and refitting of the large number of individual handles must itself have been a laborious and time-consuming job, apart from the work and time involved in the setting itself, and the cleaning.

The introduction of the iron rod, which eventually superseded the use of teazle handles on gigs, remedied many of these likely problems, replacing in a single piece the handle frame and its row of separate handles, dispensing with the need to use pieces of twine, and reducing overall the number of separate units on the gig, whilst probably also increasing the number of teazles on the surface of the cylinder. Although rods were not referred to by Partridge, in America, in 1823, they had appeared in Britain by at least 1825, and rods may have been used on a gig listed in a mill sale notice in Saddleworth in the West Riding in 1827, which had 'six sets of handle stocks complete, 24 stocks in a set', the older phraseology perhaps still being used, though the number, twenty-four, which was the number of rods on a gig, possibly denoting the use of rods.[22] Each rod was a fairly simply-constructed item, and the teazles were held in place by a combination of vertical and lateral pressure, relying on the fact that not being solid, they could be compressed together sufficiently for them to hold in place through the resilience of their hooks, so that no twine or tying was needed. The rod was a long narrow frame running the length of the barrel of the gig. Twenty-four formed a full set, and this gave a more continuous raising surface. The long lower edge of the rod was of two thin slats of iron with a space between them for the teazle stalks to be slid into, to anchor them, similar to the handles. The long strip of metal which formed the top bar or edge of the rod was curved in an upside-down half-round section, so that the 'nose' or top end of the upper teazle or button would be held when pushed up under it. The open space along the length of the rod between these two long edges and the short end pieces was divided by short uprights, which kept the rod rigid, and divided it into a number of sections which were set separately. The 'sides' of the teazle were exposed on both sides of the rod, so that when one side had been used sufficiently, the rod could be lifted out, turned around, and put back in place, by means of short projecting pins on the rod that slid into slots on the drum of the machine. In what was probably a later innovation, the ends of the rods were held by flat springs. Like the staggering of the handles on the handle frames, the positions of the supporting struts forming the sections of the rod were staggered through the set so that they did not leave lines, and eventually, gigs also had a slight traversing motion on the rollers for the same reason.

The changeover to rods brought about a different mode of setting, and this may have been marked by a change in the terminology from 'handle setter' to the later 'teazle setter'. 'Tassle' or 'tazle' setters were recorded in the Saddleworth census returns of 1841, and more genteelly, as 'teazle' setters in 1851. However, it may not be possible to be too precise about the implications of the terminology at this time. Raising with handles continued to be an ancillary part of the work in mills where teazle gigs were used. It was noted in Saddleworth in the 1830s that large amounts of teazles were used by hand, whilst at a mill referred to by Baines in the late 1850s, with twenty-four gigs, there were thirty men and twenty-four boys working as giggers and also as hand raisers. Jubb, in1860, also noted the need for hand raising. In addition, although it is not at all possible to measure the rate at which rods replaced handles on gigs, it is likely that the change-over was not instant, and in the West of England in particular, the cloth manufactures stuck to the old practices, so that as late as 1867, it would seem, gigs were still being made with handles,

and continued to be used for some purposes up to the 1960s. As a result, at the mill mentioned by Baines, the three men and four boys who looked after the teazles in the mill were described as 'handle setters',[23] and at the start of the 1860s, the future Leeds teazle merchants Abraham and Joseph North, and their father, described themselves as handle setters. However, in the succeeding period, as the deployment of gigs with handles presumably declined, the term does seem to have disappeared, and James Henry Firth of Huddersfield, looking back at his own temporary work setting teazles in America in the early 1870s, called himself a teazle setter.

The setting of rods was carried out at a bench, at the front of which were two brackets onto which the rod was placed, so that it was at about waist height, with the top of the rod tilted back a little from the vertical, for the convenience of working. The arrangement was such that the rod was unable to move away to the left as the setter worked on it, pushing the teazles into place. The flat top of the bench sometimes had a high back and sides, to hold piles of the teazles and buttons of whatever combination was to be set. Some setting benches, though, were made double-sided so that two setters worked facing each other. The setter wore 'leathers' on the left hand, a home-made arrangement of finger and palm covers to protect against repeated contact with the sharp, slashing hooks of the teazles, and set the teazles with an 'iron' held in the right hand. Made by the mill smith or by the setter himself, the iron was a short flat bar of metal, the precise shape varying according to preference, but usually with at least some kind of a moderate lift or bend, or even a curve, near the end, so that the teazle would not slip as it was being set. An iron would last a lifetime, but as a setter got older, sometimes a heavier iron would be obtained, so as to give more help in setting the teazles in place.

Some idea of the scene can be gained from an illustration of 1845, which shows the setting of rods for gigs at a bench. Lying on the floor are bundles, probably representing glens taken from stavs, whilst in the background, a boy is using scissors to cut the stalks to the required length. Loose teazles are on the floor or in boxes and a basket, and on the top of the bench itself, where the setters could see them and take hold of them.

Setting began with a button as packing in the top left-hand end of the section of the rod at the left end. The size of the button would depend on the size of the teazle required by the finisher. The stalks of the buttons were first knocked off with the iron by some setters. The teazle was then put in with its stalk between the slats, and set up against the left end of the section with the iron. The next teazle and button were put in and so on up to the last teazle, the final button being put in to complete the section of the rod. The rest of the rod was set, and looked over, partly to make sure the teazles and buttons formed an even surface on both sides, and the stalks sticking through the slats were then cut off underneath. The aim of the buttons, put between the tops of the teazles where they became narrower, was not only to pack them, but also to ensure a continuous raising surface. There was sometimes a danger with larger sizes of teazles that the button would not be equally large, and a bar would be left on the cloth. Equally, a rather thicker teazle in the rod could produce a line on the cloth. It was necessary to select rather slimmer teazles for the end sections of the rod, which came up against the list of the cloth, the weakest part. Teazles, even when properly sorted, vary in length, thickness and shape, and it was the particular skill of the setter to look for, spot, pick up, manoeuvre and set the most suitable teazle without interrupting or slowing the momentum of the work. Some of the Saddleworth 'tassle setters' of 1841 were boys of ten and twelve, and for those who could do it, skill as a setter was a portable asset. When he went to America in the early 1870s, J. H. Firth, the Huddersfield temperance worker and one-time drunkard, a weaver by occupation, saw himself through a thin patch, still on the drink, by taking a job as a teazle setter in a New Hampshire woollen mill at about $10 a week.[24] Eventually, through the last three decades of the nineteenth century and up to World War I, as the Yorkshire mills decreasingly used their stem teazle gigs, and fully prepared and sorted French teazles came on the market, the teams of men and boys who did the preparatory work on the

teazles for the setters were required less and less, so that in most of the mills where teazles were used, only the setter was still to be found. As one writer of 1912 described the situation in the West Riding:

> In the large blanket factories, one man is exclusively engaged in selecting the teasels and fitting them into the lattice-like frame prepared for their reception.[25]

(c) The standardisation of stem teazle sizes

English teazles supplied in stavs were already graded into three classes or sizes, kings, teazles and buttons. Within each, though, there was a range of sizes, that is lengths, from about 1 inch for the smallest buttons, to 5 in or more in kings, and the diameter and hook strength of all these was proportionate to the length. Some further grading must always, therefore, have been carried out, so that similarly sized teazles could be set neatly and with an even surface, and so that the 'weight' of the teazles used was appropriate to the weight of the cloth or fabric to be raised, and the nature of the work. Direct information about how this sorting was done, or about the sizes used, is absent until the later nineteenth century, by which time 'standard sizes' as they were called in one place, were current in the supply trade and in the mills.

There were probably two main reasons for the appearance of these in this period. One was the introduction of the iron rod with its fixed clearance, which meant that the teazles and buttons to be set in varying combinations with each other had to be fairly exactly graded. The other factor that probably brought standard sizes into use was the French import trade, in which the exporters were able to supply large quantities of teazles all fully prepared and sorted to a specific size, ready for setting. The references to conventional sizes in the 1890s, therefore, show that there were two systems of describing sizes, in one of which the teazles were identified by names, mostly in the form of words, or initials such as 'O', whilst elsewhere a set of numerical descriptions such as 15-18 and 18-21 were employed.[26] The existence of these two systems alongside each other seems to have been another result of the two strands of practice in the trade in the second half of the nineteenth century. The former range of sizes was based partly on terms from the English growing trade and also incorporated elements of Yorkshire mill practice; the latter was connected with the French and Normandy import business. Although similar, they do not seem to have matched entirely, though in practice that does not seem to have been an impediment to the free use of both.

Although these systems were already current in the nineteenth century, the greatest amount of detail about them comes from the practices of the West Riding teazle merchants in the 1960s and 1970s. At Edmund Taylor (Teazle) Ltd. in Huddersfield, the firm which had the strongest historical connections with the West of England growing trade, and with the terminology of the stem teazle market amongst the mills at the western end of the woollen district; and which referred to the pack of 13,500 as the Yorkshire pack, the stem teazle sizes were known by their 'English' names, and the measurements for these were in Imperial units, inches and halves and quarters of an inch.

Edmund Taylor (Teazle) Ltd. Stem teazle sizes

'English' names	Measurements in inches
King	3½ - 5
Diamond	3 - 3½
G	2¾ - 3
O	2½ - 2¾
P	2¼ - 2½
PP	2 - 2¼
$^{2}/_{8}$	1¾ - 2
Large button	1½ - 1¾
Small button	1 - 1¼

'Kings' and 'buttons' were derived from the English growing trade, though the word 'diamond' is otherwise unknown outside this context. Also obscure is the source of the capital letters for some of the sizes, though Harry Sloman of the Leeds firm of Sloman & Smith thought that they had originated in the Normandy import business. The symbol '$^{2}/_{8}$', however, is derived directly from Yorkshire mill practice in the setting of the iron rods, the term being a play on words, one of this particular size set above the other 'two in 'eight', as pronounced locally, filling the vertical space of the conventional rod. The use of inches and halves and quarters of inches as the basis for grading the size clearly also reflects the normal mill application of Imperial measurements. At the Leeds merchant firms of J. Sloman and Sloman & Smith, which had a family background in the import trade from France, and where the pack of 13,500 was known as the 'French' pack, for reasons that have been considered, the 'English' names were also followed, though the word 'king', from the English growing trade, was omitted, all the larger sizes being called diamonds.

Stem teazle sizes
J. Sloman and Sloman & Smith

'English' names	'French' size	Sloman & Smith sorters' numbers	
	33 -- 36		
Diamonds	30 – 33	7	
G	27 – 30	6	
O	24 – 27	5	
P	21 – 24	4	on the gauge
PP	18 – 21	3	
$^{2}/_{8}$	15 – 18	2	
Large buttons	12 – 15	1	
Small buttons	10 – 12		

The measurements, however, were not the same as those at Edmund Taylor (Teazle) Ltd., taking a different form. They were called at both of the Sloman firms the 'French' sizes, but despite this, and their metric appearance, they were in fact tenths of an inch. Like the 'French' pack and the 'Normandy pack', these 'French' sizes probably represented another cross over between the two systems in the trade. It is likely that earlier in the days of the French import trade, it became usual to order sorted teazles from France for the English mills in sizes in inches and tenths of an inch, a method which was more similar to the metric usage than halves or quarters of an inch. The exact sizes in the English system at Taylor's, and in the French sizes were not, therefore, precisely the same, but in practice, there were never any problems, and setters could ask the merchants for particular kinds of sorting of sizes anyway. It is noticeable that none of the cases of teazles bought by C. Hemingway & Co. of Batley in 1897-1900, were described in the mill purchase ledger by a numerical size, the case of best French teazles bought from J. Sloman in May 1897, being listed not as '24 - 27', but as 'O'.

(d) Stem teazle procedures in the twentieth century

Whilst there is direct evidence from before World War I that the Yorkshire merchants were becoming involved in the work of clipping and sorting teazles with their own employees, there is little information about how the work was carried out at that time. It is worth looking back here, though, at the detailed account published on 1 January 1876 in the *Skaneateles Free Press*, describing the operation of J. McLaughlin & Sons at Skaneateles. The 'shop' consisted of a purpose-built structure of two storeys with a basement. The teazles were first hoisted to the top of the building, where they were stored 'in the rough'. They were then pitched into racks projecting to the floor below, where there were two work rooms of clippers, cutting the 'beard' or sepals off, and presumably also cutting the stalks, the rooms having in one, twenty-five, and in the other, twenty workers. From there, the

teazles went down to the basement where they were sorted into any of eighteen different sizes. They were then packed by hand in layers in boxes. There were thirty in this department. On average, eight cases a day, holding 250,000 teazles, an average of some 31,000 per case, were turned out. The firm made its own cases. Separate storage was also leased. The main shop was heated with stoves, but the fire risk was recognised with numerous water buckets throughout. Four McLaughlin brothers looked after finance and sales; the shop and shipping; clipping; and sorting and packing.

In this country, the only description of the work before 1914, relates to James Bortoft & Sons of South Milford. In the barn attached to the drying shed, a number of men and women were employed through the year to make up the stavs of Yorkshire teazles in the way that has already been described. The French teazles that arrived at South Milford in cases were treated differently, however. With these, the cases were opened and the whiskers and sepals were cut off and the stalks cut to the lengths required by the mills, and then they were put back in the boxes.[27] They were presumably also sorted to the same size. One of the consignments bought by C. Hemingway & Co. of Batley in 1898, consisted of a case of 27,000 teazles from James Bortoft & Sons, clearly sorted to a size.

In the post-1918 years, although teazles were nearly always supplied to the mills already trimmed and sorted to specification by the teazle merchants, or by the French exporters, Wormald & Walkers of Dewsbury still bought teazles in stavs and used their own workers to clip and sort them for the setters. With twenty-five gigs and also spindle raising machines, and with an annual production of more than 1,000,000 blankets, this required a team of five or so men and boys under a foreman setter. Typically, the preparatory work was done by the boys, who first cut off the sepals and then cut the stalks to ½ in, the length required by the foreman setter. The sorting was then carried out, much as it probably always had been, by throwing the teazles into baskets, each of which had a teazle of the appropriate size stuck by its stalk into the wickerwork round the top edge of the basket as a guide.[28]

At Sloman & Smith, who were also engaged mainly in the stem teazle trade, the teazles, at one time still in stavs, were stored above the workshop, and when needed were brought down the stairs and opened out onto the floor. A circle of women, of whom there were at least thirty at one time, sat around them, wearing gloves for protection against the hooks of the teazles, using ‘clippers’ or scissors to ‘carp’ the teazles, removing the whiskers when stavs ended, and cutting the stalks shorter. The teazles were also riddled at an early stage so as to remove any seed left in the heads, the various merchants commonly making a bit of extra money selling it for budgerigar food. The teazles were clipped into baskets and these were taken to the sorter. At Sloman & Smith, one person would sort all the different sizes, with the aid of a gauge made of thin sheet metal, which had spaces into which the teazle could be placed to determine its size. The firm, purely for its own use gave the sizes numbers, from 1 to 6, from large button to G, anything larger being considered a diamond, these being cut into spindle teazles. At J. Sloman’s Exchange Teazle Works, it was also the procedure for one person to sort out all the different sizes at the same time, but by eye, with a sample of each as a guide, though if there was a rush, one size might be sorted out for a particular order.

At Edmund Taylor (Teazle) Ltd. in the later 1940s and in the 1950s, the work was similar in principle, the teazles being cut by the women clippers, who were also provided with gloves, the sepals and stalks being cut first. The job itself was dirty and dusty, handling and clipping and sorting the millions of teazles that passed through each year, 200,000 teazles a week, and sometimes 250,000, being handled. The clippers were paid individually by the weight they had done. The teazles then went to the sorters, who here, through experience, were able to sort the teazles by eye, at a series of three benches. The rough sorting, to take out the big ones, was carried out at bench number one, and the other sizes at benches two and three. In the 1960s, probably, when the company’s imports from France were increasing, a French sorting machine was bought, but its accuracy was

not considered to be good on the smaller sizes, and it could not sort the teazles for quality. As a result, particularly as the stem teazle trade declined, it had been little used by the earlier 1970s. It was, however, the only example of machinery being brought into the stem teazle trade in the West Riding. The idea of a sorting machine , however, had been tried out not only in France, but in the United States, where in 1870 G. A. Burrough of Providence, R I, patented a teazle grading machine. There is no mention, however, of such a machine being used at the McLaughlin warehouse in the detailed account of 1876.

* * *

Although in the 1950s, Edmund Taylor (Teazle) Ltd. employed two setters to set empty rods for customers, mostly in the local area, there were still a number of setters working in mills in the West Riding, though by the early 1970s, the number was down to around four or five. At least two of these had started their working lives in this trade at Wormald & Walker's, of Dewsbury in the 1920s. One of them, Norman Dawson, recalled later that when he started there in 1923 at the age of fourteen, he was told he was going into a dying business. The foreman setter would then, from time to time, have one of the boys to set part of a rod to see whether they were likely to take to the work. Norman Dawson, as a result, worked on there as a setter for some forty-one years, and then went for a time to set rods for Edmund Taylor (Teazle) Ltd. at Chardon Mill.

Whilst there, he encountered the notorious 'continental' rods, that were sent down regularly in larger numbers from Crowther's of Milnsbridge in the Colne Valley, to be set again. A 'nightmare' for the setter, these had narrow tops and a lower space for the teazles, so that he would set them with $^{2}/_{8}$ only. The slats at the bottom were close together, and were also clogged with a coat of paint undoubtedly applied to stop the rods rusting as a result of the wet raising. His guess was that they were probably simply rods from some older machines still used at the mill. Another setter, Mr Easton, who worked at Taylor's from around 1951 to the middle 1980s, also encountered not only these continental rods from Crowther's, but having to set up a machine in a mill with rods that were so damaged that it was necessary to stand on them to bend them straight again before they could be set and fixed in place.

During the 1939-45 war, when economies had to be made with the supplies of English teazles, Norman Dawson set buttons 'three in height', an arrangement requiring great skill and care with these smaller sizes, the application being in the raising of very fine cloth. In normal times, because of the expense of teazles, the setters would sometimes be asked to 'turn' the teazles. This involved taking out the left-hand end teazle in each section of the rod, and then turning them all by ninety degrees. Although the hooks on one of the exposed sides would have been flattened to some extent by the iron during the initial setting, this presented the unused sides of the teazles and prolonged their useable life by 50 per cent, this being a technique that worked better with large teazles.

By the early 1970s, Norman Dawson had a regular job for three days a week at the firm of Henry Wheatley, Hopton Mills, Mirfield, where there were five very old gigs still in use for the finishing of cloth such as llama. Another setter who also began work at Wormald & Walker's, and who, after a long period there was working in the early 1970s as a journeyman setter, going to different mills as required, was William Aston. One of the mills he then worked for was Joshua Ellis of Batley Carr, Dewsbury, where cloths such as vicuna were produced. This firm was one that had earlier sent a trainee setter to Edmund Taylor (Teazle) Ltd., but he had not taken to it, or possibly, not seen a future in it. Bill Aston also set teazles for Hainsworth Mill, Pudsey, another manufacturer of high quality or speciality cloth, making fine quality billiard table covering.

He also had set buttons three in height for velvet. It was his view that to be a successful setter required something of a temperament, being able to move and work quickly. With so few cloth finishers still accustomed to teazles, he found that in the different mills he worked at, setting different combinations of teazles according to the kind of cloth that was made,

he was often consulted by the finishers, and he would have teazles ordered from Taylor's in the particular sizes he preferred. For him, after a lifetime in it, it was necessary to have an interest in the task, and to want to do it properly. He recalled the precept of one of the old setters at Wormald & Walker's about the work: 'Always leave it so everybody knows who's done the job.'[29]