12: Teazles in use

The subject of cloth finishing is a detailed and technical study, and it is intended here only to look in a brief way at the methods used in dressing shops and mills for finishing cloth with teazles during the period since the later eighteenth century and for the management of the teazles.

Teazles could be used in both wet finishing and dry finishing. The latter gave a blanket type of finish suitable for certain cloths, and this kind of raising action was one that could be carried out on wire raising machines once they had become technologically satisfactory towards the end of the nineteenth century. The spindle teazle raising machine also gave a lifted pile on goods such as knitwear, jumpers, scarves and socks. Wet raising, however, was essential for the production of the 'dress' finish associated with the traditional broadcloths and the cloths of a similar type, with names such as doeskin, moleskin and bearskin. During the nineteenth century, despite the decline in the output of these traditional high quality plain cloths, the important low woollen trade in the West Riding continued to use teazle gigs in wet finishing routines, partly in order to produce the laid pile necessary on heavy cloths for outdoor wear, and partly because cloths made with the shorter shoddy and mungo fibres needed the less severe action of teazles.

The raising of the nap with handles in the traditional way or 'what is technically termed rooing the cloth' as George Walker expressed it in 1814,[1] was sometimes done at a board, or dubbing board. This, as seen in Walker's interior of a Leeds dressing shop, was a padded sloping board supported on wooden legs, over which the cloth was drawn. On broadcloth, two croppers worked side by side, one raising the cloth from the left-hand edge to the centre, the other from the centre to the right-hand edge, the cloth being held temporarily in place by straps on either side, presumably fitted with habicks or small double-ended hooks.[2] Alternately, the cloth could be raised with a handle in each hand.[3] At some stages, the cloth was flung over the wooden bars of the perch to be raised, these being suspended from the ceiling above the heads of the croppers in Walker's scene. In the Huddersfield narrow cloth trade, the cloth was sometimes held taught between the ratcheted rollers of the 'nelly', a wooden frame leaned against a wall, though the man working at the nelly in 'The Old Cropping Shop' is actually using a card.

The gig shown by Rees in 1815, and that described by William Partridge, in 1823, conformed to what was probably a traditional model, though with many variants in sizes, details of construction and operational procedures. The teazles, as has been seen were fixed round the drum in handles, and there was a top and a bottom roller, between which the cloth was stretched. The process of raising had to be stopped after each running-up or raising, usually to wind the cloth back to the roller it had started from. By 1819, however, 'the most improved gig-mills used in Yorkshire' had made the motion of the cloth continuous, so that the machine did not need to be stopped after every raising, by sewing the ends of the piece together, and having it led back over further rollers to the front of the gig, from where it was taken up and gigged further.[4] This was the origin of the Yorkshire gig, in which the cloth came to rest on a scray in front of the gig, this forming a part of the set-up. This system seems to have been introduced very quickly into the United States, or perhaps it was of separate origination there, because William Partridge said that on many gig mills he saw there, the ends of the cloth were sewn together, or otherwise fastened with long slender needles. He commented that this was 'by no means a bad way of raising the nap, and I should consider it equally as good as the process I have described, provided every other part were equally well managed.'

Despite the appearance by at least the second and third decades of the nineteenth century of the two developments, the Yorkshire gig, and the iron rod, there was not, as has

been observed already in various contexts, an immediate wholesale changeover to the newer technology, the older practices being in some places deliberately retained, and the newer ones resisted, so that there was to some extent a regional divergence within the woollen industry in England. In particular, manufacturers in the West of England continued to use the West of England or up and down gig, with the top and bottom rollers, and using handles, though with continued improvements to it. This was because it did a better job on the raising of the West of England cloths that continued to be made in traditional ways. These were designed to possess a good pile, and as has been noted, in the second decade of the nineteenth century, were being raised even more intensively than before. An important factor was the diameter of the drum of the gig, a subject that William Partridge had given especial attention to. In 1871, the report on the London International Exhibition commented on the Gessner double-barrelled gig common on the continent, where Ernst Gessner had been designing teazle raising machines since the 1850s, saying that the smaller diameter of the barrel of this kind of machine made it more suitable for raising West of England cloth.[5] As a result, in Gloucestershire, for example, not only did the West of England gig, fitted with handles, continue to be used, but the major local manufacturer Strachan & Co. were making them. The Trowbridge gig is ascribed to the 1860s, and the matching gig in store with the Stroudwater Textile Trust, also from Longfords Mill near Minchinhampton, has a handle dated 1867, presumably the date of manufacture, possibly of both gigs.

Elsewhere, however, the very different lines of the Yorkshire gig, using rods, with the overhead delivering system for the cloth, and with the scray with a moving endless belt of slats geared to the machine, appeared, often manufactured in the West Riding, by textile engineers such as G. W. Tomlinson and W. Whiteley & Sons Ltd., both of Huddersfield. Gigs such as these found their way into the woollen industry, not just in Yorkshire, but in Wales, for instance, though in the West of England, they were regarded as only being suitable for some of the lighter work such as brushing, many Yorkshire cloths in fact being lighter in weight and in finish, often also being weaker, where they were made from reclaimed fibre.

In America, though, by the early twentieth century, patterns of teazle raising gigs made by leading textile machinery manufacturers in the eastern states, including machines for continuous running, often followed more compact designs, whilst some increased the contact between the cloth and the teazles by incorporating two cylinders or barrels, or by having two or four contact points round a single barrel.[6]

Within the basic pattern of the Yorkshire gig with the teazles in rods, there were variations needed to meet different requirements within the woollen trade, and these differences involved the rods fitted to the gigs. Often this meant simply a matter of the length, but there were some differences that went beyond this, altering the conventional setting of the teazles in some ways.

A chief property of any gig, whether fitted with handles or with rods, was that it should have been wide enough to raise the particular width of cloth or fabric. Broadcloth woven on handlooms in the West Riding in the eighteenth and early nineteenth centuries was said to have been around 54 in wide, and at Bean Ing in Leeds in the early 1800s, best superfine broadcloth could have been 58 in, to be stretched to 61 in. William Partridge referred to cloth made to the wider ‘seven quarter’. The length of gig he stipulated, 6 ft 3 in, would have been long enough for the dressing of any of these.

Although during the nineteenth century, broadcloth ceased to be made to the traditional widths, the old widths, based on broad or narrow cloth woven on the handloom, continued to be relevant in the clothing trade, and for this, and other reasons, gigs with different lengths of barrel, and therefore, rods, appeared. In 1896, in the seventh edition of their *Catalogue of Finishing & Dyeing Machinery,* G. W. Tomlinson of Huddersfield accompanied the illustration of their raising gig with the words, ‘The usual width of a Gig is 65 in. on the Teazle’. As the length of the rod is greater than the distance occupied by the

teazles, this size may have been the same as that of the 66 in gig, with sets of 66 in rods entered in the mill sale catalogue of the Nortonthorpe and Cuttlehurst Mills, Nortonthorpe, near Huddersfield in 1895. However, longer lengths of gig, and of rod, were also required. The gig at the Armley Mills Leeds Industrial Museum is probably 72 in in nominal length, while a set of spare rods there are probably 84 in. The Yorkshire gig at the Stroudwater Textile Trust's Dunkirk Mill has rods that are 88 in, and the Nortonthorpe mill referred to also had a 96 in raising gig with sets of gig rods of 96 in. The conventional height of the space for the teazles in most rods of these kinds was 2¾ in or so.

There were, though, sections of the woollen industry in which the weight of teazles in the conventional rod was either too great or not great enough, and gigs, and their rods, and the setting were adapted accordingly. One type of rod already mentioned, the 'continental' rod, was needed for raising lighter cloths such as billiard cloth, and had a lower space for the teazles, so that it could only be set with a $^{2}/_{8}$ or with large buttons two in height, to give a gentle raising action, smaller teazles having weaker hooks. Two gigs adapted, on the other hand, for heavier work seem to have been connected with the Lancashire woollen industry, where heavy cloths such as flannels and blankets were made. One such machine, now known by name alone, was the 'Lancashire gig', referred to by the teazle merchants Edmund Taylor (Teazle) Ltd. of Huddersfield in the early 1970s. This machine had two noteworthy characteristics, one being that it was set with kings, that is larger teazles around or over 3 in, depending on the exact specifications, suitable for raising coarser cloths. The other was that the teazles were held in place by string round their tops. This briefest of descriptions opens the possibility that the Lancashire gig was in fact another still-surviving version of the gig using handles, like at least one West of England gig still used in Gloucestershire up to the 1960s. By the early 1970s, though, according to the merchants, there were none of these Lancashire gigs left in this country, the last being in a mill in Chile.

By the early 1900s, the heavy woollen loom, on which the heaviest cloths, such as those manufactured in Lancashire, were woven, had a reed space of up to 154 in, which meant that the heaviest cloths were also amongst the widest. One gig adapted to the raising of this class of goods was the one to be seen at the Helmshore Mills Textile Museum in Rossendale, Lancashire. Based on the pattern of the Yorkshire gig, but massive in size and standing on a heavy cast frame, this gig has rods that are 120 in in length, with a space of about 5 in, getting on for twice the normal height, for the teazles. It is set with very heavy teazles, probably Gs, two in height, one above the other, to give an exceptionally heavy degree of raising, this being effectively twice the weight of the teazles in the conventional rod. The rods, because of their greater length, are divided into eight sections, compared with the usual six.

Although the various lengths of raising gigs made by the textile machinery manufacturers, and the rods for them had to correspond, in the West Riding, the making of the rods themselves seems to have become, to some extent at least, a separate part of the mill supply trade during the course of the nineteenth century, with firms such as J. Shaw of Folly Hall, Huddersfield, noted in a directory in 1857, and Ellis & Taylor of Leeds, similarly identified in1881, making iron rods for gigs, the latter firm also selling the teazles to go in them. These firms may have supplied rods either directly to the mills, or to the machine makers themselves possibly, for in their 1896 *Catalogue*, G. W. Tomlinson of Huddersfield said, rods 'are not included in quotations unless specially mentioned', in which case, 'the rods can be filled with teazles, if desired'.

The practice in both hand raising with teazle handles and in raising on the gig, was to start with old worn teazles and then progressively add newer ones. At Bean Ing in Leeds around 1810, the dressing procedure for best superfine cloth began with 'five throughs with old Teasels, using the worst first', before a sixth with new teazles, followed later by five more throughs with old teazles. The complete process went as follows:

When best Superfine Cloth is taken from the Mill it is first dryed on the Tenters, when dry it is taken off & well wet out and taken immediately to the Raising Board and given five throughs with old Teasels, using the worst first, the sixth time use new ones (and if the Piece be very stout or a mixture it will require one thro' with Flatter Cards)--in this state it is thrown on a Horse to sipe (about 10 minutes) if thin cloth it ought to be dryed before it is taken to the Shear Board where it is cut once over without raising the wool, (this operation is called cropping) it is then well wet out again and raised four times thro' with old Teasels on the Raising Board, it is then struck twice thro' with flatter Cards at the Perch (Pearck) which stands in a Trough of Water, roll it up for Tenter and let it lay one day wet; then take it to the Tenter and strike it down with Cards and brush it, it is always stretched one yard to the score and if stamped 58 inch broad stretch it to 61, when dry take it to the shear Board and cut it three times over with the best finishing Shears and once on the back side.

A Piece should never lay in Press above 24 hours without being turned, when turned it should lay three day longer …

Cassimeres double milled are dressed the same as fine cloth.

Similarly, in starting to gig a new piece, William Partridge said that for the first course of twelve runnings up, the gig should be filled entirely with 'dead work', that is worn out teazles, some better teazles being added only slowly, course by course, so that by the end, no more than one third of the handles were of new teazles, or rather more if the cloth was very stout, but with no more than two-fifths new. In more recent times, in Yorkshire, the gig would be 'sharpened' by the addition of rods of new teazles, mostly no more than six out of the twenty-four, and never more than twelve, keeping roughly to the same proportions as Partridge. The amount of work to be done by the gig also depended on the degree to which the cloth came in contact with the teazles on the drum. This, as Partridge pointed out, depended on the diameter of the drum, a three foot diameter resulting in the cloth wrapping round nearly half the barrel. Later gigs enabled the degree of contact to be controlled by means of a breast roller across the front of the barrel, which could be raised or lowered.

In the past, the 'dead work' or worn out teazles, which were nevertheless vital for starting the raising, and for the slow and gradual building up of the nap, were brought to that state through the repeated sequence of use, cleaning, drying, and re-use, the main purpose of which, despite the labour involved, was to keep the teazles, an expensive commodity, required in quantity, in action for as long as possible. The cleaning and drying, whether of handles or rods, was a matter requiring considerable attention, because the teazles, once filled with flock, would no longer do their work, whilst thorough drying was necessary to enable the hooks to regain their stiffness, so that they would work better, and also to prevent the appearance of mould which could cause them to break up. During the course of the nineteenth century, a number of efforts were made to improve the procedures or to economise on the labour needed for this work.

George Walker's 'The Preemer Boy' illustrated a scene in a Leeds dressing shop that would have been familiar over the preceding centuries, with the boy picking the flock from the handles discarded by the two croppers, using the small tool, the preem, consisting of a stubby wooden handle fitted with metal prongs, described as 'an iron comb'. Going back in Leeds to at least 1576, the name for the instrument gave use presumably not only to 'preemer', but to 'premajer', the term for some of the workers in the cropping shops at Bean Ing in 1813. Although no association has been found to connect the two, Walker said of the word preem that 'the word is no doubt a corruption of *preen*'. In Partridge's account of raising on the gig, the handles only needed five or six runnings up for them to be clogged with flock, and need turning, and then cleaning. This was done, also by a small boy, with an iron comb, words identical to Walker's, though Partridge does not add any

particular name.

The cleaning of gig handles was therefore the same as the cleaning of handles used by hand, and it seems likely that it was only as a result of the introduction of the iron rod, the shape and structure of which leant themselves better to it, that the mechanical cleaning of the teazles was devised, this economising greatly in the labour involved. At any rate, by at least 1853, a brush, incorporated into the gig, had been invented to clean the teazles whilst the gig was still in operation, the brush revolving in the same direction as the barrel of the gig, but faster, so as to lift the flock off the teazle hooks without damaging them. Such brushes were capable of being put in and out of operation as required, a number of patents being devoted to the subject. One of these specified a spiral brush of bristles along a roller, as the key to the process was that the contact with the teazles had to avoid damaging them. For this reason, one proposal of 1873 involved a brush to clean away the flock, this brush in turn then being cleaned by a card wire roller, the flock then being removed from this into a receiving box. Some American gigs of the early 1900s offered either a stationary brush, which could be used by making the cylinder wind against it, or a rotary wire brush to be put in and out of action during the running.

The G. W. Tomlinson *Catalogue* of 1896, however, showed that by then, there was a further option available for cleaning gig rods in the mills. This was a separate machine, into, or onto, which rods could be put for cleaning. The name for this, a preening brush, recalls the word ‘preem’, and perhaps shows that Walker was right in connecting the two, and may indicate that in the West Riding mills, the use of the term had continued.

The second process required in the traditional care of the teazles was the drying, which at one time was carried out, it would seem, entirely by natural ventilation, as the rack of teazle handles above the window in ‘The Old Cropping Shop’ indicates. The painstaking system outlined by William Partridge also relied wholly on natural drying, though under cover in special open-sided sheds. It was because this system, involving the moving about of large numbers of handles paid off through the thorough drying of the handles, which prolonged life of the teazles, that Partridge warned against attempts to do with less than the number of drying sheds that he recommended. The wet handles had to be initially propped in pairs against each other, and when dried moved together, six of the designated sheds, with their special design of slats and uprights being needed to hold the handles for each gig.

The arrangements for drying teazles in Yorkshire mills are probably to be best found in insurance company records such as the one that shows that at Bean Ing in 1827, a warehouse building included a small room for drying teazles. This, which does not sound as though it would have had the kind of natural ventilation that was essential in Partridge's system, may have had an artificial drying method, such as the steam-heated chest for drying teazles that formed part of a patent of 1825. Another teazle room at Bean Ing, close to the croppers’ shops may have been a storeroom.[7]

In the twentieth century, as the use of teazle gigs declined, there seems to have been a progressive corresponding decline in the traditional practices intended to prolong the life of the teazles. In 1924, when teazle raising had just undergone a revival in the previous years, but many experienced finishers and setters must have been lost in the war, an ex-finisher, writing in one of the trade journals found it necessary to remind his readers that frequent drying of the ‘slats’ or rods, renewed their effectiveness. None of those interviewed in the 1970s, some of whom had experience going back to 1920, ever mentioned the use of any kind of cleaning device or machine to remove the flock, or used the words ‘preem’ or ‘preen’. Instead, every hour or so, the gig was stopped, and the teazles cleaned by hand with a ‘fettler’ or ‘fettling carder’, using a local word for cleaning. Card clothing, though handy, and available, was perhaps not necessarily the ideal thing to use, compared with the prongs of the preem, and the hooks of the teazles could be stripped away if care was not taken. No particular arrangements for drying were ever

referred to, and instead, the teazles were worked, until after a few days, or a week or so, depending on the amount of work, they had to be discarded.

A good deal less is known in general about the rotary or spindle teazle raising machine. It is not known to have been mentioned or illustrated in the standard text books of the woollen industry. The basic device, however, like the stem teazle raising gig, consisted of a drum or barrel with the teazles round the outside, and an arrangement for the cloth or fabric to be passed across the drum. The bored teazles, placed on spindles angled slightly above the horizontal in rows along the drum. the angle being reversed on alternate rows, were free themselves to turn as they met the fabric, giving a more lifted finish.

The obscurity of the origin of the process has already been mentioned. However, an undoubtedly very early, and very simple, probably locally-made machine of the kind can be seen at the Museum of Lakeland Life & Industry in Kendal. Historically, the town was a centre of the woollen trade, where teazles were used. The borough coat of arms has three teazles quartered with three woolsack or bale hooks, and almshouses of 1659 put up by an individual who made his money in the woollen trade display a stone tablet with a card, a teazle handle and shears. The local woollens were called the Kendal greens, but the town also had an important stocking manufacture, and it is probable that it was with this that the rotary spindle teazle raising machine in the museum was connected.

The raising machine, which is without provenance, looks as though it would have been of nineteenth century manufacture. It consists of a notional or skeletal drum or barrel between two round endpieces of iron, each 22½ in in diameter, the distance between being no more than 15½ in. The drum is mounted on a stand with two very heavy cast end frames. The whole is very robustly made and put together. The top of the drum is hardly at waist height. The raising surface itself is made up of rotary or spindle teazles, drilled through the core in the usual way, and put onto sixteen spindles, each of which runs the whole way across from one of the round ends of the drum to the other. Alternate spindles are angled alternately to make the raising even. Each spindle carried seven 5 cm teazles. At one end of each spindle, the end from which the teazles are put on, there is a spring coiled along the spindle to keep the teazles together, and at the far end there is a small fixed nut on the spindle to keep the teazles centralised in the path of the fabric or stocking material, and to stop the top end of the last teazle wearing as it turned. To replace the teazles it would have been necessary to unscrew a little metal plate on the outside of the circumference of the round end, each little plate serving two spindles. There is a double drive wheel at one side for a belt to turn the drum, these two wheels being fixed so that they turn together. Across one face of the drum, at the side, there is a wooden beam, with a brush of bristles along its inner face, the bristles therefore projecting inwards towards the teazles, this brush matching the length of the raising surface of the teazles within the endpieces. There are two large knurled wheels or nuts at the ends of this wooden beam, so that the brush can be adjusted in, towards the teazles, or out.

There is no attachment or apparatus for feeding or presenting the fabric to the teazles whilst the drum is turning, but there is equally no sign that such a device was ever attached, but is now missing. What may be likely therefore is that, the raising machine being fixed in position by screws or bolts through the holes in its feet, the delivering system was a separate piece of equipment, located next to, or above the raising machine. This may have been powered by a second belt from the second wheel at the side of the raising machine, so that the same drive powered both the drum and the delivering machinery, both usually or always running, therefore, at the same time. The brush of bristles on the inside of the wooden beam lying across the drum would have been more likely to have been intended to be there to clean the teazles of flock at intervals, rather than to have been meant for application in some way to the fabric or material. The operator would have been able to adjust it in and then out again as the drum was turning, using the easily-grasped large adjusting nut or wheels. This may have been done while the whole apparatus, including the delivering machinery, was in operation and turning, or there may

have been a disengagement arrangement so that the teazle raising drum turned on its own. This was, therefore, entirely similar to, if much simpler than, the integral system developed for the cleaning of gig rods on stem teazle raising machines in the nineteenth century, using a bristle brush, not wire, and being put in and out of operation while the raising machine was working, or at any rate, while the barrel was still turning, whenever this was felt to be necessary by the operator.

The arrangement of the spindles on the Kendal raising machine, across the 'drum', simplified the construction, but left a great deal of empty space round the drum, even in a machine with such a small width, as a result of the way in which the adjacent spindles diverge from one another. The industrial rotary or spindle teazle raising machine, as made by the main textile engineers, was not only a far larger item, comparable in general to the stem teazle raising gig, but was designed and engineered to fill the drum with teazles. To this end, the industrial machine had the teazles set in threes on short spindles, at a slight angle, a row of these spindles being fixed in a line along the length of an actual drum. In this way, the wide gap of the Kendal raising machine was avoided. One weak part of the arrangement was that at the point where the end of the teazle came into contact, it tended to wear, and one of Gessner's suggested improvements at the start of the 1880s was a metal cap. The metal rotary teazle raising machine, such as Tomlinsons (Rochdale) Ltd.'s 'Metazel' raising machine of around 1960, had the same way of arranging the layout of the teazles on the barrel or drum. The cleaning system in the Metazel was integral and the flock was carried away pneumatically.

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Items and displays of one kind or another connected with the fullers' teazle and its use can be found in museums up and down the country, particularly where woollen cloth has been made. The teazle raising gigs and machines that have been referred to here in passing are relatively few in number across England and Wales, mainly in industrial museums. They are mostly, where on display, static exhibits, but one gig, at Dunkirk Mill in Gloucestershire is a working gig.

The gig on show at the Trowbridge Museum came from Longfords Mill, Minchinhampton, Gloucestershire. Dated to the 1860s, it is equipped with handles, and is a West of England gig with top and bottom rollers for the cloth. Its robust construction conveys an impression of a heavily practical and powerful piece of machinery. It is set up with the cloth in position. It came to the museum in 1991. A twin of this gig is in store with the Stroudwater Textile Trust, also from Longfords Mill near Avening, Minchinhampton, which closed in 1990. This gig has the date 1867 etched onto one of its handles. It was last used for brushing the finished cloth in the 1960s. The Trust also has a Yorkshire gig at Dunkirk Mill. This has no maker's name, but is virtually identical to one shown in an advertisement of the 1870s. it was saved in the early 1990s from Tal-y-Bont near Aberystwyth. It was not considered in the West of England to be able to do the work of the West of England gig, and was reserved for mosing, raising the nap again after cutting, or doing a light finish on apparel cloth. It is now in working order, driven by line shafting off an 1855 waterwheel. The shafting and fast and loose mechanisms that controls it were saved from Longfords Mill. In order to save the wear on the cloth only half of the twenty-four 88 in rods, every alternate one, are used.

The gig at Armley Mills Leeds Industrial Museum is also a Yorkshire gig, without any visible maker's name. The machine has a scray, and is set up with cloth in it. The rods are held back by flat springs. This gig also has pipework belonging to a wetting system for use on the cloth during raising. The back is panelled in. The rods are probably 72 in nominal length, and nearby is a set for a longer gig, probably 84 in. Another Yorkshire gig, with no maker's name, is in the National Wool Museum, Llandysul, Carmarthenshire, Wales. It is thought to be of the mid-nineteenth century in date, and came from Maesllyn Mill, Llandysul. It has a scray driven by an arm from the gig. Of the type of the Yorkshire gig,

but longer, and with the frame made of heavy castings, is the teazle raising gig at the Helmshore Mills Textile Museum of Lancashire Museums. Intended for the raising of very heavy and wide cloth, its rods are 120 in long and set with very heavy teazles, two in height. It has no maker's name. Like the Trowbridge gig, it is a very impressive machine, and has cloth set up on it. The scray is a replacement in wood. The back of this gig, too, is panelled in. The rotary or spindle teazle raising machine at the Museum of Lakeland Life & Industry, Abbot Hall Art Gallery, Kendal is a tantalising curiosity, but it can be seen to have a place both in the history of the local wool textile industry, and in the development of the rotary teazle raising process. The museum has another similar machine in store.

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Fullers' teazles do not last forever, and even with the best care, eventually came to the end of their working existence. With the hooks bent and broken, and the cores stripped, they were fit only for the mill rubbish heap. Sometimes, according to report, a new plant could be seen struggling to grow from seed still held amongst the ruined teazle heads.