the regular price for slubbing, &c., is charged, and the pro­fits are divided at the end of the year. In the larger ma­nufactories at Leeds, the mule is used instead of the jenny. In some of these factories all the operations from sorting the wool to packing the cloth are carried on, whilst in some the weaving is given out. The establishment of Messrs Hirst, Bramley, and Co. is a sample of an admirably regulat­ed factory, where the whole process of cloth-making is car­ried on ; and we are much indebted to those gentlemen for the facilities afforded us in the prosecution of our inquiries. To Messrs Ripley and Ogle we are also similarly indebted.

The operations of warping and weaving, and indeed every thing connected with them, have been fully described in the article Weaving : all that we need mention here is, that the hand-loom is chiefly employed at present, though there seems every probability that Messrs Sharpe and Roberts’s improved power-loom will rapidly supersede the hand-loom. In several factories of Leeds, power-looms are employed to weave the finest and broadest cloths, namely, such as are twelve quarters wide in the loom ; and we could discover no greater difficulty than in the weaving of worsted stuffs, to which power has been extensively applied.

The cloth is woven of the width just mentioned, to allow for the shrinking which it undergoes by the processes of scouring and fulling, especially the latter. The outer edges of the cloth have a list border, which receives the tenter­hooks in stretching. This list in the west of England is made of goats’ hair, but in Yorkshire it is merely formed of coarse yarn. This, we believe, is all that is necessary to be added to what will be found in the article Weaving.

After the cloth comes from the loom, and before it can undergo any other process, it is necessary to scour it, in order to get rid of the oil and size to which the wool and yarn have been subjected in the preparatory processes. This is performed at the mill, in a somewhat rude machine, called the stocks, and consisting of a pair of wooden mal­lets, worked alternately by a cog-wheel. The cloth is ex­posed to the stroke of the mallet in an inclined trough, the end of which is curved, so that the tendency of the stroke is to turn the cloth round and round, and different por­tions are alternately exposed to the operation of the ham­mers. At first soap or some other detergent is used, but at last a stream of pure water is let in upon it.

It is now carried to the drying room or tenter-ground, and stretched upon a vertical rail or tenter-hooks, where it is left to dry in the extended state. The lower rail of the tenter-frame is made to slide, so that the cloth may ac­quire the requisite degree of tension.

The cloth thus cleansed and dried is delivered over to the burlers, who pick out all irregular threads, hairs, or dirt of whatever kind, which may remain in the fabric. This process is called burling, and to perform it, the cloth is ex­amined both on the surface and through the web against a strong light. In the larger factories a room is assigned to the business of burling ; but in the cloth-villages of the west riding, during the summer months, the process is carried on by the wayside and in lanes, on walls and on hedges.

The cloth is now ready for the operation of the fulling- mill, which, like the scouring stocks, is furnished with mal­lets driven by a cog-wheel ; but the milling trough has a square instead of a circular end, so that the cloth receives the direct blow of the mallets, and is not made to escape from the blow by the operation itself. The stroke of the mallets is extremely heavy, but it does not injure the cloth, on account of the multitude of folds. This greater force, as compared with the scouring stocks, is produced by the hanging of the hammers. The shafts of the scouring stocks are nearer to the perpendicular, so as to cause the mallets to move more horizontally, and therefore with less velocity. They are hence called *hanging* stocks, while those of the fulling-mill are called *fulling* stocks.

Improvement has of late found its way into this branch of the cloth-manufacture as well as into others. The old fulling-mill was of wood ; but such machines are now con­structed of iron, with much more accuracy, and work with greater precision. The best of these is the invention of Messrs Willans and Ogle of Leeds. The bed of this ma­chine is hollow, so as to form a steam-chest, connected by a pipe with a boiler, so as to keep up the degree of heat neces­sary to the perfection of the fulling or felting process. But the great improvement of this machine is a contrivance for altering the form of the trough against which the cloth re­ceives the stroke of the mallet. This consists of a moveable curved plate, traversing on a fixed hinge-rod at the bottom of the trough. The upper edge of this curved plate is capable of being advanced towards or withdrawn from the mallets, by means of a screw-rod attached to its back. By this means the directness, and therefore the force, of the stroke is altered so as to suit the different qualities of cloth.

To the felting property of wool we have already alluded. By the united operations of beating, heat, and moisture, the minutely jagged surfaces of the fibres of the wool are made intimately to cohere, and form not a mere woven tissue like cotton, flax, or silk, but a felted homogeneous mass, similar to the paper on which we print. If a piece of cloth be cut it will not unravel, the tissue is almost lost under the thick fulled surface raised upon it, and the weaving seems less to give a character to the fabric than to impart the requisite degree of strength.@@1 Superfine cloths have four fullings of three hours each, a thick solution of soap being spread between each layer of cloth every time. Scour­ing is aided by fuller’s earth, that which is found in Eng­land being said to be superior to any other.@@2 Rinsing with clear water completes the process, which diminishes the width of the cloth between forty and forty-five per cent., and the length about fifty per cent. After every impurity is washed out, the cloth is again stretched upon the tenters until it is completely dry.

The cloth next undergoes the operation of teazling, by which the loose fibres of the wool are raised to the surface, so as to form, when duly cut or sheared, the pile or nap, For this purpose the teazle, a species of thistle (*dipsacus fullorum)* is employed. This useful plant is cultivated in the clothing countries, and especially in Somersetshire, where they are sold in packs of 20,000, at about L.6 per pack. In periods of scarcity the price has advanced as high as L.22 per pack, followed by a great importation from France, and a consequent glut, reducing the price to L.3. A piece of forty yards consumes 3000. This state of cir­cumstances has induced many to turn their attention to the invention of some metallic substitute, but the thistle teazle still maintains its supremacy.

Formerly the teazle was fixed in a hand frame, and worked by two men in the manner of a large two-handled brush or hand-card ; but for many years the gig-mill has been employed, in which the teazles are arranged in a cy­linder, and the cloth being stretched on two cloth-beams, one above and one below the teazle cylinder, the cloth moving in a direction contrary to its revolutions, its surface is exposed to the operation of the teazles. In the older

@@@1 Cloth has recently been produced by the felting process alone, without the aid of weaving. Some machinery has been erected at Leeds, and it is expected to succeed. In France, cloth has been produced by the same invention. The scheme is not new, for as early as 1794, Mr Joseph Booth took out a patent for the production of cloth without wearing; but after being tried at Taunton, at Lewisham in Kent, and at Merton in Surrey, it was abandoned. We trust the present effort will be successful.

@@@2 “ Here the Dutchmen found fuller’s earth, a precious treasure, whereof England hath better than all Christendom beside ; so that nature may seem to point out our land for the staple of drapery, if the idlenesse of her inhabitants be not the only hindrance thereof."—Fuller's Church History.