

CLOTH. This term in a general sense is used to signify any substance formed by the interweaving of animal or vegetable filaments, though in England it is particularly applied to the various manufactures of wool. Hair is sometimes spun into thread, and wove into cloth: fine gold or silver thread is also sometimes mixed with silk in ornamental articles, but the cloths commonly made are either of the vegetables flax, hemp, and cotton; or the animal substances wool and silk. We are but little acquainted with the antiquity of the art of weaving, but sacred and profane history concur in proving that it was in very early ages brought to considerable perfection. It was most probably invented in Asia, and by degrees found its way to the different countries of Europe. It was unknown in Britain in the time of Julius Cæsar, and some public acts in the early ages of English history, prove that for many years our wool was sent over to the continent to be manufactured. But the despotic and cruel behaviour of the Duke of Alva, and the persecutions which followed the revocation of the edict of Nantz, drove hundreds of manufacturers from their native country, who took refuge in the British isles, and brought with them the knowledge of woollen and linen manufactures, which have since been greatly improved, and have become the acknowledged staples of England and Ireland. The still more recent discoveries of Sir Richard Arkwright have added the extensive and lucrative manufacture of cotton, the lighter branches of which employ the poor of Scotland, while the more substantial parts have become of very great importance in England.

With respect to the manufacture of woollen cloths, which, being the staple of England, we select for the subject of this article, we may remark, that a description of the method practised in Wiltshire for the production of superfine cloths, will include all that is necessary, since the inferior kinds are produced only by coarser methods of performing the same operations, and by using inferior materials. All cloths which are intended to be scarlet, green, or black, are manufactured white, and dyed in the piece when finished; the other colours are generally dyed in the wool, though there are some of inferior quality which are also dyed in the piece. The wool when taken out of the bale must be carefully picked, as it abounds with pitch and other substances. It must then be scoured by being boiled in liquor composed of one-fourth urine and three-fourths water. When it has been well stirred, and cleansed from dirt and grease, it must be taken out, drained, and washed, and then put into the dye furnace. When dyed, it must be again washed and dried, and afterwards beaten on wooden hurdles, unless a machine be used for that purpose. All the locks which are not regularly dyed, the lint and other filth, must then be carefully picked from it. In manufacturing mixed cloths, proper proportions of the different coloured wools being weighed out, they are well shaken together, and then well mixed, by being turned in the wool-mill, and passed twice through the scribbling engine, instead of once. Being thus prepared, the wool must be spread on the floor, and regularly sprinkled with oil of olives, in the proportion of 3lbs. to 20lbs. which must be beaten into it with heavy rods, and the whole then carried to the scribbling engine. By passing through this

engine the locks of wool are separated, and formed into light flakes; it is then taken to the carder, by which the wool is formed into separate and smooth rolls of twenty-eight inches long, and half an inch thick, which are immediately taken by boys, and attached to the spindles of the roving or stubbing machine. This machine draws out the wool into large and slightly twisted threads, and winds it into balls ready for spinning. By the spinning jenny the threads are twisted, and drawn to a proper degree of size and strength, and are then reeled into skeins, and prepared for the loom. The stronger sort, intended for the woof, is wound on spools, or quills, which are tubes of such a size and shape as to be easily placed in the hollow of the shuttle. That designed for the warp is wound on large wooden bobbins, from which it is by the warping bar conveniently arranged for the chain or warp of the piece. The chain must be stiffened by a size made by dissolving 3 lbs. of glue in a quantity of water sufficient to saturate the whole. In weaving broad cloth, two treadles are employed with a weaver to each, on each side of the loom. They tread alternately on the right and left side, each on his own treadle; this raises and lowers the threads of the warp equally, and they throw the shuttle transversely from one to the other. Every time the shuttle is thrown, they strike the warp with a moving frame, called the batten, to which is fastened a kind of comb, called a slay, or reed; the threads of the warp are passed between the teeth of the slay and the cloth, and the stroke is repeated six or seven times with the warp open, and as many times when it has crossed and closed on the woof. When the whole warp is filled with woof, the piece is finished, and taken to the fulling mill, where it is soaked with urine or hog's dung, and then scoured with clean water. Being thus cleared from the oil and filth contracted in dying, it is ready for the next operation, which is called burling, and is performed by women, with small iron nippers. The cloth by this process is cleared from knots, lint, small straws, and lesser filth. If any uneven threads are left by the spinner, they must be gently taken out, or if any hole has been made, it must be carefully mended with some of the warp yarn of the same cloth.

The qualities which distinguish woollen cloths from all other manufactures, and render them particularly suitable to northern climates, are the compactness and density which they acquire from the operation of fulling. The cloth is sprinkled over with a liquor prepared from 5 lbs. of soap, made of oil of olives, dissolved in hot water, and then laid in the mill-trough, where it is pounded with two heavy wooden hammers. By this process a cloth 40 yards long, and 100 inches wide, is reduced to 30 yards long, and 60 inches wide. During the operation it should be taken from the trough, to be smoothed from wrinkles, and more soap should then be added. The property of being rendered thicker by compression is peculiar to woollen cloths. It is said that the fibres of wool are thickly set with jagged protuberances, which it is supposed, catch hold of each other, and when firmly pressed together, become inextricably united, so that the cloth when cut is not liable to unravel, as other kinds of cloth do. When milled the cloth must be scoured with a preparation of fullers' earth and bullocks' galls, till perfectly free from soap, and then taken to the cloth worker to be dressed. This operation is performed by first drawing out, and placing in one direction, by means of wire cards, and teazels, all the fibres of wool that can be brought to the surface, and then shearing them as close as may be practicable, without laying the threads of the cloth bare. The instruments employed in this process were formerly worked by hand, but recent improvements have adapted them to machinery, which performs the operation with more exactness, as well as much less expense. When

the wool is by the repetition of this operation sufficiently raised, the cloth must be taken to the rack, where it is strained till it becomes of an even breadth; it is then returned to the shearing-boards to be cut till perfectly even. It is next given to the cloth drawers, who first draw out all the small straws and bits of lint which may remain, and then carefully fine-draw any small holes which have been made. It now undergoes the last operation of pressing. The cloth being laid in even folds, a sheet of glazed paste-board is placed between each fold; it is then laid in the press, and covered with thin boards, on which iron plates properly heated are laid. On the whole pile the top of the press is brought down by means of a lever turning a screw, and pressed with the degree of force thought necessary to give the cloth a proper gloss. When cold it is taken out of the press to be folded and packed for sale.