operations necessary to perfect weaving. The loom of the Hindu has been described in the article Cotton Manufactures. In Baines’s history of that branch of our industry are some characteristic figures of the Hindu manufacture in all its stages ; and when it is considered that the muslins of the east have never been surpassed, the truth of the above proposition will at once be admitted. To perform the same operation equally well, but in less time and at a less cost, has always been deemed an object of sufficient import­ance to occupy the attention of men of superior intelligence and energy ; and although much has been done within the last sixty or eighty years, there is still ample room for im­provement.

The common European loom, which is one stage in ad­vance of the rude loom of the Hindu, has been essentially the same for centuries. The loom itself indeed remains unaltered, and it is only in the mode of throwing the shut­tle that any improvement has taken place. Of that im­provement we shall presently speak.

The loom consists, first, of a strong frame-work of four upright posts, with beams at top from post to post, some­thing like a four-post bedstead. It is further strengthened by two longitudinal pieces of wood, in which the posts rest, with two similar pieces about half way up, with cross pieces at each end. These form the frame-work of the loom, and it must be obvious that their arrangement is of little mo­ment.

The essential parts *of* the loom consist of, lst, the appara­tus for stretching the warp ; 2d, the simple contrivance for raising half the strings of the warp and depressing the other half, so as to open a space for thc weft to be cast through ; 3d, the instrument for casting the weft between the opened threads of the warp ; and, 4th, that for striking it home.

At one end of the frame above described, is abeam call­ed the warp-beam, round which the longitudinal yarns which form the warp are wound. This beam is, in some better made looms, a well-rounded roller, but in the looms generally in use, even at this time, it is but rudely rounded ; it has, in fact, the appearance of an originally square beam, with the edges roughly taken off.

At the other end of the loom is another and correspond­ing beam, called the cloth-beam, on which the woven por­tion of the work is wound. This cloth-beam is generally more carefully constructed than the warp-beam. It is fur­nished with a rack-wheel, for the purpose of *letting in* or winding on the cloth, as portions of it become woven. This keeps it in a state of tension, with the aid of a pulley; sometimes an iron weight, but often a stone, slung over the warp-beam. As the web is wound on the cloth-beam, the unwoven warp is of course wound off the warp-beam, the whole being kept distended during the progress of the work.

We now come to the arrangement for raising the threads or yarns of the warp, half and half alternately. Slung across two pulleys at the top of the frame-work of the loom, are two pieces of wood, called, with the apparatus attached to them, heddles. These pieces of wood are of length just equal to the breadth of the cloth to be woven. If the warp consist of 100 yarns or threads, each of these heddles has fifty pieces of twine descending about a foot below the warp, with a loop or eye-let hole, through each of which a thread of the warp passes alternately. The hanging ends of these pieces of twine are attached to two pieces of wood similar to the heddles, and are made fast to two treadles, so that when one treadle is pressed down with the weaver’s foot, half the yarns of the warp will be raised, and the others depressed, so as to give to the warp an opening which, on a side view, has the appearance of an elongated lozenge. This opening is called the *shed,* and should be about two inches between the yarns.

It is in the shuttle, the instrument for passing the weft between the opened warps, and the batten, or instrument for striking the weft home, that thc great difference be­tween the Hindu and the European loom consists. The Hindu shuttle was, and we believe still is, in form some­thing like a long netting-needle ; and when the weaver has passed the weft, the same instrument serves him to beat it home ; but in the European loom they are distinct instru­ments, though intimately connected in the same portion of the loom. We shall now describe both.

The *hatten,* which is also called the lay or lathe, con­sists of a moveable swung frame, suspended to a cross-bar resting easily upon the upper bars of the loom. From this cross beam descend two *swords,* as they are called, at the bottom of which is a sort of shelf, called the shuttle-race. The two ends of this shuttle-race are closed up at the sides, so as to form short troughs, in which two moveable pieces of wood, called pickers, or peckers, traverse along pieces of wire extending only the length of the two troughs, or each about one quarter of the length of the bat­ten. To each of these two pickers is fastened a string, both strings loosely meeting at a handle which is held in the right hand of the weaver. When the shuttle is in one of the troughs, a smart jerk or pull at the picker projects the shuttle along the shuttle-race, and another sharp jerk or pull in the contrary direction projects it the other way. Formerly the shuttle was thrown by the hand, but about one hundred years ago, the picker, or fly-shuttle, was in­vented by one John Kay of Bury, in Lancashire ; but it was opposed by the workmen, and not generally adopted for some time after. It nearly doubled the produce of a man’s labour.

The *reed* is a frame with pieces of cane or wire fixed at equal distances upon the shuttle-race, and not unlike a comb in appearance. The canes or wires of the reed are called the *dents* (no doubt from the French *dents,* teeth) ; the yarns of the warp pass between them, and they serve to keep the work even, and to strike home the weft evenly. The reed is kept firmly in its place by a piece of wood fit­ting closely over it. This is called the cap or lay-cap, and the weaver, while working, holds it firmly grasped in his left hand.

The shuttle is a small piece of wood, pointed at each end, and hollowed in the middle, to contain the bobbin of yarn which is to form the weft. There is a small hole at the side of the shuttle called the eye, through which the yarn runs freely at each pick or jerk of the picker. On