Cotton-manufacture. The progress of a bale of cotton to the condition of thread or yarn may be briefly stated as follows:—

1. Sorted and mixed, to give uniform quality to a given lot. The cotton is piled in layers in a barn, and in taking it from the side of the heap, the cotton of the several strata is an average of the whole.

2. Scutched or willowed, to tear the matted masses apart and open out the fibers.

3. Cleaned and baled by a combined tearing and blowing action.

4. The bale is further treated in a similar manner, the filaments being more divided, received on a wire-gauze drum, pressed into a thin sheet, and delivered as a lap upon a roller.

5. Carded, to straighten the fibers, which are delivered in fleeces or slivers by the doffer; that is, in broad or narrow films or transparent sheets of fiber; or the fleece is reduced to a sliver by being passed through a funnel and consolidated by rollers.

6. Doubled and drawn, to complete the parallelism and elongate the ribbon. By the repetition of this process, the possible inequalities of separate ribbons are lost by throwing them together and re-drawing again and again, and depositing in cans.

7. Roving, to attenuate and slightly twist the spongy cord and wind it on bobbins.

8. Fine- or supplementary roving and stretching by the bobbin-and-fly frame or the stretcher-mule, delivering on bobbins.

9. Spinning in the throttle, which continuously draws, twists, and winds the yarn (for warp); or in the mule, which draws out and twists lengths of about 56 inches, and then winds upon the spindles (for weft).

10. Winding, doubling, and singeing the yarns, to fit them for the weaver.

11. Packing.

12. Dressing.

13. Warping.


N.B. There are many varieties and differences in machines and processes, and some even in the order of details. Much difference also exists in the machines for finer or coarser work, so that, while the above list is substantially accurate, it will not be found to agree with the order of all factories, and perhaps not in every respect with any one. The inventions involved in the treatment of cotton by machinery are about as follows:—

Fly-shuttle, John Kay, of Dury, 1738.
Carding-machine, Lewis Paul, 1738.
Drop-box, Robert Kay, 1740.
Spinning by rollers, Lewis Paul or John Wyatt, 1728.
Spinning-jenny, Hargreaves, 1767.
Water-frame, Arkwright, 1769.
Cotton-gin, Eli Whitney, 1794.
Dressing-machine, Johnson and Radcliffe, 1802–1804.
Power-loom, Horrocks, 1803–1813.
Mule, Samuel Crompton, 1774–1779.
Self-acting mule, Roberts, 1825.
See COTTON, FLAX, WOOL, HEMP, SILK, ETC., APPLIANCES, p. 831.

A cotton-factory cited by Ure has machines in the following proportions:—

1 card, 1 breaker, and 1 finisher; joint capacity 21,000 pounds per week.
3 dressing-frames of 3 heads each.
2 coarse bobbin-and-fly frames.
7 fine fly-frames.
12 self-acting mules; 404 spindles each.