

ARKWKIGHT, SIR RICHARD, in *Biography*, an eminent manufacturer, advanced himself, by his mechanical inventions for carding and spinning cotton, from the humble station of a country barber to an immense fortune and an honorary title. For performing these operations of carding and spinning by means of machinery, it was required either that the usual manœuvre of the carder should be effected with square cards, or that cylinders, covered with a kind of metallic brush-work, should be made to revolve in contact with each other, either to card or to strip, according as the respective velocities, directions, and inclinations of their wires might be adjusted. With regard to spinning, it would be indispensably necessary, not only that the raw material should be very nicely prepared, but also that it should be regularly drawn out by certain parts representing the fingers and thumbs of the spinner. The contrivance for this purpose consisted of a certain number of pairs of cylinders, each pair revolving in contact with each other. Suppose then that a loose thread or slightly twisted carding of cotton were made to pass between one pair of cylinders, properly adapted with a facing for holding it, and that it proceeded from thence to another pair, whose surfaces revolved with a much greater velocity; it is evident, that this quicker revolution would draw out the cotton, and ren-

der it thinner and longer when it came to be delivered at the other side. This is the operation which the spinner performs with his finger and thumb; and if the cotton be delivered to a spinning apparatus, it will be converted into thread. Sir R. Arkwright contrived to make these rotatory carding and spinning engines to move by horse, by water, and by steam; and thus, by the saving of labour, and with the advantage of a patent monopoly, he was rendered one of the most opulent of our manufacturers.

After he had quitted his original business, in the year 1767, he came to Warrington, where he projected a mechanical contrivance for a kind of perpetual motion. A clock-maker of this town, whose name was John Kay, dissuaded him from it, and suggested that much money might be gained by an engine for spinning cotton, which Kay promised to describe. Arkwright at first objected, but afterwards asked Kay, if this engine might be made at a small expence? Kay had been employed in making a cotton spinning engine; and in the trial for setting aside Arkwright's patent, it was proved that he had invented such an engine, but he had not brought it to perfection. Kay and Arkwright applied to Peter Atherton, esq. of Liverpool, for assistance in the construction of such an engine, who, discouraged by the mean appearance of the latter, declined undertaking it; though he soon after agreed to lend Kay a smith and watch-tool maker to prepare the heavier part of the engine, whilst Kay himself undertook to make the clock-maker's part of it, and to instruct the workmen. In this way Arkwright's first engine, for which he afterwards took out a patent, was made. Mr. Arkwright soon after connected himself in partnership with Mr. Smalley of Preston in Lancashire; but their property failing, they went to Nottingham, and there, by the assistance of wealthy individuals, erected a considerable cotton mill turned by horses. A person of the name of Hayes had also employed himself in making cylindrical carding engines. Upon the whole, without minutely detailing further particulars, it appears that the cotton spinning was no new attempt when Mr. Arkwright embarked in it; but many difficulties occurred in bringing it to perfection. In the hands of Mr. Arkwright, the carding and spinning of cotton became a great national manufacture. According to his statement, it appears that the advancement of it during a period of five years, cost him and those that were concerned with him 12,000*l.* before they derived from it any profit; and it must be allowed, that he alone seems to have had sufficient perseverance, activity, and skill to perfect a scheme, in the prosecution of which many others had failed, and to render it valuable to himself and the public. The merits of sir R. Arkwright may be summed up with observing, "that the object in which he was engaged is of the highest public value; that though his family were enriched, the benefits which have accrued to the nation, have been incalculably greater; and that upon the whole, he is entitled to the respect and admiration of the world." He was knighted by his present majesty on the 22d of December 1786, on occasion of presenting an address from the high sheriff and hundred of Wirksworth; and died at his works at Crumford in Derbyshire, August 3d, 1792. Gen. Biog.