

Japanese Civilization (Part 6)

– Maritime Asia and the Industrial Revolution –

By Kawakatsu Heita

The Influx of Indian Cotton

The Calico Prohibition Laws

Britain responded to the influx of Indian cotton with two laws prohibiting calico. In 1700, the British parliament passed the first law banning the import of calico. (Muslin and plain calico were exempted from this ban, and imports of cotton thread and fustian thread were permitted.) The preamble to the law justified it as follows: "If the East India trade continues, it will drain the nation's coffers and necessitate the melting down of coins. The resulting reduction of labor will inevitably cause grave damage to the country and force most of its manufacturing industries to seek labor overseas." However, the law did not have any effect and, two decades later in 1720, a stricter calico prohibition law was passed. This law expressly stated its aim of maintaining and promoting the British woolen and silk fabric industry, prohibiting the wearing of clothing made of calico and the use of calico in clothing, interior decoration and household effects. (As in the first law, this ban did not apply to muslin.) It is important to note here that both laws permitted the import of calico for re-export. These two calico prohibition laws had a considerable impact on the development of the British cotton industry both domestically and overseas.

Imitation of Indian Cotton and the Development of the Cotton Printing Industry

Let us first examine the domestic impact of the calico ban. Since the use of calico was prohibited at a time when a demand structure already existed for Indian cotton for clothes, interior decoration and household effects, the ban stimulated the manufacture of imitation

goods. The major effect of this was the development of the cotton printing industry from attempts to imitate Indian cotton by applying Indian color-printing techniques to plain calico imported from India as well as to linen and fustian. The textile printing industry developed out of European chemical techniques, arising almost simultaneously in France, the Netherlands and Britain, and subsequently in Switzerland and Germany. Of the various attempts to imitate Indian cotton, the printing industry was the most successful thanks to rapid advances in printing techniques. By 1744, the quality of printing was not inferior to Indian chintz, although it still did not reach the level of printed muslin. The number of "proto-factories" – printing factories that were forerunners of factory manufacturing – increased rapidly. By the first half of the 1760s, there were at least 28 such factories in Britain, 42 in France, 33 in Switzerland and 18 in Spain. By the middle of the 1780s, there were 111 factories in Britain, more than 115 in France, and 49 in Switzerland. The total length of printed calico produced in France in 1785 was 16 million meters, and of the million or so rolls of cotton cloth produced in Britain in 1792, more than 60% were processed at printing factories.

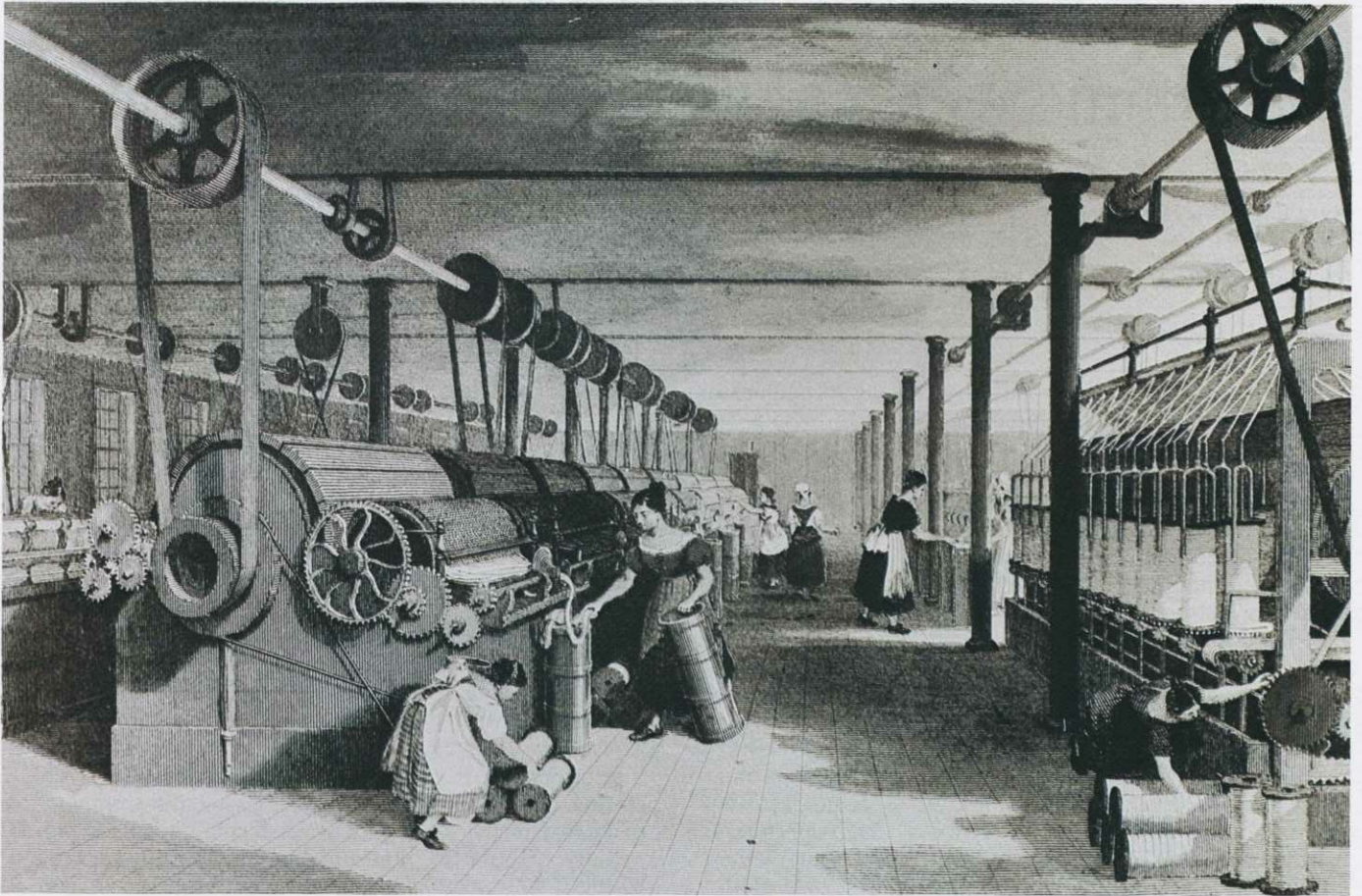
It is important to stress that one of the key factors in the rapid development of the calico printing industry was the fact that a substantial market had already been created by Indian goods. Since a huge demand already existed, the task facing the printing industry was not the creation of new demand but the development of products of the same quality as eastern fabrics at retail prices that the middle and lower classes could afford. The first step in the rise of the printing industry was the development of products that could replace imported Indian calico.

Development of the Cotton Market in the Pan-Atlantic Region

Let us now turn to the external influence of the calico prohibition laws. By stimulating re-exports, the laws led to the development of the cotton market in the pan-Atlantic region. Among the European countries, the largest importer of Indian cotton was the British East India Company based in India, followed by the Dutch East India Company. Although they operated on a smaller scale, the French East India Company and, a little later, the Danish East India Company also played significant roles in importing Indian cotton. Here we will focus on the largest importer – Great Britain.

The British East India Company re-exported Indian cotton to all the regions surrounding the Atlantic Ocean: Europe, Africa and America. One of its most important markets in Europe was Germany. In place of the former main export, British woolen fabrics, Indian cotton was exported to Germany in return for the import of linen. Another major center of demand was Spain, where Indian cotton was used domestically or taken to the Spanish colonies. Africa was also an important market, to which both Indian cotton and British-made imitation goods were exported. Compared to Indian cotton, however, the amount of British imitation cloth that could be exported to Africa was very limited owing to its inferior quality. In 1706, the Viceroy of Cape Coast Castle (Ghana) reported that "only cloth made in East India can be sold: they will not buy imitation cloth here," and made several similar reports thereafter. The Viceroy's report in 1724 stated that the "local people still show very little interest in imitation fabrics; they are too heavy." Cotton cloth apparently had to be light to find a market in Africa. As we will see, the

Photo: World Photo Service / LONDON: THE MANSELL COLLECTION



A spinning factory in Lancashire in the 19th century

British finally succeeded in manufacturing this kind of light cloth at the end of the 18th century. But in 1751, exports of British-made imitation fabrics accounted for less than one-tenth of all cotton exports to Africa, and even though these exports more than tripled during the next quarter century, the proportion of imitation goods was never more than about 10%. Exports of British-made cotton were essentially conducted to make up for the insufficient supply of Indian cotton.

The Ascendancy of Indian Cotton

Let us take a bird's eye view of Britain's cotton export business from the beginning of the 18th century. During the 75 years from 1699 to 1774, the market for both Indian and British-made cotton exported from Britain was the pan-Atlantic region. Indian cotton

accounted for 94% of Britain's cotton exports in the years 1699-1701, 92% in 1722-24, 86% in 1752-54 and 76% in 1772-74. During this period, the official value of Indian cotton re-exports more than doubled from 340,000 pounds in 1699-1701 to 700,000 pounds in 1772-74. In the second half of the 18th century, apart from the superiority of British goods in the American market, British imitation cotton goods could not compete with Indian cotton in overseas markets. Taking into consideration the problem of smuggling and the re-exports of Indian cotton by other countries, particularly the Netherlands, it was very difficult for Britain to undermine the ascendancy of Indian cotton in the pan-Atlantic region. In short, for more than one century after the Restoration of the monarchy in Britain (1660), Indian cotton completely dominated the pan-Atlantic cotton

market.

The Rise of the British Textile Industry

The mission of the British textile industry that emerged in the final quarter of the 18th century was clear: to manufacture cotton cloth that was equal in quality and price to Indian cotton. If it achieved this aim, nothing could stop it from gaining complete control of the pan-Atlantic cotton market. In other words, the British textile industry would rise on the basis of the existing pan-Atlantic global market that depended on the supply of Indian cotton. It is important to stress here that this industry, the "central pillar of the British industrial revolution generally viewed as a model example of a spontaneous industrial revolution," actually arose as an import substitute industry in

response to the external impact of the influx of Indian cotton.

The Development of Spinning Techniques

In 1774, parliament passed a law permitting British citizens to wear clothes made using only cotton. This law, promulgated in conjunction with the invention of various spinning techniques, reflects the first appearance of the prospect of developing a substitute for imported Indian cotton. James Hargreaves' spinning jenny was patented in 1770, Richard Arkwright's water frame was patented in 1769, and Samuel Crompton's spinning mule was completed in 1779.

As a result of the development of these new spinning techniques, productivity increased by leaps and bounds, production costs decreased sharply, and the production of high-quality (fine and tough) cotton yarn was made possible. At the beginning of the 1780s, one pound of fine cotton yarn, known as No.100 yarn, cost about £2, but by 1830 the price had dropped to three shillings. The number of spindle machines also increased significantly. In 1788 there were 50,000 mules in use and by 1811, according to documents Crompton submitted to parliament in that year, the total number of mules in England and Scotland combined had reached 4.6 million.

Success in the Production of Muslin

The improvement of the quality of cotton yarn was of decisive importance in the battle with Indian cotton. In the mid-18th century, the most common type of cotton thread exported from India was fine thread. However, British spinning technology at that time was only capable of producing thick thread, and even this often depended on the delicacy of the spinner's touch. Following the invention of Hargreaves' spinning jenny and Arkwright's water frame, the British finally succeeded in manufacturing cotton thread with the development of Crompton's spinning mule. Fine yarn spinning was eventually estab-

lished in Britain in the 1830s, when it became possible to produce fine thread of the same quality as Indian cotton.

The success in the production of muslin – the generic name for the finest cotton thread – was the “greatest ambition” of British cotton manufacturers. (G. Unwin) Before the spinning of fine thread was made possible by the invention of the spinning mule, the British depended on Indian muslin or used fine thread imported from India. But the invention of the spinning mule enabled them to produce the fine thread needed for muslin weaving domestically and move toward realizing their dream of self-sufficiency in cotton production. Crompton's spinning mule was initially known as the “muslin spinner.” Crompton himself described the spinning mule as a “machine that can produce in large numbers one of the first products of Europe – fine muslin and cambric.”

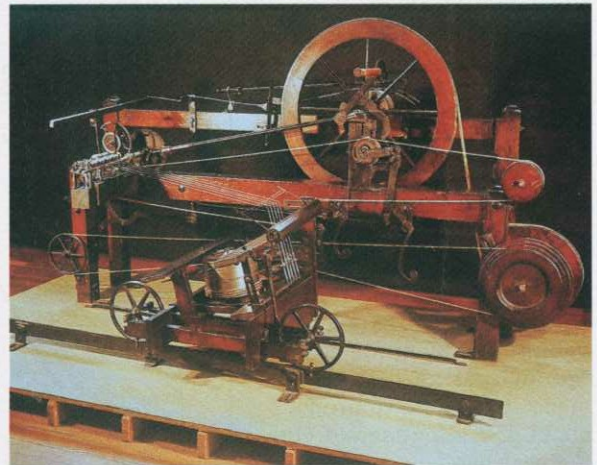
Before the spinning mule, the Europeans made countless attempts to imitate muslin but always lost out in competition with Indian-made fabrics. In 1780, a weaver from Bolton, Manchester, named Thomas Ainsworth became the first manufacturer to produce muslin. In 1783, Samuel Oldknow set up business on his own as a muslin manufacturer and had become recognized as the leading manufacturer in Britain in less than three years. By 1787, total muslin production had reached 500,000 rolls a year.

The Three-Cornered Atlantic Trade Network

The Importance of Long-Staple Raw Cotton

In 1788, when the prospects for the mass production of fine muslin thread that could compete with Indian cotton had become clear, Patric Colquhoun asserted that “there can be no doubt that

Photo: World Photo Service / LONDON: SCIENCE MUSEUM



The original model of Crompton's mule spinner

Britain will not require any cotton other than long-staple cotton to secure a decisive advantage in the future.” Although the quality of cotton of course depended on cotton manufacturing techniques, it was also deeply related to the type of raw cotton that could be used. Since it was impossible to cultivate cotton in Britain's climate, all of the cotton used as raw materials had to be imported. The type of raw cotton used in Britain varied according to its source.

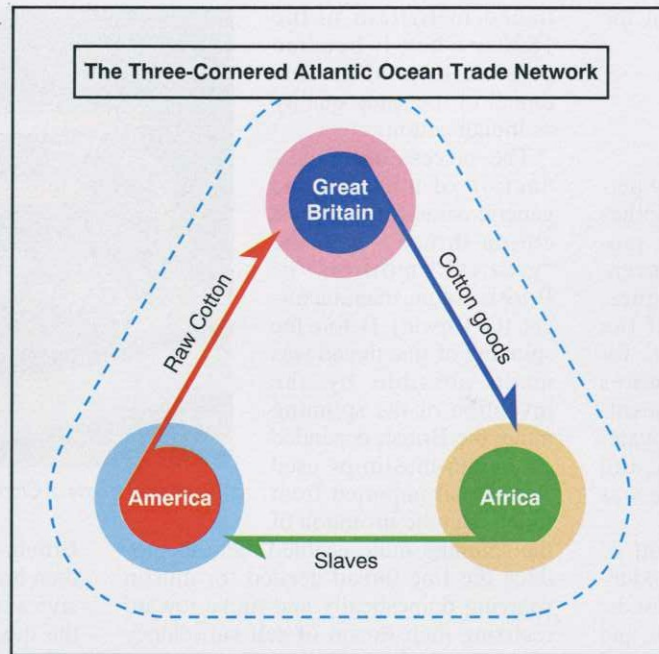
The raw cotton imported by Britain in the 18th century can be broadly divided into short-staple and long-staple cotton. In the first decade of the century a substantial amount of short-staple cotton was imported, but from the 1720s onwards long-staple cotton from the West Indies came to account for 60-80% of raw cotton imports. Until the end of the 18th century, not much attention was paid to the quality of this raw cotton, but with the invention of Crompton's spinning mule in 1779, long-staple cotton acquired a new importance as the most suitable type of raw cotton for spinning fine thread. Until then, the spinning industry had focused more on mass-production than the improvement of quality.

The Shift from Short-Staple Cotton from the Old World to Long-Staple Cotton from the New World

Let us examine the trend in imports

of long-staple raw cotton after the British became aware of the importance of improving the quality of cotton thread following the invention of the mule. Until the beginning of the 1790s, imports of raw cotton from the long-staple cotton-producing United States were not substantial. The turning point came in 1793 with Eli Whitney's invention of his famous cotton gin, which made it possible to produce about 152 kilograms of cotton per man-day. In the year of this invention, total exports of raw cotton amounted to only 500,000 pounds, but this rose sharply to 1.6 million pounds the following year, increased more than tenfold to 17.79 million pounds just six years later (1800), and reached 40 million pounds in 1805. Exports to Britain of sea island cotton also increased sharply during roughly the same period even though Whitney's cotton gin apparently could not be used for separating this type of cotton. Demand for sea island cotton was particularly high because it had the longest and finest staples, making it the most suitable type of raw cotton for fine thread spinning. Total exports of sea island cotton from South Carolina amounted to more than 90,000 pounds in 1793, rose to 160,000 pounds the following year, and had increased dramatically to 8.3 million pounds by 1801. Most of these exports were to Britain. The period during which cotton exports from the United States to Britain rose most rapidly was the boom years of 1799 to 1802, when the United States became the world's biggest exporter to cotton to Britain.

From the second half of the 1820s, American-produced cotton accounted for more than 70% of Britain's cotton imports. On the other hand, imports of short-staple raw cotton dropped. Asian-produced raw cotton, which accounted for about three-quarters of cotton imports and one-third of Britain's total



imports at the beginning of the 18th century, had lost its importance by the end of the century. In fact, the price of Asian cotton was considerably lower than American cotton, and for this reason, Manchester requested the British East India Company to import Indian raw cotton in 1788 and 1799. But after it became clear that Indian cotton was not suitable for use in spinning machines, the growing demand for American cotton turned into a flood.

To sum up, the British cotton industry made a decisive shift at the end of the 18th century from short-staple raw cotton from the Old World to long-staple raw cotton from the New World.

Indian Cotton Outstripped by British Cotton

As we have seen, the modern cotton quality paradigm of long-staple raw cotton as "fine thread" fine or cloth became established from the end of the 18th century to the beginning of the 19th century. Ninety-nine percent of Britain's cotton exports during the 30-year period from the last decade of the 18th century were to the pan-Atlantic region: Europe, Africa and America.

British cotton had clearly superseded Indian cotton in this pan-Atlantic market.

During the years from 1784 to 1786, cotton goods only accounted for 6% of Britain's exports, but this increased to 16% in 1794-96, and reached 42% in 1804-06. Nearly all of these cotton goods found their way to Europe, Africa and America. The pan-Atlantic region thus became linked to Britain as a market for cotton goods through the development of raw materials from the New World and spinning technology. This commercial relationship came to be characterized by a three-cornered trade network based on exports of British cotton goods to Africa, transportation of African slaves to America, and exports of

American raw cotton to Britain. Cotton, which had been one of the corners of the triangular Indian Ocean trade network, had become part of the three-cornered Atlantic Ocean trade network. Britain, the dominant country in Western Europe, had finally gained the ascendancy in the manufacture of one of the products of the East. In addition to giving notice of the establishment in Britain of a production base for global commerce, this foreshadowed the formation of the British view of India as a "developing country" and its continuing sense of superiority as an "advanced nation." **JTI**

Continued in Part 7

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