consumption of 9 to 10 million lb annually. Lyons is the head­quarters of the trade, principally in the production of dress fabrics, plain and figured, and other light and heavier fabrics. St Etienne and St Chamond are important centres for the ribbon trade. There

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| Table III.—*Production and Consumption of Raw Material.* | | | |
|  | | Production.  Average of Seasons 1903-1904,1904- 1905, 1905-1906. | Consumption.  Same Average of Years 1902-1903, 1904. |
| Europe— |  | I,276,OOO |  |
| France.... |  | 9,519,400 |
| Italy ... |  | 9,233,400 | 2,125,200 |
| Switzerland | . | 99,000 | 3,509,000 |
| Spain . |  | 176,000 | 402,600 |
| Austria Hungary |  | 360,800  323,400 | 1,707,200 |
| Russia and Caucasus |  | 893,200 | 2,796,200 |
| Bulgaria, Servia and Roumania | | 343,200 | 37,400 |
| Greece and Crete |  | 138,600 | 44,000 |
| Salonica and Adrianople . | | 574,200 | 66,000 |
| Germany |  | Nil. | 6,261,200 |
| Great Britain America— | • | Nil. | i,559>8oo |
| United States Asia— | ■ | Nil. | 13,481,600 |
| Brutia .... | . | 1,207,800 | 66,000 |
| Syria .... | . | 1,100,000  556,600 | 242,000 |
| Persia . . . (Exports) | | (no estimates) |
| Turkestan . | >> | 600,600 | ,, |
| China .... | ». | 8,960,600 | l, |
| Canton, China . |  | 4,661,800 | ,, |
| Japan .... | »» | 11,136,400 | »» |
| India . | »1 | 563.200 | 770,000 |
| Tonquin and Annam. Africa— | ∏ | 22,000 | (no estimates) |
| Egypt ....  Morocco | . | Nil. | 440,000 |
|  | Nil. | 154,oυo |
| Algeria, Tunis . |  | Nil. | 143,000 |
| Various countries | • | Nil. | 121,000 |
| Total lb . . . | | 42,226,800 | 43,445,000 |
| *N.B.—*The difference in | the totals is owing to the figures being | | |
| based on the production in | seasons, and that of consumption upon | | |
| calendar years. |  |  |  |

arc also important manufactures of silk at Calais, Paris, Nîmes, Tours, Avignon and Roubaix. Germany follows France with a consumption for the various fabrics of over six million lb annually. The principal seat of the trade in that country is at Crefeld, nearly one-half of the production of the empire being manu­factured there. Velvet is the special feature of the industry, about one-half of the looms being devoted to this textile, the remainder being devoted to union satins, pure broad silk goods and ribbons. Other principal centres of the silk trade in Rhenish Prussia are Viersen, Barmen, Elberfeld and Mühlheim. The province of Saxony has also important manufactures of ace and glove fabrics. Third on the list of con­tinental producers is Switzerland ; Zürich takes the lead with broad goods (failles, armures, satins, serges, &c.), and Basel rivals St Étienne in the ribbon trade. Russia, by a prohibitive tariff on manufactured silks of other countries, has since 1890 developed and fostered a trade which consumes annually about 3 million lb of raw material for its home industry. This has also stimulated silk culture in the Caucasus, from which province it draws about one-third of its supplies. A special feature of its manufactures consists of gold and silver tissues and brocades for sacerdotal use. Moscow is one of the principal seats for the weaving of these fabrics. Italy, the early home of the silk trade in Europe, the land of the gorgeous velvets of Genoa and the damasks and brocades of medieval Sicily, Venice and Florence, now takes only a sixth place, the centre of greatest activity being at Como; but Genoa still makes velvets, and the brocades of Venice are not a thing of the past. Austria and England follow on the list of important silk manu­factures. The former has found its principal de­velopment in Vienna and the immediate neighbourhood.

By special grants from the Hungarian government silk-reeling has been fostered and encouraged. In 1885 the production of raw silk was about 300,000 lb, while in 1905 it reached 750,000 lb, an annual production which is still maintained.

In the United Kingdom all the silk industries (those depending on spun silk alone excepted) have been declining since the French Treaty of 1860 came into operation. This cannot be gauged by the

decrease in imports of raw material from the fact before mentioned that formerly London was the centre of distribution for Eastern silk, which is now disembarked at other European ports for continental consumption. The shrinkage is the more noticeable in the throwing branch of the industry. Many of the mills formerly in operation in Derby, Nottingham, Congleton and Macclesfield have been closed owing to the importation of foreign thrown silks from Italy and France, where a lower rate of wages is paid to the operatives em­ployed in this branch. In like manner the manufacture of silk fabrics in the districts of Manchester, Middleton, Macclesfield, London (Spitalfields) and Nottingham (for silk lace) has decreased proportionately. Against this we must set off a decided increase in the manufacture of mixed goods, carried on principally in Scotland, Yorkshire and Lancashire.

The remarkable development of the comparatively new trade in spun silk goes far to compensate for the loss of the older trade of net silk, and has enabled the exports of silk manufactures from Great Britain to be at least maintained and to show some signs of ex­pansion. Silk spinning has chiefly developed in the Yorkshire, Lancashire, Cheshire and Staffordshire textiles centres. Its ex­pansion and importance may be seen from the fact that the imports of waste, knubs, &c., which in 1860 was 1506 cwts., reached in 1905 a record of 72,055 cwts. But it is highly significant that while the exports of British silk manufactures have not decreased, the imports in the meantime have shown a marked expansion. Although the use of silk goods has unquestionably increased since the middle of the 19th century, the expansion of native productions has not kept pace with that growth. (R. Sn.)

*The Spinning of "Silk Waste”*

The term *silk waste* includes all kinds of raw silk which may be unwindable, and therefore unsuited to the throwing process. Before the introduction of machinery applicable to the spinning of silk waste, the refuse from cocoon reeling, and also from silk winding, which is now used in producing spun silk fabrics, hosiery, &c., was nearly all destroyed as being useless, with the exception of that which could be hand-combed and spun by means of the distaff and spinning wheel, a method which is still practised by some of the peasantry in India and other Eastern countries.

The supply of waste silk is drawn from the following sources: (1) The silkworm, when commencing to spin, emits a dull, lustre­less and uneven thread with which it suspends itself to the twigs and leaves of the tree upon which it has been feeding, or to the straws provided for it by attendants in the worm-rearing establishments: this first thread is unreelable, and, moreover, is often mixed with straw, leaves and twigs. (2) The outside layers of the true cocoon are too coarse and uneven for reeling;

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| Table IV.—*Silk Goods exported from the United Kingdom.* | | | | | | |
| Year. | Raw Silk. | Knubs,  Husks, Silk Waste and Noils. | Thrown and Spun Silk. | | Silk Manufactures. | |
| British. | Foreign and Colonial. | British. | Foreign and Colonial. |
|  | ft). | cwts. | £ | ft). | *£* | *£* |
| i860 | 3,153,993 | 1,506 | 826,107 | 426,866 | 1,587.303 | 224,366 |
| 1865 | 3>i37.292 | 1,212  4-l67 | 767,058 | 306,701 | 1,404,381 | 166,936 |
| 1870 | 2,644,402 | 1,154,364 | 39.771 | 1,450,397 | 166,297 |
| 1875 | 2,55U4i7 | ι.779 | 880,923 | 87.924 | ’,734,5’9 | 328,426 |
| 1880 | 947.165 | 9.241 | 683,591 | 7.553 | 2,030,659 | 259,023 |
| 1884 | 377,349  167,086 | 6.538 | 612,951 | 50,559 | 2375,4’0 | 644,722 |
| 1888 | 7,438 | 388,828 | 63.192 | 2,664,244 | 727,673 |
| 1892 | 164,150 | 7.397 | 322,894 | 32.574 | i,655,3io | 730,3’6 |
| 1896 | 142,034 | 5.053 | 265,142 | 74.140 | ’,423374  ’,637,915 | 725,123 |
| 1900 | 192,616 | 5.691 | 425.647 | 35.858 | 9’9,0” |
| 1901 | 244,566 | 5.370 | 294,311 | 48,666 | 1,429,381 | 1,021,637 |
| 1902 | 152,463 | 6,160 | 237,718 | 95,862 | ’,393,3’4 | 1,071,633 |
| 1903 | 178,458 | 9.740 | 256,341 | 81,707 | i,436,734 | 1,038,634 |
| 1904 | 186,174 | 9,148 | 218,881 | 43,938 | 1,604,554 | I,241t242 |
| 1905 | 188,246 | 13,524 | 298,299 | 53,825 | i,693,3I4 | 1,142,217 |
| 1906 | 92,124 | 3,243 | 323.873 | 57,’43 | 1,858,634 | 1.094.657 |
| 1907 | 80,645 | 5,007 | 401,336 | 47,404 | 2,009,613 | I ,490,066 |
| 1908 | 42,898 | 6,571 | 101,316 | 43,7¼ | i,244,546 | 1.427.974 |

and as the worm completes its task of spinning, the thread becomes finer and weaker, so both the extreme outside and inside layers are put aside as waste. (3) Pierced cocoons—*i.e.* those from which the moth of the silkworm has emerged—and damaged cocoons. (4) During the process of reeling from the cocoon the silk often breaks; and both in finding a true and