

\$17,500 to Germany, and \$111,029 to other countries. If the raw material exported is worth in round figures a million dollars the value of the same material made up and shipped in the manufactured form would mean the addition of four or five million dollars to the exports of Canada even in the present stage of its development.

An interesting pamphlet dealing with asbestos, from the geological point of view, was published last year by the Geological Survey of Canada, the author being Dr. R. W. Ellis. From this it appears that of the nineteen mines operated to a greater or lesser extent in Canada all but two are in the province of Quebec. An idea of the growth of asbestos production considered as a mining industry, may be gathered from the fact that the output of this country has grown from 380 tons in 1880, valued at \$24,700, to 40,416 tons in 1902, valued at \$1,148,319. The average value has varied from \$26 per ton up to \$127 per ton. Owing to the varying uses of the material a much lower grade of rock can be turned to account now than formerly, hence the average value has been reduced in recent years, but the light grade fibre maintains its price, the market value of No. 1 crude rock ranging from \$150 to \$200 per ton. Those interested may be able to get information also from J. Obalski, Inspector of Mines for Quebec, who refers to the industry in detail in his annual reports.



### THE SILK INDUSTRY OF THE UNITED STATES.

The historical pamphlet recently published by the Silk Association of America, and noted elsewhere in this issue, contains an instructive account of the growth of the silk industry in the United States. As early as the middle of the 16th century an attempt was made to establish the industry on this continent, when Cortez experimented in sericulture among the Aztecs in Mexico. In 1608 James I. introduced the silk worm to his royal estates in England, and a short time afterward he recommended the Virginia Company to raise silk worms rather than tobacco, "which," said he, "besides much expense, bringeth with it many disorders and inconveniences." Misfortune overtook the attempts that were made to comply with the royal command, and another more peremptory demand in 1622 produced no more result. From this time on, spasmodic attempts were made to raise silk in the colonies but never amounted to much. At the time of greatest activity before the Revolution the export of raw silk averaged only 500 pounds per annum.

After the Revolution several states began paying premiums and bounties for the planting of mulberry trees, and in 1826 the federal government encouraged sericulture by issuing a manual on the growth and manufacture of silk. For about twenty years the sericulture bubble swelled. The growth of the mulberry was undertaken in various states, and magazines were published in the interests of the industry. "No competition," said one of these papers, "need be feared

for years to come, if ever. The bounty offered on silk by the State of New Jersey will pay all the expense of making it, and leave the whole of the crop clear profit. The bounty granted by Pennsylvania will do even more."

In 1844 the bubble burst. Competition with Italy in the production of raw silk was impossible on account of the price of labor. Since 1844 few attempts have been made to raise silk on this continent, but the attention of the United States has been turned rather to silk manufacture. The idea of successfully manufacturing from imported raw material was scorned at first, but it gradually gained ground until in 1857 the government withdrew the 15 per cent. duty on raw silk, thus encouraging the manufacturer with duty-free raw material. This change in the tariff has been characterized as one of the few that did little harm at the time and that has done good ever since.

The duty on silk goods at that time was 24 per cent., but during the civil war it was raised by a series of advances to 60 per cent., and the result was a great stimulation of manufacturing. Power-loom weaving was introduced and the range of goods manufactured was increased until in 1870 the silk goods manufactured in Paterson, N.J. alone, were valued at over four millions. In 1872 the Silk Association of America was organized. The Centennial Exposition of 1876 was a great stimulus to the silk industry, as by it the people of the United States discovered that they were able to supply their own wants in this line, and the nations of Europe recognized a coming rival.

In 1883 the duty on silk manufactures was reduced from 60 to 50 per cent., and it has remained at that figure ever since. From 1893 to 1897 there was a period of stress for the textile industries, and a time of uncertainty with respect to tariffs, but in the latter year the duty was fixed at an average of 50 per cent. on all silk manufactures.

By 1900 the silk industry had obtained third place among the textile industries of the country, and the United States had become the second silk manufacturing country of the world.

Not only has the silk manufacturer in the United States made a success of his business in his own country, but he has crossed the line and established the industry in Canada, the two silk mills of this country having both been started as branches of United States concerns. The number of silk power looms in the United States in 1904 is 56,225, of which 47,725 are operating on piece goods, and the balance on ribbons and other narrow fabrics. The number of throwing spindles is 1,250,000, and of accessory spindles, 7,128,000. The industry employs about 75,000 hands, and the annual value of the products over \$100,000,000. It will thus be admitted that the history of the silk industry of the United States is a triumph of consistent protection from government combined with the inventive skill of those engaged in the industry. A similar policy pursued on this side of the line with regard to the woolen industry would make Canada one of the greatest woolen manufacturing countries of the world.