OUR SILK INDUSTRIES.

The following interesting account of silk culture and of silk manufacture in Canada is given by the Montreal *Herald*:

The silk moth lays its eggs on the leaves of the mulberry tree upon which the caterpillar feeds, and these caterpillars form the cocoons from which the silk is manufactured. The eggs are hatched in an apartment heated to the proper temperature by a stove. When the hatching process commences, as soon as the young caterpillars make their appearance a paper perforated with holes, and covered with mulberry leaves, is spread over the basket in which they are placed, and in passing through the holes to get at the mulberry leaves they free themselves from their shells. The worms speedily settle on the leaves and sprigs of mulberry, and are thus easily transfered to trays, and removed to a cooler room called

A NURSERY.

This is a dry room, the temperature of which is regulated, and which is well ventilated to purify the air from the noisome exhalations produced by the excrements of the caterpillars and the decayed leaves. which are not unfrequently, unless due precautions are taken, fertile sources of diseases amongst the worms. In this room wicker shelves are arranged at convenient distances, lined with paper, on which the worms are placed. The mulberry leaves presented to the caterpillars are chopped. Four meals a day as a regular rule, and luncheons between, when the worms are particularly voracious, is the liberal allowance for their subsistence.

The silk worms live in the larval state from six to eight weeks, during which period it moults or changes its skin four times, increasing its size and voracity with every moult, and when fully grown is about three inches in length. When about to spin, the silkworms are provided with little bushes of broom, heath, or other flexible substance, from which they suspend themselves after spinning a few threads. By continually twisting their bodies they gradually envelop themselves into a thick, silken

OVAL SHAPED COCOON.

Specimens of these bushes laden with cocoons appeared in the London Exhibition of 1851, like diminutive trees bearing golden fruit.

The silk itself is a secretion of a pair of tubes, which terminate in a prominent pore or spinneret on the under lip of the caterpillar. The two fine filaments are glued together by another secretion from a small gland, so that the apparently single thread which forms the cocoon is really double.

The cocoons, when completed, are thrown into warm water, which dissolves the glutinous matter, causing the threads to adhere, and separate them. The end of the thread is then found and placed upon a reel, and the silk wound from off the cocoon into what is called a bank. The length of the silken thread obtained from a silken cocoon is sometimes from 750 to 1,150 feet long, or of an average length of 300 yards. Twelve pounds of cocoons yield one pound of raw silk, from 200 to 250 cocoons going to the pound weight. About

ONE OUNCE OF SILKWORMS' EGGS

will produce one hundred pounds of cocoons; 16 pounds of mulberry leaves are food sufficient for the production of one pound of cocoons, and each mulberry tree yields about 100 pounds of leaves.

The Chinese were the first who understood how to rear silkworms, unravel the threads spun by them, and manufacture the silk thus obtained into articles of dress and ornament. Silk appears to have been worn by the Chinese and Japanese from time immemorial—even 2,000 years ago, when our ancestors were naked savages. The silkworm moth and the mulberry tree are in fact both natives of China, whence both were brought to Europe during the sixth century in the reign of the Emperor Justinian. At first the culture of silk was confined to Greece, particularly to the Peloponesus, where it spread so much that this part of Greece derived its modern name Morea (Latin *morus*, a mulberry) from that circumstance. From Greece

THE SILK MANUFACTURE SPREAD

into Sicily, Italy, Spain and finally France. As the breeding of this valuable insect is only possible in warm climates the silk culture is necessarily confined in Europe to Italy, the south of France, and Spain. From these countries it is exported to England, the United States and now to Canada, where it is manufactured into threads and textile fabrics.

In 1863 the firm of Belding Brothers & Co. commenced the madufacture of sewing silks and twist at Rrockville, Conn., where they have two mills, each 300 feet long and four storeys high. They have also mills at Northampton, Mass., for the manufacture of silk fabrics and hosiery, with warehouses at New York, Boston, Philadelphia, Chicago, Cincinnati and St. Louis. They rank among the largest houses, if they are not actually the largest house, in the silk manufacture in the United States and their goods bear the highest reputation.

In 1867 a branch of this establishment was organized in this city. Mr. F. Paul beoming resident member of the firm and manager of the establishment, the business being carried on under the style of

BELDING, PAUL AND CO.,

for the purpose of manufacturing sewing silks, threads, ribbons, and handkerchiefs. At this time the production was limited as the intention was so to speak "to feel, the way," the manufacture being from 50 to 100 pounds per week. From this, however, it has rapidly developed into what may be termed a nice business, now producing 1,000 lbs. per week with a rapidly and constantly increasing demand for a more enlarged production. At the outset it was necessary to observe caution, owing to the fact that the fashions change rapidly and it was undesirable to have manufactured stock on hand. No apprehension is now felt on this account, inasmuch as the demand exceeds the supply. At first it was impossible to procure skilled labor here, and it was found necessary to import it from the mills at Brockville, Conn., but, one by one these gradually returned to the States, and now the operatives, with the exception of the foreman, consist of those engaged and trained here. These consist of representatives of all nationalities, but principaly of French-Canadians, who are found to be very quick, docile and excellent operatives.

THE BUILDINGS NOW IN USE

are two in number. One of these, built of brick and iron, fronts on St. George street, being number 30. It is 45x75 feet, four storeys high, with basement. The basement is used as a machine shop and storeroom, the ground floor as an office and sample room, the second floor as a spinning room, and the fourth as a weaving room. The machinery is operated by steam power, which is obtained from the adjoinsng establishment of Messrs. Rogers & King. The second building is located at St. Gabriel Locks, on the south bank of the Lachine Canal, adjacent to the McGee Bridge. It has a frontage on the canal of 100 feet, with a depth of 45 feet, is of brick and is four storeys high. It was formerly used as Tees' chair factory, and has been altered and fitted up for its present purpose.

THE MOTIVE POWER

here is derived from the canal, the machinery being operated by a water wheel. Great inconvenience is experienced from having the works thus divided up, and to obviate this the firm is now erecting a new building at the canal, running parallel with the one it now possesses there. This will be 100 feet long by 45 wide, four storeys high, with an entrance tower in the centre, in which will be placed closets, wash rooms, &c., &c.; for the use of the operatives. Between the new and the old building there will be a clear space serving as a passage 47 feet long. Each floor will be unobstructed from end to end so as to secure a perfect light, the floors above being supported by two rows of pillars which will form an alley, on each side of which will be ranged the different machines. The first floor will be devoted to spinning, the second to winding, the third to doubling, and the fourth to weaving. While the building will by a plain structure in so far as appearance is concerned, it will be fitted up with the latest and most approved appliances. There will also be a dye house on the canal front, separate from the mills, covering a space of 2 200 square feet. There will be two boilers, 5x16 feet, for supplying the necessary steam required in the operations.

Having described the buildings, the next and by far the most interesting is

THE MANUFCTURE.

The raw silk is obtained from the New York House. On its arrival here the raw threads are sorted, an, operation which requires a quick eye and proficiency. This is done by the eye. All the threads of the same cocoon are not alike but vary considerably at times. It is then soaked in water at a temperature of 110° F. to soften the natural gum and facilitate the process of winding. This done, it is wound on bobbins, an operation which though apparently simple requires great care, owing to the fact that the silk thread is very fine. It is then doubled, that is two or more threads according to the purpose for which it is intended, are joined together. It is then put on the spinning machine and spun, after which it is twisted, which consists in doubling and spinning three of these threads, the twist being reversed to make the thread stronger. The number of threads depends upon the

FINENESS OF THE RAW SILK,

and also upon the character of the goods to be woven. It is then taken to the stretching machine, the patent for which is controlled by the firm, to remove the rough or knotty appearance which appears. It does not, as its name might imply, stretch the silk, it evens it out, removing the lumpy appearance, and imparting to it a uniform tension. It is made up into skeins preparatory to being dyed. This is done by reeling, each skein consisting of 350 yards. It is then put upon delicate scales, and its weight marked, after which it is ready for the dyer. It has now reached the condition of thrown silk and the process is completed. The

DYEING PROCESS

is the next adopted. In this there are three hundred colors, requiring a large stock and assortment of dyes to be kept on hand. From the dye-house the silk is again taken to be spooled in the lengths and sizes required. The dyer first boils the silk in soap and water, to free it from any remaining gum, and to give it a more lustrous appearance. By the boiling process the silk, if pure, looses about 24 per cent. of its weight, so that a pound of silk will weigh about 12 ounces. This is the reason that American silk is put up in 12 ounces to the pound. Sewing silk thread runs from 150 yards to 1,800 yards to the ounce, while silk for ribbons, which is much finer, runs from 6,000 yards to 10,000 yards per ounce.

THE COLORED DYES.

The ribbon manufacture is one from which more is expected than that of handkerchiefs, plain goods in the latter article being only now made up.

The operatives employed average 300. The remuneration to these is $2 per week for green hands from the day of engagement, to $6 and $7 per week for more advanced ones.

The Montreal firms derives no little advantage from its connection with the American house referred to, from the fact that they can procure from them the newest and latest patterns and all desirable information, in addition to which they allow the American firm to test new appliances and when success attends them they avail themselves of the others experience.

This firm manufactures her the same brands of sewing silks that have become so universally popular in the States, and if ladies see that Belding, Paul & Co's. name is stamped in the end of the spool they may depend on getting an excellent article.

Nearly all the silk manufactured is for the Canadian market, the remainder being sent to Newfoundland, where there is an excellent market, considering the number of the population.

The firm have had samples of their silk manufactures on exhibition at Toronto and St. John, where we understand they took high honors.

The Dominion Steamship Line.

On the arrival at Quebec of the steamship Oregon, the following congratulatory testimonial signed by the steerage passengers on board, was presented to Captain Williams, in command of that vessel:—We, the unsigned steerage passengers, beg to return our sincere thanks to Capt. Williams, officers and crew, for their prompt and careful way in navigating this good ship, leaving Liverpool, July 26, 1883, for Quebec, and for their genial kindness toward us throughout the voyage, and which, we feel, could not possibly be exceeded. Especially would we record our gratitude to the chief steward, Mr. Duffin, and Dr. Henderson, for their unceasing attention. We would also say that the food we received has been good and plentiful, and, should we again desire to cross the Atlantic Ocean, would not wish for a better boat than the steamship Oregon.

It is equally complimentary to the Dominion Company that on the homeward voyage the following testimonial, the first signature in connection with which is that of L. A. Senecal, Esq., was presented to Captain Williams, on the same vessel:—In view of the separation which will follow the termination of our voyage, the passengers on board the Oregon desire to express to you and the other officers of the ship our hearty appreciation of the admirable skill, judicious discipline, and uniform courtesy with which your duties have been discharged during the voyage now drawing to a close. Although the weather has been far from being propitious, and we have been exposed to the danger resulting from both fog and ice, yet by a constant attention on your part, aided by a knowledge and skill in the science of navigation, which we have never seen surpassed, our good ship has kept her course without variation or delay, and bids fair to make her port at the very hour anticipated upon her departure. Such qualities of good seamanship deserve more than passing notice, and it gives us great pleasure to express our appreciation of them in a form which we trust may be serviceable to you in your future relations with your company and the travelling public. The genial urbanity which we have so much enjoyed in our intercourse with yourself has shown itself without exception in the other officers and staff by whom the ship is so ably managed in all its departments, to all of whom we beg to tender our hearty thanks. Of the ship itself we can confidently say that she has given the best evidence of the two qualities most prized by the traveller—strength and safety. The rooms are unusually large and commodious and well ventilated; the supply of food has been bountiful, attractively varied, and admirably served, and, in every respect, we can heartily recommend the Oregon and yourself to the confidence and patronage of our friends and others whom business or pleasure may take across the Atlantic.—*Journal of Commerce.*

Judge Black left by his will $2,000 to his grandson on condition that he should drop the name of Jeremiah Sullivan and assume that of Henry Vantriess.

THE MOST SALEABLE HORSE.—Mr. Joseph Lamb, one of Chicago's best known extensive horse dealers, in paying a tribute to the superiority of the grade Percheron-Norman horses, said: "Most of my trade is with lumbermen and in the city. I handle more Normans than of any other breed, because they are more salable and eagerly sought after, the only drawback to the business now being that I cannot get them fast enough. They are possessed of more endurance than other breeds, give good satisfaction, and wear well; have better feet, last better on our pavements, and are more easily acclimated than any other breed. It is very rarely you get a Norman horse with bad feet. They are good, cheerful walkers, and more attractive and finer looking, with better action, than the other large breeds."—*Chicago Tribune.* M. W. Dunham, Wayne, Ill., has imported from France and bred in their purity about 1,400 Percheron Normans, and 390 of them within the past few months, particular attention being given to pedigree and French record.

Tom Hughes, who, by-the-way, is now sixty years old, says that eventually everybody on the other will come over to America to make money, and everybody here will go over there to spend it.

The Queen has had telephone wires run from Balmoral to Abergeldie, the Scotch place of the Prince of Wales, and to adjacent places, and between Windsor Castle, Frogmore Garden, and the Farm.