

## THE MANUFACTURE OF LINEN THREAD.

### HOW FLAX IS GROWN.

#### BARBOUR BROS. & CO.—A CENTURY OF THREAD MAKING.

The industrial history of our country shows as clearly as the political the influence of the mother country, and but a superficial reading will demonstrate that much of our mercantile and manufacturing prestige is due to the efforts of old established but enterprising concerns, which, having faith in the New World, crossed the ocean, and by the same methods that won success at home built up a vast and lucrative business here. Indeed our progress could not have been as rapid or permanent as it is without this influence, for while our own people had always sufficient enterprise they yet lacked the practical knowledge and skill to engage in such manufactures as require technical knowledge and the experience of years to operate successfully, and which have been supplied largely by Great Britain. No review of our industries would be complete unless it dealt with this class, and no house could be more thoroughly representative than that of the Barbour Brothers Company, New-York, which, with the Barbour Flax Spinning Company, Paterson, N. J., and the parent concern, William Barbour & Sons, Limited, Lisburn, Ireland, have been engaged for over a hundred years in the manufacture of linen threads of every description, and to-day are the recognized head of this trade throughout the world. John Barbour, the founder of this house, was born in Paisley, Scotland, about the middle of the eighteenth century, and there became familiar with the manufacture of linen thread. Afterward in 1784 he removed to Ireland, and located at Plantation, near Lisburn, where he established large flax mills, being the first to introduce into the North of Ireland this industry, which has since grown to be one of the most important in that country. The original works, though at the time considered extensive and complete, were insignificant compared with those of the present day, while the processes were crude in the extreme, but little machinery was used, everything being done by manual labor or horse power, notwithstanding which their production soon became well and favorably known, and the business rapidly and steadily increased. Associated with Mr. Barbour in these early days was Mr. John Duncan, and the firm continued until the death of the latter, in 1815. Afterward, about 1820, Mr. Barbour died, and was succeeded by his two sons, John and William, but this partnership continued but a few years, the latter withdrawing and the former continuing the business at the old site until his death, which occurred but a short time afterward. Mr. William Barbour acquired some 75 acres of land on the River Legan, together with the water power, and erected thereon factories, which are to-day the largest of the kind in Great Britain. This gentleman, the founder of the present house, possessed unusual business capacity, to him largely the position of the concern being due, and as a mark, both of his judgment and the position he had won in society, he was made, some 20 years previous to his death, Commissioner of the Peace, in which capacity he served with satisfaction to the public and honor to himself.

At various times he associated with himself his five sons, John D., (since a member of Parliament,) Robert, Samuel, Thomas, and Frank, who, reared in the business and perfectly familiar with it in every detail, were well able to assume, and afterward did assume, the active management of the firm of William Barbour & Sons, and by their sagacity and enterprise largely extended the reputation and business of the concern. One of the sons, Mr. Thomas Barbour, came to America in 1849, and in order to familiarize himself with the trade of this country secured a position with A. T. Stewart & Co., where his ability was soon recognized and he was placed in charge of the entire wholesale linen department of that house, in which capacity he remained until 1852, when he began business on his own account, importing threads and twines, particularly those manufactured by his father. In 1855 he and his brother Samuel entered into partnership under the firm name of Barbour Brothers. In 1861, however, the latter returned to Ireland, leaving the management of the business affairs of Barbour Brothers and of William Barbour & Sons, in America to Mr. Thomas Barbour. Both these brothers, in 1862, were taken into the latter firm.

In 1864, owing to the imposition of the tariff of 1862, it was decided to commence the manufacture of linen thread in this country, and a mill was purchased in Paterson, N. J., Mr. Robert Barbour coming to America to take charge of the manufacturing department. The firm availed themselves of the law which permitted the importation of flax spinning machinery duty free to bring over every improved appliance for making flax threads and yarns of every description and grade from their works in Ireland. A year later the Barbour Flax Spinning Company was organized, with Mr. Thomas Barbour as President. He afterward resigned, becoming Vice-President and Treasurer, and was succeeded by Mr. Robert Barbour, who continued in charge of the manufacturing branch, while his brother directed the financial and commercial affairs at the principal depot, No. 134 Church-street, New-York.

Mr. Samuel and Frank Barbour having died, the affairs of the concern, which under the three names constitute one enterprise, are conducted in Ireland by Mr. John D. Barbour under the old firm name, and in this country by Mr. Robert Barbour, Mr. Thomas Barbour having died during the last year. The extent of foreign business of this concern, done entirely by the Lisburn house, is enormous, and its productions reach every part of the known world through agencies established at London, Manchester, Glasgow, Dublin, Paris, Hamburg, Brussels, Amsterdam, Madrid, Milan, Naples, Montreal, Melbourne, and Sydney, while the factories at Paterson, together with some of the foreign production, supply the trade of the United States through the New-York house and branch houses at Boston, San Francisco, Philadelphia, St. Louis, and Chicago, and they manufacture and sell several times as much as all the other houses of the kind in America combined.

No detailed account of the mills is possible within a limited space. Suffice it to say that those in Paterson, while they are not, taken jointly, as large as the works at Lisburn, they are the most extensive in this country, and a brief sketch of them may help give some idea of the magnitude of the whole.

The Grand-street mill, as it is called, occupies, with the grounds around it used for bleaching, &c., two entire blocks of ground in Paterson, N. J., and is 50 by 400 feet and four stories high, being one of the handsomest specimens of mill architecture in this country. The material, both raw and manufactured, used here being of the most inflammable nature, every precaution has been taken to make the building absolutely fire-proof and to provide means for promptly quenching fire at any point.

The interior of the building is entirely of brick, stone, and iron—the floors being stone flags laid on brick arches, which are supported by heavy iron beams, while the stairs are of stone and brick. On each floor and on each side patent sprinklers are laid, so constructed that at a certain temperature they will open innumerable valves and flood the entire floor without damage to the lower stories, and there are besides other appliances for throwing streams of water from any part of the building, the water being

supplied from a reservoir owned by the company situated on a hill 180 feet above the level of the mills.

At the Spruce-street mill all the preparatory work is done, and also most of the carpet yarn spinning. Here, also, are the dye houses and the drying sheds where the yarn is dried, these latter covering several acres of ground. Besides a fine Corliss engine, water power is used here supplied from the Passaic River. The granite mill, three stories high and 400 by 50 feet long, is also owned by the company, though leased to a silk manufacturing concern, the Barbours furnishing the power, which is supplied by a 300 horse power Corliss engine, which also operates the dynamos of the electric light company which lights Paterson. An addition, 100 by 50 feet, is being made to this building.

Flax or lint, the material from which linen thread is made, is obtained from the fibre of the flax plant, a small plant grown largely in Southern Europe, parts of Asia, and, to a limited extent only, in our own country. It is asserted, however, by experts that the flax plant in America could be much improved and made most valuable were it not for the high price of labor here, which prevents the necessary care and attention being given it, the most elaborate and painstaking care being required during its early growth and subsequent harvesting. The finest flax comes from France, the entire product suited for thread manufacturing being confined almost entirely to that country, Holland, and the Province of Ulster in Ireland, where the Barbours originally established their works. Here from the time it is planted until harvested the flax plant is attentively treated and weeded, and a remarkable characteristic is that, no matter what the nature of the soil or season, the plant invariably blooms at a certain time in July. Shortly after blooming it is ready for harvesting and it is pulled up by the roots, and being bound in bundles, is fermented in pits filled with water, then dried in the open air, after which it goes to the scutch mills, of which there are many scattered through the country wherever there may be water power, and which separate the fibre from the woody part of the plant and leave it in shape for the first processes of the spinning mills. The next process—the first one in these mills—is that of "hackling" and "carding," which is nothing more than combing the lint by drawing it through a series of upright needles, which not only remove all remaining imperfections, but also lay the fibres straight and smooth ready for the drawing and twisting which follow.

After this it is put on preparation machinery which reduces it to a single continuous strand known as a roving, in which condition it is transferred to the spinning jenny, where it is wound upon reels or spools, and, afterward placed in the spinning frame, which is long enough to contain hundreds of spindles. Here it is brought to the requisite degree of fineness and as many yarns as the nature of the thread require twisted together by a rapidly revolving spindle. The machinery used is the most perfect of its kind, combining as it does every modern labor-saving device, and is brought from Ireland, being the product of the great machine manufacturing house of Combe, Barbour & Combe at Belfast. All of the machinery is wonderfully complete and most interesting, but perhaps as remarkable as any is the simple device for winding the thread in balls, and which does the work with enormous speed and perfect precision, most of the balls containing a thousand yards of thread without a break or knot. The bleaching department at the Grand-street mill has particularly good facilities, being supplied with pure spring water and having large grounds for open air drying and bleaching.

Most of the flax used they import just as it comes into the market from the farms in the North of Ireland, where it is a favorite crop, and manufacture it into all kinds of linen thread, including shoe thread, saddler's thread, sewing machine and carpet thread, salmon and gilling thread, and also carpet yarn. Ten tons are manufactured each day.

There are nearly 15,000 spindles for spinning and twisting in the Paterson mills and 25,000 in those at Lisburn, the former employing 1,400 hands, who produce about \$120,000 worth of finished goods each month. To one not familiar with the magnitude of this industry, an idea of its immensity may be gained from the fact that the mills of this company collectively manufacture each day more than 75,000 miles of thread, enough to reach around the earth three times; or, again, if every man, woman, and child in the United States used a spool of Barbour's sewing thread in the course of a year this concern alone could more than supply them. The shoe thread made by this concern is known in every part of the world, and in this country it is safe to say that there is not a shoe manufacturer or small repairer and maker but who uses it to a greater or less extent. They have extensive machine repairing shops, and also manufacture everything used in connection with the packing and shipping of their manufactured goods, including the paste-board boxes and wooden cases; of the former they make and use 5,000 a day; the concern have also a printing and lithographing establishment for the preparing of labels, trade marks, wrappers, &c. In short, the establishment under the present management is perfect and complete to the minutest detail.

The Barbour Companies have here as well as in Ireland looked closely to the welfare of their workmen, and in Paterson own several large blocks of handsome and convenient dwelling houses, supplied with every modern improvement, where their hands live comfortably and conveniently and at moderate cost.

Mr. Robert Barbour, the present President, has charge of the manufacturing affairs of the house in this country, while his nephew, Mr. William Barbour, a son of the late Mr. Thomas Barbour, is the Secretary and Treasurer, having charge of the mercantile and commercial branch of the business. \* \*