steam engines of 46 h.p. each (designed and constructed by a Gloucestershire engineer), and by a water-wheel, which can be coupled with the engines. The premises are lighted by electricity generated on the premises, are provided with the Water automatic sprinkler system throughout, and are steam-heated.

Indeed, nothing seems to be left undone which could facilitate or safeguard production. It should be added, in passing, that the male and female operatives are confined to separate departments, and that every stage of the work is carried on under the most wholesome conditions, the sanitary arrangements and the general comfort of the workpeople having been carefully considered.

While it would be impossible to give in limited space anything like a detailed description of the various processes of manufacture, it may be proper to refer in a word to one or two of the more interesting departments. The general turning and making department is an admirably lighted room, 110 by 80 feet in dimensions, and is undoubtedly one of the finest workrooms in the county. Here are employed about one hundred operatives, a large proportion of whom are machine hands, performing the various operations of shaping, smoothing, and carving the sticks. The saw-mill, where the rough timber is reduced to proper dimensions for the purpose of preparing the best possible kindling and firewood, stands at the end of the building, and is of such a nature that the lumber is not brought in, but actually sawed and finished on the premises.

Messrs. Harrison and Company's manufactories include umbrella sticks and handles in wood and celluloid, with specialised fitting of sticks and handles for walking sticks in Congo, myrtle, farre, bamboo, cherry, hazel, orange, and other native and foreign woods. In their large stock room may be seen at one time as many as 14,000 samples, representing every conceivable design. In addition to their large stock always at the manu- factory the Company also maintain offices and stocks in London, Manchester, Glasgow, and Paris, their manufactories being distributed from these centres to almost every part of the world.

It is but just to add that under Mr. Harrison's direction the works have fully maintained their reputation for excellence and have enjoyed a world-wide reputation as one of the leading concerns in the kind in the kingdom.

HATHERLEY WORKS, GLOUCESTER.

The largest Step Works in existence.

If in 1885 Mr. Charles Albin Jour, is highly specialized, each man confining himself to that operation for which training or natural aptitude has best fitted him.

Owing to the fact that the larger part of their manufacture goes to many parts of England, comparatively little being used in the county, but few even of our own people have any idea of the extensive range of operations of Constance and Sons' industry. It is perfectly accurate to say that they are, without exception, the largest manufacturer of their exclusive lines in the country or perhaps in the world, and their premises cover a large area, four-fifths of which is under roof. Nearly all of the buildings are modern, and comprise a number of separate store and warehouse rooms, as well as the large departments in which the actual manufacturing processes are carried on. The mechanical equipment is thoroughly up-to-date, including circulars and bandsaws. The number of turning lathes of all sizes, the largest being capable of turning handles to twelve feet in length. At the present time about forty operators are employed, and it is interesting to know that a number of the operatives have remained with the Company for many years—in some cases for thirty or forty years—a fact which sufficiently illustrates the kindly relations existing between employers and employed.

JAMES CONSTANCE & SONS, LONGHOPE, NEAR GLOUCESTER.

General Wood Turner's and Manufacturers of Prong Stems, Hay Rakes, etc.

MSRS. JAMES CONSTANCE AND SONS' manufacture at Longhope, near Gloucester, has been so successful and continuous operation for considerably over a century, having been established in 1788, on the site of the present premises. The industry is conducted by a prominent member of the present senior member of the Company, and during its entire history has remained in the hands of the members of the same family. Gloucestershire furnishes but few instances in which an industry has been carried on for a longer period, or with more success, by one family.

The process of manufacture of the various articles is very interesting, and the visitor is surprised to find that almost every article

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must go through a number of hands, and frequently a number of months before it is complete. Throughout the works labour is carefully specialised, each workman confining himself to one particular operation or kind of work, thus gaining a rapidity and accuracy which he could not otherwise acquire. Much of the work requires an accurate judgment on the part of the worker, as well as considerable skill. Thus in splitting the log from which the glue is made, for example, and turning the greatest care must at all times be exercised.

Messrs. Constance and Sons obtain their supply of timber—oak, beech, birch, and other woods—from the Forests of Dean, Herefordshire, Monmouthshire, and Shropshire. All of the rough timber is stacked in the yards and thoroughly seasoned before being used; and in many cases, after being split and sawed into lengths, it is again seasoned for months. This care is characteristic of their methods throughout every stage of the work, from first to last. Their entire reputation has been established on quality rather than on price or on making a cheaper article, but it is not too much to say that no firm has consistently maintained a higher standard.

The present members of the Company are Messrs. Stephen W. Constance (the senior member), and his sons, W. J. and John Constance, all of whom devote their whole time to the business. Although the industry is more than a century old, it is still thriving and progressive, and it has been a pleasure to refer to the thorough and conscientious methods which characterise its management.

IRELAND AND COMPANY, GLOUCESTER. Wholesale and Export Brush Manufacturers.

MESSRS. IRELAND AND COMPANY’S brush factory, New Inn Lane, Gloucester, has been in continuous and successful operation for considerably over a century, having been established in 1876. The original premises—where, in West Street, and after several removals to more convenient quarters, made necessary by increasing trade, the present commodious premises were secured in 1889.

As is the case with several of Gloucestershire’s industries, the appearance of the Company’s factory is but little known, even to our own people, as it is so surrounded by other business premises as to be almost obscured from the view of the casual observer. The buildings, however, are quite extensive, with a frontage of 36 feet, and large workshops of modern construction in the rear. In recent years several important additions have been made, including a roomy and substantial two-story building erected last year. Immediately opposite the factory is a separate building, 70 feet in depth, used exclusively as a warehouse.

Brush-making in Messrs. Ireland and Company’s factory is highly specialised, the factory being divided into a number of separate departments, in each of which only a part of the work is done. Among the departments are the “pan room,” where sweeping brooms, bass brooms, hearth brushes, bannister brushes, etc., are made; the drawing room, for scrubbing brushes, stove, shoe, dandy brushes, the finishing of nearly the varnished room; and several large stock rooms. The factory gives employment to between 25 and 30 hands, whose productive power is increased by a system of incentive wages and approved regulations. All of the operative works under agreeable conditions, the various departments being well lighted and ventilated and thoroughly kept in order. One large room are thousands of backs and handles—enough, one would imagine, to supply the trade for years. In other rooms are kept large quantities of assorted fibres and bristles, varying in fineness from those used for paint brushes to the heaviest and coarsest pavement and street brushes. Many of the bristles are imported from the most distant countries, Russia, Siberia, China and India contributing largely to the stock, the price for some varieties ranging as high as 12s. per pound. All of the fibres and bristles are received from South America, Mexico and Africa. Thousands of pounds of fibre and bristles are always kept in stock, to enable the Company to promptly meet any order.

Messrs. Ireland and Company manufacture almost every variety of brush known, though they have for many years paid special attention to the manufacture of high quality brushes and brushes for household purposes. They also keep men specially engaged for all classes of small work. Their trade extends throughout the Midlands, the West of England and South Wales, where their reputation has long been firmly established. It is worth noting that they have never advertised their wide collection having been secured and maintained wholly through the invariably high quality of their manufactures.

The present members of the firm are Messrs. G. H. Harris, R. J. Templeman (manager), J. G. J. Lane, and A. S. Lane, all of whom devote their entire time to the management of the business. Of these Mr. Harris has been identified with the business continuously for thirty-four years, and Mr. Templeman for thirty-two years. It should be added that during its long history of 140 years the business has never been suspended for lack of work, and that under the present management its high standing is being fully maintained.


MESSRS. S. J. MORELAND AND SONS’ match works (one of the largest and oldest brush-making industries in Gloucester) were established over fifty years ago by Mr. S. J. Moreland, the present senior partner of the Firm. The business was carried on as a small undertaking by Mr. Moreland, who occupied his own cottage in Bristol Road, and the original premises would be lost in those required to-day.

From the date of its establishment until the present time the rapid development of the industry has been its unbroken growth. Fifty years ago match-making was undeveloped, and both the methods of manufacture and the product were of the crudest description compared with those of to-day. But, like nearly all industries, the manufacture of matches has been completely revolutionised by modern science and invention, and the highly specialised machinery now in use has enormously increased the output and at the same time minimised the cost. In this development Messrs. Moreland and Sons have taken a very important part, and many of their machines and special appliances are of their own invention.

Coincident with the constantly increasing demand for the Firm’s matches the buildings and machinery have been gradually enlarged, the premises, including the large timber yards on the canal side, now comprising an area of six acres. The buildings are of the most substantial construction, and are provided with every convenience which long experience or forethought could secure. They are lighted by electricity, and are equipped with the automatic sprinkler system throughout. The works are entirely self-contained, comprising, in addition to the actual manufacturing departments, carpentering and fitting shops and a complete printing plant.

It is but just to add a word here as to the conditions under which the operatives (of whom there are upwards of 1,000) perform their work. The buildings are admirably lighted and ventilated, and are heated with hot air, thorough ventilation being secured by means of fans. Every effort has been made to ensure the health and comfort of the operatives, so that this object has been attained is evident to anyone who is privileged to inspect the works.

It would be wholly out of keeping with this brief article, and would be beyond our present limits, to attempt anything like a technical description of the various processes in use in Messrs. Moreland and Sons’ works. It is interesting to know, however, that such is the rapidity and precision of their special machines that in less than an hour a rough piece of timber is converted into the finished article. One of these machines, into which planed sheets of wood of the proper thickness, turns out the completed splicts at the almost incredible rate of 12,000,000 per hour, and another machine has a capacity for turning out over 700 boxes per minute. Other processes are not less rapid, and in the course of a single day tons of wood are converted into finished matches, packed in boxes and ready for shipment.

Messrs. Moreland and Sons manufacture all kinds of Safety, Paraffin, and Vesuvian Matches, and their famous matches of the “England’s Glory” and “John Bull” brands, are widely known. These matches were introduced a few years ago, are appropriately named the “John Bull” brand, and, like the other products of “England’s Glory” match works, have gained a world-wide popularity.

It is perfectly accurate to say that the products of the various factories in Gloucester—or in the West of England—are known in so many homes in various parts of the world. The “England’s Glory” and “John Bull” matches are not only familiar words in every British household, but they are in daily use in all our Colonies and Dependencies, and in other countries. Whenever they go they are a favourable advertisement for Gloucestershire manufacture.

There is another very commendable feature of Messrs. S. J. Moreland and Sons’ great industry which we should refer in conclusion. The firm have been among the fore-runners of any combine or syndicate, but, on the contrary, have held their own, and have consistently combated monopoly. The present members of the Firm (Mr. Moreland is the senior partner of the industry) and his two sons, Messrs. Harry and Philip, all of whom devote their entire time to the business.