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WALLOTTY TROT.

THERE was once an old woman who lived with her daughter at the side of a hill in the midst of a forest. They were very poor, their only means of support being the thread which the daughter spun with her distaff and spindle; and she, poor girl, worked early and late to earn enough for their wants. It so happened that the king's son, while hunting, went astray in the forest, and entered the widow's cottage to inquire his way. He was greatly struck with the girl's beauty, and not less with the numerous hanks of yarn which attested her skill and industry. He inquired how it happened that they had collected such an immense pile; when the old woman—concealing the fact that this was nearly an entire winter's store—declared, that her daughter had spun the whole in a week. "In a week!" exclaimed the astonished prince; "if this be true, I have found a wife more worthy and valuable than any other in the country. I will send you a load of flax; and if she has it spun by the end of a week, I will make her my bride; but if not, I will have you both cut in pieces for deceiving the son of your sovereign." The terrified girl saw next day a train of laden mules coming to the cottage; she went out into the forest to weep over her destiny, when she met a decrepid old man. On learning the cause of her weeping, "Do not weep, daughter," he said; "I will execute the task imposed on you by the prince, provided that you will either give me your first-born son when he is twelve months and a day old, or that you shall, in the meantime, find out my name." The maiden, wondering greatly, agreed to the terms; the old man conveyed away the flax from the cottage, she did not know how; and returned it in the form of beautiful yarn just before the week had expired. The prince found all as he had wished, and married her; they were very happy, and when the princess had a son, the joy of the prince knew no bounds. But alas! the year came near its close, and the princess had not yet found out the name of the mysterious old man: she dreaded to lose her little son, and yet dared not tell her husband. The prince, seeing his wife one day disconsolate, told her an anecdote to amuse her. He had been hunting, and lost his way in the forest; he looked around, and saw a cave in which an old man was spinning with a sort of wheel,

such as the prince had never before seen; and the old man was singing,

"Little my mistress she knows my name,  
Which shan't be forgot, which shan't be forgot,  
When a prince as heir to the fortunes I claim  
Of Wallotty Trot, Wallotty Trot."

The princess instantly guessed that this must be her mysterious friend. When the year and day expired, the old man appeared and claimed the child. "Stop," said the lady; "your name is Wallotty Trot." It was so; and the old man said that, to reward her ingenuity, he would teach her how to use the wheel, which had enabled him to spin the flax so quickly. Having done so, he disappeared, and was never seen again; but the prince and princess taught this new branch of industry to their subjects, and so enriched their country as to become the admiration of surrounding nations.

Such is an epitome—shorn, we fear, of much of its story-telling attractiveness—of a legend which the late Dr. Cooke Taylor heard from the lips of an old woman in Ireland, and which he believes to be nearly identical with one preserved by the brothers Grimm in Germany. That the old woman believed in her story is very likely; people have believed much worse stories in their time. It is, in truth, one among many examples of a curious tendency in the popular mind—to attribute to fairies or good people, or mysterious people of some kind or other, all useful inventions, the date or the introduction of which is not well known.

The spinning-wheel marked one stage in the great history of clothing—one of the greatest of our social histories. Weaving was, in all probability, an earlier art than spinning; because reeds and rushes and straws, ligaments and fibres and rootlets, can all be woven in their natural state. But spinning was, nevertheless, one of the earliest arts; the distaff and spindle were known to most of the chief nations of antiquity; they are known by everyday use to the Hindoos at the present day; and they were the recognized means of spinning until comparatively modern times. The "spinsters" or spinners with the distaff and spindle, included the high-born and wealthy ladies of our feudal days. Who was the real Wallotty Trot that invented the spinning-wheel, will, in all probability, remain an unfathomable mystery; but, be he who he may, he was the Arkwright of those days; he levelled one of the roads which led to the gigantic manufacturing system of the present times. Unless the yarn had been spun more rapidly than the distaff and spindle could accomplish it, rapid weaving would have been useless, and improvements in looms unsought for; the spinning-machine would not have appeared, for want of its progenitor the wheel; the steam-giant would not have been called in aid; and the neat cotton dresses and merino

gowns, the net collars and silk kerchiefs, the white stockings and tidy shirts, would not (as now) have been attainable by the families of working men. If social evils have accompanied these changes (and such is doubtless the case), let us not ignore them; we can talk of the great changes themselves, and still do justice to those—whoever and wherever they be—who yearn to pluck out the tares from among the wheat.

What a mighty contrast exists between the manufacturing systems of the last century and the present! If, for example, we take the production of woollens and worsted, we find that Norfolk carried on this branch of industry long before the West Riding of Yorkshire; that serge, and camlets, and other coarse goods were the chief products; and that much of this work migrated to Yorkshire about sixty or seventy years ago, on account of the water power and the cheap coal which that county possesses. But, whether in Norfolk or Yorkshire, in Kendal or in the West of England, the cloth manufacture, before the introduction of machinery, presented an aspect which to us now would seem most strange. No factories; scarcely even workshops. The cloth-maker, the monied man who had to bear the commercial responsibility of supplying the markets, picked up or gathered up his wares in an extraordinary way. In the first place he had to travel about on horseback, to buy the wool, on which the labour of the handicraftsman had afterwards to be bestowed; he visited the sheep-farmers, and also those privileged towns which had the "staple," or market for wool, and purchased his material in bits and scraps. He next availed himself of the aid of sorters who slowly separated the wool into parcels, cutting up with a hatchet or with scissors those fibres which were too long. When the sorters had finished, the combers took away the wool to their own homes, combed it into "laps," and brought it back again to the manufacturer. The wool was then carefully packed, strapped to the backs of mules, and carried out to the country districts, in the cottages of which it had to be spun; and not only was this done in the neighbourhood of the large towns, but to very great distances from those towns. In order to save his horse's legs and his own time, he conveyed the wool to one agent in each village, and left him to distribute it among the villagers. The wife and daughters of the cottager, with the old one-thread wheel, spun the wool into yarn, which the agent called for, and sent back to the manufacturer. Another running about ensued: the yarn had to be sent to the weavers. These weavers lived here, and there, and everywhere; they had to be sought out, and the yarn placed in their keeping. When returned in the shape of cloth, the material had yet to be scoured and fulled, dyed and shorn, and had to go out on its travels again before this could be accomplished.

Nor were the cotton districts less marked by the rambling nature of the manufacturing arrangements; although, from the comparative recency of the cotton trade in England, the circumstances were not quite parallel. The cotton yarn was mostly spun in the houses of the peasants near and around Manchester and Bolton, and other Lancashire towns; the wives and daughters spun it in the intervals of farm labour; and travelling chapmen went with their pack-horses from door to door, to purchase the yarn. The supply was very uncertain, and the weavers were thus frequently brought to a stand-still for want of material; the prices paid for yarn were often high—so high, indeed, as to encourage much of that children's labour which has since become a feature in manufacturing districts. Very frequently the father was a weaver, and the mother a spinner, both working on different sides of the same humble room. Sometimes the manufacturer gave out warp yarn, with raw cotton for weft yarn, to a cottager, and left him, with his family, to perform all the operations necessary for converting the material into cotton cloth. Travelling pedlars took advantage of this system to tempt the housewives into dishonesty; they offered trinkets for purloined bits of cotton, which it was hoped would not be missed by the manufacturer.

The system pursued among the manufacturers themselves contrasted no less strangely with that which is so familiar to us. The roads of Lancashire were so bad, that cotton could be conveyed from town to town only by pack-horses. Dr. Aikin, who lived at Manchester when the manufacturing system was about developing its gigantic proportions, says that previous to 1690 there were no capitalists among the Lancashire cotton manufacturers; every man worked hard for a livelihood, whether he employed others or not. During the next period of thirty or forty years the manufacturer worked hard and lived plainly, but he accumulated a little capital; he sold his goods to wholesale dealers who came to him. "An eminent manufacturer of that age used to be in his warehouse before six in the morning, accompanied by his children and apprentices. At seven they all came in to breakfast, which consisted of one large dish of water-pottage, made of oatmeal, water, and a little salt, boiled thick, and poured into a dish; at the side was a pan or basin of milk, and the master and apprentices, each with a wooden spoon in his hand, without loss of time dipped into the same dish, and thence into the milk-pan; and as soon as it was finished they all returned to their work." About the middle of the last century, and down to the time of Arkwright's epoch, the manufacturer gradually established a larger system of dealings. Instead of sending chapmen with laden pack-horses to the small dealers in the small towns, the chapmen merely carried patterns and received orders;

and in proportion as the roads became improved, waggons were employed instead of pack-horses. At length came the inventions of Watt and Arkwright, Crompton and Hargreaves; and Lancashire underwent a social revolution such as the world has rarely witnessed.

Let a second Wallotty Trot enable us to jump over a period of sixty or eighty years, and set ourselves down in the middle of the nineteenth century.

Scene the First: a Lancashire cotton-mill. Take it where we will: it matters little—Manchester, Bolton, Oldham, Ashton—any will do. It is a brick building of vast length and height, with as many windows as there are days in a year, or perhaps more. Dull are the bricks, unadorned are the windows, and monotonous the whole appearance of the structure: be factory labour good or bad, the factory itself is certainly not a “thing of beauty” in its externals. But it is a grand machine in its organism—the mind, the fingers, and the iron and steel, all work together for one common end. A bale of cotton goes in at one door, and the cotton comes out at another, in the form of woven calico or fustian; and a thousand human beings may be marshalled in the path from the one door to the other. The building consists of six or eight stories, and each story of vast rooms or galleries, with many-windowed walls. There is machinery to lift the workers to the upper floors; machinery to raise and lower the cotton; machinery to work the mules and the looms. There is gas for winter-light, warm air for cold days, and ventilating currents of cool air for warm days. The cotton is conveyed in its bag, perhaps to one of the upper floors, and it travels downwards from floor to floor, as the order of processes advances; a “devil” tears the locks of wool asunder; a “scutcher” blows away all the dirt; a “carding-machine” lays all the fibres parallel; a “drawing machine” groups them into slender ribbons; a “roving machine” slightly twists them into a soft spongy cord; a “mule” or a “throstle” spins the roving into yarn; and men and women, boys and girls, tend on the machines while all this is being done. There is no running about from cottage to cottage, to get the carding done at one place, the spinning at another, the weaving at a third; all is done as part of one great process; and not only so, but most of the machines feed themselves with the material on which they are to work. All the real labour is performed by machines; the attendants are engaged in minor but nice adjustments, which the machines cannot do for themselves. It is a mistake to suppose, as some do, that factory labour reduces the factory workers to mere machines: their duties require much quickness, delicacy, and discrimination. And when the yarn has been spun, and has been conveyed down to the weaving-shed, we here find a thousand won-

derful machines weaving calico by miles; the machines doing the hard work, and women and girls attending to adjust and supply them. And when the calico reaches the warehouse, we find hydraulic presses and steam presses to pack it into compact masses; while, in the counting-house, the manufacturer and his clerks are carrying on correspondence with every part of the globe, watching the pulsation of the market, and making sales and purchases with (often) a very slender margin of profit.

Scene the Second: a Leeds Flax Mill. If, in respect to the Lancashire cotton factories, one general type might serve for all, without special reference to one particular establishment, such is not the case in respect to flax-mills; for there is one at Leeds so striking, so original in its aspect, so advanced in its organization, as to stand out in broad distinction from all others. This is the celebrated establishment of Messrs. Marshall. What are the objects to be attained in a great building devoted to manufactures? To exercise a ready supervision over the whole of the arrangements and operations; to provide facilities of access to all the machinery; to obtain a uniformity of temperature and moisture (very important for some purposes); to avoid draughts of air; to establish good ventilation; all these, added to the ordinary mechanical requirements of the work to be done. Now, it occurred to Messrs. Marshall that one monster room might effect all this; and they constructed a monster room accordingly. They procured designs and drawings from M. Bonomi, derived from the temple architecture of Egypt, and sought how to throw boldness and massiveness into a one-story building. An entrance like an Egyptian temple, a façade of stone, surmounted with a bold cornice; a chimney having the form and proportions of the far-famed Cleopatra's needle—these meet the eye on the exterior. In the interior we find a room nearly four hundred feet in length, by more than half of this in breadth—five times as large in area as Westminster Hall. The roof of this vast hall is supported by half a hundred pillars, and is lighted by ten thousand square feet of conical skylights, occupying the summits of small domes or ground arches. On the floor of this room are ranged rows of machines in almost countless number, by which the flax can be wrought into linen yarn, and a thousand or more of busy workers are tending these machines, with ample space to move about. The two-acre roof is formed of concrete so firm and durable that vegetable mould can be spread upon it, grass grown in the mould, and thus a field made on the top of a factory. The drainage of the field (the rain water of the roof) is carried down the fifty hollow pillars to the ground underneath, as was done at the Crystal Palace. Beneath the vast room are large machines and furnaces for ventilating and warming it, and also some of the

apparatus for setting in motion the hundreds of flax machines. Here, therefore, not only are the operations of hundreds of cottages and cottagers concentrated in one building, but the building itself may be said to be concentrated in one room, where all that mechanical skill can effect is effected, to make every hour's work do the best that it can. Flax cannot be wrought and spun without much dust and a little wet; but the workers can pursue their labours with much less of personal discomfort than under any variety of the older system.

Scene the Third—a Bradford alpaca-mill. Alpaca, by the care now bestowed upon its production, is made to produce fabrics of much beauty for ladies' dresses, not only in its uncombined state, but also when combined with silk and cotton. Mohair, too, (the hair of the Angora goat) has come greatly into favour. Bradford contains many immense factories—on the Lancashire plan—for working up wool, and alpaca, and mohair into cloth or stuff; and more are being built; but if the world will continue to demand more stuff, more alpaca, more mohair, there must be an increased expansibility in the manufacturing arrangements for their supply. And thus do we find a clue to the origin of *Saltaire*. Mr. Titus Salt, one of the magnates of industry at Bradford, has several establishments in the town, which have grown with the growth of manufactures; but the time has come when organisation and centralisation are wanted; and these are about to be obtained by a scheme of (perhaps) unparalleled boldness.

On the line of the Leeds and Skipton Railway there is a point at which a small river-valley branches out southward to the town of Bradford, about three miles distant. And at the point of junction stands the town of Shipley, one of the stuff-working satellites of Bradford. Not far from Shipley is an estate which Mr. Salt has recently purchased, crossed by a road, a river, a canal, and a railway; and on this estate is now being constructed a factory which will, in many respects, be the finest in the world, and will be the nucleus of a town towards which great attention will be attracted. A great power for good and for evil will rest in the hands of the owner of this gigantic establishment; and one feels inclined to encourage a hope that the second half of the nineteenth century may show itself to be something more than a mere steam-engine era.

If, leaving the Shipley railway station, we ramble along the Bingley road, we come shortly to what was once a wide expanse of green fields, but is now the theatre of immense building operations. It seems more like a Legislative Palace, or a Record Office, or some great public work, than a mere factory belonging to one individual, which is here under construction, so solid do appear the masses of stone employed, and so vast the

scale on which the operations are planned. The entire buildings will cover or enclose an area of six acres. The chief structure, technically called the "mill," will be a stone building five hundred and fifty feet in length, six stories in height, and having its crowning cornice and its many hundreds of windows so finished with dressed stone, as to give an architectural grandeur to the whole. And then, instead of frittering away the window surface into numerous small panes of glass, large sheets of cast plate-glass will be employed. All that hollow-bricked floors can effect in giving lightness and facilitating ventilation; all that massive cast-iron beams and ornamental cast-iron columns can do to ensure strength; all that can be done in rendering the structure fire-proof by avoiding the use of wood, are duly considered and provided for. Running northward from this fine structure are two subordinate portions, or wings, each about three hundred and thirty feet in length, and as lofty as the main structure; they are to be warehouses. Beyond the western warehouse are large but low buildings for the preparatory manufacturing processes, while the other extremity is to be devoted to weaving and finishing; the main structure itself being the scene of the intermediate or spinning processes. The raw materials will thus enter one warehouse, traverse the huge range in a circuit, and then reach the other warehouse.

The arteries of communication are quite extraordinary for their completeness. There is, in the first place, a handsome new road being formed along the western face of the pile, crossing the Leeds and Skipton railway by a cast-iron bridge, and then crossing both the river Aire and the Leeds and Liverpool canal by a wrought-iron tubular girder bridge on the celebrated "Britannia Bridge" principle, and about four hundred and fifty feet in length. In the next place, the warehouses abut northward on the canal, and will have steam-worked "hoists" for loading and unloading barges in the canal. In the third place, a branch will be carried from the railway into the building, where hoists will load and unload the railway waggons with great rapidity. And hoists will load and unload ordinary waggons, and will raise and lower materials from one story to another, and will very likely raise and lower the operatives themselves (or some of them) to save leg-power.

Then the power for working this stupendous concern: how vast must it be! The steam-engines, of power adequate to the whole demands of the mill, will occupy two handsome engine-houses on either side of the principal entrance; and will send off their smoke into an Italian-looking campanile sort of building, two hundred and fifty feet high. Twelve hundred tons of solid stone are said to have been employed to form the supporting beds for the engines. The boilers beneath

the level of the ground, will be fed with water from the Aire by one tunnel, and send forth the used water by another tunnel. Beneath the weaving shed will be an immense filter and reservoir, capable of storing half a million gallons of rain water from the various roofs—rain water being useful in scouring wool. Between the canal and the river are to be gas-works, capable of supplying five thousand jets with their light-giving food. But as to the working-machines, the complex apparatus which will cover ten or twelve acres of flooring in the different stories, no mere paragraph, or no dozen paragraphs, could describe it; all that invention has yet accomplished in the manufacture of stuffs, alpacas, mohair, and such like, will doubtless be brought into requisition.

The living machinery has yet to be noticed; and here is the matter that will tax the head and the heart of the founder of this great establishment. The buildings, machines, and appliances will be fitted for a staff of no less than four thousand five hundred workpeople; and as there must be at least an equal number of non-workers to give domestic homes to the workers, the full powers of the mill would require a neighbouring population of nine or ten thousand persons. Now, the factory is being built out in the fields, beyond the limits of Shipley; and Mr. Salt has therefore to create a town as well as the factory which is to give bread to the townspeople. His plans comprise the building of seven hundred houses, of various sizes and ranks, but all provided with light, ventilation, and drainage, on the most approved modern arrangements; wide streets, gardens, spacious squares, and play-fields and grounds; a church, schools, a covered market, baths and wash-houses, a public kitchen such as scientific cooks now know well how to plan, a refectory or large dining hall, and other useful buildings.

And such will be SALTAIRE—a name which, unless anything should occur to frustrate the works now rapidly advancing, will soon occupy a place among the notabilities of Yorkshire. Some of the London newspapers have set down the probable cost now being incurred by Mr. Salt, at half a million sterling; but it has since been stated, apparently on good authority, that the outlay will be much less than this. Be it a hundred thousand more or less, however, here we see before us a prospective community, the daily bread and the social comfort, and the moral advancement of which will very intimately depend on the fortunes of one single establishment. When trade is good, and stuffs are "looking up" in the Bradford market, and all hands are employed, and credit is sound—then may Saltaire possibly be one of the best of our industrial communities, for it appears as if it would have many physical and moral advantages to begin with; but when adversities come (and they do occur to stuff-makers as

well as to other makers), then will be the test, to show whether the Saltairians (we will coin a word for the purpose) can bravely stand the buffetings of fortune. How much, how very much of this will depend on the combined wisdom and kindness of the Captain of Industry, who leads the whole, need hardly be insisted on.