

Uncle Keith simply ignored the subject and read his book with a pretence of being perfectly absorbed in it, though I am certain that his eyes twinkled mischievously whenever he looked in my direction, as though he were quite aware of my flood of repressed oratory.

I determined to have it out with Aunt Agatha, so I followed her into her room, and asked her in a peevish voice what she meant by saying Uncle Keith would be so angry with me, as he had not raised a single objection, and, of course, as silence meant consent, I should most certainly keep my appointment at Prince's Gate.

Aunt Agatha looked a little distressed as she answered me.

"To tell you the truth, Merle, I did not quite understand your uncle myself; I expected a very different reception of my news."

"Tell me all about it from the very beginning," I returned, eagerly. "Patience has made such a nice fire, because she said she was afraid you had a cold, and I can just sit by it and brush out my hair while we talk."

"But I am tired and sleepy, child, and after all there is not much to tell," objected Aunt Agatha; but she was far too good-natured to refuse for all that, so she seated herself, dear soul, in the big chair—that she had christened Idleness—and tried to remember what I wished to hear.

"I told him everything, Merle: how your one little defect hindered you, poor child, from being a nursery governess or companion, and how, in spite of this serious obstacle, you were determined to work and be independent."

"Well, and did he say nothing to all that?" I asked, for I knew in what a feeling manner Aunt Agatha would have described my difficulties.

"Oh, yes; he said, 'poor little

thing,' in the kindest possible way, 'and quite right—very proper,' when I spoke of your desire for work."

"Well," rather impatiently.

"He listened very attentively until I read him out the advertisement, but that seemed to upset him, for he burst out laughing, and I thought he would never stop. I was half crying by that time, for you had worried me to death all the afternoon, Merle, but nothing I could say would make him grave for a long time. He said once, 'What could have put such a thing into her head?' and then he laughed again as though the idea amused him, and then he rubbed his hands and muttered, 'What an original child it is; there is no deficiency of brain power as far as I can see; who would have dreamt of such a thing?' and so on."

"Then I may flatter myself that Uncle Keith approves of my scheme," I observed, stiffly, for I was much offended at the idea of his laugh.

"Oh dear, no," returned Aunt Agatha, in an alarmed voice, "he expressed his disapproval very strongly; he said it was all very well in theory, and that, on the whole, he agreed with you that the nursery was undoubtedly a lady-like sphere, but he was far from sure that your scheme would be practical. He foresaw all kinds of difficulties, and that he did not consider you at all the person for such a position."

"Why did not Uncle Keith say all this to me himself?" I demanded.

"Because he said it would only be sowing the wind to raise the whirlwind. In an argument he declares women always have the best of it, because they can talk the fastest, and never will own they are beaten; to raise objections would only be to strengthen you more in your purpose. I think," finished Aunt Agatha, in her softest voice, "that

he hoped your plan would die a natural death, for he recommended me to withdraw all opposition."

Oh, the cunning of these men. I would not have believed all this of Uncle Keith. I was far too angry to talk any more to Aunt Agatha; I only commanded my voice sufficiently to say that I fully intended to keep my appointment the next day; and as she only looked at me very sadly and said nothing, I had no excuse for lingering any longer, so I took up my candlestick and marched into my own room.

It felt cold and desolate, and as I sat down by the toilet table, such sad eyes looked into mine from the depths of the mirror, that a curious self-pitying feeling made me prop my chin on my hands and exchange looks of silent sympathy with my image.

My want of beauty never troubled me; it has always been my private conviction that we ought to be thankful if we are tolerably pleasant in other people's eyes; beauty is too rare a gift to be often reproduced. If people thought me nice-looking I was more than content; perhaps it was surprising that, with such good-looking parents, I was just ordinary and nothing else, "But never mind, Merle, you have a good figure and talking eyes," as Aunt Agatha once said to me. "I was much plainer at your age, my dear, but my plainness never prevented me from having a happy life and a good husband."

"Well, perhaps I should like a happy life, too, but as for the husband—never dream of that, my good girl; remember your miserable deficiency in this enlightened age. No man in his senses would condone that; put such thoughts resolutely away and think only of your work in life. *Laborare est orare.*"

(To be continued.)

THE CONTENTS OF MY WORK-BOX.

HOW BUTTONS ARE MADE.



It is scarcely possible to determine when buttons, which are both useful and ornamental, were first made. In the paintings of the fourteenth century they frequently appear on the garments of both sexes, but in many instances they are drawn without button-holes, and are placed in such situations as to suggest that at that time they were used more for ornament than usefulness.

It was towards the close of the sixteenth century that button-making was first considered a business, and that the manufacturers formed a considerable body.

Button-making was originally a very tedious and expensive process. The button consisted of one solid piece of metal; the ornaments on the face of it were the work of an engraver. To obviate the expense connected with such a

method of production, the press, stamp, and engine for turning the moulds were introduced. This improvement led the way for other improvements, both with regard to the materials from which buttons were afterwards made and also the process of manufacture. The plain gilt button, which was extensively used in the early part of the present century, was made from an alloy called plating metal, which contained a larger proportion of copper and less zinc than ordinary brass. The devices on the outer surface were produced by stamping the previously cut out blanks or metal discs with steel dies, after which the necks were soldered in. At the present time every possible kind of metal, from iron to gold, whether pure or mixed; every conceivable woven fabric, from canvas to the finest satin and velvet; every natural production capable of being turned out or pressed, as wood, horn, hoof, pearl, bone, ivory, jet, ivory nuts; every manufactured material of which the same may be said, as caoutchouc, leather, papier maché, glass, porcelain, etc., buttons are made in a

great variety of shape; but at the present time they may be classed under four heads: buttons with shanks, buttons without shanks, buttons on rings or wire moulds, and buttons covered with cloth or some other material.

In the process of metal button-making by means of fly presses and punches, circular discs, called blanks, are cut out of sheets of metal. This work is usually done by females, who, while seated at a bench, manage to cut out as many as thirty blanks per minute, or twelve gross in an hour. On leaving the press the edges of the blanks are very sharp. When they have been smoothed and rounded, the surfaces are polished on the face by being placed separately in a die, under a small stamp, and causing them to receive a sharp blow from a polished steel hammer. The next process is that of shanking, or attaching small metal loops, by which they are fastened to garments. The shank manufacture is a distinct branch of the trade in Birmingham, although at times carried on in the same factory.

The shanks are made by a machine, in which a coil of wire is gradually advanced towards a pair of shears, which cut off short pieces. A metal finger then presses against the middle of each piece, first bending it and then pressing it into a vice, where it is compressed so as to form a loop; a hammer then strikes the two ends, spreading them into a flat surface, and the shank is pushed out of the machine ready for use. The shanks in some instances are attached to the blanks by women with iron wire, solder, and resin, after which they are placed in an oven, and when firmly united are removed and form plain buttons. In the majority of cases, however, soldering is dispensed with, the shanks being made secure in the press.

If the button is to be finished without a shank, it is passed on from the press, which it leaves as a blank, to another where the holes are pierced, and then to a third where the roughness is removed from the edges of the holes.

The commonest metal buttons which I have seen in process of making were cut out of scraps of tin, similar to what may be seen on the refuse heap of any shop where tin goods are made. The hand presses worked by women cut out the blanks, made a simple impression on the outside, and turned up the edges all round at the same time. The blanks were then passed on to another press, where pieces of cardboard were inserted, and the edges turned over to keep them firm. The holes were next pierced, and a finish given by a blow from a stamp.

I felt deeply interested in seeing all kinds of buttons in process of being made, some for India, others for Chili, and our own army, but the prettiest and most interesting to witness while passing through the presses, stamps, and hands of the workers were some which were being made for Malta. In passing through the first press the blank was embossed and cut out. By another press the edge was scalloped, and by a third press the open work was effected. The next process was that of so pressing each disc to such an extent that the scalloped edges of two might meet, and thus form a round button of pretty design when united, and a shank fastened in the centre of one of the blanks.

Military buttons, like many others, are made of two discs of metal, the impression on the outer ones being produced by a sharp blow in a stamp, the under ones having two holes pierced in them for the shanks, which are put through and bent flat on the inside. They are next passed through another press which firmly fastens the two discs together, and holds the shank so securely as to obviate the necessity of having recourse to soldering.

Covered buttons are made in an immense variety of textiles. It is impossible in the space allowed for this paper to enumerate them, but I may add that their ingenious construction, their good wearing qualities, the clever mechanism of the tools by which the various discs of cloth, metal, millboard, etc., are cut out, and the methods of uniting them so as to form a complete button, are marvels of skill and industry.

The earliest covered buttons were made so recently as the year 1802, in Birmingham, by Mr. B. Sanders. Those buttons had metal shanks, but by the ingenuity of Mr. Sanders, jun., his father's invention was completed by tufts of canvas, through which the buttons could be attached to garments, being substituted for rigid metal shanks. The only improvement since made has been that of covering the back of the silk-fronted buttons also with silk.

A covered button consists of two discs of metal and one of millboard, thicker or thinner, according to circumstances. In making it,

the sheet of iron is first scaled, by the use of powerful acids, and then cut into proper size and shape by a press. The neck, or collet, of the button is japanned after being stamped and cut. The hollow between the neck and shell is filled with millboard. When the parts are put together and pressed the button is brought into shape, and its several parts are consolidated.

It was in the year 1841 that Mr. John Aston made the first three-fold linen button—that is, a button formed of a linen covering and a ring of metal, so put together that both sides and centre were completely covered with separate pieces of linen, and thus produced being quite flat. This being an exceedingly neat and convenient button, it became largely patronised, as it still is by housewives, for all underclothing, having superseded the old thread button formed of a ring of wire, with threads drawn over it and gathered in the centre. A slight improvement was made by Mr. Elliott. During the time that the patent lasted these two gentlemen worked in concert, and established a very successful business.

So great has been the demand for covered linen buttons at different times, that during one single year Mr. Elliott's successors have in the process of making them required 63,000 yards of cloth and 34 tons of metal, and given employment to 250 persons. As the button trade has for a considerable time been in a very depressed condition, it is possible that the productions of this firm may not be of such magnitude as they were a few years since.

With regard to the depressed condition of this branch of Birmingham industries, one manufacturer assured me, only a few weeks ago, that where 150 persons were employed at one time, not more than 20 or 30 would be working then. In visiting one of the largest manufactories the same day, I saw sufficient to convince me of the truthfulness of his statement, for in passing through the different workshops I saw one or two presses, stamps, and turning-lathes at work, whereas several were unused and without attendants. One firm, when trade is in a flourishing condition, will make about 15,000 gross of linen buttons weekly. Ivory buttons are made from the tusks of elephants; but as the material is expensive, and the manipulation has to be conducted with great care, and that chiefly by hand, they can only be used by persons who can afford to pay a goodly sum.

During the last few years, in which a great variety of colours has been introduced, both for ladies' and gentlemen's garments, and buttons have been required to match, it is fortunate that a substitute has been found for ivory in the kernel of the "corozo" nut. This nut grows in clusters on palm-like trees in South America, and is husked like a coconut, but is different in shape and considerably smaller in dimensions. The kernel—the part used in button-making—is milk-white, and being softer than animal ivory, is more easily turned, and as it readily absorbs dyes, it can be made to take any colour with little trouble.

The process of making these vegetable ivory buttons is as follows:—After boys have cracked the shells, the kernels are taken by men standing at benches in which small fine-toothed saws are revolving. Only a slight pressure of the nut against the saw is required before it is divided into equal parts. If necessary, the operation is repeated. Providing, however, that the pieces of the nut are of proper dimensions, they are passed on to the turner.

The next process is that of cutting out or turning, and is performed in the following manner:—The turner, after fixing a piece of the nut in the chuck of his lathe, brings a

tubular cutter, the face edge of which is toothed like a saw, to work on the exposed front surface of the nut; the result is that of a rough button or mould. As these moulds are rough, they are passed on to another lathe, where they are made smooth, and then to a third, where the holes are drilled. They are next passed on to the dyer, who arranges his colours according to instructions received. It sometimes happens that a mottled appearance is required; when such is the case, girls are employed to touch them with the colours required by the aid of camel-hair pencils. The buttons are next placed in tanks for drying, the tanks being heated by steam for that purpose.

Most of the buttons are polished in lathes by friction from their own dust, held in the hand of the operative.

Porcelain buttons were invented by Mr. R. Prosser, of Birmingham, who, in conjunction with the celebrated firm of Minter and Co., made them in large quantities in the potteries, about the year 1840. They were, however, soon driven from the market by French manufacturers, who sold a great gross—that is, twelve gross, each of twelve dozen—for the ridiculously small sum of elevenpence.

Glass buttons are made by heating canes of glass and pinching them from the end with pliers, which at the same time answer the purpose of a die. They are sold very cheaply, as low as twopence a gross, but it is scarcely possible for any English firm to compete with Bohemia in their production.

Mother-o'-pearl buttons are made out of pearl shells which have been imported from the coasts of Macassar, Manilla, Bombay, the archipelago of the Pacific, the Bay of Panama, and a few other places. Their market value is not always the same. At the present time it ranges from £8 to £10 per hundredweight. The blanks are cut out of the shells by a steel tubular cutter, similar to that used in cutting the vegetable ivory. As the cutter works its way through a shell, small cylinders of pearl are disconnected, which are reduced in thickness by splitting into discs, a little thicker than the button is required to be when finished. These blanks are finished singly in a turning lathe, by being placed in a suitable chuck, and having a steel tool applied to its face for producing the rim and depression in the centre. They are then passed on to another lathe, where the holes are drilled, and afterwards to another, where they are polished by friction, and a mixture of rotten-stone and soft soap.

The best white buttons are those which are made from Macassar shells, and the best black from shells of the archipelago of the Pacific. The latter are the dearest, in consequence of the black shells not being so plentiful as those of lighter shades. Some few years since the consumption of mother-o'-pearl shells in Birmingham amounted to nearly one thousand tons annually; the failure of the fisheries in Central America has, however, reduced it to a little more than a third, or about three hundred tons a year.

Thimbles are made by stamping, and afterwards turning in a lathe, the indentations being produced by a suitable instrument. On the Continent the operatives make them with punches in as many as five different mandrils. Scissors, bodkins, etc., have nothing connected with their manufacture which calls for any special notice. Although, as in previous papers, I have conducted my readers in paths not usual to girls and young women, I hope that my description of button-making will interest a considerable number, and teach them to think more of buttons and how they are made and by whom made than they have ever done before.