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CALICO PRINTING IN INDIA

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India has for long been famous for its art of calico printing and there were a number of centres in the east and west, south and north, where the craftsmen practised this art and carried on their business on traditional pattern. In the north Farrukhabad and its contiguous area has for a long time been an important and flourishing Centre of Calico-printing and the following pages are devoted to the discussion relating to the development of the art and style of calico printing with particular reference to that of Farrukhabad.

The history of the Farrukhabad style of calico printing can proably be traced back to the beginning of the eighteenth century, i.e. about the time when the city of Farrukhabad was founded by the first Bangash Nawab, Muhammad Khan. The date according to contemporary Muslim historians was 1216 A. H., (1714 A. D.) and we learn from the same sources that the Nawab made special provision in his plan of the city for the construction of separate quarters allotted to the guild of calico printers known as *Sadhs*. The quarters later came to be known as *Sadhwara*[1].

The calico printers of Farrukhabad could not thus have been the original inhabitants of the place, and had most probably migrated from some other centre, under the patronage of the Bangash family. Tradition has it that they originally belonged to the ancient town of Kanauj, which at one time boasted of a flourishing industry of printed cloth—an industry which on available evidence appears to have been somewhat eclipsed by the rise of the sister industry in Farrukhabad[2]. The printing art of Farrukhabad is thus a derived art bearing family-likeness not only to the art of Kanauj but also to that of Lucknow which probably had a common origin. The products of the three schools could hardly be distinguished from one another except that the Lucknow *palangposhes* were mostly in larger and bolder designs and that in the quilted shawls (*fards*) turned out by Lucknow and Kanauj, the field was usually covered by small flowers closely compacted with a border pattern composed of two or three parallel scrolls. The Farrukhabad school however was fond of the Persian "*tree of life*" pattern with a profusion of green leaves, the border being bound with festoons of flowers encircling corners or demarcating conventional facades and balconies. The effect was literally one of exuberance.

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The art of painting cloth by hand must have become established by the beginning of the seventeenth century, for 'Painted Clothes' are included in John Chamberlain's list, dated 1601, of principal imports from the East Indies into Holland and Portugal[3]. The exact date on which block printing of cloth was introduced in India cannot be stated with certainty, but evidence is not lacking that the printing by this process had taken firm roots in the country by the middle of the seventeenth century. This would be clear from a proclamation of Charles I dated 1631 in which printed calicos are specifically mentioned as one of the principal imports from India[4]. A more direct evidence is afforded by Tavernier, who in 1670 observed that "the workers (at Sironj) print their calicos according to patterns which the foreign merchants have given them"[5].

Although there is very meagre information as to the technique employed by the Farrukhabad school in printing their products but there are reasons to believe that this could not have been very different from that employed by the printers of other parts in India. The two techniques of hand painting and block printing must have been combined in the production of a single piece of cloth, as in other schools. The technique employed in hand painting was usually as follows. The outline of the design was stencilled, and pounced with charcoal and then painted over with a black edge. The blues and the reds were the results of vat dyeing. Before dyeing the cloth with indigo which gave the blue colour, those parts of the cloth that were to be reserved from it were first pencilled over with wax, which was then removed in boiling water. The steeping of the cloth in a vat of powdered chay root made necessary previous pencilling in of mordant (solution of alum), the purpose of which was to fix the red dye and to modify its tone. Yellow and green were always painted on by hand.

During the last quarter of the eighteenth century hand-printing was almost entirely superceded by block printing, which in all probability was the process in use at Farrukhabad during the nineteenth century. A detailed description of this process is available in Saiyid Muhammad Hadi's work[6].

The local name of this industry was known as *Kapre-ki-chhapai.* The materials for printing were generally of 3 types; (i) *Malmal* and *nainsukh latha,* or *lankilat* and muslin for ordinary class of workmanship, (ii) coarse native cloth called *garha* used for printing carpets known as *farsh* and (iii) the country cloth called *gari, dhoti-ka jora,* for *adhotr* was used for printing *chhint* (course chintz) and the fabrics known as *dagha* or *galef.* Calicos were printed in two different styles; (1) the superior *tel chol* style in which bleaching through the agency of an emulsion made from a fixed vegetable oil and an alkali forms an important factor and (2) inferior *Katha* style in which the cloth is not bleached at all.

In the *tel chol* style the material generally used was the English long cloth or *nainsukh.* The cloth was first cut into pieces varying from six to seven yards in length, the breadth being generally about a yard. Twenty such pieces were taken

at a time. They were then handed over to the tanner, who dipped them in a mixture of finely powdered sheep-dung and water in a large circular earthen pot sunk in the ground, and trampled them down with his feet, in order that the solution might be uniformly soaked by the several pieces, the weight of dung used being ½ lb for every score of pieces. The latter were then left in the vessel for the night.

Next morning the pieces were passed on to the washerman who washed them simply in clear water, and after drying they were returned to the tanner to be bleached. A white emulsion was prepared by mixing 5 to 7 lbs. of castor oil (or a mixture of castor and sesame oils in equal parts) with two ounces of native alkali in the pot. A small quantity of powdered sheep-dung was then thrown into the emulsion and water added. The pieces were then dipped in the solution, well rubbed under feet, and being wrung out, they were packed together in a piece of cloth and left on the ground for three or four days, the unused solution being preserved in the vessel. On the fourth day the pieces were spread out in the sun. When dry they were taken in sets of four or five at a time, again dipped in the emulsion, wrung out and exposed in the sun. The process (*ugjana*) was continued for 10 to 15 days till the cloth became perfectly white. Then they were washed in clear water for a second time.

The cloth then being returned to the printer he made a preparation from powdered myrobalan 2 parts, and *Terminalia bellerica* (*Bahera*), flowers of *Griselea tomentosa* (*dhawai*) root of Nordostachys (*balchhar*), coconut, root of *Hedichium spicatum* (*Kapur kuchri*) and root of *Cyperus pertinius* (*Naghar motha*) 1 part each. The compound powder was made into balls (of ½ lb. each) each ball being thrown into a vessel containing enough water to dip five pieces at a time. The pieces after being plunged, were wrung out and dried. Each piece thereafter was cut into two parts and joined so that the length of each became three to three and a half yards and the breadth was doubled. The pieces were then handed over to *Kundigars* by whom they were spread on a block of wood having a semi-circular surface, and were well beaten with clubs. After this the cloth was ready for printing.

A light convex bamboo frame work called *thatia* or *tatti* was placed in a round earthen vessel called *gaddi* which contained the dye. A piece of coarse flannel was placed over the *thatia* and another piece of *markin* over the flannel, the *thatia* being sufficiently flexible to bend easily when pressed with the die and to allow the cloth to sink to the surface of the liquid below. The cloth was stretched for printing on a bench (*tipai*) covered with about one dozen layers of some kind of coarse cloth to serve as a pad. The printer sat on the ground and held the die in his right hand. Black patterns were usually printed first. Of these the borders (*hashia*) was first taken in hand. The black dye was prepared from ferreous sulphate 2 lbs., water 3 gallons, flowers of *Griselea tomentosa* 1 oz., gum of *Anogeissus latifolia* (*Dhaumar*) 6 lbs., ghee 2 oz. and wheat flour 1 oz. A small portion of the dye was poured into the printing pot. The printing block was then pressed on the cloth overlying the frame work which took up the dye, it was then placed firmly on the cloth to be

printed and given 3 taps from above with the closed fist of the right hand. The pattern was thus printed all round in short pieces in order to make the border. Any block patterns which were to be printed in the field were printed next.

The process immediately following the printing of patterns was that of the application of resist paste (*chune-ki-chhapai*), which consisted in coating the patterns with a preparation of lime in order to protect them from the action of the ground colour. The paste was prepared by dissolving in water four pounds of shell-lime, the liquid being kept at rest for sometime. The surface water was then got rid of and the sediment passed through a piece of muslin. Half a pound of soap, 2 lbs. of gum of *Anogeissus latifolia* (*dhaumar*) and 12 lbs. of gum acacia were then dissolved in it with the addition of little water. The printed patterns were then stamped over with this preparation and a line was drawn with it to make the boundary between the ground and the borders which were dyed differently.

The last process was that of applying the ground colour (*zamin-ki-rangai*), which was done by rubbing the prepared dye liquid with a piece of flannel or by cloth over the printed fabric. The colour in the field was usually different from that on the borders. Sometimes the field was divided into four equal parts and each part was rubbed over with a different colour. The colours commonly applied were :

(1) *Bāsantī* (sulphur yellow) prepared from *Delphinium ajacis* boiled in water, or turmeric boiled in water and then mixed with curdled milk.

(2) *Khaki* prepared from the infusion of pounded *babul* pods put in water.

(3) Pink or light pink prepared from infusion of madder of different strengths.

(4) *Sabz* prepared from pounded turmeric mixed with pomegranate rind to which European grey and green aniline dye are added.

(5) Sky-blue prepared from the blue dye used in printing borders and patterns.

(6) Dove-grey from European violet dye mixed with an infusion of madder.

(7) Yellow green from a decoction of ground turmeric, pomegranate rind and European green aniline dye.

The application of the ground colour being over, the cloths were sent to the tanner by whom they were washed in running water to take away the resist paste. The pieces were then folded and clubbed smooth by the *Kundigars* or clubmen.

Printing of calico in the *katha* style differed from the style described above in that the former completely dispensed with the bleaching process. The dye liquid

in printing the black pattern in this case consisted of a preparation of acetate of iron. Curtain and table-cloths were often printed in this process.

Another process of printing known as *Zarde-ki-chhapai* consisted in applying dye liquid to unwashed cloth. The fabrics printed were generally handkerchief, *saris*, *dhotis*, and *dupattas* made of muslin, *nainsukh*, or long cloth.

The dyes used by the Farrukhabad printers were generally imported from Lucknow. These were usually made of *shisham*, mango, and ebony and were often of delicate and skilful workmanship. The surface of blocks were first covered with chalk-powder upon which designs were made by marks made with an iron pen. The patterns were then chiselled into relief. The usual intricate pattern of a given space was not carved entirely on a single block, a separate block being used for the application of each colour. The designs reproduced were often of foreign inspiration, as would no doubt be indicated by the occurrence on certain classes of fabric of the Persian 'tree of life' pattern, of the English sprigged motives, and the French ribboned Swags. But the designs themselves and their general treatment never lost their unmistakable Indian flavour.

The printers have lately taken to the use of brass dies and the technique has undergone a number of changes in recent times consequent on the invasion of indigenous designs by European ones and by the growing popular demand for novelty.

REFERENCES

[1] Irvin. The Bangash Nawab of Farrukhabad, *JASB*, No. 4 1878, p. 278.
[2] Atkinson. *Gazetteer of N. W. Province of India*, Vol. 7, p. 287.
[3] Birdwood, G. *Report on the old records of India Office*, pp. 201-202.
[4] ——*op. cit.*, pp. 37.
[5] Tavernier. *Travels in India*, Book I, Chap. 4.
[5] Hadi, Saiyid Muhammad: *A Monograph on Dyes and Dyeing*, p. 44.