

## TECHNICAL SECTION

### PRESERVATION OF A TEXTILE AND A MINIATURE PAINTING

By T. R. GAIROLA

#### 1. TEXTILE

THE specimen was an eighth-century fragmentary textile from Central Asia. It was printed with star-patterns in yellow on a red background, which was identified as silk by an examination under microscope (pl. XXXV A).<sup>1</sup> The specimen had a fine texture, but its fabric, in the last stage of deterioration, had become so brittle that a mere touch was sufficient to crumble it to dust. The heap of its fragments could not, therefore, be handled easily. Repairs by darning was out of the question and stitching the fabric to a backing was equally impossible as the fragments had lost all strength. Neither the pattern of the textile nor the design of the print was recognizable. Pl. XXXV B shows the extent of the disintegration: the particles formed by the lightest pressure are visible on it.

The long molecular chain in a textile accounts for its physical properties, such as tensile strength, elasticity, suppleness, resistance towards bending, etc. Ageing effect caused by temperature, variations in humidity, light and oxygen breaks this chain; consequently, the textile loses all its characteristic features and becomes brittle and cannot stand even the slightest strains.

The preservation of the present textile involved the following processes in succession: (1) removing the superficial dust; (2) strengthening the fragments; (3) opening the folded pieces; (4) removing the creases, straightening out the fragments and separating them from the junk; (5) putting the fragments in position, as far as possible, and arranging them in their right places with respect to the warp and weft and designs on them; (6) cleaning them; (7) fixing them on some strong background with an adhesive; and (8) putting the jointed textile on a sunken mount-board for exhibition or storage.

The textile, which had been wrapped in a piece of paper, had to be transferred on Nepalese tissue-paper for preservative treatment. A piece of tissue-paper, big enough to accommodate the complete textile when opened out and stretched, was kept over the junk and a cardboard-piece put on it. The whole unit, consisting of the wrapping paper, the tissue-paper and the cardboard, was turned upside down, so that the textile was now on the tissue-paper. The cardboard underneath was then slid out and a glass sheet

<sup>1</sup>The illustration shows the photomicrograph of cotton, silk and wool fibres. An identification of the fibre is necessary before repairs and preservation are undertaken. Burning test is also helpful: textiles of vegetable origin (cellulosic base) give out the odour of scorched paper and textiles of animal origin (protein base) of scorched hair. A scheme for preservation can be formulated only after the identification of the fibre.

inserted in its place. The loose tissue-paper was wetted at the corners and fixed to the glass by pasting. The superficial dust was carefully removed from the textile with a soft sable brush. The fragments were then strengthened with 1 per cent methyl-methacrylate solution in a mixture of 75 per cent toluene, 24 per cent alcohol and 1 per cent dibutyl-phthalate. The lines of folds were treated with a mixture of alcohol and water and the folded pieces opened out. The creases were immediately pressed with a flat spatula, so that the acuteness of the creases was reduced. It was now possible to separate the fragments from the junk. Individual pieces were given the necessary number of preservative coatings to strengthen them. Pl. XXXVI A shows the fragments thus strengthened and separated, with newly-revealed, though fragmentary, printed patterns occurring here and there.

The fragments were now fit for safe handling with a pincer and spatula. They were arranged, as far as feasible, in a proper position, with regard to the warp and weft of each fragment and the printed designs on them. It was possible to make out the design of the printed portion on the fragments, which were found to be exactly fitting with each other. This gave the clue to the original set-up of the textile. This part of the work needed great perseverance.

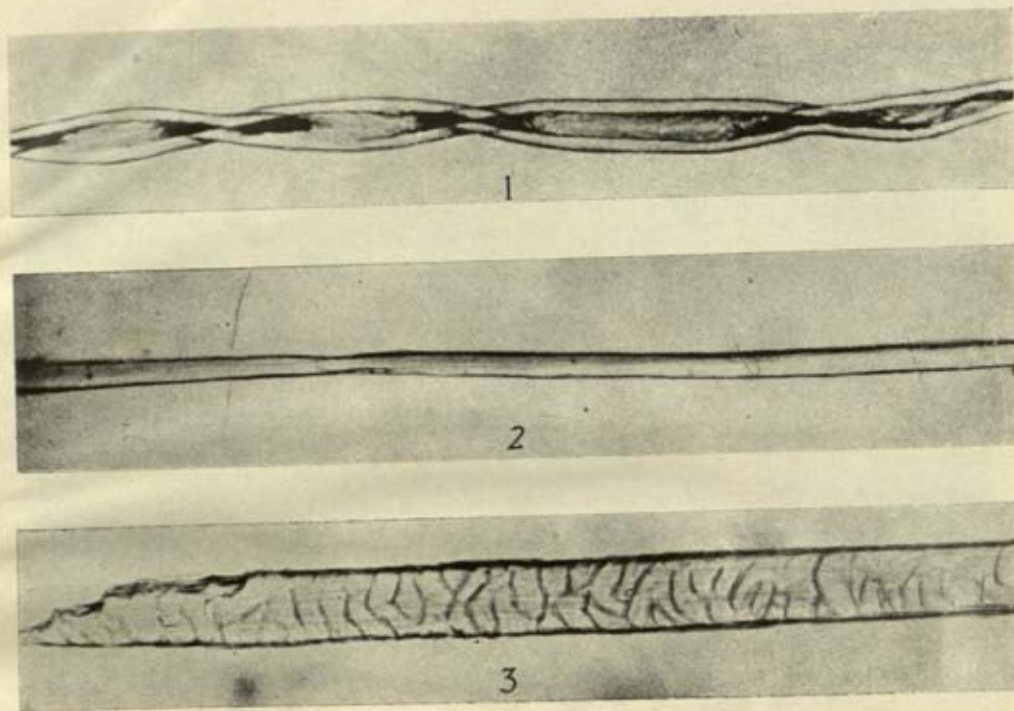
The pieces having been arranged, the process of cleaning was taken up. The glass plate with the tissue-paper and the loosely-arranged fragments was kept inclined (1 in 60), so that aqueous solutions used in cleaning could run out slowly over the fragments without disturbing their position. The fragments were carefully wetted with a dilute aqueous solution of cetavlon by means of a sponge. The cetavlon was allowed to work for some time, and then a slow current of water was run from the topside and a sable brush was passed over the fragments. A very gentle flow of water was maintained through the apparatus illustrated in *Ancient India*, no. 8 (1952), p. 94, fig. 1. By adjusting the inclination of the glass plate holding the textile it was possible to make the fragments float freely, and this facilitated the movement of the individual fragments to their correct positions in relation to the adjacent fragments. When washing was complete, the excess water was drained off, and the back of the fragments was subjected to a similar washing treatment by turning the textile upside down with the help of another tissue-paper fixed on the glass plate. Water-treatment completely eliminated all the creases, imparted pliability to the fabric and helped in the restoration of the warp and weft of the textile to their proper places.

This having been achieved, the exposed reverse side was mounted on a silk background with starch paste containing sodium arsenite insecticide and saffrol. The textile was then brought on the silk and put in a sunken mount-board. Pl. XXXVI B shows its condition after preservation.

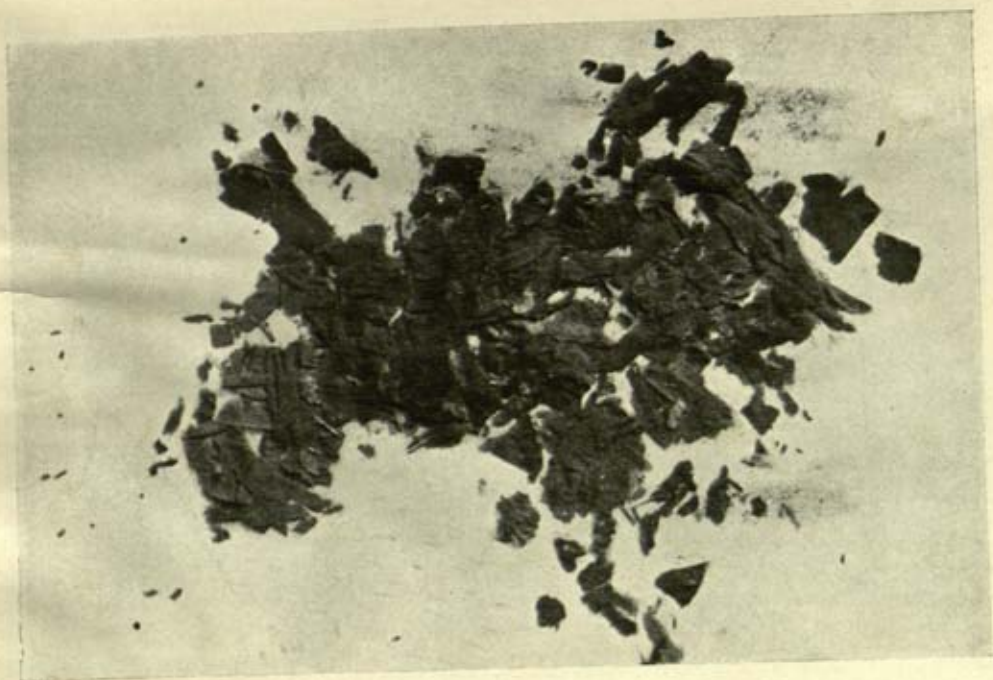
## 2. MINIATURE RAJASTHANI PAINTING

This painting was torn at several places and had creases and folds all over its surface. It was further covered with secondary water-colours of green, white, blue and bluish-white tints, applied by a faker for masking the damaged and deteriorated original background and enriching it with fresh colours, which, at the same time, covered the delicacy of the original miniature by hiding and obscuring the details. On the top right corner was written *śrī Rāmachandra-ji rau rāja-tilaka* in two lines. At first sight the somewhat skilful overpainting was not discernible, specially because the legend aptly gave the title of the painting; but when carefully examined, the rounded paint-edges and the abrupt break in

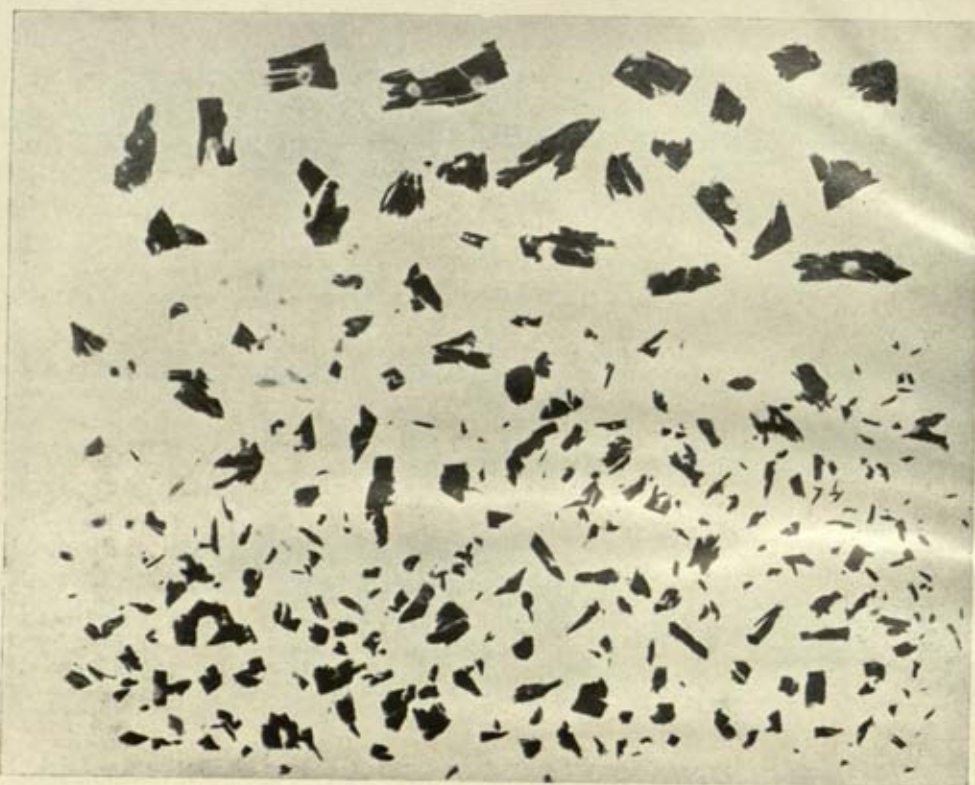
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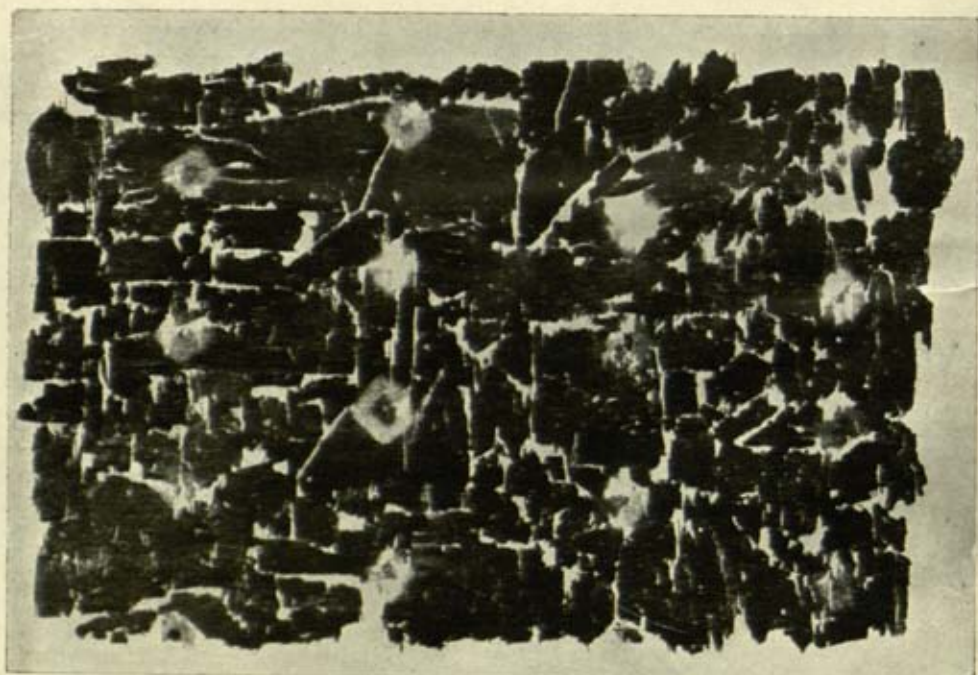
A. Photomicrographs of 1, cotton, 2, silk, 3, wool, ( $\times 200$ ). See page 143



B. Fragmentary painting from Central Asia, before preservation. See page 143

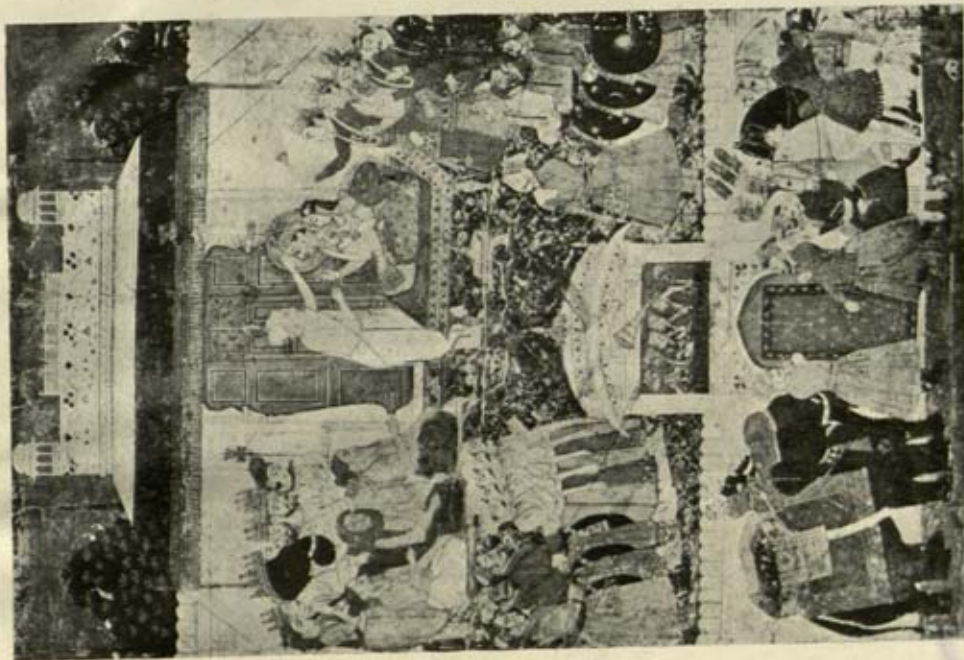


A



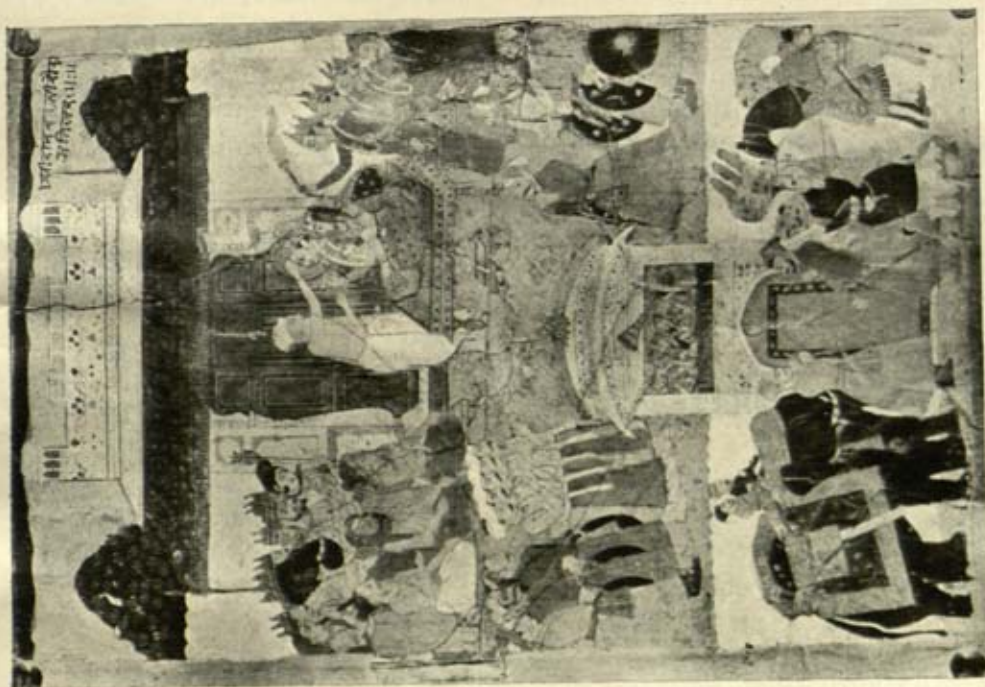
B

*Fragmentary painting from Central Asia: A, during, and B, after, preservation. See page 144*



B

Rajasthani painting: A, before, and B, after, preservation. See page 145



A



the flow of the outlines of the figures and other subjects revealed the later paintings, which had completely disturbed the Rajasthani characteristics of the background of the miniature.

The miniature was found covered with two layers of paper pasted on the back at some later date to serve as a support. The paper on which the painting was executed had become porous and spongy and its sizing material had been destroyed, with the result that its cellulosic texture was visible wherever the paint-layer had scaled off. It seemed correct to presume that in order to hide these damaged spots as well as to give a bright toning effect to the painting, the faker had used his pigments lavishly. Pl. XXXVII A shows the condition of the miniature before treatment.

The preservative treatment of the painting called for the adoption of the following processes: (1) removing the overpaint; (2) fixing the original water-colour pigments of the painting; (3) removing the supporting paper-mounts from its back; (4) eliminating the folds and creases; (5) removing the sticking paste left over, after the removal of back support; (6) mounting the painting on a fresh support of Nepalese tissue-paper; and (7) applying a preservative coating on it.

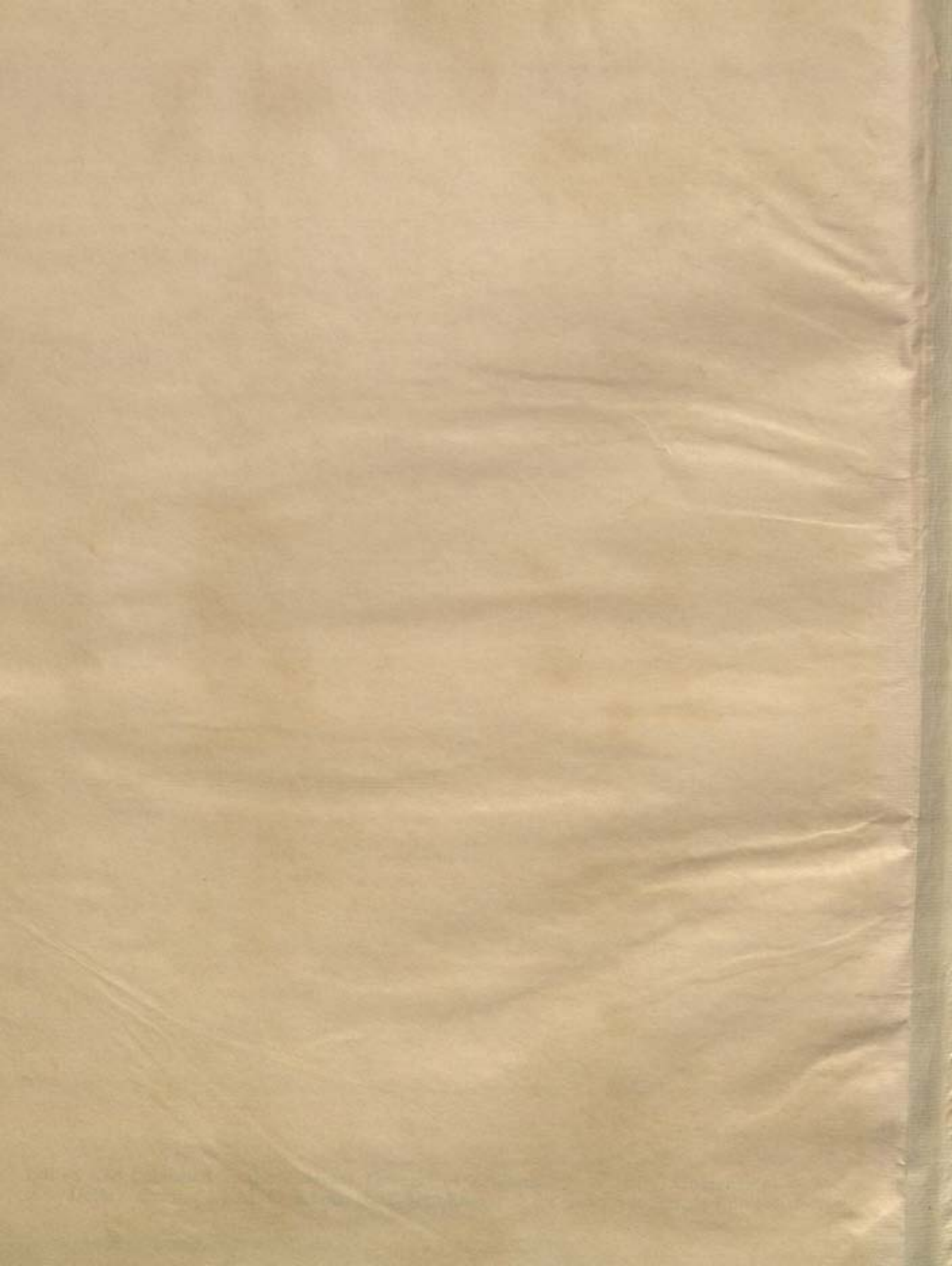
Since the colours used by both the original artist and the faker were water-soluble, the removal of the later colours without disturbing the former presented a great difficulty, as any method used to preserve the original pigments would simultaneously preserve the later ones as well. However, experiments done on a corner of the miniature showed that while the overpaint softened very easily and quickly when moistened with water, the original colours required a little more time and greater friction for such softening. This differential behaviour of water towards the two sets of pigments suggested a procedure for the removal of the overpaint without disturbing the original painting underneath. Small tufts of cotton of the diameter of  $\frac{1}{8}$  to  $\frac{1}{4}$  in. fixed to tips of bamboo tooth-picks were wetted, put on the overpaint and given a circular movement. This softened the upper pigments. The process was repeated till nothing of them was left. It so happened that during the operation the background and support of the original painting also became sufficiently wet and softened and showed signs of abrasion when the last tuft of cotton was swirled over. Whenever it was noticed, alcohol was immediately applied as a restrainer. The porous nature of the paper contributed to the difficulties in this direction.

After the removal of the overpaint, the pigments of the original painting were fixed with two coatings of 1 per cent methyl-methacrylate solution in toluene and alcohol. The painting was then turned upside down on a tissue-paper mounted on glass sheet and the dirty layers of paper were removed from the back by the usual processes of softening and washing. The excess paste was scraped and washed off in running water. The painting was then reversed and all creases and folds removed from the front side with the help of a spatula. It was then subjected to a general cleaning treatment and finally given a backing of two coatings of Nepalese tissue-paper and stretched well as usual. As the paper on which the painting was executed was fragile, porous and spongy, it was found necessary to coat it thoroughly with 1 per cent preservative solution once again. Pl. XXXVII B shows its condition after treatment.

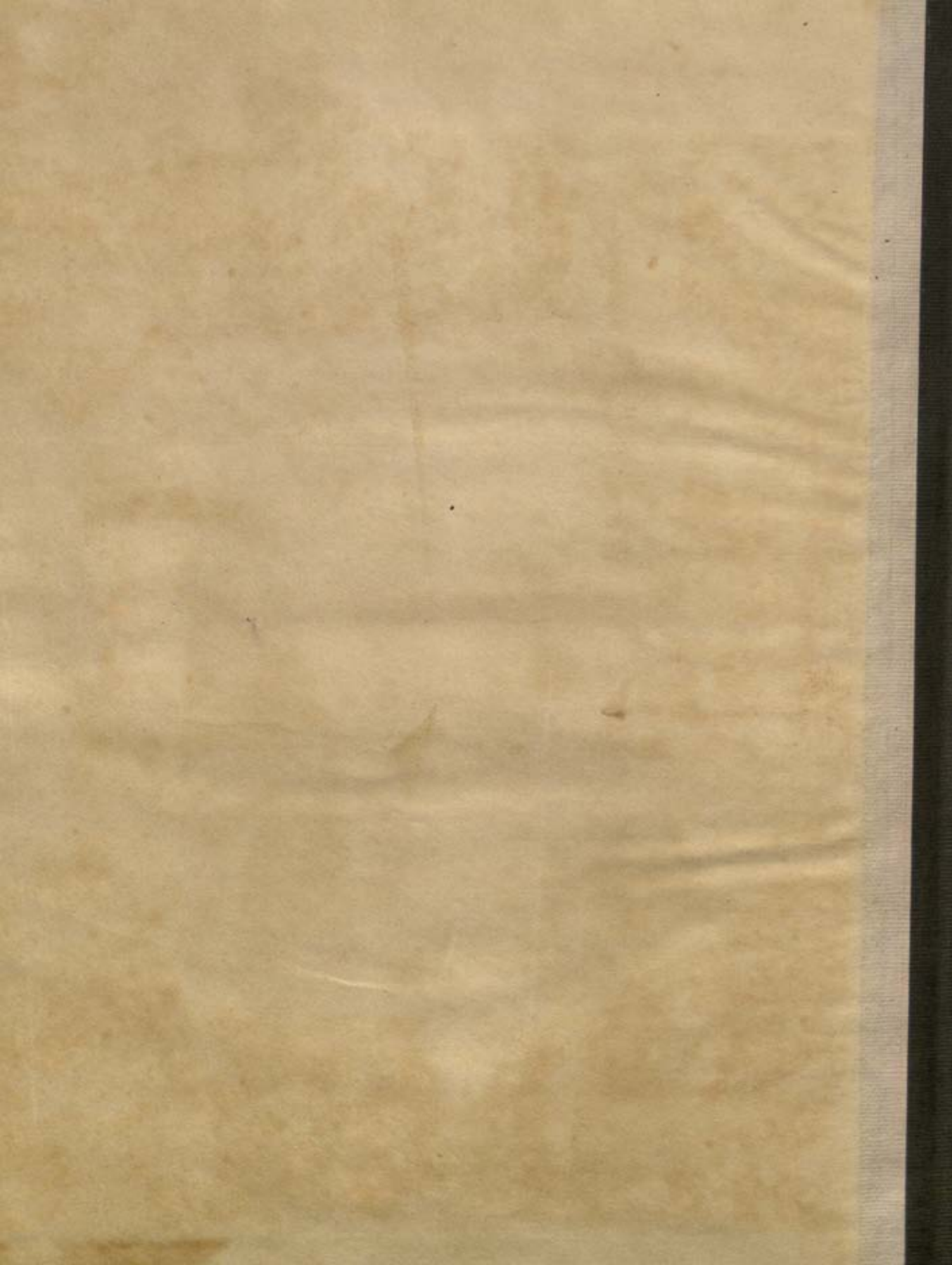












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