Chapter IV

TECHNIQUE AND NOTES ON STYLE

In matters of the principal techniques employed, mural painting in 19th century Punjab shows strong affinity with contemporary wall-painting in the neighbouring regions, especially the Hill States and Rajasthan. And yet it would not be without interest to examine this matter in some detail.

Broadly, of course, wall-paintings fall in one or the other of the three categories: (1) tempera, (2) fresco or (3) fresco-secco. In tempera, painting is done on dry wall plaster with pigments made in an organic medium. True fresco implies work done on wet wall plaster with pigments ground in water. In fresco-secco, painting is done on a dry wall with
pigments ground in water. In each of these, attention has to be paid to (a) the 'carrier', which supports the 'ground', (b) the 'ground' on which paintings are executed, (c) the materials or pigments used in the work and (d) the 'binding medium', or the means by which pigments are attached to the ground so as to make the work firm and lasting.

The question of finding a suitable surface like a wall or ceiling which acts as 'carrier' is of primary importance, for on a permanent foundation for the plaster coats making up the mural ground depends the longevity of the painting. In 19th century Punjab the 'carrier' almost always was a wall or ceiling, made of handmade bricks, baked to a fresh looking red and laid in lime- sand mortar. The breadth of the wall depended on the type of edifice, but there is to be seen a general preference for broad walls, usually not less than two and a half feet in breadth. No serious effort seems to have been made towards waterproofing the walls, but the process of spraying good bricks before setting them into mortar, tended to largely remove the possibility of efflorescence. Negligence to do this has indeed led to a whitish exudation which can be seen on some of the old walls bearing mural panels in the samadhi of Sardar Lal Singh at Kale Chandpur, a village near Amritsar; Shiv temple at Achal Batala; samadhi of Baba Han Singh near Sodhiwala, a village in Ferozepur
district, to name only a few. All brick joints were
raked back about a quarter of an inch and smooth bricks
were roughened with a stone-cutter's hammer to enable
the surface to hold on firmly to the plaster, the
'ground' on which the paintings were executed.

Mud walls also served as 'carriers' as in some of
the Hill States, but only rarely. An example can be
seen in the haveli of the Sandhanwalia Sardars at Raja
Sansi, where the walls serving as 'carriers' were
composite brick and mud material. Brick walls were
here covered with a mud plaster six inches thick, the
purpose clearly being to keep the inside cool in summer
and warm in winter.

Where murals were executed on already standing
old walls, whatever plaster was on them, was first
removed, and the surface roughened enough to hold the
new plaster firmly. In general, partition walls,
waterproofed by their very location, constituted the
best 'carrier' for mural paintings.

In the sub-montane tract, stone being easily
available, was used to erect walls of edifices. That
it served as a good 'carrier' is apparent from the
extant murals in the temple of the Bairagis at Ram
Tatwali and in the gurukwara of Baba Kala Dhari at
Una. The rough surface of stone added to the firmness

of plaster and all chances of salt efflorescence were eliminated.

In respect of 'ground', while the nature of the material composing it was more or less the same, there appears to have been no uniformity in the proportions in which the materials were mixed.

Lime was the pre-eminent material in the formation of 'ground'. Chemical analysis of plaster taken from the haveli of Seth Panna Lal Shul Chand Sharda at Faresepur, and from the Parīkot Fort, has shown that the proportion of lime or calcium carbonate in them was, respectively, 61% and 65%. Lime was prepared extensively in the Punjab, mostly around good kankar quarries. A circular mud-built structure with a round tank in the centre, known as pāhua or kiln, was filled with fuel, and above this kankar was stacked in layers interlined with wood and cowdung. A long narrow aperture was left down to the circular tank and lighted fuel was thrown below it to ignite the whole mass. Little or no wood-ash got mixed with the lime, but dung-ash did and the lime had to be cleaned of this.

1. I am grateful to the Post-graduate and Research Institute of the Deccan College, Poona, for analysing the plaster and for sending me the results with their letter No. 701 (3)/7041 dated November 28, 1973.
2. See Hoshiarpur B.C. 1904, p. 149.
Else, it fetched a lower price, being of inferior quality. It took four to five days of burning to convert kankar into lime which was then slaked. It may be noted that lime procured from one kankar quarry differed from that from another quarry, both in chemical composition, and in giving final results.

The lime was thoroughly slaked to prevent 'blisters' appearing in the 'ground'. It was kept under water for at least a week, and it improved the longer it was treated like this. Every day the water was changed so as to leave a very fine sediment. Then it was strained through a fine cloth, the substance that remained in the cloth being called 'pora', the equivalent of the Rajasthani 'pura'. The best of all slaked limes, matured for more than a year, turned into viscous lime-putty and was used in the most ambitious mural projects such as that of the Shish Mahal at Patiala. It was stored in a tightly closed box in a cool dark-room or cellar, better still in a lime pit which used to be deep and well covered up.

The other materials used in the preparation of

1. See Joshilamur C.C. 1904, p. 149.
2. See E.B. Havell, Indian Sculpture and Painting, p. 268.
4. LANC. X, No. 2, March 1957, p. 27.
the 'ground' were called 'kutta' and 'doga'. 'Doga' was the curd-like residue of white plaster prepared from burnt and drenched marble duly cloth-filtered, while 'kutta' was the rough remains of white marble plaster, obtained from the cloth-filtered material. Not infrequently fine clean sand, preferably banksand, was also used in addition to or in place of marble meal and marble dust. Sand that contained mica was avoided in painting work. Mica on the 'intonaco' surface and painted over, would sooner or later split, divide and fall off, leaving white spot. It appears that sand was washed and sifted a great deal to get rid of its impurities. Clay was also used in the preparation of the 'ground', corresponding to the 'makaul' plaster applied in the Hills. Chemical analysis of plasters from the haveli of Seth Panna Lal Phul Chand Sharda, at Faraspur and from the Faridkot Fort has shown the proportion of clay in them to be 39% and 32% respectively.

In addition to lime, sand and clay, the major

1. Marble was imported from Jodhpur; see Giani Hira Singh Bard, "Sri Tam Taran Ji de Puratan Itihas", Jhulwari (P) No. 6-7, May 1933, p. 499.
3. Id.
5. See Edmund W. Smith, "Decorative Painting from the tomb of Itmad-ud-Daulah at Agra", JIA, VI, No. 51, July 1895, p. 92.
7. Analysis done by Post-Graduate and Research Institute of the Deccan College, Poona.
constituents of 'ground', other materials were also
made use of, but since they did not form an essential
part of the 'ground' composition, their use depended
primarily on the discretion of the muralist. Powder
obtained by grinding coach, and paste made of the
mash pulse (Phaseolus Radiatus), was used for achieving
added whiteness to the surface. The use of these two
materials in Sakari murals has already been established,
but chemical analysis of plasters from Punjab does
not reveal their presence even though many elderly
painters, who possess knowledge of the traditional
methods of mural painting, speak of their having been
applied in the final coat of plaster for better results.

Molasses or sugared water were generally used for
to adding to the adhesive properties of the plaster,
as in Rajasthan. These also helped to retain moisture
for the plaster to be kept moist and in a workable
condition. The practice of using molasses in mural
paintings continued well into the first quarter
of the present century and there is evidence even of

1. See K. Aryan, "Technical Notes", Jaro, XVII, No.3,
June 1964, p. 15.
2. Thomas Holbein Hendley, "Decorative Art in Rajputana",
JIFA, No.21, II, 1939, p. 47.
3. cf., S. Paramesivan, "Indian Oil Paintings", Journal of
Madras University, XII, No.1, January 1940, p. 124.
use of diluted honey along with molasses. Then clay was used in the 'ground', adhesive quality was obtained by mixing fibres of jute, hemp etc., chaff and cow-dung; sometimes a little rice-starch was added to impart further tenacity. The use of these materials in the Punjab was not by any means an innovation. Early texts like Vishvakarmottara, Abhilashitartha Chintamani and Siva Paratgata, clearly speak of them and their properties. Their use only makes it evident that the knowledge of materials used in ancient Indian wall-paintings did not merely survive as knowledge in the 19th century, but continued to be put to use.

The technique of applying plaster on the 'carrier' that constituted the 'ground' differed according to the painting process to be adopted. However, workers in the profession were apparently aware that whatever the process, success in mural painting depended entirely upon the proper handling of mortar materials, both before and after they were mixed together. They

1. Pandit Baru Mal, interviewed at Makodar, vividly remembers to having supplied a number of bottles containing honey for use in the murals of the Thakurdwara of Lala Chhur Mail. The murals were painted in V.S. 1975 (= 1918 A.D.).
know that repeated re-mixing of the mortar before use ensured the successful conclusion of the work and that tight and homogeneous unification of sand and marble dust with lime was essential to coherence in plaster coats.

Through various stages of its execution, the laying of the 'ground' for fresco painting, done on wet plaster with pigments ground in water, demanded considerable skill. Brick or stone walls were wetted well to receive the coat of 'ariccio', the plaster layer covering the masonry. Plaster, made of slaked lime and sand, was driven well into joints and crevices and then beaten all over with a long strip of wood used edgewise until it became slightly dry. The process was repeated until the 'ariccio' became at least a quarter of an inch thick. It was then carefully levelled to receive the coat of 'intonaco', finely grained plaster layer covering the rougher 'ariccio' surface on which the colours were laid. The 'intonaco' plaster was composed of perfectly slaked lime and finely pulverized marble meal, made into the consistency of a cream and applied to the wet wall plaster with a brush and rubbed over the ground with

When the plaster grew a little dry and sticky, it was polished with an agate polishing stone until the surface was quite smooth and glazed. The more carefully it was done, the finer was the polish. Every time the agate was moved backwards and forwards, it was made to pass over a portion of its previous course, so as to prevent any line at the edge. The ground was thus ready for painting. It is interesting to note that 'kañsi-de-kaul' or bowls made of bronze, were sometimes used in place of agates for polishing purposes. In the preparation of walls intended for fresco painting, great precautions had to be taken, as unevenness in surface was not only unsightly, but allowed dust to accumulate to the detriment of paintings.

The process, known as 'mohra-kashi' in Punjab,

1. With a micrometer attached to eyepiece of the microscope, the thickness of 'intonaco' layers of frescoes in the temple of Kishan Chand Bhandari at Batala and gurukwara Pothi Mala at Guru Harshahai were measured and found to be 1.3 mm and 2.1 mm respectively.

2. Shri O.P. Agrawal, Chief Chemist and Head, Central Conservation Laboratory, was kind enough to examine the plaster of murals of Ram Tatvali. The polish of lime surface at the places where paint had fallen suggested that the burnishing technique of plastering was used.


remained considerably popular till the end of the 19th century. It was also called 'Jodhpuri humal', probably because the technique was borrowed from Jodhpur, the place where it was originally practised. For better comprehensibility of the technique, it is expedient to describe it briefly, using vernacular terms for materials already referred to above.

According to the late Bhai Gian Singh Nangra, who practised the technique for several years, one square foot of brickwork on even wall was kept wet to requirement by the continuous sprinkling of water. Thereafter the area was plastered with 'pora'. On this plaster was cast a layer of 'goa'. Before casting 'goa', the 'pora' was plastered with 'kutta', which made the plaster stronger as well as whiter than its original condition. When the 'goa' was still wet, the design was drawn.

A more or less similar process was adopted for preparing 'grounds' for dry wall plaster techniques of tempera and fresco-sooco paintings; only the materials used and the application seldom reached the refinement required for fresco work. Relatively

few murals done in tempera have survived. Some representative examples can be seen in the haveli of the Sandhanwalia Sardars at Raja Sansi. The murals here were executed on a fine coat of white clay or gypsum, 2.1 mm in thickness, applied over mud plaster. It appears to be in no way inferior to the coat of lime in semblance; however, being less tenacious, it has pooled off the walls at several spots thus robbing a number of panels of their beauty.

It may be remarked that the fine white plastering process resulting in the formation of 'ground' had grown into a highly developed art in India. The technique was known as 'gach-kari' in Punjab. It offered considerable scope for embellishment work in buildings for the ground for fresco painting, gilding, painted gesso work or for plain cut and modelled ornament was similar.

The results of the chemical analysis of some specimens of 'ground' plaster of representative places with mural panels, set forth below add to our knowledge of materials used in the formation of the 'ground'.

1. E.B. Havell, Indian Architecture, p. 192.
2. See Khan Singh Naba, Encyclopaedia of Sikh Literature, p. 293.
<table>
<thead>
<tr>
<th>Name of the Edifice</th>
<th>Analysis</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>1. Temple of Bairogi* at Ram Tatwali in district Hoshipur</td>
<td>Carbon dioxide and Combined Water</td>
<td>40.1 %</td>
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<tr>
<td></td>
<td>Silica</td>
<td>10.3 %</td>
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<td>R 2O3</td>
<td>3.5 %</td>
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<tr>
<td></td>
<td>Calcium Oxide</td>
<td>45.3 %</td>
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<td></td>
<td>Magnesium Oxide</td>
<td>0.5 %</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>99.7</strong></td>
</tr>
<tr>
<td>2. Bhowul of Seth Panna Lal Phul Chand Sharda at Pernapur City.</td>
<td>Calcium Carbonate (lime)</td>
<td>61 %</td>
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<tr>
<td></td>
<td>Acid (HCL) insoluble matter( clay)</td>
<td>39 %</td>
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<td><strong>Total</strong></td>
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<td><strong>100</strong></td>
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<tr>
<td>3. Pariddot Port.</td>
<td>Calcium Carbonate (lime)</td>
<td>68 %</td>
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<td></td>
<td>Acid (HCL) insoluble matter (clay)</td>
<td>32 %</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100</strong></td>
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</tbody>
</table>

1. I am grateful to Shri C.P. Agrawal for analysing the plaster and for sending its report vide his letter No. MM/lab. C-2, dated February 19, 1973.

2. The analysis was done by the Post-Graduate and Research Institute of the Deccan College, Poona, and its report was sent to me vide letter No. 701(3)/784\*1, dated November 28, 1973.

3. Ibid.
The pigments used in Punjab murals do not seem
to have been of a wide range, the palette of the 19th
century muralist being rather austere and limited.
The colours used were mostly earth or mineral colours,
as few others would stand the action of lime. The use
of vegetable pigments was generally avoided, apparently
because of their inability to resist the chemical
action of lime. All the colours needed were made by
the painters themselves, their preparation taking
1 "greatly their skill, patience and labour."

According to late Bhai Gian Singh (Nagass), only
six colours: red, green, yellow, blue, black and
2 white were used in fresco painting. Different tones
were obtained of all colours except green, by mixing
3 white colour. Green was treated with yellow clay.
Red was prepared from an indigenous clay called
'humachi' which was generally imported from hill
areas and was available with grocers. It was

1. S.C. Thanur Singh, "Fresco Painting of Golden
Temple, Amritsar", Indian Art Souvenir, pp.
3. Ibid., p. 28.
4. Ibid.
pulverised on stone slabs while being constantly moistened with water. The intensity of red always depended upon the fineness of the pulverised clay. For obtaining green, small chips of terra-verte, called 'ganga-i-sabz', were pulverised along with water. Yellow was obtained from yellow clay and blue was made from lapis-lazuli. Deep blue obtained from indigo was used in later works. Black was prepared from burnt coconut crust or from the smoke of mustard oil burnt in earthen lamps.

'Putta', the curd-like substance obtained from filtering water-drenched burnt marble chips, served as white colour. The colours were kept wet with water in earthen receptacles while work was in progress.

It might be useful to have here in a tabular form, a list of the colours employed with their local names.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Local Name</th>
<th>Type of Pigment</th>
<th>Source of Pigment</th>
<th>Hue</th>
<th>Comments</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Red</td>
<td>(a) Giri</td>
<td>Mineral</td>
<td>Light</td>
<td>Red has been used ranging from light red to brown. Shades like ‘gulabi’ or pink and ‘badami’ or almond-coloured or ‘humachi’ or ‘humma’, a type of iron oxide.</td>
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<tr>
<td></td>
<td></td>
<td>(b) Humachi</td>
<td>Mineral</td>
<td>Indian red</td>
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<td></td>
<td></td>
<td></td>
<td>Prepared from a clay called 'humachi' or 'humma', a type of iron oxide.</td>
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<td></td>
<td></td>
<td>(c) Sandhuri</td>
<td>Chemical</td>
<td>Vermilion</td>
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<td></td>
<td></td>
<td></td>
<td>Made from red lead.</td>
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2. Ibid.
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<tr>
<td>(a)</td>
<td>Sinarfi</td>
<td>Mineral</td>
<td>Made from cinnabar or red sulphide of mercury.</td>
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<td></td>
<td>Vermillion</td>
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<tr>
<td>2.</td>
<td>Yellow (a)</td>
<td>Pila or Zari</td>
<td>Mineral</td>
<td>Made from (1) yellow clay popularly known as ochre or Multani mitti; and (2) by pulverising pila patha.</td>
<td></td>
<td>Yellow ochre</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>Harital</td>
<td>Mineral</td>
<td>Made from harital or orpiment, a yellow mineral of arsenic group.</td>
<td></td>
<td>Indian yellow</td>
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<tbody>
<tr>
<td>c</td>
<td>Poorl or green or green-soldi</td>
<td>Chemical obtained from urine of a</td>
<td>deep yellow</td>
<td>Deep pigeon grey</td>
<td>were obtained by mixing other colours.</td>
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<tr>
<td></td>
<td></td>
<td>cow fed on mango leaves.</td>
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<tr>
<td>3.</td>
<td>Blue</td>
<td>(a) Laiward Mineral obtained from</td>
<td>Ultramarine blue</td>
<td>Blue was not a popular colour with mural painters.</td>
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<tr>
<td></td>
<td></td>
<td>powdered lapis-lusuli.</td>
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<td></td>
<td></td>
<td>(b) Silla Organic Made from indigo</td>
<td>Deep blue/ blue violet</td>
<td>It has been used only sparingly especially in earlier paintings.</td>
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<td>4.</td>
<td>Green</td>
<td>(a) Sabz Mineral Made from terra verme stone known as 'sang-i-sabzi'</td>
<td>Malachite green</td>
<td>It was darkened by mixing with bhumachi.</td>
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<tr>
<td></td>
<td></td>
<td>(b) Jangal Inorganic Prepared from</td>
<td>Greek</td>
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</table>

Black had a very deep shining surface. Direct use of black was seldom made and it was mostly used to create darker shades of other colours. Before burning, almond crusts were coated with mustard oil.

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<th>4</th>
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</thead>
<tbody>
<tr>
<td>5. White</td>
<td>Sujhda</td>
<td>Mineral/Inorganic</td>
<td>Made from: (1) burnt marble, drenched in water and then filtered; (2) powdered conch shell; (3) white chalk and (4) zinc-white.</td>
<td>White was mostly used for obtaining different tones of other colours.</td>
<td></td>
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</tr>
<tr>
<td>6. Black</td>
<td>Kajal</td>
<td>Inorganic</td>
<td>Made from: (1) burnt coconut or almond crust; (2) smoke of mustard oil; (3) black soot obtained from iron griddles (4) pulverised charcoal and by burning ivory.</td>
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As a case study, chemical analysis of the pigments of mural panels in the Dairagi temple at Ram Tatwali in Hoshipur district was made and yielded the following results:

- Red : Red ochre
- Green : Term verte
- Blue : Ultramarine
- Black : Carbon black
- White : Lime

The source of golden colour to be seen only in the frescoes of the Shish Mahal at Patiala, is not known with certainty. In the presence of some evidence of Sahari painters having been associated with the work on the Shish Mahal frescoes, it is likely that they followed the same technique for obtaining golden colour which their predecessors had been employing in the hills i.e., gold was used in the form of leaf for broad work and 'balkari' (soluble gold) when finer work was done.

Many of the pigments, if not very finely ground.

1. The analysis was done by Shri O.P. Agrawal, Chief Chemist and Head, Central Conservation Laboratory, New Delhi.
were well washed in water. The peony or deep yellow, obtained from the urine of a cow fed on mango leaves contained salt, which was eliminated by thorough washing before grinding to ensure that the colour did not fade away with time. The colours became lighter after the plaster dried, and necessary allowance was made for this change. The finished colour applications looked smooth, even and compact.

These traditional colours, despite the artist's clear awareness that they were more lasting and durable, were gradually beginning to be superseded by European-made colours by the '70's of the last century. In fact the 'wave' of European-made colours, poor as they were as substitute for permanent indigenous colours, was beginning to engulf many regions. Brilliant aniline dyes found their way into the muralists' art, as much as in other industries requiring use of colours.

The thickness of layers of pigment varied slightly from one place to another. Paint layers from two places, measured with a micrometer attached to the eyepiece of microscope, have given following results:

<table>
<thead>
<tr>
<th>Name of the edifice</th>
<th>Thickness of paint layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Havelli of Sandhan-walia Sardars at Raja Sansi</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>2. Temple of Kishan Chand Bhandari at Batala</td>
<td>0.1 mm</td>
</tr>
</tbody>
</table>

The "binding medium", or the means by which pigments were attached to the ground so as to make the work firm and lasting, differed according to the technique adopted. The adhesion of pigments to the 'ground' in fresco painting was due to a chemical process, involving lime as the binding agent. Among the ingredients of ground plaster were sand, lime and calcium hydroxide. When colours mixed in lime-water were introduced to the still wet plaster surface, the pigments were soaked through with the hydrate of lime. In the process of drying, a chemical change took place: the hydroxide was converted first into oxide and then, gradually, as it was in contact with air which contained carbon dioxide, it changed into calcium carbonate; the resulting surface was reasonably resistant to atmospheric action.

Unlike in the Italian process of fresco-buono, colours in the Indian process of fresco painting were united to the plaster, not only chemically, by the
action of lime, but also by the mechanical action
of beating colours with a trowel into the surface of
the 'ground'. The polishing or rubbing-in of colours
with a small iron spatula passed over the surface
was peculiar to the Indian practice.

In fresco-secco technique, painting was done
on the wall, when the plaster had already dried,
with pigments ground in lime-water. Lime-water
served as a 'binding agent', but quite often, colours
were also tempered with some kind of organic medium.
Tempera or distemper painting was a method of painting
in which solid pigments were employed, mixed with
water as a medium, with some kind of dissolved gum to
prevent the colours scaling off. Gum obtained from a
tree like acacia was the major 'binding agent'. Because
of religious taboo, bone-glue or leather-glue were
avoided. It appears that cheese, which could be
transformed into a sticky liquid by mixing with
different solvents, was also used as one of the
'binding agents'. With all this, however, tempera
painting could not stand exposure to weather for long,
and was thus ill-suited for external decoration; the

colours, being surface deep, did not become part of the stucco. Coats of varnish, applied to the surface to preserve the pigments, are seen only quite rarely, possibly because, they gave a brownish tint to the surface and affected the original beauty of the colours. It also appears that varnishing came in only with the advent of European influence. The technique of burnishing left little need for the coat of varnish on painted surface in terms of surface appearance, for if properly done, it gave a distinct glaze to the paintings. It has unfortunately not been possible for me to confirm the type of 'binding agent' used in murals, alluded to by Lt. Barr as 'paintings in oil', because the murals which he was describing are on the Pakistan side of the Punjab and I could not gain any access to them.

In addition to the plastering of the 'ground' and preparation of pigments, the making of a 'cartoon' or a drawing prepared to the size of the mural, was one of the important works preliminary to painting a mural. Cartoons were not invariably used, and the

3. Ibid., p. 100.
making of a cartoon depended on two factors: (1) on the quality of work aimed at and (2) on the space and size of the surface available.

For ambitious works aiming at excellence and sumptuousness, greater efforts were put in in the matter of better drawings and designs. The possibility of models, 'modellos' of the Italian masters, being prepared for the entire composition of a painting or set of paintings is not to be ruled out. On the basis of these models, full-size drawings of whole compositions were drawn in pencil or charcoal on a sheet of reasonably thick paper. The entire drawing was then pricked, care being taken to see that the perforation was even and perfect. This perforated drawing, constituting the 'cartoon', was called a khaka. For works of an ordinary order, the sequence to be painted was drawn directly on paper and then converted into a khaka by perforating the drawing. It is true at the same time that many hand did not make use of khakas, for they had acquired the facility of executing drawings

1. See Broomock, op. cit., glossary.
2. The excellently planned frescoes in Shish Mahal at Patiala, for instance, could not have been painted directly. The 'khakas' used for painting mural panels in Rani Mahal at Nabha were recently acquired by the Department of Archaeology, Punjab.
4. Ibid.
direct on the 'intonaco' surface. The khakas and outline sketches of popular themes, drawn by gifted artists, were also available for sale in big towns and must have been a boon for lesser artists who were poor at producing good drawings of their own.

Although most of the drawings for mural panels with 'portraits' were made from imagination, many portraits must have been drawn from life also. This is indicated by the observation of Capt. Leopold Von Orlich also. That pains were taken for drawing portraits from life is alluded to in a romantic tale that has an episode in which a likeness is drawn after seeing reflection in water, and is then transferred onto a wall. Interestingly enough, a set of three extant mural panels in the Shiv temple at Lasara, a village in district Jullundur, depict a lady drawing a portrait from life.

1. See plate No. 21.
2. It is most likely that the 'dealers in pictures' enlisted by Edelsohn in Report on the Census of Punjab 1901, II, Table No. XII B, in addition to their primary dealings in pictures, were also the sellers of khakas. These were available in the market well up to the end of the first quarter of the 20th century. Murals in the shrine of Giga Pir at Chhapar, a village in district Ludhiana, painted in 1923, were, I was told, based on khakas purchased from Jagraon.
4. See plate Nos. 50 and 51.
5. See Travels in India, including Sind and the Punjab, I, p. 206.
6. See Charles Symerton, Romantic Tales from the Punjab, pp. 228-238.
The dimensions of mural-panels depended on the space available, and varied from the size of a usual miniature to as much as eight times as large; cartoons, in their most developed forms, were exactly of the same size as the mural panels. It could be of great interest if we were to determine the method that was used for achieving large compositions which covered the entire walls like the one, twelve feet long by six feet in height, in the fort of Hari Singh Malwa at Gujranwala. Did the designer, one wonders, enlarge from a drawing with the help of proportional squares on the wall itself? There exists no direct evidence to say that he did. If a pierced cartoon was pounced or traced on to the wall, it would be obvious that either full-sized outline drawings or an enormous scale were used entire or that small details of individual figures were separately used to make the whole.

Native paper made of old 'tat-patti', bleached, washed and reduced to pulp, available in various sized sheets of different qualities, and known by different names, was used for preparing cartoons. The best paper was manufactured at Sialkot and was

preferred by the muralists. The drawing was pricked with a fine needle, mounted in a piece of wood for a handle, with greater attention being paid to faces, hands and feet etc.

Bouncing was done by rubbing over perforated lines with a cloth ball filled with charcoal dust. A square of a fairly closely woven cloth was laid out and filled with charcoal dust. By lifting the edges together this ball was formed; a strong cord was tied around the neck making it into a 'notli'. Careful dusting of the lines prevented charcoal from flying over the 'intonaco' and left a fairly good 'spolveri'; the dotted marks left by charcoal dust flicked through the holes. By pressing lines in the soft 'intonaco' with the help of a stylus, unperforated drawings were also sometimes transferred to plaster.

As for brushes, the painter generally made his own according to his needs. For ordinary work, brushes were made of goat and camel hair and for subjects requiring high finish, squirrel's hair bound in pigeon's quills was pressed into service. These brushes

1. *Art* No. 2, March 1957, p. 27.
were beautifully made and were in no way inferior to those manufactured in Europe.

After the drawing was transferred on to the 'intonaco', colours were then set into it with the help of a small wooden shovel, with a slight hunch in the middle; this was known as nahla. This shovel was constantly, gently, 'thumped' on the plaster in such a way that the colour did not get rubbed or mixed with the neighbouring colour. This process was continued till the colours had become one with the plaster. The whole operation required very close concentration and artists were known to have often gone without meals to ensure the setting in of colours before the plaster dried up. Once the original colours were 'established' into the 'intonaco', further colour settings were applied for bringing in details, giving tones as desired, and for imparting final touches to the painting.

In a number of edifices in the cis-sutloj state of Patiala, miniature paintings executed on paper

were made to serve as 'murals'. Shallow recesses corresponding to the dimensions of the miniatures were left in the walls, and these paintings done on paper were inserted and covered with glass. This mode of embellishment was confined only to the interiors. Probably the upper apartment of Hari Singh's villa at Gujranwala referred to by Lt. Barr, was also embellished in this way; many of these paintings, as the Lt. describes, had succumbed to the feminine gun weapon of slippers.

Because of the easy availability of limestone in the Shivalik Hills, the surface of walls was given a relatively good coat of chunam at places that were not far from this range of mountains. The quality of the chunam coat in areas around Bhatinda and Talwandi Sahib however was generally poor, possibly because of the difficulty of getting lime in good quantity.

This brief study of the technique of mural painting would remain incomplete without some mention

1. These are to be seen in Giani Khana Katgarh at Patiala, gurdwara of Sri Guru Teg Bahadur, both at Bhaburpur and in old Moti Bagh at Patiala, in the Rani-Mahal at Nabha and also in the Devi Durga Mandir at Payal in district Ludhiana.
2. See plate No. 47.
of the native practice of surface decoration on wood.
The ground there was first prepared by covering the
wood with cloth or with the fibre of _sac_ (_Crotolaria
1
1
Juncea_), mixed with whiting and glue. The decoration,
2
2
usually confined to designs, was done in water colour,
and protected by a coating of varnish. Use of linseed
3
3
oil as a medium in the surface decoration of wood
gained popularity in the last quarter of the 19th
century.

It is time now to turn to style.

Most of the 19th century European travellers
through upper India, who are our eye-witnesses for
these murals did not much appreciate the 'native' art
of embellishing walls. They saw murals as having been
4
4
fashioned in 'the most grotesque' style, 'ridiculous'
5
5
to look at, executed in 'bad taste'. Few art critics
and historians of Indian art in this century have paid
close attention to murals of 19th century Punjab. The
few that have done this have regarded these with a

1. J.L. Kipling, "The Art Industries of Punjab"
   (Supplement), _J.I.A_., No. 10, April 1836, pp.
2. See plate No. 96.
3. J.L. Kipling, "The Art Industries of Punjab"
   (Supplement), _J.I.A._., No. 10, April 1836, pp.
4. Lt. Barr, _Journal_, pp. 99, 141; Charles Wason,
   Narrative of Various Journeys in Beluchistan, Afghanistan
   and the Punjab, p. 414.
6. ibid., p. 139.
superior air and pronounced them to be the result of an indifferent, if not inferior, activity. Had there been any serious attempt at examining this art, the severity of some of the remarks, I believe, would surely have been considerably less. To quote Roopa Krishna: "If we look at these paintings from the standpoint of those masters who painted them, and take a reasonable and sympathetic view of the conventions and traditions by which they were guided in the expression and delineation of these ideas, we will surely find a great deal of art and beauty in these old paintings, which we can not but fail to realize even if we apply to them the standard of realistic representation which is, however, foreign and even inimical to their conceptions."

Murals in 19th century Punjab were obviously painted in a 'traditional style', and may in general character be described as 'decorative', following an ornamental scheme. It is clear that these murals have nothing to do with the great style of the murals from ancient India, because that tradition had already died out in the medieval period. These were a continuation of the somewhat rough style that had for long been common in the 18th century Punjab, with additions made

from time to time derived from the mural styles prevalent in the neighbouring Hill States and Rajasthan.

Again, in the work of 19th century Punjab no attempt appears to have been made towards achieving any marked individuality in style. It thus becomes difficult to consider the stylistic traits of these paintings by making as its basis the works of individual painters; only some general observations can be made.

As has been observed, in respect of the division of surface in mural arts, two things can ordinarily happen: either the pictorial representation follows the shape and size of the surface itself, or it introduces the illusion of other spatial dimensions — for example depth. Generally speaking, the subervience of pictorial representation to the shape and size of surface in murals from 19th century Punjab, is more apparent in purely ornamental paintings and less in those that are narrative. The general rule that "construction should be decorated, decoration should never be purposely constructed" seems to have been faithfully followed, with the painted scheme trying

1. Owen Jones, Grammar of Ornament, pp. 5-6.
to adjust itself to the pre-existing structural articulations.

There is in 19th century a striking 'range and readiness' of approach in the relationship between painting and architecture, something that is usually much more complex. More often than not, the architect or mistr, who used to be skilled in several crafts, was himself a wall painter in the Punjab, as he was in the Punjab Hills. Despite this, difficulties of co-ordination between the architecture and the mural, sometimes arose because of the variety of walls and their dimensions, and fixed architectural orders like doors, windows and alcoves, which could not be altered. In fact, barring a few 'grand' structures, architectural planning, clearly incorporating schemes of embellishments, was seldom done with much care.

The wall forming a vertical plane, was usually divided by horizontal and vertical lines, forming rectangular and square panels, frequently of uniform.

2. Most of the artisans in the 19th century Punjab did all jobs allied to their trade; see Dobson, op. cit., I, p. 376.
4. For instance, the architectural plan of the palace of Maharaja Ranjit Singh was duly laid out before the commencement of its construction. See Shahamat Ali, The Sikhs and Afghans in connection with India and Persia, p. 588.
occasionally of different dimensions. Effort was made to achieve a sense of unity in all the walls by creating a relationship through similarity of panels, at least in the walls facing each other. Other patterns of divisions were also adopted, but all these were generally based on horizontal and vertical lines drawn across the surface of the wall. Generally the horizontal panels were painted on the space nearer the ceiling and vertical panels lower down on the walls. Sometimes the panels simply constituted a frieze 2 skirting a ceiling, the rest of the wall being left either bare or embellished with floral designs of various descriptions. The division of walls into panels could have been perfectly symmetrical but for interruptions of surface caused by the structure of the building. The rigidity and tensesness of these divisions was sought to be relieved by floral decoration that covered all space of the walls around rectangular and square pictures and brought about a harmony of feeling. It had become almost a convention with the muralists to give to the upper edge of panels the

1. This is evident, for instance, in the mural panels painted in Shish Mahal at Patiala.
2. For instance, in the temple of Mansa Devi near Manimajra, in the gurdwaras of Baba Rala Shari at Una and in the haveli of Sandharwalia Sardars at Raja Sansi.
3. See plate No. 97.
4. See plate No. 95.
arched appearance of an Indian style above
(resembling to a certain extent the 'tudor arch' of
western architectural terminology). Visually, this,
virtually altered the rigid geometrical shape of
panels. The rectangular or square features were
also offset by an almost excessive use of curviforms,
both inside and outside the panels.

Although the compositions of murals in 19th
century Punjab were not based on any hard and fast
rules, certain common traits discernible in many of
the extant murals, point to the painter's intention
to compose his works in accordance with certain
graphic principles. These he applied while preparing
drawings to the size of murals preparatory to
painting mural panels. The figures and other pictorial
elements were so composed as to fit neatly into the
space available for painting. The effort to utilize
the available space in the best possible way, often
led the painters to choose a theme which, in its
graphic representation, would adapt well to the shape
and size of the surface to be embellished. The result
often was the juxtaposition of divergent themes,
without any integral relationship. This is how, in the
running chain of narrative themes, there appears, quite
unexpectedly, sometimes, a representation of a bird or

1. See, thus, plate Nos. 7, 13, 32, 36 and 75.
an animal entirely unrelated to the subjects illustrated. The consideration here is obviously that of space and dimension rather than of unity of theme. An elegant figure of a peacock in the gurdwara of Baba

Sir Singh at Naurangabad, thus, may be cited as a representative example of a graphic shape being composed to adjust to a horizontally elongated space. That the surface to be embellished was made the best use of, is also apparent from the representation of rasa- lila which demanded a circular composition, and was therefore usually painted on the inside of a dome, which had the necessary circular space. It is not unusual that the orderly setting or division of surface imparts a certain serenity to the paintings, a sense of rhythmic and spatial order. The severity of compositions created by geometric divisions of the background were offset by the rounded forms and the flowing costumes of figures, imparting a vigour to them.

The division of space, either static or dynamic, was mostly determined by the theme to be depicted, in the former, movement being deliberately avoided and in the latter movement being a principal characteristic.

1. See plate No. 87.
2. See plate No. 24.
3. See coloured plates No.I, II, III and plate Nos.1, 2, 12, 13, 17, 20, 27, 37, 41, 59, 70, 71, 87 and 89.
4. For instance, see plate Nos. 70, 71 and 72.
5. For instance, see plate No. 37.
In a panel at **gurukwara Pothi Mala at Guru Harshahai**, depicting the four sons of Guru Gobind Singh on horseback, thus, galloping horses and speeding dogs establish the required atmosphere of action. The same is true of another painting in the *gavadh* of Baba Mahesh Das at Pindori near Gurdaspur, representing 'Churning of the Ocean' and the Matsya avatar in a single panel. Here the turbulent waters of the ocean are shown with sweeping lines and forcefully drawn curvilinear shapes of fishes.

The importance of major characters in a composition was stressed by taking attention away from the background detail; but wherever the background detail too was also elaborated, major characters were sometimes made to predominate by the use of certain colours restricted to them alone. This is seen with striking effect in the frescoes of the Shish Khabal at Patiala. The significance of major characters was also emphasized by carrying the viewer from clearly articulated figures close to the picture plane back to an unexpressed infinity. The device of indicating importance through varying the scale is often used. A mural panel in **akhara** Beri Mala at Amritsar, thus, represents the 'Jand-lat'.

1. See plate No. 17.
2. See plate No. 34.
3. For instance, see plate Nos. 14, 60 and 64.
4. See plate No. 60.
with a relatively big figure and emerges quite dominating in the army that follows him.

Of the two principles of symmetrical and optical balance, the painters often preferred the former, but did make on occasions successful use of the latter in composing murals. Most of the themes, by the very nature of their character, demanded symmetrical balance. The principal figure was set in the centre, and flanked by lesser characters. This was done, for instance, while depicting Guru Nanak along with Baba 2 and Hardana or Ranjit Singh with his attendants. Thus the symmetrical balance was built up round an important central figure or axis, with one or two subordinate motifs or groupings on either side. It is interesting that some of the symmetrically balanced 19th century mural compositions seem to retain their vigour up to this time. The genesis of several modern oleographs, representing the ten Sikh Gurus in a circular or oval composition, thus, can be seen in a panel in akbari Kashi Wala at Amritsar and also in another one in the Dila Mubarak at Chhochhrauli.

With time, many compositions, once fresh, became

1. See coloured plate No.II and plate Nos.1,2,11,23,30, 37,59,75 and 79.
2. See coloured plate No.II .
3. See coloured plate No. I.
conventionalised into traditional schemes and
pictorial patterns. A most typical example is the
figure of Guru Cohind Singh on horseback, holding a
falcon and accompanied by a hound and a few attendants.
This nearly symmetrically-achieved pattern had all
the qualities of the best compositions of 19th
century Punjab murals. The success of this composition
perhaps tempted painters to adapt it to other themes
as well.

Although the compositional device of grouping
figures was known to the painters and was done with some
competence, the general preference was for keeping
the figures distinct from each other, as was often
done in Sahari murals. One of the most representative
examples of intersecting figures is seen in an extant
mural panel in the dera of Baba Lal Ji at Dhianpur.
Here are seen Radha and Krishna almost merging into
each other. The figures are so arranged that while
their faces are distinct, the remaining parts of the
body tend gracefully to fuse.

The size of human figures varied according to the

2. cf. plate Nos. 12 and 13 with plate No. 27.
3. See plate Nos. 6, 15, 41 and 50.
4. See Nara Seth, Wall Paintings of the Western
Himalayas, p. 96.
5. See plate No. 20.
dimensions of panels, but on the average these
remained nearly life-size. Sometimes of course figures
1 2
were life-size and even larger. The number of figures
in a composition depended naturally on the nature
of them depicted, and ran sometimes to as many as a
3 thousand. A panel depicting the marriage
procession of Guru Nanak in Baba Atal, consisting of
more than a hundred figures, may be cited as a typical
example of a crowded scene in which the centre of
interest remains the major character.

Although well done portraits in frontal view
were not rare, the rule remained portraiture in profile.
In this convention, while the face was shown in profile,
shoulders and body were sometimes viewed three quarter.
Many of the figures represented were well known
characters from history and, although treated ideally,
the personality could be identified with ease. Several
portraits, with likenesses of exceptional interest.

1. See plate No. 50.
2. The murals depicting members of Sikh royalty on the
walls of the Ramgarhia Bunga at Amritsar, now almost
obliterated, were larger than the size of life.
3. Baron Charles Hugel, Travels in Kashmir and the
Punjab, p. 284.
4. See plate No. 3.
5. See coloured plate No. I and plate Nos. 50, 51 and 52.
6. See plate Nos. 43, 44, 45, 46, 47, 55, 56 and 60.
7. See coloured plate No. I. The three dogra brothers
standing before Ranjit Singh are easily identified
from their facial characters.
indicate that the painters had a certain competence in portraiture. Most of the portraits were painted against flat white background. Light and shade or cast shadows, as ordinarily understood, were sparingly used in paintings of the earlier period, but in portraits executed in the last quarter of the 19th century, we find the painter influenced in his use of light and shade by European painting. Details of dress as well as personal paraphernalia were often elaborately painted.

Most of the religious personalities, particularly the Sikh Gurus, were portrayed with a nimbus in the murals. The nimbus often took the shape of a yellow-coloured circle around the head, radiating rays, but in the mural panels of the Akal Takhat at Amritsar, the nimbuses were formed of dark-coloured circles which brought into relief the faces of the Gurus. The figures of Maharaja Ranjit Singh and of some of the rulers of the Cis-Sutlej States were also portrayed with nimbuses.

1. See plate Nos. 48, 49 and 50.
2. See plate Nos. 40 and 52.
3. See plate Nos. 50 and 59.
4. See coloured plate No. II and plate Nos. 3, 4, 5, 6, 8, 9 and 10.
5. See plate Nos. 4, 5, 6 and 9.
6. See coloured plate No. I.
7. See plate No. 47.
In the treatment of figures much care was spent on the face than on the rest of the body. Thus, while facial expressions in several mural panels are remarkable, the hands, and particularly the feet, are carelessly drawn.

Perspective as such was not carefully employed and only an incipient attempt in the direction was made through converging architectural lines and relatively small figures or trees shown in the background. The mural panels representing barn-masa poetry in the Jish Mahal at Patiala, are, perhaps, the most ambitious efforts of this kind.

Elements of folk-work, which was considerably in vogue in the 19th century Punjab, are seen in plenty in some of the murals. While 18th century murals in the guri of Baba Sidh at Mari Mustafa, a village in district Faridkot and in the temple of

1. See coloured plate No. 1 and plate Nos. 48, 50 and 51.
2. See plate Nos. 53 and 56.
3. See plate Nos. 30, 36, 43, 70 and 71.
4. See plate No. 60.
5. See plate Nos. 32 and 60.
6. See plate Nos. 73 and 74.
8. See plate No. 24.
Shri Ram Dev at Choman in district Gurdaspur, are rough in character, 19th century murals at several places, including in the temple of Shri Kalu Nath at Nathana, the samadhi of Baba Sarb Sukh, Sarb Kral, Copal Das and Bhagwan Das at Jandali, a village in district Sangur and the Mirankari sera at Patiala bristle with elements of folk-painting, with their simple, bold and clear forms and austereely used colours. It appears that most of these paintings are not the work of professional mural painters but were executed by mis-mistries who were engaged to construct these edifices.

Although the colours used in murals were not of as wide a range as were used in contemporary miniatures, this did not affect the process of embellishing the walls. The law that governed the use of colours seemed to have been simple: light against dark and vice-versa. The entire colour-scheme was so planned as to make isolate the various forms and make them distinct by the contrast of the colours used. This mode also fitted in with the intention of the painter to make the viewer focus on a particular spot or on the central action that the painting meant to

1. See plate No. 16.
3. See Kanwarjit Kang and Himal Sandhu, Punjab Murals, plate entitled "This panel depicts several themes including Raja Rasalu, Rani Kokilan and Raja Hodi,"
4. See plate No. 27.
illustrate, balance of colour was often accomplished through careful manipulation of hue, value and intensity.

From a consideration of the style and the technique visible in some important murals of 19th century Punjab like those in the Shish Mahal at Patiala, the Jhakurdwara of the Birlagis at Ram Tatwali, the temple of Kishan Chand Bhandari at Batala, the Dera of Baba Lal Ji at Sirmapur, the Raghumath temple at Pindori, Gurudwara of Baba Kala Dhari at Una, Akhara Bala Nand at Punamgarh, Gurudwara Baba Bir Singh at Naurangabad, Shri Balkiana Sahib near village Jaura on the Tarn-Taran-Patti road, the Darbar of Baba Hal Bass at Barnala, Gurudwara Pothi Wala at Guru Harsahai, it would be clear that 19th century Punjab muralists knew how to deploy their technical knowledge and stylistic potential to advantage, thus creating work that commands respect, even admiration, at times.

1. See plate Nos. 29, 32, 36, 70, 71, 73 and 74.
2. See coloured plate No. I, II and plate Nos. 45, 46, 55, 64 and 68.
3. See plate Nos. 19 and 23.
4. See plate Nos. 20, 22 and 37.
5. See plate Nos. 2, 40, 43, 56 and 61.
7. See plate Nos. 44, 75 and 77.
8. See plate Nos. 12.
9. See plate Nos. 7, 17 and 50.