ORIGIN, HISTORY & DEVELOPMENT

(BAGRU)

Bagru, a small village town in Rajasthan, is situated at a distance of 32 Kms, east of Jaipur city. Its traditional processes of hand block printing on textiles with rich natural colours have been known for many centuries. With the attraction of foreign buyers for the traditional hand printed textiles, this village hums with much activity today, supplying exquisite printed materials for the export trade.

No authentic literature is available to indicate when this printing started there. According to T.N. Mukherjee. Bagru, another town in the state produces a quantity of Chintzes. John Irwin and Schwartz (p.16) indicate the Sanganer which is now a famous centre for cotton printing was not apparently so in the seventeenth century, although sometimes mentioned as a source of plain woven good and a good centre for ordinary dyeing operations. George Watt while referring to Calico printing of Sanganer and Jaipur does not mentioned Bagru. However the descriptions of the prints of Jaipur given by him closely resemble those of Jodhpur than of Sanganer. The cloth was coarse and it was used sewn together into skirts worn by females throughout the greater part of Rajputana. In spite of these circumstances there is every reason to believe that the craft has been handed down for centuries and was probably the same, known earlier, as Jaipur prints.
In the later publications of T.M. Abraham and Devaki Ahibasi mention has also been made of Bagru as a centre of printing and dyeing.

In the Central Museum at Jaipur some of the exhibits bear the common caption “prints of Sanganer and Bagru” which is confusing as the prints of these places seem to have distinct characteristics, Sanganer prints being mostly on a white ground as indicated by George Watt (p. 27-47, 249). Similarly in the City Palace Museum at Jaipur there are at least two samples of coarse printed fadat cloth which, though catalogued as Sanganer material, bear a close resemblance to the Bagru style of printing.

The hand printers, known as chhipas, came from Sawai Madhopur, Alwar, Jhunjhunu and Sikkar districts of Rajasthan to settle in Bagru and make it their home some 300 years ago. According to a legend, at the very outset, some two families of chhipas were brought by the Thakur of Bagru to settle in Bagru from Isarda, a village four miles from Jaipur and from then on migration of more families of chhipas continued from different places. They perhaps came for the then royal patronage but more for the abundant availability of water, which had excellent properties suitable for dyeing and printing. Abundant flowing water for the important requisites for printing; and the Sanjaria river with its perennial water stream and stretches of sandy bed was aptly suitable for the purpose. The Sanjaria river, with its origin some 5 kms from Bagru westwards, was then watering this village town and its water was surrounding the
place then known as Bagora island, from which the name Bagru is perhaps derived. It is interesting to find a printed narrative in the killa of the hereditary Jagirdar of Bagru. The narrative was found in a frame but was unsigned. A portion of the narrative is given below.

“The Chief (Thakur) of Bagru is the foremost noble in Jaipur State and occupies the first seat on the left hand of Maharaja. In the absence of the Durbar from Jaipur he has, by custom, charge of the city and the palaces and by hereditary right performs the Bhait and other ceremonies in place of His Highness. He is among the twelve Kotharis of Jaipur who claim descent from the great Maharaja, Prithiraj, the direct progenitor of the Jaipur ruling house. The title of Adhiraj is hereditary in the family. Bagru is derived from Bagora, the name of an island in a lake where the city was originally built and is famous for its palmfans and Chintz.”

Today the Sanjaria is not that perennially flowing river stream. Except in the rainy season when there remains a flow of water, at other parts of the year it remains dry. All the same, its enchanting bed consisting of pearl-white soft sand stretches far and wide. The river bed is now almost at a distance of one kilometer from the locality inhabited by the chhipas. The water of the river in those olden days was being diverted through underground tunnels. The old bridges on such tunnels at different places with dikes all around the village are reminiscent of the olden days when both flowing transparent water and a clean sandy bed provided by the Sanjaria river were available to the chhipas. Even now, when there remains a flow of water in the
Sanjaria river, some printers are seen working on its bed and carrying on the washing, harda and tapana processes. Although mostly deprived of such advantages of the Sanjaria river, the craft of hand block printing has retained its traditional vigour. In place of the Sanjaria river, the sub-soil water, tapped by wells, has retained the old properties of the water of the Sanjaria river. The stretches of sandy loam in the sunny fields serve the chhipas equally well. (Plate 1)

The production pattern and the traditional motifs have however undergone a change. The entire population of the chhipas then engaged on the production of the local varieties of printed fabrics, mostly of fadats, lugdis, angochhas, bichhaunis, rezais etc., is now engaged in the sophisticated production of running dress materials, kaftans, raprons, midis etc. All the same, the basic techniques and colours remain unchanged and unaffected through all these centuries and these make the Bagru prints spectacularly different, distinctive and individual and a highly specialize craft.

**BAGRU PRINTING**

Two hundred years after the birth of the Sanganer village of Jaipur by Prince Sangaj in Sixteenth century, a few muslim printers of cheepa community of Sanganer settled in Bagru and started block printing at Bagru (Indian Express, 1983, Sujas, 1998).

Tribal people (Banjaras) of Nagaur used to go to Dishawar through Bagru. In the very beginning, a Cheepa family that settled in Bagru started printing clothes for these banjaras about eight generations ago. These banjaras used to leave their cloths for printing
while going to Dishawar and collected their printed cloths while returning back to Nagaur.

The art of hand-block printing of Bagru is not more than 150 years old and it was in about 1943 that Bagru started printing of ‘Sanganeri Prints’. Bagru fabrics became famous throughout the country only in 1975. Now it has its unique place as ‘Bagru Prints’.

It is believe that during Second World War, Bagru village was busy in making tents called ‘Tamboos’. These were fast coloured and were used for war and weddings (Maharshi, 1994: Phadke and Sharma, 1993).

The ancient Bagru ‘jajams’ that is the floor covering were known all over the country. They were made of thick handloom cloth and were used as darries or village carpets. These jajams had big geometrical designs. It has been stated, in one of the leaflets produced by the Thakur of Bagru village that the cloth printed at this village was fast in colours.

Before 1975, the work of craftsmen of Bagru went unnoticed. With the government aid, it gained popularity and during this period the samples of the hand printed textiles went to foreign lands.

The small scale industries department of Rajasthan helped these printers in various ways by which the productivity increased and the quality improved gradually.

Few changes were made in the prints, the motifs were rearranged to give variety. As a result, two colours-red and black used in Bagru textiles gave the impression of having different shades.
Dealers from U.S.A. Japan and Europe placed large orders for them. The upshot was that Bagru textiles which fetched not more than rupees then thousand in the domestic market annually brought in two crores in the year 1978-79 (Indian Express, 1983)

**COLOURS, FABRICS AND MOTIFS USED IN BAGRU**

For Printing

Colour is king, fabric the subject and

Motif the maid

(Chisti and Sanyal, 1989)

**COLOUR USED**

As the artisans were close to the nature, they seemed to have reached in a subtly sensitive manner to various aspects of nature, for instance colour which is so crucially significant in the creation of crafts. They seemed to have developed their own science of colours. They related colours in order to form a kind of harmony through regular or diffused or composite reflections. For the contrasts chosen may be steep but not harsh, daring but not unsettling, with tender colour interposing.

Inspite of seeming conservatism, the Indian craftsmen have been remarkably flexible in colour combinations, perhaps boldly borrowing from nature. They are free from the rigid code of matching the West adheres to the craftsman’s eye seems to swing between delicate undertones and strong overtones, from the youthful to the mature while a tonal balance is maintained (chattopadhyaya, 1985).
The desert belt which stretches from Sind, now in Pakistan, Kutch and Kathiawar in Gujrat, right through Rajasthan and covering parts of Haryana, coming up to the edge of Delhi, as a bold and robust tradition of intense sun-burnt colours and strong linear patterns. The brilliant red, the deep yellow ochre, the vivid lime green and the bright blue of the limpid lakes are the colours invariably used here. They are further accentuated by the use of contrasting colours (Dharmija, 1970).

The main colours used in Bagru are red and black. A few other colours are also used but not in general. Formerly natural dyes indigo, madder, pomegranate rind and turmeric were used as colouring material. Synthetic alizarin and indigo have however since replaced madder and indigo. Congo red is used for brightening the red colour and pink colour. Direct yellow colour is used for yellow in prints. However, other natural dyes continue to be used along with the traditional processes for preparation of mordents resists and colours.

For preparing the red colour dye-bath synthetic alizarin lumps are used. The bath is prepared by mixing dhawai ka phool (flower of woodfordia floribunda). For blue colour, synthetic indigo is used. Harda solution is used for dyeing yellow as well as for mordating for the black colour which is printed. Another yellow colour is obtained from pomegranate skin. (Monhanty Chadramouli and Naik, 1987).

FABRIC USED

Reja, is a thick coarse cloth woven in Rajasthan. The distinction of caste and region in a costume are shown through the printing and
dyeing of this very cloth. The reja cloth is presently being used only for making floor spreads or padharnas. With the change of time the weaving of cloth has also changed tremendously. Formerly, where hand woven coarse reja was used.

The mill made long cloth or pharad has taken its place. As these prints became popular in the lands abroad newer experiments were tried out with cloth to provide the customers according to their demands. Today, we have printing on a number of different fabrics which were not in use earlier. In 1978 Bagru prints were started on mulmul cloth. Later in 1985 another successful experiment was carried out by printing khes and durries and in the year 1986 silk sarees were printed. However, good printing cannot be obtained on fine cloth and the colour also is visible on the reverse of the cloth. But at the same time it is also true that exquisitely fine designs can be printed on fine cloth with better results, as it is not possible on coarse fabric, (Kothari, 1995, Maharshi, 1994).

**MOTIFS USED**

The decorative motifs in the Indian crafts go deep into the earliest time. As the tribal crafts are not always crude or archaic therefore they have a pattern of their own which within a rigid circumference laid down by a hoary tradition has attained a perfection. These folk forms have crept into new emergent creations so inexplicably that in may cases the dividing line between the two is either thin or almost non-existent. Tribal fabrics are superb because in folk art nothing is accidental or freakish. Every detail has a
meaning and a symbolic significance though some of these may have been forgotten. Basically the flock art reflect the physical environment as well as the raw material on which the craftsman works. The craft was motivated by utilitarian and ritualistic factors and sometimes by individual creative impulses.

It may not however be easy to find a satisfactory or uniform explanation for the meaning of the motifs as some are described as ageless and they seem to be true of all times like lotus, the serpent, the elephant, the chakra, certain trees and many more (Chattopadhyay, 1963).

Traditionally, motifs printed at Bagru are large with bold lines because these were meant for the peasant society. The customers, printers and block makers of this centre took aspirations from the wild flowers, buds, leaves and printed geometrical patterns. Usually motifs there consisted of flowers, buds and leaves composed in form of a cari (mango), pan (betel leaf), katar (dagger) and jhumka (earring). When Bagru printing started at that time common patterns printed by the local people were coriander (hara dhania), Chaubundi, Chakri, dacha and neem leaves (Kothari, 1995).

The many new influenances that kept flowing into the country touched each facet with a delicate finger leaving a deep impression of it’s own beauty. The impact came from Central and West Asia, Persia and Greece. The flavour of the Persian influence has been a strong and abiding one, as under the Mughal rulers. Persian crafts and craftsmen were patronized and introduced in to India. The Indian
crafts men as usual rose to the occasion and blended with subtle ingenuity the old and the new and the new style was created which is still with us to delight our hearts and our senses. The Mughal inspired floral prints of Bagru came from a different court influenced tradition. Bagru products which were mostly aimed at local, rural women also reflected in its design the Persian influence so prevalent in Rajasthan that dates back to the seventeenth century (Chattopadhyay, 1963 Gillow and Barnard, 1991).

Some of the traditional motifs used in Bagru in printing are ilaichi buti, bichu buti, cari buti, dhatura buti, dhania buti, kachnar buti, guldaudi buti, pankhi buti, genda buti, chaubundi buti, Kamal buti, Gulab buti, Dakh buti, Mukut buti, paan buti, katar buti dupatti buti, mirchi buti, jadhpul buti, surajmukhi buti, hathi buti ghoda buti, belpatra ki bel, neem patti ki bel, angoor ki bel, machi ki bel, Chauphooli bel, kamal phul ki bel, sugga bel, kalash ka kangura, kali ka kangura, Leheriya and Sanganeri Buti (Sujas, 1998).

With the changing taste today many old forms are forgotten and new motifs are created. A remarkable feature of the traditional printing is that animals are not printed on fabric meant for costumes. But in the present day –cultural hotch potch, these traditional crafts are only a matter of fashion. Foreign buyers order patterns and colour schemes of their choice, all these influence printing industry, Recently with growing interest in ethnic designs, printing motifs patterned after mandana floor decoration, became very popular, Japanese took them with great delight and Indian ladies favoured them for a salwar suit (Phadke and Sharma, 1993).
Although imitation of the technique and craft has been made elsewhere in other printing centres, yet Bagru prints have retained their special appeal which is least sense in similar prints of the other centres. This is attributed to the excellent qualities of the water in Bagru.

**COMMUNITIES ENGAGED IN DYEING AND PRINTING IN BAGRU:**

In the vast flowing river of craft,

the skilled enhance their lives,

count you to find,

A single day of skillful

– a year of the unskilled.

(Chisti and Sanyal, 1989)

In order to fulfill the necessity, work relating to manufacture of fabric, its production and ornamentation was assigned to certain communities in society for example, weaver was responsible for weaving a fabric while nilgar (dyer), rangrez (dyer) and cheepa (printer) decorated the fabric by dyeing and printing it for festive occasions and different climatic conditions.

A leaflet printed in Bagru in late nineteenth century while describing the thikana of Bagru mentioned printing industry in this village. The cultural environs in Rajasthan are largely based on its Varna-Vyavastha (Caste System). Therefore, a number of communities
have been engaged in the job of dyeing and printing which are described under:

**Rangrez and Nilgar**

Although their job is the same but difference lies only in one aspect that those who dye with Kusum flowers are called rangrez and those dyers who dye with the indigo are called nilgars.

**Brahmakhatri**

They perform three jobs—tieing, dyeing and printing. They generally print odnis. Brahmakhatris are Saivite and worship Hinglaz Matta as their family deity.

**Bandhara**

They also belong to Brahmakhatri. As they do the job of tieing and dyeing of head gears (pagris) and odnis in Jalore and Jaswantpura region of Western Rajasthan, so, they got the name Bandhara. Firstly they tie dye the cloth and then they do printing on it.

**Chadwa**

Chadwa is taken from Hindi word ‘chadana’ which means to put colour to the fabric and hence the person who used to colour fabric came to be called as Chadwa. These are Muslims and trace their origin from Multan (now in Pakistan) from where they came to Marwad. Their job is to tie head-gears and odnis and dye them with kusum flowers and indigo. They often do printing.

**Cheepa**

Cheepa is also a deformation of Hindi word “Chapana or ‘Chapai’ and the craftsman who did the work of ‘chapai’ of printing
came to be called as ‘Cheepa’. Some trace their origin from Pandarpur and some from Javata. They are further classified into

Muslim Cheepas

Hindu Cheepas

In Sanagner and Bagru, cheepas are called as Namdevi Cheepas’ as they are followers of Saint Namdev – a Maharashtrian saint, and wear a string in his name and are mostly vegetarians.

Muslim cheepas print and dye cloth like Hindu cheepas but they do not dye with indigo. These cheepas use fast indigenous colour like al, haldi, harda, alum, kasis and do not use kusum or indigo.

According to a legend, they art of textile printing was taught by God to Namdev in his dream and later on he passed it to his heirs. But during the reign of Aurangzeb, when Aurangzeb started forcing people to convert to Muslims, some of the heirs of Namdev got converted to muslims and thus came to be called as Muslim cheepas.

Hindu cheepas worship their family deity Jakhar Matta. They have a tradition in their community whereby sons from the first wife will be cheepa and those from the subsequent wife Darji or tailor, even when they are engaged in the work of textile printing. They cheepa community has been doing the work of dyeinjg and printing at local levels in Sanganer and Bagru (Kothari, 1995, Sujas, 1998, Maharashi, 1994).

The cheepa community, widely famous for their superb block printing is divided into several gotras such as asarmia, Bhanbhoria, Baunlina, Bandhiwal, Bhagerwal, Deosaya, Dhowtia, Gangwal,
Besides this rigid caste system of the society, there are certain taboos also in this trade of printing and dyeing. For example, indigo is considered impure and therefore only nilgar and chadwa communities dye indigo. Similarly printing with mica is done only by chadwa, other are not supposed to do so (Kothari, 1995).

Sanganer dyeing and printing is an age old art which in modern times is dying considerably. The best possible contribution has been made to collect the available literature relating directly or indirectly to present research work so as to determine clearly its scope and objectives. The following points are included in this chapter.

I. Origin, history and development

II. History of dyeing

III. Types of dyes

IV. History of printing

V. Types of printings

VI. Kinds of dyeing and printing done in Rajasthan

VII. Dyeing and printing centres in Rajasthan

VIII. Related Studies

I. Origin, history and development

Rajasthan is a fascinating desert land whose ruggedness hides many a touching tale of velour and sacrifice is rife with colour and gaiety art and pageantry. A small town called Sanganer near Jaipur is
described in 17th Century records as a centre of dyeing rather than of chintz painting.

It is situated 8 miles to south east of Jaipur. Although, once it was just an obscure village, but today it is known not only in India but abroad also and is gaining its popularity. An old person residing in Sanganer told that the village was established around 1527 and was older than Jaipur. The foundation of Sanganer Village was laid by Sangaji, a Kochahaya Rajput and eight decedents of kind Prithviaraj of Amber. This Sangaji was thought to have manifested himself as a snake of gigantic size than as a demigod. He is represented in the temple in Sanganer as a warrior riding a horse with a lance. He is still worshipped as a god, specially by mean as an original tribe.

Sanganer is situated on the bank of river Saraswati which was also known by the name of Aman-I Shah ka Mala Dhoond Nadi or Nandi Nandi.

There was a common belief that the river had some magic effect to help in the printing process. If the cloth was washed in the river for certain times, it gave a light rosy shad after every successive washing. It was assumed that almost 425 years ago, this river provided sufficient water to fulfill the needs of people who, settled there and the village Sanganer came into existence.

When interview as taken place with city palace Museum they said about a folktale.

There was a man in the reign of Sultan (emperor of Sanganer) naming Namdeo. One night he had a dream in which he was taught
about vegetable dyeing. When he woke up in morning he told his
dream to other villagers about the process of vegetable dyeing. People
accepted it is as a gift of god and they were really grateful to Namdeo
for this. Namdeo is still worshipped today by the printers since he
taught them the art of printing which provided them their livelihood.
Thus the era of vegetable dyeing began in Sanganer.

As far as the history of Chhipas in Jaipur is concerned, it is
quite obscure and lost in the mist of unrecorded history. However,
according to the old residents of Sanganer, the printers settled down
in Jaipur in the time of Raja Man Singh of Amber or probably even
before when Sawai Jai Singh was allocating the various Mohallas and
areas to the various traders and craftsmen. None of the caste people
were ready to occupy a deserted area in Purani Basti as it has been
cursed by a sage. The Maharaja was at a loss till the Chhipas of
Sanganer came to the king’s rescue and agreed to occupy this solitary
area with faith that Sangaji would relieve them from the Sage’s curse.
Sawai Jai Singh being very happy blessed them that their craft would
certainly progress and would attain such heights which no other
 crafts of Rajasthan would reach.

The number of Chhipas increased during the reign of Sawai
Pratap Singh of Jaipur, who took immense interest in the development
of this art. This art was given maximum patronage under the two
rulers, namely Sawai Pratap Singh and Sawai Jagat Singh.

Sawai Madho Singh-II of Jaipur also made a lot of efforts to
keep up the tradition and encourage the Chhips tribe Raja Man Singh,
who during his visit to Britain Saw Garments of Sanganer Prints in a museum, made all possible efforts to introduce and popularize this art in England. The actual era of export of Sanganer Chintzes was started by Sawai Ram Singh II.

The old residents of Sanganer told that the printing process followed in the olden days was as follows. A piece of cotton cloth which was to be printed was first washed in water and then was immersed in a solution containing.

Linseed oil - 2 lbs  
Lime - 1 lb.  
Water - 4 lbs

The cloth was then exposed to the sun and this process was repeated for nearly fifteen times and then the cloth was washed in running water and dried. It was then yellowed by dipping in a solution of a certain kind of fruit locally called Harda or Harar powder (Lyrobalan, Terminalia Chebula) and dried. The printing paste was then prepared using red, black, yellow or mehndi colours and was used to print the cloth with wooden blocks called “Buntia” or “Chahapa” in Local language.

These blocks were prepared by the expert craftsmen who carved out on them the various patterns called Buntis locally. Now-a-day to save time and money printing is also done with various screens.

The old residents of Sanganer also told that at the beginning of first would war the Alizarian colours for printing in red were imported from abroad through the east India Company and therefore they cost
a lot. During this period, Jaipur traders used to visit Sanganer to buy the clothes specially dupatta and safa cloth which was in great demand by the rural people. In 1930, a critical situation was faced by the traders of India due to the lack of financial resources. Manufacturers had to leave their trade and take up manual labour. Jaipur traders also stopped buying the printed cloth from Sanganer. Therefore, printers had to go themselves to the Baat Bazaar in Jaipur to sell the cloth. Local traders of Jaipur then started buying the cloth through brokers. These brokers took advantages of the prevailing conditions by taking a large amount of commission from the printers for selling the printed cloth to the traders. This selling through brokers affected the printers and prevented them from getting their works worth.

A villager in Sanganer also told that during the second World war the condition instead of improving got worse, consequently in 1944, the multipurpose Sanganer cloth printing co-operative society came into being for the welfare for printers. Since the attitude of the printers was not encouraging and co-operative society would not bring much improvement in their conditions.

They also told that after the second world war, various products of Sanganer printing like bed covers, curtains, blouse pieces, handkerchiefs and other things became very popular and the demand for these increased not only in India but also in USA which started importing Sanganer printed items from India. In olden days, Sanganer dyeing and printing was mainly done on Muslim cloth but now the
printing has also been started in handloom cloth under the patronage of the Khadi Board. This has resulted in the further increase in demand of Sanganer prints which in turn has helped to improve the economic status of the printers.

It was also told by the villagers that in 1956 a training centre was established by the Rajasthan Government in order to train the people in vegetable dyeing and block printing and to develop new designs. But it was closed after six months since not many people had joined this institution.

In 1970, people from other villages were also influenced by the art of Sanganer dyeing and printing and therefore, they immigrated to Sanganer. As a result the number of owners increased to 43 out of which 13 were big and 30 were small, whereas, the number of families of printers increased to 184. And thus the era of progress of Sanganer printing came into being.

**II. HISTORY OF DYEING**

Colour has always fascinated human kind for both aesthetic and social reasons. Throughout history, dyes and pigments have been major articles of commerce. Generally, aqueous solutions of dyes are employed to coloured textiles (Britannica encyclopedia, 1994-2001).

Of all the textile crafts, it is for the art of dyeing that the Indian people have been world famous for many centuries and especially for their processing of natural dyes stuffs and synthetic dyes (Gillow, J., 1991).

Dye stuffs and dyeing are as old as textiles themselves and predate written history. Fabrics dated from 3500 BC have been found
in Thebes, Egypt, that still possess the remaining of blue, indigo dyes; other fabrics discovered in the ancient tombs of Egypt were coloured yellow with dye obtained from the Safflower plant. Beautifully coloured fabrics, dating back several thousand years have been unearthed in China, eastern Mediterranean countries and some areas of Europe.

Prior to 1856, all dyestuffs were made from natural materials, mainly animal and vegetable matter. A bright red was obtained from the tiny insect native to Mexico. This insect was used by the Aztecs to colour their fabrics and when the Spaniards invaded Mexico in 1518, they called the insect and the dyestuff cochineal. A tiny mollusk found on the phoevcian coast near the city of tyre which produced a beartiful purple colour. By 1500 BC tyre had become the center for the trade and manufacture of this purple dye. The dye was tremendously expensive to produce because approximately 12000 of these tiny shellfish were needed to obtain a single gram of dye. Thus, the expression “Royal Purple” of “Born to the Purple” arose as an indication that only the wealthy could afford the dye.

Early efforts at colouring fabrics were hampered by the fact that few of the natural dyes formed colourfast combinations with fibers. Eventually scientists found that this defect could be partially overcome by the use of mordant compounds that render the dye insoluble on the fabric.

During the Dark times, there was little advancement in fabric colouring and most dyeing was done in the home. The beginning of
the Italian Renaissance saw the art of dyeing revived and the first book on the subject was published during fifteenth century AD. Dyeing techniques were constantly being improved during the ensuring centuries and written material had provided valuable information to scientists and technicians as well as to consumers. As long as people were dependent on animal and vegetable matter for their dyestuffs and on minerals for the mordanting agents, progress was limited by the skill of the operator in mixing the natural dyes and in perfecting the techniques used to apply them. As with many of nature’s products, the quality of materials varied considerably and consequently the results were somewhat unpredictable. It should be noted, however, that throughout these periods the only fabrics to be coloured were natural. Thus, colouring was not as difficult as it became after the development of manmade fabrics.

The development of artificial dyes has been rapid and the available dyes number in the thousands. However, researches in the development of dyes continues.

III. TYPES OF DYES

There are two main types of dyes

(A) Natural Dyes: Natural dyes could be classified as follows:-

1. According to Source:-

   a) Vegetable Dyes: In early times the plant world furnished the principle source of the dyestuff by which man obtained colour. The parts of the plant used varied widely for dyeing were roots, stalks, bark, foliage, berries and seedlings.
b) Animal Dyes: Certain insects and shellfish were the colour sources from animal world.

c) Mineral Dyes: The House wives in earlier times made a type of mineral dye known as iron by placing raps of iron in a barrel covering them with vinegar and water and allowing the mixture to stand. Home spun fabric was soaked in the in a solution of wood ash and then exposed to the air became to so called iron buff. (Joseplh, M., 1972)

2. According to colour Produced

a) Yellow: Yellow can be obtained from onion skins, henna, turmeric, fenugreek, spinach, jasmine, sunflower.

b) Blue: It can be obtained from indigo wood, long wood etc.

c) Green: Chlorophylls is the source of a green dye. For example fenugreek, green can also be made from yellow and blue. Ritha leaves yield a green dye with turmeric.

d) Red: Red is obtained from Brazil Wood.

e) Brown: It is obtained from Oak, tea, bark of tree.

(B) Synthetic Dyes: Synthetic dyes could be classified as follows:-

3. According to Dyeing Method

(a) Substantive or Direct dyes: Substantive or direct dyes comprise the largest and most commercially significant group of dyestuffs. Direct dyes are water soluble and they are applied primarily to cotton fabrics when the dye’s dissolved in water, salt is added to control the absorption of the dye by the fabric. The fiber, yarn or fabric is immersed into a solution of the dye
this solution includes the dye, salt, type, water and other additives that may improve the absorption to some degree.

(b) Azoic or Napthol Dyes: Azoic or Naphol dyes are used also for cellulose fabrics and to limited extent for main made fibers such as nylon, acrylic, polyester and polypropylene. These dyes are sometimes called “ice” colour because they are applied from a low temperature water bath. Azoic dyestuffs produce brilliant and fast colours at relatively low cost. They exhibit good colourfastness to laundering, bleaching and lights. So they often serve to colour fabrics used for towel, sheets, pillow cases and other fabrics that require bleaching.

(c) Acid Dyes:- Acid dyes can be used on protein, acrylic, nylon and certain modified polyester fibers. Some work satisfactorily on spandex and polypropylene fibers. They dyes are applied from an acid bath, rather than a water bath therefore their use is limited to fibers that are not damaged by the type of acid solutions required. The range of colours varies from bright to light and from pale to dark tints and shades.

(d) Cationic or Basic Dyes: Cationic or basic dyes are among the oldest synthetic dyes. They are excellent for colouring acrylic fibers and are successful on modified nylon and polyester fibers. When properly selected for the right fibers they produce brilliant colours with good colourfastness to most environmental and laundering conditions. They dyes are not colourfast on cellulosic or protein fibers, however they are sometimes used as
topping colours to increase the brightness of a textile. Such brightness on cellulosic or protein fibers is seldom durable and disappears during the first care period. However, these dyes give outstanding colourfastness on acrylic nylon and polyester fibers.

(e) Disperse dyes: Disperse dyes, formerly called acetate dyes, were originally developed for acetate fibers. They are used for colouring acetate, polyester, acrylic and nylon fibers. These dyes are dispersed into a solution and then into the fiber, colourfastness of disperse dyes to light laundering and dry-cleaning is excellent.

(f) Vat Dyes: The type of dyes that have frequently been advertised as having the best colourfastness is the group identified as vat dyes. In general these dyes do exhibit excellent colourfastness particularly to laundering, however their colourfastness to light may not be as good. Today there are many different types of dyes that have outstanding colourfastness but vat dyes still remain a good choice of for many kinds of fibers as well as fabrics.

(g) Reactive Dyes: Reactive dyes were first introduced in 1956. These dyes actually react chemically with the fiber molecule, thus producing a high degree of colourfastness. Although they are used primarily on cotton, some types have been developed for rayon, nylon, acrylic and protein fibers. Reactive dyes have also been developed in a few colours for some polyester fibers.
(h) Pigment colours: Pigment colours technically are not true dyestuffs. However they are included here as they are used in colouring some textile fabrics and thus serve as colouring agents. Pigment colours have no affinity for fibers, they are attached to fibers or fabrics by means of some type of adhesive resin or bonding agent. They resultant colours are relatively permanent, but their durability is directly related to the durability of the bonding agent (Joseph, M. 1972).

IV. HISTORY OF PRINTING

The art of printing on fabrics originated thousands of years ago, immediately following the development of some type of fabric. Primitive people decorated garments and home furnishings with paints as they did on their bodies. At that time colours were not securely attached to the fabric, so they frequently were lost during use and care. Fortunately however some early printed textiles had survived. There are examples of early printed textiles in museums throughout the world, there are examples of illustrations showing painted textiles on walls of excavated tombs, pottery and other artifacts found in archeological digs. One of the oldest remnants of printed fabric was found near Thebes Egypt and has been dated about 1600 BC (Joseph, M, 1972).

The art of depositing the colours on to the fabrics so as to obtain various designs is termed as textile printing. They history of this art of decorating fabrics is lost in antiquity, Printing blocks are said to have been used in India as far back as 3000 BC, although no
such blocks or textiles have survived,. This antiquity can be only estimated from wall carvings paintings or accounts, none of which can be assumed to be accurate (Robinson 1961)

It is however assumed that this art has its origin in the far east where the Hindus and Chinese were known to have practised hand printing with wooden blocks as early as 500BC (Shenai, V.A. 1990).

Whether the printers of India or China were the first to make simple blocks for textile printing it is certain that this art was a fairly extensive industry in India during the earliest part of the Christian era (Thames /Hudson 1975).

The discovery of printed fabrics in Central Asia which have worked with resists process can be dated to the eight century A.D. They were found to have their origin in India. One of the printed pieces having floral motif were discovered to have its origin at Masulipatan where it is still traditionally prepared with resists process (Dharmija J., 1964).

A wide variety of good including painted and printed cotton was exported from India to China. Java and Philippines mainly Caromandal Casts in the 15th Century B.C. Extensive trade was also carried out by land route to Egypt, Arabia Turkistan, China and Java.

Rajasthan is the 3rd largest state of India, Jaipur being its capital city. Raja Man Singh was very friendly with Mughal Emperor Akbar. His strongly forged link between Rajputs and Mughal Empire remained intact till 18th Century thus enabling the state to retain its independence of culture and to assimilate the art and learning of the Mughals in it (Irwin J and Hall M Calice Museum of Textiles: 1971).
Obviously many of the Sanganeri designs portray flowers that are not likely to have been seen by the Calica printers nor by the block engravers of Rajputana. Inspite of these circumstances however there seems very reason to believe that the craft has been handed down for centuries and has come to us in all the purity of original inspiration. The nature feeling and colour reciprocity as also the technique in printing are all perfect while the absence of machine regularly gives a charm that places these goods above and beyond anything as yet accomplished in Europe (Ahivasi, D., 1996).

The products of Sanganer continue to enrich ancient Indian Art. They have a charm of their own. An innate feeling for beauty, a sense of colour and pattern, infinite patience and the accumulated experience of centuries have enabled our craftsmen to create items of rare excellence. Sanganer printed clothes are made up items that are much in demand and adorn humble dwellings as well as sophisticated homes in India and abroad (Jain, J. and Jain, K., 1935).

V. TYPES OF PRINTING

1. RESIST PRINTING

(a) Tie Dyeing: In this kind of dyeing a cloth is tied before dyeing. It is of two kinds.

(b) Palngi Tie Dye: It is an oldest method of tie dyeing Plqangi resists methods were used by primitive people in the Far East. Early designs were extremely delicate and many from Asian countries are fine and delicate in nature. In this process, tiny puffs of fabric were pulled over a pointed object, tied tightly with
waxed thread below the puff and then dipped into colour. The entire fabric may have been dipped for certain effects. Where the fabric was tied by the thread it resisted the dye and remained the original colour. If more than one colour was applied, the fabric was retied before the second colour was added. Each tying would be at different locations. Many colours could be used but retying was needed prior to each application.

(c) Modern Tie-Dye: Tye-dye designs can be made by folding the fabric so that certain areas are protected from the dye by knotting the fabric to prevent dye penetration in selected areas and by inserting lines of stitching which are then pulled into a tight unit or by using foreign materials to prevent dye from reaching the fabric. When fabric is folded for tie-dyeing, it is arranged in various types of folds of pleats; and then certain areas are further tied of with cord of thread to prevent penetration of colour into the fabric at those locations.

(d) Batik: Batik is the resist dye method perfected by Javanese. Today batik is made in many countries, but most typical and probably the best comes from Indonesia, Malaysia and parts of Micronesia. This method of printing fabrics involves sealing sections of fabrics with wax to prevent dye penetration after colour is added, the wax is removed. This process is repeated for as many colours or dyes as needed to finish the pattern. Any smooth fabric can be printed with this method; however it is not effective when applied to fabrics with a nap or a pile or made rough textured yarns.
(e) Ikat: Ikat, also called Kasuri, is a resist method in which only the warp yarns are printed. The areas not to receive colour are tied and the yarns are dipped in dye the tied areas remain white and the untied areas pick up the colour of the dye. If more than one colour is to be used, several things will be necessary. After the fabrics are coloured they are placed on the warp beam and threaded into the loom. It is then woven with solid coloured filling yarns. The resulting design is soft and somewhat hazy in character.

(f) Stencil Printing: Stencil printing was first developed by the Japanese and was the precursor of modern screen printing. Today it is considered primarily a handcraft process. In stencil printing, design areas are cut from this sheets of paper coated with oils, wax or varnish or they are cut from thin sheets of metal. A separate stencil is prepared for each colour. The stencils are arranged so that all stencils for a single design fit together or register, so that the resulting pattern is a perfect copy of the original design.

(g) Screen Printing: Screen printing is considered by many to be the newest technique for decorating fabrics developed from stencil printing. It is essentially a stencil process that has been refined. The screen is made by covering a frame with a fine mesh fabric of silk, metal, nylon or polyester filament. The screen fabrics is covered with a film then the design areas are cut out of the film, leaving the fire-mesh fabric open for the
dyestuff to pass through the print area. There is a screen for each colour to be used fabric is securely attached to a table, a frame holding the screen for a specific colour is laid on top of the fabric and dye is forced through the screen with a squeegee. As soon as one colour has been placed on the fabric another screen is placed in top of the location and the second colour is forced into the fabric. This process continues until all colours have been applied.

**KINDS OF SCREEN PRINTING**

There are two kinds of screen printing: Hand Screen printing and machine screen printing.

In hand screen printing, various requirement are:

(a) Frame
(b) Screen Gauge
(c) Squeeze
(d) Printing table

The frame can be wooden or metal on which screen gauze is mounted tightly, the design is transferred on to it by any one method from extremely simple one painting out the background with varnish to the most advanced of photochemical techniques. The parts of gauze are blocked out so that dye passes through some parts and not others. The gauze may be of silk, vinyon, parton etch (Andrew, H.)

The squeegee or the scrapper for carrying the colour paste from one end of the screen to the other is made up of various material as :

(a) Straight grain willow.
(b) Wood rubber i.e. wooden handle with a rubber tongue.

(c) Full rubber

(d) Leather

(e) Glass rod (Kale, D.G. 1976)

2. Flat Bed Printing

This kind of printing operation is made fully automatic by standardizing the stages of preparation and producing the print including screen holding, addition of print paste, pressing the paste on to the cloth lifting the screen and carrying the cloth forward to the next screen printing position.

The fabric to be printed is properly fixed on the endless printing conveyer blanket by means of good natural or synthetic adhesive. The fabric is suitably fed to the machine in a crease free manner. The print pattern is registered on the fabric by pressing the printing paste through the specially engraved positions or the flat screens. These are as many numbers of screens as the number of colours in the print pattern. The fabric to be printed is conveyed i.e. carried forward, with each colour, register by register, while the flat engraved screens continuously rise and come down at each repeat of the colour pattern. The screen frames are held on the rigid structure. All the screens are raised or lowed simultaneously and very accurately. Thus, all the colours in the pattern are printed at the same time, but on the differed printing places of the cloth. Because of the advance movement of the cloth on the conveyer blanket, the entire coloured pattern will be printed only when the far and screen completes its printing operation.
To achieve the desired printing results minimum squeegee strokes should be employed. Production is inversely proportional to the number of strokes. There are two kinds of squeegees used, the roller squeegee have a softer squeezing effect, while the rubber blade squeezes account to design and the pressure extended (Bhagwat R.S.).

**THE ROTARY PRINTING**

Any one of the rotary screen i.e. perforated or gavanoplastic is engraved with the chosen design. The rotary engraved screens belonging to the desired pattern are placed and fixed in their proper position in predetermined order. Although as many as 20 colours can be printed simultaneously in a design only 5-7 coloured designs are most commonly used.

The printing paste is introduced in the center of the rotary screen by means of the colour distribution system. The colour paste is well distributed all over interior of the rotary screen and is pressed on to the fabric by means of a well designed squeegee system (Bhagwat, R.S).

The substrate, i.e. the cloth trends over and along the endless printing conveyer wide rubber belt under the rotary screen cylinders which are in continuous movement. Rotary screen is the fastest method of screen printing with production rate of 2500-3500 yard/hr. Rotary screens are cheaper than the copper rollers used in roller printing. Because of this economic printing of competitively short yardages, combined with the versatility and freedom of design interpretation associated with screen printing, it may go some way
towards bringing a better and more adventurous quality into the mass market side of the industry (Pizzuto J.J. and Storey, J. 1992)

3. DISCHARGE PRINTING

Discharge printing involves the removal of dye from a fabric in such a manner that a pattern is formed. The area where the dye has been removed may be left white or another colour may be placed in the pattern area. It is particularly useful when print fabrics with dark backgrounds are to be made. To remove the dye, a design roller is coated with a bleach that removes the base dye and leaves the while pattern on a dark background.

4. DIRECT PRINTING

Direct printing has been the most common method of applying surface design to fabric. Recently, however the increase in the use of screen printing and the development of the transfer printing have reduced the amount of direct roller printing. Nonetheless, direct printing is still one of the most important methods for applying colour pattern or designs to fabric. There are two general methods used for direct printing block printing and roller printing.

(a) Block Printing:- Actual samples of fabric stamped with blocks to produce block prints have been dated as per back as 1600 BC. Wall paintings indicating the possible application of pattern by blocks appear to have been made as far back as 2100 BC. Some of the early blocks were up to 18 inches square and more than 3 inches think. Blocks used today may be of any manageable size. In block printing a separate block is required
for each colour. On the block the design area is raised whereas
the background area which is not to be printed is carried away.
The procedure for printing is more or less standard. The
fabrics is laid flat on a smooth, padded surface and anchored
securely. Next the dye is applied in a uniform layer to the raised
portion of the block. Then the block is pressed into the fabric so
that the dye is transferred to the fabric. Today block printing is
primarily a craft or art form.

(b) Roller Printing: Roller printing had its origin in the use of flat
plastes or blocks on a flat printing press. It was a natural
development from block printing. Thomas Bell invented the
roller print machine in 1783. His process combined metal
engraving with colour printing. The major difference between
block and roller printing is that in blocks the design area is
raised whereas in roller printing the design areas is the etched
away so it is lower than the surface. In roller printing the
design size or repeat cannot exceed the circumference of the
rolls used; and as these rolls are considerably smaller than the
rolls used in screen printing. Design for direct roller printing are
generally smaller than those produced in screen printing.

The process is as follows:

After the design has been made and the colours to be used have
been selected, the portion of the design for each specific colour or dye
is identified. The design for a specific colour is transferred to a metal
roller with an instrument called a pantograph. The roller is then
dipped in acid which etches or burns away the surface layer of the metal where there is no coating. After etching the resist coating is removed and the roller is polished. The engraved rollers one for each colour are looked into place on the printing machine. The roller rotates in paste of dye a blade removes dye from the smooth surface of roller leaving colour in the etched areas the roller rotates on the surface of the fabric. Depositing colour from design areas into the cloth (Joseph, M., 1972).

5. TRANSFER PRINTING

Transfer printing is Sanganer a new method of printing fabric this technique was developed in the late 1960s and the early 1970s. The process involves the transfer of colour from one surface usually paper Sanganer to a second surface the textile fabric. There are three basic methods used for transfer printing vapor phase transfer wet transfer and melt transfer. They all operate in somewhat the same manner. A design is Sanganer printed into paper or similar surface it is then transferred to the fabric by one of the methods listed. the system depends on the fact that the dye has a grater attraction for the cloth than it does for the paper.

Transfer printing has become on important process particularly for knit fabrics because it does not distort the fabric during the printing operation. Further transfer prints can be used on fabrics of almost any width.

6. JET PRINTING

Jet printing is achieved by controlling continuous dye streams. The dye streams are deflected by air or machine devices in such a way
as to be directed into or away from the fabric depending on the pattern desire.

7. PHOTOGRAPHIC PRINTING

This kind of printing is done like photography. Light reactive dyes are used in this kind of printing. Design is developed by placing a negative. After the full design is developed it is converted into positive by thorough washing.

8. BUBBLE PRINTING

It is a new process. In these printing bubbles like foam is developed colour is dispersed according to plan and or more dispersion of colours can be made. In this kind of printing various geometrical shapes are developed. It is a still newer in labs kinds of dyeing and printing done in Rajasthan.