

# Manufacture of Japanese Type Papers in India

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## In Japan

Japanese Handmade Paper are renowned all over the world for their exquisite beauty and infinite varieties. The industry has existed there for thirteen hundred years uninterrupted and is still flourishing, notwithstanding the enormous growth of the machine made paper. The papers are sold at a fancy price and are highly admired in U.S.A. and other countries because of their unrivalled quality.

At the time of the Author's visit to Japan in 1960, it was reported that several millions of rupees worth of paper is being exported annually to U.S.A. There exist over seven thousand handmade paper units employing more than 30,000 people. Most of the units function as small cottage units.

The raw materials employed in Japan for their typical artistic papers are primarily barks of certain plants. Chief amongst these are (i) Kozo (*Broussonetia Kazinoki*), (ii) Mitsumata (*Edgeworthia Papyrifera*), (iii) Gampi (*Wikstromia Sikokiana*). Besides these, certain hemsps are also used. Nowadays, a little sulphite pulp and straw pulp is also used for admixture.

The most interesting part of the Japanese paper, however, is that in order to keep the extremely long fibres properly dispersed during the formation of paper, they employ a very thick vegetable mucilage along with the pulp. This mucilage is obtained mainly from Tororo Awai foots (*Abelmoshes Manihot Medicus*).

The equipment employed is very simple. The old type paper units even do not use a

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beater. After cooking the bark, they beat it with a wooden mallet and lift the paper on bamboo mats. For drying, the paper is applied to wooden boards and are dried in the sun. No sizing, glazing or cutting is required. In more advanced centres, they employ a Hollander beater or a stamper and for drying, a drying box, called "Khansoki" which is filled with water and which carries an integral furnace, is employed.

Work force is mainly women, who work long hours and meticulously scrape the bark, pick the pulp, life the sheets, dry them and do all manner of processes connected with paper making.

The varieties made are almost innumerable. Under the utility grade paper can be listed plain papers made for window panes or for use on the sliding doors and walls of the Japanese houses, stencil tissue paper which is also exported, brush writing paper, etc. A very larger list can be drawn of artistic decorative papers, used for wrapping or for lamps, for umbrellas or fans, and as wall paper. These are made in a variety of ways. In the first instance, very long fibres and low basis weight render an intrinsic beauty to the paper. In addition, papers are strewn with extra long fibres either bleached or unbleached, or with artificial silk. Beautiful lattice designs are produced by means of various stencils over which the wet papers are sprayed with jets of water. Beautiful flowers, leaves or even butterflies are sandwiched between two layers forming attractive designs. In fact, the varieties of paper produced in Japan are almost countless. Ever new varieties are being invented to cater for the export market. This naturally keeps thousands of rural families busy

in the art, for which a Japanese is naturally proud.

### In India

After the Author's visit to Japan in 1960, he attempted to find out whether production of these grades of paper would be feasible in India. Naturally, the effort had to be made in four directions. In the first instance, it was necessary to find out whether suitable raw materials could be obtained within the country in sufficient quantity. Secondly, the technical processes adopted in Japan had to be introduced in this country. Thirdly, equipment suitable for the processes had to be manufactured and adopted in India. Finally, it was necessary to find out whether there could be enough market for such grades, particularly, in view of the fact that the products are exceedingly expensive.

As a result of the efforts made over last four years, it has now become possible to establish two Pilot Units for manufacture of Japanese type paper in India. One located at Malavli near Lonawala, Maharashtra State and the other at Dehradun.

The problem of finding suitable raw materials has now been solved. In almost all parts of the country there are some plants or the other which can yield fibres suitable for Japanese type paper. Besides, it was also found that the three principal paper making plants of Japan are also available in this country. *Broussonetia* has been introduced and has become naturalised in the forests of Eastern U.P. and parts of Punjab. *Edworthia Papyrifera* is found in eastern Himalayan forests at an altitude of 1,500 metres and above. *Wikstomia* has been located around Chakrata in U.P. at an altitude of over 2,400 metres.

Besides these, certain typical Indian raw materials like *Dephne Cannabina* (Badua) and *Lasiosiphan Erioccephalua* (Rametha) are available in abundance in Himalaya and

western ghats respectively. In addition to these, even on plains there are a hosts of raw materials like *Ficus Hispida*, *Gerardiana*, *Heterophilla*, *Morus alba*, *Boemeria Macrophyla*, etc. Moreover, various hemsps Banana fibres, avage fibres, etc., can also be employed.

As regards mucilage, it is found that a number of trees barks yield very fine niucilage comparable to Tororo Awai of Japan. To name a few *Erinocarpus Nimonans*, *Kydia Calycina*, *Grawia* species, *Litsea sebifera*, etc. Moreover, the entire stalk of vegetable bhendi (*Hibiscus Esculantus*) can be used for production of mucilage. The Tororo Awai of Japan, i.e. *Abelmoshes Manihot*, has been located, particularly in Bombay Island and it appears that it will be available in many parts of India. Thus it will be seen that on the side of the raw materials, there is no difficulty, rather it would be so ample as to warrant establishment of hundreds of paper making units.

As regards processes, the Japanese processes have now been adopted with a slight modification to suit Indian condition. Mats made from bamboo strands similar to those employed in Japan are now regularly made and lifting of paper with the help of this has commenced.

For drying, "Taosuki" designed after the Khansoki in Japan has been constructed and is regularly employed in the two Pilot Plants. The process of scraping the barks is actually made easier and more efficient than that prevailing in Japan, inasmuch as, a mechanical scraper has been introduced. Most processes are simple enough so that they could be adopted by the Adivasis in the hills where raw materials are available.

On the side of marketing, it has been found that some of the attractive varieties have already caught the attention of the traders and orders have started coming in, much in excess of the production capacity. Negotiations for the export of the paper are also afoot.

It is, therefore, now possible that a chain of units could be located in suitable localities such as hills of the western ghat or Himalayan ranges. Collection of barks would provide a lucrative occupation for the Adivasis of those areas on a daily wage of Rs. 3/- or so.

The wages in properly set up units can easily be anywhere between Rs. 3 and Rs. 5 per day per person. The production can be organised on small units with a production of about 20 kg. per day, employing about

20 persons. The cost of finished papers is, of course, very high, viz. between Rs. 10/- and Rs. 20 per kg. There is a very good prospect of establishing an export market for these products.

It can very well be said about this Industry, that it would be bringing into use what was up to this time an altogether waste material, for providing employment where it is most needed and producing goods which can be exported.

