A PAPERMAKING PILGRIMAGE to Japan, Korea and China

DARD HUNTER

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SPECIMENS
INTRODUCTION

In travelling through the more remote districts of Japan on the narrow, rough, and often dangerous roads, passing endless processions of carts, jinrikisha and pedestrians along almost continuous lanes of low-built houses and villages, the Occidental tourist cannot but observe two dominant features — the absence of chimneys on the houses and shops, and the use of great quantities of handmade paper for everyday purposes.

The rooms of Japanese houses are heated by large, heavy earthenware bowls, known as hibachi, in each of which several pieces of charcoal burn with a red glow within a nest of sand or asbestos, the charcoal being dexterously put in place by the use of ornamental brass chop-sticks. To the visitor from the Occident, accustomed to central heating supplemented by roaring wood fires within huge chimneys, the Japanese method of heating seems cheerless and inadequate, but in the elimination of complicated heating devices and chimneys the Nipponese have dispensed with one of the most expensive features of house construction. It is doubtful, however, if the native people, huddled about the small charcoal fires, are ever wholly warm during the cold, damp winter months, as they are constantly rubbing their hands above the hibachi in an effort to absorb what little heat may arise. There is also little solid construction in their houses. The living quarters of Japanese homes are fairly large and usually have one or two sides of each room made up of small, oblong lattices of light wood over which paper is pasted, allowing the entrance of light but preventing all vision from either the inside or the outside. Even in the north country the Japanese houses and inns have only these thin paper windows to separate the meagre indoor comfort afforded by their charcoal heaters from the drifted snow banks and the cold winds from the mountains.

While Japanese houses with their artistic paper windows may not be adequate in material comforts for us, the Occident could learn a great deal from these hardy, healthy people in the use of paper in ways unknown in the Western world, as the Oriental artisans, more especially the Japanese, have developed papermaking and adapted it to almost every conceivable usage. This is probably due more to the growth in their country...
of certain trees and shrubs, the bark of which forms excellent papermaking fibre, than to the outstanding technique of the Japanese in the craft of papermaking. This does not mean that the Japanese are not expert papermakers, relying only upon their superior natural fibres, for they are, without doubt the world’s most highly skilled artisans in this craft. With the Japanese innate ability to execute unusual hand work and through the use of mulberry, mitsumata and gampi fibres as raw materials, it is not an exaggeration to state that the present-day handmade papers of Japan are the technical marvel of the entire papermakers’ craft.

In Europe and America, as well as in the Orient, there are fast-running machines each producing hundreds of feet of paper a minute, but these delicate and easily-torn sheets would not endure the ordeal to which the Japanese subject their thin, but hardy, handmade papers in the making of windows, lanterns, partition screens (shōji), umbrellas, rain-clocks, bags, tarpaulins, and all manner of other requirements where glass, metal, leather, and cloth are employed in the Occident. The general impression existing among Western people is that Japan has a mild climate and that therefore more delicate and fragile objects can survive, but this is not the case, as both summer and winter in Japan are most severe and are trying even to an American accustomed to rigorous winters and to summers that are damp and warm. It is only through the use of superior and unique papermaking materials and genuine ability in the craft of paper fabrication that the Japanese are able to make papers that give faithful service through long periods, being used over and over again. It is not uncommon to see paper umbrellas that have been in use for many years, and any traveller knows that Japan could never be called a rainless country. The observant wayfarer who has sojourned in the mountainous little island during the spring months is cognizant of the hardships the paper umbrellas must undergo, for it often rains for several days without interruption; and no matter how wet and damp it may be the people are always to be seen walking through the rain-soaked rice fields with their stilted wooden sandals and their charmingly-coloured paper umbrellas.

Along the country roads and lanes of Japan it is interesting to watch the great variety of man- and beast-drawn carts laden with every kind of native commodit,
each with its paper tarpaulin. Every little cart has this oiled paper protection, impervious to water and lighter in weight than cloth, which during sunny weather is folded and packed away in the vehicle. These seemingly fragile paper covers will endure the trying conditions they are subjected to year after year and finally wear out only through constant use, as any other supposedly more durable material. The jinrikisha men in the towns and villages during the periodical rains wear mantles of oiled paper, for this material is not only effective in keeping them dry, but may be purchased in large pieces for a few cents, and the sturdy little men who draw the comfortable, high-sedled carriages are not affluent. The workers in the fields, the men labouring on the roads, and the watchmen at the railway crossings depend upon coverings of paper to keep them dry.

The oiled paper of Japan may be purchased in the smallest of shops, and every peasant cottage has a small stock of sheets of divers sizes which are used over and over for many household requirements. In the districts where tea is cultivated stout oiled paper bags are used for holding the leaves and it is not unusual to see sacks that have given service for half a dozen years, literally covered with patches of paper where they have been repaired from time to time. Paper bags for the storing of grain are also common, for paper that has been oiled or tanned with the fermented juice of green persimmons, the method used to render the material durable, is not easily destroyed by insects. The Occidental traveller never ceases to wonder at the almost unlimited use of paper by the Japanese; their expert adaptation of the seemingly frail material far exceeds in ingenuity the skill of the Chinese and the Koreans.

This is not to say that the present-day Chinese and Koreans have not wisely and skilfully adopted paper to many purposes. In Korean house building paper plays a part that is unique, for in place of the regularly-shaped mats used on the floors of Japanese houses, the Koreans use thick oiled paper, a thoroughly practical material when their method of heating is considered. In Korea the rooms are kept warm not by the picturesque hibachi of Japan, but by an oven under the floor. The smoke is emitted by way of a tile chimney running underground and finally rising within a wall at a considerable distance from the house, though in lovely houses it escapes directly from the house.
foundation without the bother or expense of a tile chimney. For actual comfort the Korean house is to be preferred to the Japanese as in both countries the people live close to the floor and in Korea the floors are delightfully warm, while in Japan the floors, even though covered with the thick straw mats, are usually cold and uncomfortable, especially without slippers, which are not worn in Japanese rooms. In Korea, as in Japan, paper is used for windows, and in some parts of China it is employed for this purpose. The Chinese also use it to line clothing. Throughout the Orient paper holds a prominent place in all manner of ceremonies and festivals, and dozens of native mills are kept in operation through the manufacture of special papers for such purposes. In China vast quantities of these papers are manufactured to be converted into spirit money, tapers, incense wrappers, fire-crackers and to satisfy many other ceremonial requirements.

Aside from all of these utilitarian and religious purposes the papers of the Orient are used in great quantities for brush writing, which requires a soft, rather absorbent, paper, the direct antithesis of what the Occident considers desirable. In the Occident a heavily-sized, non-absorbent paper is required. With pointed metal pens and rapid flowing chemical ink in which the colouring is dissolved, a hard, impervious paper is needed, and in the Occident this form of writing paper has been developed. In the Orient, however, as before stated, the writing instrument for many centuries has been the brush, and the fluid used for writing a suspension of fine particles of carbon in water; for this combination the best results are had by the use of soft, absorbent paper. In both the Occident and the Orient the paper suits admirably the respective purposes of each, but neither could use successfully the paper of the other.

Paper was originally made for calligraphy—printing of any kind was not invented until a number of centuries after the advent of paper; printing, therefore, had no influence upon the invention of paper. The first printing, in both the Orient and the Occident, was influenced entirely by the paper at hand—paper that had been made primarily and essentially for writing. We have to this day two distinct schools of printing, each the direct result of paper, just as we have two distinct schools of writing, the Oriental with a brush and the Occidental with a pen. The Oriental mode
of printing, like the Oriental style of writing, requires soft, absorbent paper which can best be made from the long-fibred barks of trees and shrubs which grow abundantly only in Asia. Chinese and Japanese wood-blocks could not be printed in the Oriental manner by using the hard-sized, rag papers of Europe. The soft, delicate tones of Oriental wood-blocks are enhanced by the use of mulberry and mitsumata papers, and even American and European wood-block artists find the exquisite papers of Japan far superior to European handmade papers in both printing and aesthetic qualities.

The paper of Japan, Korea, and China used in the myriad ways that have been outlined is to a great extent genuine handmade, and fabricated from one of the several varieties of native barks, from bamboo or straw, or from an admixture of these materials. It is displeasing, however, to see that to-day some of the mills add wood pulp to the natural bark fibres, a practice which inevitably lowers the quality of the paper.

In Europe and America handmade paper is regarded as a luxury, something to be used only for the printing of expensive de luxe books, or for etchings or elaborate stationery — indeed the greater part of the people of the Occident live their entire lives without ever even seeing any paper that has been made by the old traditional hand process. In the more cultured Orient this condition does not exist; every person, from plutocrat to peasant, comes in daily contact with common, useful things that have been made of handmade paper — things fabricated by artisans who regard their craftsmanship as edified through its use by the work-a-day people for humble purposes.

The handmade papermakers of the Orient, unlike those of the Occident, do not feel that their handiwork should be restricted only to the libraries and drawing-rooms of those who have the means to indulge their tastes in finely-printed books and expensive engravings. Their art is not exclusive, but inclusive, an ideal which is the result of an ancient civilization where handmade paper has always been used for making lowly objects, and where traditions and training have been handed down through countless generations of papermaking families.

A census of the handmade paper industry of Japan would show between twelve hundred and fifteen hundred individual mills, each operating from one to forty vats. In China, where a census would be almost an impossibility, there are literally
thousands of mills making handmade paper of some description. From this it will be seen that the industry is far from dying in the Orient, and new uses for the paper, especially in Japan, are being constantly developed. It is possible that the fabrication of paper by hand in a commercial way will continue for all time in the Orient as labour costs are extremely low and there is considerable natural papermaking material. Coupled with these two important conditions is the fact that many of the utilitarian handmade papers of the East, especially those made in Japan, have qualities that cannot be duplicated successfully by the papermaking machine. In Japan in the year 1932 the value of the paper made by hand was yen 14,000,000, while that manufactured by machinery was yen 43,000,000 — surely a comparison that is favourable to the ancient hand process when compared with conditions in Occidental countries. In three great papermaking districts of Japan — Gifu, Fukui, Köchi — there are almost six thousand families who gain their support through the fabrication of handmade paper. The Japanese have not, however, been slow in adopting the papermaking machine, but they well know that certain varieties of paper can only be successfully made by the use of a mould in the hands of a skilled and patient worker.

In America there are no mills making handmade paper and it is unlikely that paper of this kind will ever again be made commercially in this country. In Great Britain and Continental Europe there are not above three dozen handmade paper mills, and the number is decreasing. Compared with the amount of paper manufactured on the machine in Europe that fabricated by hand is trivial and insignificant. There are two reasons for this: the high cost of labour, which places handmade paper entirely out of reach for ordinary purposes, and the fact that the modern machine can come very close to duplicating most of the qualities and characteristics that are sought for in handmade paper of the European type. From present-day indications it would not be an extravagant prophecy to say that the next thirty years will see the demise in Europe of handmade paper as a commercial commodity, while in Japan, though the number of mills will probably decrease, there will still be much handmade paper fabricated. This is a logical conclusion, and one that is justified when materials, labour, methods, and ultimate adaptability and usage are taken into consideration.
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Paper in Chinese Religious Ceremonies: With many photographic illustrations, prints from old Chinese wood-blocks, and more than 80 original specimens of Chinese “spirit-papers” gathered from all parts of China, Indo-China, Siam, Malaysia, and Java.

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PART I

Papermaking Materials

In the compilation of this book it is hoped that no undue partiality has
been shown toward the paper of Japan; the truth remains, I do favour
the Japanese so far as handmade paper is concerned, and it is my opinion
that the finest paper made at the present time in the Orient is produced in
this small island empire. To China must go the glory of the invention of
papermaking, and in ages past the Chinese have made fine papers, but the
present-day aspect of handmade paper in that vast country is not encourag-
ing. If I am prone, therefore, to devote more space and enthusiasm to Japan,
it is through my keen appreciation of their superb papers as I have used them
for many years and well know the admirable qualities that they embody.

From early centuries the people of Japan had communication with
Korea, and it was from that locality, then part of China, that the, Japancsc,
in 610 A.D., gained their initial knowledge of paper, when sheets of this
substance fabricated from the bark of the mulberry tree were brought to
Japan, in the form of books, by a native priest, named Doncho. The first
paper actually made in Japan was produced during the reign of Suiko
Tennō by a group of Buddhist priests whose work attracted the attention
of the crown prince, Shōtoku (572-623 A.D.). Crown Prince Shōtoku,
photograph 4, became deeply engrossed in the art of papermaking. He not
only occupied much of his time and spent considerable money in this
pursuit, but encouraged others to acquaint themselves with this new, elusive
craft. The empire was searched for papermaking materials, and numerous
experiments were conducted with the native wild plants and shrubs, such
as binan-kazura, nashi-kazura, hogari, tamo-no-ki, aka-ne, and others.¹

¹ These plants are known internationally by
their Japanese names, which are, perhaps, more
appropriate than the numerous forms of English
and Latin appellations. Some of these plants
are found only in Japan, while others grow only
in Japan and China.
1 Paper Mulberry: (Broussonetia papyrifera)
The first paper of Japan, unlike that introduced by Doncho from Korea, was not made from the paper mulberry, but from barks that were inferior to this excellent material. In an endeavour to emulate the Korean and Chinese paper, Prince Shōtoku ordered that the paper mulberry tree be cultivated in the principalities of Echizen, Ise, Satsuma, Idzumo, Tosa, and Osumi, and that the technique of forming sheets of paper be taught to the people. This command resulted in widespread progress in the growing of mulberry trees and in the actual making of paper. The principality of Tosa, in Kōchi, in the southernmost part of the island of Shikoku, early became a great papermaking district and to this day remains one of the principal papermaking centres of Japan — in fact, about one-sixth of the total production of the entire country is manufactured in Kōchi. Echizen, in Fukui, is now a large papermaking district, and has been ever since the seventh century when Prince Shōtoku sponsored the craft in that province.

The most important papermaking substances used in Japan, China, and Korea are derived from the barks of the paper mulberry tree, the mitsumata and gampi shrubs, and from bamboo and straw, all indigenous to the Orient. Without question when the finest paper of the Orient is considered, the mulberry and the mitsumata are the most important fibres. It is my desire to give a detailed account of these two materials, for they are not only the most valuable papermaking substances, but they have received less attention from Occidental writers than have bamboo and straw.

The paper mulberry, Broussonetia papyrifera, Vent. of the order Moraceae, woodcut 1, (named in honour of the French naturalist, Pierre Marie Auguste Broussonnet, 1761-1807), attains a height of nearly twenty-five feet, and generally branches a short distance from the ground. (In Japanese the paper mulberry is known under a number of names including kōzo, kowzo, kōzu, kauzo, kachi-no-ki, and kazi-no-ki.) The leaves are deciduous and vary in shape, those of young trees being divided into three or five lobes, while those of older trees are usually an unbroken oval. Of the Japanese mulberry there are
three species: *asaba* (literally: paper mulberry with *asa* leaves), *kaname* (literally: important paper tree), and *makaji* (literally: true paper tree).

The *asaba* may be divided into three sub-species according to the colour of the bark — yellowish, greenish, and reddish. These species are found in the warmer regions of Kōchi and southern Japan. The *kaname* may be divided into two sorts — those with blackish bark and those with bark of a purple tone. The *kaname* species grows in the deep valleys and sheltered places where the sun does not penetrate so abundantly. The *makaji* variety of mulberry is extremely hardy and grows to a considerable height.

The paper mulberry of Japan has distinct male and female flowers produced on separate trees. The female flowers are congregated into heads about the size of marbles, with three or four tubular-toothed calyxes, a single style produced from the side of the ovary, and a tapering stigma, while the male flowers are cylindrical drooping aments or catkins, each flower growing from the base of a small bract, and having four-parted calyxes and four stamens. The trees must be at least three years old before they bear the dark red pulpy fruits which resemble the common mulberry in shape and have the same over-sweet flavour.

From a review of statistics it is apparent that the cultivation of the paper mulberry is decreasing in Japan, for in the year 1919 a little over seven million *kan* were produced, while in 1923 there was less than five million *kan* used in the making of paper. (A *kan* is equal to 8.23 pounds.) At the present time the greater part of the paper mulberry grown in Japan is found in the Prefectures of Shimane, Yamaguchi, Tottori, Okayama, and Kōchi, Ehime, and Tokushima in the island of Shikoku. In the springtime, in driving from the town of Kōchi in the south of the island of Shikoku to Kawanoye on the north coast, the traveller may see many paper mulberry trees growing along the roadside, as well as clumps of mitsumata on the slopes of the mountains, the soft yellow of the mitsumata flowers casting a waving golden glow over the landscape.
In selecting the barks of the paper mulberry the Japanese papermakers avoid any substance that is decayed or discoloured. Decay is found mostly in tall trees that have been broken by the wind; in the deep valleys and ravines the bark is often injured by wild rabbits, goats, and deer that feed upon it. Broken or stained bark is not suited for making the whitest paper. The mixing of the barks of different species is also avoided, but apparently there is no particular species that has undisputed claim to superiority, although certain species are peculiarly adapted for the making of specific kinds of paper. The secret of making fine paper from the mulberry tree seems to lie in the use of but one species of the bark and that particular species alone. Apparently, if the barks of the different species are mixed, the paper is reduced in quality, although each species has its own fine characteristics when used separately. For making the highest grade of paper the mulberry trees should not be over one year old, and if paper superlative in whiteness and texture is desired the barks from trees of different ages, although of the same species, should not be mixed together. For example, if barks from two year old and three or five year old trees are put together, even though they be the same species, the paper will be inferior to that made from barks taken from trees that have been growing the same length of time.

The mitsumata, Edgeworthia papryrfera, Sieb. and Zucc., (E. chrysantha, Lindl.), of the order Thymelaeaceae (in Japanese: mitsumata, mitzumata, midzumata), woodcut 2, yields one of the finest of papermaking materials. Some of the most remarkable papers of the world are made from the bark of this shrub, including the justly renowned Kyokushi which is known and cherished for fine printing throughout Europe and America.

Mitsumata may be divided into two varieties according to the size of the leaves — the large-leaf and the small-leaf. The large-leaf variety grows

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*The name mitsumata is derived from two words, mitsu meaning three, and noda denoting forked or pronged. This name is given the shrub because each stalk divides into three branches and each branch in turn divides into three, until the uppermost part of the shrub is reached. It is said that the mitsumata is the only shrub in Japan that branches in threes.*
MITSUMATA: (Edgeworthia papyrifera)
almost profusely in the island of Shikoku, but its growth is not limited to this southern locality. It bears yellow flowers in abundance and the fibre of its bark is comparatively fine and easily separated. The small-leaf shrub also bears yellow flowers, but the length between the root and the first triple branches is shorter than with the large-leaf variety. The large-leaf shrub produces also a finer papermaking fibre. Neither of the varieties of the mitsumata flourishes in the extreme north. If grown in a warm part of the country the bark may be used for making paper when only one year old, while if grown in a colder climate three years of growth are necessary before the bark is considered sufficiently matured. Mitsumata grown in localities where there is plenty of rain and moisture is comparatively tall, but the bark is correspondingly thin, while the shrub produced in drier regions is apt to be of slow growth, but with heavier bark. The harvesting of the shrub takes place during the winter months and consists of simply cutting the plants at the ground by means of a sharp hook-shaped knife, tying the stalks into small bundles, and storing them under shelter. Although the tops are cut every other winter, the roots of the mitsumata remain alive for a number of years, but for papermaking purposes the roots cease to throw out profitable new shoots after eight to twelve years. After serving their usefulness the old roots are dug out and replaced by young plants which have been raised from seed. Two years are required for an old stump to produce a usable bush, and many of the plants are given three or four years before being again cut.

The finest mitsumata barks for papermaking are taken from shrubs that have attained a height of ten or more feet, measured from the ground to the triple branches. The most desired barks are white, but a slight trace of red does not interfere with the papermaking quality. Mitsumata barks from shrubs of different ages, unlike those of the paper mulberry, may be mixed without interfering with the quality of the paper, provided the shrubs have had a growth of less than five years. The cultivation of mitsumata in Japan,
like that of the paper mulberry, is decreasing, for while in the year 1909 there were five million, seven hundred thousand kan produced, the production in 1923 fell to four million, nine hundred thousand kan. Mitsumata grows also in China, but the plants that I have examined in that country seem to be of a coarser nature than those of Japan, and the Chinese paper made from mitsumata bark is not at all comparable to the Japanese.

The bark of the gampi Wikstroemia canescens, Meisn. (Passerina gampi, S. and Z.), of the family Thymelaeaceae, woodcut 3, is also a most excellent papermaking material of Japan, but it is not so universally used as either the paper mulberry or mitsumata. The gampi shrub is of wild growth and is related to spurge laurel (Daphne mezereum, L.), its habitat is along the warm sea shores and in places not a great distance from salt water. Unlike the paper mulberry and the mitsumata the gampi is not cultivated. The shrub is of fairly rapid growth and often attains a height of ten or more feet; the flower is small and of a reddish-brown colour, appearing in the month of June. There are three species of Passerina: the round leaf, the oblong leaf, and the “dog-toothed” leaf. The last named species is known in Japan as the hinojô or hinito. The bark of the gampi makes unusually fine paper embodying both strength and gloss, but, as before stated, this shrub does not rank with either the paper mulberry or the mitsumata in paper production.

From the eleventh century onward, bamboo has been a papermaking material in China, but in Japan it is not so commonly used as a fibre for paper. The best bamboos of Japan (called: take, pronounced ta-kâ), for papermaking are the two varieties known by the natives as hachiku and madahe. The finest grades of bamboo paper that are produced in Kwangtung Province, China, are fabricated from the species known locally as mau chuk (Phyllostachys edulis (Carr.) H. de Lehaie), photograph 5, while a low grade of paper, used principally for ceremonial purposes, is made from wong chuk, the specific name of which has not been determined. For papermaking, the
GAMPI: (Wikstroemia canescens)
bamboo stalks are cut during the dry season and the hard outer surface and the nodes, or joints, are removed. Photograph 6.

In both China and Japan, rice straw constitutes an important material for the making of handmade paper, photograph 7, the best qualities of paper being made from straw that is of a greenish-yellow colour and from that which has dried in the sun without exposure to rain or dew. In Japan, rice straw suited for papermaking is divided into three classes or qualities. The finest paper is made from that part of the straw which extends from the first node to the head; this part is known in Japan as sube and is the choicest section. The second quality includes the straw from the first node down to about an inch above the ground; this section is called nakanuki. The remaining straw chaff which is used in making a most inferior kind of paper is known in Japan as do-u.

Oriental handmade papers of the present day differ somewhat in texture from those fabricated hundreds of years ago; the noticeable difference is caused by an admixture of foreign pulps. This is to be deplored, and it is hoped that the papermakers of Japan will encourage the growth of the paper mulberry and the mitsumata in sufficient quantities so that the high quality of their papers may not be impaired by the too generous use of substitutes. The tendency to adulterate has so far not been very serious, but each year, as the crop of native trees and shrubs grows smaller, some of the makers of paper are tempted to add more and more inferior pulp to their formulas. This sincere caution is meant more for the papermakers of Japan than for those of other parts of the Orient, inasmuch as I am most partial to Japanese papers and cannot but deplore this adulteration, seemingly prompted by commercial expedience. While this same cheapening of materials has taken place in China, the modern handmade papers of that country have never appealed to me to the same extent as those of Japan, and therefore my lamentations concerning the adulteration of Chinese papers are more restrained.
The Materials Used in Sizing Oriental Papers

The Occidental and Oriental methods used in the sizing of paper are not unlike, but their respective missions have numerous technical differences. In the Occident a solution of size, or glue, rendered from the hides of animals, is employed for closing the pores of handmade paper and giving it a slight coating of a mucilaginous substance, making the sheets impervious to ink. In the European method the size is applied either to the rag pulp before it is formed into sheets, or by dipping the paper into the size after the sheets are formed and dried; in some instances, to gain certain erasing qualities, both methods are combined. For writing with a metal pen in the European manner sizing is essential, for if the paper were left unsized (waterleaf) the ink would spread as on blotting paper, a substance which contains no sizing material.

In the Orient, where the brush and ink-cake are used for writing, heavy sizing is not essential. Nevertheless, the size is required for various technical reasons, more concerned with the actual making of the paper than with its ultimate use for calligraphy. In Japanese papermaking the vegetable size is a necessity in the actual forming of the sheets in the mould. It prevents the entangling of the long bark fibres and assists in producing even and uniform sheets of paper; sizing in the pulp also adds strength and a certain gloss that the paper would not otherwise possess. Its most important use, however, is to prevent the sheets from sticking together when they are couched one upon another, as in Oriental papermaking the sheets are not interleaved by felts as in the European method of making handmade papers.

In an endeavour to classify and arrange intelligently the various materials used for sizing in Japan, China, and Korea the student of papermaking grows bewildered with the multitude of colloquial names: each plant seems to be known under myriad appellations. While visiting the mills of these Oriental countries I was fortunate in being able to gather
together the various plants and barks used for the making of size, but, inasmuch as each region has its own local names for the materials, I found the task of compiling a list somewhat arduous. I was, however, kindly assisted by Mr. Honori Sato, a student of Oriental botany, and hope that the following descriptions of the plants, and the enumeration of their names will not prove too confusing.

In Japan there are three general classes of sizing, or no-ri, used in papermaking—shokubutsu-nori, tsuyu-nori, and ishi-nori. Of these three, the first, shokubutsu-nori, is absolutely essential in all papers made from the bark of the paper mulberry, for it is, strange as it may appear, only this particular vegetable size or mucilage that keeps the delicate sheets from sticking together.

Shokubutsu-nori are obtained from the roots of various Japanese plants and from the barks of various trees, the supply being almost unlimited. The shokubutsu-nori may be divided into two distinct groups—the kyofunori and the norinoki. The kyofunori are derived from plants, the norinoki from trees, all of which contain some form of mucilaginous matter suitable for sizing paper.

The kyofunori embrace such plants as marshmallow (Althaea officinalis, L.), holly-hock (Althaea rosea), okra (Abelmoschus esculentus) and rose-mallow (Hibiscus manihot, L.). The Hibiscus manihot of the family Malvaceae is perhaps the most widely used of the various plants for the sizing of paper, and in Japan it has a confusing variety of local names—koshokki, ohshokki, and tororo-aoi, being the appellations most frequently heard.

The name norinoki (meaning a gum tree) is not a name of any particular tree or shrub. The word is made up of three parts, nori meaning gum or mucilage, no a syllable which takes the place of the English possessive’s, and ki denoting a tree. Any Japanese tree that yields gum may be called norinoki. The words neri, nubeshi, nebashi, metarimonono, nebashi-nura-norimonono, tororo are all synonyms for nori, being provincialisms.

The names koshokki and ohshokki are Japanese localisms, while the names tororo-aoi and aoi (Holly-hock, Althaea rosea) are used in Korea. From the construction of the first two words it appears that koshokki is composed of ko a classic Chinese term meaning small, shok a classic Chinese term meaning glue, and ki denoting a tree or plant, while the word ohshokki is made up of oh meaning big, shok glue, and ki tree. Thus these two terms no doubt had their local origin as meaning “small gum tree” and “big gum tree,” denoting the kyofunori relating to the small plants, and the norinoki, or large gum bearing trees.
The *kyoifunori* plants grow in abundance in most parts of Japan so there is little necessity for cultivation. The plants that grow in fertile soil have many leaves and considerable development above ground, but the roots are not so large, while the plants found growing in poor soil have heavy roots. Since the size is extracted from the roots, the plants growing in poor soil are the ones most desired by the makers of paper. The buds and flowers of these plants are usually removed, as this has a tendency to increase root growth. The plants are dug from the ground after the leaves have turned a little yellow; the leaves and stalks are discarded, the roots tied in bundles and stored in a dry place, as they decay readily, especially during warm, moist weather.

*Norinoki*, as before explained, is the Japanese name for the sizes that are extracted from tree bark. The principal tree or large bush yielding *norinoki* is the *Hydrangea paniculata*, S. and Z., of the family (?) *Saxifiagacea*. The *norinoki* are of two species — the *matsukawa-norinoki* and the *hodokawa-norinoki*, the latter also called *hodogawa-norinoki*. The *matsukawa-norinoki* produces a size very light red in colour, and said to have an adhesive quality even greater than the *kyoifunori* extracted from the roots of *Malvaceae* plants; but the *hodokawa-norinoki* produces a size or “mucilage” that is superior to the *matsukawa*, as it has no colour and therefore does not stain the paper. The size-yielding trees are cut down, about a foot from the ground, after they have attained their full development, which requires several years after planting. The limbs are severed into three-foot lengths and pounded with a mallet until the bark is loosened, the inner white bark being used for the making of the size, and not the roots, as is the case with the *kyoifunori* plants. The *Hydrangea paniculata* grows profusely in the hills and mountains of Shikoku Island, and in Tosa, the papermaking centre of this island, the tree is called *tazu* or *tadzu*, while in other districts it is known as *nibe*. A Japanese

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2 The terms *tazu, tadzu, nibe, wazgi, utsugi, sabia* all belong to the same tree known in Japan as the *noritsugi*, while in the Occident they are known botanically as *Hydrangea paniculata*.
vine which furnishes a mucilaginous bark is the binan-kazura or binan-katsura (Katsura japonica, L.), but the bark of this vine is used to such a small extent for the sizing of paper that it is insignificant, and mention of it is made here only to make the compilation as complete as possible.

The material used for imparting a gloss or lustre to Japanese paper is known as tsuya-nori, being made from rice flour. Kaolin and similar minerals and clays used in the “loading” of Japanese paper are termed ishi-nori. The vegetable size (shokubutsu-nori) is always employed irrespective of the addition or omission of the tsuya-nori used for making paper glossy, or the ishi-nori, the substance employed to increase the weight of the paper.

In the Kwangtung Province of China size for paper is made by boiling the leaves and twigs of an evergreen shrub, sai ip tung ts’ing (Ilex pubescens, H. & A.), or those of a tree known as taai ip tung ts’ing (Ilex rotunda, Thunb.). In China size is also made from the roots of the ka saam nim (Abelmoschus moschatus, L.), and the bark of the muk min tree (Bombax ceiba, L.); as well as from the shavings of the p’aiu fa (Machilus thunbergii, S. and Z.), the latter being the same mucilaginous substance that is used by Chinese women as a pomade for the hair. The shavings from which size is extracted are of a lower grade, however, than those employed in making pomade. The shavings, about four inches in width and about the thickness of cardboard, are placed in an earthen vessel, covered with water, and stamped with bare feet until the glue or size is extracted. The liquid is strained through bamboo baskets and is then ready for the papermakers.

In Korea, as in Japan, the size used in the paper is made from the Hibiscus manihot (Abelmoschus manihot medicus), the root of this plant being generally conceded in both countries to be the finest sizing material when the best methods of old traditional papermaking are practised. During my visits to the paper mills of Japan and Korea this particular plant was much in evidence and it was my privilege to see the entire process of preparing the size from the roots; a most simple procedure, but one requiring considerable
time and patience. The *nori* of Japan and Korea are prepared by grinding the roots or barks to a pulp, after first removing the outer skin or rough covering. The ground pulp is placed in a sack made of finely-woven cloth and the sack and its contents immersed in a tank of pure mountain water. After the pulpy material has soaked a few minutes the sack is pressed and the thick glutinous liquid, or size, extracted through the meshes of the cloth. The pressure is continued until the ground barks or roots have given off all of the glue that they contain; then the bag is again filled with fresh ground gelatinous material and the dipping and squeezing process repeated. This work is usually performed by a woman whose duty it is to extract the *nori* for use in all of the vats of a mill. In warm weather there is a certain risk of the glue becoming rancid, so it is necessary to have a constant supply of freshly macerated roots and barks. As previously stated, the use of the vegetable glue is of Oriental origin, giving to papers of the Orient certain characteristics not found in those of the Occident.

**Colouring Materials**

In modern times the Japanese make use chiefly of synthetic colours for staining their papers, but previous to the advent of cheap and inferior dyes from the Occident, the barks, roots, leaves, and berries of various plants were used for this purpose. Inasmuch as vegetable dyes are still employed in several remote parts of Japan in colouring paper, it will be useful to list the sources of the most important shades as I have been able to assemble them. A pleasing grey, or slate colour, is made from the plant called *nemurasaki*, known botanically as *Lithospermum officinale*, while a light brown, or tan, is rendered from the berries of the *yashiabushi* (*Alnus yasha*). A delicate pink is made from the fernlike *sn-ho* (*Caisalpinia sappan*, L.), and various shades of yellow are extracted from the *ki-hada* (*Phelodendron amurense*, Rupe.). Different shades of a beautiful blue can be made from the plant known in Japan as the *ai*, and known botanically as *Polygonum*
Comparatively few of the Oriental papers are coloured artificially, but when colour is used the vegetable dye gives a much finer and more lasting tone than the imported synthetic colours.

The Japanese papers that are coloured in the vat during the process of forming the sheets are usually in soft, unobtrusive shades. When dark, brilliant colours are desired the Japanese artisans usually resort to the ancient practice of surface staining. This method of colouring is accomplished by coating one side of the paper with a liquid dye applied either with a sponge or soft cloth. The absorbent nature of the bark fibres and the vegetable size used in the manufacture of Japanese papers renders them ideal for staining in this manner. The craft of staining and decorating Japanese papers is not performed at the paper mills, but is undertaken in separate establishments, usually in the large cities, Tokyo being a centre for this kind of work.

The whitest handmade paper produced in Japan is made from the bark of the mulberry tree; papers made from mitsumata and gampi have pleasing natural tones that are especially well adapted for the printing of etchings and wood-blocks. The subdued, delicate shades of mulberry, mitsumata and gampi papers have aesthetic qualities that cannot be successfully imitated by the use of dye, no matter how skillfully the work may be executed.
PART II

Papermaking Moulds of the Orient

From the time of the invention of papermaking in China in the second century of the Christian Era, the mould has been the chief tool in the hands of the papermaker. It is only through its use that the macerated vegetable fibres floating upon the surface of water are brought together and matted into a homogeneous layer, which, after drying, is paper. The entire history of paper is so closely connected with mould-making that it is only through a study of moulds that the history of paper is revealed. Without a thorough knowledge of mould construction throughout the centuries it would not be possible to arrive at definite conclusions regarding the formation of the ancient Oriental papers that have been unearthed by archaeological expeditions in the Far East. It has not been my privilege to examine all of the old papers that have been discovered by Sir Aurel Stein and Dr. Sven Hedin, but I am informed that these precious bits of paper distinctly show the impressions made by bamboo moulds of the “laid” type. While these impressed lines in this early paper do not bear out my supposition, I am inclined to think that the very first paper was formed on a fabric mould of the “wove” style. There is no basis whatsoever in the way of specimens of ancient paper nor any concise evidence to prove this assumption. In my own experiments, however, while trying to arrive at the modus operandi used by the actual inventor of paper I have come to the conclusion that the “wove” mould must have been the earliest type employed, and that the macerated fibres were poured onto the mould and

6 Sir Aurel Stein, an eminent authority on Asia, on one of his journeys through Chinese Turkestan discovered several parcels of folded paper, which, upon ultimate examination under the microscope, proved to be formed partly of rag fibres. Authorities place the date of these sheets at about 150 A.D. Paper, dating from 250-300 A.D., was also found by Dr. Stein in Nyia in Turkestan. The earliest paper that is clearly dated was found by Dr. Sven Hedin at Loulan, the date being 264 A.D. A number of these ancient papers are in the British Museum.
dried upon it, and not the mould dipped into the fibrous liquid and the wet sheet removed at once. My imaginary type of mould may have been used only a short time, but sufficiently long to convince the inventor of paper that he had conceived a method of forming thin, matted sheets suitable for calligraphy—a substance which would eventually become an economic substitute for the various materials that had been previously used for writing. I will not venture a surmise as to when the “laid” type of mould was first used; the earliest paper discovered by Sir Aurel Stein and Dr. Sven Hedin clearly shows the impressions of moulds of this construction, but this paper does not date from the very beginning of the craft. My contention that the “wove” mould was probably the first form has no other basis than that the idea of this type of mould, so simple to use, would naturally have been the first to enter the mind of the originator. It is my belief that the “laid” style of mould, dipped into the vat of suspended fibres, was an after invention—perhaps following the “wove” mould by only a short time, but sufficient to give the “wove” mould first place.

To my knowledge no second century paper of the “wove” style, showing the impressions of the woven fabric upon which it was formed, has ever been discovered in Asia. In Kwangtung Province, China, at the present time, however, the “wove” style of mould, upon which the fibre is poured and allowed to dry, is in use. There is no record of how many years this method has been employed, but it is interesting to note that the locality where these “wove” moulds are now used is not above two hundred miles from Leiyang, near Hengchow, Hunan Province, the seat of the invention of papermaking by Ts’ai Lun about 105 A.D.

As the “wove” mould from Kwangtung Province so closely resembles my own imaginary conception of the original Chinese mould such as may have been used by Ts’ai Lun, or his apprentices, I will begin this section with a description of this implement.

The Kwangtung “wove” mould which forms photograph 8 was
presented to me by Mr. F. A. McClure, professor of botany, Langnan University, Canton. This particular mould was used in making a special paper called *Tang chi*, or lantern paper. Near the city of Fatshan, Kwangtung Province, moulds of this same type are used in the making of *Kam pok chi*, or gold leaf paper, which is apparently used for no other purpose than for placing between gold leaf, a form of thin beaten gold employed by the Chinese wood-carvers for decorating images and idols. The mould shown is capable of forming sheets of paper measuring approximately 16½ by 21 inches. Probably the largest “wove” moulds in use at the present time in China are found at Ma Haang, near Kochow, southern Kwangtung. These measure 34 by 59 inches and are used for making *Taai pei chi*, large bark paper. From the dimensions of *Taai pei* paper it will be seen that the woven type of mould does not place a severe restriction upon the size of the sheet made. It must be understood that the macerated pulp or fibre is poured onto these “wove” moulds and that each sheet is suffered to dry upon the mould before being removed. Since even with favourable weather it would require about a half hour for each sheet to dry, this method of papermaking necessitates a large stock of moulds. In the mill at Fatshan there are about two thousand moulds, both old and newly-made. The photograph of the Kwangtung type of “wove” mould gives a clear idea of the construction. The two lateral bars of bamboo are twenty-seven inches in length and about one inch in diameter, the “legs” protruding about three and a half inches beyond the point where the two cross-bars, also of bamboo, are placed. The two long lateral bamboo strips are made of *ch’a kon chuk* (*Arundinaria sp.*). The cross-bars, which are equal in length, plus the diameters of the two lateral bars into which they are morticed, are about three-fourths of an inch in diameter and are made from split *mau chuk* (*Phyllostachys pubescens* (Carr.) de Lehaie). The woven screen, upon which the fibrous pulp is poured to form the sheet of paper, is composed of *ch’ue ma* (*Boehmeria nivea*, Gaud) (termed ramie, rhea or china grass), and is made to fit precisely
the opening in the bamboo framework. The warp and woof strands of this woven material are about the thickness of common cotton string and are twisted to give strength. The woven ramie screen is fastened to the four bamboo bars in the following manner: Strips of slender bamboo equal in length to the edges of the screen are run at short intervals through the meshes of the cloth, forming a boundary edging which in turn is lashed to the heavy bamboo frame by the use of rattan wound spirally around each section. The method of lacing is so well conceived that the tension on the woven cloth is distributed evenly over the entire surface. In Kwangtung the “wove” moulds are subjected to a treatment of shue leung, a dye which acts as a preservative. In specimen 51 is shown a sheet of paper that was made on the “wove” type of mould; an examination of this paper will reveal the indentations of the woven cloth.

In the Chekiang Province there is in use a type of papermaking mould probably invented within the past hundred years, but founded upon the “wove” mould of Kwangtung. This mould, five specimens of which are pictured in photograph 9, is of the same general principle as the Kwangtung implement, but substitutes for the woven ramie cloth a screen of osier or rattan. The strips of rattan are about five-eighths of an inch in width, with cross strips every two and a half inches, forming a very coarse warp and woof surface which allows the drainage of water in much the same manner as the woven ramie. The pulp is also flowed over these moulds, as in the Kwangtung type, and the paper dried upon the moulds. Photographs 10 and 11. In the rattan moulds it will be seen that there are raised narrow strips of wood around the four edges of each frame which act as boundaries to keep the pulp from flowing over the sides. These strips answer the same purpose as the “deckles” on European hand-moulds. The sheets made on the rattan moulds of Chekiang measure 45½ by 59½ inches, the paper being made from bamboo fibre.

We now come to the common type of “laid” mould, almost universally
used by the hundreds of small handmade paper mills throughout China. Probably the greatest volume of paper is produced in the province of Fukien, but the finest Chinese paper is fabricated in Anhwei. In both provinces the "laid" mould is employed. This Oriental "laid" mould has been in use in China since shortly after the invention of papermaking, and upon it all modern papermaking, both Oriental and Occidental and both handmade and machine-made, is founded. The principal feature of the "laid" mould is that it can be used over and over without interruption, inasmuch as the wet, newly-made sheets may be taken from the mould immediately after they have been formed. In the "wove" moulds, of both the ramie and rattan construction, where the pulp is poured on the moulds, it is necessary to allow the sheets to dry adhering to the moulds, so that many moulds are required. With the "laid" style, however, as before stated, the thin layer of fibrous pulp is deposited on the mould by dipping the mould into the pulp; and as the entire surface of the "laid" mould is smooth and flexible the newly-formed sheet may be taken from the mould's surface immediately after being dipped, leaving the mould free again for immediate use. One "laid" mould is, therefore, capable of producing the same amount of paper as several hundred separate moulds of the woven fibre style.

The "laid" mould of China shown in photographs 12 and 13 gives a good conception of this type, although there are innumerable sizes and variations. This particular mould is divided by leather straps into three parts, for the forming of three separate sheets with one dipping of the mould, each sheet measuring approximately eight inches square. Specimen 50. The frame of the mould, upon which the "laid" cover rests, is made of bamboo and china fir. The two lateral bars are thirty-four inches long and the cross-strips twelve and a half inches in length, thus making a rectangular frame. The four bars of the main framework are cut from china fir (Cunninghamia lanceolata, Hook. f.), while the seventeen thin cross pieces are fashioned from arrow bamboo (Arundinaria or Sasa sp.). The "laid" cover
upon which the paper is actually formed is supported upon the framework just described, the whole constituting the principal tool of the papermaker. The “laid” cover in this particular instance is thirty inches long and eight and a quarter inches wide and is composed of rounded strips of bamboo, the rounded form given by the simple, but ingenious process of drawing the strips of bamboo through a metal plate in which round holes have been drilled. The “laid” bamboos are not, however, sufficiently long to run the full length of the mould, but are butted together to form one continuous line, the separate lengths being from eight to ten inches. In the mould shown in photograph 13 there are thirteen bamboo strips to the inch, but this number must not be taken as universal, as there is a great variation in the number of “laid lines” to the inch, as well as in the thickness of the strips.

It will be seen from the photograph that the laid bamboo strips are laced together at intervals, the lacing holding the bamboos firm and in exact relation to one another. The material used for lacing, like that from which the “wove” Kwangtung moulds are made, is composed of the fibre of ch’ue ma, or ramie. The laced lines appear about an inch apart, except where the rounded strips are butted together, at which points the lacing is more closely spaced to keep the loose ends of the bamboo from becoming dislodged. The number of “laid” lines to the inch, as well as the distances between the laced, or “chain-lines,” may be detected in the impressions left in the paper, no matter how many centuries old it may be. This is true also of European handmade paper, but in place of the laid bamboos and lacing of hair or ramie, the European mould-makers use metal wires. The rigid metal wire moulds of Europe, upon which all Occidental papers have been made since the twelfth century, are a distinct outgrowth of the Chinese bamboo moulds of the second century. Papermaking was over a thousand years in making its transit from Leiyang, China, to Xativa, Spain, but after the thousand year journey the principle remained unchanged.

In photograph 13, showing the Chinese mould, it will be seen that the
laid bamboo cover is terminated at the top and bottom edges by bamboo bars, one slightly larger than the other. The two bars act as boundaries, so that the wet pulp will not flow beyond these points, the flowage at the narrow sides being checked by two loose pieces of wood (china fir) which are held in place by the worker who dips the mould. (Both the small rounded “laid” strips and the two bars running parallel with the laid lines are made of bamboo, *Phyllostachys edulis* (Carr.) de Lehaie, the whole mould being coated with lacquer, *Rhus vernicifera*, as a protection against water.) This boundary is the “deckle” or fence around the four outside edges, while the two leather straps divide the mould into three distinct parts, upon each of which a separate sheet is formed when the mould is dipped into the vat. In photograph 14 is shown a mould with three leather straps, suited for making four sheets of paper at one time; if a long narrow sheet of paper is desired the leather straps are removed, as the bamboo “laid” lines run the full length of the mould. The “laid” mould is the most common type in China as well as in all parts of the Orient. It is found in an almost unlimited variety of sizes, but in general principles of construction all are identical.

The craft of papermaking was introduced into Korea from China. The exact time is not known, but the inception dates from a most remote period. The Koreans in turn carried the art to Japan sometime during the seventh century A.D. The Japanese, with their innate ingenious skill became expert papermakers, and soon outclassed both the Chinese and the Koreans in the cultivation of trees and shrubs for papermaking barks, in the varieties of paper made, and in economic production. Before the advent of the Japanese in Chosen, the Koreans had their own technique in mould construction as well as in the formation of paper upon the moulds, although, as in all papermaking by hand the original Chinese principle remained unaltered. In visiting the small handmade paper mills of Korea I did not find a counterpart of the “wove” mould such as is used in Kwangtung Province, South China, nor do I believe that the “wove” type of mould ever played
a part in Korean papermaking. The Korean papers have always had their own special characteristics, due largely to the moulds on which they were formed and the technique used in the preparation of the materials. When the Japanese entered Korea during the first part of the present century, the Koreans were making paper in their own manner, which, although primitive, answered their special requirements. The cumbersome Korean methods, however, did not appeal to the aggressive Japanese as efficient and economical and it was not long before they made every effort to supplant the backward Korean system with their own proficient one. This was accomplished by the establishment of classes in the making of handmade paper at the technical school in Seoul, where young Koreans are taught the craft as practised in Japan. In a later section of this book this most interesting school is dealt with at length, as it is the only institute in the world where the craft of making paper by hand is taught.

It will not be many years before the old Korean methods of mould construction, as well as of paper fabrication, give way to Japan, so it is my desire to describe the typical Korean mould as it remains in use in a few of the more inaccessible paper villages of the mountainous peninsula. It was my privilege to visit the papermaking hamlet of Ompei in central Korea where I was able to see the papermakers at their work. They generously presented to me for my collection one of the moulds they had been using during my stay in the village. As this mould is of the typical early pattern and representative of old Korea, a complete description of it will be given.\(^7\)

Like the common “laid” mould of China, the Korean mould consists of four separate parts—the frame, the “laid” cover, and two “deckle” sticks. In the Korean mould given me at Ompei the frame, or support, is made

\(^7\) Inasmuch as the Japanese type of hand-mould will be described later it will not be necessary to give an account of this improved implement in connection with its recent introduction into Korea, although the old Korean paper-making mould will in time be forced into retirement by the Japanese who rightly regard their system as the more progressive, though not so picturesque. Compared with modern Japanese moulds those of Korea are most primitive.
of inch square strips of soft wood, and measures thirty inches wide and fifty-seven and a half inches long; four ribs run parallel to the length, the ribs being triangular in shape with the point uppermost; a flat cross-piece of fir through the centre of the mould-frame gives additional strength to the four ribs. The whole frame is morticed and held together with wooden pegs, forming a firm support upon which lies the “laid” bamboo cover. The cover, upon which the paper is actually formed, is made of rounded bamboo \(^8\) strips laced together at given intervals with ramie or hair. There are fifteen laid lines to the inch in the particular mould described, but this number must not be taken as universal, as Korean moulds show decided variation in this detail. The “chain,” or laced, lines of the Ompei mould are seven-eighths of an inch apart, which is rather wide spacing for a mould from Korea. The “laid” bamboo cover is bound on the four sides with coarsely-woven fabric. This cloth not only protects the edges, but at each end, parallel with the laid bamboos, it is sewed around bars of bamboo which act as boundaries, or “deckles.” The “deckles” along the wide side of the mould are formed by loose rounded pine sticks which the workers hold in place. Thus with the two permanent strips and the two removable sticks a complete boundary around the four sides of the mould is effected, keeping the liquid pulp well within bounds when the implement is dipped into the vat.

All Korean moulds, as well as the paper formed thereon, may be distinguished by several marked characteristics: the “laid” lines run the narrow way, and the “chain” lines, often narrowly-spaced and irregular, run the length of the mould or sheet of paper. I have examined hundreds of sheets of Korean paper, dating from about 1700 onward, and it is most unusual to find any specimens that do not conform to the standard just

\(^8\) While bamboo is the most common material used in making Korean “laid” moulds there have been instances where the stalks of a tall Korean grass (\(\text{Miscanthus sp.}\)) have been employed. Bamboo is an ideal material for the construction of Oriental moulds.
described. In all other Oriental (and Occidental) moulds the reverse of
this arrangement is true, that is, the “laid” lines run the long way of the
moulds, or paper, while the “chain” stitches are parallel with the narrow
edges. The typical Korean mould shown in photograph 15 was used for
forming paper 28½ by 46½ inches, a size which, after oiling, is used for
permanent covering of floors in native houses.

The papermaking moulds of Japan are the most complex in the Orient,
and new devices are constantly tried and adapted in an endeavour to perfect
handmade papers for various modern uses. In addition to the purely aesthetic
value that their handmade paper may possess, the Japanese craftsmen have
been mindful of its commercial possibilities and have made such remarkable
developments that the vat papers of Japan find daily use throughout Europe
and America for many utilitarian and industrial purposes.

If it were not for certain elusive artistic qualities, there is probably no
handmade paper at present fabricated in China or Korea that could not
be duplicated on the machine. In Japan, however, much of the paper is sold
solely for its adaptability to various industries, without assuming that it
may possess aesthetic or sentimental value. Some of the exceedingly thin
and long-fibred varieties of Japanese bark papers could not be successfully
run on a paper machine and therefore the handmade paper industry of
Japan has a hopeful outlook, while in other parts of the Orient the machine
may eventually supplant the ancient hand craftsmanship. It is gratifying,
however, to note that in both China and Korea there is a certain sentiment
among the older inhabitants about handmade paper. But the older genera-
tion must sooner or later give way to the new order, and even in ancient
China, with all her traditions and superstitions, there is a desire among the
younger people to cast out the old-time-honoured crafts to make room for
modern mechanical appliances. A most noticeable and striking demon-
stration of this tendency is the present-day use of the fountain-pen among
young European-clad students who have developed a special technique in
writing their complicated characters. The old classical Chinese scholar, with his hatred for Western innovations, clings to the hair brush and ink-cake, and deplores the transformation that his elegant calligraphy is undergoing, but through the inevitable alteration in the mode of writing Chinese characters the entire papermaking industry of the country may in time be revolutionized.

While Japan is also experiencing a decided change in every aspect of life, the skillful artisans of the island empire have kept more nearly abreast with the times in making their handmade papers, and in recent years their papers have been adapted to such a variety of special commercial uses that many of the hundreds of small mills throughout the country may be assured of a continuance. This would be particularly true if the present wage scale remains unaltered, for it is, after all, chiefly through low labour costs that the handmade paper industry of the Orient is able to exist in competition with the machine.

While, as before stated, the moulds of Japan are more complex than those of any other part of the Orient, the formula of their construction and their ultimate use in forming sheets of paper, are practically the same as in China and Korea. The Japanese have in late years, however, given thought to such commercial necessities as more rapid production and the adaptability of certain styles of moulds to particular requirements. There are a number of types of moulds in use in Japan, but on my recent papermaking journey in that country, where we inspected over a hundred different mills, I noticed that two distinct styles dominated, each of which will be described in detail.

The most common type of mould used in Japan is distinguishable from all others by the “deckle,” or upper sugeta, being hinged to the lower sugeta,

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9 The term sugeta is made up of two words, su meaning a bamboo mat or strainer, and geta meaning a row of tiles, fencing, etc. In this particular case sugeta is used to denote a fence or “deckle” for keeping the fibrous pulp within the boundary of the su.
or frame. Moreover, this pattern of mould has two handles protruding from the upper *sugeta* and spaced conveniently for the worker to grasp. Moulds of this type, photograph 16, are used in making the thinnest of tissue paper, specimen 21, usually from the bark of the mulberry tree, called in Japan, *kozo*. The uncut and untrimmed paper fashioned on this mould would measure 22 ¾ by 62 ¾ inches, but these exceedingly thin papers are usually trimmed and cut into convenient sizes to suit numerous commercial uses throughout the world. The mould cover (su) is made for forming “wove” paper of the finest texture, and every effort has been made to eliminate any markings or impressions which the mould cover might leave in the paper. This has been accomplished by covering the usual “laid” bamboo *su* with a finely-woven silk textile in which the warp and woof threads run about thirty-four to the inch, the silk being lacquered to protect it against the constant moisture. The supporting frame-work for this “wove” covering is made of soft wood with thin copper hinges and catches, the whole frame weighing but five pounds, while the woven silk cover, with its flexible bamboo under support, weighs only one and one-fourth pounds. From the photograph it will be seen that there are thirteen ribs, or cross-bars, which support the “wove” covering while the mould is dipped. Each of these wooden ribs is surmounted by a copper wire bridge which holds the “wove” cover above and away from the ribs, thus eliminating any impressions or streaks in the finished paper that the suction of the ribs would cause if the covering were laid directly against the wooden rib supports. These slightly-curved wire bridges are a recent innovation and were adopted solely to remedy the streaks, which were a slight annoyance to the foreign trade in using the paper for special purposes. In most of the Korean paper, made on native moulds, these dark streaks or rib impressions are quite noticeable, but for many uses this insignificant defect is not an objection.

The Japanese mould just described was presented to me by Mr. K. Makauchi at the time of my visit to his mill near Köchi, on the island of
Shikoku, south of Japan proper. Another mould of the same kind, but smaller in size, may be studied in photograph 17. This implement was given to me by Mr. M. Mori, superintendent, Gifu Prefecture Papermaking Laboratory, and had been used in the Uchda paper mill, Kamimaki-mura, Mugigun, Gifu. Both of these hinged moulds were in actual use when we inspected the mills and were taken from the women workers so that I might have them for my collection.

The other common type of Japanese papermaking mould is shown in photograph 18. This utensil is employed in forming sheets of paper that measure 34 by 68½ inches, the paper being made from the bark of the mulberry tree and used in Japan for windows and partition screens. Specimen 4. I have seen these large sheets made in both Okayama and Fukui Prefectures, this particular mould having its origin in Okayama. The supporting frame is made of light-weight wood, and has sixteen quarter inch ribs and a single rib running through the centre that measures one inch. All of the ribs are cut to a point on the upper edge so that there is as little wood surface as possible coming in contact with the “laid” cover. The frame weighs eleven pounds, but a mould of this pattern is operated by two women, the process being fully outlined in Part III. The “laid” covering for the mould is formed of rounded bamboo strips that have been forced through a draw-plate rendering every strip precise and true. Each strip of bamboo is seven and a half inches in length, and nine of these strips, placed end to end, are required to extend the full length of the mould. There are twenty-five of these “laid” lines to every inch. Where the bamboos are butted together the “chain,” or stitched, lines of silk are only three-eighths of an inch apart, but the regular “chain” lines are spaced one and three quarter inches. The su, or bamboo cover, with its two triangularly-shaped wooden strips running at the edges parallel with the “laid” bamboos, weighs two and one quarter pounds.

The small type of mould, photograph 19, is in every-day use in Japan,
but inasmuch as the sheets made thereon are comparatively small, these moulds are not of much significance commercially. The small mould illustrated is of the regulation three-piece pattern with an upper and lower sugeta, between which is placed the su, or “laid” bamboo cover upon which the paper is formed. The “deckle,” or upper sugeta, is not always hinged in these small moulds, but is held in place by the worker as each sheet is dipped. These moulds are used in making the so-called “art” papers which have four “deckle” edges and are so much desired by the printers of etchings and wood-blocks. Specimens 13 and 33.

Even the European style of rigid wire mould is not unknown in Japan, and it was my privilege to see moulds of this pattern in use at the Imperial Government mill, near Tokyo, making the new money paper for Manchuria, as well as other finely watermarked specimens. Mr. Misao Murai, chief engineer of this renowned mill, displayed for my benefit many light-and-shade watermarked moulds executed in woven wire, as well as the magnificent papers that had been formed upon them. These large watermarked papers are mounted in wooden frames and embrace all manner of Japanese pictorial art—landscapes, animals, flowers, birds, fishes, and, of course, many studies of the beloved Mount Fujiyama. I have never seen finer watermarking and value highly the sheets which Mr. Murai kindly presented to me. In Japan, as in Europe, these elaborate and skillfully executed watermarks have very little commercial value and are created by craftsmen who have no other desire than to surmount great technical difficulties and to achieve something in paper that is artistic and unique.

It was also my privilege to see woven wire moulds in use in the mill near Okamoto, Fukui Prefecture, owned by Mr. Ichibe Nishino, a scholarly gentleman of old Japan, whose family has been engaged in papermaking in this locality for many generations. These moulds were being employed in making the well-known mitsumata “vellums” which are used extensively in Japan for bonds and stock certificates.
PART III
The Pilgrimage

In undertaking a pilgrimage to the Orient in quest of information, specimens, and tools relating to native papermaking, the all important requisite to a successful and profitable journey is to have friends in the different countries who are acquainted in the isolated papermaking districts, and who have access to the various mills and workshops. Without such introduction the task would be hopeless, as in the Orient many of the old handmade paper mills are situated in remote locations where few foreign visitors would have reason to penetrate, and the mill owners and workers still have the ancient idea of secrecy and mystery about their craft. Without proper introduction through native gentlemen who are known and trusted by the papermakers the finest mills would remain but a blank wall to the foreign intruder, for, with all their inborn courtesy and hospitality, the custodians of the handmade paper mills are reluctant to permit anyone to see what takes place behind the high rambling walls, unless they are certain that the sightseer is seriously interested in their work and has only honourable intentions. There still exists in the Orient that medieaval secrecy which not many years ago enshrouded the mills and workshops of Europe and America—indeed even to this day this same seclusion and reticence prevail in a few of the English and Italian handmade paper mills.

In Japan my papermaking sojourn was planned and supervised by a number of gentlemen connected with the Oji Seishi Kabushiki Kaisha (Oji Paper Company), including Mr. K. Takashima, managing-director of this company, Dr. T. Seki, secretary of the Nippon Seishi Rengokai (Association of Japanese Paper Mills), Mr. Yasunosuke Fukukita, purchasing agent of the Oji Company, and Mr. S. Yamada, of the export department of this large manufacturing concern; Mr. Shigeo Nakane, of the American Embassy, Tokyo, also rendered most valuable assistance and guidance.

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Dr. Seki, one of the foremost authorities in Japan on the subject of old papermaking, arranged the itinerary and accompanied us on part of the expedition, while Mr. Yamada, a most agreeable and painstaking gentleman, acted as interpreter, companion, and guide during my entire stay in Japan.

In giving an account of our journeys in Japan in search of material for this volume, I will endeavour to confine my writing to papermaking and allied interests. There is much of unusual interest in the more remote and untravelled parts of Japan—the everyday life and strange customs of the country people, the religions, the costumes, travelling conveyances, shops, inns, restaurants, geisha—but Occidental writers have not neglected the various picturesque phases of the Orient so it will remain for me to dwell only upon the fabrication of handmade paper and those subjects connected with this calling; any deviation from this course would be beyond the scope of this book.

The papermaking journey was planned well in advance of my reaching Japan, so that a few days after my arrival in Tokyo, early in March, Dr. Seki, Mr. Yamada, and I set out in the evening from the capital with the north coast of Japan, to be reached the next morning, as our destination. The trains of the narrow-gauge railways run smoothly and are almost always precisely on time, but the designer of the sleeping-cars did not take into consideration the comfort of a six-foot paper enthusiast who was destined to spend many nights within the confines of the short and narrow berths.

The first place to which we were bound was the small village of Takefu, in the province of Echizen, in the prefecture of Fukui, which is the nearest village to the papermaking centres we wished to visit. After changing cars at Takada, Toyama, and the city of Fukui, we reached Takefu the day following our departure from Tokyo. We had been in the village only a few moments when we were approached by a policeman and a small group of soldiers who politely asked my companions who I might be and what
possible interest a foreigner could have in the out-of-the-way village of Takefu. After Mr. Yamada had explained my presence, and the authorities were convinced that I was only a harmless craftsman who had journeyed half way around the world to see mulberry fibres converted into sheets of paper, they did not confront us further until nightfall.

Through the kind offices of Dr. Seki we were introduced to Mr. Fujiki who operates a machine paper mill not far from Takefu village, and this gentleman arranged for our conveyance to the handmade paper mills in the district, inasmuch as the mill owners had been notified long since regarding our coming. Before going to the outlying places, however, we were invited to inspect Mr. Fujiki's machine mill, where, after many introductions, we were served tea, a courtesy which grew to be very familiar, for in the paper mills of Japan it is always the custom to serve tea to the guests both before and after the inspection. It is usually partaken in a small room fitted for the purpose. The tea used is invariably green and the cups are small and without handles, but with tiny lids to keep the refreshment hot during the long periods of drinking which includes much polite bowing and animated conversation. In the mill, as we walked slowly past Mr. Fujiki's pulp beaters and papermaking machine, the workers, huddled over their hibachi, would kneel and touch their heads to the damp floor in respect to Dr. Seki and Mr. Yamada, to say nothing of the inquisitive papermaker from beyond the sea. At the time of our visit the machine was running a thin, transparent paper which we were informed was to be used for the wrapping of incense for religious offerings.

To reach the various handmade paper mills of Echizen from Takefu it is necessary to go by automobile and by foot through miles of narrow, winding lanes, as both the large and small mills were built clustered together in little isolated groups, hundreds of years before any thought was given to transportation other than by man or beast. In travelling through one particular part of Echizen we came upon a long, narrow road that our
driver deemed too soft to withstand the weight of the light American automobile at our disposal, so a messenger was sent to the next village for a less weighty form of conveyance. After considerable waiting, amid an assemblage of hundreds of wooden-shod peasants and round-faced, gayly-dressed children who had gathered to see the “blue-eyed foreigner,” all of whom had no other thought than an interest in our welfare, two of the tiniest automobiles I had ever seen came to our aid. We then started for our destination, through overhung groves of bamboo and forests of giant trees, past little paper-windowed houses, shops, shrines, and moss-covered tombs; the dense countryside of Japan is beautiful in the spring, but the tourist must leave the good roads and take to the sparsely-trodden paths if the real life of the country and its natural beauties are to be appreciated.

We finally reached Okamoto-mura where the renowned Nishino hand-made paper mill is located; but before going to the mill it was imperative that we pay our respects to the owner, Mr. Ichibei Nishino, whose family has been engaged in papermaking for many generations. Seven brothers of Mr. Nishino also reside in this district, each one following a distinctly different form of craftsmanship. The home of Mr. Ichibei Nishino, the papermaker, is situated directly on the steep and narrow winding road which leads to the mill; a wooden house with low portico, under the roof of which hang seven oddly-shaped bamboo fire buckets, the whole façade having the appearance of a delightfully picturesque stage-setting. The frailty of the sliding doors made of light latticed wood covered with mulberry bark paper attests the honesty of the community, for within, on the raised polished floor are bales and bundles of all manner of fine papers that have been manufactured in the owner’s mill; the house serves not only as dwelling place, but for office as well. With the manners and politeness of ancient Japan, the venerable Mr. Nishino, at the sight of his old compatriot, Dr. Seki, fell to his knees and touched his head many times to the floor. After the ceremony of greeting was finished we were invited to sit
upon the polished floor around the hibachi, and were served clear green tea and little squares of confection. Mr. Nishino, with much humility and modesty, implored that we do him the honour of inspecting his paper mill, and upon our grateful acceptance of the invitation, the master of the mill led the way down the grass-grown lane to the group of buildings surrounded by a wall where the inevitable hot green tea in tiny covered cups was awaiting our arrival.

The Nishino, handmade paper mill is the most pretentious in the district, and I was rather surprised to see the large proportions of the rambling, half-timbered buildings, each devoted to one of the many processes of preparing the materials and converting them into sheets of paper. We were taken up steps and down, through the warm, steamy, stone-floored sheds, filled with the aroma of fresh bark, where the materials are boiled; then on through the low house where the beating takes place, and into the great rooms fitted with low, oblong wooden vats filled with the beaten bark into which the moulds are dipped in forming sheets of paper. In Japanese handmade paper mills the visitor is always conscious of the sound of dull, slow beating and the swishing of water, mingled with the scuffle of wooden shoes on rough stone floors, while the whole atmosphere is one of intense dampness, heavy with the delightfully-fresh odor of newly-beaten barks.

While visiting the Nishino mill I was fortunate in being able to see the making of the so-called “vellum”—that smooth, long-fibred, natural-toned paper sometimes used in the printing of fine books and etchings, and cherished by bibliophiles and print collectors everywhere. This paper is made largely from the bark of the mitsumata shrub. In Part I, I have dealt with the cultivation of the mitsumata and other papermaking plants. This, however, will be an appropriate place for an account of the actual preparation of the several barks used in papermaking.

The part of the bark useful to the papermaker is that section which lies between the stalk and the actual outer bark—the thin, white, tender
inner bark — photograph 20, the rough, dark-coloured outer bark and the stalks being used for fire-wood. The stalks of the mitsumata are cut at the commencement of winter and the entire bark removed, both inner and outer together. The bark is air-dried and is known in Japan as kurokawa, or black bark. After the rough, dark outer bark is removed, the remaining thin inner bark, from which the paper is made, is termed jikegawa, or unfinished, unbleached bark. This unfinished bark is bleached and cleansed by being allowed to soak in pure water for several days, after which treatment it is called shirokawa, or bleached bark. The barks are next cooked; the mitsumata undergoes the cooking process in the jikegawa state, the paper mulberry in the shirokawa form, and the gampi in the state termed kurokawa. The preliminary treatment of the barks, up to the cooking process, is mostly performed by the peasants who cultivate the shrubs and who sell the bark, done up in neat bales, to the papermakers.

The boiling or cooking process, photographs 21 and 22, is known in Japan as jiohatsu or nikata. The barks of the mitsumata, paper mulberry, and gampi are all cooked in an alkali solution, the bundles, tied with bark, being placed full-length in the open cooking receptacles (ike) where either steam or direct fire is applied. The barks of mitsumata and gampi require about three hours of cooking, while the bark of paper mulberry, being tougher, takes from six to eight hours, according to its age and tenderness.10

The cooked pulp is again washed in running water for several days which rids the material of any residue of alkali and tends to promote a natural whiteness without causing the bark fibres to lose strength. The washing process is termed arai-kata and takes place in the pure water of the numerous streams that abound in the papermaking districts. After the

10 According to Genta Yoshii of Köchi, writing in Nippon Seishi Ron (Papermaking in Japan), published in Tokyo, the 31st year of Meiji (March 28, 1898), the following suggestions are given for cooking the various materials used in Japan for paper: For straw, caustic lime; for willow, potash; for all kinds of twigs, crude lye; for barks in general, wood-ashes; for bamboos, any caustic (hydrate and sulphide); for mulberry bark, etc., clear lye.
bark has undergone the second washing following the boiling, the materials are subjected to a most exacting and laborious process, called mizu-naoshi, photograph 23. This work, performed by women and girls, consists of ridding the boiled and bleached fibre of any foreign matter. For this arduous task the bark is immersed in vats of clear water, and all dirt, remains of insects, sand, decayed bark, minute scraps of the dark outer bark, and discoloured fibres are picked out by hand with infinite pains and patience. In this thoroughly simple, but laborious, practice lies one of the “secrets” of fine Japanese papermaking. When the raw material is picked over while lying upon a table or other dry surface, instead of in vats of water, the picking process is termed kara-naoshi as shown in photograph 24.\footnote{In the Imperial mill, near Tokyo, this picking process is carried on in a manner that I did not see repeated in any other Japanese mill. After the regular mizu-naoshi, the pulp was run through a small, narrow wet-machine which formed the bark fibres into crude, thin sheets, or laps. While still moist, these long sheets of pulp were suspended, against the light, over small wooden standards, thus affording the women workers every opportunity of seeing the minute specks, which then were snipped out by hand with amazing dexterity. This particular pulp was eventually to be used in making the finest “vellums” for the Imperial Government of Japan. No other country in the world uses such beautiful papers for governmental purposes.}

The mizu-naoshi, or cleansing process completed, the pulp is ready for beating. In the case of mitsumata and gampi the maceration is done in ordinary beaters or “Hollanders” of very small size, photograph 25, the roll being held well away from the bed-plate so that the fibres are drawn out and not cut or crushed; the fibres that are to be used in making fine Japanese paper must be long and uninjured by harsh beating. The bark of the mulberry is either beaten by hand, which process will be treated later, or reduced mechanically by means of stampers, photographs 26 and 27, that endeavour to emulate the ancient hand pounding. The mulberry bark after beating in a few of the large mills is put through another macerating process. This consists of placing small portions of the stamped pulp in half-round bamboo baskets lined with silk cloth. The pulp held in the basket is placed under running water and subjected to a violent agitation...
produced by a pronged metal fork somewhat resembling a giant egg beater. The post-beating operation completed, the basket of pulp is removed from under the fork-like beater, the water drained through the silk cloth, and the laps of pulp piled in rows ready for the papermaker.

During our visit at the Nishino mill we were fortunate in seeing paper fabricated on rigid, woven-wire moulds, the type of mould used in Europe in the forming of handmade paper. This paper was intended for bonds and each sheet bore watermarks of Japanese characters, every symbol sunk in the woven wire cloth, thus causing the characters to be heavier than the rest of the sheet. The largest sheets measured 22½ by 33 inches. Not only were moulds of the European type used, but the process of forming the sheets of paper upon them was not unlike the Occidental procedure. In the making of the Japanese mitsumata papers, however, the mould is dipped into the vat two or three times before the proper amount of stock is secured, while in Europe but one dipping is required. This variance, of course, results from the different character of the material—mitsumata, paper mulberry, and gampi fibres of the Orient being vastly removed in structure and temperament from the rag fibres of the Occident.

The inspection of the Nishino mill completed we returned to Takefu, where Mr. Fujiki had arranged a banquet for us, embracing raw fish, sake, and all the native delicacies to be had in the village. This was my initiation into the purely Japanese manner of life; the food I found exotic, but most excellent, my greatest hardship being in sitting for many hours cross-legged upon the floor. Several geisha girls were present, and two of them, Miss Kikue Yamada and Miss Fukueyu Matsunoya, sang an old papermaking song for me. The precise history of this I could not ascertain, but apparently the verse had come down through several centuries. The song is difficult of translation, but it is a humble plea to the stranger visiting the province to purchase the wares of Echizen, including knives, nets, dyed cloth, and marbled paper. The one verse is sung over and over, and runs in this manner:
Taefu meibutsu uchimono kaya,  
Miyage kaimasho, sumi-nagashi.  

Following the banquet at the restaurant we went to the small inn where we were to spend the night, and there, after being served tea and pink cocoanut balls wrapped in green leaves, we retired in rooms where only paper windows separated us from the drifted snow banks of the courtyard. The Japanese bed is made up on the floor with many blankets, and with one of the ever-present hibachi, or charcoal bowls, cunningly wrapped into the folds of the coverings. I had been asleep only a moment when our polite policeman friend of the morning, accompanied by two yellow-and-red-uniformed soldiers, came to the inn to ascertain further the reason for my presence. The officer informed my companions that I was the first foreigner ever to spend the night in Takefu, and it was highly important to know my exact mission. Again they were told that I was only an enthusiastic student of the papermaking craft and had come to the province of Echizen to gather material for a book on the subject of paper. The sworded policeman displayed marked signs of skepticism, and it was only after being shown sheets of Occidental paper in which my portrait was watermarked that he was convinced I was interested solely in paper, and had no intention of making maps of the coastal fortifications or blowing up one of the Imperial bridges.

Early the following morning Dr. Seki, Mr. Yamada, and I set out to visit the shrine near Okamato village which was many years ago dedicated to the papermakers of Echizen. Within one of the buildings many historical documents and papers relating to papermaking in the district may be seen, there always being a yellow-robed priest in attendance. While the exact

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12 The word sumi-nagashi has two meanings: The first relates to paper that has been surface stained by lifting floating colours from the surface of water, in the same manner as "marbling" is accomplished in the Occident; the second meaning of the word applies to dyed cloth. It is my belief that by the use of the word sumi-nagashi the song is meant to denote both ornamented paper and cloth, products of Echizen at the time this simple verse was compiled.
origin of papermaking in Echizen is not known, there is a fanciful local legend that purports to be very ancient. A certain deity, so the legend goes, revealed himself by the side of the stream, and, disguised as a beautiful woman, he placed a part of his kimono upon a bamboo stick in imitation of a mould; this he then dipped into the stream and shook it as if in the act of forming a sheet of paper. The villagers, upon seeing the strange happening, were much excited and astonished and implored that they be told the significance of the unusual actions. The reply was, according to the story: "The soil of this dukedom is poor and lacks fertility, but the water from the mountain streams is clear and pure. I shall, therefore, teach you papermaking so that all may live by this craft." The villagers asked who the stranger might be and received only the reply, "My name is Mizuha-Nome-no-Mikoto"; the moment the answer was given the apparition disappeared and was seen no more by the simple village folk. Soon after this strange occurrence the art of papermaking was established in Echizen, and the people from the surrounding countryside built, near the village of Okamoto, a beautiful Shintō Shrine and dedicated it to Mizuha-Nome-no-Mikoto, the mythical founder of Echizen papermaking.

Photograph 28. The lovely old grey group of wooden, tiled-roofed buildings, some half dozen in number, is set on a quiet and lonely hillside amid giant evergreen trees through which penetrate thin streaks of light casting weird patterns upon the moss-covered roofs of the inspiring shrine — the most impressive sanctuary in the world dedicated to the craft of papermaking.¹³

The largest sheets of paper ever made by hand were fabricated in Okamoto at the Iwano mill, located not a great distance from the Shintō Shrine. Two sheets were formed, although only one was required, each measuring sixteen feet eight inches square. The paper was too large to be made in a mould in the regulation manner, so the workmen sprayed the

¹³ In the compound of the old Imperial paper mill, near Tokyo, there is enshrined a small section of this unique monument, a constant inspiration to the hundreds of governmental workers.
pulp over a porous surface laid above the floor, thus forming a thin coating of fibrous pulp in a more or less even thickness. The process may be seen in the two photographs 29 and 30. One of the gigantic sheets was used for a painting now in the Memorial Building, Waseda University, Tokyo, dedicated to the late Okuma, Governor of the University and Premier of Japan. Only one sheet of the paper was required at the University, the other being given to Mr. Kadota, of Osaka, a collector of paperiana, who thoughtfully presented to me a section of this unique example of the papermakers’ craft.

The province of Echizen, in which Okamoto is located, is fortunate in having the large bay and harbour of Tsuruga, and it was to this landing place that there came many of the early Korean and other immigrants from the Asian continent. The city of Fukui (meaning: “Happy Well” or “Well of Blessing”), lying about twenty miles from the Bay of Tsuruga, was for centuries the seat of the daimios, or feudal nobles, of Echizen, with their castles and armed retainers. Of these lords Matsudaira of Echizen was one of the first to lead in liberal thought and the renovation of Japan through Western civilization. Until the year 1872 the various daimios issued paper money in many forms, values, thicknesses, and sizes, but all of these notes have long since been called in by the Imperial government. As late as 1867 there were no fewer than twenty-three kinds of paper notes and forty-nine styles of coinage in circulation. Much of this paper was of Echizen origin, for not only was this province renowned for its thrilling history, but for paper, tea, and silk. It is said that as far back as the eighth century Korean envoys were brought to Echizen to see paper made and to admire the finished sheets produced by the Japanese craftsmen. In modern times the handmade papers manufactured in Fukui Prefecture amount to over a half million yen a year, the industry giving full-time work to 287 men and 493 women artisans.

Thoroughly satisfied that we had seen most of the papermaking of
Echizen, we journeyed south to the Prefecture of Gifu, as it was our desire to inspect the industry in Mino, a district abounding in handmade paper mills. In Gifu over three thousand five hundred families are engaged in papermaking, with an annual production of two million yen. In the city of Gifu we found an hotel of European style which had been opened only a month or two previously, and there it was my pleasure to be the first Occidental guest. The city of Gifu is a popular resort on account of the famous cormorant fishing in the river Nagara, a form of sport that has appealed to the Japanese for over a thousand years.

Some of the finest handmade paper mills of Mino are located in or near the village of Kamimaki, in the county of Mugigun, not more than an hour’s drive from Gifu city. At Kamimaki-mura (mura means village), we were received by Mr. M. Mori, superintendent of the Papermaking Laboratory of Gifu Prefecture, who kindly went with us to the various mills. The largest and oldest establishments in this section are the Ota and Uchda mills, each a group of low rambling buildings covering considerable area. After the regulation serving of green tea, Mr. Mori directed us through the mills where they were making the well-known “Mino-gami” for which this section is famous. Paper of this kind is made from the bark of the paper mulberry and was first fabricated, it is thought, by Ota in the Year of the Empire 1850-1858, or according to the Gregorian calendar, 1190 to 1198 A.D. The Mino province is famed for its beautiful hills and valleys with many streams of clear water and the soil is of the proper fertility for the growing of paper mulberry trees.

Such names as Mino, Echizen, Tosa, etc., are appellations of former autonomous dukedoms and principalities which were abolished during the nineteenth century when the Japanese Empire was remapped and new names applied. The names of the former autonomous states, however, are still used to indicate a district they once occupied, but not in the sense of political sub-division. For example, the former Dukedom of Mino is now known as the Prefecture (Ken) of Gifu; the former Dukedom of Echizen is now known as the Prefecture of Fukui, etc., etc. It is perfectly proper to use the ancient names as well as those of more modern origin. In fact, in Japan the old names are more often heard than the modern appellations.
In Kamimaki-mura I was especially interested in visiting the home and workroom of a mould-maker where we saw this skilled artisan place the small bamboo splints side by side and lace them with silk, thus forming the “laid and chain” lines of the mould, the entire work being accomplished while he sat upon the floor. This occupation was carried on in a small cottage of three rooms, one the mould-maker’s shop, another fitted with a vat for making paper, while the third was devoted to the living quarters for the master, his wife and children, and his sister, all working at some branch of papermaking within the confines of their home. In the many distinct districts of Japan where paper is made by hand, there are usually several large mills which have many vats and employ a large number of workers; but scattered around the large mills are dozens, sometimes hundreds, of small one-vat mills operated by individual families, many of the houses sheltering both the papermaking equipment and the family. Such a combination home and mill was the one belonging to the old mould-maker, and in this small house, distinguishable by a well-worn mould hanging over the door as a sign, I first saw paper mulberry bark being beaten by hand — an interesting sight indeed, for here was a process totally unchanged from the twelfth century when papermaking was thought to have been introduced into the village of Kamimaki. While the man of the house was constructing moulds for other mills of the district, his sister was beating bark and his wife forming paper at the vat, the children placing the semi-moist sheets upon boards for drying — surely a picture reminiscent of mediaeval times, the workers being totally oblivious of the modern machine with its ultimate destruction of hand craftsmanship.

The hand beating (uchikata) so interesting to me was done upon a heavy stone, about two by four feet, with a thickness of six inches. A handful of mulberry bark was laid upon the stone, water was thrown upon it, and it was then beaten with two mallets, one in each hand of the woman worker and wielded alternately with marked rhythm. As the pulp spread out upon
the surface of the stone it was gathered together and beaten over and over again, a little water being thrown upon it from time to time, until finally it was reduced to long-fibred pulp. Photograph 32. Through the kind overtures of Dr. Seki and Mr. Mori I was fortunate in being able to add to my collection the wooden beaters shown in photograph 31,\(^\text{13}\) which the mouldmaker’s sister was using when we entered the small compact cottage; also I was glad to be able to acquire one of the moulds that the kindly old mould-maker had constructed, shown in photograph 17.

It was with a great deal of regret that we left beautiful Gifu and continued south on our papermaking journey. While I am primarily interested in handmade paper and my visit to Japan was undertaken with this one thought in mind, it was my pleasure to inspect several machine paper mills belonging to the Oji Company. In Osaka we visited the Miyakojima and the Yodogawa mills, both modern plants with fine equipment, producing paper equal to any machine-made paper manufactured in the world. In Osaka banquets were given in our honour by Mr. J. Horikoshi and Mr. I. Minaguchi, directors of these mills. For many years Mr. Horikoshi has been an ardent student of ancient papermaking, and his library of Oriental works on this subject is probably the most comprehensive in Japan; I was pleased to find several of my own books in his collection. Mr. Minaguchi is the brother of the late Premier Hamaguchi who was assassinated three or four years ago.

Not far distant from Osaka is the village of Najio which is a noted

\(^\text{13}\) From the photograph of the two wooden beaters from Kamimaki it will be noticed that they differ in construction from the long beating sticks that are shown in the few old Japanese prints that depict papermaking. In the print showing the beating of pulp, in the volume *Wakoku Shishoku Edzukushi* (published in 1681), by Hishikawa Moronobu, the pounding implements are long, square tools, not unlike the tapa beaters of Samoa, Fiji, and Tonga. Dr. Engelbert Kaempfer, writing in 1692, after his visit to Japan, says: “The bark . . . being beaten with sticks of the hard *Kumoki* wood.” In the book *Kamisuki Choho-ki* (1798) compiled by Jihyoe Kunihigashi, the bark beaters depicted are in the form of elongated clubs, while the same sort of tool is shown in the coloured print by Hokusai (1760-1849). The long tapering sticks are still used in Shimane Prefecture. I am unable to trace the time or place of origin of the Mino mallet beaters, but they are similar to those in use in some parts of China.
handmade paper district. The outstanding interest in Najio papermaking is that here may be seen the last remnant of the old custom of the workers sitting before their vats, instead of standing as is the case in all other parts of Japan where paper is formed by hand. Views of Najio mills may be studied in photographs 33 and 34.\textsuperscript{16}

The monument shown in photograph 35 was erected by the papermakers of Najio in commemoration of the pioneer papermaker of the province. The gentleman standing before the monument is Mr. Kadota, a merchant of Osaka, who collects items of a papermaking interest and has always been especially concerned with the handmade paper industry of Najio.

The island of Shikoku was to be the next step in our journey in search of information relating to Japanese handmade paper fabrication. This island lies directly south of Japan proper, the southern port being Kōchi which is reached from Kobe by travelling through the Kii Channel into the Bay of Tosa. The ocean voyage required about fourteen hours of very rough sailing, the small ship “Tenyumaru” (God be with us), leaving in the evening and reaching the old town of Kōchi the following morning. Mr. Makauchi, of the Nippon Shigyo Kaisha, met us at the wharf and we were driven to the Shironishi Kan, a low, rambling inn overlooking almost tropical vegetation. Here, in this typical Japanese tavern, we were to reside during our sojourn in Tosa. Besides visiting dozens of small one-vat mills in Kōchi Prefecture, we made a thorough inspection of the Tokuhira mill, where we saw handmade paper being made from straw pulp, the process of cooking the straw and forming the sheets being practically identical with that of other mills, although the paper was of a rather low quality, to be used locally.

\textsuperscript{16} It is possible that in ancient times all Japanese papermakers worked while sitting before the vat. In Moronobu’s four-volume work \textit{Wa-koku Shōshoku Edzukushi} (Artisans at Work), published in 1681 (second edition, 1685), the two wood-blocks showing papermaking depict the sitting position; the same procedure is seen in the wood-block of 1798 in \textit{Kamisuki Chōho-ki}. The rare, but well-known, coloured wood-block by Gyokusai Sadahide (1820-1867), shows the woman worker seated upon a low stool while forming sheets of paper at the wooden vat.
Through the kindness of Mr. Makauchi, Sr. we were tendered a most elaborate banquet where we met most of the gentlemen connected with the papermaking industry of the locality. This feast was given at the *Tokugetsu-Ro*, literally meaning, “House of Catching Moon,” where it is said over five hundred *geisha* are in attendance. A number of these girls had been rehearsing an old papermaking song for my benefit and sang it for me at the banquet with *samisen* accompaniment. They were delighted when I requested the words of the song, which I here append:

**Tosa no meibutsu,**
*Sango ni Kujira*
*Kami ni ki-ito ni matsuobushi,*
*Yosakoi, yosakoi!*

**Tosa no Köchi no**
*Harimaya-bashi de,*
*Bosan kanzashi kau wo mita,*
*Yosakoi, yosakoi!*

**Koi no motsure mo sara-sara to**
*Kami-suku-otome, “Miss Köchi,”*
*Utsuru kanzashi mizu-kagami,*
*Tare ni moratta beni-sango?*
*Köchi koishiya, beni-sango!*

A literal translation of this ancient song is herewith attempted, inasmuch as it shows the extent to which the craft of papermaking has penetrated even the entertainment of the province of *Tosa*. I could not discover the history of the verses, but I was assured that the song has been known and sung in Köchi for many years; it is possible that it is even contemporary
with the introduction of papermaking into Shikoku island. The literal translation of the three verses follows:

_The famous products for which Tosa is renowned are artistic coral and whale, Paper, raw silk, and dried fish, Come, come, and visit our province._

_In the town of Kōchi in Tosa Province when I was walking through Harimaya-bridge I saw a Buddhist priest with shaved head purchase an ornamental red coral hair-pin._

_Throwing aside all of her tangled love affairs, as if she was discharging the pulp from her mould, Miss Kōchi, prettiest of all papermaking girls, is happy when she can see her reflection in the water of her vat. But from whom did she receive the ornamental red coral hair-pin? We are longing for Kōchi and red coral!_[^17]

Our days in Kōchi were well filled with visits to paper mills and with banquets and entertainments given in our honour, all of which proved most

[^17]: In Japanese verse the sentiment is never fully expressed, the words or phrases merely suggest a certain thought or emotion. Since a Japanese poem is in reality simply a framework or skeleton into which the poet must bring his own thought, their verse, when translated literally, does not convey to the Western mind the full meaning of the writer. In Japan, an ornamental coral hair-pin is a special token of love, but a Buddhist priest does not marry and he is not supposed to buy or even look upon anything of a feminine nature; the inference is made, however, that the priest gave the coral ornament to the girl papermaker and that she was contented when she could see the reflection of it in the vat from which she dipped the sheets of paper in her daily work. The papermaking girls of Kōchi are the prettiest of all Japan.
instructive and pleasurable. One morning we were delighted to receive a message from Mr. T. Morisawa, of the Maru-Toshi mill, Takaoka-mura, Takaokagun county, not a great distance from Kōchi town, requesting that we drive to his establishment for luncheon. The Maru-Toshi mill is locally noted for the manufacture of mulberry bark paper used for covering the latticed windows of Japanese houses, the paper being made about 24 by 68 inches in size so that many of the small oblong openings may be pasted over with one sheet. The window paper is removed from the delicate wooden frames every spring so the Japanese housewife knows nothing of the burdensome task of washing glass windows. The village of Takaoka, where the Maru-Toshi mill is located, lies in a most remote and primitive part of Shikoku Island and can be reached only through narrow, almost impassable, lanes, the route being bordered with cultivated fields interspersed with weather-beaten, unpainted wooden houses with paper windows. Owing to the day of our visit being a local holiday the mill was not in operation, but Mr. Morisawa and his associates were most hospitable and we were taken to the upper story of the house where the low table was laden with all manner of quaint dishes and delicacies, many of which were new to me, as our host lives in a part of Japan where customs and traditions have met with few changes in hundreds of years. The dining room was enclosed on all sides by sliding paper windows, two of which were left open so that the changing landscape might be seen, for Shikoku Island is charming in the springtime and the next day was to be the first of April. As we sat around the low teak-wood table, scarcely ten inches from the floor, I was delighted with the colourful assortment of strangely ornamented cakes, slices of raw fish, soft spongy confections covered with pink cocoanut and wrapped in dark green leaves, rice-balls imbedded in sea-weed, and all manner of pungent sauces, many of the edibles being totally new to me. After luncheon with all its formalities completed, we walked through overgrown paths, along the streams, with dozens of little chubby-faced
children all dressed in the gayest of colours, each child resembling the proverbial Japanese doll, following and chattering after us—a “blond giant” is not often seen in the out-of-the-way county of Takaokagun, and the children, as well as the older folks, were most curious. In the undisturbed regions of Japan nothing is drab or commonplace, for through the use and appreciation of colour even the poverty becomes picturesque and romantic. It is only in England and America that poverty is sordid and distressing, for the Anglo-Saxon people do not understand or comprehend the importance of colour in everyday life.

As has been previously stated, the actual modus operandi employed in the forming of sheets of paper is practically identical in all of the mills of Japan, whether in the dozen or more large “company” mills having many vats and scores of employees, or in the hundreds of small home-mills operated by the peasants and their families. The following description of the equipment and process has not been gleaned from any one mill, but from the inspection of well over a hundred different plants, both large and small. It will, therefore, be in the nature of a composite description; the photographs used have also been made in various mills located in different parts of Japan. The moulds shown in photographs 16 and 17, Part II, are the type most used in the empire, and upon moulds of this style fully three-fourths of the handmade paper is formed. The making of the thin, long-fibred mulberry bark paper will be outlined first, followed by a discussion of the use of the more uncommon styles of moulds.

The equipment used in the actual formation of Japanese handmade paper comprises four essential items: The mould, in which the suspended fibres are formed into sheets; the vat (sukibune), which contains the macerated pulp in suspended solution; the agitator (mase or sabri), in shape of a huge comb, used in stirring the contents of the vat; and the table or platform upon which the newly-formed sheets are laid or “couched.”

The vat: In Japan the receptacle for the pulp is extremely simple in
construction, merely an oblong wooden tub about four feet wide, seven feet long and two feet deep, the timber about three inches in thickness. At each end of the vat are permanent wooden supports for the agitator, called mase-geta. The comb-like agitator is removable at will and swings easily from the tops of these supports, as is clearly shown in photograph 36. When not in use the mase, or stirring implement, hangs upon the wall. The hand-made paper vat of Japan, unlike that of Europe, has no pipes, permanent agitator ("hog"), bridge, or any appurtenances whatever, save the mase and the mase-geta. Set flush with the bottom of the vat are two separate rows of tile, which serve no more important purpose than as buffers for the wooden bucket when the vat is emptied. In some vats these tiles are ornamental, but apparently their only mission is to prevent the bailing receptacle from scraping the wooden bottom of the vat. No drains are supplied.

To commence work: The vat is filled with pure water to within about eight inches of the top. Next, the beaten pulp is added by hand, an amount sufficient for a given number of sheets. There is a definite system of regulating the amount required. The macerated pulp is moulded into square blocks by pressing it into four-sided wooden forms, much in the same manner as clay is moulded into bricks. Each of these moist blocks of pulp represents so many sheets of paper of a certain size and thickness. The method of measurement is thoroughly simple and from all indications most practical. The blocks of pulp needed are placed in the vat of water with the nori, or size (Part I); the mase, or agitator, is next put in place on the supports, and the mass in the vat given a most thorough stirring. This mixes the pulp and water, forming an "emulsion" of countless individual fibres in suspension. The stirring process requires considerable time and must be done at certain intervals, as well as when new blocks of pulp are added to the diminishing stock in the vat.

The vat charged with water, pulp, and nori and thoroughly agitated, the worker is ready to form paper upon the mould. As will be seen in
photograph 37, each mould is suspended from overhead by four cords, the upper end of each cord being tied to the small end of a bamboo pole, the pole giving sufficient “spring” to allow the handling of the mould and yet furnishing considerable support and balance. The mould, with its underframe and hinged deckle, between which lies the bamboo “laid” cover which in turn is covered with silk cloth, is held by two conveniently placed handles, as shown in the photograph. The mould is next skillfully tilted at the ends so that it takes up a small amount of the watery fibrous stock upon its silk cloth surface, then shaken to and fro; a portion of the pulp forms the first layer of the sheet, while the remainder of the stock floats over the newly-formed surface back into the vat. The mould is again dipped slightly into the vat of pulp and another layer formed, all the while the mould being kept in motion and the thin fibrous liquid floating over the deposited layer, the surplus being allowed to flow over the edge of the deckle, or upper sugeta. After several dippings and a great deal of rolling motion the sheet is practically formed, but, as if to give a last finishing touch and to cross the fibres, the worker brings the mould to the front edge of the vat which acts as a support for a sort of fanning motion which discharges the surplus stock over the back edge of the mould and completes the formation of the sheet. The moulding process is not easily described, although I have seen hundreds of sheets formed and have watched the dexterous manipulation of the moulds for hours. It is quite obvious that the entire technique is different from that employed in the formation of European handmade paper, requiring, no doubt, far more skill than the Occidental method.

The system of Japanese papermaking just described is known as nagashizuki, while another form, much simpler, consisting of using all of the pulp lifted by the mould, is termed tamezuki. The work of forming paper
at the vat is accomplished equally well by men or women, but women workers predominate to a marked degree. A worker can make up to five hundred sheets a day, the paper being, untrimmed, about 23 by 64 inches in size.

The deposited layer of pulp lies so thin upon the silk cloth that it is

Occidental papermaking by hand are founded. Inasmuch as there are no words or expressions in any language except the Japanese to express the two terms it will be fitting and proper to make use of the appellations used in Japan.

The Japanese terms nagashizuki (also written nagushizuki), and tamezuki (also written tanesuki), are used to denote the two methods employed in uniting the papermaking fibres upon the moulds — the first mentioned being the Japanese and Oriental manner, while the second is that used in Europe and all Occidental countries where handmade paper is fabricated.

The term nagashizuki is from nagasu, meaning to flow horizontally, or to run over a level or nearly level plane. The name zuki comes from saku, meaning to make or drain paper. With this method the vegetable mucilage, or nori, (see Part I) is always added to the pulp in the vat, so that both the method and the ingredients are purely Oriental. With the nagashizuki method the fibrous stock is made to flow forward to backward, and from left to right, all over the mould, inside the “deckle” or fencing. The water from the stock drains only partially through the mould, as the movement of the mould causes the fibres to attach themselves on the surface of the su forming a sheet of the desired thickness, the surplus water being thrown over the “deckle” into the vat.

The term tamezuki comes from tamezu, meaning to retain, or to fill and hold. In this manner of forming sheets of paper, the stock, or pulp, is drawn on the mould and the surplus water allowed to drain through the su, with the aid of a slight shaking motion. As its name implies, the tamezuki system retains or holds the fibrous solution on the mould within the boundaries of the “deckles,” and permits the drainable part of the solution to pass through the meshes of the mould.

The well-known kyokushi of Japan is made in this fashion, as are all handmade papers of the Occident. In short, in the tamezuki method the paper is formed on the mould by permitting all of the drainable part of the paper stock to pass through the mould, while in the nagashizuki method the paper is formed on the mould by the flowing movements of the stock over the mould, the drainage through the mould being insignificant.

The nagashizuki method of forming sheets of paper is especially adapted to making tissues and the very thin mulberry bark papers that are so admirably fabricated by the Japanese. The nagashizuki was the principal method used in Japan before the Meiji Era, but with the introduction of Western papermaking knowledge the tamezuki manner was adopted to a limited extent in the making of certain kinds of heavier weight papers. For typical Japanese papers, however, the nagashizuki system is employed and it will always be the method best suited to the making of the unusually thin and delicate, although strong, papers in which the Japanese excel all other papermakers. Previous to the introduction of Western customs the Japanese used a method of forming paper that somewhat resembled that of the tamezuki, but it was not until the so-called improvement in mould-making by Genta Yoshi, during the early days of the Meiji, that the real European type of mould was introduced into Nippon.
scarcely discernible. The next operation is to free this filmy sheet from the mould, a process which in itself requires no mean skill. The “deckle” frame of the mould is unhooked and thrown back, the silk-covered bamboo su is now lifted free from the under sugela, or support, and the newly-formed sheet deposited upon a cloth-covered board placed upon a table at the

The advantages of the nagashizuki method and its influence upon the paper will be enumerated: The employment of the vegetable nori, the energetic movements of the fibrous pulp upon the mould, and the casting off of the surplus paper solution over the mould, are the three salient features of the method termed nagashizuki, and to these three purely Oriental processes Japanese papers owe their many typical qualities and the peculiar characteristics that cannot be successfully imitated in the Occident, either by hand or by machine. Inasmuch as each of these three features is an important link in the combination that gives the elusive charm to Japanese papers they will be described in detail.

(a) Besides its valuable adhesive function, the nori ox toro added to the pulp helps to create a state of emulsion. The fibres, when saturated, are heavier than water and if the water was not thickened by the nori the fibres would sink to the bottom of the vat. The nori keeps the fibres well distributed and in a state of suspension in the solution, and prevents unnecessary entanglement and knotting of the fibres. The nori also lowers the speed of the drainage through the mould and assists the fibrous pulp to remain on the mould a considerable time without solidifying or forming into a separate sheet. Without the admixture of nori the pulp would harden upon the mould much more rapidly, and there would be more drainage through the woven cloth, or bamboo “laid” lines, of the mould. It requires more time and more skill to form a sheet of paper by the nagashizuki method, but it is the only manner in which the exceptionally thin papers can be manufactured successfully; the system, however, is not limited to thin papers alone, as almost any degree of thickness may be built up by using this method.

(b) The process causing the paper solution to flow in the “backward-forward, left-right motion” with great speed upon the mould is termed in Japanese, shi-yo-nagashi. This oft-repeated motion prevents the adherence of foreign, or impure, matter, as well as helps to cross, mat, and distribute the fibres upon the mould’s surface. The paper formed in this manner is unusually strong and of even texture with the fibres lying in every direction, owing to the various layers of pulp built up on the mould, one upon another.

(c) The term tasui is given to the process of discharging or throwing the surplus fibrous solution over the “deckle” into the vat. When the watery mass is placed in motion upon the mould, the fibres readily adhere to the su, and the scum or impurities float on the surface, being finally eliminated over the edges of the mould. Therefore in the tasui process, the surplus solution, as well as the impurities, is removed. The surplus material is allowed to flow over the “deckles” after each dipping of the mould, and at each dipping a certain thickness of the sheet is attained, but the various layers of fibre are not perceptible in the finished sheet as they all unite in forming one homogeneous piece of paper. The three important factors of the nagashizuki system just outlined are of decided Oriental origin and differ in method, but not in principle, from the system used in handmade paper fabrication in Europe.
worker's back. (The first sheet "couched" on the board comes away from the su with some difficulty, but after several sheets have been laid down as a foundation the work progresses with less hardship.) The "couching" is accomplished by placing the front edge of the su lengthwise upon the already formed sheets, and allowing the su to roll slowly over the pile, thus causing the new sheet to adhere in its full breadth to the stack of paper. The su is next lifted from the near edge of the pile and drawn away, leaving the filmy sheet squarely upon the pile. The processes of both laying the sheet and removing the empty su are plainly depicted in photographs 38 and 39, in which pictures it will be seen that two slight wooden posts act as guides in placing the su, thus making a perfectly straight and uniform stack of paper. In photograph 38 it will be noticed that each vat is fitted with a wooden standard in which a narrow roll of paper is placed, a contrivance very like the holder for paper tape used in doing up packages. In making certain kinds of very frail, delicate paper a strip of this thin, narrow, rolled paper is placed along the su, forming a reinforced edge to the paper, enabling the worker more easily to separate the sheets after they are pressed. It must be understood that each sheet is laid directly upon the other, without the interleaving felts used in the European process of making handmade paper.

Pressing and drying the paper: At the end of the day's labour each worker has completed a pile of paper which contains anywhere from two hundred to five hundred sheets; the stack is called a shito. The following day, five or six of these piles, each supported by its board, are assembled in one straight block, and pressure applied by a huge lever upon the end of which heavy stones are hung, as shown in photograph 40. The pressure is increased gradually by the careful addition of more stones. In no case should paper be subjected to a severe pressure at the beginning,

19 The term shito is no doubt derived from the word shi, meaning paper, and the word to denoting a layer or strata, hence a pile of moist paper laid in sheets is commonly called a shito.
as this would cause the sheets to adhere together. The amount of pressure and the length of time in the “press” depend upon the thickness of the paper, the size of the sheets, kind of pulp, nori, and the temperature of the day. Each variety of paper demands a slightly different treatment, so it is not possible to lay down any specific rules for pressing. The piles being pressed sufficiently, each separate sheet, while still somewhat moist, is stripped from the shito and “pasted,” or brushed, against a board for drying, as shown in photographs 41 and 42. The drying is subject to the weather, and the out-door method is used at all times except when it rains; I have even seen rows of the boards, covered with paper, leaning against the low mill buildings when the atmosphere was quite cold and the ground covered with snow. Photograph 43. In photograph 44 may be seen the mill yard of the Nippon Shigyo Kaisha, near Kochi, with the drying boards set in the open against permanent metal supports. In looking down upon a papermaking village from surrounding hills, a most picturesque sight greets the eye, for wherever one may look there are hundreds of the drying boards, each with three or four sheets of paper upon it. Although this seems to me a romantic subject for picturing, I have discovered but one Japanese coloured wood-block print in which the drying-boards are shown — the print by Hokusai (1760-1849), entitled “Fukui Bridge in the Province of Echizen.” This wood-engraving is one of the “Famous Bridges” series, issued in a book of eleven prints, and published by Yeijudo in 1827-1830. The wood-cut shows in the foreground a wooden bridge over which numerous people and a pack-horse are passing; in the background may be seen the blue and red tile roofs of small cottages and many drying boards, each holding six sheets of paper, supported by poles of bamboo. It is strange that the Japanese wood-block artists, always seeking picturesque settings, were not more moved to make use of the pictorial aspects of papermaking in their prints, but being themselves users of paper, they were probably too close to the subject to realize or appreciate its possibilities as material for illustrating.
In some of the large mills of Japan the drying is accomplished by artificial heat, but I am led to believe that the old method of drying the material upon boards in the open air assures better paper. In artificial drying, there are rows of steam-heated, three-sided metal dryers, placed horizontally, against which the moist paper is brushed. The dryers turn on an axle and the moisture from the paper is evaporated so rapidly that the paper on one metal surface is always ready for removal as the dryer is turned, paper being constantly brushed on and taken off. While such appliances make for speed, the paper is finer when dried by the old-fashioned out-door method—quality is always sacrificed when contrivances for rapid working are introduced into hand craftsmanship. The brushes used in “pasting” the paper to the boards, or to the steam-heated metal surfaces, are made chiefly of horse-hair or vegetable fibre. The brush shown in photograph 31 and presented to me by Mr. Shigeo Nakane, was procured near Okayama and from all appearances it is made from the fibres of the Trachycarpus leaf. The manipulation of the brushes in spreading the paper untorn and unwrinkled upon the boards requires considerable agility and skill and can only be accomplished successfully after much practice.

After drying, the paper is graded according to smoothness, gloss, thickness, cleanliness, and other characteristics. This branch of the work is depicted in photographs 45 and 46. The fine thick paper, without defects, is known as jio-to-shi; the fine thin paper, without blemishes, is called chuto-shi, while paper with good texture, but showing minor defects is termed katu-shi. Any paper falling below the standard of katu-shi is labelled defective and sold as such. In counting paper the Japanese use the following system: a cho represents twenty sheets, ten cho make one soku, ten soku make one shime, while four or six shime make a maru. A marker is placed at every cho, or twenty sheets, and a shime is usually considered the unit of a package of paper.

The paper is cut in specific sizes by laying a pile upon a platform on
the floor, placing upon it a board of the desired size of paper, and cutting around the board with a sharp knife. This process is shown in the right foreground of photograph 47, while a photograph of the knife used in Tosa is given more clearly in photograph 31. The packing of paper for shipment is shown in photograph 48, the photograph taken in a large Japanese mill.

Next in importance to the fabrication of the fine, thin types of paper comes the making of window and screen paper. This particular paper is used only in the Orient. The mould for forming it is described in Part II. The vat used in making window paper is quite large and rests upon the floor of the mill; sometimes it is built permanently of stone or cement—the dimensions being a length of about eight feet, a width of five feet, with a depth of a foot and a half, the bottom level with the floor. The mould, photograph 18, is suspended from the ceiling, directly over the vat, by two wires or cords, the top of the mould being slightly below water level. The cord, or wire, supports are fastened, in the same position, at each end of the mould frame, both a little off centre so that the mould may be easily tilted sideways. At each end of the vat sits a woman to manipulate the mould, dipping it sufficiently to cause the pulp to run over the mould's edge upon the su, or “laid” bamboo cover, leaving a thin deposit of fibre, the residue flowing back into the vat. This operation is repeated several times until the sheet is of the proper thickness and formation. This is the nagashizuki system, the same as the method described previously in the making of the thin paper upon the moulds with the hinged deckles. After a sheet of the window paper has been formed, one end of the mould framework is rested upon one end of the vat, while a bamboo pole, laid across the vat’s sides, supports the other end of the mould-frame, the two suspending cords hanging limp. Both workers next raise the su, or “laid” bamboo cover, with its deposit of mulberry bark fibres, and “couch” the moist sheet of paper upon a cloth-covered platform ready to receive it. As previously explained, the initial sheet is laid down with some difficulty, but after three or four sheets
have been placed one upon another, forming a pliable foundation, the "couching" is more easily accomplished. The making of window paper is carried on with less precision and exactness than the formation of the very thin papers made especially for exporting.

While there are many kinds of handmade paper produced in Japan, each varying slightly, the foregoing explanations of the use of the two most important types of moulds thoroughly cover the technical category of Japanese papermaking; the variance not being in the method, but in the kind of pulp used, the size, weight and colour of the paper, and whether made on the "wove" or "laid" pattern of the su.

The days spent in the papermaking districts of Tosa, Shikoku, passed all too quickly; we were delighted with our reception at the mills, and the opportunity given us to make a thorough inspection of the handmade paper industry of the island. It was with reluctance that we took our departure from Tosa, but it was our desire to visit the Kamafu mill, in the village of Kawanoye, at the extreme north of the island. The railroad was not completed, so that we were obliged to drive the hundred or more miles in an automobile over a most dangerous mountain pass, there being no fences or guard rails anywhere along the route. The narrow, rocky road winds through the mountains, on one side an abrupt precipice extending hundreds of feet to the rushing river below. With the automobile scarcely a foot from the edge of the road, with almost a perpendicular drop below we could look over the vast valley hemmed in by ragged mountains, the bases overgrown with yellow flowered mitsumata shrubs, paper mulberry trees, and evergreens. The scenery of Shikoku is marvellous, and while there is a constant fear that any moment may see the car dashed to the stony depths below, there is so much of interest along the way that the stranger forgets the danger and thinks only of the natural beauties of the inspiring scenery in the distance, and the more intimate cottages, shops, and mills, all hung with long brightly coloured banners. Along the roadside artisans in
picturesque costumes ply their many crafts, making the journey one of intense interest at every turn. In no part of Japan is the scene so gorgeously colourful, for here is Nippon of hundreds of years ago, without a trace of the Occident with its drab, unromantic influence. As we travelled along, at no great speed, we passed all manner of carts, drawn by men, women and children, dogs, goats and horses; every conceivable kind of crude wheeled vehicle laden with huge logs, bales of mulberry and mitsumata bark, vegetables, and every description of the merchandise of the community. In every village along the route work was going on in front of the small wooden shops—men making paper umbrellas, women and children husking rice in primitive hand mills, workmen, almost naked, moulding grey clay roof tiles, peasants stripping barks for the papermakers, carpenters with their oddly-shaped tools building cabinets from soft, white wood, the aroma of which scented the air. Workers were everywhere doing their daily tasks in the exhilarating mountain air seemingly unconscious of the splendid scenery around them, and of their own delightful quaintness and charm. Only after a sojourn in the remote and unspoiled parts of Japan can the Occidental visitor truly appreciate the outdoor scenes of Japanese life depicted by such wood-block artists as Kitao Shigemasa, Utagawa Toyokuni, Kitagawa Utamaro, Hiroshige and Hokusai. Everywhere one looks the composition of an old print reveals itself in life, with all the distorted positions, soft colouring of quaint costumes and buildings; peasants in their water-soaked rice fields, the craftsmen at their various unusual tasks along the lanes and in the doorways—everywhere pictures, everywhere workers, there is no place for idleness on the lovely island of Shikoku.

Our most interesting, but hazardous, journey, from the southernmost part of Kōchi to the north coast was completed by nightfall. In Kawanoye we met Mr. Hisamatsu of the Kamafu mill and after an inspection of this and other mills of the village, we went on to the small island port of Takamatsu; a pleasant crossing of the Inland Sea brought us to Okayama.
on the mainland. Further visits in Osaka, Nara, Kyoto, and Nagoya completed, we returned to Tokyo after a continuous journey of several thousand miles, with minute inspection of well over a hundred Japanese handmade paper mills. While we were invited to visit every mill in each papermaking community, this was impossible as there are literally thousands of the small, one-vat mills where excellent paper is made by individual families.

The admirer of hand craftsmanship who wishes to see Japanese paper being made, and who does not have the time to venture far from Tokyo, will be delighted by a visit to the papermaking village of Ogawa-Machi, Saitama Prefecture. Photograph 49. This most interesting papermaking centre is not more than a two hours’ drive from the capital, and as this district is the seat of a great many individual mills, the paper enthusiast cannot help being richly rewarded. Also the Imperial paper mill, on the outskirts of Tokyo, is of absorbing interest, as here may be seen the making of the beautiful mitsumata “vellums.” This plant, with its numerous old wooden buildings, withstood the earthquake, and is, no doubt, the most unique government institution in the world.

Thoroughly satisfied with my research work in Japan, it was my desire to see handmade paper fabrication in Korea, and it was not long after returning to Tokyo that I set out with this objective in view.

While in Tokyo I was invited to see the fine specimens of old Korean paper in the collection of Mr. Takashima, an ardent bibliophile. He even most generously presented some choice examples to me. I found it difficult, however, to ascertain, either from him or from other authorities, just where handmade paper was being fabricated in Korea at the present time; no one in Japan seemed to have investigated the craft in their newly-acquired country, and no precise information was forthcoming. Unlike modern Japanese and Chinese handmade paper, that made in Korea is not well known in Europe or America, as very little has ever been exported, the Koreans themselves making almost exclusive use of it.
Determined to see Korean paper made I started out from Tokyo alone, as Mr. Yamada, who had been with me while visiting the Japanese mills, could not spare the time for the long, tedious journey. I was well supplied with introductions, but I did not have the slightest conception of where the papermaking villages were located. The absence of this information did not perturb me or lessen my enthusiasm as I felt confident that I could “scent” the handmade paper mills, even in so vast a country as Korea. The journey from Tokyo to Shimonoseki, at the tip end of Japan, where the ship is taken for Korea, occupies a day and a night, over territory that I had already traversed in visiting the Japanese mills. After a rather rough crossing through the Tsushima Channel, the ship arrived in Fusan, Korea, the following morning. I was met by Mr. U. Nakamura, of the Japan Secret Service, who had been informed of my arrival; the Manchurian development was at its height and the few foreign visitors were watched with polite scrutiny, this being the direct route to the new state of Manchukuo. Mr. Nakamura had been informed that my sojourn in Korea was to investigate the kami of the country; that I had been a persistent student of this substance for many years, and that I had come to Korea to collect specimens of every variety, both old and modern. Mr. Nakamura was skeptical and incredulous and could not believe that the collecting of kami was really my mission. I could see plainly that he had misgivings regarding my sanity, but in the gracious Japanese manner I was allowed to proceed on my journey, the kindly secret service officer wishing me every success in my quest. A month or so later, when I was again in Fusan, I had the pleasure of renewing my acquaintance with Mr. Nakamura and he was most profuse in his apologies for having previously treated me with so much skepticism. On my first appearance in Fusan the secret police had been informed that I was in Korea to investigate kami which, of course, means both paper and hair. Mr. Nakamura explained to me that when I originally arrived in Korea it was his idea that I had come to examine all of the hair in the country,
both old and modern; he had visions of me going about clipping examples here and there for my collection and finally writing a book concerning the straight black tresses of the charming Korean maidens. Even in the Fusan newspaper a story was used about the singular American who had journeyed half way around the world simply to make an assemblage of Korean hair, both old and modern. It is little wonder that the courteous officer had apprehensions regarding my sanity when he first met me in Fusan, but upon our second meeting we had tea together, and he could not forgive himself for having confused the meanings of the word kami. In the Japanese language many words have numerous meanings and nearly everything has a multitude of appellations, all of which make for difficulty, even to the Japanese themselves, as the foregoing incident discloses.

After reaching Korea I ascertained that paper was being made by hand in several isolated localities—one place not far from Fusan, Keishô Nan Dô, another in the neighbourhood of Taikyû, photograph 50, Keishô Hoku Dô, and still another at a small mill near Kusan. Photographs 51 and 52. These mills could be visited without journeying far into the interior, but being told of the primitive papermaking village of Ompei, Keiki Dô, lying between Keijô (Seoul) and Kaijô, in Central Korea, it was my desire to visit this particular hamlet, where, as I was told, nearly every person in the village was engaged in some branch of native papermaking, the methods remaining totally unchanged from the most ancient times.

After seeing the mills of the south, I proceeded to Seoul, through the mountainous country, almost barren of trees, but even so most beautiful and alluring; the air far more fresh and invigorating than in Japan—even the Japanese themselves do not hesitate to say that the Korean climate is more healthful than that of their own small island. It was springtime and all along the route the Korean peasants were breaking up the none too fertile ground with the aid of oxen-drawn plows contrived of heavy wooden sticks, unchanged from the crude plows that were used in Korea and China.
a thousand or more years ago. In looking through the windows of the coach I was constantly hoping that I should discover sheets of paper being dried upon the ground or upon boards, and in that way find still another papermaking centre, but nothing that would even suggest papermaking was seen after leaving Taikyū.

The journey from Fusan to Seoul occupied almost a full day of travel, through the quiet countryside, with always the low, closely-built straw houses of the villages and towns in sight; the men and women dressed entirely in white, while the children’s dress of bright yellow and red gave a dash of colour to the sombre landscape. Photograph 53. It does not require an imagination to determine why Korea is called “The Land of Morning Calm,” for the still calmness is felt on every side, even in the great modern city of Seoul — never has a country been so rightly named. No sensitive Occidental can visit Korea without a feeling of sadness, for there is always present a certain elusive atmosphere that unconsciously produces almost a sense of serene melancholy. Here the timeworn past is making a courageous attempt to fit itself to present-day ways and customs, but the task is difficult and the visitor from the Occident is left to wonder if there is really any gain in an ancient, backward country like Korea endeavouring to adapt itself to the modern world. A thousand years ago the Koreans were in their prime, but today they seem bewildered and hardly capable of adjusting themselves to changed conditions, much as the natives of the South Sea Islands have been unable to cope with the march of so-called civilization and find themselves out of accord with both the past and the present.

Upon reaching Seoul I was met by Messrs. Takahashi, Nishikawa and Nishijima who were exceedingly thoughtful in planning my sojourn in Korea and arranging for numerous adventures into the realms of papermaking, including a visit to the paper village of Ompei.

It was a typically calm day when we set out from Seoul to make our
way to Ompei, not a great distance but somewhat an arduous journey, owing to the almost impassable rocky roads along winding rivers and streams swollen by the spring rains. The narrow road leading to Ompei passes the last remaining section of the ancient wall, which once surrounded Seoul when it was one of the important cities of the world, but which has long since been allowed to fall into dilapidation. Photograph 54. After reaching the Great White Buddha at the foot of the mountain, photograph 55, it was necessary that we walk the remaining distance to the little thatched, treeless village where paper has been made by hand for countless years. Photograph 56.

While I had seen other Korean paper mills I was hardly prepared for the sight of such a primitive setting as one encounters upon the first glimpse of Ompei. Crude stone rolls for macerating pulp and several vats were in the open, while other vats were located under rude thatched straw coverings, all beside the river—everything of the roughest workmanship, but presenting a unique and picturesque industrial scene such as might have been beheld on this same spot five, or even ten, centuries ago.

The only material used in Korea for papermaking, besides old paper scraps, is the bark of the paper mulberry (Part I) which is called tak by the natives. For the most part the Ompei papermakers were using all sorts of old discarded paper for their raw material, as their finished product is employed only in Korea; none is exported. The paper made in Ompei measures about 28¾ by 46¼ inches and is used almost exclusively for covering the floors of Korean houses, in the same manner as the Japanese make use of thick vegetable fibre mats. While paper such as is fabricated in Ompei by hand could be successfully duplicated by machinery, it is doubtful if this old native craftsmanship will ever be supplanted by the modern machine. The Korean people hold to their ancient customs far more than do the Japanese, or even the Chinese, and it would be difficult to convince them that machine-made paper could ever take the place of their own product,
especially for the covering of floors. Native handmade paper is sold in the cities in regular stores dealing only in this commodity, and it may be purchased in any of the remote little village shops that are scattered throughout the length and breadth of Korea.

In photograph 57 is shown one of the stone rolls which was used in Ompei until recent years for macerating the material from which paper was made. In the photograph it will be noticed that a young boy is posed in the act of pulling the stone around its circular trough, but human labour was never used in this manner. Formerly oxen or horses furnished the motive power for the grinding of pulp, but the papermakers explained to me that there was not sufficient grass in the district to provide food for the animals, so they had to import small beaters, of the "Hollander" type, from Japan. This modern equipment, housed in a newly-built wooden shelter and actuated by a sputtering gasoline engine, surely presents a glaring and disturbing anachronism — the most ancient form of primitive appliances being used side by side with the latest conception of progress and efficiency!

The vats from which the paper is dipped are simply crude wooden boxes, measuring about seven feet square and twenty-eight or thirty inches in depth, the vats resting on hewn logs placed directly on the ground. The vat is filled with water and the pulp added by means of a large wooden paddle, shaped somewhat like a shovel, the beaten pulp being mixed thoroughly with the water by a vigorous swishing or lashing with bamboo poles until the fibrous mass becomes even in consistency. The size is next added to the contents of the vat in the same manner as in Japan, but in the making of the crude papers of Ompei this mucilaginous substance does not play the same subtle technical mission as in Japan where the highly skilled artisans use it in the formation of their really fine papers. As with the Japanese, the roots of the *Hibiscus manihot* and other gelatinous plants are used for sizing, the plant being known in Korea as *takpul*. When I was in
Ompei the papermakers were using the roots of the holly-hock (Althaea rosea) for the size, the use of any special plant being influenced by its abundance at the particular season. The Korean size is prepared by the same process as the Japanese, previously described, but the technique is less efficient.

In fabricating the sheets of paper two men work at every vat, each holding a long edge of the mould, as may be seen in photographs 58 and 59. (For a description of the Korean mould see Part II.) The mould-frame, with its "laid" bamboo cover, and the two "deckle" sticks in place, is dipped into the vat of pulp and a sufficient quantity of the fibrous liquid taken upon its surface. This is given a spreading motion while the water is running through the meshes of the bamboo sieve-like mould, and the dipping is repeated until the sheet is of the desired thickness for its particular use. It is the vegetable size that makes this repeated dipping possible and differentiates the ancient Oriental method of handmade papermaking from that of the Occident. After the sheet has assumed its proper thickness through dipping, the two "deckle" sticks are removed and the "laid" bamboo cover is lifted free from the mould-frame. The bamboo, with its layer of matted pulp, is laid face downward upon a pile of sheets already formed, the worker having first placed a length of straw along one end of each sheet to facilitate the subsequent separation of the sheets. The workers then roll the "laid" bamboo matting with wooden rollers, which causes the moist sheet to adhere to the pile so that the empty bamboo mat may be raised, and placed again on the mould-frame ready for forming the following sheet of paper. This process is repeated over and over until a substantial stack of waterleaf paper is built up, each separated from the next at one narrow edge by a straw or length of grass. These straws, protruding from the edges of the paper, may be seen in photograph 59, having been put in place by the young Korean sitting at the end of the pile of paper; the long wooden rollers also are visible, leaning against the vat.

The heaps of paper are pressed over night by means of a lever press
weighted with huge stones in much the same manner as the primitive press of Kōchi shown in photograph 40. The paper intended for use on the floors of Korean houses must be thicker than it is possible to form in a mould, so several sheets are made to adhere together, thus forming one thick sheet. At Ompei the sheets are combined by means of heavy hammers or stampers which are raised and allowed to fall upon the paper with great force, a man constantly shifting the sheets from side to side upon a platform under the hammers so that the blows fall on all parts of the paper, reducing it to one compact layer. The paper is then placed on the ground and allowed to dry, photograph 60, finally being carried to the village, as shown in photograph 61. Before the heavy sheets are used on the floors of native houses they are dipped in oil which renders the material exceedingly tough and firm, making a most substantial floor covering and one that is entirely practical when the manner of heating the Korean houses is considered.

All Korean paper is made by the method just described, but for the papers used for writing and printing the material is dried upon boards as practised by the Japanese handmade papermakers. The specimens of Korean paper appended will give a clear conception of the construction of the “laid” bamboo moulds, as well as of the degree of perfection reached by the papermakers of Korea. It is not likely that there will ever be a market for these papers in Europe or America, and the makers apparently have no interest in adjusting them to Occidental requirements. For the most part Korean papers are folded before being sold, which does not interfere with local uses, but renders them totally unfit for Western printing. The fact must not be overlooked that the papermaking of Ompei is exceedingly backward and undeveloped, even for Korea, and that this particular village represents the craft in its most primitive stage. While the general principle of the method is precisely the same as that of the Japanese, it is only necessary to examine the original examples of paper from the two countries to apprehend the technical differences.
One of the most interesting days I have ever experienced investigating handmade paper and allied crafts was spent in the Technical School of Seoul. This institute is housed in a wooden building of European architecture, not far from the capital, and is the only academy in the world where the teaching of forming sheets of paper by hand is part of the curriculum. In the seventh century the Koreans carried the art of papermaking to Japan, and Korean methods of working were introduced into that country; now, in return, in the twentieth century, the Japanese are teaching the Koreans the more efficient process used in Japan. It was for this purpose that the institute at Seoul established a department of handmade paper fabrication, the Japanese realizing that the Koreans had made but little progress in the craft for almost a thousand years, and desiring that the papermakers from the mountains and valleys of Korea learn the more skillful Japanese system. This work is under the guidance of Mr. T. Tamamura, president of the institute, and Mr. K. Seno, chief of the school laboratory. During my visit to the school in company with Mr. Takahashi, these two professors were very considerate of my interest, and permission was given for making photographs of the school room, the first pictures ever to be made of the papermaking classes. By a study of the two photographs 62 and 63, it will be seen that the moulds and method of working are purely Japanese, and differ, in mode but not in principle, from the more clumsy, antiquated manner of Korea. The students of the school are young Koreans who have previously worked in the time-honoured fashion of their own country, but it is the desire of the Japanese masters that these young lads learn the more precise methods of Japan and convey their knowledge to the old native papermakers in the hills and mountains of Korea. Probably the finest papers being made at the present time in Korea are fabricated in the school at Seoul, but it will require many years before the Japanese manner of making paper by hand is in use in all parts of the Korean vastness. While economically the Japanese have accomplished a great deal
in Korea it is always to be regretted when a purely native craft, or a
particular method of executing that craft, is disturbed, even though the
old methods are somewhat crude and technically inferior to the new process
introduced. It is true that the Koreans themselves have made little progress
in their papermaking, but their papers from the beginning have been
individual and embody certain eccentric characteristics that are charming
and unmistakable. After Japan has finished her educational work in paper-
making, however, this fascinating individualism will exist no more and the
paper of both Korea and Japan will become almost identical. To be sure,
the Japanese method of making paper by hand is distinctly superior in
many ways to that of Korea, but I am always a little chagrined when
standardization, even though it be economically expedient, enters into the
realms of native craftsmanship. I am glad that I was privileged to see the
old paper village of Ompei and other papermaking districts of Korea
before this eventual change takes place.

It is difficult to become enthusiastic regarding the handmade papers
of present-day China. In the past most excellent paper has been made in
this ancient country, and at the present time there are a vast number of
small handmade mills in operation, but for the most part the paper is not
only crude, but lacking in even aesthetic quality—handmade paper may
lack finesse of workmanship and yet have a certain charm through artistic
feeling. Most of the handmade papers of Japan combine both technical
perfection and pleasing artistic qualities, and the papers of Korea while
not of high craftsmanship, do possess certain characteristics that give them
marked distinction. Much of the handmade paper of present-day China,
however, is not only devoid of expert workmanship, but makes no pretext
or assumption that it has any degree of comeliness. This is especially true
of the product made from bamboo, but much of this particular paper is
fabricated for religious and utilitarian purposes where goodness of quality
and artistry are not essential. Paper had its inception in China, and for
upward of eighteen hundred years it has been made continually in many of the provinces, but even with this unique background and with countless generations of training in the handicrafts, the modern papers of China are not all that could be desired.

It will not be within my province to prophesy regarding the future of the handmade paper industry of China, but it is likely that there are many mills in remote parts of the country which will continue making paper for local consumption for hundreds of years to come. In the more accessible regions, however, there is a tendency to turn to machine-made papers for many purposes, including even a substitute for the absorbent, unsized mulberry bark papers used for brush writing. Within the past several years young Chinese engineers have established a machine mill in Foochow, Fukien Province, where the soft brush writing papers are being successfully manufactured. The workmen at this mill have not been lacking in cunning and ingenuity, and have imitated the qualities and desirable characteristics of the native handmade writing papers, even to placing a bamboo “laid” mat from a hand-mould around the “dandy-roll” of the machine, thus causing every sheet to be impressed with the “laid and chain lines” of a typical Chinese hand-mould. There are no European papers that lend themselves to brush writing, and therefore the Chinese scribes have found only Oriental handmade paper satisfactory for this purpose.

In the section of this book dealing with moulds I have given a description and illustration of a particular Chinese “wove” mould, photograph 8, such as I surmise was the original type used by Ts’ai Lun at the invention of papermaking and during the first few years of its practice in Leiyang. It is my desire to explain the use of this form of mould, as it is apparently unique in Oriental papermaking, and, from my own observations, it is found only in a few districts in China at the present time, the most accessible localities being in Kwangtung Province.

As previously explained, the earliest paper that has been discovered
was formed on the “laid” style of mould, fabricated from vegetable fibres. This early paper, however, does not date from the time when paper was invented, there being a lapse of some forty to fifty years between the actual invention and the period represented by the ancient paper unearthed in the Great Wall of China. It is my contention that the “wove” type of mould was used for making the first paper and that the “laid” mould was an after-invention, being conceived sometime between 105 A.D., when paper was invented, and 150 A.D., the date attributed to the earliest paper that has been found.

The employment of these simple “wove” moulds, upon which each individual sheet of paper is allowed to dry, is the most interesting aspect of all Chinese papermaking. The use of the common flexible “laid” mould in China at the present time is not dissimilar to the methods employed in Korea, and therefore it is not necessary to enter into a detailed description of this method of forming paper.

As outlined in the section dealing with moulds, the “wove” moulds of Kwangtung are used in the making of paper for the packing of gold leaf and for making lanterns. The paper mill near Fatshan, Kwangtung, operates throughout the year as the raw material used for making the paper is not seasonable, being scraps of old discarded papers which were originally made of bamboo (*Phyllostachys edulis*) and ceiba (*Bombax ceiba*) fibres. The small buildings which house the Fatshan mill are of crude construction of bamboo, china fir, and native-made bricks, the roofs being of tile. The eight or ten workers sleep in one of the small storage rooms, preparing their own meals and eating the meagre fare in the open crouched upon their haunches. Hundreds of moulds are stacked on the veranda, and on rainy days, when it is not possible to work, the moulds undergo repairs, for they are of delicate construction and need constant attention.

In preparing the pulp for papermaking in the Fatshan mill, the scraps of old bamboo paper are soaked in water held in large earthenware jars
sunk level with the ground; the mass is trodden with bare feet until it becomes well macerated. The discarded scraps of bark paper, being of a stronger nature, are subjected to a more severe treatment than is necessary with the comparatively soft bamboo fibre. After the foot beating, the pulp is placed in a washing net, or bag, and cleansed in a pool, as shown in photograph 64, taken in another part of China. The washed pulp is next placed in a large semi-cylindrical wooden tub partly filled with water, the mixture being about twice as much bamboo pulp as that made from the bark paper scraps. A small amount of size (hereafter described) is added, and the mixture agitated by means of a hoe-shaped wooden tool which is plunged vertically time and time again into the fibre laden liquid. This treatment alone, however, is not sufficiently vigorous to render the stock suitable for papermaking, but it tends to mix the two kinds of pulp together.

Two men, one at either side of the receptacle, beat the mass with bamboo canes, each cutting the liquid in an opposite direction, using backhand strokes. At intervals during the beating the fibrous material is brought to the surface by plunging the hoe-shaped implement into the mass. After the stock is of uniform consistency with all lumps reduced to fibre, the material is ready to be placed in the vats from which the sheets of paper are dipped.

The dipping vats of Fatshan are different from those in all other Oriental mills that I have visited, as they are made of earthenware, each vessel being about twenty-four inches in diameter and eighteen inches in height. The vats, with their heavy rims, are held on supports, so that the tops are about three feet above the ground level. The macerated bamboo and bark pulp is dipped from the large wooden receptacle into the earthenware vat which has been partially filled with water, and a great deal of the size is then added to that already in the pulp. (This size, extracted from the p'aau fa (Machilus thunbergii), is described in the section of this book dealing with Papermaking Materials.)

The pulp and size, after a thorough mixing with the water in the earthenware vat, is ready for making into sheets of paper. Preparatory to
use, the moulds (see Part II relating to the “wove” moulds of Kwangtung) are dipped in water and a certain number placed at the left of each dipping vat. It is at this juncture that the Fatshan mode of papermaking differs from all others, either Oriental or Occidental. In all other systems of making paper by hand the mould is dipped into the fibrous liquid, but with the “wove” mould of Kwangtung the pulp is poured onto the mould, the pulp being conveyed by a cocoanut shell bowl. The worker holds one end of the mould with his left hand while the other end of the mould rests upon the edge of the vat, leaving the right hand free to dip the bowl and pour its contents over the coarsely-woven cloth of the mould. Two bowls of pulp are poured, one after the other, upon the cloth, the mould is lifted and slightly agitated so that the liquid flows over its entire surface. Then the mould is again rested on the vat’s edge and two more bowls of pulp are thrown over the previous thin coating and spread over the mould as before. The water drains through the meshes of the woven cloth of the mould and is wasted upon the floor, leaving a layer of fibres upon the woven fabric. In other forms of Oriental papermaking by hand the water drains back into the vat and thus the valuable sizing material is retained for future use, but the size made from paau fa shavings soon loses its gelatinous qualities and is of very little value for further work after it becomes separated from the fibre. Should any holes or ragged edges appear in the thin sheet of moist paper upon the mould they are quickly remedied by the worker dipping his hand, cup shaped, into the vat and applying additional pulp to the defective places. Two or three handfuls of liquid pulp may sometimes be added before the worker is satisfied with the sheet. As the patches are applied while the layer of paper is moist they join with the sheet and are not noticeable in the finished product. In forming paper upon this ancient type of “wove” mould each worker can make about 125 sheets an hour, rather a remarkable speed considering the various manipulations and individual attention required with each sheet. After each mould has received
its layer of pulp it is leaned against a wall where it is allowed to drain for fifteen or twenty minutes. The moulds, each bearing a newly-formed sheet of paper, are then carried into the drying yard where they are stacked in long double rows. Photograph 65. The time required for drying naturally depends upon the weather; on sunny days the sheets may be removed in about half an hour, while under cloudy skies the time necessary for drying completely may be extended to an hour and a half, or more.

The sheets of paper when dry cling closely to the “wove” screen and it is only by using an awl-shaped tool made of bamboo and metal that one corner can be loosened. The sheets can then be removed without tearing, the workers walking through the rows of moulds and stripping the paper from them with considerable dexterity and speed. Photograph 66.

The small mill at Fatshan has about two thousand moulds, but only a fourth of this number are in actual use; when the weather is favourable the eight workers, operating four dipping vats, are able to produce nearly two thousand sheets of paper each day.

Fatshan is not the only papermaking locality in Kwangtung, China, where the “wove” moulds are used, but the entire process as practised in Fatshan seems to emulate closely the manner I imagine was used by Ts’ai Lun during the initial experiments in papermaking in the early part of the second century. The same principle of operation as that performed at Fatshan is also used in forming paper upon rattan moulds as shown in photographs 9, 10, and 11. This type of mould is described in Part II, and while it is founded upon the ancient “wove” cloth mould, it probably did not have its origin for many hundreds of years later. From my own experiments with different styles of moulds I am convinced that the present-day “wove” mould of Kwangtung resembles closely the original mould used at the inception of papermaking at Leiyang, and that the method of forming sheets of paper upon it is practically the same as that employed by Ts’ai Lun and his contemporaries.
Part IV

Japanese Papers: Their names, origins, history and uses

The first three books compiled in Japan appeared in the eighth century A.D. and were called Kojiki (Record of Ancient Matters), Nihongi (Chronicles of Japan), and the Manyoshu (Collection of a Myriad Leaves). In the Kojiki and Nihongi are set down the oral traditions and hieroglyphic records of events from about 1000 B.C. to 700 A.D. The Manyoshu contains poems and songs from remote antiquity, as well as those that were composed in the Empire to the time of publication. In the Kojiki and Nihongi there is mention of the use of the bark of the paper mulberry tree for clothing, wrapping, and other domestic purposes, while in the Manyoshu there are numerous poems and songs which refer to the cultivation and use of this tree. It is evident, therefore, that the Broussonetia papyrifera was well known and utilized in ancient Japan.

The Kojiki and Nihongi state also that in the 18th year of Suiko, a Buddhist priest, an envoy of the King of Korea, “presented to the Imperial Japanese court a writing ink and papers.” This has been interpreted by many writers as the date of the introduction of the art of papermaking into Japan. Those historians who associate paper only with writing are of the opinion that the craft of papermaking was brought to Japan about the time that writing was introduced into the country. If these books are to be relied upon, however, paper was used in ancient Japan for many purposes besides writing and the introduction of paper and writing need not have been contemporaneous. The most ancient Japanese poems and songs which are recorded in the Manyoshu refer clearly to kami, or paper, of the temples and shrines of pre-historic Japan. It is entirely possible that paper was used for purposes other than calligraphy long before the sixth century; in fact, some Japanese antiquarians even go so far as to state that papermaking had its inception in Japan.
The phrase “presented to the Imperial Japanese court a writing ink and papers” as recorded in the Kojiki does not necessarily mean that this was the introduction of papermaking itself. Perhaps the Kojiki, and later the Nihongi, really meant to say “in the 18th year of Suiko (Empress Suiko, 593-628 A.D.), a Buddhist priest from Korea introduced to Japan papers for writing purposes.” The fact that many Japanese poems and songs originating in pre-historic ages frequently refer to kami, or paper, leads us to believe that paper was known in Japan for other purposes than writing centuries before any contact with continental Asia, although it was not used for writing until the time of Empress Suiko. The poems and songs of the Manyōshū, which antedate the Suiko Era, occasionally refer to the danger of damaging or losing one’s clothing if caught in the rain. This might be construed to mean that some of the clothing worn by the ancient Japanese was made of crude paper, perhaps from the bark of the mulberry tree.

In the Japanese language God is known as kami, and paper is also called kami. Many historians agree that the reason for this is that in Shintōism, the chief religion of Japan, paper has long been used as a symbol for God. In pure Shintōism idols and images are not employed, but pure white paper is used constantly; the name of the god or goddess to be worshipped is written on a slip of paper which is folded and placed in the shrine. To the devout Shintōist a piece of clear white paper consigned to the proper place in a shrine is as sacred as the cross is to the Christian. It is easy, therefore, to comprehend why God and paper were expressed by the same term. Shintōism came into being between 1000 B.C. and 700 B.C., and long before the founding of the Empire or the introduction of the art of writing, crude paper, uninscribed, was used in its rites. Some Japanese historians are of the opinion that Japanese paper and Shintōism have been co-existent, and that the origin of Japanese paper, which was independent of foreign influence, must be sought in the misty depths of pre-historic Nippon.
According to Kaibara the word *kami* is an abbreviation of the term *kaki miru*, literally meaning “write and see.” It is also stated that in classical Japanese the name for paper mulberry, *kozo*, means “God’s raiment.”

The whole study of the origin of Japanese names is most interesting and has led to considerable research in the various terms applied to Japanese papers. Some of the results of this research are here set down. The compilation which follows is the first attempt of the kind in a Western language and it is hoped that the list will be found useful and valuable to users and admirers of the myriad kinds of papers produced by the adept Japanese papermakers. The Japanese name of each individual paper has been Romanized, and, when possible, a brief history of the paper is given, as well as the locality of its fabrication, material employed, size, usage, etc. These names are purely Japanese, as used in Japan, and must not be confused with American and European trade-names which are often applied to Japanese papers without any regard for historical significance or meaning.

**AIHANSHI**

The Shohan-shi (literally: small or narrow Hanshi) is sometimes called Aihanshi. See: Hanshi.

**AKA IRO-GAMI**

A red-coloured paper which had its origin during the Nara Period. (710 to 794 A.D.) See: Iro-gami.

**ASAFU**

Of the Usu-gami group. Produced in Yamagata Prefecture and used principally in Japan. Astringent is often added to this paper. Approximate size 9½ by 19 inches.

**ASA-GAMI**

The name *asa* denotes hemp (*Cannabis sativa*). Asa-gami is one of the oldest papers of Japan, the name appearing in many ancient writings. Papers of fine quality made of *asa* (hemp) in the years of the Empire 1409-1416 (749-756 A.D.), are preserved in the Temples
of Hōryū and Tōdai in Yamato (Nara). The paper in the Hōryū Temple is of a light green colour, while that in the Tōdai Temple is Shira-asa-gami (white) and Midori-asa-gami (green). Asa-gami is used chiefly for drawing. During the Nara and Heian Periods the Asa-gami and Kachi-gami were the two most popular papers used in the Empire.

**ASAKUSA-GAMI**

A name sometimes given to Suki-gae-shi which made its first appearance during the Yedo Period.

**ASHIMORI-HANSHI**

The name of a certain kind of Hanshi which is produced in Bichu. See: Hanshi.

**ATSU-GAMI**

The name applied to thick paper, but particularly to a heavy paper made in Ichikawa, Shimane Prefecture, from the bark of the paper mulberry (*Broussonetia papyrifera*).

**ATSU-GAMI RUI**

The “thick paper” group.

**ATSU-GAMPI-SHI**

A thick paper made in Gifu from the bark of the gampi (*Wikstroemia canescens*). The usual size of this paper is approximately 10½ by 15½ inches.

**ATSUYO**

An old name applied to a Torinoko usually made of gampi fibre.

**ATSUYO-TORINOKO-GAMI**

An important thick Torinoko, made since the Tokugawa Period. The same paper as Atsuyo. See: Torinoko.

**AWAJI-HANSHI**

Of the well-known Hanshi group. Used in Japan for writing, printing and general records. Produced in Tokushima Prefecture, Island of Shikoku. Approximate size, 9½ by 13 inches.
AWOBANA-GAMI
A special paper made in the Omi district, Shiga Prefecture.

AWO IRO-GAMI
A blue-coloured paper of special quality. See: Iro-gami.

AWO-TOSA-SHI
This paper was used by the Tokugawa Shōgunate, and during the Tokugawa, or Yedo Period, the manufacture was regulated by special decree. At present it is made in Tosa, Kōchi Prefecture, and Osaka Prefecture. It is used in the decoration of Japanese houses. Also termed Mizutama.

BARA IRO-GAMI
A rose-coloured paper of special quality. See: Iro-gami.

BOKAN-SHI
A very strong paper made of paper mulberry bark. Formerly used in making under-clothing for soldiers. In previous years much of this paper was exported to Russia where it was used in making cheap, but warm, clothing.

CHIKU-SHI
A paper made from young bamboo, the fibre not being more than a year old. Also known as Take-gami: literally, bamboo-paper.

CHIRI-GAMI
Made of waste paper and used locally. Produced chiefly in Nagato, Tosa and Mino.

CHIRI-SENKA
See specimen 13.

CHIUYO-GAMI
A Torinoko in medium thickness. See: Torinoko.

CHU-SHI
A name applied to any second, or middle, class paper.

DAIHŌSHO
One of the seven principal varieties of Hōsho. See: Hōsho.
DANSHI OR DAN-SHI
Also known as Michinoku-gami and Ma-umi-gami. Danshi is a rather thick paper with a finely wrinkled surface. During the Middle Ages it was called Hikiai-gami and was imported in large quantities to China. It is mentioned in the classics, Genji Monogatari, Makura-no-Sōshi, etc. There is a difference of opinion as to the material used in making Danshi in ancient Japan, but at present paper mulberry and gampi barks are used. Danshi is produced in the Kyoto, Echizen, and Kawachi regions. The approximate size is 18½ by 24 inches.

DORO-IRE-NO-OJI-DANI
A fairly heavy, natural toned paper first produced in Oji-dani in Izumo. This paper is made of mitsumata bark and contains a small amount of Hoshigami clay which is found only in the region of the Hoshigami mountains. The paper is sometimes given a gloss by rubbing with a stone or smooth earthenware.

ECHIZEN-SUGIHARA
The name applied to the Sugihara paper produced in Echizen, Fukui Prefecture. See: Sugihara.

FUKUI-TORINOKO
A Torinoko paper produced in Fukui Prefecture. This paper has a beautiful “wove” surface and is used in the Occident for printing wood-blocks, etchings, etc. In Japan it is employed in book printing. The approximate size is 16 by 38 inches.

FUROYA-GAMI
An old name for a gold and silver tinted paper popular during the Yedo Period.

GAMPI-SHI
See specimen 15.

GO-FUKU-GAMI
A name applied to Santome-shi. First made in the years of the Empire 2233-2251 (1573-1591 A.D.). It is a thick paper formerly used for wrapping clothing, etc.
GOFUKU-MAKI-GAMI
A thick, strong, serviceable paper made from paper mulberry bark. Used in the same manner as Go-fuku-gami.

GOSHIKI TORINOKO-GAMI
A multi-coloured Torinoko. See: Torinoko.

GOSYU-TORINOKO
See specimen 20.

GOWA
A paper of the Kizuki group. Produced in Tochigi and used in Japan for domestic purposes.

GOZENHIRO
A name applied to one of the seven varieties of Hōsho. Produced during the Tokugawa Period. See: Hōsho.

HAKU-UCHI-MANIAI
Of the Maniai group, the papers containing a clay peculiar to the Prefecture of Hyogo where this paper is produced. The size is approximately 15½ by 21½ inches.

HAKU-WO-SHI
One of the so-called “camels’ hair brush” papers. Produced in Kōchi and used in Japan for making kimono patterns. Related to Shirakumo-gami. Approximate size 27½ by 55 inches.

HANA-GAMI
Hana means nose, hence Hana-gami, handkerchief. Soft tissue used throughout Japan in place of linen and cotton handkerchiefs. See: Shohan-shi.

HAN-KIRE
Literally: “half-cut.” This paper is largely used in Japan for accounts and letter writing.

HANKIRI-GAMI
This paper was first made between the years 1661 and 1672 A.D. The sheets are cut in small, rectangular sizes and are commonly used
in Japan for memorandums and messages. The papers of this kind produced in Chikuzen, Buzen, Bungo and Hiyuga are considered to be of the highest grade.

HANKUSA-GAMPI-SHI
The material used in making this paper is one-half gampi and one-half other material, hence the name Hankusa. Used in Japan for making fans, etc. Approximate size 15½ by 21 inches. Made in Gifu.

HANSHI OR HAN-SHI
This well-known paper traces its origin to the eighth century A.D. and is made of paper mulberry or mitsumata, or both. The paper is light in weight, silky and transparent. The word Hanshi is usually preceded by the name of the district from which it comes.

HARI-NUKI
The Japanese papier-maché. The word is derived from hari,-ru, to stretch or spread, and nuki,-ku meaning to draw out.

HAYASHI-SHITA-GAMI
This is apparently an old paper of Mino no longer made in Japan. It had its origin in the fifteenth century A.D., and exists only in old books and temple records.

HICHISHOKU-SHI
Also known as Nanairo-gami. This paper may be traced to 1573 A.D., and at present is made in Tosa, Kōchi. It is fabricated in seven different colours.

HI-KAMI
A name sometimes applied to Torinoko-gami. The Hi-kami traces its origin to the Nara Period, the name appearing often in the writings of the Nara and succeeding periods. Early writers state that Hi-kami was made from the kanibi plant. The writer, Seishō-Nagon in the book “Makura-no-Sōshi” mentions this plant and describes it in detail. The plant has been identified as Kiko-gampi, a variety of gampi. The name Hi-kami was superseded during the fourteenth century A.D. by the appellation Torinoko.
HIKI AWASE
The name given an inferior quality of Danshi. Also called Hikiai.

HIKOMA
Of the Kizuki group. Made in Tochigi and used in Japan for records, etc. Approximate size 22⅜ by 30 inches.

HIROSHIMA-SUGIHARA
A Sugihara-gami produced in Hiroshima Prefecture. See: Sugihara.

HIRO TORINOKO-GAMI
From hiro, meaning large or wide, hence a large or wide Torinoko paper. See: Torinoko.

HODOMURA

HONEN-SHI
A modern paper made of mixed materials consisting of paper mulberry bark and straw.

HōSHO
This paper had its origin in the Muromachi Period (fourteenth century A.D.). During the Ashikaga Period, under the command of the Shōgun the paper called Hōsho was made in the province of Echizen. For a generation or two after this period, the manufacture was encouraged by Nobunaga Oda and Hideyoshi Toyotomi, dictators of Japan. During the Tokugawa Period the Hōsho papers of Echizen were used by the Shōgunate Government. The texture of Hōsho resembles that of the Danshi and also the Sugihara-shi, but thicker than the Sugihara and without the wrinkles of the Danshi. While Hōsho is produced principally in Echizen, it is also made in Tango, Kaga, Kyoto, Tosa, Aki and Mino.

HOSOKAWA
A paper used in Japan for permanent records, accounts and the like. Made from mulberry fibre in Musashi and Shinano districts. This paper is of the Kizuki-gami group and measures about 12 by 16½ inches.
ICHIMAI-HARI-TORINOKO
A beautiful Torinoko paper produced in Fukui Prefecture. Made in very large sheets up to 10 by 11 feet, but the usual size is about 38 by 74 inches.

ICHIMAI-SHIKI GOKUMOSEN
Of the Suki-iro-gami group. Also known as Goun. This paper was introduced during the Bunsei Era (1818-1830 A.D.), in the former autonomous state of Atami. Made in a light delicate green and now used for books, writing, etc. Produced in Shizuoka Prefecture. Size 15 by 20½ inches.

IDZUMO-SUGIHARA
A Sugihara produced in Idzumo, from whence the name is derived. See: Sugihara.

INABA-SHOIN
Of the Shoin group. A soft mulberry fibre paper made in Tottori Prefecture and used for records. Approximate size 11 by 15½ inches.

INSHU-HANSHI
See specimen 11.

INSHU-MINO
See specimen 23.

IRO-GAMI
Also called Shiki-shi. The Iro-gami is traced to the Nara Period (710-794 A.D.). Iro-gami literally means “coloured paper,” but there are papers of this kind that are not coloured. Iro-gami belongs to a class by itself and must not be confused with other coloured papers. In the Middle Ages this paper was used for writing poems and short messages, also for decorations. There were between thirty and forty colours of Iro-gami, including black and white, but during the past fifty years the Iro-gami colours have been standardized.

IRO-HŌSHO
See specimen 25.
IRO-MANIAI
Of the Maniai group. Produced in Hyogo and contains clay peculiar
to this prefecture, the clay content being quite obvious. In dull tones
and about 15 by 38 inches in size.

IRO-TORINOKO
See specimen 34.

ITAGAMI OR ITA-ME-GAMI
A heavy paper or board made by pasting a number of sheets together
by the use of shōfu-nori, or wheat paste, in the same manner as
Occidental paste-board is fabricated. Usually ten to twenty sheets
are adhered together to form the Ita-me-gami of Japan.

IWAKUNI-HANSHI
Of the Hanshi group, produced in the Suwo district and considered
of the finest quality.

IWAMI-HANSHI
A thin Hanshi from Iwami, made of paper mulberry (kozo) bark.

IYO-MASA
A soft paper formerly used in Japan for wrapping dried plants.

JIO-SHI OR JIOTO-SHI
A name applied to any superior Japanese paper.

JIOSHU-HANSHI
Of the Hanshi group, produced in Kozuke.

JIREI-YOSHI
Of the Atsu-gami group. Made in Fukui Prefecture and used in Japan
for official bulletins, announcements and fine envelopes. The size is
approximately 22½ by 31½ inches.

JIUMONJI
Of the Atsu-gami, or thick paper, group. Made in Tochigi Prefecture,
formerly produced in Shimozuke and Mino. Used in the making of
Japanese artificial flowers. Size about 15 by 22 inches.
Jōka-hanshi
Of the Hanshi group. A soft paper made of paper mulberry bark and used for writing, napkins, and handkerchiefs. Made in Köchi in 10 by 13 ½ inch size.

Kabe-gami
The common Japanese name for wall-paper.

Kabukenshi
Made of mitsumata and used in Japan for printing and engraving stocks, bonds, certificates, licenses, diplomas, etc. Of fine texture and unusual strength.

Kachi-gami
Kachi is one of the numerous old Japanese names for Broussonetia papyrifera, commonly called kozo. According to the classics, the so-called “wood silk” of the Kamiyo Period, or prehistoric Japan, was made from the fibres of paper mulberry. Kachi-gami made during the Nara Period is still preserved in the Hōryū and Tōdai Temples. The method of making this paper has not changed since the Nara Period. During the Kamakura Period (twelfth to thirteenth century A.D.) and Muromachi Period (fourteenth century A.D.) the manufacture of Kachi-gami became popular and the paper assumed various names in different sections of the Empire. Kachi-gami is a most ancient paper, indeed some scholars even state that this paper and the religion Shintōism were co-existent in Japan since the beginning of that religion in prehistoric times.

Kaga sugihara
Of the Sugihara group of papers. Made in the Kaga province of north-central Japan from whence the name is derived.

Kaho-shi
Of the “camels’ hair brush” paper group. Made in the Prefecture of Fukui. This paper is named after the well-known Japanese artist, Kaho Hashimoto and is used by many painters in the Orient. Made in large sizes approximating 38 by 72½ inches.
KAIDA-SHI
A thick paper first made during the twenty-fourth century of the Empire at Inaba. At present it is manufactured in Inaba, Hiroshima, Aki, Nagato, etc.

KAIKO-SHI
A strong, thick paper composed of mulberry fibres and made especially for the silk industry of Japan. In this particular paper the bark from old trees is used as it is desirable that the paper be rough and irregular, making an ideal surface for silk-worms to lay their eggs. The name *kaiko* means silk-worm.

KAIRO-YO-MINO
See specimen 4.

KAMAKURA-SHI
This paper was first made in Kamakura during the thirteenth century A.D. and was originally known as Mikudashi-fumi-gami. It was used chiefly by the *samurai* (soldiers or knights of the Shōgunate Era). When the Shōgunate Government was transferred to Kyoto, Mikudashi-fumi-gami began to be known as Kamakura-shi.

KAMIYA-GAMI
Also called *Yado-gami*. This paper traces its origin to the ninth century A.D., and is mentioned in the classics, *Makura-no-Sōshi* and *Genji-Monogatari*. In the Middle Ages Kamiya-gami was used for official purposes and was highly valued for its beauty.

KANENI
An ancient Japanese name for gampi, also known as Kigampi and Kikogampi.

KANJI
A heavy, rough surfaced, natural-coloured paper fabricated from the bark of the paper mulberry (*kozo*). Made in Gifu Prefecture.

KAN-SHI
Of the Torinoko group. A black paper made in Fukui Prefecture. The size approximately 35¼ by 71½ inches.
KAN-TOSA
Also called Murasaki-Tosa. Used in Japan for decorative purposes. Produced in Nara and Kochi. Size about 12½ by 17½ inches.

KARA-KAMI
As the name implies, China paper. Usually decorated wall hangings imported from China or made in Japan. The Chinese were the first to make use of wall hangings and wall papers.

KASA-GAMI
This paper is of ancient origin and is thick, strong and when oiled is used for making umbrellas, rain-coats, etc. The word kasa means umbrella.

KATA-GAMI
The oldest Chinese papers in existence in Japan at the present time are the art papers of the period known as the “Six Dynasties.” About the middle of the Heian Period the Chinese style of paper began to be made in Japan. The paper used in the famous book entitled “Sanju-Rok-Nin Kashu” preserved in the Buddhist Temple of Nishihonganji at Kyoto is an example of the paper of this kind. During the Fujiwara Period, Chinese papers began to be imported to Japan on a commercial basis and were decorated with pictures, characters and symbols. These papers were known in Japan as Kata-gami.

KATÔ-SHI
Applied to any low grade paper.

KEISHI
Any ruled paper of Japan is given the name Keishi.

KIGAMPI
A name sometimes applied to papers made from gampi fibres.

KI-IRO-GAMI
A yellow coloured paper. See: Iro-gami.

KIKOGAMPI
A modern name applied to gampi paper. Also called Kigampi.
KI-TORINOKO
  See specimen 35.

KIYOHANA
  Of the Usu-gami (thin paper) group. Manufactured in tissue form. Also known as Kiyobana. Produced in Fukuoka Prefecture in a size about 9½ by 12 inches.

KIZUKI-HÔSHO
  See specimen 24.

KIZUKI-IROMONO
  See specimen 32.

KIZUKI-O-HÔSHO
  Of the Hôsho class or group. A soft paper, smooth on one side and slightly rough on the other. Made from the bark of the paper mulberry in Fukui Prefecture. Used in Japan for book printing. The papers, Kizuki-naka-hôsho and Kizuki-ko-hôsho are related to Kizuki-o-hôsho, all varying in size.

KOGIKU
  Of the Hana-gami, or Kwaichu-shi, group. Also termed Kokiku. A soft thin paper used in Japan for handkerchiefs and napkins. Made in Gifu in rather small sizes.

KOHIRO
  A name given to a Sugihara paper made in Yoshino districts. See: Sugihara.

KOHÔSHO
  One of the seven chief varieties of Hôsho which was made during the Tokugawa Period. See: Hôsho.

KO-MINO
  A name sometimes applied to Kogiku-shi. A handkerchief paper.

KONAOSHII
  One of the types of Mino-gami. Made since the twelfth century.
KO-SHI
A name given thick paper.

KOSUGI-GAMI
Of the Hana-gami group. Used for handkerchiefs, napkins, etc. Produced in Echizen, Shimozuke, Kaga and Tosa.

KOSUGIHARA
Of the Hana-gami group. This name may also be written Kosugi-bara, the sound “ha” is interchangeable with that of “ba.” Made in Kōchi in small sizes and used largely by Japanese ladies.

KOTAKA-DANSHI
Of the Danshi group. This paper is used in Japan for book covers, wrapping and artistic purposes. It is a rather heavy paper covered with wrinkles. Made in Fukui Prefecture in a size approximating 13½ by 18½ inches. See: Danshi.

KO-TAKU-SHI
See specimen 2.

KOWA SUGIHARA-GAMI
A rather thick Sugihara used in Japan for visiting cards, indexes, etc. Made of paper mulberry bark in Satsuma, Tosa, etc. See: Sugihara.

KOYA-GAMI
An ancient paper deriving its name from Koya, the seat of the famous Koya Monastery. During the Middle Ages Koya-gami was thicker than at present and since the Yedo Period the quality has suffered. This paper is made from mulberry bark and is used chiefly in making shōji, the movable walls which are paper covered; also it is used in making umbrellas and other household articles of Japan.

KOYA-UDA
See specimen 33.

KOZO-GAMI
See specimens 21 and 22.

KOZO-KYOKUSHI
A popular Japanese paper usually made of mitsumata, but sometimes
paper mulberry is used. Employed for fine printing, drawing, pamphlet covers, painting, etc. In America this paper would probably be known as a “vellum.” Made in Fukui Prefecture.

**KUMOKAMI**

Also known as Uchikumori. The word *kumo* means “clouded-over,” hence this paper is a kind of marbled paper. Kumokami has been made in Japan since the earliest days of the Fujiwara Period and was employed in ancient times for writing poems and songs. Made in Fukui Prefecture in a size about 16¾ by 21½ inches.

**KUMO-TORINOKO-GAMI**

This paper is of the fine Torinoko group and as its name implies has a mottled or clouded appearance.

**KURO IRO-GAMI**

Literally: “black coloured paper,” but Iro-gami is a distinct paper and not simply any coloured paper.

**KUSURIBUKURO**

See: Yakutai-shi. This paper is used in the Orient for wrapping drugs and medicines. The paper is manufactured in a large variety of colours, the material being the bark of the gampi. Made in Tosa.

**KUZU-SHI**

Formerly used in the Orient for printing. Made in Yamato, Higo and Hiyuga districts.

**KWAIIDA**

Of the Atsu-gami (or Ko-shi) group. Sometimes called Kaida. Made in Tottori and used in Japan for records. Usual size about 11½ by 16½ inches.

**KWAIROYO-SHOIN**

Of the Shoin group. Usually made from the bark of the paper mulberry. Used for records. Made in Kochi in a size that measures about 11 by 15½ inches.
KYOKUSHI
See specimen 18.

KYOKUSHI-RORUNASHI
The same paper as above except in this case the paper has not been subjected to the “plater” which renders the paper smooth. It is used in painting, sketching, etc., as the surface has a “tooth” which makes it adaptable for chalk, charcoal and pencil drawing.

KYOKUSHI-SUKASHI
The term sukashi implies that the paper bears watermarks. The Kyokushi are often beautifully watermarked with intricate designs. While the Japanese execute the most highly skilled and most artistic watermarking accomplished anywhere in the world, there is very little of this ornamental paper exported. The European method of watermarking is in practice and lends itself admirably to the Oriental fibres.

KYOKUSHI-SUKASHI
See specimen 6.

MANIAI
See specimen 26.

MA-SHI
A modern paper used for brush writing. Made in large sizes in Fukui Prefecture. Approximately 38 by 72⅓ inches.

MATSUYAMA-HANSHI
A Hanshi produced in Iyo. See: Hanshi.

MATSUZAKI
Of the Kizuki-gami group. Used for records and made in Nagano in a size about 12½ by 17 inches.

MA-UMI-GAMI
Another name forDanshi.

MICHIHOKU
An old name forDanshi. Mentioned in the classic Manyōshū. See Danshi.
MIDORI-IRO-GAMI
A green Iro-gami. See: Iro-gami.

MIKUDASHI-FUMI-GAMI
The name given the paper made in Kamakura during the thirteenth century A.D. Used by the samurai (soldiers or knights of the Shōgunate Era). When the government was transferred to Kyōto the Mikudashi-fumi-gami became known as Kamakura-shi, the name now used.

MINATO-GAMI
An ancient paper tracing its origin to the tenth century A.D. Made in black and grey and used in Japanese tea-houses. Named after the place of origin, Minato. The old name was Shiki-kaeshi-gami, and sometimes called Yado-gami. Made in Hyogo in a size measuring about 15 by 37 inches.

MINENOYUKI (SAZUKI-HANKIRE)
Of the Hankire group. Used in Japan for writing, books, etc. Made in Kōchi Prefecture in a long, narrow size approximating 7¾ by 24 inches.

MINO-GAMI
The district of Mino has been known for centuries for its fine papers. What is now called Mino-gami was first made by Ota in the year of the Empire 1850-1858, or according to the Gregorian calendar, 1190-1198 A.D. During the Tokugawa Period Mino-gami was used by the government for official purposes. The finest Mino papers so closely resemble the Usuyo-gampi papers that it is difficult to distinguish between the two. Mino-gami is made from the bark of the paper mulberry; there are many types of Mino-gami.

MINO-SHOIN
Of the Shoin group. Used for shōji and for writing. Made in Mino, Gifu Prefecture. Size about 11 by 16 inches.

MINO-SUGIHARA
A Sugihara-gami made in Mino province. The Sugihara papers vary in texture and size according to the locality of their manufacture, or
according to their uses, but they have certain characteristics common to all. See: Sugihara.

**MISU-SHI**
Of the Usu-gami (or thin paper) group. Also called Shohan-shi. Made in Nara and used only in Japan. Size about 9½ by 13 inches.

**MIYAMOTO-SHI**
A very thin paper made of gampi and produced in Shinano.

**MIZOGUCHI-GAMI**
According to old records this paper was first made by a Buddhist monk named Nichigen Shonin in 1595 A.D. The name of the paper is taken from the village of Mizoguchi in the district of Chikugo, a locality renowned for its pure water and for mulberry trees, from which this paper is fabricated. The making of this paper is not now limited to the original district, but is made in Higo, Hizen and Chikuzen.

**MIZUTAMA**
Or Awo-Tosa paper. Made in five different colours and used in Japan for interior decoration; *mizutama* literally means, drops of water or spray.

**MIZUTAMA-TORINOKO**
See specimen 29.

**MOMIGAMI GOSHIKI (Asagi)**
See specimen 30.

**MOMIGAMI GOSHIKI (Aka)**
See specimen 31.

**MOMO IRO-GAMI**
An Iro-gami of the shade of the peach. See: Iro-gami.

**MON-SHOIN**
Also known as Moyo-shoin; *moyo* means mark or design, the paper having an all-over pattern in watermark. Used extensively in the Occident, and in the Orient for fancy *shōji* and lanterns. Made in Gifu in a size approximating 11½ by 15½ inches.
MORISHITA
Of the Kizuiki-gami group. A fairly heavy strong paper used in Japan for making umbrellas. Made in Gifu Prefecture in a size measuring about 13½ by 18 inches.

MOYOHŌSHO
One of the seven principal varieties of Hōsho made during the Tokugawa Period.

MUGI-GAMI
*Mugi:* literally, barley or wheat; hence, paper made from straw.

MUGISHIBO
Of the Danshi group. This paper is covered with wrinkles running one way of the sheet, somewhat resembling straws, from which the name might have been derived. Made in Fukui Prefecture. Size 15½ by 37 inches.

MURASAKI IRO-GAMI
An Iro-gami in purple. See: Iro-gami.

MURASAKI-TOSA
Also called Kan-Tosa. A purple-coloured paper made in Nara and Köchi and used for displaying merchandise, also for shelf papers. See: Kan-Tosa.

NADA-SHI
A thick paper made in Wakasa.

NAGA-KAMI
One of the several varieties of Yoshino-gami. See: Yoshino-gami.

NAKANAOSHI
One of the many types of Mino-gami.

NAKATAKA-DANSHI
A name applied to a medium sized Danshi.

NANAIRO-GAMI
Also called Hichishoku-shi. This paper may be traced to 1573 A.D. Now made in seven different colours in the province of Tosa, Köchi.
NARA-GAMI
Named after the ancient city of Nara in the district of Yamato. Writers of the Middle Ages describe this paper as being thin and finely wrinkled.

NEZUMI-FUTO-SHI
Until the early years of the Meiji, this paper was used for making envelopes, but it is no longer manufactured. The name nezumi means “rat” so it is presumed that the paper takes its name from this rodent as the paper is of a dark grey colour. It was originally made in Tokyo Prefecture.

NIBU-HŌSHO
Of the well-known Hōsho group. A grey-coloured paper used in the period of mourning. Made in Fukui Prefecture in a size of about 15½ by 20½ inches.

NIMAISHIKI GOKUMOSEN
Of the Suki-iro-gami group of papers. Made in a number of colours: red, blue, grey, tea, white, etc. Produced in Shizuoka Prefecture. Size 15 by 20¼ inches.

NISHIJIMA-SHI
This paper was originally made by Mochi Zuki in Nishijima, in the district of Kai. It bears a strong resemblance to the famous Danshi.

NISHINOUCHI-GAMI
Of the Usu-gami (thin paper) group. Used in Japan for records, shōji, etc. The name is derived from Nishinouchi in the district of Hitachi. Size about 12 by 19 inches.

NORI-IRE
According to Mr. Naojiro Haibara in his compilation, “Shugyoku-Shishu” the Nori-ire is of the Hōsho group, made in Köchi. In the work, “Washi Rui” compiled by Michitaro Watanabe, the name Nori-ire is given as of the Sugihiara group, owing to being made from paper mulberry bark and a size or nori made from rice flour.
OHARA-SHI
A coarse paper used locally for wrapping purposes. Made in Shinano district.

OHGATA-SHI
A thick paper made in Yonezawa.

OHIRO
One of the seven old varieties of Hōsho made in the Tokugawa Period, and used by the Shōgunate Government.

OHIRO-HŌSHO
See specimen 5.

O-HŌSHO
A Hōsho used at the time of marriage, birth and other ceremonial times. Made in Fukui. Approximate size 15½ by 20¾ inches.

OKA-HANSHI
A well-known Hanshi produced in Hiyuga and Bugo.

ŌMI-TORINOKO
Of the Torinoko group or family. In ancient times this paper was called Atsuyo. As the name ōmi implies, it was originally used for religious ceremonies. Made in Shiga in 16 by 21 inch size.

ŌNAOSHI
One of the many types of Mino-gami.

ŌNŌSHI
Of the Shoin group. In ancient times this paper was also known as Kiryokuyo-o-Mino, while in modern times it is sometimes called Ōnaoshi. Used for writing, printing, etc. Made in Gifu, size 12 by 18 inches.

Ō-SHU-HANSHI
Of the Hanshi group, used for tracing, writing, etc. Made in Ehime in a size which is about 9½ by 13 inches.

OTAKA-DANSHI
See specimen 1.
O-TAKI-SHI

This paper was named in honour of the Ōtaki Shrine, and used by artists for painting and drawing. Made in Fukui Prefecture, size approximately 38 by 72½ inches.

RAKUSUI-SHI

A fairly heavy ornamental paper in which sea-weed or other strands of coloured material cover the sheets. First made in Yedogawa, Koishigawa-ku, Tokyo, during the Meiji Era. Size about 36 by 72 inches.

SAJIKAWA-HANKIRE

Of the Hankire group or class. This paper is manufactured from paper mulberry bark, either plain or with sea-weed or moss running through the sheets. It is used in the Orient for book printing and is made in Tottori. The size is approximately 7½ by 24 inches.

SANTOME-SHI

Santome is of the Atsu-gami, or thick paper, group. Also sometimes called Go-fuku-gami, and was first made between 1573 and 1591 A.D. Now used for envelopes for documents. The size is about 15½ by 18 inches.

SANZUN-HIRO-MANIAI

A plain paper containing clay. Made in Hyogo in a size of about 15½ by 40 inches.

SASHIKI-SHOIN

Of the Shoin group. Used for records, etc. Made in Köchi. 11 by 15½ inches.

SASOKU

Of the Hanshi family or group. Made in Shizuoka and used for shōji. Size about 10¾ by 14¼ inches.

SEKISHU-HANSHI

A Hanshi in natural tone. Made in Shimane and used in the Orient for writing and printing. The size is about 10 by 14 inches.
SENKWA-SHI
A thick paper of the Atsu-gami class. First produced in Iyo in the years of the Empire 2233-2251 (1573-1591 A.D.). Made of pure mulberry bark; at present manufactured in Tosa, Iyo, Yamato, Bingo, etc.

SET-KO-SEN
A very smooth finished paper used in Japan for making envelopes and containers. Made in Tokyo Prefecture. Size about 22½ by 41½ inches.

SHASUKI-TENGUCHO (Or TENGUJÔ)
A soft thin paper made of long-fibred mulberry bark and used in Japan for filtering, napkins, packing, etc. Made in Gifu Prefecture.

SHIBU-GAMI
This paper, brown in tone, has been made in Japan from time immemorial. It is stained with the juice of the persimmon, known in Japan as shibu. Made of paper mulberry and mitsumata, although gampi and straw are not unknown in its manufacture. It is largely employed as silk-worm “egg” paper.

SHICHI-KUSUN
Used in Japan for handkerchiefs. The ancient Nobe-gami was of similar quality although somewhat thicker. Made in Köchi in a small size, 8 by 11 inches.

SHIDAI-SHI
One of the Atsu-gami rui (thick paper class). Used for making umbrellas, record books, etc. Made in Yamato and Kii.

SHIGARAMI-GAMI
See specimens 16 and 17.

SHIKI-SHI
Another name for Iro-gami. See: Iro-gami.

SHIMAMAKI-SHI
A paper resembling the Santome-shi and used for similar purposes.
SHINGU-SHI
A very large heavy paper made by Shikaji Nakada of Ino (Kōchi) for the Meiji Shrine. Made of pure kozo (paper mulberry), size 107 by 107 inches.

SHIRO IRO-GAMI
Iro-gami without any colouring.

SHOHAN-SHI
A name applied to a size of Hanshi, literally meaning, small or narrow Hanshi. Also known as Aihanshi. Made in Suwo, Aki and Settsu.

SHOIN-SHI
This is a variety of Mino paper and is made of mitsumata and paper mulberry barks; the latter is used for the finest quality of Shoin-shi. The paper is very strong and of fine texture. Used in Japan for recording important public documents and official acts. As a “record” paper, the writer Genta Yoshii says it is unsurpassed. Made in Fukui, Gifu and Kōchi. All of the Shoin group measure about 11 by 15½ inches, or in Japanese measurement 93 by 132 bu.

SHŌJI-SHI
See specimen 4.

SHOKANYO-TORINOKO
A Torinoko used in Japan for title-pages of books. Made in Fukui.

SHO-MINO-SHI
Another name for Kogiku-shi. Made in Mino, Mikawa and Kaga.

SHUZENJI-GAMI
A special paper of a light brownish tone, said to have originated about three hundred years ago, but the exact date is not known. During the Yedo Period this paper was extensively used by the Tokugawa Shōgunate. Made in Shuzenji, in the district of Idzu.

SUGIHARA-HŌSHO
Of the Hōsho group. Principally used by the warrior class during the Kamakura Period. Now used for printing and writing. Made in Kōchi in a size approximating 15 by 20½ inches.
According to "Hojo Kudai Ki" published in the year of the Empire 1879 (1219 A.D.), Sugihara-shi owes its name to the village of Sugihara in the district Hirima. Other writers, however, claim that the name is taken from the village of Sugihara in the Mino province. In ancient times Sugihara-shi had an important place in Buddhist and Shintô Shrines. In modern times Sugihara-shi is produced in numerous places and its variety has increased. The following named Sugihara papers are made in Harima: Ohiro, Omono, Onaka, Odani, Hachibu-kuse, Nakadani, Aradani and Shiso. In the regions of Tosa and Hiroshima, the following named Sugihara papers are made: Osugi and Nakasugi. In Yoshino regions a Sugihara paper known as Kohiro is made. The Sugihara-shi bearing the name of the place of their origin are the following: Kaga-Sugihara, Tango-Sugihara, Mino-Sugihara, Echizen-Sugihara, Hiroshima-Sugihara and Idzumo-Sugihara. The Sugihara papers vary in size and texture according to the place of manufacture, but they all have certain common characteristics. These papers are made of paper mulberry fibres and a size is used that is made from powdered rice. On account of this sizing the Sugihara-shi is sometimes nicknamed "Nori-ire."

SUI-HA

During the Muromachi Period, Sugihara-shi was called Sui-ha, while to the women folk it was simply termed Sui.

SUKI-GAE-SHI

This paper made its appearance during the Yedo Period. Also known as Asakusa-gami. Usually made from discarded paper.

SUKI-KOMI-NO-KAMI

The term designating that a paper is made on the "laid" type of mould.

SUKIMOYOSHI

A coloured cover paper used extensively in Japan in book work. Made in Fukui Prefecture.
SUMI-NAGARE TORINOKO
A decorated Torinoko. From the Japanese words sumi-nagare meaning "flowing-ink."

SUMI-NAGASHI
A marbled paper in colour, used for artistic purposes; the paper being well covered with flowing lines in various dull colours. Made in Fukui Prefecture in a convenient size for book work, 16¾ by 21½ inches.

SUMIRE-KUMO
Of the Torinoko group or family. First made during the Meiji Era. As its name implies, the paper is decorated with clouds of violet colour usually with a grey background. Also made with pink, blue and white spots. Imported to the Occident where it is used in interior decorating and for book covers. Made in Fukui Prefecture in a size approximating 19½ by 23¾ inches.

SURUGA-HANKIRE
Since the early days of the Meiji Era, the making of this paper has been popular. In later years it began to be manufactured in Yedogawa, in Tokyo, and was, for a time, called Yedogawa-hankire. At present, however, it is made only in Shizuoka, the place of its origin. The size is about 7½ by 20¾ inches.

SURUGA-HANSHI
In the Middle Ages this paper was produced in great quantities in the then autonomous state of Suruga. During the later periods it was manufactured under the name Kairyo-hanshi, in bleached condition. Suruga-hanshi of the Yedo Period was made of mitsumata. Not produced at the present time.

SUSAKI-HANSHI
Used for records and for shōji. Made in Kōchi in a size that is about 9¼ by 14 inches.

SU-SHOIN
A paper made of bleached paper mulberry bark and used in the Orient for records. Produced in Gifu Prefecture. Size 11 by 15½ inches.
SUZUKI-HANKIRE (GYOKUSEN)
Of the Hankire group. Used in Japan for books. Made in Köchi in 7 by 20¼ inch size.

SUZUKI-HANKIRE (HAKUGYOKUSEN)
Of the Hankire group. Used for book printing. Produced in Köchi in a size approximately 7½ by 24 inches.

SUZUKI-TENGUCHO
A paper made from mulberry bark with a slight trace of bamboo pulp. Used for filtering, packing, napkins, etc. Made in Gifu Prefecture.

TAI-HANSHI
One form of Hanshi, denoting big or large Hanshi.

TAISHO-MIZUTAMA
Of the Torinoko group or class. As the name implies, this paper is spotted with drops of water. First made during the Taisho Era. Made in Fukui Prefecture. Size 21½ by 31 inches.

TAKE-GAMI
Another name for Chiku-shi, or a paper made from bamboo as the word take implies.

TAKENAGA
Of the Hōsho group. A paper used for various purposes. Made in Ehime. Size 20¼ by 30 inches. According to the modern treatise, "Washi-Rui" compiled by Michitaro Watanabe, this paper is used by Japanese women in place of ribbon, the paper being dyed in various colours and sometimes given a gold or silver tint. This writer also states that the Takenaga-shi is manufactured in Tango, Mino, Tosa and Hiyuga.

TAMAKUMO
Also called Tobikumo. Of the Torinoko group. These papers have been made from the earliest days of the Fujiwara Period, and used for writing poems and songs. Tamakumo literally means balls or clouds, the paper being spotted with balls of colour. Made in Fukui Prefecture in a size of about 16¾ by 21½ inches.
TANGO-SUGIHARA
A name applied to the Sugihara paper manufactured in Tango.

TANZAKU
A kind of paper or any thin substance that is used in Japan for writing verses, poems, etc.

TENGUCHO
Of the Usu-gami, or thin paper, group. According to Genta Yoshii, writing in the 31st year of Meiji (1898 A.D.), the paper commonly known in Japan as Tengucho is made from paper mulberry bark only. It is soft and used by dentists and doctors in lieu of absorbent cotton. Largely exported to Europe and America. Made in Gifu, Fukui and Kōchi. Size about 11 by 16 inches.

TETSU-IRO-TORINOKO
Also called Kurokane-torinoko. Of the Torinoko group or class. A coloured paper in dark tones which is used only in Japan. Made in Fukui in 15 by 36 inch size.

TOBIKUMO
Same as Tamakumo.

TORINOKO
See specimen 19.

TOSA-HANSHI
The name applied to the Hanshi produced in Tosa, Kōchi Prefecture.

TOSA-KARAKAMI
Of the so-called "hair-brush" papers. Produced in Kōchi Prefecture in a size approximately 28½ by 56 inches.

TOSA-SHOIN
See specimens 8 and 10.

TOYO-GAMI
The Toyo-gami is smooth, strong and comparatively thick. Used for printing important legal documents, envelopes, expensive books, etc.
In making genuine Toyo-gami the mitsumata is the only bark used. The Prefecture of Shizuoka is well known as the centre of Toyo-gami production.

**UCHIGUMORI**
One of the papers of the wide Torinoko group.

**UCHIKUMORI**
Another name for Kumokami, of the Torinoko family or group. Made in Fukui Prefecture, size about 16¾ by 21¾ inches.

**UCHIKUMO-TORINOKO**
Of the Torinoko group. The word *uchikumo* means clouded or cloudy, as the paper is spotted or mottled.

**UCHIYAMA-SHI**
A name applied to large Hanshi.

**UCHIYAMA-SHOIN**
Of the Shoin group. Used in Japan for records and *shōji*. Made in Nagano Prefecture. As with all of the Shoin class, this paper measures about 11 by 15½ inches.

**UDA**
Of the Kizuki-gami group. A paper used largely in Japan. Made in Nara Prefecture. Size approximately 12½ by 18⅛ inches.

**UNKASHI**
See specimen 27.

**UNRYUSHI**
See specimen 28.

**URUSHI-KOSHI-GAMI**
Of the Yoshino-gami group. A soft, thin paper used chiefly for handkerchiefs. The Yoshino paper, unlike most others, is not easily dissolved in water and it can withstand a considerable amount of moistening.

**USU-GAMPI-SHI**
A thin paper made from gampi bark. This paper is also called Gampi-shi-usui. Made in Gifu Prefecture. Size 10¾ by 15½ inches.
USU-MINO
Largely used for tracing, etc. in connection with the making of Japanese prints. Made in Gifu. Size about 10¾ by 15½ inches.

USU-TORINOKO
A lightweight Torinoko, made in Fukui Prefecture. Size 38 by 74 inches.

USUYO-TORINOKO-GAMI
A thin Torinoko. During the latter part of the Heian Period (724-1185 A.D.), the keeping of diaries became prevalent in Japan and the Usuyo-torinoko-gami was used for this purpose. During the Tokugawa (Yedo) Régime (1603-1867 A.D.), oil was applied to this thin paper and it assumed the name of Yu-shi. In the Middle Ages, when the country was torn with wars, Usuyo became very popular as its strength and high quality seemed to attract the warriors’ attention and admiration. Messages written on this thin paper were especially convenient for secreting on the person of the couriers.

UTSUSHI-GAMI

UWA-SENKA
See specimen 7.

WAGATSUMA
Of the Hanshi group. Also called Kairyo-hanshi and Gosai-kairyo-hanshi. Used in Japan for records, etc. Produced in Kōchi, size about 9½ by 13 inches.

WAKAMIDORI-KWAIRYO-SHOIN
Of the Shoin group. Used for writing and tracing. Made in Kōchi, size about 11 by 15¾ inches.

WARA-GAMI
Wara-gami, as its name implies, is made from rice or wheat straw. As early as the ninth century A.D. there are records relating to Wara-gami.
WA-TO-SHI
This paper was first made in the year of the Empire 2461-2464 (1801-1804 A.D.), in Mito. It is made from mitsumata bark and has a close resemblance to Chinese paper.

YADO-GAMI
Another name for Kamiya-gami. Minato-gami sometimes goes under the name of Yado-gami.

YAGIRI-GAMI
This paper is made from slippery-clm bark. Its name appears in the writings of the ninth century A.D. when it was held in equal popularity with Asa-gami and Kachi-gami.

YAKUTAI-SHI
See specimen 36.

YAMASHIRO-HANSHI
A kind of Hanshi produced in the Nagato district.

YANAGIGAWA-HANSHI
A kind of Hanshi produced in the Echigo district.

YANAGI-HÖSHO-HANKIRE
Of the Hankire group. At one time a popular paper in Japan. Made in Tottori Prefecture. Size about 7½ by 24 inches.

YANI-IRI-SHOIN
Of the Shoin group. A soft white paper used for printing and writing. Made in Kōchi Prefecture in a size approximately 11 by 15½ inches.

YAWARAKA-GAMI
One of the several varieties of Yoshino-gami.

YOGOCHIRI
Of the Kizuki-gami group. Also called Kawachiri. A rough paper made from coarsely-beaten bark, the pulp containing pieces of unmacerated bark, twigs, etc. At one time popular in the Orient for bags, wrapping, etc. Made in Saitama Prefecture. Size, 12 by 16½ inches.
YO-GWA KANVASU
See specimen 3.

YOSHINO-GAMI
The name of this paper comes from the district of Yoshino. There are several varieties, all of which are listed in this compilation. See: Yawaraka-gami, Naga-kami, Wara-gami and Urushi-koshi-gami.

YOSHINO-YAWARA
Of the Usu-gami (thin paper) group. Made in Nara. Size 9½ by 19 inches.

YU-SHI
During the Tokugawa Period oil was applied to the Usuyo-torinoko paper and this paper was known as Yu-shi.

ZU-BIKI-SHI
Also called Zu-hiki-gami. A thin, rather hard surfaced paper used by artists, photographers, etc. Made in Köchi in a size approximating 22 by 31½ inches.

ZUNGAIPI USUYO
See specimen 12.
PART V
Bibliography

WHILE this list of Oriental works relating to Paper and to Papermaking has been compiled over a period of many years, no intimation is given that it is complete. The most important books and pamphlets are in the compiler’s collection and the others have been examined in various Oriental libraries, both public and private. As will be noticed, Japanese works predominate, while there is a scarcity of books in the Chinese language relating to papermaking. Many of the works are not dated, but for the most part, the Japanese compilations are from the Meiji Era (1867-1912) and onward. The old, as well as the more important later books are listed. Each Oriental title is followed by a literal translation.

ASA-SHI KO
Paper made from hemp.

CHIKUGO MIZOGUCHI-SHI NO REKISHI GAIYO
An outline of the history of Mizoguchi paper in Chikugo Province.

CHOSEN NO SEISHI SHISEKI
Historical sites of paper manufacture in Korea.

ECHIZEN NO SEISHIGYO
Papermaking in the Province of Echizen.

ECHIZEN-SAN SHI
Papermaking in Echizen Province.

ECHIZEN SEISHO NO YUISHO OYOBI ENKAKU
Origin and outline of the history of papermaking in Echizen Province.

GAIKO ITSUJI NI ARAWARETA YOHISHI TO TORINOKO
Parchments and Torinoko papers as represented in diplomatic episodes.

GANPISHI KO
Thin rice paper.
GIFUKEN SANGYO-SHI
A history of paper manufacturing in Gifu Prefecture.

HAKUSHITSU WASHI REJINSAIZU SHIKO SHIKEN SEISEKI
The results of rosin size tests on thin Japanese papers.

HANAIshi NO KYUSEKI HAKKEN
The discovery of ancient sites of Hanai papers.

HONCHO KOSHI NO KOSHO OYOBi INYOSHO
Comparative study of the old papers in our country, and the books of reference.

HYOSHI-YA, KAMISUKI KARAKAMI-SHI
Bookbinders, papermakers, paper-screen-makers. A literature of these crafts affords an insight into the customs of various ages.

JIKKEN SHUSETSU MITSUMATA SAIBAI-HO
Methods of cultivating mitsumata, a collection of tests.

KAGAKU OHYO NIHON SEISHI SHIMOPO
A new chemical method used in Japanese paper manufacturing.

KAIRYO MITSUMATA BAIYO JIKKEN-ROKU
Records of improved methods of cultivating mitsumata.

KAMI
Manufacturing paper, plants for papermaking, comparative study of old papers, paper manufacturing in various countries, etc. With illustrations in colour.

KAMI-FU
A list of the papers made in various countries, with names, sizes, etc.

KAMI-FU (NUKIKAKI SHOSHO)
Extracts from the above title.

KAMI NO REKISHI
History of paper.

KAMIRO HOJOKI
An illustrated treatise on papermaking.
KAMISUKI CHOHO-KI

The oldest book in the Japanese language relating to the craft of papermaking. The original edition of this work was published about 135 years ago in the city of Osaka. The author was Jihyoe Kunihigashi, otherwise Jihyoe Kokuto, a paper merchant of Iwami. The illustrations were made by the Settsu Meisho and the well-known artist Tanba (both of the eighteenth century). The ancestors of the editor, Jihyoe Kunihigashi, or Kokuto, were natives of Wasada in the Principality of Bungo. Later they moved to Kunizaki of the same principality, changing their surname to Kunihigashi. During the Tokugawa Period, they migrated to Mino-gun in the province of Iwami, where it is thought that Jihyoe Kunihigashi was born. The date of his birth is not certain, some placing it the latter part of the Genroku Era (1688-1704 A.D.), while others are inclined to believe that he was born in the early days of the Hieh Era (1704-1711 A.D.). Jihyoe Kunihigashi spent his life in improving the condition of agriculture in Iwami. His work attracted the attention of the ruler of the province and under his order the young man improved the rice-fields, introduced new plants, encouraged the replanting of the forests, and gave instructions in the making of paper. The so-called Sekishu-hanshi or Iwami-hanshi owes its development to Kunihigashi. The first edition of "Kamisuki Chocho-Ki" was published sometime during the Kwansei Era (1789-1801 A.D.) which corresponds to the time of the 11th Shōgun of the Tokugawa Dynasty. It is not known when Kunihigashi died, but his tomb is located in the village of Yasuda in the province of Iwami. In September, the 13th year of Taisho, a group of paper merchants erected a monument to the memory of this renowned chronicler of Japanese papermaking. A facsimile reprint has been made in Japan by Mr. Horikoshi of Osaka, also a reproduction of this old treatise has been produced in Germany.

KANSHI KO

Chinese paper.
KO-GEI
A Japanese magazine devoted to the arts and crafts movement. From ko, meaning crafts and gei, arts. The number of “Ko-gei,” published April 15th the 8th year of Showa, is devoted to the handmade paper industry of Japan. There are numerous specimens of paper and articles concerning Japanese papermaking by the following authorities: Kazu Nakamura, Muneyoshi Yanagi, Bunsho Jugaku, Naokatsu Nakamura, T. Iwai, and Dr. Torajiro Naito. A valuable contribution to the craft of Japanese and Chinese papermaking.

KOKUSHI-KO
On grain papers.

KOSHI TENRAN TO ENNEN SHIFU
An exhibition and record of old papers.

KOSHI ZATSUDAN
Notes concerning old papers.

KOZO BUNGAKU
Literature relating to the paper mulberry (Broussonetia papyrifera).

KOZO-JU SAIBAI TO SHOSHI SEIHO
The cultivation of the paper mulberry and the manufacture of papers of various kinds.

KYU MITO-RYO NO SANSHI
Papermaking in the former territory of Mito.

MINOGAMI-SHO SEIZU-SETSU
A treatise on the manufacturing of Mino paper, with illustrations.

MITSUMATA
The cultivation of mitsumata shrubs for commercial purposes.

MITSUMATA KO
Mitsumata paper.

MITSUMATA OYOB OASA SAIBAI CHOSA
A search into the cultivation of mitsumata and hemp.
MITSUMATA SAIBAI ROKU
Records on the cultivation of mitsumata.

NANKIBUNKO SORITSUKINE CHINRETSU MOKUROKU
Classification of old books and literature, Western as well as Eastern, in the order of age, with specimens of paper.

NIHON KOYU SOMOKU SENSHOKU FU
Monograph of plant-dyeing peculiar to Japan. This book, compiled by Akira Yamazaki and published in 1933, gives many specimens of the dyes extracted from plants and used in Japan before the introduction of commercial colours. A description of the dyes used in papermaking is given with specimens of coloured papers.

NIHON NI TSUTAWATTA SAIKONO KANSEKI
The oldest Chinese literature introduced into Japan.

NIHON NO KODAI NI OKERU KAMI NO SHURUI
The varieties of paper in ancient Japan.

NIHON SEISHIRON
Japanese papermaking with illustrations of materials.

NIPPON SEISHI RON
Papermaking in Japan. One of the best Japanese books dealing with native handmade paper fabrication. The author, Genta Yoshii, has done a great deal in promoting handmade papermaking in his native country. The book was published the 28th day of March, the 31st year of Meiji. (March 28, 1898.) Illustrations of appliances, papermaking materials, plants used for sizing, etc.

SAISHIN SEISHI KOGYO
Modern paper manufacturing.

SEIKA-SHI SETSU
Detailed explanations (of papermaking) with illustrations.

SEISHI GENSHTSU-HEN
Materials used in papermaking.
SEISHIJUTSU
Paper manufacturing technique.

SEISHI KAIRYO JIKKEN ZENSHO
Experiments for the improvement of paper.

SEISHI NO GAKURI OYOBI JISSAI
Theory and practice in paper manufacturing.

SHI-FU
One of the rarest of Japanese books dealing with paper. The author, Seichiku Kimura, undertook to list all of the papers made in Japan during the period (1778 A.D.) and gives the names of the papers, where fabricated, size, etc. A most valuable compilation, published February, 6th year of Anei.

SHIGYO JINKOKUKI
Records of the paper industry.

SHIGYO KOWA HIKKI
Notes on lectures concerning the paper industry.

SHIGYO SHISATSU HOKOKUSHO, KAGAWA, EHIME, KÔCHI-KEN
Reports on an inspection of the paper industry in the Prefectures of Kagawa, Ehime, and Kochi.

SHIMANEKEN OHARA-GUN MITSUMATA SAIBAI JIGYO ENKAKU GAIYO
A treatise on the cultivation of mitsumata in Chara-gun, Shimane Pref.

SHIMANEKEN SHIGYO SHISATSU HOKOKU NARABI NI SEISHI-FU
Reports on an inspection of the paper industry in Shimane Prefecture and lectures on paper manufacture.

SHOKOKU SHIMEI ROKU
Names of the papers produced in various countries, with their sizes, etc.

SHOSOIN NO ASAGAMI NI TSUITE
Concerning the hempen papers in Shosoin temple.
SHUGYOKU-SHISHU
A collection of Japanese handmade papers assembled together by Naojiro Haibara. The book gives 100 samples of papers and is a valuable contribution to papermaking. The name “Shugyoku” was given to the Haibara paper store (Tokyo) by His Imperial Highness, Prince Arisugawa. The word “shishu” means a collection of papers. Recent.

TEIKOKU KOKUSAN SHI HYO
Papers manufactured in the Japanese Empire. With specimens, methods of making, sizes, where made, etc.

T’IEN KUNG K’AI WU
The earliest work dealing with technical papermaking in China. The book was compiled by Sung Ying-hsing in 1634 and published in 1637. Treats of making paper from bamboo, with illustrations showing the various processes.

TOSA GAMI NO ENKAKU
A history of the paper of Tosa.

TOSASHIGYO IPPAN
The paper industry of Tosa.

TSUZOKU SHIGYO HATTATSU-SHI
A history of the development of the paper industry.

WAKOKU SHÔSHOKU EDZUKUSHI
Artisans at work. Published in four volumes in 1681, with a second edition in 1685. A portion of one of the volumes is devoted to Japanese papermaking, with three wood-blocks by Hishikawa Moronobu.

WASHI
Japanese papers.

WASHI GENGYO MITSUMATA SAIBAI SHINSHO
A new treatise on the cultivation of the mitsumata as a material for Japanese paper.

WASHI NO DEMPA KEITO
Lineage of the spread of Japanese papers.
WASHI RUI
The term "washi" means domestic, or Japanese, paper; the word "rui" signifies variety, hence a list of Japanese papers. The book was compiled by Michitaro Watanabe and undertakes to list the numerous native handmade papers with places of manufacture, old names, sizes, etc.

WASHI SEIZORON
Japanese paper manufacturing.

YASHIRO KOKAN NO WASHIRON
Yashiro Kokan's treatise concerning Japanese papers.

ZOSHI SETSU
Papermaking in Gifu Prefecture, with a treatise on the paper industry of Echizen. The papers of Shikoku and the thin rice paper manufactured in Awa. The Neo-paper of Gifu, etc. Two volumes, coloured illustrations.

1,200 NEN ZEN NO KOSHI
Papers of 1,200 years ago.

1,400 NEN ZEN NO KAMI NO HANASHI
Talks on the papers of 1,400 years ago.
PART VI
DESCRIPTION OF ILLUSTRATIONS

FRONTISPIECE
Ts'ai Lun, Doncho and Mochizuki
A kakemono produced by a Japanese artist in memory of the work of Seihei Mochizuki, who established papermaking in Hishijima-mura (Kahi Province) in 1572 A.D. This drawing is of interest because it depicts, along with the portrait of Mochizuki, the imaginary portraits of Ts'ai Lun, the Chinese inventor of paper, and Doncho, the Korean priest, who, in 610 A.D., introduced paper into Japan. Ts'ai Lun, in conventional Chinese dress, stands in the centre, Doncho (left) is shown as a Buddhist monk, while Mochizuki, in formal costume, appears to be holding a rolled bamboo mould cover. This drawing is purely the conception of the Japanese artist as no authentic portraits of these worthy gentlemen exist.

WOODCUTS
1. The paper mulberry (Broussonetia papyrifera). The bark of this tree yields the most important papermaking fibre of the Orient.
2. The mitsumata (Edgeworthia papyrifera). Some of the finest papers of the Orient are made from the bark of this beautiful shrub.
3. The gampi (Wikstroemia carnea). The paper made from this shrub has its own characteristics and is readily distinguishable from all others. Cut especially for this book by J.J. Lankes.

PHOTOGRAPhURES
4. Prince Shōtoku. The patron of Japanese papermaking. While there are numerous statues of Prince Shōtoku (572-623 A.D.) throughout Japan, this particular effigy is in the Hōryū Buddhist Temple dedicated to the Prince. The Hōryū Temple is located near the ancient town of Nara.
5. The bamboo (Phyllostachys edulis). According to the scholar, Su Tung-p'o, the fibre of the bamboo has been used for making paper since the eleventh century.
6. The bamboo peeled, split and cut into convenient lengths ready for the boiling process, preliminary to being made into sheets of paper.
7. In China the straw used for paper making is subjected to a constant rewetting and restacking, the process requiring three to four weeks.
8. The "wove" mould of Kwangtung Province, China. It is thought that the earliest paper fabricated by Ts'ai Lun was made on a mould of this type.
9. The present-day wickerwork moulds of China are no doubt founded upon the ancient style of "wove" moulds now used in Kwangtung Province.
10. The Chinese worker is filling the rattan, or wickerwork, moulds with pulp as they lie upon the ground, in the most ancient manner of making paper.
11. The paper is dried upon the wickerwork moulds in the sun, in the same manner as employed with the "wove" ramie moulds of Kwangtung Province.
12. The same type of mould as shown in photograph 13. The worker is in the act of dipping the mould into the vat containing beaten fibre.
13. The "laid" mould of China. This specimen, in the compiler's collection, was used in moulding three sheets of paper at a single dipping.

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14. The same style of mould as depicted in photographs 12 and 13, but with this tool four separate sheets of paper are moulded at one dipping.

15. The typical "laid" mould of Korea, formerly used in the village of Ompei. It will be noted that the "chain" lines run the long way.

16. The most common type of mould used in Japan at the present time. The upper sugeta, or "deckle," is raised from the mould proper. Köchi, Shikoku Island, Japan.

17. The same type of mould, but smaller, as shown in photograph 16, but with a "laid" cover. This mould was used in a mill in Gifu Prefecture, Japan.

18. The type of mould used in making the shōji, or window paper, the sheets being very large. The paper made in this mould would measure 34 by 68 inches. Okayama, Japan.

19. A small "laid" mould of Japan used in making many kinds of useful and artistic papers. This is a most common type and is found in all parts of Nippon.

20. In preparing the barks for papermaking the dark outer coating is removed, only the white inner bark being used. Photograph made in Shigarami, Japan.

21. The boiling of the mulberry, mitsumata and gampi barks is accomplished in large open receptacles with wood fuel. Tosa Province, Shikoku Island, Japan.

22. Another view of the cooking or nikata process in one of the large Japanese mills. The bundles of bark are placed full-length in the alkali solution.

23. These women workers are picking any foreign particles from the washed and boiled bark, by the wet process, or mizu-naoshi. This assures clean, spotless paper.

24. The same procedure as shown in photograph 23, only this work is being accomplished by the kara-naoshi, or dry process. Either method is tedious.

25. In Japan it is customary to use the "Holland" type of beater to reduce the mitsumata and gampi fibres to pulp suitable for paper-making.

26. With the hope of emulating the old hand-beating process in beating mulberry bark, some of the Japanese mills have introduced mechanical stampers.

27. While this cumbersome contrivance resembles a machine of mediaeval times, it is a recent innovation in the beating of mulberry bark in Japan.

28. One of the buildings of the shrine at Okamoto, the most impressive sanctuary in the world dedicated to the ancient craft of paper-making.

29. Spraying out the pulp for making the largest sheet of handmade paper ever fabricated, over sixteen feet square. Okamoto, Fukui Prefecture, Japan.

30. Workers spreading the pulp in forming the large sheet of paper. Only two sheets were made, one being used for a painting in Waseda University, Tokyo.

31. (a) Knife and bench used in stripping bark, Ogawa-Machi, Saitama; (b) beaters from Kamimaki-mura, Gifu; (c) paper-knife, Köchi; (d) drying brush, Okayama.

32. Beating bark to a pulp by the ancient hand process. This method is fast dying in Japan and may only be seen in a few localities. Shigarami village.

33. A small mill in Najio, Hyōgo Prefecture, the only papermaking village in Japan where the artisans sit at their work, in the manner of ancient times.
34. The same mill as shown in photograph 33, the workers sitting before the vats dipping the moulds. The old prints of Japan depict this ancient custom.

35. This monument in Najio is dedicated to the pioneer papermaker of the village, Yaemon Higashiyama, who learned the craft in the Province of Echizen.

36. These two Japanese workers are agitating the liquid pulp in the vats preparatory to dipping sheets of paper. This stirring process is repeated constantly.

37. The worker at the right is about to dip the mould to form a sheet of paper, while the other two artisans at the left are "couching" paper.

38. The vat-house of one of the largest mills in Japan, where hundreds of workers are employed. The moulds in use are the type shown in photographs 16 and 17.

39. The worker at the right is in the act of dipping the mould, while the other artisan is depositing the newly-formed sheet upon the pile of paper.

40. Primitive presses such as this are used in even the large handmade paper mills of Japan. The pressure can be regulated by applying or removing the stones.

41. After pressing, the slightly moist sheets of paper are deftly spread upon boards and placed in the sun to dry. This work requires considerable skill.

42. The work of applying the paper to the drying boards is often carried on in the garden of the mill. Ogawa-Machi, Saitama Prefecture, Japan.

43. In Japan it is not unusual to see paper drying in the open when the atmosphere is cold and the ground covered with snow. Shigarama village.

44. The drying yard of one of the largest handmade paper mills in Japan where every step of the work is done with efficiency. Tosa Province, Kōchi.

45. After drying, the paper is graded according to smoothness, gloss, thickness, cleanliness and other characteristics. Kōchi, Shikoku Island, Japan.

46. A sorting room of another large mill where each sheet of paper undergoes a strict inspection. Japanese handmade paper is usually free from defects.

47. The packing room of a paper mill in Kōchi, Japan. The worker at the right is trimming paper with a knife such as is shown in photograph 31.

48. The wrapping and packing of paper in one of the large Japanese mills. In many Oriental mills every step of the work is accomplished by hand.

49. The exterior of a one-vat mill in the village of Ogawa-Machi, Saitama Prefecture, near Tokyo, where there are more than a hundred individual mills.

50. The beating of mulberry bark in Taikyū, Korea, where handmade paper has been fabricated for hundreds of years. The long beaters differ from those of Japan.

51. Korean papermaking in its most primitive aspect. It is little wonder that the paper of Korea is not always free from imperfections. Kŭsan, Southern Korea.

52. In Southern Korea the paper is dried upon wooden boards, in the same manner as in Japan. This method originated in China and was introduced into Japan from Korea.

53. It is not difficult to perceive why Korea is called "The Land of Morning Calm" as a sad stillness envelops the country at all seasons.
54. In journeying to the papermaking village of Ompei, Korea, the traveller passes the last remaining section of the old wall that once surrounded Seoul.

55. To reach Ompei from Seoul it is necessary to walk over a rough and stony path, passing the Great White Buddha at the foot of the mountain.

56. The village of Ompei lying along the little stream that furnishes the water for the papermaking. Sheets of paper are drying upon the ground.

57. In former years the pulp was beaten by stone rolls, but there was no grass for the ponies that furnished the motive power, so this method was abandoned. Ompei, Korea.

58. It requires the efforts of two men to dip one of the large Korean moulds into the vat of pulp. The mould being used is the identical one shown in photograph 15.

59. The boy sitting by the pile of paper places a piece of straw between the end edges of the sheets of paper. This facilitates the separating of the sheets.

60. In Ompei the paper is spread upon the ground to dry, a most primitive method. The paper made in this village is used on the floors of Korean houses.

61. In Korea men carry everything upon their backs, and paper is no exception. This boy carries heavy loads of paper from the mill to the market many miles away.

62. The papermaking school in Seoul where Koreans are taught Japanese methods. Messrs. Seno, the instructor, Takahashi, Hunter, and Yamamura in the background.

63. Young boys from the mountains of Korea learning the craft of papermaking as practised by the Japanese. The school room of the Institute, Seoul, Korea.

64. After the pulp has been beaten it is placed in a bag and washed in a running stream. This method is used in China where the photograph was taken.

65. The most ancient form of papermaking moulds are in use near the town of Fatshan, South China. The mould shown in photograph 8 is identical with these.

66. The individual sheets of paper are stripped from the moulds as they stand in the sun; the moulds are then ready for further papermaking.

67. In China in ancient times, as at present, the "deckle" edges on paper were considered imperfections. This old man is rubbing away the rough edges.

68. A coolie carrying packages of paper to the market. In China, merchandise of all varieties is transported in this manner, while the Korean method is shown in Photograph 61.
The following specimens have been chosen as being representative of the present-day handmade papers of Japan, Korea and China. The name of each paper is that used in the Orient and must not be confused with the fanciful trade names which are applied in Europe and America and which may have no historical significance or meaning.

**JAPAN**

1. **OTAKA-DANSHI.** The largest size of the well-known Danshi group. Used in Japan for covers, art work and ceremonial purposes. Made of the bark of the paper mulberry in Fukui Prefecture. Size 20\(\frac{3}{4}\) by 26\(\frac{3}{4}\) inches.

2. **KO-TAKU-SHI.** A long-fibred paper with a rich lustre. Made in Surugo and Echizen from paper mulberry bark. Produced in small quantities only. Size 17\(\frac{3}{4}\) by 22\(\frac{3}{4}\) inches.

3. **YO-GWA KANVASU.** The term Yo-gwa means "western art" and the name Kanvasu is thought to be a Japanese corruption of the English word "canvas." The paper has a rough surface and was originally created to take the place of canvas in the Occidental style of painting. Made in limited quantities in Köchi. Size 22 by 26 inches.

4. **SHOJI-SHI.** This paper is used in covering the frail wooden windows and movable partitions of Japanese, Korean and Chinese houses. It is thin enough to permit the passage of daylight and sufficiently strong to withstand the wind and daily handling. This paper is used only in the Orient for the purpose for which it is made, but in the Occident it has become popular for wood-block printing. Made of paper mulberry fibre in very large sheets on the type of mould shown in photograph 18. Shōji-shi is made in Mino, Shimozuke, Aki, Tosa and Matsu. Probably the finest shōji is manufactured in Mino, Gifu Prefecture, being known in Japan as Shōji-Minō. The specimen herewith was fabricated in the Maru-Toshi mill in the village of Takaoka, Köchi.

5. **OHIRO-HŌSHO.** Also called Ohiro-Nisoku. Of the Hōsho group. Used in the Imperial Palaces of Japan for writing and printing. Made in Fukui Prefecture. Size about 18 by 23\(\frac{3}{4}\) inches.

6. **KYOKUSHI-SUKASHI.** During the early days of the Meiji Era this paper was used in Japan for the printing of currency. At present it is employed for bonds, stocks, visiting cards, certificates, maps and fine books. There are many sizes and weights standardized for the foreign trade, as much of this paper is exported to America and Europe where it is commonly known as "vellum." The tamezuki method of moulding is used and the material may be mitsumata or paper mulberry. Made in Fukui Prefecture. The term sukashi implies that the paper bears watermarks.
UWA-SENKA. Of the Atsu-gami group. This paper was first made in the island of Uwa during the Tensho Era (1573-1592 A.D.). It is made from the bark of the paper mulberry and used in Japan for envelopes and sand-paper, but it is employed in the Occident for art printing. Produced in Ehime, Shikoku Island. Made on the type of mould depicted in photograph 19. Size about 12 3/4 by 17 inches.

TOSA-SHOIN. A common and useful paper made in Tosa, Kochi Prefecture. Size 24 by 34 inches.

YOSHINO-GAMI. This paper is used in the Orient for filtering lacquer. Made in Yamato from the bark of the paper mulberry. Size about 13 1/2 by 19 inches.

TOSA-SHOIN. Also known as Kidzuki-Shoin. Fabricated in Kochi in a size approximately 25 by 34 inches.

INSHU-HANSHI. Used in Japan for account books. Made in Inaba Province from the bark of the mitsumata or mulberry. Cut to various sizes.

ZUNGAMPI USUYO. Employed in the Orient in making fire-works. Made from gampi fibre and produced in Mino Province in the size of 17 3/4 by 24 inches.

CHIRI-SENKA. Used in Japan for sacks and packing. Made from the bark of the paper mulberry in Iyo Province. Size about 12 by 15 3/4 inches.

KAIRYO-MINO. A thin paper produced in Kochi Prefecture and used widely in Japan. Made in various sizes.

GAMPI-SHI. According to the book “Washi Rui” by Michitaro Watanabe, Gampi-shi is of recent origin, first mentioned by writers of the twenty-fifth century of the Empire (the Bunka and Bunsei Eras). The publication “Dai Nippon Chimei Jiho” states, however, that Gampi-shi was known as early as the twelfth century A.D. and was forgotten by later generations. As the name implies, this paper is made from Wikstroemia canescens and is produced chiefly in Mino and Idzu regions. The most important varieties are the Nishinouchi, Kogiku, Mino, Hoshu, Shiraito, Goshiki and Asakiri.

SHIGARAMI-GAMI. Made from paper mulberry fibre in the village of Shigarami situated in the Shinshu Mountains, a region known as the Japan Alps. Paper has been made in this village for almost three hundred and fifty years, but the industry has recently declined. This paper is fabricated only during the snow season from December to March, the pulp being bleached in the snow. The small mills are carried on by the peasants who devote the warm months to farming. This specimen, as well as No. 17, finds use in Japan for writing purposes. Size 8 3/4 by 11 inches.

SHIGARAMI-GAMI. The same paper as No. 16, but with this sheet small strips of seaweed have been introduced in the Korean manner. The sea-weed, or shi mada as it is called in Japan, is boiled for about eight hours, coloured the desired shade, cut in suitable lengths and added to the mulberry pulp.
KYOKUSHI. The same paper as No. 6, but having no watermarking. Made in Fukui Prefecture where most of the so-called “vellum” is fabricated.

TORINOKO. The Torinoko papers are frequently mentioned in the classics: Genji-Monogatari, Makura-No-Sōshi, Heike-Monogatari, etc. Torinoko papers made during the Nara Period are still in existence in the form of temple records at the Hishi-Honganji in Kyōto, and are of the Usuyo type. During the twentieth century of the Empire (sixteenth century A.D.), Kamanosuke Kato of Echizen made an improved kind of Torinoko-gami with a mixture of gampi and paper mulberry barks. Since that time Echizen (Fukui Prefecture) has become one of the chief centres for Torinoko papers. Before the fourteenth century A.D. this paper was known as Hi-kami, but during this period the name was changed to Torinoko. The name is derived from tori, bird or hen; ko, offspring or egg, the name being suitable because the paper is the colour of a hen’s egg and somewhat of the same texture or surface. The Torinoko-gami of the Nara Period may be divided into three classes: Usuyo-torinoko-gami, Chiyuo-torinoko-gami, and Atsuyo-torinoko-gami. The Torinoko-gami is a most useful and handsome paper, smooth on one side and slightly rough on the other. Early writers state that Hi-kami (Torinoko) was made from the Kanphi plant and this plant is described in detail by Seishi-Nagon in the work Makura-No-Sōshi. Kanim has been identified as Kikogami, a variety of gampi. Since the Tokugawa Period (1603-1867 A.D.) numerous varieties of Torinoko-gami have been made, the following being the important ones: Hiro-torinoko-gami, Goshiki-torinoko-gami, Kumoto-torinoko-gami, Chiyuo-torinoko-gami, Usuyo-torinoko-gami, and Atsuyo-torinoko-gami. Torinoko papers of less importance but of earlier history are the following: Uchikumo-

GOSYU-TORINOKO. Also known as Gampi-torinoko. A special Torinoko paper made in Shiga and Omi. In Japan this paper is cut in strips and used for the writing of poetry. Size about 16 by 21 inches.

KOZO-GAMI. A thin paper made from paper mulberry bark in Kōchi. Made on the type of mould shown in photographs 16 and 17.

KOZO-GAMI. A slightly heavier paper of the same variety as No. 21. Also produced in Kōchi.

INSHU-MINO. A paper used in Japan for making account books. Produced in Inaba Province from the bark of the mitsumata shrub. Size usually 11 by 16½ inches.

KIZUKI-HOSHO. Also known as Kizuki-kōhōsho. Made from the bark of the paper mulberry tree and rice powder. Produced in Echizen and used in the Orient for printing. Size about 15½ by 21 inches.

IRO-HOSSHO. As the name implies this is a coloured Hoosho. Used in Japan for various purposes of decoration. The colours are pink, light blue, cream, purple, grey, etc. Produced
in Echizen from a mixture of paper mulberry bark and foreign pulp. The size of this paper is 15½ by 20¾ inches.

26


27

UNKASHI. A coloured paper made from mitsumata bark into which white or coloured spots of pulp are introduced during the making. Used in binding Japanese books. Size 16½ by 21¾ inches.

28

UNRYUSHI. A decorated paper made from two colours of pulp. Produced in Fukui Prefecture in a size about 17¾ by 22½ inches.

29

MIZUTAMA-TORINOKO. The word mizutama denotes water-drops, hence this is a paper of the Torinoko group which has been dipped and coated with a very thin film of uncoloured pulp. Produced in Fukui Prefecture. Size 25 by 34½ inches.

30

MOMIGAMI GOSHIKI (Asagi). A paper in which the decoration has been produced by crumpling. Made in Tokyo Prefecture and used in Japanese books. Size 24¾ by 25¾ inches.

31

MOMIGAMI GOSHIKI (Aka). The same as specimen 30, but in ake (pink).

32


33

KOYA-UDA. A paper used widely in the Orient for the making of umbrellas. Made from the bark of the paper mulberry tree in Kii Province. Size 12 by 17¾ inches.

34

IRO-TORINOKO. The term iro denotes colour, hence this is a pink (aka) Torinoko. Produced in Fukui Prefecture in size 16 by 21½ inches.

35

KI-TORINOKO. As the word ki implies this is a yellow Torinoko. Made in Fukui Prefecture in size 17¾ by 22 inches.

36

YAKUTAI-SHI. Also known as Kusuri-bukuro. A reddish paper, one side of which has received a surface stain applied by brushing. First made in Tosa and used for the wrapping of medicine. Before the Meiji Era the manufacture of this paper was restricted and the method of its manufacture kept secret. During the Tokugawa Régime (1603-1867 A.D.) this paper was used in large quantities. In fabricating this particular paper the whole bark of the paper mulberry is used, both the outer and white inner bark of the tree. The Yakutai-shi of Tosa is famous throughout Japan. Size 13½ by 35 inches.

KOREA

37

SHINKO SHI. Nearly all of the Korean papers are made from either paper mulberry bark or macerated old paper, or a mixture of both. Shinko shi is made in Kyosho, near Tai-kyū, Keishō Hoku Dō, Southern Korea. The size is 21 by 36 inches. (All typical Korean papers are made on the style of mould shown in photograph 15.)
38

TAI SHI. This paper has been fabricated in Korea for hundreds of years and is perhaps the best paper manufactured at the present time. The hair-like threads in the paper are rendered from sea-weed. Tai shi is put up in folded bundles of 18 or 20 sheets, each bundle being tied with two fibre cords in the manner of a book. Made in Zenshu, near Kunsan, Zenra Hoku Dō. Size 21 3/4 by 42 inches.

39


40


41

KENYO SHI. Made in Zenshu. Size 16 3/4 by 27 inches.

42

KOEKI SHI. Made in Kokei, near Kunsan, Zenra Hoku Dō. Size 24 by 42 inches.

43

ROSEN SHI. One of the finest of present-day Korean papers. The packages of 18 or 20 sheets are tied with fibre cords as is customary with all of the highest grades of paper made in Chosen. Rosen shi is fabricated in Zenshu, near Kunsan, South-western Korea. Size 21 3/4 by 40 3/4 inches.

44

KOEKI SHI. Made in the village of Sansai, near Taikyū, Keishō Hoku Dō. Size 23 3/4 by 43 inches.

45


46

SHINKO SHI. Made in Kyosho. Size 19 3/4 by 35 inches.

47

TAISO SHI. One of the fine papers of Korea. Also tied in bundles making the paper unsuited for Occidental use. Fabricated in Zenshu, near Kunsan. Size 24 by 52 inches.

CHINA

48

CHUH CHI. A cheap Chinese paper made from the fibre of bamboo. Size 23 by 36 inches.

49

SHA CHI. Common paper manufactured from old macerated papers, largely imported from the Occident. Size about 20 by 20 inches.

50

SHAO CHI. Crude paper made from bamboo or straw on the type of mould shown in photograph 13. This paper is creased at two sides and is used as a tray for holding “spirit money” while being burnt at funerals and religious ceremonies. Size 8 by 8 inches.

51

TANG CHI. Chinese lantern paper made in the village of Kom Ts’uen in Kwangtung Province. The chief interest in this paper lies in the fact that it is made upon “wove” moulds in the same manner as that probably used by Ts’ai Lun when he first conceived the idea of making paper in 105 A.D. The village where this paper is fabricated is not more than two hundred miles from Leiyang where Ts’ai Lun carried on his initial experiments in papermaking. The pulp for Tang chi is made from scraps of Sha chi, a by-product of the paper umbrella industry. This particular sheet was formed on the type of mould shown in photograph 8. (For a description of the moulds, fabrication, etc., used in the making of Tang chi see text pages of this book.)
Specimens