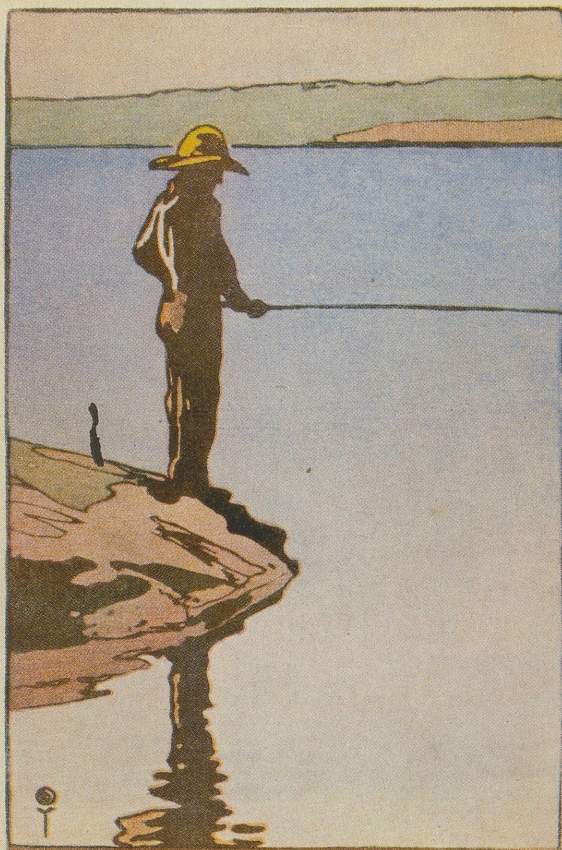


THE
TECHNIQUE
OF THE
COLOR WOOD-CUT

By

WALTER J. PHILLIPS



A wood-cut in color, by the author.

*THE
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Published August 1, 1926

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PREFACE



THE ideal of a water-color woodcut is no longer a feeble parody of the Japanese color-print that ceased two centuries ago; that color-print was the outcome of a democratic demand, and owed its success to its cheapness, though, strange as it may seem, elaboration sometimes brought it under the ban of the sumptuary laws.

Towards the close of last century, the reproduction by woodcuts in color of the Chinese and Japanese Masterpieces of painting contributed to an extraordinary development of the craft, which compels our admiration and wonder. The creative artist, however, did not avail himself of the greatest technical knowledge to express himself in this medium. Picture-reproduction and literal transcript have always had a pernicious influence on art. It brought about the ruin of "white-line" engraving invented by Bewick.

In Japan the early color-print was the result of three men collaborating—the artist, the woodcutter, and the printer. The second phase was the reproduction of the Old Masters; here the artist's guidance being removed, the woodcutter and the printer alone remained to imitate as faithfully as they were able the example before them, even the accidents of time and decay being literally copied.

They achieved supreme execution, but their work was devoid of originality. Finally, the color-print, at first the labour of three men, was reduced to two, when only imitation was required. In the West the artist who desired to make color-prints was forced to do everything himself, as trained craftsmen did not exist; he was seriously handicapped by the want of technical knowledge, but unity of purpose tended to originality; nevertheless some artists, indifferent to this, and only requiring replicas of their work, have not scrupled to go to Japan and employ her craftsmen to reproduce their work, and in so doing have acquired much false glory. This evil practice is fatal to the true cause of the color-print.

The inherent charm of a water-color print is its elusive directness of execution. In painting, the artist has to struggle with three aspects simultaneously—his idea, form, and color. In the woodcut the two former, design and drawing, respectively, can be disposed of at leisure, which leaves the artist free to concentrate on the perfect harmony of color, and then imprison it for ever, without correction, on the beautiful silky surface of Japanese paper. The directness of water-color printing is akin to fresco painting—neither the one nor the other permits of a false touch or desecrating correction. Both have a virgin quality of surface similar to the undefiled freshness of fruit and flower. The broad silhouettes of form, and gradations of color, make the water-color print the decorative equivalent in our

homes to-day of what the fresco was in the palace of yesterday.

Needless to say that the skill requisite to realize this demands a knowledge of the materials and the essential technical details, which will enable the artist to express his visions with unerring certainty—of all the difficulties to be encountered the beginner will find printing the most formidable, and in this matter no one is better qualified to instruct us than Mr. Phillips, who has a complete mastery of his craft. He has the practice in addition to the theory. His prints are not the chance survivors from countless failures. I have had the privilege of watching him print on many an informal occasion, and can speak with confidence, happy in the thought that it was just such prints which had brought two strangers together.

A stylized, handwritten signature in black ink, appearing to read 'Chenil Studios'.

Chenil Studios
Chelsea.

AUTHOR'S PREFACE



OME ten years ago I produced a score of bad etchings which made me, and many others I have no doubt, very unhappy. My thoughts were in color; consequently I had little sympathy with the convention of line as a means of expression; I came to abominate the cold unresponsive nature of metal, the smell of acid and oil, and the dirtiness of printing inks. I meditated sadly upon the fact that if Meryon had not become afflicted with color-blindness, he never could have forsaken canvas for copper, and that Michael Angelo must have loved color, though he never had much time to play with it, for Vasari said that he was so pleased with Martin Schongauer's print "St. Anthony tormented by the Devils" that he set himself to color it. Then I recalled an article in "The Studio" by Allen W. Seaby on printing from wood-blocks, re-read it, and the mutation from desire to accomplishment resulted. A magazine article on such a subject may be inspiring, as this was emphatically, but its brevity precludes its use as a manual. I had, therefore, all the fun of experimenting blindly more or less, which perhaps fired my enthusiasm. Morley Fletcher's book unfortunately did not come my way until recently, or I would have been saved many pitfalls. However, he inspired Allen Seaby, who activated me, so that he merits my acknowledgments. I tender very grateful

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acknowledgments also to my fellow color-printers William Giles, Allen W. Seaby, Y. Urushibara, and Frances H. Gearhart, for sympathy and generous contributions in an interchange of ideas, and to the three first and to John Platt, A. J. Musgrove, and Martin Hardie of the Victoria & Albert Museum for permission to reproduce their work or prints in their possession.

W. J. Phillips

Winnipeg, Feb. 28, 1926.

THE PRINT

THE COLOR WOOD-CUT

Chapter I

THE PRINT

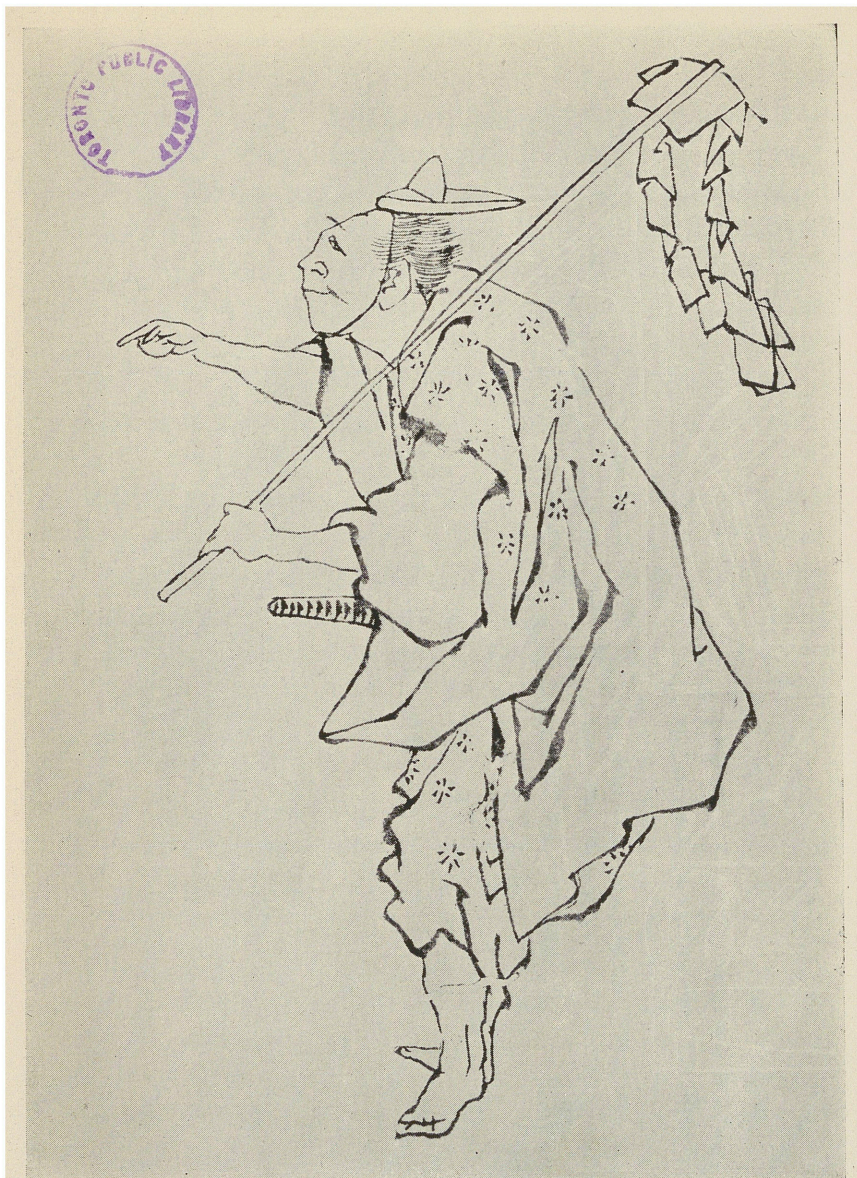


HERE is a lack of agreement as to the most apposite and euphonious name for the products of this delicate craft. It is variously called the color wood-cut, wood-block print, color-print from wood-blocks, wood-cut in color, and chromoxylograph. To enlightened enthusiasts, however, certain distinguishing features reveal its identity at a glance: no label is necessary. Even our unsophisticated friends who annoy us by remarking, "How Japanese," subconsciously recognize those characteristics which are peculiar also to a Japanese print, dimly remembered perhaps. The annoyance arises from the feared implication that we are copyists in subject or treatment, or both, whereas the common qualities that establish the relationship result merely from a similarity of method. Simplicity, which involves direct graphic statement and purity and transparency of color, is an essential feature, and one consequent upon the technique; a virtue easy of attainment. Regarded technically the craft is the simplest ever devised. It is the oldest too. No press is necessary; nothing save a plank and a knife to make the engraving, and paper, color, and

brushes, with a printing pad (for which many things will serve) to secure an impression.

In the days of the illuminated manuscript the wood-cut was sometimes used for capital letters, but in outline only. The print was colored by hand. So were the earlier Japanese prints. Several authoritative historical accounts of the craft have been published, also complete descriptions of Japanese methods. It is unnecessary to deal with history here, but you—potential chromoxylographist, to whom I address these remarks—had better make an immediate, if for the present slight, acquaintance with traditional practice before we can discuss the physical aspects of the color wood-cut.

THE TRADITIONAL JAPANESE METHOD. The artist made a drawing with the point of a brush and Chinese ink on paper of a landscape, an actor, a fish or a bird, and gave it to the block-cutter to engrave, with some instruction regarding color. The block-cutter pasted the drawing face down on a polished plank of mountain cherry wood. (Those who have heard that wood-engravings are cut on the end grain of box-wood or maple must not confuse that process with this. Cherry wood is cut plankwise: with the grain and not across it. The thickness is, roughly, one inch). He scraped away the superfluous thickness of paper, and oiled the remnant in order to render it transparent and so clarify the drawing. With a knife and a gouge he cut away the portions of wood uncovered by the drawing to the depth of perhaps one-eighth of an inch, so that eventually he



A Japanese artist's drawing for a woodcut
(From a drawing by Hokusai, in the Victoria and Albert Museum)

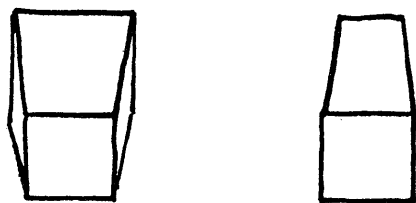
had a facsimile of the original drawing in reverse in wood and in relief. He brushed over this a black powder pigment ground in water, and finally a little paste to bind it. Damp paper was superimposed and the back of it rubbed with a baren (a pad covered with bamboo leaf). An exact reproduction of the original drawing resulted. He pasted this on the other side of the cherry-wood block, and as before proceeded to lower that portion of the surface which in the finished print would be void of a certain color. A second print was taken from the first—the key-block—and pasted on a second block of wood, which he cut for another color. And so the process continued until all the requisite colors were accounted for, ten or twelve perhaps, when a second craftsman, the printer, took charge. The finished print was made up of impressions from each of the blocks dealt with successively. The system of making the several blocks fit, or of registering them accurately, is described later on.

There is a Japanese print in the British Museum depicting the various processes in the fabrication of a print. The exponents are young ladies. They were never employed for the purpose, but they grace the picture, and demonstrate things quite effectively.

The Japanese print of the best period is straightforward and simple: an outline in black filled in where necessary with flat washes of color relieved only by occasional gradations or patterns. Most processes at present in use are based upon it, and many modern artists find in the method an adequate vehicle for the

expression of their own ideas. The thin, unemotional, but very expressive line is now expanded to indicate shadow and depth, or manipulated to suggest textural differences. Instead of being entirely negative in color—the Japanese line is gray, occasionally, as with Utamaro, flesh-red—it has become positive. In Miss Mabel Royd's or Miss Frances Gearhart's work, for example, it has the full value of black in the black and white wood-cut, and is originally designed with pictorial completeness. In William Giles' recent work it has vanished altogether as outline. Apart from its technical significance, in relation to Japanese practice, the retention of outline by modern artists is the result of their appreciation of its æsthetic value.

No modern maker of color-prints yet has attempted to adopt the stereoscopic perspective peculiarly Oriental, which is contrary to the laws of our somewhat conventional science. The cubists adopted it, and that was one of the most reasonable things they did, for the science of perspective is based on the doubtful axiom that we are equipped with only one eye—and that immovable. Hold a small box in the position depicted below, near to the eye, then vote for the more accurate presentment of what you see.



Of course this applies to very near objects only. But neither system is accurately applied universally.

While some of us follow somewhat blindly the traditions of Nippon, others actually employ Japanese craftsmen. An original print, however, one which may be signed by the artist with a clear conscience, is defined as one designed, cut, and printed by the artist, and exclusive societies, such as the Society of Graver-Printers in Color, of London, admit only these to their exhibitions.

SCOPE OF THE WOOD-CUT IN COLOR. Artists are perennially implored to consider "the limitations of the medium." Whoever invented this expression exaggerated the limitations of the English language. We are not concerned with what effects cannot be produced with our materials. As a matter of fact it is possible, if futile, to reproduce a water-color painting with fidelity. A great many color blocks would be needed, the hard edges of printing surfaces, the impressions of wood-grain, and other characteristics would have to be obscured: all of which we are rightly adjured to retain and to cherish. Mr. Platt very clearly calls this sentiment "the regard for material."

Happily simplicity, a great virtue in art, is here a necessity, or at least the result of the limitation of the number of blocks used. The skill attained by the Japanese craftsmen in the early nineteenth century, led them into useless technical complexities. Now it is almost entirely a reproductive medium. The pages of the "Kokka" abound in fine examples. All who fre-

quent picture shops are familiar with the Japanese reproductions of drawings by Charles Bartlett, Elizabeth Keith, and Bertha Lum, and have enjoyed the perfect collaboration of Frank Brangwyn and Yoshijiro Urushibara. There is no question of degeneration. Urushibara has never been surpassed from the point of view of technique, it is only that the Japanese masters of painting have ceased to regard the color wood-cut as a means of original expression, in which the materials contribute to the beauty of the design as well as to its fabrication. We must so regard it. Lest I should seem to do Urushibara an injustice, I must add that in addition to his reproductive work he is responsible for some of the most interesting original prints of recent years.

GRADATIONS AND HARD EDGES. A beautiful feature in the color wood-cut, and one unique in printing, is color gradation. The impression of wood-grain is also unique and must be considered, not only as regards texture and visibility, but for the occasional possibility of the expression of form. A soft wood, with hard annulations, such as fir, prints very clearly.

The hard edges of all cut shapes—lines as well as color masses—are not peculiar to the wood-cut, but modifications are possible, and hard edges provide the necessity for sound and simple drawing.

Mr. Seaby's "Hare" (page 22) admirably illustrates color gradation, achieved in the gray background by gradating color on the wood in the same way as on paper in water-color painting, and in the change from brown



"Hare"

By Allen W. Seaby
With a full-size fragment in color

to white in the hare's fur by scraping the wood with a knife, thus creating a necessary texture also.

In Urushibara's line print (page 24) the leaf veins are soft on one side—an effect gained by slightly bevelling the wood with a knife or with sand paper.

Local gradations are made in printing. Two brushes are sometimes used, one charged with more potent color than the other. Line blocks are nearly always printed with some variation of tone, and often in color too. The lost edges of the hair in the fragment of "Gloaming" (page 24) were obtained by printing the dark brown wetly with a generous amount of pigment on quite damp paper, and over-printing the gray (the water), thus causing a spread and gradual dissemination of the superfluous brown.

An obvious method for mitigating hard edges is to engrave shade lines as you draw them with a pen, a pencil, or an etching needle.

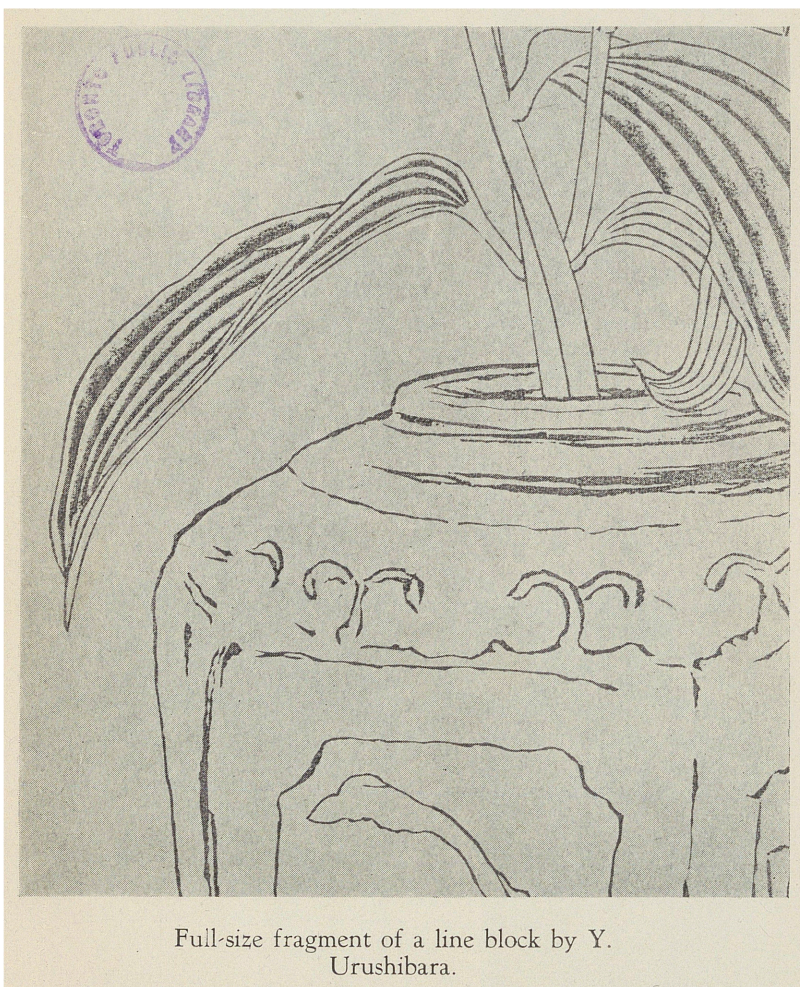
THE SUBJECT. Any subject is suitable provided it is of sufficient interest, but the design must be very carefully considered, and plenty of time and thought given to its construction. It is a responsible undertaking, the making of prints. You may be guilty of perpetrating an ineffable painting, but make a print of it and your crime is a hundred times worse. Subjects may be sought from among your paintings, or in your sketch-book, or you may deliberately make drawings with a print in view. Any medium may be used for recording suitable ideas. The Japanese artist invariably drew with a brush,

but since a long and arduous apprenticeship gave him facility with this instrument, and you have not had that advantage, I would not recommend it. "It looked very simple," wrote Mrs. Bertha Jaques, in her delightful monograph on Helen Hyde, "and I secretly thought it easy to do; but repeated trials convinced me that such skill is not Heaven-born with the unpractised occidental."

While a line and wash drawing would suit Mr. Platt, Mr. Giles would work from a painting in full color. Whatever the medium a cartoon in color is usually made, wherein form is very carefully defined, and due regard has been given to the simplification of its color scheme, its tonal effects and shapes, to accord with the number of blocks to be used. Some of the tonal and chromatic subtleties which you seem to sacrifice here may be picked up again in printing.

The first block you engrave must serve as a key for those that follow, and therefore must embrace as much of the design as possible. It may not be a pure line block at all. Make it a prevailing color if you like—in a figure the color of the flesh shadows; in a sunlit landscape the sun shadows—purple or gray.

Whatever color you select trace it out upon a sheet of, say, rice paper in soft pencil, or pen or brush and water-proof ink. Place this tracing between sheets of damp newspaper, and let it absorb moisture whilst we meditate upon the many varieties of wood, and a little longer upon the key-block.



Full-size fragment of a line block by Y.
Urushibara.



From "A Courtesan" by Yeizan
A print in the possession of
Mr. A. J. Musgrove.



From "The Bather"
by the author.



From "Norman Bay"
by the author.



From "Gloaming"
by the author.

Full-size fragments of three color-prints showing three methods
of mitigating hard edges.

Two or more planes in a picture often necessitate the cutting of two line blocks.

A key-block may be cut with every form outlined, irrespective of tone or color, and in the final printing may be eliminated wholly or in part.

Outline may be avoided also by a system of additions in which succeeding color-blocks are printed to form a key for the next: thus 1 is the key for 2, 1 and 2 for 3, 1, 2 and 3 for 4, and so on.

An alternative method: Make your cartoon in color on stout tracing paper, which may be conveniently stretched in a double frame, and trace each color as required directly upon the wood.

CUTTING



From a print by Kunisada in the possession of the author.

Chapter II

CUTTING



WOOD. We require a wood of an even texture—that is, of a consistency by virtue of which the grain will present no more resistance to the knife than the interstices—yet hard enough to withstand a certain amount of wear, and to permit of crisp edges to the finest lines. Cherrywood is one of the few that possesses all these qualities, and although there are many varieties, each is reasonably good. The Japanese cutter used mountain cherry, heavier than the wild cherry that grows in England, which Mr. Seaby has used and of which he has written. Canadian cherry is between the two in appearance but it is more brittle, and it is cut in a way which suits the lumber trade rather than the engraver. However, selected planks are sometimes perfect.

Kauri is a wood from New Zealand whose suitability for this purpose was discovered and exploited by Mr. Giles. It is remarkable for apparent absence of grain.

Walnut, maple, chestnut, pear, and oak have all been used, but American oak and walnut are unsuitable. Though the ideal method is to use blocks sawn from one plank for one print, a soft wood is often substituted

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Walnut, maple, chestnut, pear, and oak have all been used, but American oak and walnut are unsuitable. Though the ideal method is to use blocks sawn from one plank for one print, a soft wood is often substituted

for the color blocks, for reasons of speed and economy. Lime, whitewood and gumwood (Circassian walnut) are good for this purpose.

All woods must be well seasoned. They must also be handled and stored with judgment. Do not, for example, leave wood exposed to direct sunlight or to heat or damp unless you wish it to warp. If warping does occur it may be corrected by damping the concave and drying the convex sides.

I have a set of blocks of which the key is English and the colors Canadian cherrywood. The former is no more than half an inch thick and somewhat green, and is just as competent an instrument as the barometer for recording variations in atmospheric humidity. Its length varies from eight and a quarter inches to eight and a half according to the weather, towards which the other blocks maintain a rigid indifference. Consequently, unless I choose my day, printing must be preceded by some very careful adjustments.

Warping, shrinking and expansion will play tricks with any system of registration, therefore buy wood by the plank, an inch thick, so that you may be sure of having seasoned wood to use.

PREPARATION OF WOOD. Wood must be planed first and then scraped. For the latter purpose try discarded safety razor blades. One scraping is not sufficient. Dampen the wood and loose fibre ends will appear: these must be shaved away. Prepare both sides.

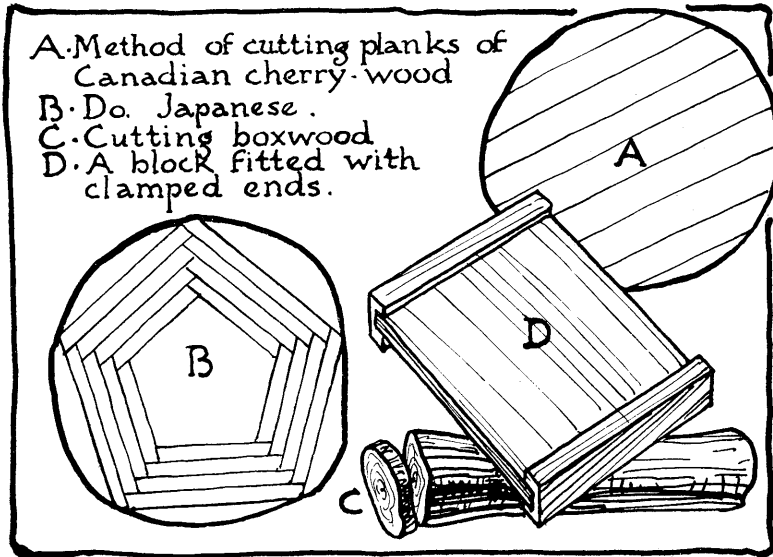
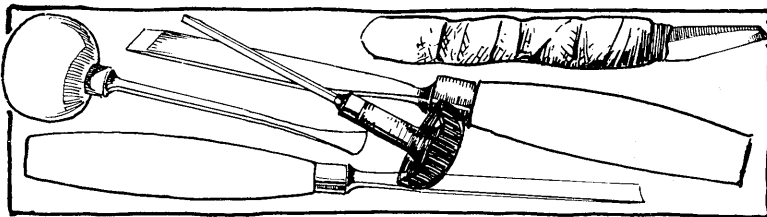


Diagram showing block with clamped ends, the Japanese and American manner of cutting planks, and the cutting of boxwood.



Various cutting tools.

Risk of warping is diminished by clamping the ends, as in the diagram.

If possible the wood surface should admit of at least an inch margin around the design, for a purpose which will be explained hereafter.

TRANSFER OF TRACING TO WOOD. *Make some starch, rice, or flour paste, and brush it over the block evenly more than once. Do not hurry over it. Recover your tracing, which will be damp enough by now, and lay it face up on your drawing board. Take up the block in your hands and lay it, pasted surface down, upon the tracing. Smooth out the creases if there are any, but carefully, because some papers will stretch very easily.*

Now you have the tracing reversed, on the wood, and when dry it is ready to cut.

WOOD SUBSTITUTES. Linoleum is used as a substitute for wood, but the word is often anathema to the serious engraver, who regards it justly as lacking in character and vitality.

Mr. Giles has perfected a method of surface printing from metal plates, which is capable of great refinement and beauty.

CUTTING TOOLS. The difference between a wood-cut and a wood-engraving lies in the fact that the former is fashioned with a knife, the other with a graver. The knife deals efficiently with wood cut plankwise, the graver with wood cut across the grain—end-grain it is called. My knife has a flexible blade. I hold it as I hold a pencil or a pen, and it is almost as serviceable a

drawing instrument. Its best and most frequent stroke is towards me. But any pointed blade will do if it is sharp enough.

You need an oil-stone and a strop. The latter is a thick piece of leather mounted upon a slab of wood, and dressed with crocus powder. A few rubs of the blade on this every few minutes will keep the edge keen, and the oil-stone will be needed rarely.

You may now commence to cut your block. Rest it upon the table in front of you, with a folded piece of cloth beneath it if it has no clamps. If the design is not perfectly clear rub oil over it.

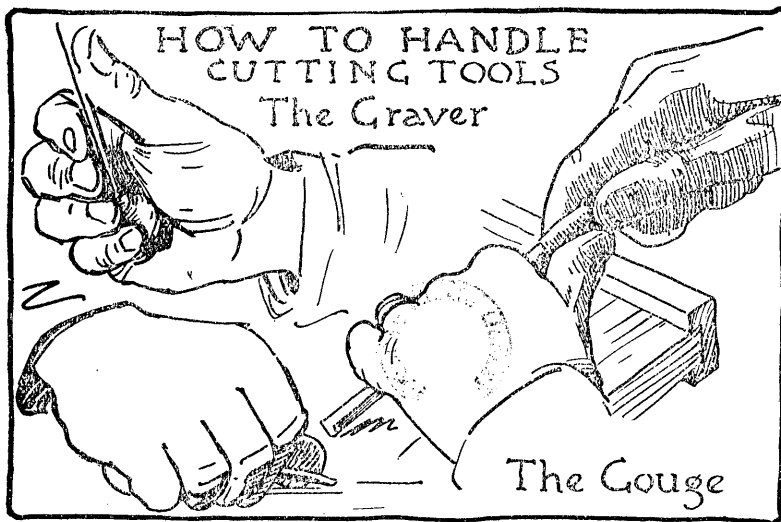
Select a line. The wood on both sides of it must be cut away. The original wood surface is the printing surface, and that part of it not actually occupied by your design must be lowered. Your isolated line must stand up alone. For two good reasons the knife cuts must be at an angle. First, with a broad base a fine line has a good chance of survival, and second, another cut must be made to clear the line—the two completing a V-cut, which is clean and expeditious.



The direction of the stroke is necessarily varied, since it is impossible to continuously, in cutting, turn a large plank to accommodate a particular stroke.

When all lines have been cleared in this way, there are still surfaces left which must not print. Remove them with gouges and a small chisel.

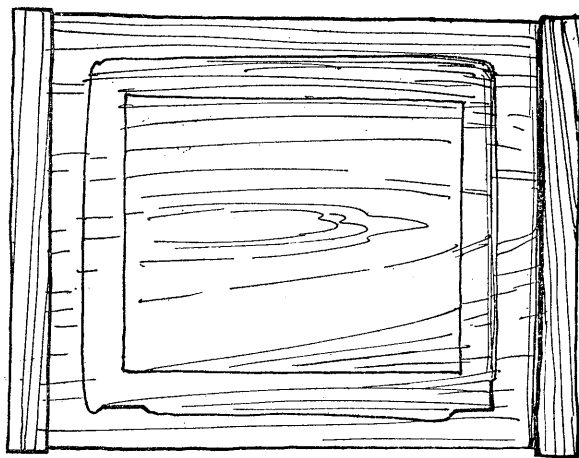
Wood-carver's tools are quite suitable, though the smaller sizes are better fitted with round ends such as the wood-engraver uses—they then have the advantage of being manageable with one hand. Their full length should be from four and a half to six inches, to suit the size of your hand. They should be held in this way:

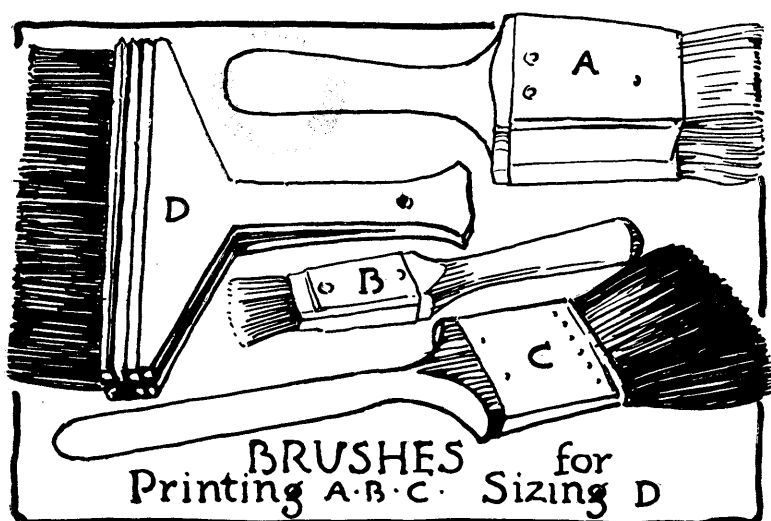


Get a carpenter to show you how to hold the wood-carving tools; a diagram will not help you much, though I have provided one. There must be something against which the plank may be pushed, or you cannot use a gouge conveniently. A screw will do, projecting about half an inch above the table top, but a strip of wood

nailed to it is more useful. A careful and experienced craftsman never cuts himself because he keeps his tools sharp and never takes chances. Keep your left hand out of the way of a possible slip and remember that a blunt tool is more dangerous than a sharp one.

Clear the wood away from the furthest limits of the design—about one inch beyond them, but at one corner, most conveniently the bottom right-hand corner—cut a right angle with half-inch arms and clear the wood from within them. On the left bottom edge of the block cut a half-inch line (don't bother to measure it) level with the lower arm of the right angle. These cuts must be vertical, and may be made with a chisel and mallet; they are to hold the trimmed edges of the printing paper later on and serve as register marks. The diagram makes this matter clear.





Types of brushes used for sizing and printing.

Thus the outer edges of the design are cleared, ensuring a finished print with a perfectly clean margin.

HOW DEEP TO CUT. Regarding the depth to which waste areas need be lowered: do not exceed one sixteenth of an inch at the edges, but as you get away from them go deeper. The middle of a reduced section should be the deepest, because damp printing paper will sag where it has no support. However, the very first impression taken from your block will show you how far you are right.

ISLANDS. There is no need to excavate the whole of a very large waste area. The middle of it may be left standing, but the edges of this "island" must be rounded with a chisel, and afterwards sandpapered to prevent blind impressions on the printing paper.

BROKEN LINES, or parts otherwise spoiled, may be mended by inlaying a fresh piece of wood. It is a thankless task, and one cannot help but admire the Japanese craftsman who would inlay a piece of boxwood deliberately where very fine cutting was necessary. The method is to shape your "peg," then dig a hole to fit it, or vice versa. Glue will help.

When the cutting and the clearing are finished wash off the remains of the rice paper and prepare to print.

IMPRESSIONS FROM THE KEY BLOCK. At this stage cut a cardboard mask of the size of the print including margins. Place it on sized printing paper (the process of sizing is explained subsequently) and cut around it to

secure printing sheets of the correct size. Cut sheets of newspaper an inch or more larger all round than the printing sheets, and brush water evenly over them. Place alternate sheets of newsprint and printing paper on a board and cover with another. After half an hour remove newsprint except the sheets at the top and bottom of the pile. In perhaps an hour the printing sheets will be damped consistently and ready for printing. Use a black pigment for printing. Lamp-black ground in water, or in gum water, will do. Brush it over the block, and add a little paste—very little. There must be no superfluous paint or paste between lines or anywhere else. The pigment on the block should be damp but not wet. Apply a sheet of printing paper—the right-hand bottom corner fitting the right angle, and the bottom edge the cut line in the left-hand corner. Rub lightly with the printing pad over a protecting sheet of butter paper.

While the sheet is still damp—providing no corrections are needed—paste face down upon another block.

Paper expands in varying degrees when damped, and for this reason the last caution needs emphasis. Never paste down a dry key impression: If you do, the shock will come when all the engraving and printing is done. The offending color may be a quarter of an inch short of requirements, and a hiatus of that dimension in an otherwise perfect correlation is quite annoying. It is well therefore to have a new block freshly covered with paste ready to take the impression immediately it is

pulled. Or if a number of impressions are dealt with keep them between damp sheets.

It is sometimes necessary to allow the impression to dry in order to draw color shapes upon it which have not been outlined on the key block. In this case be sure when pasting down that the paper is of the same degree of humidity as when it was printed.

Care must be taken to cut away sufficient wood between the edge of the design and the edge of the block to ensure that the margin of the print shall be safe from paint smudges.

PLANNING THE COLOR BLOCKS. When the key is in pure outline the planning of the color blocks is a straight-forward matter exemplified by almost any Japanese print. Local color broken only by pattern and modified perhaps by gradations, fills in the spaces outlined. Broadly speaking one block is cut for one color. Even the addition of light and shade does not complicate matters unduly. But the subtle tonal and chromatic changes for which we now look in landscape may be represented only by the cutting of more blocks and by overprinting.

The tendency is to simplify, to cut down the number of blocks. Instead of using a blue and a yellow and a green you try to eliminate the green block and get that color by printing blue over yellow. Tone is a factor which prevents the extended use of overprinting, however. The blue of the sky is not intense enough to give a vivid green, say, for the foreground. But the

carnations of the flesh are invariably and best done in this way. Gray in landscape is a valuable undertone. In "Wylle Mill Bridge" the ground color is gray with only the high lights (in the sky) picked out. Though by overprinting a better surface finish is sometimes acquired, avoid too much of it. It is bad technique—though it happens—to have a number of colors printing one over the other. The paper becomes sodden, which causes delay.

Make sure the grain of the wood is consistent in quality and direction with the texture of whatever the color surface represents. In selecting wood for a line block let the grain run in the general direction of the lines, if possible, since a line cut along the grain is less likely to chip than one cut across.

Rather than use a cheap, thin, and more or less transparent paper for working proofs, use ordinary printing paper, or a fairly heavy paper anyway. If it is too thick and opaque after pasting down it may be stripped very easily. When dry separate the superfluous stratum with a knife at one corner and rip it off boldly. Subsequent oiling is necessary. The reason for my preference for heavy paper is that it permits of greater accuracy in printing. A thin paper will sag over every depression and so cause mistakes in dimension.

Considering one color only, cut around all the masses that contain it and remove the intervening shapes. Only the surface covered by that one color must remain intact.



"Mary at the Lake" Color-print by the author,
showing the impression of fir-grain in the
background.

Cut along the middle of a fine line which defines a color mass. Do not neglect to cut carefully around the corner of the paper which in the process of printing fitted the right angle (the register mark) which you cut on the key block, and along the edge which fitted the line. Make exactly similar cuts to those on the key block. Done properly this is a perfect system of register; on the other hand it is often the cause of much tribulation to the careless worker.

Two colors far enough apart may be cut on one block.

A simple arrangement of a few colors is generally effective where the surfaces are simple and as far as possible unbroken. Study the possible effects of wood grains, and avoid such mistakes as a vertical grain in a sky, or a diagonal grain in a sheet of water. On occasion it is desirable to select a piece of wood whose grain will not print readily; and conversely a wood like fir which prints a most definite grain pattern, has its uses.

When all the color blocks are cut you are ready to print.

PRINTING

Chapter III

PRINTING



APER. Japanese papers are the only suitable papers obtainable at present. They are made expressly for hand printing, and are tough enough to withstand hard usage in a damp condition, a quality imparted by the long fibre from which they are manufactured. Of these Hosho is the most venerable. It is made from fibre taken from young mulberry shoots, and may be recognized by the watermark-lines, roughly one inch apart, covering the whole sheet. It is not so tough as Torinoko, a paper designed to hold up under the protracted processes of reproduction practised in Japan; which sometimes involve an extraordinary number of printings. Torinoko is manufactured from fibres of a species of mallow. Its surface is glossier and more perfect than that of Hosho, and it is usually heavier. The difference in texture of printed surfaces on these papers makes this description necessary. With Hosho, pigment apparently remains on the surface, though actually it penetrates the paper. With Torinoko pigments become incorporated with the paper to a greater extent, so much so that it is often impossible to move them once printed. The best period of Japanese color-prints was pre-Torinoko. A number of artists still prefer Hosho, the whiter paper; it is by no means superseded.

The hard grained surface of European etching or drawing papers takes an unpleasant mottled impression—one spotted with white, or whatever color the paper may be—an effect which the pseudo-craftsman often describes as atmospheric, and similar to that resulting from a badly prepared wood-surface which is covered with holes and indentations. But occasionally a printmaker makes a brave effort to use it.

The satin texture of printed pigment, discernible in good prints, can be attained only by the use of a perfect wood surface, Japanese paper properly sized, pigments ground in water and applied with paste, and much experience. If you examine the back of such a print you will see that the pigment penetrates the paper, and seems to have become a part of it.

A certain amount of size may be soaked out of European papers it is true, but this leaves them too fragile to handle in a damp condition. They are made up of too short fibres.

SIZING PAPER. The following mixture (Mr. Urushibara's recipe) is sufficient to size about fourteen sheets of Torinoko paper (Imperial) on both sides:

Alum	$\frac{1}{8}$ oz.
Gelatine	$\frac{1}{4}$ oz.
Water	35 ozs.

Hosho paper should be sized only on one side, with half the quantity of water.

Heat the water but do not let it boil. Add the gelatine and when that is completely dissolved add the alum.

Different papers and different woods require slight modifications of the recipe. So does a change in atmospheric conditions. The necessary amount of modification is slight and is best decided by experience. Mr. Urushibara advises a pinch more of alum for soft woods such as whitewood, or for a soft paper or for a dry climate.

A BRUSH FOR SIZING. A broad brush is needed, neither thick nor long in the hair. My own is of Japanese manufacture, six inches in width, the hair one and a quarter long and three-eighths of an inch thick.

Lay a sheet of Hosho paper upon a drawing board flat upon the table, smooth side uppermost. With your brush full, but not too full of warm size, cover the paper evenly. It is a delicate process; use the brush as carefully as though you were painting a portrait. Starting at one edge continue until you reach the other with a band the full width of the brush. The second stroke must touch the first but not overlap it. If possible do not go over the same place twice.

Do not flood the paper.

Keep the size warm.

The brush strokes should follow the same direction as the lines which constitute the watermark.

Lay a second sheet over the first, and proceed in the same way.

Creases made during sizing are permanent. Therefore carefully avoid making them.

Leave the pile of sized sheets for a while, so that the size may spread evenly through it, but not too long, say half an hour.

Now lay each sheet to dry upon newspaper spread upon the floor, or suspend it from a line strung across the room as clothes are hung up to dry. Use wooden clips for the latter purpose.

The rate of drying varies of course. Once in my experience in England, notoriously humid, a whole winter's day and a night failed to harden a sheet, whereas an hour on a Canadian summer's day will suffice. England's comparative humidity, however, fills the printer's heart with joy. It had much to do with the acknowledged pre-eminence of the English School of Water-Color Painting. It is early to claim pre-eminence for English chromoxylographists, but the craft flourishes, and many boldly make the claim. In that country one is never bothered unduly by printing paper which dries prematurely, or by wood so dry that much energy must be expended in getting it into proper condition.

Torinoko paper must be sized on both sides with the weaker mixture.

PIGMENT. Buy only colors of proved permanence, in powder form—not necessarily finely ground, but dry.

Mr. Howell C. Brown, of California, and his brother have done good work in testing various makes of pigments. Some results of their labor are recorded in the Original Color Print Magazine for 1925. They have

established the reputation of one color at least—Cadmium Red—which is a notable addition to the modern palette.

Luminosity is a quality dependent as much on technique as on the physical properties of individual pigments. When you are experienced in prints you will notice that, held to or against the light at a particular angle, the richness of printed color is very much enhanced. Mr. Giles has written of this phenomenon, which he calls dichroism, borrowing the term from mineralogy.

Opaque and transparent pigments must be differentiated, both as regards design and over-printing. Opaque colors printed over others often are effective. The addition of white to give body and opacity to transparent pigment is justified on occasion. Mr. Urushibara has a print in which slim grasses and flowers with hovering butterflies are overprinted on a ground of solid black. Some artists justly question the propriety of using colors which change in artificial light, regarding the fact that pictures are more often viewed thereby than by daylight. Blue, for example, unless with a greenish bias, loses most of its quality.

Some colors print very easily and smoothly, but others sometimes need the addition of glue or gum to ease their transference from wood to paper. The color is ground in water, conveniently on a ground glass slab with a muller.

MEDIUM. The medium or binder is paste, made with starch, flour or rice. The first is most easily made, but

its adhesive properties are apt to injure the surface of the paper if too much is used. Rice paste does no harm in that way.

To make starch paste, mix dry starch with enough cold water to make a stiff cream. (A teaspoonful of starch makes a cup of paste). Add boiling water, stirring the while, until the liquid thickens. If it does not thicken, boil it.

For printing add water after the thickening occurs, until you have a liquid of the consistency of milk, because further coagulation takes place when the paste cools. Rice flour or powder should always be boiled with water.

Gum arabic may be used as a binder, with glycerine or paste, for special purposes, where, perhaps, a little more intensity of color is desired.

An intense black may be obtained by grinding the crude pigment in warm glue size. This is the Tsuya-Zumi of the Japanese. According to Mr. E. F. Strange the glue-water medium used was made in the proportion of about one-third of an ounce of glue to three-fourths of a pint of water, in which a little alum had been dissolved. This mixture coagulates of course unless it is warmed, and may be kept some time in that condition without deterioration. While in use the vessel containing it should be kept standing in a pan of hot water.

BRUSHES. A variety of brushes are suitable for spreading color over the blocks. An inch hog-hair brush,

such as is used for oil-painting, is adequate for smaller areas, but a wider and thicker brush is better. Probably the best is the badger brush made especially for this purpose by the Bryce-Smith Company of London. An inch brush of that type is an inch long in the bristle and three-quarters of an inch thick.

Cut up newspaper two inches larger all round than the printing paper. Dampen them evenly with a brush, but not so much as to show a watery sheen on the surface. On each sheet lay a piece of printing paper, right side down (always stack your printing sheets in this way), and leave the pile to stand with a board on top for, say, one hour. A sheet of zinc or glass is really preferable to a board, which very soon warps under this treatment.

Take out the damp news-sheets, and distribute them between top and bottom of the pile. In a humid atmosphere one or two sheets only are necessary; the rest may be removed altogether. Leave for at least one hour and a half. Damp paper will not mildew for three days at any rate. The most convenient time for dampening is the evening previous to the day of printing; the papers may remain piled safely all night.

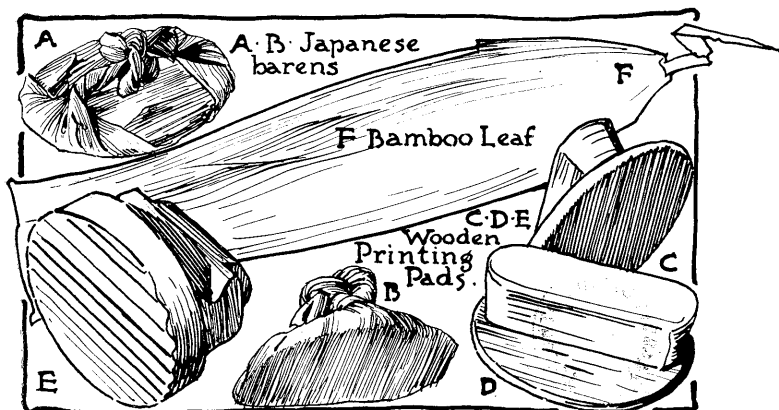
Japanese printers dip the printing sheets in water and hang them up to drain. The time allowed for drainage is about twenty minutes, but it depends obviously on the state of the atmosphere. Blotting paper may be used for absorbing superfluous moisture.

OTHER NECESSITIES FOR PRINTING. The printing pad, or baren, as it has come to be called, is not yet standardised in the West, as it has been for more than a century in Japan. The Japanese baren is a most efficient tool, but dependent upon a steady supply of bamboo leaf which forms its outer covering. The body is made up of a disc of cardboard, overlaid by a closely woven web of twisted bamboo leaf. Horsehair is sometimes added. The cover, flat on the underside, is twisted on the other, and its two ends tied to form a handle. Buy one if you can—there is nothing so good.

A substitute, of hard wood, is easily constructed. My own is merely a disc with one ribbed face, with a block of wood forming a grip screwed or glued to the other. The disc should be four or more inches in diameter, and a quarter to one inch in thickness. The ribs may be anything from four to twenty to the inch. The larger ribs necessitate a thicker wood, and are made on a planing machine. The small ones are cut on a wood-engraver's ruling machine, or they may be dug out laboriously by hand with a V-tool or a graver. They should be moulded into fairly shallow rounded shapes,



because a cup-shaped depression will occasion suction in rubbing, that is, besides forcing the printing paper down to the wood it will tend to raise it again, which is awkward. At intervals wipe the face of the baren with



Barens and printing pads.



Printing—applying the paper.

an oil rag, unless like the oriental a rub on the back of your head will give a similar result.

It is advisable to interpose a sheet of butter paper in printing, as a protection to the print, though it is not always necessary.

You will need also a rag or a sponge for cleaning the blocks after each impression.

I have not yet mentioned any of the host of substitutes for the baren, except my own, which I have found to be effective. Mr. Giles has one constructed of ribbed glass, with a wooden grip glued to the disc. Sharkskin, book-muslin and other kinds of cloth have been recommended as a substitute for bamboo leaf. Cloth of any kind is especially futile, at least that is my experience; apparently other artists have found it useful for it is frequently mentioned. Such unlikely tools as a photographer's squeegee (a rubber roller), and a cocoa tin lid, give results.

All this equipment must be arranged tidily on the table before you—the block directly in front with a wad of wet paper or rag under each corner so that it cannot slip; to the left your baren on a sheet of butter paper, the oil rag beside it; to the right your glass color-slab and muller, and brushes, and beyond them your bowls of paste and clean water; beyond the block the pile of printing sheets.

Do not think me fussy when I specify tidiness. It is essential. The wet materials only too easily soil the dry ones, which in turn soil the print unless you are

watchful, and they must be separated as widely as possible. Cultivate cleanliness also in printing. Wash rags, brushes and paint slab after each color, and always work with clean water.

BLIND PRINTING. This is a process of embossing for which a block is cut with thought of a delicate relief but no color. Much pressure is needed in printing. It is evident that such blocks must not be cut in reverse, and that the pattern to be printed must be impressed on the back of the print. Rain might be effectively suggested by this method, and some textures and patterns.

THE ORIENTAL PRINTER kept his color in pots, already ground in water and ready for use, and he sat on the floor "with his legs neatly tucked away beneath him," as Mrs. Jaques describes Muratta san, "and was nearly lost to view behind piles of papers, blotters, printing blocks, a whole battalion of old blue and gray bowls and brushes." But I cannot sit comfortably on the floor, and I like to mix color as I need it on the ground glass slab.

PRINTING. *Brush the water-color vigorously over the block, which should be damp—but not wet—on the surface so that color will not dry too quickly on it. Add a little paste and brush again, this time more carefully and evenly, the final strokes as delicate as possible, covering the whole printing area and in one direction.*

As to the amount of paste, a block six inches square would require as much as would flow on a Canadian nickel (or an English threepenny-bit). Too much paste

—I am speaking of starch paste—will pull fibre ends from the paper or, worse still, a fatal slice of its surface. The latter catastrophe happens only when the paper is soft owing to weak size, or when you neglect to wipe from the wood the gathering film of superfluous paste which in a very short time becomes sticky enough for a fly trap. Rice paste does not offend so badly in this way. Paste, pigment, and especially water must be used sparingly; there should be no free moisture or superfluous color anywhere, neither in the hollows nor between lines.

Make sure the pigment does not lie in streaks.

Immediately the color is laid satisfactorily take up a sheet of damp paper in the fingers leaving your thumbs free to hold the right hand bottom corner in the depression you made to receive it, and the bottom edge on the left side snugly against the other register mark. Let the sheet fall gently over the block, holding on at the register marks to ensure its correct placement.

Unfortunately my early education in this craft was deficient. I have developed certain bad habits; among them a method of laying paper on a block—a method which on one occasion excited an unreasonable amount of hilarity in my friend Mr. Giles. I will describe it for what it is worth, but I will not recommend it unless you cannot manage the other. The block is turned so that the register marks appear at the top. The paper is picked up in the normal manner, that is with thumb and forefinger, but is held between the lips so that both

hands are free to guide the corner and the edge into their exact positions.

Now lay a sheet of butter paper over all and rub with your baren. If it is a line block little pressure will be needed, but a large area like a flat background or an unbroken sky will require energetic rubbing. Don't rub small disconnected patches; take long sweeps up and down in the latter circumstance, beginning at the left side, and let the direction of the stroke be at right angles to the ribs of the baren. Do not go over the same ground twice if you can possibly avoid it. Too much or too vigorous rubbing will make spread lines or edges on your print; that is, the paper will be forced over the sides of cut shapes, picking up pigment which never belonged to the surface.

Peel the paper off the block gently, and put it under a damp sheet.

Before doing that, however, let us examine it. The first print will show whether any waste area needs further excavation. The first impression of a line block usually discovers the need for more work with the knife and the gouges; that of a key-block should be compared with the original drawing. If masses of color appear mottled, too much water was used; if blotched, that is faint and dark in patches where you expected a smooth tint, then the paper or the color on the block was too dry. There is no need to let a printed color dry before adding a contiguous one. They will neither run, nor offset.

The order in which the blocks are printed depends upon many things. Generally the largest color area is printed first and the lines last. The former needs a damper paper, and each exposure to the air helps the paper into condition for the lines. But at times one color must be imposed on another and the order cannot be reversed; a transparent color may be required to give a bloom to an opaque one, for example. Sometimes it is advisable to print the line block first, in which case the sheets must be redamped for the colors.

GRADATIONS. To print gradations load only one corner of the brush with pigment, the rest of it with a little water and paste. If the gradation covers a large space this is unnecessary: start with a full brush where intense tone is intended and work towards the light; you will find if you manage properly that you will finish with a comparatively clean brush. It is sometimes expedient to print the gradation first, and a flat tone over it. For small areas, such as the boy's red cheeks in "The Bather" (page 24), use a dry brush with a small quantity of strong pigment, already mixed with paste, on damp wood.

The practice of mixing powder and paste on the slab before use is effective for intense tones, and small patches of color, and it saves time on most blocks. The ideal surface, however, is obtained only by brushing paste over color already spread upon the block, and this method should always be used for large masses of color.

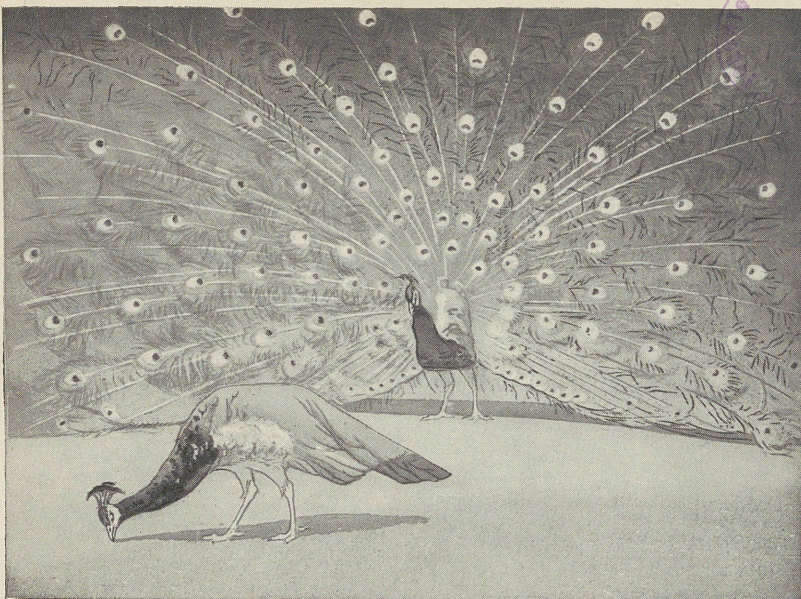
The best impressions are taken when the wood has become a little sodden with paint and paste and its pores

closed. It follows that the more impressions taken off at one sitting the better. After trial proofs have been pulled and studied, and the final state of the print decided upon, let your first set number as many as may be finished conveniently in two days.

When your papers become too dry always stop printing and slip them between damp sheets of newspaper. It will never do to persuade yourself that a slight dryness does not matter, or that with only a few more to do you might as well go on. It is the little extra trouble occasioned by the determination to have every step perfectly accomplished that makes all the difference between success and failure. From beginning to end everything must be right, every small process efficiently performed, all mistakes corrected, not slurred over, and success, you will find, is easy of attainment.

Trial proofs show mistakes made in cutting; faulty register marks for example, which must be corrected; smudges which indicate shallow clearing of waste spaces; overlapping edges, and so forth.

I have described this process because I have found it the most satisfactory; not the easiest, but the most beautiful. Other binders than paste may be used. Some artists invariably use oil on dry and unsized paper, in the form of printers' inks, of doubtful permanence, or artists' oil paints in tubes, conserving a great deal of energy. For years I used water-colors in tubes or pans, latterly with a little paste, on unsized paper. The print so made differed from the powder-and-paste print in



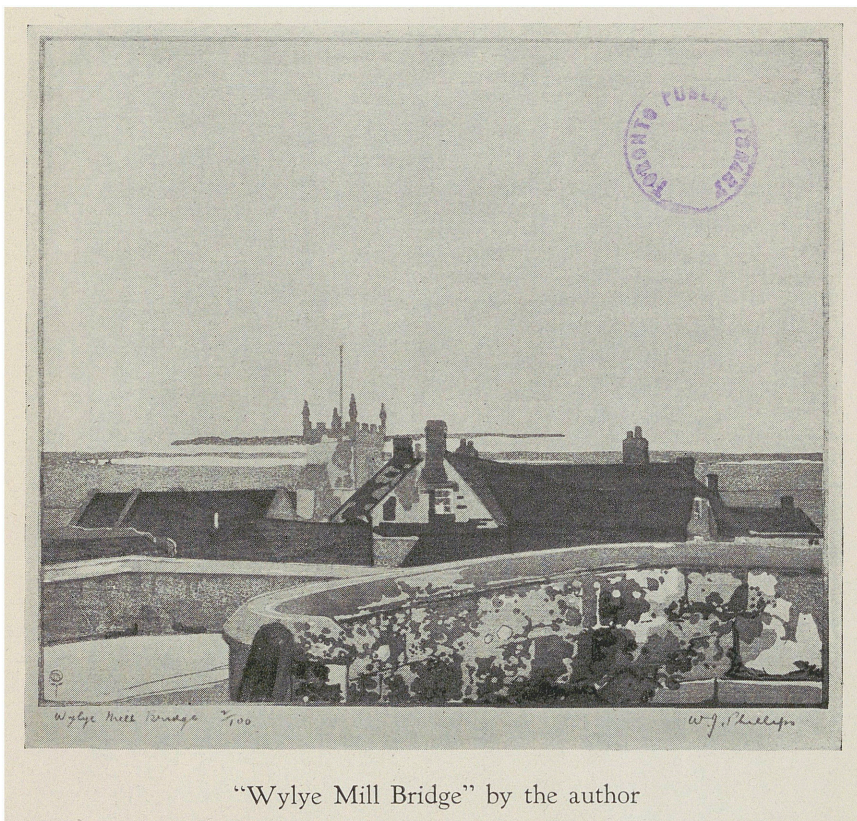
"Sic transit gloria mundi" by William Giles with a full-size fragment in color.



"The Jetty, Sennen Cove" by John Platt, with a full-size fragment in color.



"The Shinto Temple of Masaki, Yedo, in Snow" by Hiroshige I,
with a full-size fragment in color. From a print in the
possession of the author.



"Wyllye Mill Bridge" by the author

surface quality. It has an unpleasant glaze due to the gum, and records also all the imperfections of the wood, because, being very finely ground, the pigment penetrates its pores, and even with the aid of paste has insufficient body.

GOLD AND SILVER. The gold and silver in Japanese prints are brass and lead powders mixed with glue and printed directly from the wood block. A better method is to print with a sticky mixture: glue or gelatine size, or gum, mixed with some pigment if you like, and to brush bronze or lead powder over the print with a soft brush, immediately.

DRYING THE PRINTS. *The finished prints must be laid out to dry, and then ironed on each side. Use a fairly hot iron, and cover the print during the process with a piece of rice paper or tissue. Or, preferably, place the prints separately between drying boards (straw boards) in a pile under a weight. This process may last a week in a humid climate, so that the first has the advantage of speed.*

EDITIONS. It is usual among print makers to limit the number of proofs taken from one set of blocks, though hard wood will stand up under very extensive printing. Thousands of good impressions can be pulled. White-wood, which is very soft, failed me on one occasion after four hundred printings, wearing on the edges and surfaces, too, but it was a poor piece of wood. That is the only example of serious deterioration within my experience. An edition of one hundred proofs is com-

mon. It is indicated on each proof in this way: the first is marked on the lower margin in pencil 1/100, the second 2/100, and so forth. The proof is also signed in pencil immediately below the design on the right, and frequently the title is added.

The Lame Duck 35/100

Edward Fox.

Proofs are marked "second state" when further work has been done or some alteration made after a number have been issued, and if the second state is final it may comprise a complete edition disregarding the number published in the earlier state. Extra proofs are sometimes made for special reasons, which are indicated thereon.

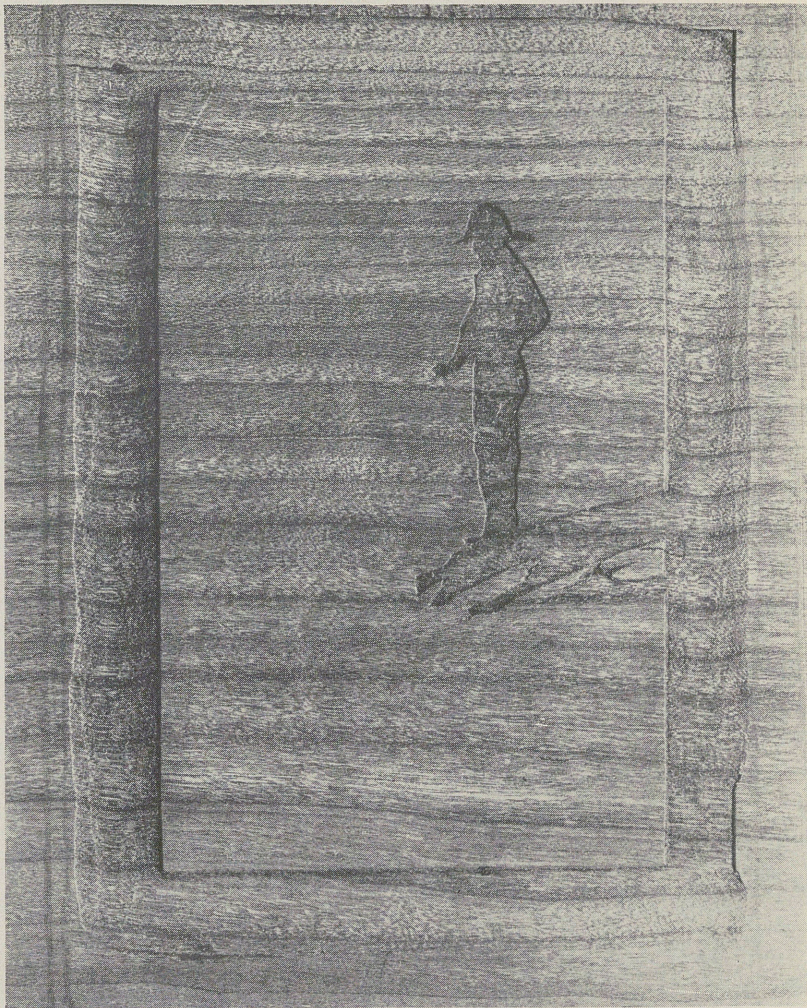
MARKETING PRINTS. The most effective way to market prints is through a print publisher, but many of them naturally look askance at an unknown artist. If this should happen to you, submit your work to interested societies for exhibition—a list of them is appended—where the critics in the light of their physical well-being and according to the extent of their knowledge, may appraise them conveniently. For an intelligent estimate of your technique go to another artist working in this medium.

EPILOGUE. I have tried to describe the whole process of making a wood-cut in color as minutely and as faithfully as possible. Follow the instructions as faithfully and you may succeed. Difficulties will assail you only when you lack in concentration and persistence. It is

most important to perform each operation perfectly. Be content with nothing less than perfection. Carelessness in pasting a drawing down on wood for example, must be paid for in time, material, and energy. There is nothing more exasperating than cutting through paper that has failed to stick when sections of it fall away to leave you without guide lines. Every careless gesture entails a penalty—but cultivate patience. In printing, remember that cleanliness and order wait upon success.

PROGRESSIVE PROOFS

The frontispiece, a wood-cut in color, was cut on five blocks of Canadian cherry wood. A photograph of each block is reproduced on the following pages, together with an impression from each.



The gray block

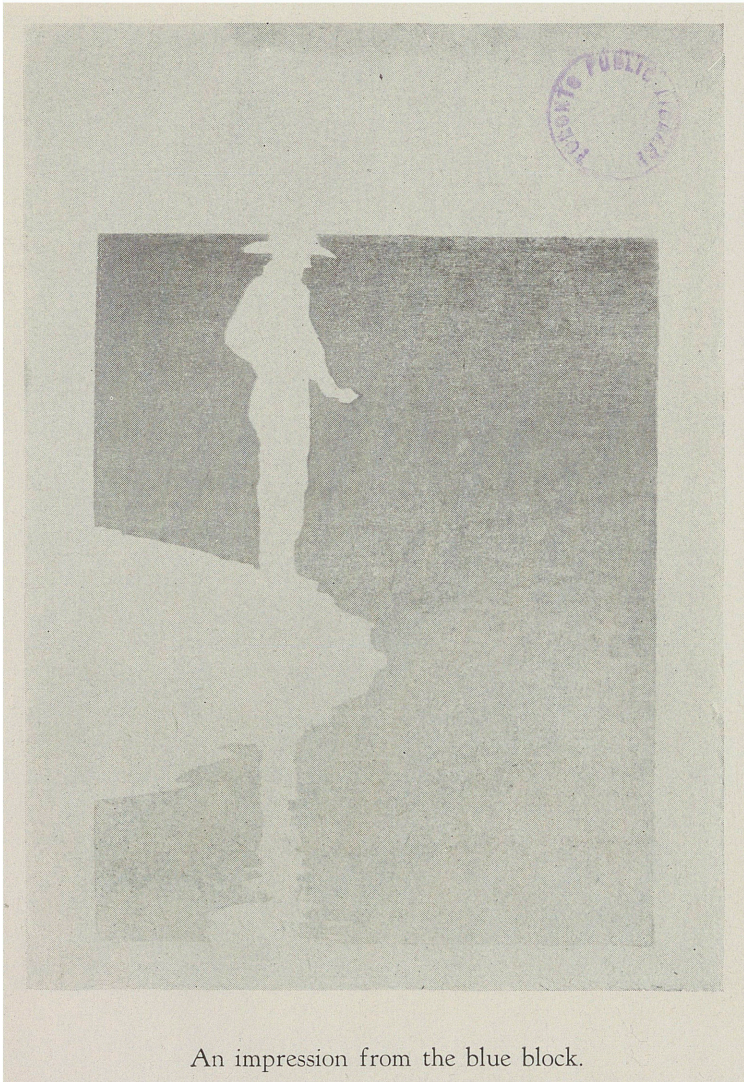
The first block printed, because, its printing area being greater than that of the other colors, it needs a slightly damper paper. Observe the position of the register marks which duplicate those on the key-block. The remaining colors were printed in the order in which they occur on the succeeding pages.



An impression from the gray block.



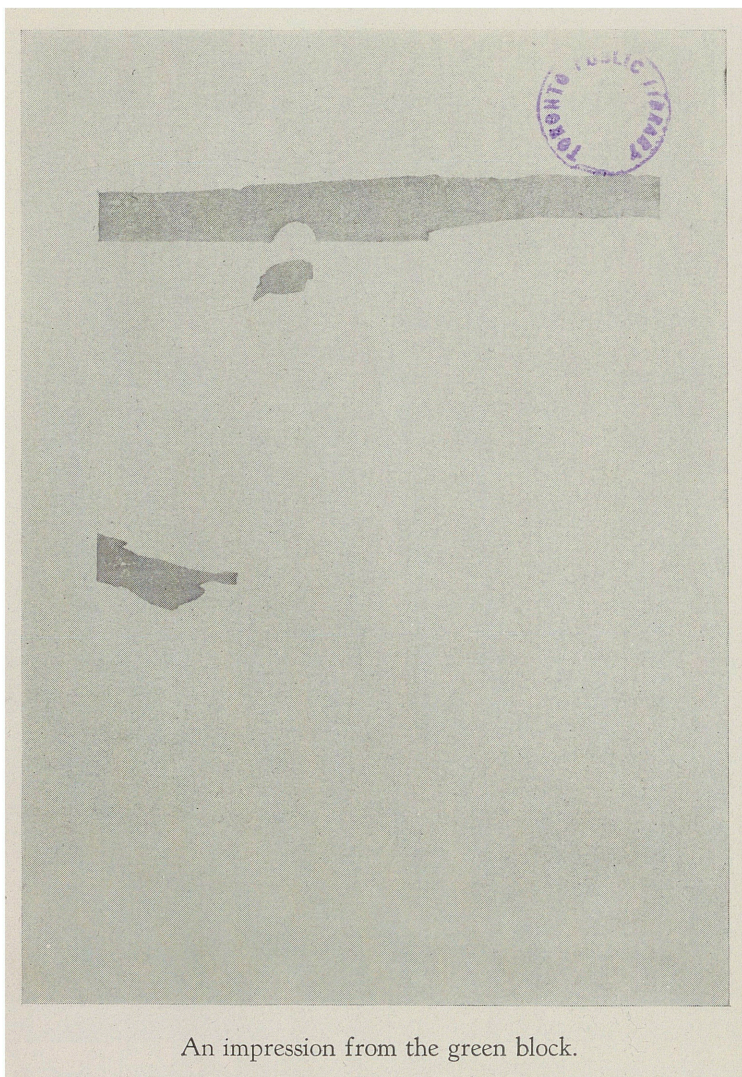
The blue block.



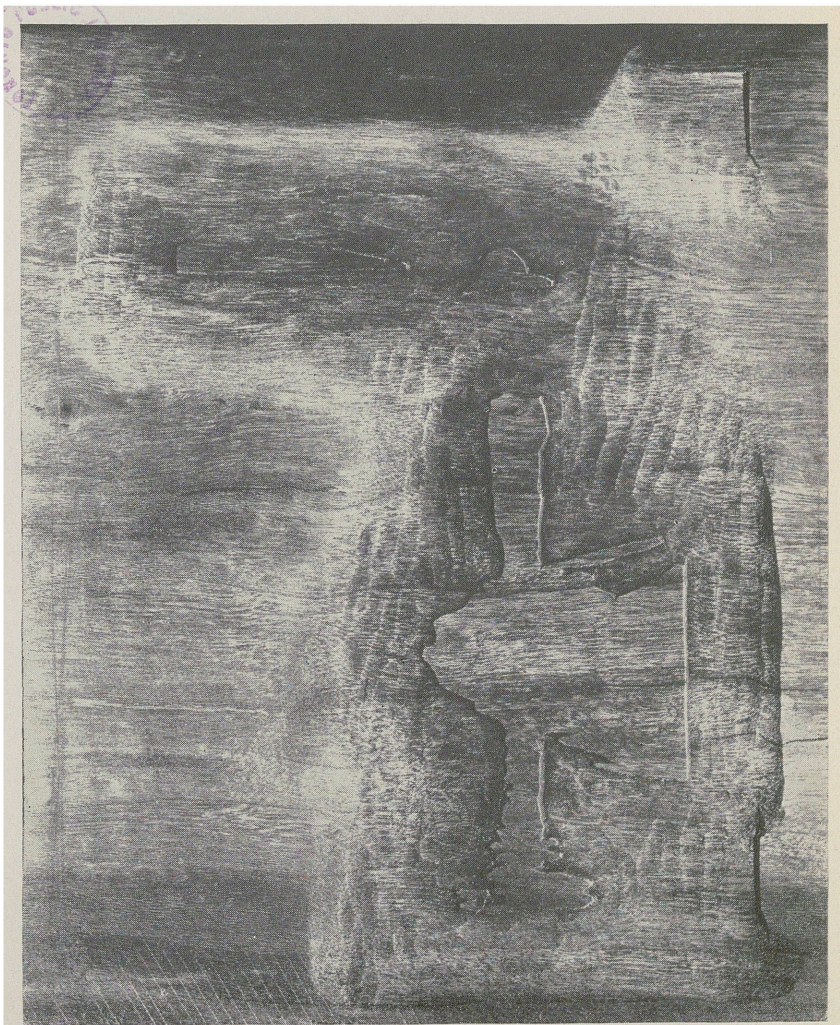
An impression from the blue block.



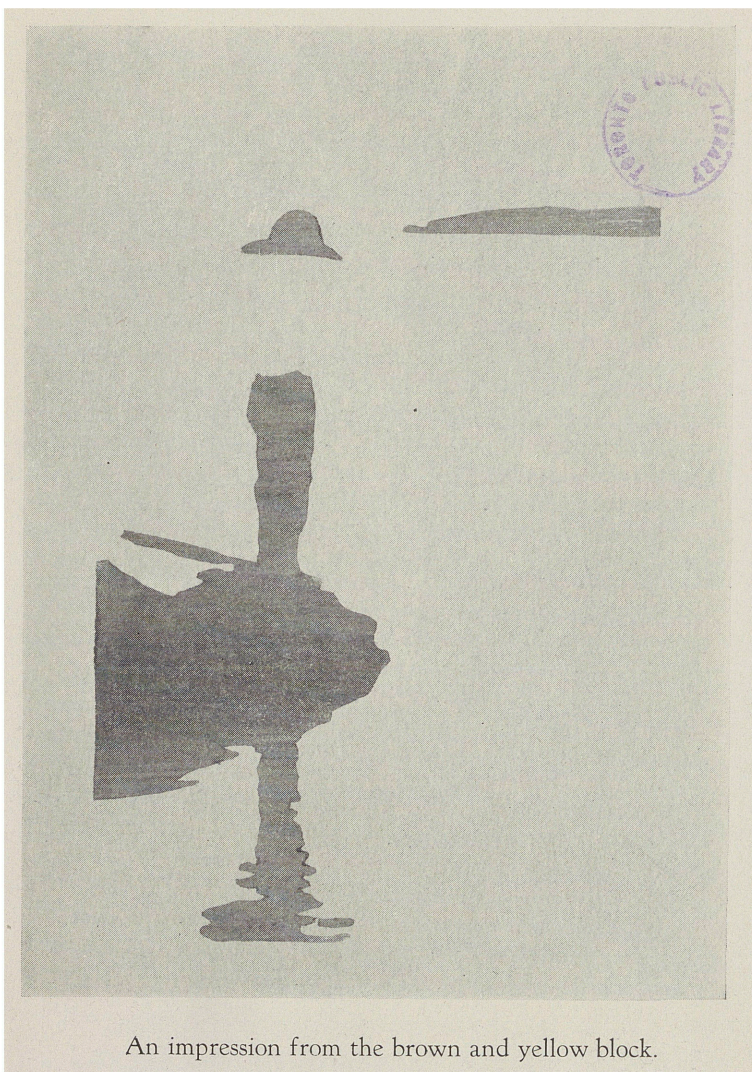
The green block, with patch of red.



An impression from the green block.



Brown and yellow block.



An impression from the brown and yellow block.

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Victoria and Albert Museum Handbooks. Japanese Color-prints by Edward F. Strange. London, 1910.

Containing comprehensive chapters on the history, significance, and technique of the craft as considering Japan, with some sixty half-tone reproductions of outstanding prints.

Victoria and Albert Museum Catalogues. Tools and Materials Illustrating the Japanese Method of Color-printing. By Edward F. Strange. London, 1913.

A short but accurate account of Japanese practice, with diagrams of the tools employed, and descriptive paragraphs regarding colors and the various vehicles used with them.

Washington. U. S. A. National Museum. Report of the Smithsonian Institute for the year ending 30th June, 1892. Japanese Wood-cutting and Wood-cut Printing. By T. Tokuno. Washington, 1893.

The Japanese Color Wood-cut. By Walter Baedeker Mahlow. Die Kunst Schule. February, 1925.

Wood-cut Printing in Water-colors After the Japanese Manner. The Studio, London, 1894, and some articles published subsequently in the same journal.

Wood Block Printing, By F. Morley Fletcher. Pitman, London.

The first book on the recent revival of the craft in Europe, and since its publication the standard work on the subject. It contains many illustrations, including an original print by the author.

The Original Color-print Magazine, published in London by William Giles, Chenil Studios, Chelsea, 1924, 1925, 1926.

An annual publication, with an original print as supplement, containing articles on the craft and on relative subjects by living artists. A most valuable book. Among its contributors are the editor, William Giles, Allen Seaby, Y. Urushibara, Morley Fletcher, Claude Flight, George H. Viner, and W. J. Phillips.

Color Printing with Linoleum and Wood Blocks. By Allen W. Seaby. Dryad Handicrafts, Leicester.

A useful manual, written primarily for schools.

The Modern Color-print. Malcolm C. Salaman, London.

An appreciation of the work of British color printers, with an account of William Giles' new relief-metal process.

SOME SOCIETIES OF PRINT MAKERS

The Society of Graver Printers in Color. Acting Secretary,
H. W. Bromhead, 18 Cork Street, Burlington Gardens,
London.

The Color Wood-cut Society, Mrs. E. C. Austen Brown, 16
Fulham Road, London.

The Society of Print Makers of California. Secretary, Howell
C. Brown, 120 N. El Molino Avenue, Pasadena, California.

The Canadian Society of Graphic Arts. Secretary, C. F.
Comfort, 87 St. Clair Avenue E., Toronto, Ontario.

