

BRUSHWORK, AND INVENTIONAL DRAWING.

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ONE of the soundest contributions that have been made to the theory and practice of elementary education, of late years, is contained in the system of inventional drawing introduced by Mr. Ebenezer Cooke, of London, England. It is the gradual outcome of thirty years of practical teaching; it has latterly received the sanction of the Educational Department of the English Government, having been adopted in their official "Illustrated Syllabus of the Course of Instruction in Drawing under the Department of Science and Art,"¹ prepared by Mr. Cooke himself; and it has also been adopted in part, under the name of "Brushwork," in some of the kindergarten schools of our own country,² as a recognised improvement upon the system of Froebel, with the spirit of which it stands in absolute logical agreement.

Mr. Cooke's ideas are notable for their conformity to the facts of artistic development, for their psychological insight, and for their inherent pedagogic power; and we believe we are doing a service to the cause of education by bringing them to wider notice among unprofessional and untechnical readers. Save for a few prefatory remarks and a supplementary discussion of the physical and mechanical conditions which lie at the basis of Mr. Cooke's main innovation, we shall do little more than offer an abstract of his ideas, allowing him in the main to use his own words. Those who desire more detailed information may consult the *Special Reports on Educational Subjects for 1896-97*³ and Mr. Cooke's pamphlet *Brushwork in the Kindergarten and Home*.⁴

¹ London: Eyre & Spottiswoode. 1896. Price, 4½ pence.

² For example, in the new Chicago Institute, conducted by Col. Parker.

³ Published by Eyre & Spottiswoode, London, 1897. Price, 3s. 4d.

⁴ *Sesame Club Papers*, Sesame League, London, Dover St., W. Price, 1s.

Art is but a form of human expression, the outward embodiment of human thought and sentiment, standing in this regard on the same lofty level with speech and music. It is the objective incarnation of a subjective meaning; it is *creation*, not mimicry; and, primarily, the outward forms which this creative activity assumes possess significance solely as symbolic indications of the *intellectual* and *æsthetic* messages they are designed to convey.

This is strikingly apparent to the student of Egyptian, early Greek, and Oriental art, where the artistic form, to our eyes, appears to lack utterly the elements of naturalness and truth, and which bears to our æsthetic apprehension the same relation of intelligibility as a sentence in some archaic Scottish dialect would to the linguistic apprehension of an American. And not only is the outward form of its intellectual message—its language—national and historical; it is also individual. "If living figures were posed and grouped like those in the pediment or frieze of the Pantheon and photographed, the beauty of line and generalisation of forms in each figure, or in the groups,—the thought, knowledge, and feeling of Pheidias would be wanting, even if his composition was imitated."

Art, in fine, is not photography, not imitation of nature pure and simple. It is picture-thought expressed in picture-writing,—a writing or language having its idiosyncrasies of form and expression, and requiring its own appropriate interpretation.

Art, in this sense, as the conveyance of thought, is to be distinguished from art as technique and as concerned with the perfection of form. Thus, outline, the primitive and natural method of expressing thought, common alike to the savage, the child, and the student, remains such even in the highest stages and is in this respect distinguished from painting, in which the expression of thought and feeling is subordinated to the representation of fact.

In this *creative, intellectual, and non-imitative* character of art, we have, now, obtained a pedagogic foothold for the guidance of instruction, and in this connexion Mr. Cooke remarks:

"Language is a means of expressing or conveying thought by signs. Outline does not represent form; there is no line round an object. The scribble of the little child stands for objects long before the child can make or even suggest resemblance to their form. Outline stands for the object or the mental picture; *it is a sign, not a representation*. The child's drawing tells us what it knows by line signs, it is not a representation of the object.

"Children's early drawings seem to confirm the conclusion that line is language, and show at the same time that it is unnatural for the little child to draw directly from nature as a student does; its drawing from nature is done another

way. To represent objects as they appear is very difficult; to express its knowledge by sign, is easy. The child's first drawing of a man is not a representation, but a statement of its knowledge in line signs. The child frequently puts two eyes in the profile, for it knows there are two, and it tells us what it knows, not what it sees; it expresses its knowledge by signs, not pictorially."

And again, giving examples:

"In reasoning or representing, general truth or knowledge controls the result.

"If a cherry is drawn from knowledge, it will frequently be represented by a circle, or by a form intended for it, for we recognise no other generalisation of rounded form but the circle. A cherry is round; the most perfect rounded line form is the circle; therefore the nearer the cherry is made to that general form, the more it will be like a cherry. With the real object in front, students often make this mistake. General truth controls the representation. It is easier to draw from knowledge than from sight; to use line language than represent things as they are.

"Take another illustration from color. A class of eleven girls are given a peony petal to paint; poppy or rose would have done equally well. Ten paint the petal one uniform red color, crimson lake. One girl, who looks at her petal, adds a little scarlet and purple in some places. But the class laugh at this. The petal is red; they know this, and paint it so; there is no need to look. If they should look, and see other colors, so strong is the conception they do not attempt to represent what they see. Knowledge controls every line, every color."

"Seeing is not so easy as is often supposed. To see and interpret rightly what is seen is one aim of education."

The representation which constitutes infant art, coming thus from a knowledge that is within, and being thoroughly individual and independent in its character, it would seem that this *spontaneous bent for expression and activity* should be so fostered as to form almost the sole source from which the subsequent development should flow:

"The child must see and think for itself; it must combine and invent, not merely copy what others have done. . . . We can no more think for a child than eat for it, no more acquire for it than grow for it. All round us the materials are provided, but the mental activity and the process by which material becomes knowledge is the mind's own. . . . Some teachers seem to consider they are doing the child a service, instead of an injury, by providing it with copies made with easy strokes and touches of the brush. They seem proud of efforts that babies in the kindergarten equal and sometimes surpass; and the worst of it is, they are quite unconscious of their mistake. The expression of its own thought, the exercise of its own mental activity, educates the child. It can put lines together as soon as it can draw. *Copies are cribs*; the real work of translation from objects into line has in them been done. Copies may be models of composition and have other values, but they exercise constructive imagination very little. Copies made with the class, by children; by teacher and children; as illustrations or examples; or in any way which brings class and teacher into communion and into action, which interests and stimulates to effort, are quite unlike the dead printed copies so commonly given, to the exclusion of all else. Copies may have value in many ways, but they should not come before the child's expression of his own ideas.

"The child must get his own knowledge of eyes from eyes and translate for himself; copies may help him, but not Michael Angelo's. Some early master whose mind and knowledge is in sympathy with his own, may help more. Archaic art, the early art of the race, is more in harmony with it. Our pre-Raphaelites insisted on important educational principles. Copies made on its own plane after its manner, entering into its thought, may help the child to express itself. The child tries to express its own thought before it imitates natural objects. Imitation of nature is a late stage. In its earlier stages thought is intimately connected with its drawing. Inventive drawing involves thought; drawing from imagination comes before drawing from objects. To go to nature is right, but it must be through the child's nature. Education is involved in the efforts to express our own ideas, not to copy others."

Having indicated principles, we may now proceed to mechanism. With our limitations of space we can do no more than sketch the general tendency and spirit of Mr. Cooke's *technique*. It is now familiar in its main principles and differs from the best recognised traditions chiefly in the emphasis it lays upon freedom and inventiveness. It is opposed to the representation of natural form by generalised geometric form,—an inheritance from the Schoolmen in their mistaken interpretation of the relations of Greek art and geometry, natural form in Greek education never having been subordinated to geometric form. In fact, it takes its origin precisely in the suggestions of Greek archaic art, in its recognition of the structure of the arm and the resultant form of lines, the free sweep it gives to brush and color. Mr. Cooke says:

"Elementary drawing books often begin with the two geometrical elements, straight line and arc, and immediately after them copies or examples are given, presumably combinations and exercises with these elements. Very often neither of the elements given appear, but instead of them there is another line with which all the exercises are made, but for this no element is offered. No beautiful freehand ornament can be made with these geometrical elements; the hand is constructed to move in other lines, for which no element is given; no drapery; few, if any, of the lines of movement; neither falling water nor fluttering flame; no rounded forms; not even circles as they are really seen, except in one position in which the eye rarely is, exactly opposite the centre; to these may be added the whole wide region of living form, their movements and gradual changes, and none of these, nor any portions of them, can be drawn with the recognised elements—straight line and arc. The yeast plant and other low forms of life may be circular at first, at rest, or when dead. The sun and moon look like circles; the eyes of animals, sections of eggs, and parts of plants may be circular, but as we usually see them they are not. Among living things the circle is rare, and when it occurs it is rarely in a position in which it can be represented by an arc, or any combination of arcs."

Our conception of form and its elements, therefore, requires revision. General, mathematical forms have been derived from natural objects; to nature consequently we must return.

In the inorganic world, the characteristic bounding forms are

straight lines and plane surfaces; in the organic world, the characteristic bounding forms are curved lines and rounded surfaces. A snow crystal and a lily have both six parts radiating from a center, with the same angle between them. The crystal is bounded by straight lines, the flower by curves. Form is less fixed in living things; it is always changing with life, development, and movement. But in all their exuberant multiplicity a single fundamental form, according to Mr. Cooke, is apparent—the ovate form, the oval. It is seen in plants, birds' eggs, fishes, and shells.

"Bud, leaf, flower, seed, embryo, even root and stem, as in onion, turnip, and potato, are but variations of the same shape—the form of bulb and fruit resulting from the form of their constituent parts. The general outline of whole plants, trees, sometimes their branches and shoots, repeat this shape or elements of it. Fir trees in form follow their cones, while the cones repeat the seed. The seed follows the trees as child follows the race."

The ovate form is thus the ground form of plants; and, though not so easily seen, of animals also. Conic sections and catenaries seem to be the prevailing curves in nature. This will be evident from certain physical considerations, which Mr. Cooke has not developed, but which afford a mechanical and mathematical support for his empirical observations. All living and plastic forms have been subject during their development to the effects of gravitation; and whatever modifications of their plastic substances have taken place, have been induced by gravitation. John and Jacob Bernoulli, the famous Swiss mathematicians and physicists of the seventeenth century, while once walking in the environs of Basel, accidentally came upon the question of the form which a chain suspended at both ends would assume if left entirely free to the influences of gravitation. They both immediately reached the conclusion that the form would be that in which the center of gravity of the hanging mass would lie lowest, in accordance with the principle that heavy bodies tend to sink as far as they can. This curve was called the *catenary* or chain-curve from the object which was first historically employed for its illustration. Pictures of the form of this curve are given in the annexed cuts taken from Mach's *Mechanics*. The general appearance of the curve will vary greatly, according to the distance between the points of suspension; but mathematically and mechanically every curve so produced will possess the same properties. Whatever hangs by catenaries; it is the curve which the cables of suspension bridges make; it is the curve of the dorsal and ventral portions of animals; it is the curve of draperies, the curve of human beauty, of hanging vines, and of all

animal and vegetable forms which have shaped themselves in natural conditions of pendency. Modified by the various stresses and strains imposed by interferent conditions, and antagonised occasionally by molecular and tensional forces of superior power, it has in its multiple variations naturally furnished the ground form for the development of all animate nature.

It is the generalised conic section, thus, that Mr. Cooke has adopted as the most natural fundamental line. The ellipse seems to be the form best suited to his purposes, and its quadrant is chosen as the elementary line having the same value as the straight



THE CATENARY, OR CURVE FORMED BY A HANGING CHAIN.

The center of gravity of the entire mass tends to seek its lowest possible point,—a physical fact by which the mathematical peculiarities of the curve are determined.

line and the arc of a circle, completing the alphabet of linear form and constituting the missing element of outline—the line of life, development, and of movement.

As to the non-coincidence of the mathematical properties of the curves considered, he seems to be unconcerned. The characteristic which he seeks in his new element is *gradation*. His sole request is that one end of his line should be nearly straight, and that the remainder should gradually curve more and more towards the other end. It performs various mathematical eccentricities: if set free, it continues to curve or coil until it becomes a spiral, the form of shells. Yet it is the curve of natural movement, the

curve which the child is compelled to make by the very structure of his arms,—the curve of Greek art. When produced by continuous rapid and repeated action freely from the shoulder, and with non-resisting materials, it is performed happily, freely and spontaneously. It is the expression of the child's own impressions, thought, or feeling; it is in perfect subjective and artistic harmony with the characteristic form of living things; it is thus the counterpart of nature.

The graduated curve, rapid free movement, the use of non-resisting materials, repetition, these are the foundation.

"We should draw out power by doing. The child shows how it can be done. It goes rapidly over and over, round and round. Repetition is just what is wanted, and this is delightful to the child, for it is natural to the structure and movement of the arms, and pleasant to its senses. The rapid movement is the innovation; it is opposed to all our established tradition. But we go to nature; this is her direction. We have no choice; we must follow, and we soon find it is right. All motion is subject to law. Skating and cycling are quicker than walking, but are not less direct. The rapid motion of the potter's wheel and the lathe assist materially to make the form produced. The child who makes lines at first with such intense concentration of energy at its finger tips and pencil point that the paper is cut through, is wasting power and reversing the method of nature; which seems to be rapid movement and non-resisting materials, or soft clay should be given and incised lines made in it with a hard point.

"Freehand often means cramped fingers and indirect drawing—fifty little touches to a line five inches long, rubbed out, perhaps twenty times, in parts and patched up. The whole arm is used by the child when scribbling, and its structure shows it is well adapted for this free action and for graduated curvature. Rapid action over a smooth surface is more easily directed and controlled than a slow movement, deeply incised in the substance of the paper. There is less resistance and more help from bodily structure and the mechanical movement.

"Non-resisting materials the child selects, and the pavement artist knows their value. The misty window-pane, the sea-shore sand, the wet finger-tip, the leading of water over a smooth surface are some of the child's suggestions. Chalk and blackboard, brush and color, charcoal or colored chalk on paper we can adopt. Brush and water on the blackboard are the readiest materials for us: whatever can be most easily used should be used; drawing in the air with the finger tip is not to be despised."

We have here the first intimation of the character of brush-drawing, proper. "The history of drawing with a brush, as distinguished from painting, is not yet written. Engraving, etching, and pen-drawing—all products of a firm point—have their literature; but the work of the soft, flexible brush-point, with its many and varied powers, is hardly known outside the region of technical art." It is the chief instrument in some kinds of lithography, and it was recommended and practised in a measure by Ruskin and Rosetti. But the analysis of the full powers of the brush in edu-

cational drawing remained for Mr. Cooke, and it was effected first in connexion with the study of Greek art, and secondly in connexion with his actual work of teaching.

"There are two kinds of brush lines in Greek art—namely, broad bands all round the vases, and freehand patterns. The bands seem to have been made mechanically. They may have been made by holding or fixing the brush steadily in one place while the vase revolved, as a chisel is worked at a lathe, and as the hand



ELEMENTARY BRUSHWORK.

"Alma" School, Bermondsey, London, S. E. Age, 8 years.

itself moulded the vase on the potter's wheel. The bands vary in width, but between them are free lines arranged in a simple manner, often in a kind of geometric pattern. It is in making these free lines that the power most characteristic of the brush asserts itself. It persistently presents to the artist, as the child presents to its teacher, the most important characteristics of its inner self, until at last the artist recognises its right to speak and the truth of its message, and accepts the teach-



ELEMENTARY BRUSHWORK.

"Alma" School, Bermondsey, London, S. E. Age, 9 years.

ing of his instrument. The shape most natural to the brush is ovate, the form of the brush itself, and also the outward expression of the force employed. When hand, brush, and material work harmoniously together, various ovate forms are produced with ease at one stroke, by the free play of the brush. Some of these are very suggestive of living forms; alone or arranged in the most simple ways, imagination sees in them likeness to flowers, leaves, shells, fishes, and birds. Inventive imitation stimulates observation; fish and bird are looked at again and the forms are improved. The eye of the fish, which at first was placed in the mouth, or at the furthest end, is put in its right place; its "lots of fins" become definitely numbered, of better form, and in their right places. This may have led to the direct study of nature; but at first these forms are not copied from nature. The strokes of the brush most easily made in free play for decoration suggest the forms of objects, and a few touches are added playfully from memory to accent the discovery. By frequent repetition and directed observation these are made more complete. From the simpler animals the higher forms develop; from fish to bird, from bird to mammal, and so up to man. This interesting course can be followed on the vases from ragged and unequal lines, to most skilful decoration, from simple ovate strokes to the majestic dignity of Athenæ and the supreme beauty of Aphrodite."

Line, with the brush, was not an easy beginning even for the Greek artist, and it is not easy for the child, although there are, as Mr. Cooke indicates, easy ways of making lines. Line and mass seem to be the most natural beginning with the brush, but there is another—the "blob." This is the characteristic innovation of Mr. Cooke's work, known to the educational world now for many years, even in manifold perversions, but still interesting and deserving of wider dissemination. We will listen to its origin and function in his own words:

"While I was considering the problem, 'How to begin coloring with little children,' and watching them for guidance, a child helped me. If he did not suggest the way—I rather think he did—he fixed it, and although this new way has been now much abused, it is a useful beginning. The Greeks did not use it much, if they found it. The Japanese have found and used it, but neither to Greek nor Japanese am I indebted, but to a little boy.

"It came in this way. As the function of drawing is to express ideas, as expression of ideas is educative, and as children like to make pictures, I asked Jack L— to make drawings of the story of the Sleeping Beauty. He had come to that fateful birthday, when the Beauty, believing all danger past, wandered to the uninhabited upper room in the ancient castle, and found the old witch there spinning. It pleased him in making a picture of this scene to fill the room with real and unreal strange creatures. Dusty cobwebs indicated the neglect of ages. Big spiders spun webs in windows, rafters and corners; imps gambolled on the floor; but over and above all, rats were most abundant. There was a reason for this. They had gathered into themselves a new and absorbing interest beyond and above the picture itself, and had overflowed its bounds and filled its margin. For he had made a discovery, apparently as the picture neared its end. It was that a rat could be made by one touch of the side of the brush—by that "blob" with which we are now so familiar—adding only a few short strokes from memory for ears, tail, and



APPLICATION OF DESIGN TO PANEL OF PARTITION
Specimen Brushwork of the "Alma" School, Bermondsey, London.

legs. Delighted with his discovery he covered the floor in the picture, and then the whole margin of the paper all round, with rats. This impressed the 'blob' on me, but even then it might have passed unnoticed had not these two questions been working in my mind: 'What are the general forms in living objects'; and 'How can we help little children to begin to color?' To this last question here was an answer; here were all the conditions required; the ovate form and an animal at once, made with one easy stroke, and that so delightful to a boy that he repeated it scores of times just to please himself with its free play. Although Jack L— has been dead several years, he did not live altogether in vain."

A few words as to the mechanical production of the "blob":

"A brush is ovate in shape, leaf-like; fill it with color not too thin and watery, let its whole length drop on the paper, press it down a little, then take it up, without moving it sideways, and it paints at one touch a portrait of itself—an ovate blot or blob. Any child who can hold a brush can make it. . . . To make it the brush should be held nearly parallel to the paper, not like a pen at an angle of 45°. One way of doing this is to put the long handle inside the hand, and drop the brush on the paper. One end of the blob thus made is dark, the other light; the color is graduated like the form. To get the full value of this gradation, to get the darkest points together in the centre of a flower or whorl, the hand must be turned at the wrist freely, and for this some preliminary gymnastic exercises will be useful."

Next, as to the suggestiveness and inherent potentialities of the "blob":

"The ovate forms, separately or combined, will suggest to the child natural objects, such as leaves or fish. Two ovates or blobs will by the addition of a stroke or two represent a plantlet; three, a clover leaf, or flying bird; four, a wall-flower; five, a starfish, or flowers, regular or irregular, as roses or violets. If the ovate forms are arranged along a line instead of radiating like a wheel or floral leaves, buds and fruits will be suggested. Many other things—animals of many kinds, from worms to man, can be easily made by adding limbs and other appendages. The Greeks seem to have seen very soon in the ovate stroke the likeness to the cuttle fish.

"Children constantly find similarities in ovate forms and in chance combinations they make. This characteristic of the child long survives, and it indicates an easy way of beginning and helping design; we can begin with something outside, or from something done, as well as from thought, perhaps better. The child's natural method supports this. At the age of four a child names what it has drawn after the drawing is made. Even artists like Leonardo da Vinci, have advised that a plate should be held over a flame, to get suggestions for pictorial effects, from the chance scribbles and tints of its smoke. This way of beginning with the outer, sanctioned by the child's nature and highest authority, may be used, at least as the child uses it, to get initial suggestions. It can be abandoned if not needed, but when we see how some earnest people 'cudgel their brains' trying hard to invent, and nothing comes, a beginning of this kind may be a relief and a comfort. The little child begins by doing, and thinks afterwards. This shows how production promotes thought; suggestions arise from the doings of the hand as well as from the activity of the head, from outer as well as from inner; only begin, and the next step will be easier. Put down two blobs, they may suggest combinations, when thought fails."

And finally a remark on the rôle of accident in creative invention and on the power of the accomplished fact :

"A child will often, by happy accident, make something like a bird or beast, and this can be made again. 'I can't' has lost its power ; what the child has done, it can do. If chance combinations are repeated they will come under the control of will and cease to be accidental. The happy accident will also induce the child to look again, of its own free will, at the actual thing to see how like it is, and so more knowledge will be gained and the form improved. Anything that will induce the child to go to Nature itself—instead of having Nature brought to it by another—to use its eyes and senses constantly out of doors and about it, is good. Its drawing may be useless, but to see is better than to draw. All study will be benefited by cultured and constant observation. The little child observes habitually, and the habit should never be allowed to die."

Little has been said in our quotations regarding details of technique. This is a matter for which the reader is referred to the sources above mentioned. But we may mention in conclusion, and *à propos* of this point, the work of the "Alma" School of London, one of the newer well-designed and well-equipped schools of the London School Board, in which the new *Alternative Syllabus of Drawing* which embodies Mr. Cooke's ideas has found successful adoption, and from the records of which the specimen illustrations accompanying the present article have been taken. The "Alma" School is attended by the children of workingmen, of ages ranging from seven and one half to thirteen and one half years ; there are two lessons in drawing a week, the main object of which is the teaching of design. The introduction of the system in this school has been very encouraging from an intentional point of view. "It has evoked in the boys," says the Headmaster, "such an intense interest as I had never seen displayed before. The study has been from the beginning taken up with the utmost enthusiasm. The boys were charmed to be able to use chalk, but they have been fascinated with the brush, and the deftness with which they manipulate it is marvellous ; there is almost an entire absence of color in the wrong place ; a spotted or smudged drawing is scarcely ever seen ; they take an immense pleasure and rapidly acquire skill and taste, in mixing and harmonising colors." It has called forth a great deal of voluntary homework, and has appealed to the dullest as well as to the brightest. "Nor has the effect of this work been confined to the drawing ; the consciousness of power which a boy obtains in producing a good design overflows into all his other work. Some timid, hesitating lads have been simply transformed intellectually under its influence. Such a boy no longer does merely what he is told ; he works because he enjoys it, because he feels that by work he can achieve something." It has supplied, in fine, "an artistic and scientific basis for true technical training, and produced at the same time the spirit which alone will make that training effectual."