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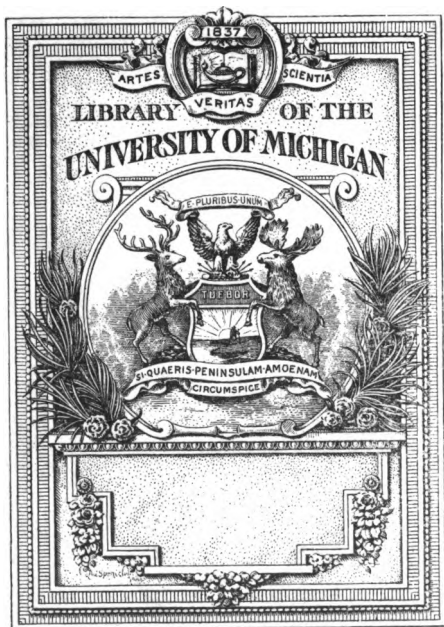
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The Republic of Childhood

FROEBEL'S OCCUPATIONS

BY KATE DOUGLAS WIGGIN
AND NORA ARCHIBALD SMITH



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I. FROEBEL'S GIFTS.

II. FROEBEL'S OCCUPATIONS.

III. KINDERGARTEN PRINCIPLES AND PRACTICE. (*In Preparation.*)

HOUGHTON, MIFFLIN AND COMPANY,
BOSTON AND NEW YORK.

THE
REPUBLIC OF CHILDHOOD

BY
KATE DOUGLAS WIGGIN
AND
NORA ARCHIBALD SMITH

II
FROEBEL'S OCCUPATIONS

The Republic of Childhood

The Kindergarten is the free republic of childhood. — FROEBEL.

FROEBEL'S OCCUPATIONS

BY

KATE DOUGLAS WIGGIN
AND
NORA ARCHIBALD SMITH

Properly thou hast no other knowledge but what thou hast got
by working. — CARLYLE

The entire object of true education is to make people not
merely *do* the right things, but *enjoy* them — not merely
industrious, but to love industry. — RUSKIN



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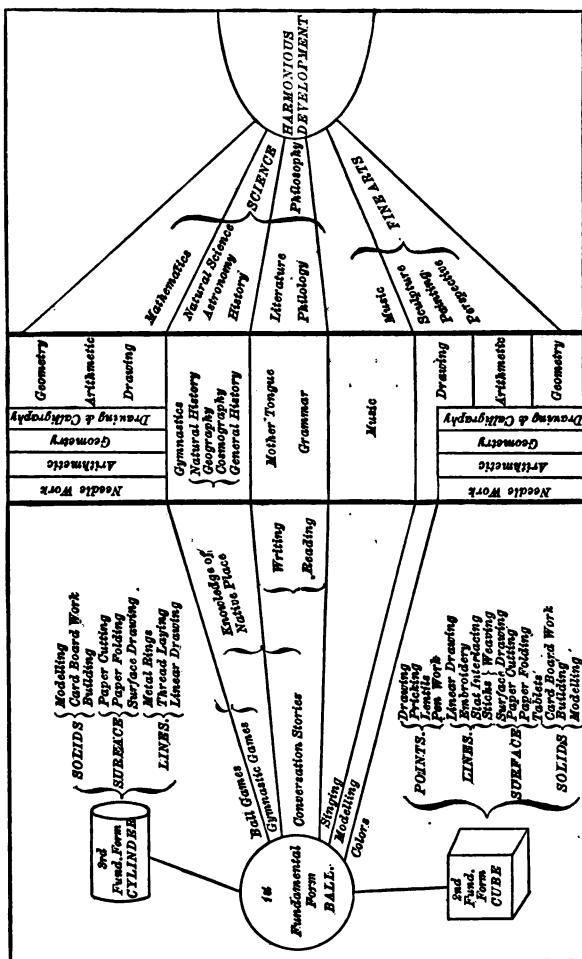
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SYNOPTICAL TABLE OF THE GIFTS AND OCCUPATIONS SHOWING THE CONNECTION BETWEEN THE KINDERGARTEN AND SCHOOL.

[Mme. A. de Portugall.]

FROEBEL'S OCCUPATIONS

THE KINDERGARTEN GIFTS AND OCCUPATIONS CONSIDERED AS A WHOLE

"These employments aim at and produce, first of all, in man, an all-sided development and presentation of his nature; they are, in general, the needful food for the spirit; they are the ether in which the spirit breathes and lives that it may gain power, strength, and, I might add, extent, because the spiritual qualities given by God to man, which proceed from his spirit in all directions with irresistible necessity, necessarily appear as manifoldness, and must be satisfied as such, and met in manifold directions."¹

THE gifts, occupations, and recreative exercises of the kindergarten were devised by Froebel to satisfy what he terms the eight instinctive activities of the child, "for play, for producing, for shaping, for knowledge, for society, and for cultivating the ground." Professor William James, with somewhat differing insight, divides the instincts of children into four, which he considers fundamental, namely, "construction, imitation, emula-

Tools of the Kindergarten satisfy instincts of Childhood.

¹ Froebel's *Education of Man*, page 269 (tr. by J. Jarvis).

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tion, and ownership." These also are satisfied in the kindergarten, though we endeavor to translate emulation into aspiration, and overweening desire for private ownership into a willingness and an ability to use all possessions for the common good.

It cannot but be seen that although the gifts Their Dominant Purpose. and occupations of the kindergarten appeal to numberless minor needs and desires of the child, their dominant purpose is the development of creative self-activity, and that while they serve to interpret the external world to him, they at the same time give adequate expression to his internal world. It is in his conception of the value of creative activity, of the essential relation of impression and expression, of the beauty and spiritual meaning of true work, of production, that Froebel differentiates himself from all other educators.

In that wonderful volume of his letters, which discloses on every page his lofty enthusiasm, his devotion, patience, courage, self-sacrifice, single-mindedness, — his inspiration, in fact, for such indeed it was, — are the following words in relation to the instrumentalities of the kindergarten, and we give them entire as a commentary upon the man and his work: —

"I mean that we shall be borne onward into the very heart of practical Christianity through these games and occupations of little children,

which we are contriving with such attention, loving care, inward watchfulness, and outward work. In the first place, we thus avoid all those sad consequences which arise from the neglect of children in their earliest years. For the great friend of children has said: 'Whoso shall offend one of these little ones which believe in me, it were better for him that a millstone were hanged about his neck, and that he were drowned in the depth of the sea.' And how many, many children, often very tiny ones, are there not who are 'offended' in Jesus' sense of the word by the weariness which comes of doing nothing, or by being forced into unsuitable occupations! In the second place, also, we are fulfilling one of the weightiest commands of Jesus, which he puts into the words, 'Whosoever shall not receive the kingdom of God as a little child, shall in no wise enter therein.' Now the kingdom of God is the kingdom of unity, of union, of unification, of unison, of concord, of love, of peace, of law, of introspection, of perception of the inner essence which underlies outer manifestations. It is the kingdom of social union, of trustfulness, of belief, of hope; it is that province of the observation of the small which concerns it as member and part of the large, of the near as germ of the far, etc. And all this will be, by means of these games and occupations, early awakened, nourished, cared for, and developed in the child.

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Herein lies the secret of the success which results from the operation of this system of organized occupations, a success often apparently inexplicable, and by many spoken of as its 'magical effect;' herein lies that hallowing influence which extends its attitude of belief and trust (that is, the childlike, motherly, brotherly attitude) over the whole life of the child, and which from this beginning spreads ever widening throughout the whole family. For God's will is to give help to all mankind, and that every one should attain to the knowledge of truth through the means which He has made manifest in the inner being of the universe of living creatures. These means are displayed in the phenomena of all creation, and before all else in the *soul*, in the *mind* and in the *hand*, as well of each man in his individual capacity, as of the vast collective unity of mankind, held together by God." ¹

The series of kindergarten gifts and occupations were the fruit of about fifteen years' study, thought, reflection, repeated trial, and wide experience on Froebel's part, and they have as yet received little essential modification from the kindergartners of to-day. The two series show many points of resemblance in their purpose and in their appeal to the child, and Froebel himself did not, in writ-

Connection of and contrast between Gifts and Occupations.

¹ Froebel's *Letters on the Kindergarten*, translated and annotated by Emilie Michaelis and H. Keatley Moore, page 56.

ing at least, make any marked distinction between them. It is evident at once, however, that their chief connection lies in the fact that impression made through the gifts is converted into expression in the occupations.¹ The four essential points of contrast between them may be considered to be the following:—

a. The gifts are analytic, the occupations synthetic.

b. In the gifts there is investigation, combination, rearrangement of certain definite material, but no change in its form; in the occupations the material is modified, reshaped, and transformed.

c. The results obtained in gift work are transitory, in the occupations permanent.

d. The gifts ascend from solid through divided solid, plane, divided plane, and line, to the point; the occupations begin at the point and travel the same road in an opposite direction, until they reach the solid.

It should be noted, however, that commonly only the first six gifts are introduced in regular succession, and that the last four (tablets, sticks, rings, and seeds) are made supplementary to the

¹ The kindergarten wisely selects a series of objects that lead to the useful possession of certain geometric and numerical concepts that assist in grasping all things in their inorganic aspects. . . . In the occupations the child finds relations to the fundamental geometric shapes that he has learned to know, and he sees with clearness and precision how to realize ideas." (W. T. Harris.)

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first six, and used interchangeably with the occupations, while regular occupation material is provided to embody the results produced by them in permanent form. So far as our experience goes also, the occupations are seldom introduced in regular order of development (from point to solid) but are almost invariably used as companions and helpmates of the gifts.

Dr. W. N. Hailmann gives the distinction between the two series as follows:—

“ A *gift* gives the child a new cosmos, and the *occupation* fixes the impressions made by the gift.

“ The *gift* invites only arranging activities, the *occupation* invites also controlling, modifying, transforming activities.

“ The *gift* leads to discovery; the *occupation* to invention. The *gift* gives insight; the *occupation*, power.”

Another slight distinction between them, dependent upon the second point of contrast, is that “alteration and transformation of the occupation material can only be contrived by the help of simple tools:”¹ the steel weaving needle, the wooden modeling knife, the “creaser” for paper interlacing, the wooden pointer for the thread game, the steel pricking and sewing needles and scissors, the pencils, the paint, and mucilage brushes. None of these are necessary in

¹ Hermann Poesche.

the gifts, of course, as no alteration of the material is either possible or desirable.

The ideal gifts, according to Dr. Hailmann, should satisfy the following conditions:

“1. They should, each in its time, fully represent the child’s outer world (macrocosm).”

“2. They should, each in its time, enable the child to give satisfactory expression in play to its inner world (microcosm).”

“3. Each gift should, therefore, in itself represent a complete, orderly whole or unit.”

“4. Each gift should contain all the preceding, and foreshadow all the succeeding gifts.”

“In short, each gift should, in its time, aid the child ‘to make the external internal and the internal external’ in the widest sense.”

It has been claimed that any occupation which might be devised would be Froebelian, if we adhered closely to three points: simplicity, continuity, and unity. This statement, however, although true in one sense, is contradicted by the fact that the occupations developed by Froebel correspond not only to those which have always been in use among mothers and children, but also (in essentials) to the primeval arts. They may be, as they already have been, changed, modified, and supplemented, but they cannot be altogether superseded, for they are based on the universal instincts of childhood.

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Mr. H. Courthope Bowen says in this regard : "It must not, however, be supposed that any manual work will do as an occupation. All honest work, certainly, produces a good effect ; and domestic service — which is a child's public service — most certainly ennobles a child, and, indeed, all of us. But just as in the songs and games, so here — a choice has to be made ; and what is chosen has to be adapted to the kindergarten purpose, — the purpose of mental, physical, and moral development. Not only has the material of an occupation to be easy for a child to manipulate, and well fitted for the work required of it ; but the occupation in itself must be varied and many-sided in its educative power ; must not be simply imitative ; must draw into itself what has gone before and reach out to what is to follow ; and must distinctly form a part of the organic unity of the whole kindergarten process." ¹

The aim of the kindergarten, as has been repeatedly said, is to strengthen and develop productive activity, "but we must be conscious of ideas before we can express them, and we must gain the mastery of material before we can use it as a means of expression. Hence the first use of the gifts is to waken by their suggestiveness the mind's sleeping thoughts, and the first use of

¹ H. Courthope Bowen, *Froebel and Education by Self Activity*, page 149.

the occupations to train the eye and the mind to be the ready servants of the will.”

While the occupations as a whole apply the principles suggested by the gifts, particular occupations connect with particular gifts. Let us review briefly the latter series before beginning in detail upon the former, that we may see more clearly the distinctive value of each and the way in which the one complements the other.¹

The list of Froebel's gifts begins with the ball, an object comprising in itself, in the simplest manner, the general qualities of all things. As the starting-point of form,—the spherical,—it gives the first impression of knowledge in this direction, and being the most easily moved of all objects is symbolical of life. It is as easily grasped by the hand as by the mind, and becomes the first known object with which all other objects for the child's after play and instruction are brought into relation. Besides teaching form, the balls are also intended to teach color, hence their number of six, representing the six standard colors derived from the spectrum.

For the purpose of acquiring clear, distinct, and correct ideas of things around us, it is indispensably necessary to become acquainted with them in all respects and relations. The ball is therefore made the object of a great variety of plays and exercises in order that the child may

¹ The gifts are treated in detail in a previous volume.

know through actual experience all its qualities and uses.

Froebel's second gift, which consists of a wooden sphere, cube, and cylinder, is connected with the former gift, and foreshadows that which is to come. It emphasizes contrasts, suggests variety, and is most valuable in form teaching, since we never so well understand the qualities of any object as when we see it confronted with its opposite. The new material of the gift and hence its greater weight and density and greater capability of sound are so many added charms to the child, while he particularly delights in the revolution of the three solids and the different geometrical forms which are thus produced.

These three whole bodies, introduced as fundamental or normal forms in which all qualities of whole bodies in general are demonstrated and which serve to convey the idea of wholeness, are followed by the introduction of variously divided solid bodies, viz.: the third, fourth, fifth, and sixth gifts, or the building gifts.

Of the normal forms with which Froebel begins, he leaves the sphere and cylinder and chooses the one greatest in possibilities, the cube, for a source whence, by strictly systematized analysis, the rest may be obtained. Without a division of the whole, observation and recognition are next to impossible. The rational

Second
Gift.

The Build-
ing Gifts.

investigation, the dissecting and dividing by the mind, — in short, analysis, — should be preceded by a like process in real objects if the mind is to be fitted to reflect intelligently upon Nature.

Division performed at random, however, can never give a clear idea of the whole or its parts; but a regular division in accordance with certain philosophical laws is absolutely essential.

The orders in the vegetable kingdom are distinguished according to form and number of parts, and Froebel here borrowed from Nature a guide which led him in systematizing the means of developing the young mind.

The first of the building gifts is a two-inch block, the same size as the second gift The Third Gift. cube, divided once in each dimension producing eight smaller cubes. Now the child becomes a maker and a builder, new revelations of his power come to him at every turn; he has found an object which he can use to express the ideas that are stirring within him. "Every effort on the part of the child here, as in the building gifts, to create something of definite form or of definite purpose is a training of both the powers of thought and volition as well as a gratification of worthy desires." ¹

Here, too, we see the beginning of arithmetical processes, only faintly suggested in the second gift, while geometry is carried on still more fully.

¹ Dr. C. C. Van Liew.

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The fourth gift, another cube, is so divided as to form eight parallelepipeds or bricks two inches long, one inch wide, and one half inch thick. We gain little new mathematical knowledge here, only fresh ways of presenting the old truths, but find greatly increased facilities for teaching dimension, and certain problems of equilibrium presented in most attractive guise.

The Fourth Gift. Next comes the fifth gift, a larger block cut twice in each dimension, producing twenty-seven cubes, three of which are cut in halves and three in quarters. The triangular prisms of two sizes which now appear, as well as the greatly increased amount of material, open a wide field in building, while knowledge in geometry, arithmetic, and philosophy grows constantly wider and more accurate.

The Fifth Gift. The sixth gift, a cube the same size as the fifth, is divided into eighteen bricks, six columns (or bricks cut lengthwise), and twelve square faced blocks (or bricks cut breadthwise). It far surpasses all the others in the beauty of the forms it produces, and thus fitly closes the series of the building gifts.

The Sixth Gift. The logical combination of parts to a whole which is required in using these blocks renders them a preparatory occupation for succeeding combinations of thought, for the right construction of parts into a whole always follows certain laws, thereby forming a serial con-

nection which in Nature is represented by the linking of all organisms. As Nature in the organic world begins to form by agglomeration, so the child in his first occupations commences with mere accumulation of parts. Order, however, is requisite to lead to the beautiful in the visible world, as logic is indispensable for the formation of clear ideas in the world of thought, and Froebel's law of linking opposites affords the most reliable and simplest guide to this end. Thus below and above are opposites in relation to which the right and left side of the form or figure built serve as mediative parts. Carrying out this principle, we have established an admirable order by which even the youngest child often produces, though unknowingly, charming and symmetrical results.

In the seventh gift we pass from solid to plane, a step which was hinted at in the bricks of the fourth gift, and more definitely suggested in the sixth. The Seventh Gift. The tablets are made of thin wood or pasteboard, introduce color for the first time since the first gift, and show the one-inch square, the right isosceles, equilateral, right scalene, and obtuse isosceles triangles. Very beautiful designs can be made with the tablets, and they offer such facilities for instruction in plane geometry as to warrant their systematic use in the school.

The slats of the eighth gift given for the play

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of interlacing, form the transition from the plane
The Eighth Gift. to the line, resembling the latter, although, owing to their width, still occupying space as a plane. The staffs or sticks (also eighth gift), representing the embodied line itself, facilitate the elements of drawing, serving as movable outlines of planes. The slats and sticks are to be looked upon as the divided plane in order to adhere to their connection and relation with the form from which we started.

The stick or straight line is then followed by
The Ninth Gift. the ninth gift or curved line shown in whole, half, and quarter circles, or wire rings of three different sizes.

The stick and ring might perhaps be considered as one gift, illustrating the straight and curved lines. The former is especially well calculated for number work, and both gifts offer abundant materials for invention, while the introduction of the curve is of great advantage as offering relief to the rectilinear character of previous designs.

The last link in the chain of gifts is the tenth,
The Tenth Gift. which by means of seeds, shells, pebbles, etc., illustrates the point. These are used as a direct preparation for the occupation of perforating, and serve for outlining various objects on the tables, for making lines, angles, and geometrical figures, and for general designing.

Thus the child has been guided in a logical

manner from the solid body through its divisions, and through the embodied plane, line, and point, in matter and by matter to the borders of the abstract, and if the work in the occupations has been properly done and if the other instrumentalities of the kindergarten have been wisely managed, the child is ready to build the conventional studies of the school upon the foundation of his objective knowledge.

The occupations begin with the point which closed the series of gifts, and progress toward the solid, thus tracing the other ^{The Occupations.} half of the circle of kindergarten instrumentalities. As they will be discussed in full in later chapters, they will receive only brief description here. First in logical order comes the occupation of perforating, the materials for which ^{Perforating.} are a stout needle set in a handle, and suitable sizes of cardboard. The work produced is very pretty and delicate, and with the addition of squared paper folded over the card, any lines, angles, or geometrical figures may be made, as well as objects connected with the child's life and pleasing to his fancy.

The kindergarten sewing is closely connected with pricking, as all lines, forms, and designs which the child sews must first ^{Sewing.} be perforated. With a large worsted needle and zephyr of bright hues he follows the perforated design upon the cardboard; or, the whole surface

being pricked with holes an equal distance apart, he sews out some invention of his own.

We have several kinds of drawing among our occupations, some or all of which are used in the various kindergartens. There is, first, the linear drawing, complete plans for which were left us by Froebel, and which is executed upon checkered or dotted paper, the size of the squares being now ordinarily about one quarter inch. This, with its various lengths of lines, angles, etc., leads directly to designing, and thus to the practical application of the law of mediation of contrasts. The outline drawing, performed by means of pasteboard patterns, satisfies a common instinct of children, that of tracing outlines, and prepares for later free-hand work. This is also begun in many kindergartens, some teachers using it to the exclusion of the other three varieties, and gaining most creditable results. We have also the circular drawing suggested by Froebel and worked out very completely by Miss Emma Marwedel. The preliminary work in this system is performed by means of wooden circles of three sizes (two inches, one and one half inches, one inch, in diameter), and develops into the drawing with colored pencils, of various leaves, flowers, roots, vegetables, and fruits. It is closely connected in its later stages with free-hand work, and is intended to give the child permanent impressions of the universality of the spherical form.

The materials for the Thread game, which must next be considered, are a thread of colored darning cotton whose ends are joined, and which must be moistened before using, and a wooden pointer which serves to push the wet thread, as it lies upon the squared slate, into various forms and figures.

In Paper twisting we give the child a long strip of bright-colored paper, from an inch to one third of an inch in width, which he folds twice or three times its entire length, and then bends into geometrical figures, which he interlaces, the one in the other.

Slat interlacing somewhat resembles paper twisting, though it is much less difficult, and its materials are thin, flexible wooden slats one half inch wide, which need no previous preparation. The child delights to play by himself with the slats, and soon learns to make a variety of figures with them, which hold together when carefully treated.

The material of the Weaving is colored paper mats cut in strips of various widths, a margin being left on the four sides, and strips of another shade, tint, or harmonizing color woven in with a specially devised needle to form the pattern. Color is introduced effectively here, and designing admirably provided for. We begin by weaving simple numbers, then introduce combinations of numbers, then numbers woven in a

Thread
Game.Paper
Twisting.Slat Inter-
lacing.

Weaving.

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diagonal direction, and by this means lead finally to invention.

The name Paper-cutting sufficiently explains this occupation, whose materials are scissors, and squares, triangles, and circles of white or colored paper. The papers are first folded and then cut according to fancy, or in agreement with a certain geometrical progression, and the pieces are subsequently arranged in a design by the child. He also cuts flowers, fruits, or any complete form, from the paper without folding, and mounts the work upon cardboard.

Paper folding is performed by means of squares, oblongs, triangles, and circles of white or colored paper, which are made into a great variety of figures, dependent upon slight changes in a few definite fundamental foldings. This occupation, as Edward Wiebe says, forms "a complete compendium of elementary mathematics," while it emphasizes ideas of sequence, and teaches accuracy and deftness of handling.

In Peas work, slender sticks or wires are united by points represented by peas or tiny corks, demonstrating that it is union which produces lasting formation of matter.

Modeling in clay is the last of the occupations, according to the order in which we are now considering them, and is a delightfully simple and valuable employment, as charm-

ing to children as veritable mud-pie making. It is in nowise intended to be a preparation for sculpture, but is another of the varied means which Froebel provided for the development of expression. It provides a universal language which all may understand, while it teaches the child skill in controlling both hands, quickened observation, and a knowledge of many properties of matter.

Here, then, we see the series of gifts and the series of occupations plainly laid out before us, and as they lie side by side we can readily observe their connection with each other. This, in so far as geometrical progression is concerned, is as follows :

Correspondence
between
Gifts and
Occupations.

Point.	{ Tenth gift. (Pebbles, seeds, shells.)
	{ Perforating.
	{ Eighth gift. (Sticks.)
Line.	{ Ninth gift. (Rings.)
	{ Sewing.
	{ Drawing.
	{ Thread game.
Mediation between Line and Plane.	{ Paper twisting.
	{ Slat interlacing.
Plane and Divided Plane.	{ Seventh gift. (Tablets.)
	{ Weaving.
	{ Cutting.
	{ Folding.

Skeleton of Solid.	{	Peas, work. (An occupation, and yet a union of two gifts, stick and seed, or line and point.)					
Solid and Divided Solid.		<table border="0" style="display: inline-table; vertical-align: middle;"> <tr> <td style="vertical-align: top;">Sixth gift. Fifth gift. Fourth gift. Third gift.</td> <td rowspan="4" style="font-size: 4em; vertical-align: middle;">}</td> <td rowspan="4">Variously divided wooden cubes.</td> </tr> <tr> <td>Second gift. (Sphere, cube, and cylinder.)</td> </tr> <tr> <td>First gift. (Worsted ball.)</td> </tr> <tr> <td>Modeling.</td> </tr> </table>	Sixth gift. Fifth gift. Fourth gift. Third gift.	}	Variously divided wooden cubes.	Second gift. (Sphere, cube, and cylinder.)	First gift. (Worsted ball.)
Sixth gift. Fifth gift. Fourth gift. Third gift.	}	Variously divided wooden cubes.					
Second gift. (Sphere, cube, and cylinder.)							
First gift. (Worsted ball.)							
Modeling.							

We find in both series the same logical chain of perception and subsequent representation, and the experimental knowledge resulting from both; and thus all parts and sections of this wonderful system of plays and occupations are logically united with one another, serving the child's mind as a faithful reflector of its own internal development at every step.

The admirable way in which industrial training is begun in the kindergarten, by means of the gifts and occupations, is now beginning to receive much public attention. It is, with us, the training of both hands in exactness, deftness, and neatness, educating them to do the will of the brain which stands behind them; it is training the eye to judge correctly of lines and angles, of proportion and symmetry. Undoubtedly, if industrial education is to be carried on successfully, it must be begun early.

Industrial
Training
in the
Kindergar-
ten.

As Dr. Seguin says: "The working capacities to be trained from infancy, and more technically at school are: 1, the senses to perceive; 2, the mind to receive, store, and evoke ideals; 3, the hand to execute a concept; 4, the handling and manœuvring of the instruments which extend and enlarge the operations of the hand and of the senses; 5, the coördination, and alternate subordination of the senses in the acts of perception and execution."

All these capacities we begin to train in the kindergarten, for the working capacity is "the foundation of the independence of men, of the security, moral education, and thrift of society."

Our beginning of industrial training, however, is not confined to training the hand and eye alone. From the first, we lead the child to reconstruct, to recombine, with the materials furnished him. After he has followed a dictation from the kindergartner, in which blocks, gayly colored sticks, or bright squares of pasteboard, are arranged in a symmetrical design, he is required either to add to the figure according to his own fancy, to take it carefully apart and construct it again, or to construct an entirely new figure from the same materials.

After he has been in the kindergarten a sufficiently long time, his greatest delight is to "invent," to make new combinations and designs.

Practical men, who have looked carefully at

these inventions, have often said that many of them would serve admirably for designs in wall-paper, tiled floors, oil-cloths, carpets, etc., — designs — all these — coming from the child's own brain, and worked out by his own fingers, without assistance or suggestion from the kindergartner. Does not this promise well for the artistic workman of the future, when the child of five to six years is able to accomplish such results through industrial training?

Thus we see that in the kindergarten not only do hand and eye begin to receive their education, but new ideas, new industrial types, begin to form in the mind. From infancy the hand is trained to execute the ideas of the mind. Without ideas, what avails a skilled hand, save to give form to the ideas of others? Without a skilled hand, of how little use ideas, when so few can be found to execute them properly? So let us train hand and eye and mind together — hand and eye, willing and deft servants to the mind, which must ever be master.

But valuable as the training of eye and hand may be which is given in the kindergarten, valuable as promises for the future the designs and productions of the children, yet it must be remembered that the true worth of the gifts and occupations lies neither in the opportunities they offer for industrial training, nor for artistic development.

True
Worth of
Gifts and
Occupations.

Their prime value lies in the fact that they afford full and free development for creative self-activity, for the expression of the inner life of the child, and that, in accomplishing this end, they utilize the activities and interests which are natural to childhood.

PERFORATING

Materials : A stout darning-needle set in a wooden handle ; cardboard of any desired shape or size, either checkered, dotted, or plain ; a cushion of felt, carpet, or blotting-paper.

PERFORATING is defined by Froebel in his "Complete Statement of the Means of Occupation used in the Kindergarten," as the combining of points into lines and thence into figures ; or the outlining of patterns, by making rows of pin-holes on a penetrable surface.

Perforating defined.

It corresponds with the primeval art of puncturing (especially tattooing) of the earliest savages,¹ and has always been in use in the nursery.² Every one who has seen much of children must have noted that they seem to feel a certain fascination in thrusting pins through paper, either following the

A primeval art and a universal occupation of children.

¹ Hermann Poesche.

² "Could Time, his flight reversed, restore the hours,
When, playing with thy vesture's tissued flowers,
The violet, the pink, and jessamine,
I pricked them into paper with a pin,
And thou wast happier than myself the while,
Would'st softly speak, and stroke my head, and smile."

WILLIAM COWPER,

On the Receipt of my Mother's Picture.

outlines of a picture, or working out their own ideas. This is caused no doubt by the delight of overcoming the slight resistance of the material, of hearing its pleasant "crunch" as the implement goes through, and of expressing their self-activity in so simple a manner. Froebel notes in some of his writings that after the hole is made they delight to hold it up toward the window and let the light shine through, making "little stars," as they call them, and all kindergartners will corroborate the observation. This pleasure is perhaps akin to that they feel in looking at the light through the lattice of their fingers, and to that universal delight, of American children at least, in the "Pin-a-Penny Poppy-Show," which, as one looks back to early childhood, was as alluring and as well worth the price of admission as any grand spectacular performance has proved in later years.

As Perforating has, more than any other occupation, been made the subject of general criticism, on account of its supposed tax upon the eye, it has gradually been withdrawn from kindergarten after kindergarten, until now it is never seen among the babies, and seldom with the older children in any free or public institution, and in many localities has not been used at all for years. It is still carried on in some private kindergartens, however, where the smaller number of children admits of more thor-

Perforating
less used
than for-
merly.

ough supervision ; but even there is not a regular occupation, being used chiefly for Christmas work, or the occasional decoration of some object which is designed for a present. As it is unquestionably delightful to children and has certain points of value which are shared by no other occupation, it merits, if this be possible, such modifications of its present form as seem desirable and necessary, and speedy return to its place among the kindergarten materials.

As it is the first in the series of occupations which Froebel devised, being the opposite equal of the concrete point in the gift series, it shall be considered here in detail, the various objections against its use being reserved to the latter part of the chapter.

When and how the Occupation is to be given.

If given at all, it should not be more than once a week and to the older children only, certainly not at any time to those under five years. The class should be seated so that the light may fall from the left and back upon the paper (though this direction of course refers to all work in school and kindergarten, and not to pricking only), and it should never be carried on for more than ten minutes, and not at all on dark days. The needles should be strong and coarse, and the checkering of the paper or cardboard should never be less than a quarter inch. We must remember that the occupation is a constant practice in taking aim, and that this must be both wearisome

and dangerous, if too long continued, or given under any but the best conditions. We should often discuss the materials which the children are using,—the steel and wood of the needle, the fabric of the cushion ; and in this, as in all work with paper or cardboard, trace the various processes in its manufacture, and note the different materials of which it is composed. This will best be done by means of a story, for the children care little for bits of encyclopædic lore administered in the form of pellets. Hans Christian Andersen's "Story of the Flax" is appropriate for this purpose, with a little adaptation, and it is better to use such a classic in child literature than to attempt to frame a new tale on the same lines.

The card for perforating is generally covered with paper on which the pattern is traced, that is, if a life-form of any kind is to be made. Such patterns can be manifolded by means of the hektograph or mimeograph, and thus much labor saved to the kindergarten. If lines, angles, geometrical forms, or symmetrical figures of any kind are to be perforated, squared paper is used to cover the card, which is removed when the design is finished. Checkered cardboard may be substituted if preferred, and the paper cover dispensed with, though the effect in this case is not as pleasing.

The child must be taught to hold the pricking-

needle properly, and to drive it vertically through the card. If it is driven obliquely, the edge on the under side of the cardboard will be irregular, and the hole itself be out of line and wrongly shaped instead of perfectly round.

If the cushion on which the child pricks is too thick and soft, the needle is driven deep into the card and the holes made appear rather large and coarse. For this reason, blotting paper makes a useful cushion for the older children, and grown persons who wish to do the fine work which is so beautiful may perforate upon a folded towel, or a board of some soft wood. If it is desirable to manifold the design for the use of several children in sewing, three cards may be perforated at the same time. It is not best, however, to prick more than this number at once, as the holes in the lower cards are thus made too deep and the paper forced out too far around them.

It will be seen at once, that the work will vary very much according as a coarse or fine needle is used, and when both are employed on the same pattern, very pretty effects, simulating light and shade, may be produced. Such work, however, is emphatically not for children, and is only of value in decoration, and as showing the possibilities of Froebel's materials when developed to their full extent.

As perforating was formerly used, the earliest exercises, for which full preparation had been

made by point-laying, consisted in making holes at the intersecting point of all the vertical and horizontal lines upon the squared paper or cardboard. This would appear to be a very simple process at first glance, but it is only necessary to try it once with a class of small children to be thoroughly convinced of the bliss of ignorance in this regard. This perforating was first done up and down the cardboard, following the direction of the vertical line (the first one introduced), and then horizontally across the card. Next, points were combined into vertical and horizontal lines, one space or quarter-inch long, three holes in a line; and here entered apparently insurmountable difficulties in regard to leaving the proper interval between these lines, — difficulties which were seldom overcome in less than three or four exercises. Then angles, borders, squares, two-space vertical and horizontal lines and their combinations, were introduced, and finally the whole school of linear drawing carried out, the exercises being interspersed with the occasional perforating of object-forms. Now, however, whenever in our knowledge the occupation is used at all, life-forms are first introduced, as appealing most directly to the child's interest and sympathies, and these are closely connected with the gift-work, — during the study of the ball, for instance, circles, leaves, fruits, and vegetables being perforated. These are all

drawn on a large scale, and the holes made some distance apart, reducing the possible injury to the eye, at least, almost to a minimum. Lines, angles, and geometrical forms, which must depend for their proper execution upon the checked paper, are almost entirely done away with; as such work is much finer, requires greater accuracy of aim, and proves a greater strain on the eye and on the finer muscles of the hand and fingers. Children are now seldom allowed to perforate their own sewing cards, unless the oldest class, for instance, volunteer to prick circular sewing for the smaller children, or some symmetrical design of their own invention which they propose to use as a present.

The various forms produced by pricking, if the work is well done, are really exquisitely delicate and pretty; the reverse side, on which the broken cardboard is lifted above the perforation, being considered the right side, and so mounted when finished. All sorts of life-forms can be made with this occupation, ranging from fruits, leaves, flowers, and vegetables, to coral, sea-weed, and snow-crystals; to birds, chickens, lambs, or any other animal; to houses and household furniture, faces and figures, and even to complete pictures, whose outlines are clear and simple, and without too much detail. The wide range thus given allows us to connect the perforating with any subject which may be engaging the children's

attention, and thus to follow the invariable rule which applies to all kindergarten occupations, namely, *that the objects which the child pricks, or sews, or moulds, or cuts, should be in line with his dominant interests, and never arbitrarily selected and presented by the kindergartner.*

There is a certain variety of this occupation known as raised, or embossed pricking, or pricking in relief, which is particularly exquisite. Suppose, for instance, that a swan is to be made in relief. The paper is folded over the card and a clear outline of the bird drawn upon it, his wing and tail-feathers, his proudly arched neck, his eye and beak and swelling breast all simply represented, and all confusion of details omitted. This outline is then perforated with a fine needle, the holes being made quite close together, the paper is taken off, and the swan appears upon the card. This is now reversed, and with a very fine needle (No. 10 or 12) we perforate, with holes set close together, the entire form. This of course depresses, or makes hollow, the one surface and elevates the other, so far as to make the figure stand out in relief above the plain cardboard. Instead of one needle set in a wooden or bamboo handle, we may use a large cork and set a number of needles in one end of it, which enables us to "raise" the pattern very quickly, if it is a large and simple one. The work produced by this embossing is

decidedly more beautiful than that of any other occupation, but it is just as decidedly only safely to be done by grown persons. If a fruit, or flower, or autumn leaf is to be embossed, it may be colored with crayons, or painted in water-colors before raising, and this effect is really so exquisite that it should be seen to be appreciated. The slight breaking of the painted surface seems to soften the color, and almost to add the bloom of nature to the soft cheek of the peach. If a picture of a farm and out-buildings, with snow-covered roofs, fences, and surrounding trees, be painted, the portions on which the snow lies may all be raised, the remaining parts of the picture being outlined only, and thus a charmingly realistic effect be produced.

A large head of the hero of the "Story of Patsy," was once beautifully painted in water-colors by one of the students in our Training School, was surrounded by a circular band painted in dead-gold, and then the whole picture raised, the effect when completed being most unusual and beautiful. Calendar and picture frames may be charmingly ornamented with pricking in relief, as well as other articles, such as lamp shades and glove-boxes. If letters or figures are placed upon these decorations, it must be remembered that they, as well as their positions, must be reversed before perforating, as, when completed, the lower side is the right side.

Perforating has certain values, which it shares with all the other occupations, and which are, in brief, that it satisfies the creative and expressive needs of little children, which, Froebel says, are their most essential needs, that it gives manual dexterity, deepens mathematical perceptions, and cultivates a love for the beautiful. Its especial and peculiar values are, that it leads the child to see with exactness, trains him in eye-measure, thus enabling him to judge correctly of distances and directions, and thoroughly impresses forms upon his mind. Before the child can draw a leaf, he can prick the holes at proper distances in the pattern prepared for him, and in seeing the outline grow under his fingers, he gains a distinct idea of it, and one which will be indelibly impressed on his memory. The process is slower and more laborious than drawing, and therefore, perhaps, better remembered. The occupation points, too, with relentless finger, to the absolute relation of cause and effect. A wrong line in drawing may be erased, a wrong stitch in sewing cut out, a wrong strip in weaving removed, a wrong touch in modeling smoothed over, but there is no erasure, cutting, removing, or smoothing with incorrect pricking. The hole may be partially covered by scratching the cardboard over it, but the mark may not be removed entirely, and is thus an invaluable object-lesson to a careless child.

Value of
Perforating.

The objections to perforating we shall give in full detail, since, though they apply especially here, they are of certain weight as regards various others of the Froebel occupations. The whole question hinges upon the fundamental versus the accessory muscles,—how far the latter are used in the kindergarten, and whether their too precocious use will not result in deterioration and disease. The first developed organs of the child are called fundamental; those developed later are called accessory. The shoulder muscles are called fundamental; the finger muscles accessory. At birth nerve-centres are already developed that cause the shoulder muscles to move. The finger muscles do not act till later, which seems to indicate that the latter should not be exercised until there is a suitable basis in the former. Viewed in this light, it is evident that much work, both in school and kindergarten, is unsuited to the early motor ability of children.

Dr. C. C. Van Liew says, in an article on the "Relation of the Kindergarten to the Primary School:"¹ "I wish to call attention to one line of work, which kindergarten and primary school in recent years have pursued in common. I refer to those exercises requiring minute motor activity, such as plaiting, sewing, drawing to patterns, etc., which have constituted prominent occupations

¹ *Educational Review*, February, 1895.

for the child. In the light of certain data which child-study has revealed, concerning the physical growth and motor powers of the child between the ages of three and eight, these occupations are undoubtedly unsafe. During these years the child's physical activity, and his power of motor control, involve chiefly the body as a whole and the movements of the larger members. The whole arm is controlled more accurately and easily, and hence with much less expenditure of nervous force in proportion, for instance, than merely the forearm, hand, or fingers. The fingers, especially, require a delicacy of control, and a minuteness of movement, either in writing or in the occupations just mentioned, that are far beyond the natural power of the child at this age; hence the attempt to perform these activities is apt to result in an exhausting and injurious expenditure of nervous force. The slow diffusion of nerve energy and control, during the kindergarten and primary grade ages, also demands that there be a gradual, rather than an abrupt, approach to the exercise of such occupations."

To this we may add Preyer's remark, in the "Mind of the Child." "One thing only," he says, "I would lay down as settled, viz., that the *protracted* occupation of little children with fine work, such as the pricking of paper, the placing and drawing through of threads, etc., must be injurious to the eye. The prolonged strain of

looking at near objects is for children from three to six years old, even in the best light, unqualifiedly harmful. All strain of attention to near objects in the evening, when lamplight must be used, should especially be forbidden, otherwise the apparatus of accommodation will get a one-sided use too early, and near-sightedness will be invited." ¹

The motor ability of children at different ages has only lately become the subject of serious study, and it must be continued much more fully before we can judge absolutely what occupations are best suited to the kindergarten and school years. Mr. J. A. Hancock, late of Clark University (Worcester, Mass.), has conducted various investigations as to the motor ability of children on entering school, and from his data we may make some inferences as to our work in the kindergarten. A number of tests were made, among which were certain which attempted to determine the ability of the child to control the muscles of the arm and forefinger. "The ratio of control of man and child was 1 to 4.5 for the shoulder and 1 to 5.8 for the finger. While these results may not stand with further research, it is safe to infer that motor control in the adult, so far as the muscles are concerned, is from three to six times greater than that of the child in the first year of

¹ W. Preyer, *The Mind of the Child*, Part I., "The Senses and the Will," page 60.

school life. Data obtained from the general tests mentioned seem to justify the inferences that children have far less control of their muscles than adults; that generally the girl at the same age is steadier than the boy; that children early learn to make movements involving large muscles; that they succeed easily in large movements of some degree of complexity; and that the order of development of control is from the centre toward the periphery,— body, shoulder, arm, forearm, and hand. In the hand control, the index finger takes precedence of the others, while fine and complicated movements are made with difficulty.”¹

Professor H. H. Donaldson of the University of Chicago, in a recent article on “The Growth of the Brain in Relation to Training,”² makes the following remarks, which serve to add weight to the previous arguments: “The direct bearing of these relations on training may be briefly indicated by reviewing the control which we possess over the movements of the arm. In infancy the control of the arm is very imperfect, and it is moved as a whole, the principal motions taking place at the shoulder joint.

“We should infer from this that the cells which control these muscles are earliest developed, and such is apparently the case. Now in a very gen-

¹ Dr. Wm. H. Burnham, of Clark University.

² *Transactions of the Illinois Society for Child-Study*, Vol. I., No. 1.

eral way, the processes of development and organization in the cells which control the movements of the other joints of the arm even to the joints of the fingers, follow in regular order down the limb, and the cell-groups in the brain stand at regularly increasing distances. We should expect therefore what we find, that the power of control gradually passes down the limb, so that complete control of the fingers is the last to be naturally attained."

Now, if all these observations upon the development of motor ability are correct, or if they are correct in the main, then it is clearly wrong to give either in kindergarten or primary school any work which involves a complex coördination of the finer and more delicate muscles, for "any form of early specialization which leaves unexercised and untested considerable portions of the central system accomplishes the end it gains at the risk of overlooking the best capacities of the individual and of disturbing the nutrition of the nervous system as a whole, by an immoderate exercise of limited portions."

It befits us to consider, when we study the possible disastrous effects of a too precocious use of the finer muscles, not only the healthy, normal child, but the one who is abnormal, or nervous, or just recovering from illness. Overstrain of any kind here is doubly dangerous, as it may so easily lead to chronic disease and loss of power.

In Edmund Lear's famous "Nonsense Book "

there is a certain recipe for making an "Amblongus Pie," in which, after long and careful preparation of the ingredients, elaborate compounding and scientific baking, the whole mixture, when it has reached the point of exquisite completion, is to be

What
Changes
are desira-
ble in the
Occupation.

"thrown out of window as fast as possible." One is forcibly reminded of the recipe in reading this chapter on Perforating, for after dwelling at some length upon its beauty and value, argument after argument, piled one upon the other, has been brought forward against its use. We do not in reality feel, however, that the occupation need be altogether abolished, for it seems to us that certain modifications might be made in regard to the size of the needles used, the squaring of the cardboard, etc., which might render it perfectly harmless while retaining all its valuable and pleasing features. To do all the work on a larger scale, so that the fundamental muscles and centres may be called into play, instead of the accessory, would violate no principle of the kindergarten, but would only be such a modification of the occupation as seems required by our growing knowledge of the psycho-physical nature of the child.

SEWING

Materials: A large worsted-needle with blunt point; split, single, and double zephyr of the six colors, their tints and shades; card, Bristol, or pasteboard of any size and color, with the desired pattern perforated upon it.

THE employment of some sharp-pointed instrument attached to a thread of various substances, for useful and decorative sewing, is one of the most ancient and universal employments. The tool may be a thorn, or a needle fashioned from wood, bone, or steel; the thread, a tough grass, the fibre of a leaf or tree, the sinews of an animal or strips of its hide; or it may be the product of the silkworm, the flax, or the sheep, — yet all have been used in much the same way and for the same purposes since our primeval ancestors first made holes in the skins they wore and drew them together for a more complete covering.

And as it is now, so has it ever been in regard to the two varieties of sewing, — for use and for ornament. Even among uncivilized tribes and semi-barbarians, we find their scanty clothing embroidered with bright colors, and we know the art to have been one of the earliest employed by the Eastern nations.

Sewing
one of the
earliest of
Arts and a
favorite
Nursery
Employ-
ment.

Children, too, readily take it up in the nursery, partly by inherited instinct, perhaps, and partly by imitation; and a needle, a stout thread, and a piece of cloth, which is straightway drawn up into surprising shapes and strange bunches, will often keep a little child amused and happy for many minutes together.

The fact that Froebel's occupation-materials contain nothing new, but are based, on the contrary, upon the traditional employments of childhood, is one of the strongest arguments in their favor, for they must have been wholly wrong from a psychological point of view, had they been evolved from his own mind instead of devised from a careful study of the playing child.

When we consider the attractiveness of sewing, in itself, and the joy with which all Attractive-
ness of the
Occupation. little children greet its appearance in the kindergarten, we may be well assured that it contains a vast field for the gaining of elementary knowledge, if rightly used and systematized. The mere placing and drawing in and out of the needle, would, of course, have no educational value in itself, though it would give to both girls and boys a valuable dexterity of hand, not only for future needlework, but for any sort of manual labor requiring delicacy and skill. If, however, we look upon the occupation and apply it, as another attractive means of deepening the impressions of form, or outline, and color, upon the

child's mind, and of familiarizing him with the special characteristics of the objects he sees about him, it assumes at once a more important position.

One valuable feature of kindergarten sewing is the comparative simplicity with which its beginnings may be made. If weaving or paper-cutting, for instance, were given on the first day the child entered the kindergarten, he would fail a dozen times before accomplishing the results for which he aimed, and repeated failure is not easily borne nor understood by a little child, neither is it favorable to development at this time of life. We all feel it necessary to grasp perfection occasionally, in order to gain courage to keep on, and if this be true of maturity and experience, how much more true must it be of the undeveloped human being, of the "soul in the bud."

Shy, fretful, unhappy, nervous little pupils in the kindergarten are enticed to industry more frequently with this occupation than with any other. The paper and pencil are too familiar, and associated too intimately with the arduous labors of older brothers and sisters at their writing and ciphering; the square piece of colored paper always seems to appall them when it is first given for cutting or folding, but no child ever draws back or refuses the cardboard, with its pretty drawn pattern and needle already threaded with scarlet worsted.

Perforating and sewing are closely connected employments, as has been shown in the previous chapter, the points of the one occupation being joined by the threads of the other, and thus lines of every variety produced. The practical working of the law of mediation of opposites is here shown, and runs as clearly through all the occupations as it did in the gifts, showing itself in contrasts and connections of color, form, position, direction, and dimension, and in all the designs and figures which the child produces in his free play with the various materials.

The pattern for sewing, if it be a life-form (that is, any object, either animate or inanimate, connected with the child's experience), is first drawn upon a paper which is folded over the card and then perforated. If the sewing be intended for young children, the perforations are made as far apart as is consistent with preserving the outline of the object. If lines, geometrical figures, or symmetrical designs are to be perforated, squared paper is used to cover the card; or if checkered cardboard is employed, no paper cover is needed. If the patterns of either forms of knowledge, life, or beauty are at all elaborate, it is best to draw them lightly with a pencil after pricking, or at least to outline any portion where the design is not clearly shown.

A sewing card perforator¹ has lately been invented, which bids fair to be of the greatest assistance to kindergartners in preparing for sewing. The machine is strong and simple, and allows the perfect perforation of half a dozen cards at the same time. The holes made are large, round, and exact, and as the board is cut completely through in perforating, there are no rough and broken edges on the wrong side. Not only will it be the greatest saving of time and eyesight to the kindergartner, and will produce more perfect work, but the size of the perforations admits of the easy use of single zephyr and very large needles, thus removing the only reasonable objection to kindergarten sewing, so far as the older children are concerned, at least.

The child must learn to work upon his sewing without turning the card over each time, although of course he must turn it somewhat in order to see where to place his needle. In making the circle, he should sew in and out all around, the first time, "leaving the gates open," as we say familiarly, and then sew back again and close them. This seems an easier method for the child, and is an economy in worsted. The younger children commonly have their needles threaded and knotted and the thread tied in, but, as soon as practicable, they should be taught to do this work

¹ The Louise H. Orwig Sewing Card Perforator. (J. Ralph Orwig, Des Moines, Iowa.)

themselves, as it is not at all difficult when we consider the large eyes of the needles now in use.

It is always wise to converse with the children about the materials they are using, for thus they learn to treat them with greater care and — still more valuable lesson — begin to trace the relation of their own employments to the great industries of the world. In connection with their steel needles comes a description of iron-mining; with the cardboard comes the story of the making of paper; and with the worsted all sorts of fascinating tales and pictures and songs, of sheep-washing and shearing, of faithful shepherds and sweet white lambskins, and wise, bright-eyed shepherd dogs. If the children of our city kindergartens could once see a sheep, and note his size and feel his thick wool, then all this conversation would have a solid basis on which to rest. Failing the sheep, however, we may bring his wool to show and to handle, as well as some “rolls” of the wool as it is prepared in the mill for spinning. Could we introduce a spinning-wheel to the kindergarten, — and this is quite possible, in New England at least, — we might show the children the charming process of converting the “rolls” into yarn, and such an experience could never be forgotten or erased from the mind.

The first worsteds in sewing are commonly

*Discussion
of Materials
of the Occu-
pation.*

selected by the kindergartner in accordance with what experience has taught her to be the favorite colors of children. Later on, when their plays and experiences with the first gift balls and supplementary materials have been more extended, and when they have some practical knowledge of colors, we should provide them with worsteds of every shade and tint, and give them the fullest power of choice, guiding them to make harmonious arrangements. Here they will show great individuality, selecting their favorite colors and combinations, and often clinging to them through a whole series of symmetrical designs.

In sewing forms illustrative of animal and vegetable life we should be careful that the children associate the right color with each object. To be sure, the four or five year old child cannot make his work high art, but we can at least suggest that pink horses, blue leaves, and green pussy cats are not true to nature; and lead him to make his pictures as real as possible. Often he selects the worsted because it is pleasing to his eye and gives no consideration to the color of the object he is to sew. A question from the kindergartner or a suggestion of disapproval from the other children will frequently set his mind to working in the right direction, but if he still insists, for instance, upon sewing in bright yellow the turkey on his card, it may well be doubted if

Choice of
Colors in
Sewing.

he has ever seen that famous bird, and one should straightway be presented to his observation, if possible. Failing that, a colored picture may be shown, and thus the mistake rectified.

There is some discussion among kindergartners as to the advisability of coloring the life-forms in this occupation, the point Coloring the Sewing. at issue being that as sewing only represents outlines of objects, it causes confusion in the child's mind if they are so painted as to represent surfaces or solids. This point we shall not attempt to settle here, but whether or not coloring be a vicious practice it is certainly very much enjoyed by the child; and if he is allowed to paint the form himself with water-color or crayon it would seem as if he might thereby gain a clearer idea of the real appearance of the object.

In this, as in all other occupations, the child should himself remedy any mistakes The Child to remedy his own Mistakes. he makes through haste, or impatience, or carelessness. Of course it is the kindergartner's duty to see that his hands are clean and his table free from dust before he begins work, but if he drops his sewing on the floor and soils it, he must be given bread-crumbs or india-rubber and taught to make it clean; if he jerks the worsted through the cardboard so as to tear it, it must be mended with mucilage and paper; if he loses his needle, he must try to find it again; if after he has learned to sew

tolerably well he pulls his worsted in and out of any holes in the card without regard to the pattern, he must patiently take it out again and be ready to begin work properly next time. The teacher who corrects all his mistakes for the child is kind in the present only to be cruel in the future,—she ill prepares him for later school work and still less for complete living. The lesson of cause and effect is better learned early than late, and a few tears, a moment's irritation, a fit of contumacy, are not so hard to suffer now as remorse and repentance would be by and by. We must inevitably bear the consequences of our own errors in maturity, and if we may learn to avert them by a little experience in youth with concrete things, then blessed the teacher and the teaching. If, as Aristotle said, we learn to play upon the harp by playing the harp and become proficient in the virtues by practicing them, so the only way of becoming careful is by practicing carefulness.¹

We believe in this occupation, as it is used in the kindergarten, not only in that it leads the child to manual dexterity, cleanliness, careful artistic labor, sense of color, harmonious arrangement, and symmetry of design,

¹ "Whoever spoiled anything at Keilhau had to see that it was repaired. A boy having broken a window in carelessness or mischief had to take the frame on his back and carry it, in whatever weather might be, to Blankenburg, a distance of four miles, and bring it back repaired." (Hermann von Arnswald.)

though these would, in themselves, constitute a sufficient reason for its introduction, but as a pleasant and simple means of storing his mind with ideas of things in general, which we deem to be of use in his development.

Modeling is of course the best means of helping the child to produce a real substantial image of things in the outer world and to admonish him to look more closely to distinguish the differences between them, and bring them out in the plastic clay which shapes itself under his hand; but next to modeling, sewing is perhaps the most valuable aid in producing the same effect.

Visitors very often smile with surprise at seeing boys as well as girls sewing in the kindergarten; but as the idea is obviously not perfection in needlework, there is no reason why it should not be practiced by all. Boys certainly require skillfulness of hand in their future labors, and they enjoy this method of gaining it as well as girls.

Sewing is constantly used as a sort of interpreter of the occupations of stick-laying and drawing, working in the same field, and by its remarkable adaptation to childish desires, making a most forcible and definite impression of the instruction we wish to convey. The three occupations should be so thoroughly connected that all sewing of lines, angles, and geometrical figures should be an outgrowth of previous experiences with sticks, rings, pencil, and paper.

We can see that in sewing, as in all other occupations of the kindergarten, we should follow the plan laid down by Froebel in his system of gifts, that is, the uniting of forms or outlines of knowledge with forms or outlines of symmetry in order that no inborn faculty of the child may lack its proper development. Therefore, we use a so-called "school" or course of lines, in which, as in linear drawing, a certain logical plan is followed, and also a system of outlines, which, carefully arranged and graded, appeals to the child's fancy and imagination and leads him to inspect like objects in nature.

In the school of lines, angles, and geometrical figures we cannot be too careful about the order of procedure, nor too judicious in forcing new ideas upon the child's mind before he can properly comprehend them. Let him begin his work in this occupation by sewing a succession of pictures of the first gift balls in the appropriate colors. Afterwards he may sew outlines of rounding and round objects, such as peaches, cherries, apples, which will supplement appropriately his ball lessons and plays. A complete series of forms for circular sewing, called the "Botanical Sewing Cards, or Childhood's Fairy Land of Leaves and Flowers," was worked out by Miss Emma Marwedel. This begins with various circles in which form, color, place, and direction are illustrated, and progresses first to circles in comparative relation

to natural forms, as fruit, vegetables, and leaves, and then to the experience and making of the divided circle, which leads to the similar division of flowers into petals.¹

Of course the number of cards sewed in each design must be decided by the kindergartner herself, who sees and understands the child's capacity; if he is deft and intelligent he may proceed from one design to the next. Although the curved line drawn by the aid of spaces or dots comes latest in Froebel's school of linear drawing and sewing, it is placed there only because it is difficult for the child to make it properly or use it in designs successfully. But, long before he is able to draw curves unaided, he can sew curving outlines drawn for him, and it is appropriate that he should begin work with these because they are all connected with life forms and in line with his study of the gifts.

When it is time to begin the linear sewing, and that date depends entirely upon the age and attainments of the particular child, we give a course somewhat like the following. It is in essentials the same as that given by Froebel, though considerably abbreviated, and would be still more shortened by some kindergartners and probably lengthened by others.

¹ Fully described in Emma Marwedel's *System of Child Culture and Childhood's Poetry and Studies*. D. C. Heath & Co.

LINEAR SEWING.

Vertical lines of one space. (The length of the space is optional.)

Vertical lines of two spaces.

Vertical lines of one and two spaces.

Horizontal lines of one space.

Horizontal lines of two spaces.

Horizontal lines of one and two spaces.

Horizontal and vertical lines and their combinations.

Diagonal lines crossing one and two space squares in both directions.

Combinations of diagonals of squares.

Diagonal lines crossing vertical and horizontal oblongs.

Combinations of these diagonal lines.

Curves used in various ways.

Combinations of curves in circles and ovals.

Outlines of geometrical planes.

It is again a matter for the judgment of each kindergartner whether the child shall sew an entire card of one-space lines, for instance, or shall devote half the card to these and half to the two-space. In our opinion, however, the linear sewing may be considerably abbreviated from its early form as used in the German kindergartens, without any detriment to its real value.

We must remember that during the execution

of the school of lines the children are to have ample room for invention, which they may execute first in drawing and then transfer to cardboard, or may "sew out" upon the card itself, which should be perforated for that purpose at the corner of each square. They must also have an opportunity to work out any impressions they may have received from objects around them in Nature; else, by constant use of straight lines they will grow mechanical, and the imagination and love of beauty will lack proper development. The selection of objects to be sewn depends upon the central thought of the week, month, or term; in other words, upon the dominant interests of the child, and is never to be arbitrarily selected by the kindergartner. If she prepares for him any object of which she has a good pattern or which pleases her taste, it may be as far removed from his present thoughts as Dan is from Beersheba. If this be so, even though the form be carefully explained and a little vitality thus injected into it, it will be so out of the current of thought and feeling as to be of little educational value, save perhaps to the hands and fingers.

The work upon which the child is engaged needs constant question and comment from the kindergartner, else she cannot be sure of his comprehension. He may have been talking and singing of the cow, for instance,

Object Sew-
ing.

Conversa-
tion about
Work.

for quite a long period, and apparently know all about her milk, horns, hide, and meat, yet, upon question, it will very probably be found that he supposes the animal to be of the same size as the picture he is sewing on a card, four by four inches. This discouraging fact, which is not at all uncommon and allied to many others of the same character, quite justifies Dr. Stanley Hall's remark that there is next to nothing of pedagogic value, the knowledge of which it is safe to assume at the outset of school-life.

The child has now no difficulty with invention if he has been led in the right direction, and has been allowed freedom in which to expand all his possibilities, those inborn possibilities which seem to be in every child. Unless we can develop inventive ability in every occupation, we have stopped short of the true ideal; perfect work is not enough, it is not even especially to be desired; the purely inventive work of the child is the only real test of the value of our teaching.

We should not naturally expect perhaps to see inventive power, and a knowledge of the art of designing, in the poor little denizens of wretched homes, barren as they are of artistic influences, but we do find and develop just that in the free kindergartens, through these wonderful appliances of an educational system which works through the heart and soul to the mind and

fingers of a child. We may not call these products of infantile skill true *inventions*, perhaps, since that word would imply a more conscious use of power; but we may think of them as "findings" of the child.¹ He has really found a new and beautiful combination of the old and familiar lines, and it is his own. He becomes the tiny Columbus of a new world of art. Who can doubt that this glimpse of the beautiful will remain as an ideal? Who can doubt that when the poor little one has once experienced the joy of creating he will long to feel it again and again, and be more impatient of mechanical routine and joyless monotony in his after work, — knowing that there is a higher and better way of working, a way in which each individual may give to the world the same old truths, indeed, but stamped with a new image and glorified by his own originality?

An aspiring teacher is proud of the visible proofs of her skill in teaching, but the best proofs of that skill are not, and never can be, visible. The child cannot bring

¹ "As soon as ideas no longer present themselves in the order in which the intelligence has first perceived them, as soon as something has become altered, — were it only one link suppressed in a series of associated images, — there may be said to have taken place an artificial mental composition, a modified conception of reality, a spontaneous work of productive imagination. These free combinations of images arise spontaneously in young children." — Perez's *First Three Years of Childhood*, p. 149.

them home in tangible form, and thus by thoughtless parents they are often quite unnoticed. We wish kindergarten work to be beautiful, certainly, but not at any sacrifice or over-exertion of the child's powers. The work, after all is said and done, is not the end, but only the means. In itself it is, like all other means, worthless, except that it has been wrought in love, patience, perseverance, and understanding. As Dr. Hailmann says, "the truly valuable results of the kindergarten are to be sought in the drift and tendency of the head and heart; they become manifest in the mode of thinking and feeling; they are known by their permanence and their growth, and they seem to be part and parcel of the child."

We speak of the greatness of the idea of personal activity in Froebel's system; and, indeed, "We learn through doing" is one of the articles of our educational creed; but the foundation of that creed lies still deeper.

Being is as much better than doing, as it is far more difficult; for mere activity is always a truncated cone; it has no point with which to pierce the highest, — and no occupation whatever, of any educational scheme in the universe, can have any moral bearing unless it is rooted in these truths; unless it is the outgrowth of the child's individual powers, and has become, not mere doing, but actual living. Therefore, if we want beautiful work we must try to touch the

springs of action, to influence the will-power, not the fingers of the child ; then he will strive for perfection himself, with touching zeal. We shall be working in him "to will and to do ;" we shall not then have to drive ; we may beckon, and he will be glad to follow.

But here let us note one thing ; we must judge children by their efforts and not by their productions. The child born with clumsy fingers probably tries as hard as his little neighbor who does everything well, and he therefore needs encouragement and commendation, instead of comparison with others to his disadvantage.

The objections to sewing from a physio-psychological point of view are substantially the same as to perforating, and are given so fully in the previous chapter as to need no repetition here. They do not hold as much weight perhaps in regard to sewing, although even here the strain of the fine work upon the accessory muscles of very young children is much to be deprecated. Since most kindergartners, however, are now awake to this danger, there is every hope that such changes will everywhere be made in the occupation as to avert it altogether. There is no reason why the sewing patterns should not be designed on twice as large a scale as at present, much larger needles used, and single instead of split zephyr be employed for working.

Objections
to the Occu-
pation.

The invention of the sewing-card perforator before mentioned allows the pricking of larger holes, and these should be made at least half an inch apart for the younger children. If the cardboard now employed does not prove strong enough for the heavy worsted, Bristol-board might be substituted, or perhaps the wee ones of the flock might use pasteboard, or leatherette glued to the ordinary cardboard, which would admit of the use of double zephyr.

The occupations in general require somewhat less concentration than the gifts, and therefore the time devoted to their use may well be one of great sociability. Free conversation should always be allowed, although in gentle tones so as not to disturb other classes. It is in these quiet, sunshiny hours when the children are blissfully happy in their employment and perfectly unconscious and unconstrained, that the kindergartner learns best to know her little flock. The bits of childish philosophy or of borrowed grown-up wisdom that drop from their lips, the odd sayings, the miniature experiences, the friendly advice and warnings to erring neighbors, the snatches of happy song, the tender words and caresses to this favored among women as she passes on her errands of help and counsel, all are so many indications of the inner life of her charges. If she represses all this gentle, lightsome play of life and happiness and content,

Sewing time
a social Pe-
riod.

and requires strict silence, wherein does the discipline of her child-garden differ from that of the military school? If the children are never to speak except when they answer questions, how are we to know aught of their inner life?

Not only conversation, but singing, too, should be encouraged during the sewing and all other occupations, always with the proviso that some neighboring family is not busy with an intricate problem that demands comparative stillness in the room. There are certain songs appropriate for each occupation which the children delight to learn, and it is an even greater proof of their joy and spontaneity when they burst into some unsuspected bit of music. If we are ever tempted to hush such songs without good cause we should recall the familiar lines:—

“Give us, O give us the man who sings at his work! He will do more in the same time; he will do it better; he will persevere longer. One is scarcely sensible of fatigue whilst he marches to music, and the very stars are said to make harmony as they revolve in their spheres.

“Wondrous is the strength of cheerfulness, altogether past calculation its powers of endurance. Efforts to be permanently useful must be uniformly joyous, — a spirit all sunshine, graceful from very gladness, beautiful because bright.”

We must remember in conclusion these important points:—

1. A piece of work must never be sent to the child's home unless it is done as well as he can do it, for sometimes our only way of reaching the parents is through this very work, coming to them as a message, and telling them how the child spends his time when away.

Closing
Thoughts.

2. The child should strive to make the wrong side of the work as neat as the right. There ought not to be any real wrong side in work, or people either! It must be different, but it need not be untidy, and to allow the little one full liberty to cross and knot and tangle and waste the worsted on the reverse of the card, so long as the face of it looks well, is absolutely to foster deception and falsity in concrete things.

3. In sewing vertical and horizontal lines, let one side of the work be like the other, so that the child's idea of direction may be clear and distinct. With vertical lines we should guide the child to sew from the top to the bottom of the card, and with horizontal, from left to right.

4. If a child has finished a card with some difficulty, and has needed considerable aid in its accomplishment, let him do another of the same kind entirely by himself, and he will observe with pride his improvement.

5. In every possible way we should impress the child with the idea that he is working for others, as well as for himself, and thus develop his better nature. This should be our aim in all these

small industries, which we deem so valuable and which are so dear to children.

The dainty cards embroidered with such care and looked upon so proudly by the little ones, may all be mounted in books for a present, or they may be made up into some pretty useful article at Christmas time, and delight the parents with the marvelous achievements of their babies. But the kindergartner must beware lest such work be allowed to remain a delight and a profit, not to the community, but to each child alone, and thus foster selfishness. He should be guided to a willingness to give up his work occasionally for the common good, and so his "benevolence and social efficiency be deeply stirred in coöperative exercises that lead him to a practical union in work with other children."

DRAWING

“Considering the importance of drawing as a part of education, one gets the assurance and conviction that his enjoyment of the physical world is beautified and increased thereby. The entire world of form and color opens itself to him. A new sense awakens, which receives the liveliest impressions. One learns to appreciate nature,—to value, love, and rejoice over its beauties.”

GOETHE.

“The love of drawing shows itself in many forms. The child draws with his finger in the air, traces outlines in the sand, makes shadow pictures on the wall, blows on the window-pane, and covers its clouded surface with his motley fancies, and even bites his cookies into the forms of men and animals.”

SUSAN E. BLOW.

“As the first step in drawing is to learn to see correctly, it is evident that all the exercises, both in gifts and occupations, prepare for the use of the pencil and chalk. As the mediation of word and object, drawing is of vast importance in its reaction on the mind, and as the soul of all technical processes, it is the indispensable basis of industrial education.”

SUSAN E. BLOW.

“Drawing furnishes a means of expressing ideas, and man first resorted to it for that purpose; but when it is perverted and fails to accomplish this purpose, it does not produce the best results. Any method that teaches words before ideas is radically wrong, and any method that teaches drawing without using it as a means of expressing or representing ideas, is radically wrong, because it leaves out that which stimulates and develops the powers of the mind. Reproducing a line without considering its length or direction does very little to increase one's power.

“That training which leads pupils to be imitators only, does little to develop thought and action. Drawing ought to teach seeing, doing, and knowing. Drawing ought to cultivate the hand and the eye, and increase the knowledge of the object represented.”

W. W. SPEER.

THAT drawing is one of the earliest arts of primeval man is a fact too clearly evidenced and too widely known to need extensive comment here. From that rude picture on the rocks by which the cave-dweller indicated man escaping in affright from the approach of some prehistoric monster, to the likeness of that monster etched on his own bones, the rebus-like inscriptions on the tombs and monuments of the Egyptians, and the hieroglyphics and picture-writing of primitive tribes, some of which are still in use, we come finally to our modern letters, which occupy the highest step in the scale of the language of signs. Picture-writing in shorthand, as it were, may still be seen perfectly illustrated by the whole written language of the Chinese, and should we trace the art of drawing from its earliest inception, we should find that its value in ornament was commonly recognized even earlier than its value as a means of record and communication, for it is a universal truth that man develops the ornamental during the infancy of every race, before the useful.¹

¹ “Following the distinct teaching of history, and particularly the teaching of prehistoric times, it is clear that the artistic faculties of human beings were the first to develop, and

Nor do we need to prove that drawing is natural to children, and is one of the first means which they use to make the inward outward, and the outward inward. A soft, smooth surface, whether it be sand, or earth, or mud, or snow, offers irresistible attractions for marking and rude sketching, even to grown people, and some of us have not even yet passed the time when a cloudy window-pane offers a fascinating field for the pursuit of art. "What child," as a thoughtful kindergartner has lately said, "from Giotto down, has not been reprimanded for defacing margins of books, the wall-paper and woodwork, in his efforts to satisfy the longing to create outwardly the pictures which float before his inward vision? It is a wise mother who destroys such idols only by supplying better ones, which in this case come in the form of suitable materials to serve this craving."

"The kindergarten cannot be too much prized for having gathered in the now scattered work and play occupations, which once kept together around the hearth children with their parents in the spare hours of the evening,"¹ and among these occupations drawing is perhaps the most valuable, as it is without doubt the most universal.

that the art of those times was always of a decorative nature, the existence of many primitive nations being only known to us by their art remains." (Professor Henry Talbot.)

¹ E. Seguin.

In all civilized nations children are now taught to draw, but the object of this instruction by all these varied methods is not, Object of teaching Drawing. for the most part, and certainly not in the earlier stages, to make artists. It is, — or it should be at all events, — the education of the eye, the training of the mind, and the cultivation of another medium of self-expression. The increased attention given of late years to drawing in our schools has proved, as Dr. W. N. Hailmann says, that “there is no child devoid of a serviceable amount of talent for drawing, that all children can learn to draw just as all children can learn to speak; and that the attention given to this subject has stimulated in our youth the tendency to choose avocations in life that call for the exercise of artistic taste and technical skill.”

We need not discuss here the merit of the various systems by which drawing is Drawing Systems. taught in the schools of the United States. The mass of literature on the subject and examples of the practical work are within the reach of all and open to the critical judgment of any person, if that person be sufficiently fair and lucid in mind to hear and read patiently and weigh carefully the arguments for and arguments against; the protestations of faith in, and heretical denials of; the attack and defense constantly going on among the champions of drawing systems. It seems to an impartial observer that

there is some good in all of them when rightly interpreted, and that there is little good in any when in the hands of the wrong person.

The lively discussion as to the systems of drawing in schools, however, is equaled and even possibly excelled by the agitation of the same matter in kindergarten circles. No one of the Froebel occupations is in so chaotic a state as drawing. Every training teacher has her own method or methods of teaching the branch which are in many respects quite unlike those of any other training teacher; every kindergarten centre is trying experiments on different lines, is casting aside old systems and taking up new ones, or possibly reversing this process; there is little agreement anywhere save in a quite general dissatisfaction with what has been done, an aspiration after better things, and a "discontent" which is perhaps, as John Richard Green says, "the only true source of progress." It is idle for the kindergartner to suppose that she can so arrange her scheme of drawing as to satisfy the artist, the artisan, and the designer, while she avoids everything which she is warned against by the physiologist and the psychologist and puts into practice all that they recommend, at the same time following out her own ideals, gratifying the child, and keeping in fellowship with the leading drawing systems. It is true that Solomon said that he that hearkeneth unto counsel is wise, but

not many pages further on he remarks that it is not good to have respect of persons in judgment. The crying need in all these matters is "still a finer common sense." While the kindergartner listens attentively to her multitude of counselors, she must at the same time retain an independent judgment of her own, and having firmly fixed in her mind certain purposes which kindergarten drawing should carry out, must herself decide what will be the best methods of obtaining the desired results.

Perhaps we should all agree, to recapitulate somewhat, that these purposes are: —

- a.* The education of the eye.
- b.* The training of the hand.
- c.* The training of the mind.
- d.* The cultivation of another mode of self-expression.
- e.* The acquirement of the fundamental principles of art.

And we should also agree that "while the hand, the brain, the eye are growing, is the time to give them the habits essential to their highest utility, such as dexterity, flexibility, skill, and powers of perception and conception."

We shall not here attempt to give our opinion as to what methods will best attain these desirable and valuable results. We shall describe the four kinds of drawing, Linear, Outline, Circular, and Freehand, some or all of which are in use in the

principal kindergartens of the world ; we shall endeavor to give the various arguments for and against them, and having presented all sides of the subject as clearly as may be in our power, leave to our readers the decision as to which and how many of the methods they shall use in teaching the art to little children.

LINEAR DRAWING

“The rolling sphere, the thrown and falling stone, the water dammed up and guided into little diverging ditches, have taught the child that the direction of the effect of power is always linear.”
FR. FROEBEL.

“As the drawing of lines precedes the drawing of figures, so also there proceeds from it the invention of forms, ascending to imitation and copying; and, further, after the pupil has made the required progress in geometry and mathematics, perspective drawing, instruction regarding light and shade, as well as drawing from nature, landscape drawing, etc., will follow. The last aim here, as everywhere, is the representation of the human figure.”
FR. FROEBEL.

“The unpracticed eye of a child will first take in only the principal lines of objects, and of these first the straight ones, before it can master curves, surfaces, and filling in. We notice the same characteristics in the people who first practiced the science of architecture. Their drawings consist of outlines, linear representations in straight strokes, without curves or perspective, as in the first attempts of children.” B. VON MARENHOLTZ-BULOW.

Materials for Linear Drawing: Checkered or dotted paper, the size of the squares in the network being commonly about one quarter inch; slates squared or dotted on the same scale;¹ slate and lead pencils, and colored crayons.

FROEBEL'S idea of drawing, and his plans for introducing it as one of the first occupations for young children, are exceedingly ingenious. The touching or handling of the solid body (the most important means

Froebel's
Plans for
Linear
Drawing.

¹ Slates are now much less used than formerly.

of acquiring knowledge during the first year of a child's life, the period of his unconscious susceptibility) is now changed to the looking at objects presented to his observation, and representing their images by drawing; so that the image of a body, so to speak, takes the place of the body itself. "In drawing, the child has reached the ideal representation of solids, by means of light and shade, marks made upon a surface to represent outlines. We have a complete transition from the tangible solid to the ideal representation of it."

Froebel's method of drawing¹ unites all other kindergarten occupations into an organic succession, by following the use of blocks (solids), laying of tablets (planes), and sticks and rings (lines). These occupations are preparatory; the laying of sticks was a sort of drawing in wood-lines, and gave to the child his first ideas of invention, by making it easy for him to devise figures in which opposites should surround a centre.

Froebel observed, with greatest love and discrimination, the nature and natural instincts of the child; and the pleasure found in scribbling, that universal instinct of childhood, being legitimately controlled and directed, is made the basis

¹ A complete description of Froebel's plans for Linear Drawing is to be found in *The Education of Man* (tr. by Josephine Jarvis), pages 209 to 221.

of kindergarten drawing, an occupation both artistic and mathematical, valuable alike to head and hand, for mental training, manual dexterity, and cultivation of the æsthetic nature. Drawing is of paramount importance as an occupation, because the child is enabled by it to reproduce quickly and easily the images imparted to his mind, and to give them a visible representation, whereby they become truly objective, and are only then understood.

The child, at the early age of three to five years, is considered by many persons to be hardly able to execute satisfactory freehand drawing; and, therefore, an intermediate step is to be provided, which will serve to develop the correct eye and steady hand. This intermediate step is supplied by the use of the net or square, consisting of any open space formed by the intersection of vertical and horizontal lines, and in this the child finds the necessary aid, for it is only an aid, and not too great a one, the dots lately introduced answering the same purpose.¹ The child must be just as painstaking with as without them, and by their help he accomplishes quite wonderful and beautiful results.

These squares, commonly about one fourth inch in size, are found on slates, as well as on paper, enabling him to find distances and compre-

¹ A triangular network on the same scale is also sometimes used.

Use of the
Network or
Web in
Drawing.

hend measurement, — training him to exactness of observation and correct eye-measure.

Froebel explains, as follows, the principle on which the drawing net, or web, is formed, and its value to the child: —

“All formation is on the condition of uniting various parts; what is united forms, as it were, a web or texture, and that exists only by the connecting of opposing lines or threads, as, for example, the web of the spider, which only thus holds together. No organism exists without such a knitting of parts, without at least approximately forming a web, even if it is not visible to the eye. The magnifying power of the microscope shows us plainly the net-like web, whether it is upon a leaf, or upon our skin, or whatever it may be. Even the smallest cell, which is not visible to the eye, consists of a web, and everything which comes into view from the invisible point can be formed in no other way than by being produced thus from different directions, or shot forth, as in the process of crystallization.

“Every web also forms a net, in a certain way, by the crossing of the lines running in opposite directions. But this net exhibits at every crossing, or every point of contact, a centre which is to be referred to some circumference, as it were, and every square of the net is a division which offers the best means of arrangement of the different parts of a whole.

“For this reason I give my children a net consisting of perpendicular and horizontal lines, which serves as a guide for drawing all forms, and regulates and facilitates the proportions of parts to a whole, and their correct and equal coördination. Painters use a net for the same purpose in their copies of pictures.

“The net affords the most intelligible image of the joining of opposites, by the opposite direction of its lines. The web of all nature’s forms is always a net, and expresses the law as the norm of all formation.”¹

This method, ingenious as it is simple, should lead the child early to copy objects of nature, for if he has gained command of his pencil, and has learned how to manage straight and curved lines, the rest is sure to follow.

The school of linear drawing, as used in the kindergartens of to-day, differs somewhat from the so-called Froebel school, but none the less carries out his ideas of development exactly, being therefore similar in theory, but proceeding in a simpler and somewhat abbreviated manner. This method beautifully supplements the other occupations and the outline lessons in sewing, stick laying, etc., and by giving the child, in comparatively few lessons, lines of different lengths and directions, enables him to handle his pencil easily and freely,

Linear
Drawing
in the
modern
Kinder-
garten.

¹ *Reminiscences of Froebel*, pages 231, 232.

and gives him mobility of hand and wrist by exercising them in every possible way.

The course pursued is much the same as that already given for linear sewing, the two occupations being pursued along parallel lines, one interpreting the other.

a. Vertical lines of one "space."¹

Horizontal lines of one "space."

Combinations of vertical and horizontal lines producing angles, squares, borders, and symmetrical figures.

b. Vertical lines of two spaces.

Horizontal lines of two spaces.

Combinations, etc., as above.

c. Vertical lines of two spaces.

Horizontal lines of one space.

Combinations, etc., leading finally to the figure which we call familiarly the "vertical oblong."

d. Vertical lines of one space.

Horizontal lines of two spaces.

Combinations, etc., leading to the "horizontal oblong."

e. Diagonals obtained by crossing one space square in both directions.

Combinations resulting in square turned on point.

f. Diagonals of two-space square.

Combinations, etc.

g. Diagonals of "vertical oblong."

¹ One quarter inch, or more.

Combinations leading to the rhomb, or "diamond" in vertical position.

h. Diagonals of "horizontal oblong."

Combinations resulting in the rhomb, or "diamond" in horizontal position.

i. Right isosceles triangles and their combinations.

Equilateral triangles and their combinations.

Right scalene triangles and their combinations.

Obtuse isosceles triangles and their combinations.

j. Curves of a circle whose diameter is first one quarter inch and is increased according to the ability of the child.

Combinations leading to complete circle.

k. Curves of oval as above.

Combinations as above.

In the majority of kindergartens where linear drawing is used at all, it is preceded by the drawing of large curves and circles as advised by Froebel in the "Kindergarten Wesen." These are executed either from patterns or freehand, to connect with the study of the ball and sphere in first and second gifts, straight lines being introduced when the cube is presented to observation.

Froebel advised beginning with the vertical line in drawing; and the kindergartners in general have continued the practice, as it has seemed to them to be earlier noticed by the child, more easily executed, and first ap-

Order of introducing Lines.

peeling in the kindergarten to his attention, in the string by which the ball is suspended. This practice is supported by Dr. Seguin, who says: "By the physiological method the child draws in the following order: from a vertical line to a horizontal, thence an oblique, a curve."¹

Against this opinion, however, must be pitted that of Henry T. Bailey, supervisor of drawing for Massachusetts, who states as explicitly: "The easiest order for children in drawing is first the horizontal, then the vertical, then the oblique line. Children need most practice on horizontal and vertical because they naturally make use of oblique lines."

This is evidently a matter which only extended observations of children will settle, and it behooves the kindergartner speedily to engage in these observations lest it prove that her method of introducing the lines may have been incorrect from the first.

The rapidity with which the child goes through the "school" of linear drawing is dependent altogether upon his ability to execute the lines and make use of them in invention. Of course, however, he is never to be detained upon a certain kind of line until he can draw it perfectly. That is not to be expected at this early age and is not even to be desired, for a gain in execution here would mean a loss of power later on.

How Linear
Drawing
may be di-
versified.

¹ E. Seguin. *Education*, page 169.

With the smaller children the lines are always to have the light of fancy thrown upon them, and every kindergartner who would be successful must have an unflinching supply of the oil by which this light is fed. A row of one-space vertical lines, for instance, is comparatively uninspiring in itself, but how fascinating it is to play they are fire-crackers and "make believe" that Teddy has pulled them all out of the package and is laying them on the table one space apart so that he can count them. If it is a review day and the one-space horizontal lines are next to be drawn, it is obvious that they are the fire-crackers lighted and thrown down and ready to go off with a delightful splutter and bang. Then the angles, of course, are parts of a frame that the men are putting up to hold the evening fireworks, and the vertical and horizontal lines combined into a border or "Greek pattern," will be the rockets hissing and zigzagging across the sky by and by. Now it is obvious to any person of sentiment that the squares must be the boxes the fireworks were bought in, and let us make a great many and have a magnificent display!

Let us remember, however, that this fanciful interpretation of the lines must have a vital relation to the leading thought in the child's mind and the subject for the month, though it is to be hoped that these last are always synonymous. There is no beauty, pleasure, nor fitness in talking

of the lines as soldiers marching, when every child is aglow with the recollection of the dancing bear he saw on the way to the kindergarten; nor of playing they are fence posts when everybody is thrilled with the Christmas spirit and thinking of the "Wonderful Tree." The kindergartner who makes these mistakes, and they are not as uncommon as might be wished, is one who has but a faint vision of the truth.

When the child is drawing, we should also, as Froebel advised, join to his action the explaining word; that is, connect the visible with the audible, and thus bring it nearer to his insight, recognition, and inner perception. Froebel says, in the "Kindergarten Wesen," "The drawing of lines, of the curved as also of the straight lines, should be combined with the explaining word or with the enlivening little song, such as the earlier ball or sphere songs, not only to awaken thereby, but also to cultivate and strengthen, the general activity of the child."

Drawing and re-drawing a line without considering its length or its direction may give added dexterity, but it can give nothing else, for it is a purely mechanical process. All these small industries of the kindergarten must be lifted from the mechanical into a higher realm and must be connected with the intellect and sympathies of the child. This view of work in the Froebel system, which is one of its distinctive peculiarities, accords

well with Schiller's words in the "Song of the Bell:" —

"And well it stamps our human race,
And hence the gift to understand,
That Man within the heart should trace
Whate'er he fashions with the hand."

The lines and their connections and developments should never be presented arbitrarily to the child and set for him as a copy, but should be the outgrowth of previous work with sticks, when he has *himself discovered*, for instance, how vertical and horizontal lines may be joined into four positions of right angles, and how these may be combined into squares, etc. The world-wide difference between precept and experience lies in the two methods of teaching.

In all this linear drawing the child should be taught to see what he is doing and see the end of the line before he makes it.

Practical
Directions.

The vertical lines should be drawn from up to down, the horizontal from left to right. If a long line is to be made, a dot should be placed at the beginning and the end, and then the two points be connected with a swift light stroke. The children should use *long* pencils, and the teacher should take especial pains to see that they do not bear upon them too heavily. The habit of erasing is especially to be condemned, and constant care should be used in guarding against it, for it is one very easily acquired. The left hand should

be employed as well as the right in many of the exercises, and drawing between the lines frequently be practiced.

In drawing the child has full scope for invention, for synthetic exercises which have been made natural and easy for him by former analysis. He has now for the first time the full delight of producing, and if his training has been careful, his designs will be symmetrical in form and exact in detail. To this end we must be especially careful in all our dictations, and in the sequence of lines and figures which we present to him. They are most valuable for concentration of mind, and are so mingled with mathematical exercises that they fix in the memory all foregoing lessons in direction and number. We should be careful that the child understands each lesson as he passes over it, we must use familiar terms for the vertical and horizontal lines, the acute and obtuse angles, until he can readily remember the proper ones, and require him often to point out to us in surrounding objects these same lines and angles, that we may be sure of his comprehension. The dictations will embrace as in the gifts, forms of life, beauty, and knowledge, and of course have a direct bearing upon the child's inventive work. The language in which they are given should be perfectly simple and plain, and we should be absolutely assured of what we want to say before we say it.

Dictations
in Drawing.

One has only to try the exercise with a class of adults and note the resulting mistakes, to be convinced of the vital necessity of clearness of thought as well as speech in dictations.

Nor should we be too inflexible and dogmatic in these exercises, but should give the child as much freedom as he can wisely be intrusted with. It is a thousand times better to dictate half the central figure and let him complete the other half than to make him follow your words to the last quarter inch, when it was perfectly obvious some seconds ago what the design was to be. Who has not seen the kindergartner holding her children by sheer force of will, — they straining at the leash meanwhile, — and insisting that the exercise shall be a dictation pure and simple, and that any hapless wight who “guesses” what is going to come next and draws it, shall erase his guess and wait for the spoken word.

It is wise now and then merely to give the centre of the design and let each complete it as he desires, for the individual variations on the same theme will be most pleasing and instructive to the children. At another time we may complete the figure and encourage the child to invent an appropriate border, or we can give the border and call for a centrepiece.

Other useful variations of the exercise are to draw a figure line by line upon the blackboard, and let the children follow, or to suggest a group-

work invention on the board, or on large paper, in which each child of the class shall take part.

Memory drawing, too, is often advisable, the kindergartner or an older child drawing a figure upon the board which is quickly erased and then reproduced by the class. Such exercises must of course be very simple at first and gradually become more complex.

The copying of the child's own inventions in sticks, tablets, and rings, is extremely interesting and beneficial, because it results in drawing on reduced or extended scales. The space on the tables being one inch square, and that on the paper being generally a fourth of an inch, he must make his calculations, and transfer the design to the smaller size, so that it will meet his eye when completed, as the invention in miniature. The use of colored crayons for the copying of these inventions, as well as sometimes for the drawing of the school of lines, gives unbounded pleasure to children, and should be considered, as Spencer says, "as the natural stimulus to the mastery of the comparatively difficult and unattractive form."

Slate drawing has grown entirely out of favor in many kindergartens, as an excessive use of it undoubtedly cultivates a habit of too great pressure on the pencil and a hard touch, which are disastrous to paper drawing. Another objection to it is that the ease with

Copying
Inventions.

Slate Draw-
ing.

which incorrect lines are erased often renders the children a trifle careless in execution; and to add another objection still, and thus pile Pelion on Ossa, it is claimed that the distribution and redistribution of slates and slate pencils is one of the most dangerous methods of transmitting disease germs. This last danger might be averted by a special slate and pencil for each child, and a thorough cleaning occasionally with water containing bichloride of mercury; but perhaps a better preventive still is to throw aside the kindergarten slate altogether, or only use it for occasional dictations.

Froebel says in regard to invention: "In no other way can human work be transformed into free activity. It can only become intellectual action out of what has been mere mechanical action, when the occupation of the hand is at the same time the occupation of the mind. . . . Every human work corresponds more or less with creative activity, and this is necessary in order to make man the image of his Divine Creator, — a creator, on his own part, in miniature."¹

The kindergartner who fails to bring out this inventive ability in the child leaves unfulfilled the highest promise of the system. People are sometimes skeptical about its existence in such tiny pupils, and doubt their ability to produce original

¹ *Reminiscences of Froebel*, page 238.

symmetrical forms and designs. They almost invariably say that, at all events, if these appear, it must be due to individual talent and not to the Froebel system. But we know the perfection of every detail in that system, how the child is acted upon, and how he responds to the surrounding influences. He understands perfectly, though unwittingly, Froebel's law of the connection of opposites, and without any learning of dead rules or philosophic abstractions he goes straight to the mark and creates his form, whatever it may be. To an outsider the inventive power of the children appears more curious and wonderful than it really is, for none but the initiated realize the effect of the daily training on the child; the great perfection of observation which is cultivated, the clear impressions received, the strict discipline of mind, and above all, the atmosphere of harmony and beauty surrounding him, which develops all that is æsthetic within him and makes him an embryo artist, without special effort on his part. And why should he not be so? The kindergartner is, or should be, an artist herself, in the large meaning of the word, and she is the child's daily companion and example. His play is replete with grace, poetry, and harmony, his hourly occupations are bright with color, and full of symmetry, precision, and dainty neatness. All his possibilities are expanding in an atmosphere of love, joy, sympathy, human affection, and com-

panionship; in the society of dozens of small beings, for the most part trying to be generous, kind, and lovely; literally, all the arts wait upon him, why should he not be or grow artistic? Is there not a grave fault somewhere, if he appears to have no love for the beautiful or power of producing it, after he has been acted upon by his surroundings for a sufficiently long time? Our general system of public instruction too often succeeds in well-nigh destroying the creative power in children, and all but "overwhelming and imperious genius" is crushed beneath its relentless methods, so that Art, instead of becoming the ideal of the whole race, unveils herself only to the eyes of a few.

And no art is merely ornamental; it is also useful. It has been said by experienced and practical men that in nine trades out of ten a boy who can draw well has a vast advantage over one who cannot. The subject of manual training in education is now engrossing so much attention that people cannot fail to see how admirably it is begun in the kindergarten.

Manual
Training in
the Kinder-
garten.

The training must, of course, be entirely of a preparatory nature with us, indeed it may be questioned whether, in any case, a child could master a trade during his school life, or whether it is best that he should do so; but what we desire is the training of the eye and hand in design

and the principles of construction, so that when our children come to the work of life they will not be entirely unprepared. As the director¹ of the Public Industrial Art School of Philadelphia has wisely said, "Regard for the individuality of the pupil is the thing to be constantly kept in view; to give additional power and facility to his hand, arm, eye, and brain. Give him the power to think and create anew, see that his eye is trained, his hand made dexterous, and his brain quickened, and you may trust him to learn with ease the art of handling machines or instruments of precision. He will handle and use them the better that his whole organization has been trained. Michael Angelo said, 'Man must carry his measuring tools in his eye, not in his hand.'"

That teaching children how to use their hands would be allied to developing quickness of perception and cleverness in general, great writers and thinkers long ago held to be true, and it is now being successfully demonstrated. Charles G. Leland alludes to this in an article on "Hand-Work in Public Schools," and goes on to predict that the education of the future will embrace hand-work at every stage, from the kindergarten upward. It will be artistic at first, because art is easy, but gradually it will ripen into the practical or technological.

If our youth were all familiarized with work in

¹ J. Liberty Tadd.

school, if it had been associated in their minds with art and design, it is certain that all prejudice against it as work would disappear and our American children would have less antipathy to hand-labor.

We must remember, however, in conclusion, that whatever the technical value of drawing or its usefulness as an accomplishment, its highest value, as Dr. Hailmann says, "lies in the respectful, loving nurture and development which it gives to the art-impulse of the learner."

DRAWING AS EDUCATION. ITS PRACTICAL VALUE PROVED IN GERMAN SCHOOLS AND FACTORIES.—The United States consul at Chemnitz has been much impressed with the important place which drawing holds in the schools of Germany, and has summarized the results of his observations in a report which had just been published by the State Department.

"I never knew the value of drawing," he writes, "till I came to Germany. At Mannheim its meaning as an essential part of a German education had just begun to dawn on me. I saw its importance to the jewelry trade at Pforzheim. The more I studied the question of German education, especially technical education, the more drawing I found. It is the beginning and end of all technical education.

"A good knowledge of drawing makes a boy more useful to his employer than any other branch. It is believed here that to be able to make or build anything, one must be able first to draw it. Then, again, a drawing mechanic can carry home exact ideas of things seen. It is the custom not only in Chemnitz, but in every city I have visited on the Continent, and more especially in Germany, to send out trained draughtsmen to expositions and fairs for the purpose of copying designs, new machines, etc. How well they have done their work is seen in the manufactures of Aix la Chapelle, Crefeld, Plauen, Leipsic, Chemnitz, Frankfort, and Berlin.

“The importance of this study may be seen in the many hours devoted to it from the kindergarten to the university. No other study in technical schools gets so many hours or more careful instruction. In day schools, evening schools, and Sunday schools, it is the same thing — drawing! drawing! drawing! It is an aid rather than an injury to the memory. It trains the mind as well as the eye. It is as great an aid to the reasoning powers as is logic or mathematics. It is the very essence of both. One is always dealing with relations, making comparisons, seeking exactness. Besides, a sense of the harmonious and beautiful is developed.

“What I want to point out is its practical value. The agents of houses in the United States who haunted the halls of sale in Roubaix, Lyons, and Troyes ten or twenty years ago, now come to Chemnitz, Plauen, Crefeld, Gera, and Glauchau. It was formerly four weeks in Lyons or Troyes, and one or two days at Chemnitz, Crefeld, or Plauen. Now it is four weeks here, and days in the French textile centres. I do not say that this remarkable change is entirely due to drawing and designing, but I do claim that a very large part of it is. Nor am I alone in my belief that drawing may be an excellent substitute for logic and mathematics, for I found, after I had begun this report, books published in Germany containing the same ideas.

“The best auxiliaries to the imagination or fancy are the different styles of drawing. One author claims it as the best aid to technical skill for training the eyes, the best help to an appreciation of objective and perspective forms, and the appreciation of light and shadow. It is also regarded as a great aid to the understanding, — to mental measuring. . . .

“I always find technical teachers enthusiastic over the subject. I know what opinions manufacturers hold in regard to it; I know how eagerly the creations of French fancy (*fantasie*) and imagination are copied here and made cheaper than in France and sold all over the world. By and by, with a wider development of this art, Germany will not need to go to France for ideas. With the power to put down on paper the myriad forms found in the forests and fields, to make combinations, to depict things seen by the mind's eye, will come novelties and perfect independence.”

A HANDFUL OF SIMILES ON DICTATION VERSUS INVENTION

DICTATION is the science ; invention the art of applying the science.

Dictation furnishes the means ; invention is the end.

Dictation is one of those unobtrusive agents which lie out of sight, as the root does in the ground ; invention is the blossom. The fruit is the conscious use of power in after years.

Dictation is the moving cause ; invention the effect.

Dictation is the text-book ; invention works through the book, but clothes each word with new meaning. It uses the book merely for a text, and the sermon should illuminate the text, and lift it into a higher significance.

Dictation is the ladder on which to climb ; invention the blue sky beyond.

Dictation is the eggshell, the thing visible ; invention the living thing that issues therefrom, — the life-principle.

Dictation furnishes an inward guide, a governing law ; invention lifts it up and changes it into something higher than law. If there is too much

law, the higher powers are too fully employed in obeying it, — creation languishes.

If an eggshell were too thick, the principle of life, for the protection of which it alone existed, would be stifled.

Dictation is the letter; invention the spirit. It is the letter which is in danger of killing, but the spirit giveth life.

All great achievements are the result of preliminary discipline of mind, heart, or body, except in the case of genius, which is amenable to no laws, and works according to no fixed theories; that sort of creative genius is higher than law, and can afford to do without it.

OBJECTIONS TO LINEAR DRAWING

HERBERT SPENCER, in discussing erroneous methods in drawing,¹ says that if teachers were guided by nature's hints in making the art a part of education, they would first lead the child to represent things that are large, that are attractive in color, and around which pleasurable associations most cluster. He wholly disapproves of the formal discipline in making straight lines, and curved lines, and compound lines, with which it is the fashion of some teachers to begin, and likens it to a dry analysis of elements which, in the teaching of language, has been exploded. Mr. H. Courthope Bowen, in his pamphlet on the "Education of Man," argues on much the same lines, saying, in particular, that Froebel seems to be premature in his insistence on the use of elements. He readily allows the inventiveness exercised by his plan, and thinks the checker-work full of useful suggestions, but holds that the inventiveness is far too little free, and very liable to resolve itself into what is merely mechanical. "Checker-work," he adds, "also affords but little help in exercising expression, for that to which it gives outward

¹ *Education*, pages 140-147.

visible shape corresponds but in a very limited way to what is in the child's mind. It rather suggests new things to the child than expresses thoughts already his."

The Committee on Kindergarten, and on Form Study and Drawing, presented a report to the New York Conference of Educational Workers, as long ago as October, 1889, in which the network drawing was criticised as follows:—

"Drawing should be a means of thought expression. The old network system of drawing on checkered paper should be discarded. It is wrong in principle, it cramps execution, prevents consideration of the drawing as a whole, debars the child from the free expression of thought, and is at variance with all other work of the modern kindergarten."

For those who still believe in linear drawing, however, there is a little hope, in spite of the above criticisms, and a few champions yet remain to lead them against the foe. Dr. E. Seguin, although he criticises the "bi-lateral plan," and the "too symmetrical exercises" of kindergarten drawing, defends as follows the use of the network or the dot:—

"From the standpoint of the principles, there is only one true drawing, that is from nature, instead of from others' drawings; and two methods: (a) one which leaves the field—or plan to draw upon—a blank upon which the imagination

Answers to
some of
these Ob-
jections.

images, and the hand traces the image; (b) the second method covers the plan with lines or points of reference, which serve as guides to the eye and hand. Froebel adopted this latter course, likely the easier for infants, whose hand, alert at automatism, is irresolute under the dictates of a yet confused imagination.”¹

Professor T. G. Rooper, in his study in practical psychology, called “Drawing in Primary Schools,” defends kindergarten drawing very warmly, and some of his remarks will be given in full, as his opinion, as coming quite from the outside, must at least be impartial. He says: “Kindergarten drawing on square-ruled paper is, to begin with, a happy and an absorbing occupation; were it no more, it would be valuable for this alone. But it is much more. Children can early learn from it what is the use and meaning of symmetry, and this without technical language. . . . The point to remember is, that Froebel was much interested in crystallography and its connection with geometrical forms. All kindergarten drawing which is not founded on geometrical forms is debased, and not according to the idea of the founder. Symmetry is not the same thing as proportion, but is of even greater practical value in every-day life. . . . It is my belief that it is of great consequence to establish early in the mind of a child conceptions of symmetry, such as,

¹ Seguin's *Education*, page 169.

I think, drawing on square-ruled paper leads to. . . . We have seen how large a share the mind has in combining the impressions which it receives from the outside, and we can understand how important are the early images which a child learns to construct for itself in interpreting impressions. Geometrical patterns, both in curved and straight lines, seem to me the best foundation for this all-important sense of symmetry." Professor Rooper also defends the drawing of curves on square-ruled paper, as the natural form is based upon the geometrical one, and the regular curves may be used as an introduction to the artistic curves of growing and living forms, such as the branches of trees, the veins of leaves, or the shape of fruit.

There is another serious question, however, to be considered in using the network in drawing, and that is the evil physiological and psychological effects of too fine work. The size of the squares has gradually increased on kindergarten paper until now one never sees the checkering of one sixth and even one eighth of an inch, upon which linear drawing was sometimes executed a dozen years ago. The squares now used are commonly one fourth of an inch in size, but those kindergartners who continue to use the network would probably be much more nearly right, and certainly far safer, if they increased the scale to a half or three quarters of an

Evil Effects
of "fine
Work."

inch. If even this is found to produce evil effects, then it is obvious that this method of drawing must be promptly dislodged from its place in the kindergarten, for no intelligent follower of Froebel would for a moment retain an occupation which its designer would have been the first to discard, had he held the objections against it to be cogent.

This brings us back to the question, already several times discussed, of the fundamental versus the accessory muscles, and the danger of over-training the latter by too fine work at the expense of power in later years. If all the principles on which the question rests are correctly stated, then it is evident that we should not expect accuracy at first from little children, but be satisfied with crudity and get accuracy afterwards, or in other words that beauty must not first be considered, but power.

Professor John Dewey has lately written a letter to a prominent kindergartner regarding the fine work, which is of application here and is worthy of quotation, because Professor Dewey's Objections. of the eminence of the author and the value of his opinion as an expert. Professor Dewey says: "I do not have any practical data at hand regarding 'fine work;' theoretically, there is no doubt in my mind of its inadequacy and perverseness. I think physicians would be of one mind as to its bad effects upon the optic nerve

and the motor nerves of hand and eye, leading to some strain in eye, and tendency to chorea (if in subtle form) in muscular system.

“The evil psychological effect is just as certain if not quite so obvious,— it tends to *fix*, to *arrest* imagery, and thus produce that cramping effect which you speak of having noticed. In holding attention to minute work, there is certainly a habit formed which thwarts attention of the free, easy flow it might otherwise attain. The large flow of imagery is balked in being held down so minutely and narrowly. Free coarse work gradually refining itself, seems to me the law. . . . This fine work, it seems to me, calls attention to technique *before* the idea is formed, therefore disturbing and hindering the growth of the idea. First the crude idea, then the technique in order to perfect the idea, seems to me the law.”

The only objection to be made to this opinion, so far as we see, at least, is that it is questionable whether children naturally incline to large movements and large designs in drawing, or whether, on the contrary, they do not instinctively make petty figures. “Just so in the infancy of a race,” as Charles G. Leland says, “it perfects the pettiness of illuminating manuscripts before designing grandly.” To begin with large figures, then, if the above theory be well founded, would be to contradict, in that respect at least, the parallel

Do not Children instinctively make petty Figures?

between the development of the child and the race; but there is no doubt that we may easily make too much of this theory and strive to carry it farther than it should legitimately go.

Practically we can lay it down as a principle, that the child who has been too long accustomed to short lines, small designs, and petty figures will never be able to do the large free work which is so valuable, so artistic, and so effective, though the reverse of the principle is as certainly not true, for in this case, as in all others, the greater includes the less.

OUTLINE DRAWING

“Objects which the child could move, which were in sight, he laid on the board, or bench, or table, and drew their forms on the plane surface, following the boundaries of the objects with his hand. Soon scissors and boxes, but soon, also, leaves and twigs, even his own hand, or the shadows of objects, will be thus copied.”

FR. FROEBEL.

“The *Encyclopædia Britannica* says the children, when left to themselves, draw in outline, and we know that the early races did so. The Egyptians and the ancient Romans used words which expressed the conception that drawing was done in line. The historical development of drawing may always be seen in the practice of children when left to draw for their own amusement. They begin as the human race began, with firm outlines representing men and animals, usually in profile. The next thing they do, if left to their own instincts, is to fill up the spaces so marked out with colors, the brightest they can get. This is genuine primitive art.”

Materials for Outline Drawing: Simple forms of animals, fruits, flowers, geometrical plane figures, etc., cut from heavy colored cardboard; black and colored pencils; unruled paper or slates.

THERE is perhaps no art which, like drawing, is at the same time so purely æsthetic and so thoroughly practical. It rewards its devotee with equal beneficence, be he artist or artisan. It is of as much service to the man who designs a bookcase, as to him

Æsthetic
and Prac-
tical Value
of Drawing.

who decorates a palace. And does not this very fact prove its preëminence as an art? It can descend to the depths and rise to the heights; it may be used, and with good effect, both by the rudest savage and by the man who, in education, refinement, and æsthetic taste, is the very flower of our modern civilization. And it is well, in our practical age, that an art which, like drawing, is so preëminently useful, should at the same time be linked of necessity to all that is beautiful. It can never be degraded to purely sordid ends, for its service is an education in the largest sense — used even in the rudest way it contains a hint of something higher. It serves best him who loves it best, but he who best loves it is he who takes infinite pains, who spares neither time nor trouble in perfecting his work. And there is, no doubt, a reflex influence upon the pupils in the enthusiasm with which a master or teacher regards his work. The influence is largely unconscious, entirely so in the case of young children, but it is none the less, or perhaps all the more, effective.

This is especially true in regard to the kindergartner and her tiny pupils. If she be herself something of an artist, that is, if she have the artistic feeling and a correct idea of symmetry and design, she will not allow the children under her charge to make awkward, inharmonious designs, to perform coarse, blurred work, to draw crooked, wav-

Unconscious
Influence of
Kindergart-
ner upon
her Pupils.

ering lines, and make thick strokes. If it be a pleasure to her to handle the pencil, a real delight to draw, if only a row of lines, so long as they are straight and regular, then her children will find it a pleasure, too, and there will be inward and outward rejoicing in the drawing hour. This love of drawing is a special bent of mind or fingers, better developed in some people than in others, but it can be cultivated to a great extent, and there is no reason why every kindergartner may not, with sufficient trouble and study, and by the aid of the various methods at her command, make her children thorough little artists in the bud.

Though the kindergarten system of drawing does not profess to do more than lay the foundation for future artistic work, yet if properly carried out in its varied branches it should and does accomplish certain things.

What Kindergarten Drawing should accomplish.

The child who has spent three years in the kindergarten should have good command over his fingers, should be able to draw curved lines as well as straight, and make use of both in symmetrical design; he should have some conception of color and its artistic use, and have an idea, however small, of freehand drawing.

One common and well-founded objection made to kindergarten drawing is that, as it is commonly used, it does not make the children suf-

ficiently self-dependent. The network, or dot, has been considered invaluable as a guide to eye and fingers. We hardly thought we could teach drawing to such little children without it, and by its use beautiful results were certainly accomplished; but we must remember that it never was intended to be anything but an aid, and when the fingers had attained some dexterity, it was expected that we should be able, now and then, to dispense with it. A child learns to walk, clinging to its mother's hand; he needs her aid and encouragement, but surely there comes a time when he may essay a few trembling steps alone, when he may let go her hand and trust to his own effort. We should not then use the network or the dot so constantly as to hinder the child from ever taking a step alone.

Linear drawing, though it gives command of fingers, correctness of eye, knowledge of straight and curved lines, and power of combination and invention, can scarcely be called, save in these respects, a preparation for freehand work. Therefore, we need another branch of drawing which shall supplement the linear, giving what it lacks; and this we find admirably supplied in outline drawing. This, for four reasons, has not been sufficiently used in many of our kindergartens,—First, it is comparatively difficult to provide good patterns; second, they are not at all durable, being made of paste-

Value of
Outline
Drawing.

board; third, the work needs rather more oversight for its proper performance than does the linear drawing; and, fourth, many kindergartners have failed to appreciate its importance. Its value, however, is recognized by Froebel when he says: "Much is developed in the child by this action, more than it is possible to express; he gains by this clear comprehension of the form, the possibility of representing the form separate from the object, the possibility of retaining the form as such, the strengthening and fitting of the arm and hand for the free representation of form."¹

Outline drawing is performed by means of a series of pasteboard patterns, including geometrical forms, forms of animal life, household furniture, etc., each pattern being carefully shaded and decorated by the kindergartner. The pasteboard model is laid on paper, or the unruled side of the kindergarten slate, by the child, who holds it in position and marks its outline. When the outline has been drawn, he should add the various finishing touches after the model in his possession, this work being necessarily freehand. If it is a cat, he must add eyes, whiskers, marks to show the division of the feet into toes, etc.; if it is a leaf he must add the stem, the midrib, and the veins. Every kindergarten should possess full sets of these patterns,

How it is performed.

¹ *Education of Man*, page 44 (Jarvis translation).

carefully graded as to difficulty, and divided into forms of life and knowledge. The forms of knowledge are easily convertible into forms of beauty, thus making the three divisions of objects, according to Froebel. The forms of knowledge are, of course, geometrical, are much simpler than the other patterns, and may be used by the younger children in connection with the less difficult forms of life. The geometrical forms themselves may and should be converted into forms of life by kindergartner and children, thus giving them a more vivid interest to the baby mind.

The child will outline rows upon rows of squares, if the kindergartner only suggests with word or pencil a tiny lock and a cover, thus making them into pictures of boxes. The right isosceles triangles may be made into cocked hats, by adding a plume of feathers ; the equilaterals serve for tents, with a line to show where the curtains open ; the pentagons may be turned into charming little houses, with door, window, and chimney all complete ; the circles become wheels, the octagons clocks, and so on, in an endless and delightful whirligig where everything is itself, and at the same time something else. The circle is indeed a veritable Protean form, and lends itself to as many disguises as the wicked magician in the fairy tales who can turn himself with equal ease into a smoking volcano, or a "wee, sleekit" mousie. It

Transformation
and
Combination
of Forms.

needs but a magic touch to transform the circle into a kitten, a Jack-o-Lantern, a rabbit, a sleeping bird, a globe of goldfish, a teakettle, a sun hat, a round-eyed moon, a downy chicken, or the head of an almond-eyed Chinese baby.

The geometrical forms may also, as has been suggested, be used in producing forms of beauty. The child makes really beautiful inventions by placing the pattern in various positions, and tracing the outline, working according to the connection of opposites, and thus making a complete figure. The forms of life are more difficult and complicated, but they may be carefully graded and sets kept in stock for both older and younger pupils. For the younger, we may have eggs of various sizes and kinds on which the spots are to be placed, simple leaves like the eucalyptus, where the midrib only is shown; fruits, vegetables, pitchers, cups, teakettles, hats, bells, flower-pots, etc.

For the older ones, we may have any pattern, Varieties of Patterns. not too delicate or difficult, which our brains may devise and our fingers serve to work out. In the insect world, bees and butterflies, beetles and dragon-flies are easy of accomplishment; ducks and geese, swans and ostriches, birds resting and flying, when drawn on a moderately large scale, can be successfully outlined; fish and reptiles, pigs and horses, dogs and cats, many kinds of leaves and the simpler

flowers can all be drawn, if the child has practiced the simpler models well, and been trained to be exact in his work and careful of his pattern. If he has been allowed to drop his simple model on the floor without rebuke, to convey it to his mouth in temporary abstraction, or use it as a weapon against his neighbors, you may be sure he will do the same with the animal or the leaf it has taken you half an hour to prepare for him. So at the very first lesson we should insist upon great care in the use of these patterns, since with the best of treatment they do not long remain in good condition.

When the child is sufficiently advanced and has drawn the outline of the pattern a number of times, he should lay it one side and try to sketch it, his eye being the only guide ; while later on, he should try to draw it from memory. This is an important step toward freehand drawing, and is really not so difficult for the child as might at first appear. There is great danger in giving indiscriminate praise in all this work. Undoubtedly the child should be encouraged and his efforts appreciated, but there is no reason why he should be told his work is beautiful, when it bears no resemblance to the pattern he is copying. If he makes a vertical line, as straight as an arrow, through the middle of a geranium leaf, and on either side draws slanting lines that look like nothing but

Connection
with Free-
hand Draw-
ing.

herring-bones, in what respect are these like the beautiful curving veins of the leaf itself? If we tell him his work is "beautiful," why should he try to do better next time? Is not "beautiful" quite well enough?

Nor should we hurry him in this outline work, but rather hold him back. His natural desire appears to be to get his paper "full," and have another pattern as soon as possible. It is our place to inculcate such maxims as *Haste makes Waste, Quality not Quantity*. It is not absolutely essential that he should draw ten leaves as quickly and as carelessly as possible, and then exchange his pattern with his neighbor, but it is essential that he should draw one leaf moderately well, and at least slowly and with care. We sometimes content ourselves with too little in our labors with the children. They can do really good and artistic work, and that without overstimulation or pushing, but if we are content with less than their best, we shall always get just that, and nothing more.

It is the first steps which cost in the kindergarten. If we are untiring in our efforts to make the children neat and careful during their first year of systematic education, then neatness and carefulness will grow to be second nature with them, and having sown the good seed, we shall find it springing up and blossoming in a thousand lovely forms.

In all this drawing, the shading and decorating of the patterns is of course the essential thing, and the thing for which the occupation exists. The simple drawing of the outline is of little benefit to the older children, unless accompanied by the artistic finishing touches, and to fill a paper with outlines, no one of which has received a single original line from the child, is to defeat the very object for which the work was devised.

If it is true, as Colonel Parker says, that an ill-written word should never be seen for a moment by pupils learning to write, how is it about drawing and the models given to the child? Can we suppose for a moment that a strong influence, in the wrong direction, will not be made upon the child's mind when he draws from a soiled, discolored bit of pasteboard, with shading and decoration poorly done and half effaced? We do not claim that the child will fully appreciate the artistic work, the care and skill bestowed on a really good set of drawing patterns, but if there is anything at all in education by means of the beautiful, — in unconscious example, — then here it may be felt.

Necessity of
Care in making
and selecting
Patterns.

It is sometimes well in outline drawing to teach the child to combine the patterns. For instance, he may be given the model of a table. After this has been successfully drawn, give him a cup or pitcher, perhaps, and let him

Combination
of Patterns.

outline them in their position on the table. When he is given a leaf, show him how to make the branch, and let him draw a number of leaves in various positions, attaching them to the branch at proper distances. This work may be very well done with the natural leaves, when the children are somewhat advanced, and are beginning to have an idea of freehand drawing. They have already some command of their fingers and pencil, and can hold the leaf in position and trace its outline without tearing the delicate edge. Single flowers can be very prettily done. The single dahlia, the wild rose, the marguerite, the single sunflower; in fact any flower having one row of petals radiating from a round or oval centre, can easily be drawn. Each child is given a model the size and shape of the centre of the flower, and also a model of one of the petals. Having drawn the centre, he can move the pattern of the petals around in regular order until all are drawn, and can afterward add the stem and leaves according to suggestion. When the children can do the leaf and flower work with comparative ease on the slates, they may use paper and colored pencils, filling in the outline with the appropriate color. This, of course, is a delightful exercise, and affords a good opportunity for artistic effects in color. This work may also be combined with paper cutting. The children may draw the leaves and

Drawing
and coloring
Flowers.

flowers on the proper colored paper, afterwards cutting them out and decorating them and pasting them in their books of school work.

Outline drawing being an absolutely flexible occupation, there is no reason why it should not be related, whenever given, to the other work of the week, and thus aid in strengthening the desired impressions. Enough patterns can be fashioned to suit any thought which the kindergartner desires to express, and thus the handiwork of the child be only another note in a strong harmonious chord, instead of the touch upon a single string, incomplete in itself and related to nothing else.

Connection
of Outline
Drawing
with other
Work.

All this work of course demands carefulness, patience, and perseverance on the part of kindergartner and child. As for the kindergartner, she must ever be shod with the shoes of patience and clad with the garment of perseverance. She knows that in all work, in proportion as the result is beautiful and artistic, so the effort used to produce it must have been long continued. There is no royal road to learning, nor has one ever been found to manual dexterity. Continued practice is necessary until the hand and fingers have become trained into good habits, into rapid, unconscious response to the dictates of the mind.

Demands of
the Work
on Kinder-
gartner
and Child.

Outline drawing is a very simple occupation, it is true, but it is valuable in various ways, and in

order that the child may gain real good from it, the kindergartner must exercise constant care that he does his best, and that the models she sets before him are well-made and well-chosen. If she attends to these essentials, and if the atmosphere of her kindergarten is a serene and harmonious one, with no hurry or worry or fretfulness or fever about it, then all things conspire together for the child's benefit, and in this as in all other occupations the manual and mental results obtained will be really beautiful and satisfying.

CIRCULAR DRAWING

“But soon these lines become, for the child that is led to observe nature and surrounding things, a means of further representation. So the circle that he can draw fairly, now becomes for him the picture of the moon, the sun, a disk even of an apple, a ball, a hoop, a ring, etc. He has seen in meadows, in the garden and field, the three-leaved clover with its roundly single leaves, and the five-leaved flowers of the most different kinds with their circular corolla, and represents them easily with winding curved lines, and, still further, radiating flowers and the numerous feathered leaves, that are sometimes quite circular; as, for example, the beautiful feathered leaves of the matterdorn (a sort of field rose), of the acacia, etc., or, further, beautifully paired stem-leaves; as, for example, in the sunny blooming pfennig-kraut. But the child's impulse to represent by drawing ventures also near the living; he tries to represent the rabbit, with its rounding forms, the little mouse, sheep, dove, etc.”

FR. FROEBEL.

Materials for Circular Drawing: Wooden disks three inches, two inches, one inch in diameter; drawing paper; lead pencils and colored crayons.¹

THE passage from Froebel given at the head of this chapter sufficiently shows his opinion in regard to the importance of the curve in drawing. In a letter to one of his pupils, written in 1852, he says, concerning

Froebel an
Advocate of
Circular
Drawing.

¹ The Conté crayons give, in our opinion, the greatest variety in color and the best results, though those made by Faber are also good, and Dixon's red pencil is very useful.

the subject of drawing: "Little of this can be done in the kindergarten, because the fingers are still too weak. Stick-laying takes the place of drawing, and the making of *circles* with the slate pencil, of which the children are so fond; and this can be carried to the representation of simple forms of leaves and flowers." In another place he shows quite elaborately how the child, through the sketching of all kinds of curvilinear representations in the sand or dust, or on a window-pane covered with a film of moisture, at last reaches drawing, as such, of lines, and, he adds distinctly, "*of the curved line first and afterwards of the straight line.*"¹

Miss Marwedel's system of circular drawing was described by her under the name of "Childhood's Poetry and Studies in the Life, Form, and Colors of Nature,"—the whole scheme, however, embracing exercises with the first and second gifts, circular sewing, and plays with the ellipsoids and with the colored wooden rings, which she termed "Baby's Ringolettes." It is based upon the strength of her feeling that the simplest forms of nature which surround the child are earliest comprehended by him, and first awaken the wish of imitation. "Education must avail itself of this fact," she said, "not with the heaping together of externally given words—stifling all individual

The Marwedel System of Circular Drawing.

¹ W. N. Hailmann, *The Kindergarten Messenger*, October, 1882.

conception — but by activity, which leads to true knowledge.” This is, of course, the purest kindergarten doctrine, and the whole system seems to follow out quite perfectly Froebel’s suggestions in regard to the use of the curve.

In a little pamphlet entitled, “A System of Child Culture,” Miss Marwedel thus describes her circular drawing, and we give the description in full, as the original is now difficult to obtain: —

I. *The Sphere Divided.* Into halves, quarters, segments, hollow, concentric hemispheres, and the ovoid in the sphere. This brings before the eye of the child a series of geometrical bases of plant-forms, such as the calyx, the open flower, blossom, and leaves, while the circle may serve to convey a picture of the inner structure of trees and branches. The parts are to be copied in clay, in cement, or by drawing and shading from the models.

II. *Methodical Making and Application of the Circle.* Use forms giving views of the circle, as bottles, lids, rings of different sizes. In making the circles the child may at first use compasses, and later eye-measurements.

- (1) Finding the centre of the paper.
- (2) Making the centre with a dot.
- (3) Placing a ring or circular form on the paper, centre to centre.
- (4) Tracing the circular form with pencil — to be done with the left hand as well as the right. All these exercises to be executed at first on the blackboard, then

on paper with black, and finally with colored pencil on drawing paper.

Series A.

Forms of Knowledge.

Making the circle and filling it with lines, drawn either from the circumference to the centre, or the reverse. Use of both hands. This exercise develops the much needed flexibility of the wrist.

Making the circle in three sizes for comparison.

Applying the three primary colors.

Inventions.

Series B.

Forms of Knowledge.

Comparison between exercises 1 and 2 in Series A.

Making concentric circles.

Applying the three secondary colors.

Inventions.

Series C.

Forms of Knowledge.

Comparison of exercise 2 (Series B) with exercises 1 and 2 (Series A).

Making the circle, divided from the centre by eye measure.

Applying the three tertiary colors.

Inventions.

Series D.

Individual and coöperative inventions, using colored circles, half-circles, etc.

Series E.

Four Charts on the Origin of Secondary and Tertiary Colors.

Series F.

Four Charts on Shades, Blendings, Analysis, and Synthesis of Color.

All the foregoing exercises lead from the understanding of the circle to simple conceptions of similarity and dissimilarity in botanical forms. The forms are based on the circle, and lead gradually through fruits and flowers to leaves and roots.¹

The circular drawing is closely connected with the study of the ball and sphere, the child by the division of these being led School of Circular Drawing. to find the ring or curved line. He impresses rings, saucers, tins, bottles, and box-covers of different sizes in the sand, and also handles and draws them, and thus by his study of the round playthings, as Froebel says, "gains a clear and distinct perception and representation of the curvilinear form."

After the making of circles in the sand, they are practiced on the blackboard with the right and left hands alternately, no particular size being prescribed, but every effort made from the beginning to get the desired easy movement of the wrist, and the circular sweep of the chalk. Then the children graduate to slate and pencil (if desired) or directly to pencil and paper, using now the wooden patterns or disks, and finally take up the work with colored crayons.

¹ Series E and F (eight Color Charts) and four Form Charts (sphere, cube, cylinder, and sphere divided) may be had of D. C. Heath & Co.

Much practice is required before the little child can hold even the three-inch wooden disk firmly in place, trace its outline, and then fill it into a circle, working from circumference to centre, with round and round movements of the pencil. The two-inch disk is next to be conquered, then the one-inch, using successively the red, yellow, and blue crayons, and lastly the three sizes drawn together for comparison, first in vertical then in horizontal lines, touching each other. Now simple inventions in the three sizes and colors are attempted, and then comparison made between the three circles arranged concentrically, — the colors of orange, green, and purple now being introduced. Miss Marwedel considers these, on the Newton and Brewster theory, as the secondary colors, and provides for a series of exercises with overlapping circles, which show that a coating of the red crayon laid over the yellow will produce a more or less recognizable orange.

Now the broken ring or half-circle which gives the first idea of the end (or bud) comes into use, and the inventions grow much more elaborate, as it is possible to use three sizes of circles, three of half-circles, and the six colors. The next series of exercises takes up the regular separation of the circle into halves, thirds, fourths, fifths, and sixths, the six colors being used in succession, and the orderly fractional divisions being intended to prepare for a corresponding division

in the petals of flowers. The three tertiary colors, citrine, russet, and olive, are now applied in a series of exercises ;¹ and inventions, both individual and coöperative, are provided for.

All this work in colors upon complete curves, broken curves, circles and half-circles, is preparatory, as Miss Marwedel said, to ^{Natural} ~~Objects.~~ a study of the life, form, and colors of Nature. We now enter upon nature work, taking up first the fruits as being attractive in appearance, pleasantly known to all children, and most closely connected with the ball. First the sphere must be studied, however, and drawn from the object itself, and as this is the first time that attention has been directed to light and shade, some patience will be required as well as considerable practice before the fundamental principles of shading are discovered, and the children have learned how they may turn a flat disk into a veritable ball with softly rounded sides. The time and pains spent here, however, are fitly bestowed, for all the beauty and value of the subsequent drawing depends upon how well these fundamental principles are taught, and how well they are understood and practiced.

When the sphere can be drawn in a tolerably

¹ These exercises are arranged according to the Newton and Brewster theory, and endeavor to show the formation of the tertiaries, — citrine (orange and green), russet (orange and violet), olive (green and violet).

satisfactory manner, the fruit nearest it in shape is to be studied, the children selecting it themselves and generally agreeing at once upon the orange. Of course the blending and overlaying of colors and the shading are more elaborate here, as well as the stroke of the pencil, which differs from the absolutely circular movement used in making the disk, and all these are always to be studied from the natural object. Then another nearly spherical fruit, the peach, for instance, is represented, and so on through a series of fruit studies. Each of these is drawn within a circle of suitable size, that its approach to and departure from the geometric outline may be clearly noted, — it is represented in the natural size and studied from the natural object.

Vegetables next occupy the field, always leading the children first to select the one most nearly spherical, then to handle it and study its varied tones of color and its distinctive peculiarities of form. Each vegetable is still represented within the circle, for the object of the entire system is to show that from that form all else in nature is evolved. The pencil stroke again differs here, and the reason why we may no longer draw exactly “round and round,” or from top to bottom, is easily found out by a little study of the surface of the beet or the turnip.

The representation of flowers in the circular drawing system begins, as in all the other series,

by the selection of as perfect a specimen of the desired outline as can be found, and the first blossom studied must have an entire corolla like the morning glory, thus corresponding to the undivided circle. Two, three, four, five, and six petaled flowers follow, and it is desirable that the children select them all themselves in journeys with the kindergartner through field and garden, for only as we see them growing can we really know and love these visible proofs of the Father's goodness.

After the flowers are drawn and studied, the circular system takes up leaf work, beginning perhaps with the "rounded shield" of the nasturtium, and passing on to the more irregular leaves, with their varied forms and edges exquisitely cut. Roots and bulbs next occupy the children's attention, still being represented in circles of appropriate size, — though most of the roots have evidently now wandered far away from the original ground-form, and with these Miss Marwedel's circular drawing system closes.

Froebel noted, in the extract from the "Kindergarten Wesen," given at the beginning of this chapter, that the child's ^{Animal} _{Forms.} impulse to represent by drawing ventures also near the living, and that he tries to make the rabbit with its rounding forms, the mouse, sheep, dove, etc.

The circular drawing, as planned by Miss Mar-

wedel, has never attempted anything of this kind, but there seems no reason why an animal series should not follow the botanical forms, and be much enjoyed by the children of the connecting class, for instance. Many young animals, when quiet or asleep, resemble spheres as closely as do the fruits; witness, for instance, the downy chicken, the yellow, fluffy gosling, the kitten, or the rabbit. There are a variety of picture-books for children which make use of this resemblance, and show, by a few slight touches, the transformation of a ball into a drowsy cat, or the rear view of one intently watching a mouse-hole, of the mouse himself, of a long-eared rabbit, of a lambkin, a squirrel, a baby bear, a puppy, a turtle, a bird asleep on his perch, a globe-fish, a pouting pigeon, a hedgehog, or a porcupine. "The Nimble Pennies," a series of sketches by "Boz," lately published in "Little Men and Women," give many useful suggestions for this work, and the major part of the designs in "The Magic Pear"¹ could be appropriated for circular drawing. In these the pear is successively transformed into an elephant, a mouse, a dog's head, a rooster, an owl, a cat, a duck swimming, a wide-mouthed fish, a frog, a robin, and a rabbit, and one change is quite as easily effected as another, apparently. Older children would greatly enjoy depicting this animal series, and it would not be

¹ *The Magic Pear*, designs by Morgan J. Sweeney.

at all difficult to procure living models of some of the above suggestions, and coax them into sufficient quietude for a hasty sketch.

One objection to be made to circular drawing, though this does not apply to the system itself, but to its application, is the fact that the drawing and coloring of the fruits, leaves, flowers, etc., is so often done from copies and not from the objects. The whole intent of the work is obviously to lead the child to the appreciation and interpretation of nature, and this object is never gained by interposing a copy between Nature's handiwork and the interpreter. The rudest colored sketch of a peach, which the child makes from the peach itself, is worth immeasurably more than the finely executed copy of a pictured peach. Such copies, as Professor T. G. Rooper says, "soon become deeply engraven on the memory, and supplant the more accurate mental images formed by the contemplation of the object; and, secondly, they form a kind of mould into which all fresh observations are run, and thus prevent the child from gaining new knowledge, even by a prolonged study of the object. The imperfect mental image hinders the acquisition of knowledge, partly by preventing any attention being paid to especial features, or features not previously observed, and partly because, through mental laziness, the familiar mental and conventional image of the object sup-

Possible
Objections
to Circular
Drawing.

plants the fresh image before it has had any permanent effect. . . . The child looks and learns nothing. Eyes he has, but he cannot see."

Is there not, also, a certain objection to the somewhat analytic method which studies and represents one single flower and one single leaf by themselves, without regard to their connection? Should not the process of drawing be rather a synthetic one, and show the flower and leaf together, as they grow upon the stem?

Lastly, is not the smallest drawing pattern — one inch in diameter — somewhat too small, and would not the series of three disks be materially improved for the use of little children, if the size were increased from one half to one inch? All these questions are put tentatively, and may be answered by each kindergartner for herself.

A famous English artist¹ has spoken of the kindergarten in words which apply quite perfectly to circular drawing. "The Froebel system," he says, "teaches children by forms before they can read and write, and I believe it is right. . . . The more you teach children to look for beauty around them, the more they will think of it in later life. Then let us open their eyes to the beauty of nature, and let them find joy in form and color. It will bear fruit, as throughout life they will be guided by taste, and art and industry will profit by it."

¹ Laurence Alma-Tadema, R. A.

The long series of exercises with the various colored crayons upon whole and half circles of different sizes, and curves of varying lengths, the wide field for inventions thus opened, and the easy freehand movement of the pencil, which must be practiced, are so many of the values of circular drawing (even should they not be followed by nature work), for they teach "the art of color, of life, and of form in direct application to what we are to do with each, and the children study the harmony of color as the notes in music."

Not all artists are agreed that the child shall use color in sketching from objects and nature throughout his entire school life, some contending that between the first or second school year and the high school, there should be an intervening period devoted to long and rigid drill in drawing and in light and shade. No objection, however, could be made to allowing the kindergarten child to express ideas of form from nature with color, because here technical excellence is not expected.

The varied uses and beauties of this system of circular drawing, however, are best epitomized in Miss Marwedel's own words:—

"Therefore, as the curved line presents the line of all life and beauty, enabling the child to recognize in diversity similarity, and in similarity diversity, the unity of the universe and the

simplicity of its laws, let us lead the child to use its relation to all that exists, in order to create in the unity of right seeing, right doing, and right knowing, the poetry of childhood found in Nature's great alphabet of form." ¹

¹ Emma Marwedel, *Kindergarten Messenger*, October, 1882.

FREEHAND AND NATURE DRAWING

“It is the fault of all current systems of drawing that they limit the youthful mind to *small* inventions. . . . All who propose to teach or learn art in any form should seriously consider *freehand* as the true key to all its practice. It is a great stimulant to quickness of perception.”

CHAS. G. LELAND.

It seems to be supposed by some critics upon kindergarten drawing, that Froebel confined his plans for the occupation exclusively to that department of the art which could be executed upon the net or checker work, and which would lead eventually to designing, while giving ideas of symmetry and regularity and the development of geometric form. That this is not so, however, is evident to any one who will read his writings carefully, and note that he explicitly states that *after* the pupil has made the required progress in the preliminaries, then perspective drawing, appreciation of light and shade, and drawing from nature will follow.

Froebel's
Plans for
Drawing not
confined to
Linear Rep-
resentation.

As a matter of fact these have not followed in most cases, and many drawing teachers have even gone so far as to say that kindergarten drawing absolutely unfits the child for working from nature.

Linear
Drawing not
considered a
preparation
for Free-
hand Work.

That there is good cause for such a criticism in some quarters at least, not even the willfully blind can deny, but it may well be asked how much of this unfitness results from the system, and how much from the interpreter. Many kindergartners have augmented all the bad features of the Froebel drawing by using too small checker work ; by giving petty, trivial figures in dictation, thereby filling the child's mind with petty images ; by detaining him so long on one kind of line as to give a permanently cramped position of the hand ; by using the linear drawing only, to the exclusion of the other methods, and by deferring until very late in the kindergarten course, or not introducing at all, the curved lines which are so valuable for later school work and for sketching, and so satisfying to the child. There is, of course, no need for any of these abuses, but no person of experience can deny that they have been the rule, rather than the exception, in linear drawing.

So far as the network is concerned, it was merely intended as an aid to eye and fingers when these were too weak and unpracticed to carry out the dictates of the mind, and if used merely as an aid, and for preliminary exercises, would probably do no harm, but on the contrary be quite useful if the scale upon which it was constructed was large enough not to injure the eye, or require too delicate movements of the hand and fingers.

It seems undeniable, however, that drawing by

the aid of dots or checkers, the execution of lines of various lengths and inclinations, and the combination of these into symmetrical figures and borders would lead much more naturally to all kinds of designing, to architectural and industrial drawing, etc., than to the representation of natural objects. Though many kindergartners of to-day willingly acknowledge the use and beauty of linear drawing, they feel it quite as necessary that the children under their charge should be artists in the sense of interpreters of nature, as that they should be designers, and that the natural order of things would be to cultivate the faculty of design after the ability to represent nature had been developed. From this feeling and from the various objections already given to linear drawing, has grown the demand for freehand work from the first. That this demand is universal, we do not assert, for many kindergartners, be they right or wrong, still claim that by beginning with the linear drawing properly carried out, and alternating it regularly with outline and circular work, they so train the child's eye to correct seeing, and his hand to respond to the dictates of the will, that in his last year in the kindergarten, he is able to execute freehand drawing in a most pleasing and satisfactory manner, and after a little practice to sketch intelligibly any simple object placed before him.

A Preparation
for
Design.

“It is easier,” says Mr. Charles G. Leland, “to learn to draw well than to write well, and there is no child who would not do both admirably if it were obliged from the first hour to use *freehand*; that is to say, to control the pen or pencil from the shoulder, allowing the arm to rest on the table just enough to prevent fatigue.”

To adopt such a method of drawing in the kindergarten, if it is practicable, would certainly satisfy the physiologist and the psychologist, would come nearer to suiting the artist, and would meet with no disapproval from those who feel that the object of kindergarten drawing is not “the imitation of art-forms, but the cultivation of artistic self-expression.”

The great arguments advanced by the champions of freehand drawing, or plastic drawing as it is sometimes called, are that in the natural order of mental development, synthetic exercises should come before analytical, mass before detail, and the whole before its elements. “Children,” says Mr. Courthope Bowen, “and a great many adults also, do not see outlines at all at first, or only very dimly. Things appear to them as masses of color or light and shade, with edges not by any means sharply defined. We should begin with masses of color and light and shade, and work gradually towards improvement of outline — at least, so it seems to some of us.”

Freehand
Drawing
defined.

First Exercises
in
Freehand
Drawing.

These arguments seem to be borne out by the spontaneous drawings of children so far as these have been studied, the results of special observations in this line by several paidologists, proving that young children (five years and under) "do not regard details in things, but look upon them as wholes capable of being put to some practical use." Our own experiments in a different line have gone to prove the correctness of the observations by showing that very young children naturally concern themselves little about the size or form or color of an object, or animal, but very much about what it can do and what it is good for.

The first exercises in freehand drawing are upon circles, thus connecting with the study of the sphere. The child should be carefully trained in the position of hand and pencil and paper, and know before the drawing begins what he is expected to do and the manner in which it is to be done. It is well for the teacher first to draw a number of circles upon the blackboard so that all may watch the round and round movement of the chalk; in some kindergartens the children execute all the first exercises on the blackboard, as it is thought that they thus become accustomed from the beginning to larger, freer movements. It is well also in the beginning to practice circular movements in the air, in time to music or a song. One might suppose that it would be very easy for

children to make approximately perfect circles in this manner, but partly because they have never observed the form closely, and partly because their hands are untrained, they commonly produce at first, parallelograms, ellipses, polygons, or strange amorphous blurs and unintelligible scratches. Even the circular movement of the pencil is not easily learned, and must be practiced so often that it becomes necessary, in order to avoid monotony, to join with the work — as Froebel advised in the “*Kindergarten Wesen*” — “the explanatory word that speaks to the mind,” or “the clearing, rejoicing word of song.” Color may also add its magic touch here and make the work all golden to the child. He may have bright chalks for the blackboard, and crayons or powdered pastels and stumps for the paper, — the color being used, if considered desirable, as a legitimate reward for effort and improvement.

If the circles are drawn on paper, each effort should be discussed and compared with others to see whether the form is in the middle of the paper, whether it is of an appropriate size and has a proper margin, whether the circular form is approached or reached, and whether the desired stroke has been kept throughout. The child takes great delight in his own improvement, and if his practice papers are kept and shown him from lesson to lesson, he will observe with pride his steady climb, round by round, up the ladder of progress.

When the circular movements have been learned fairly well; when the children can make circles of various sizes, so Subsequent Exercises. that he who does not run too fast may read them; when they have been combined in various ways, and when, therefore, eye and hand have received much preliminary training, we may begin a little study of light and shade by means of objects. Let it not be supposed, however, that the above knowledge has been gained in a day or in a week or a month; for infinite pains, and much good and inspiring teaching have been bestowed on that rough circle which the casual visitor looks upon so carelessly. The fact is, that drawings produced by the freehand method are not for a long time what can be called "show work." They are truthful and honest, therefore beautiful, in one sense, and they are always interesting to the teacher; but they are absolutely crude at first, and sometimes discouraging to those who have not learned to estimate effort and achievement at their true value. When, however, in the judgment of the kindergartner, the children are ready for the work, the ball suspended by its string is frequently first attempted, each exercise being preceded by a talk about the object, so that an intelligent beginning may be made. Even now, strange as it may appear, the string will be represented, quite as frequently, as coming from the side, or lower portion of the ball, as from the

top, and sometimes is not connected with it at all; though the fact that it is always conspicuously drawn somewhere on the paper, is proof that it is seen and considered important. Repeated effort is necessary here, comparison with the teacher's ball and with the balls of other children, before it is properly drawn, and even then it is a circle with a string, and not a sphere. The gradations of light and shade, which are needed to make it look spherical, are much more difficult, and can only be represented approximately by little children. Some kindergartners prefer a fruit, — a rosy apple, for instance, — instead of a ball for this first sketching, as the variety in color is more attractive, and the gloss on its rounded sides makes the high light more easily seen. If the kindergartner uses a reading glass to focus the rays more perfectly, it will be an illumination to the children, as well as to the apple, and if the fruit be placed on white paper the shadow will be seen more easily. A great many experiments will be made here before satisfactory results can be obtained, for it is essential that, in various playful ways, the kindergartner should lead the children to *see for themselves* the light and the shadow, and not point it out to them, or indicate in so many words the fault in the sketch. We may, of course, use parti-colored apples, as well as red, for this first work; but it is easier to see the light on a dark-red fruit

than on a yellow one, for instance. Then follow pears, tomatoes, oranges, etc., and any vegetables which are approximately round and regular, and by and by, if we have patience, we shall be astonished at the truth with which the child represents simple objects. After a year's training, the child of five years draws quite well, and with expression, flowers, and fruits, and leaves, and other simple objects, as a vase or a cup to hold the blossoms, a flower-pot with its growing plant, or a bunch of cherries with its leaves. It is the easier to teach the child to draw in this manner, because he is entirely without "the embarrassment of knowledge," which, as the artists say, so "perverts the appearance of things," and therefore draws from what he sees, and not from what he knows.

All the other occupations and gift work of the kindergarten are so many aids to drawing, for they all cultivate observation, develop the æsthetic nature, and train the hand, the eye, and the mind. Modeling is of particular value in this regard, for by handling the soft clay the child makes the very object which he subsequently draws, and so learns to know, as he could in no other way, its distinctive peculiarities of form. We have no conception, until we have tried to model an object, how little we ever knew about it, though we may have looked at it every day of our lives since childhood. Modeling, cutting, and drawing are now

Assistance
of other
Kindergar-
ten Work to
Drawing.

used as means of expression in the majority of our schools, and the results are full of promise to those who believe in spontaneity rather than imitation.

Freehand drawing, however, whether it be used as an introduction to design, or to the representation of natural objects, requires a teacher who thoroughly understands at least the elementary principles of art. She has no traditions to follow, no absolute and formal system to cling to, and so much depends upon her judgment and experience and taste and artistic feeling, that it is impossible for her to teach drawing as it should be taught, unless she can draw well herself.¹ Fortunately, we can all learn the art more or less successfully, if we begin early enough; but if the years have gone by and left us absolutely without capacity for this mode of thought-expression, it is better to intrust this department of our work to some one who does understand it.

The true
Teacher of
Drawing
herself an
Artist.

¹ "The only text-book from which may be learned this fine art of uncovering artistic expression to little children, is that of the inspirational and enthusiastic interpreter, one who is a devotee to the cause of all that is true, constructive, and of good repute. The art feeling comes not through evolutionary or hereditary processes, but through revelation. The teacher who has the exquisite wisdom to detect the budding genius, and the faith to await its blossoming with gentle appreciation, she is a revelator. There is no patent method for such teaching, and the teacher, as the children's friend, is the only practice-manual." (Amalie Hofer.)

We are accustomed to talk quite freely about the value of kindergarten work in developing ambidexterity, but it may be questioned whether, in many cases, practice follows as close upon theory as it should do. Undoubtedly the work may be used for this purpose, but how often do we in reality lead the children to employ the left hand, save as an aid to the right? The purpose and value of training the left hand was dwelt upon at some length in a previous volume,¹ and need not here be greatly enlarged upon. People are sometimes inclined to doubt the worth of such training, but a little thought will show that in many trades both hands are equally necessary, and in all work it would obviously be a great added convenience to have a skilled left hand able to take the place of the right on occasion. "The right hand is also influenced through sympathy" — to quote from the report of a leading art school — and "better results are claimed from the right hand, working the left also, than from the right hand working alone, in the same space of time. Biology also teaches that the more the senses are coördinated in the individual the higher the type," and no one who has tried training the "idiotic left hand," as Dr. Stanley Hall calls it, can fail to be impressed with the resultant gain of power. If we begin early enough, the children readily learn to use one

Left and
Right Hand
Drawing.

¹ *Republic of Childhood*, Vol. I., *Froebel's Gifts*, pages 156, 157.

hand nearly if not quite as well as the other, and neither make objection to doing so, nor show less ability in the right hand in consequence, while marked improvement results in other directions. Linear drawing can be quite easily done with the left hand, but perhaps the best field for it is the blackboard, where the children have room for large designs, and can work first with one hand, then with the other, and finally use both in a series of exercises.

“The correct holding of the fingers and of the hand, for the free use in drawing, requires a Right Positions of Children. correspondingly correct free use of the whole right arm; this requires again, indispensably, a corresponding use of the other limbs and the whole body of the child who draws, if it would represent what it creates with free action of the body and with a free spirit. For a free, skillful use of the body presupposes, necessarily, a free, bright spirit, as both mutually condition one another.”¹

The child should be taught to sit upright while drawing, — this is imperative from a hygienic point of view, — for bending over the work is a prolific cause of curvature of spine and near-sightedness. He cannot make large movements, or get free execution, if he is allowed to rest his nose on the paper, and as an aid in this matter he should use *long* pencils. He should also hold

¹ Friedrich Froebel.

his paper square on the table, parallel with its edge, and be taught to work from the shoulder and not let the weight of his body fall upon his arms. All these positions, however, must be taught while the preliminary exercises are being practiced, so that they will be natural and easy, for when it comes to sketching, to hold the child back with directions about positions of body, arms, paper, and pencil will take all the joy and freedom from the work, and very likely discourage him altogether.

When the children have had a little practice in pencil holding, though this many of them have had before coming to the kindergarten, they will take the greatest pleasure in illustrating simple poems and stories, and the younger they are, commonly, the more rapid and confident are their sketches, and the more un-daunted do they seem in the face of difficulties. In fact, they do not recognize difficulties at all, generally speaking, and are just as ready to draw the tossing ocean as a mud-puddle. These drawings are most valuable for the student of childhood, and the less previous instruction the children have had the better for this purpose, as the drawings are then more spontaneous. The poem or story must be well known, of course, so that there may be a more or less clear mental image of the objects or personages mentioned, and then, after it has been repeated, these will be

rapidly drawn and with little hesitation. It is most important that the kindergartner should add neither line nor suggestion to these rude pictures, for their greatest value is in their spontaneity. If she gathers and preserves, from year to year, large collections of the illustrations, sorting them according to the age of the artists, she will do a service to education, since many valuable deductions may be made from them, — and a service to herself, because she will thus the better understand the individuality of each child under her care. It is to be regretted that more really good verses and simple poems suitable for children of kindergarten age are not to be had, for these are most useful for various purposes besides that of illustration. The kindergartner, however, who keeps a scrap-book, into which she may gather the useful bits of flotsam and jetsam from her daily reading, can supplement these with selections from the various collections of children's poems, and thus always have something appropriate at hand.

The spontaneous drawings above described are useful in another direction, because they greatly increase the sum of the teacher's pleasure. Of course this pleasure must be quite concealed when the sketches are being made, but they are often so original, so quaint, so unconsciously humorous, that they touch all the secret springs of laughter.

In some kindergarten normal schools a complete course in blackboard drawing is now given

to the students, and it has long been the practice to do so in several of the English training schools, the Froebel Society of Great Britain and Ireland giving examinations in this branch to students who apply for its certificates. No accomplishment is more useful for any teacher than to be able to illustrate simply and quickly her ideas and her lessons upon the blackboard; and for the kindergartner it is especially valuable, on account of the youth of her pupils and the fact that a picture is always intelligible to children of all ages and all races, when a spoken word may or may not be understood.

It is certain that all intelligent and normal persons, if taught by the right method, could learn to draw freely enough for ordinary purposes, as easily as they learn to write; but what are we, who were not so taught and have no natural ability, to do in the matter? Some of us can now never learn to draw well enough to sketch in the presence of the children the required object or figure, unless we have given it long practice beforehand. We can, however, by the aid of the various books and manuals on the subject, prepare, for instance, a series of illustrations for any story, and cover each with paper until the right moment comes to introduce it. The effect when the drawing is unveiled is dramatic and thrilling in the extreme, and is not so dependent on the beauty of the workmanship as

*Illustrative
Drawing by
Teachers.*

might be imagined. A series of picture tales — the “Peter and Patty Stories” — was published in “Babyland” a few years ago, and these lent themselves charmingly to the above method of illustration, the children, by the aid of the pictures, telling the story themselves with the greatest glee when once it was begun. Any continued story might easily be told on the same plan, as the kindergartner could select, from the books at her command, such pictures as she could best make. “The Kindergarten Blackboard,” by Miss Marion Mackenzie, Miss Bertha Hintz’s “Illustrative Blackboard Sketching,” Augsburg’s series, “Easy Things to Draw,” and several of the Prang Art Manuals are all very valuable aids to blackboard work, as the pictures are presented simply, with bold outlines, and the elimination of all unnecessary detail.

THE THREAD GAME

Materials: A thread of bright-colored darning cotton; a squared slate; a wooden pointer the size and shape of a slate pencil.

THREADS and cords are the basis of many amusements which are traditional in every country. Who has not seen little children absorbed in their knitting with a spool and pins, who has not taken part in that game in which a knotted string, by dexterous manipulation and much slipping on and over little fingers, becomes the Single and Double Cross, the Pond, the Fish, the Tailor's Long Scissors, and finally the "Cat's Cradle;"¹ who has not watched boys intent upon learning to tie the various knots, the slip knot, square knot, sailor knot, overhand, figure of 8 and bowline, and wished that some of the ardor and fury of per-

Playing
with
Threads a
universal
Pleasure.

¹ "This game is found in nearly all parts of the world. The Dyaks, or natives of Borneo, are very skillful at it, making many kinds of puzzling figures, and the Maoris of New Zealand are also fond of it. The latter call it *Mani*, the name of their national hero, by whom they say it was invented. Its various patterns represent incidents in Mani's life and other events, forming a kind of pictorial history of the country."—*The Young Folks' Cyclopaedia of Games and Sports.*

formance shown therein might be transferred to the tasks of the school? And this same childish pleasure in handling the soft pliable thread becomes the basis of many useful and beautiful occupations in later life, — the knitting, tatting, crocheting, darning, sewing, netting, embroidering, drawing in, which are a solace to so many weary hours.

The thread game in the kindergarten differs a little from any of these amusements and indus-

The Thread
Game in
the Kinder-
garten.

tries, but it is a very pleasing occupation, nevertheless, and not only pleasing, but possessing certain well-defined points of value. The thread used is of bright-colored darning cotton from twelve to eighteen inches long, the ends being knotted together. The knot should be made as small as possible, and care should be taken that the thread lies quite smooth before fastening, else it will curl and writhe like a snake when we attempt to move it. It should be thoroughly moistened before using, and is then laid on a squared slate. The child now takes his wooden pointer and pushes it into any form suggested by the kindergartner, this being the fundamental figure of a sequence to be developed later. Of course if a square or circle is to be the fundamental figure, no dimensions need be given, but if we are to work from an oblong, for instance, we must know its required length and width. The child should not touch

the thread with the fingers, the pointer being all that is requisite to produce the various figures. It is well to have the slates slightly moist before beginning the dictations, and now and then to ask one of the children to serve as a "little helper" and sprinkle a few drops of water on each one, for if either the thread, or the surface on which it lies, grows dry, the movements cannot be executed accurately.

Here, as in the other occupations, there should always be a little informal conversation about the materials the children are using. Conversations about Materials. With the thread game we have wood, slate, and cotton, and as the exercise is commonly only used in the older classes of the kindergarten, there should be little need of the imparting of much information by the kindergartner, but the pupils themselves should be eager to tell what they know on the subject. It is not supposed that such an exercise is to be turned into a recitation, and the children balked of their legitimate desire to handle the thread and pointer and make something at once. They must not be allowed to become impatient for their work and eye it longingly while question and answer are going on, but the conversation should ripple pleasantly along while the materials are being distributed, and thus beguile the time of waiting. The value of such conversations does not lie alone, nor chiefly, in the opportunities for self-

expression they provide, but in the gratification of healthy curiosity as to the "how" and "why" of things, the furnishing of a rational interpretation of some of the phenomena with which this great, mysterious, unknown world is filled.

The thread, representing with equal readiness the straight line or the curve, corresponds to the stick and ring in the gifts. By means of the pointer and the checkers on the slate, it may be pushed into numberless forms, both geometrical and artistic, and may also be made to represent fruits, leaves, flowers, vegetables, household implements, and furniture. We commonly begin by making some simple geometrical form, as a circle for instance; then perhaps we push it out a certain number of spaces at the upper edge and make a pear, pull it down at the lower edge and make a leaf, push it out at the sides and make a diamond-shaped window-pane, and go on, until in one charming sequence we have made from our accommodating friend the circle, a heart, a dumb-bell, a carrot, a toad-stool, an umbrella, and a pair of spectacles, the children exclaiming with delight at each new and unexpected form. If the kindergartner has any faculty for rhyming, and can improvise, as Froebel advised, some little verse which will bring in this heterogeneous collection of articles, one can imagine the merriment that will follow.

If we began with a pentagon, we may direct

Forms of
Knowledge,
Beauty,
and Life.

that all its corners shall be pushed in a certain number of spaces, and so proceed until we have produced a series of forms of symmetry, some of which are as graceful as bits of seaweed, with their many branching fronds.

The fundamental form for all these transformations must be laid with exactness, else the child cannot follow the dictations properly, and he must push the thread the required number of spaces, and no more or less, or he will fail to get the desired figure. For this reason the occupation, as has been said, is not suitable for the very youngest children, as it requires a little more care than they could be expected to give. The thread game is one of our most effective means, on this account, for teaching the relation of cause and effect. If in the first few moves of a sequence the child makes a serious mistake, there is no redress. He cannot go forward, for his figure is probably already so unlike that of any one else that he cannot follow the dictation, and he cannot go back to the beginning, unless all the other members of the class are willing, and would be justified in waiting for him. He must simply sit still till the brief dictation is over, and then be ready for the next series of figures, or the free invention.

Invention is so easy in the thread game, and the work is enjoyed so thoroughly, that the occupation is a very useful one to give when the

children seem a little tired, or have been having a more difficult gift exercise than usual.

Invention.

After dictating the fundamental form and the first few moves, it is well often to leave the children quite unhampered, and let them go on by themselves and make their own discoveries. The kindergartner should be at hand, however, for she will constantly be needed to admire the successes, to hear the fanciful names applied to the forms produced, to sympathize with the failures and encourage trying again, and to see if the successful child can retrace the steps by which he has reached some particularly attractive form. With a square table, at which four children can sit, one on each side, and a longer, heavier thread, or cord, group work can be carried out successfully, and the very care which each must exercise, lest he pull the figure too far his way, or disarrange his neighbor's side of the pattern, makes the work, when completed, a greater pleasure.

The thread game, though it may be classed among the minor occupations, and is not at all essential to the scheme of kindergarten handiwork, is yet quite valuable in some directions. It is very seldom used, and yet the fact that children like it so well, and that there are no serious objections to be made against it, should recommend it to our attention.

The figures produced with the pliable thread have the charm of unexpectedness, and of nov-

Value of
the Thread
Game.

elty also, for they are quite unlike those made with any other occupation. The work is an assistance in eye-training and in measurement; it impresses the outlines of the simple geometrical planes upon the mind; it teaches carefulness and accuracy and gives a lightness and delicacy of touch which are useful in all work. It is, on the whole, a very simple occupation, requiring little previous preparation, for the threads may be used again and again, and is, on that account, especially well suited to the nursery, where it may be trusted to while away many restless hours on a rainy day.

PAPER INTERLACING

Materials: White or colored paper strips from one fourth inch to an inch and more in width, and from twelve to eighteen inches long.

PAPER interlacing is commonly classed as one of the so-called minor occupations, which most kindergartners would consider as being slat interlacing, peas-work, chain making, bead stringing, cardboard modeling, rolled-strip work, paper interlacing, and the thread game. Intertwining, or paper twisting, as it is quite as commonly called, is, if carried out to its full extent, the most difficult of any of these occupations, and is therefore only suitable for the older children in the kindergarten, save perhaps in some of its preliminary exercises, such as the making of angles and simple figures.

The long strips for paper twisting may be had, of course, at the kindergarten supply stores, but may also be cut in large quantities at any bookbinder's or the wholesale paper establishments. The long strips are given to the children, the glazed paper being best adapted to these first efforts which require so much fumbling and experimenting, and the mate-

Paper
Twisting a
minor Occu-
pation.

Practical
Directions.

rial, color, length, and width are fully discussed. The inch-wide strips are commonly used for these preliminary exercises, as the principles of turning and folding corners and fastening ends are best learned on a large scale. The strip is first folded in half, its entire length, and then held by both ends and placed in such positions, dictated by the kindergartner, or one of the more capable children, as will help in developing and fixing ideas of position, form, direction, etc. Next the desire for producing something is gratified, and the paper is bent into a right angle, using the lines on the table as a guide. It is discovered now that the right angle is only shown on the inside of the strip, the outer edge making a slanting line where the corner is turned. We could probably go over no more ground than this in the first exercise, even with quite capable children, and a pleasant finish to the play would be to put all the right angles into a common stock and make a group-work invention, which may be laid out on a large table by several of the children according to the suggestions of the class. This may subsequently be mounted by the kindergartner, and serve as a souvenir of the first play with the interlacing strips.

For the next exercise the strip will be folded as before, and two or three simple figures made from it, a square, an oblong, and a triangle, perhaps. Not more than this, if as

Subsequent
Exercises.

much, can be done in one lesson, as the principle of turning the corners will not yet be obvious to all, and the fastening of the ends presents still another difficulty. These large squares and other figures may be given to the babies and serve as frames for their simple work.

When the paper twisting is taken up again, the strip given is the half, or three-quarter inch width, and the children are taught to fold it twice, first bending and creasing down one third of its entire length, and then doubling the other third over upon this. This process, of course, makes the paper one third as wide and three times as strong. The simple forms must now be made again with the narrow strip, for the children are not yet ready for the interlacing, or weaving, of one figure into another. As a step toward this, however, there may be another coöperative exercise. John may give his square to Lucy, for instance, receiving her triangle in return, and the kindergartner may intertwine each pair for them, while they look on with eager, admiring eyes. The pretty design thus made may be mounted on paper as a present, or used for the child's book of kindergarten work.

A mechanical contrivance called the "Little Creaser" has lately been invented, which is a great help in folding the paper into thirds. It is a box-like wooden arrangement, with two bent wires and grooves in the bottom, and a cover which

is shut down upon the strip. This is then pulled out through one of the open ends, and is found to have been creased in two well-defined lines its entire length, serving as a guide to the eye in folding. It is great fun to pull the strip through, even for grown people, and is not so much of a help to the children as to be objectionable, in our opinion.

The squares on the table or slate are really not sufficient as a guide in paper twisting save for the first exercises and the rectangular figures, so we early introduce large heavy pasteboard tablets around which the strip may be folded. These are the fundamental forms of the seventh gift, but made on a larger scale, usually that of two or three inches. The child lays the tablet on the table and follows its outline with the folded strip, bending and creasing it carefully at each corner. He must early be led to see that there is no beauty in the work unless accurately done, and there really seems to be no one of the occupations, save its first cousin, paper folding, which so depends for its pleasing effect upon absolute and mathematical exactness.

When the child has learned to make a few simple geometrical figures fairly well, it is time to take the next step, that of interlacing them to form a design. If we are working upon squares, for instance, the first one is completed, carefully fastened, and laid

Interlacing,
narrow fold-
ing, ro-
settes, etc.

parallel with the edge of the table, while the second is woven into it, under one side and over the other — under — over — until it lies securely fastened into the first in diagonal position, the two forming a very pretty star-like figure. Any two similar geometric forms may be thus intertwined, the best effects being produced from the regular figures, and subsequently a variety of these interlaced, making a large design. Most of the German "Guides" give elaborate examples of intertwining, and a series of plates from the designs of Mme. Kraus-Boelte are to be had, some of which are very intricate and interesting, and would seem almost impossible to any fingers but those gifted with a magic touch. All kinds of charming effects, in contrasting colors and in various tones of one color, may be produced with the interlaced figures, for we have all the resources of the modern color-market in the engine-colored, coated, and glazed papers at our disposal.

The strips may be folded four or five times when older children or grown persons are using the occupation, making a very pretty effect when contrasted with the broad ribbon-like appearance of the strip folded once. Elaborate borders may also be interlaced to surround the designs, to ornament box covers and frame the various kinds of handiwork, and a further and very pleasing modification may be added to the occupation by folding the corners of the figures into one, or a series

of rosettes. The process by which these rosettes are folded is not one which can well be described in written words, though it is not particularly difficult, and is easily learned from dictation or illustration.

As paper twisting illustrates the straight line, it may be used to produce any simple life forms, but it is perhaps inadvisable to employ it for this purpose, as it can only be done by pasting the strips in position, and allows no interlacing of figures, which is, of course, the idea on which the occupation is based. We must always begin with the geometrical forms as a foundation, and one of the chief values of intertwining is that it shows so beautifully the development of symmetrical figures from the mathematical basis. This lesson cannot be so well learned if we use the strips for making life forms, and we also lose, in a measure, one of our opportunities for teaching the practical working of the law of mediation of contrasts.

Paper interlacing may be made quite useful in the school, on account of the trifling expense of the materials and because it needs no previous preparation, which latter fact is a matter for serious consideration when one has fifty children in charge and only one pair of hands. It may be used to illustrate the various lines and angles either from dictation or from drawings on the blackboard, for impress-

Forms of
Knowledge,
Life, and
Beauty.

Use of Inter-
lacing in
Primary
Schools.

ing still further the simple geometrical forms, their names and the number of their sides and angles, and may also, after folding in halves or thirds, be creased into inches and used for estimating distances and dimensions. The figures produced may be devoted by the pupils to group-work inventions, for this coöperative work is more than ever necessary, now that the children's individuality is more fully developed, their ambition growing, and the time approaching when they must assume the duties of the citizen. We have seen the blackboards in a primary school-room very effectively bordered with broad three-inch strips of paper twisting folded into a running design and fastened in position with small brass-headed tacks. The children took the greatest pride in this border, which was the work of the entire class.

Dr. Hailmann makes the following suggestion, in his "Kindergarten Occupations in the School," as to the connection of intertwining with drawing: "These forms," he says, "yield excellent material for drawing exercises, on the slate or on the blackboard. There can be no objection to exercises in extending the forms in drawing, by permitting the addition of more lines. . . . On the contrary, these exercises are of great value, since they train the pupils in the difficult art of recognizing the simple types, from which all forms, however complicated, are derived. Thus

they render the powers of analysis keen and reliable in the discovery of types, and the powers of synthesis ready and fertile in the invention of new combinations or modifications of types ; while, at the same time, they furnish ample and valuable groundwork for future generalizations and classifications.”

Paper twisting is in reality a combination of the two occupations folding and weaving, and in its various forms has always been a favorite with childhood. There were certain snow-white stars folded by a very complicated method long since forgotten, which once used to give a great deal of pleasure to two little girls we knew, and if our memory serves us, the points of those same stars could be slipped one into the other and thus make a very pretty frame for cherished photographs. Then there were little book-marks and air-castles and, best of all, fascinating baskets that were filled with flowers and hung to door-bells on the eve of May-day, long ago. And don't you remember the “Pussy-cat stairs” that mother used to fold for us when we were very little, so little that we could only watch in round-eyed wonder the deft white fingers as they fashioned the tiny staircase ?

Ah, the kindergarten does well indeed when it gathers up the traditional nursery plays and weaves them into a garland to delight and charm the children of to-day !

Paper twisting a favorite Occupation of Children.

SLAT INTERLACING

Materials: Thin uncolored wooden slats, of birch, oak, or other tough wood, about ten inches long and one half inch wide.

THERE is much similarity between slat work and paper twisting, the aim of both being the interlacing or weaving together of two or more independent figures.

They give much the same impressions of form, size, number, position, and direction, and are equally useful in design; but the former occupation is simpler than the latter, and better adapted to the representation of objects connected with the child's daily life and sympathy. They differ, however, in material, in color, in the fact that the slats are ready for immediate use, while the papers need preparation by folding, and also in that complete figures only are interlaced in paper twisting, while in slat work separate slats representing lines are interwoven with the geometric forms.

The slats are a part of the eighth gift, but, as noted in the previous volume,¹ are used commonly for interlacing and as a preparation for weaving.

¹ *Republic of Childhood*, Vol. I., *Froebel's Gifts*, page 145.

That they are properly classed among the gifts, however, is proved by the fact that the forms produced with them are not necessarily permanent, but can be resolved into their original elements without change in the material.

The slats are early introduced in the kindergarten, though with no attempt at first to use them for interlacing, but merely ^{Introduction of the Slat.} to pave the way for the sticks, and to teach simple lessons in regard to the directions of lines, the parts and the spacing of the table, etc., and thus prepare for later dictation. Save in peas-work, this is the only occupation in which wood is employed, so we have a wide field for all the charming stories, songs, and poems we can gather together on the subject. The exercises must be brief when the slat is first used, and as they are not yet concerned with making, are apt to grow a little tiresome if not enlivened by the kindergarten. The songs of the "Carpenter," the "Trees," and the "Wood-sawyers"¹ may appropriately be sung now, as well as those old kindergarten favorites, the "Sawing Song" and the "Joiner."

Miss Emilie Poulsson's delightful book, "In the Child's World," in its various chapters on Wood, Trees, and the Carpenter, is a storehouse of valuable material for stories, all of which, of

¹ *Kindergarten Chimes* (Kate D. Wiggin), published by Oliver Ditson Co.

course, are equally as useful with the building gifts; and her "Old-Fashioned Rhyme," which follows the wood in all its processes of transformation from the tree to the house, should be memorized by every kindergartner.

There are a number of things to be found out about the slat, besides its material, its color, length, and width; and the children, if properly led, may make a series of scientific experiments with the simple bit of wood. To illustrate the law of balance, the slat may be poised on the back of the hand, on the fingertips, etc., and finally serve as a see-saw laid across a small block, two of the wooden lentils merrily riding at each end and an appropriate song being sung. Nor would it be waste of time, if it were the close of an exercise, for the kindergartner to cut out hastily a pair of rude paper dolls for each of the small teeters. We may well believe that there would be much more thorough investigation into the laws of equal distribution of weight, if these attractions were added.

Mme. Kraus-Boelte gives the following pleasant exercise, bringing out elasticity, vibration, and also rhythm. The children are directed to hold the slat firmly, projecting halfway over the edge of the table, to press the projecting part down, release it quickly and note the buzzing or whirring sound to be heard and the vibration

First Exercises with the Slat.

plainly to be seen. The sound will vary according to the length of the projection and the thickness of the slat, and the whole class may make an amusing chorus by being allowed to sound the slat, each in turn with a regular rhythm, or all together.

A variety of exercises in vibration can be given with the slat, and also many in elasticity which will show the principle of the bow and arrow. Hermann Goldammer¹ mentions one exercise in elasticity, which we have found to be received by the children with the greatest delight and acclamation. "Lastly," he says, "we must put the elasticity of the slat to a practical use by making it serve as a sort of catapult. To this end we may hold it on the table with one end projecting beyond the edge and the other held tightly down, and place on the extremity of its projecting part a tiny ball of wool with a feather or two stuck into it to make it the more visible. The pressure of the finger bends down the slat, suddenly we let loose, and up flies the ball to the ceiling, to the no small delight of the child."

Even with two or three slats rude life-forms may be made, but these are only line-
pictures, and cannot be lifted from the ^{Slat Weav-}
ing.
table. With a fourth slat, however, the true inwardness of the occupation and the flexibility of the wood stand revealed; for if each slat comes

¹ *The Kindergarten*, page 156.

in contact with the other three, and is supported by them in such a manner that two slats rest on one side of it, whilst the third, the middle one, rests on the other side, a complete figure will be produced which can be lifted from the table. The theory of weaving the slats over and under seems a simple one enough, but experience will show that there is a wide gap between theory and practice. Though the child must be shown at first how to weave them together, yet he will never really learn the process until he has experimented by himself and probably made several failures. He may have achieved an apparent success with his weaving, and yet as he attempts to lift the form it falls into pieces in his hands. "It was the *one slat*," says Edward Wiebe, "which, owing to its dereliction in performing its duty, destroyed the figure and prevented all the other slats from performing theirs." The wise kindergartner may use this little occurrence for the pointing of a story on the value of coöperation, and the moral, if it is not too strongly insisted upon, will sink into the heart of the child, weighted as it is by his experience with concrete things.

With a few slats the child can make a variety of life-forms, as stars, fans, gates, picture-frames, trellises, boats, etc., and when he has once grasped the principle by which the figures hold together, he will invent freely with the material. Many beautiful forms of symmetry can be made also ;

but though all these must rest upon a foundation of knowledge forms, yet the geometrical outlines are not as easily studied here as in the paper twisting, for they are somewhat confused by the crossing and interwoven sticks. For number-work, however, slat weaving is much better adapted than the former occupation, and thus again gives evidence of its kinship to the stick family. As the interlaced figures grow more complex, the width and length of the slats may be reduced, and the ends pointed or rounded, thus producing very dainty little designs which may be mounted on heavy colored paper. For kindergarten children, however, the width of the slats should not be lessened, and it would be better, for the first exercises, if they could be had double the present width. Some authorities advise soaking them a half hour in warm water before attempting to cut them, but this, though it makes the wood more pliable, tends in our experience to discolor it.

Slat interlacing has never been a very popular occupation in our American kindergar-
 tens, but when one considers the mat-
 ter, it is really difficult to know why this should be so. It needs no previous preparation, therefore is well adapted for use when the kindergartner is tired or hurried; the children like it very much, and the older ones, after the first few lessons in weaving the figures, can be left quite

Value of
Slat Inter-
lacing.

by themselves in times of exigency, and trusted to experiment and work on most industriously. The designs produced are large and free, having none of that delicate prettiness (or pettiness) about them which so distinguishes paper twisting, and the materials handled are so substantial in size as to produce no strain whatever on the accessory muscles and the finer nerve-centres. The work is admirable, too, in developing ambidexterity, for the left hand is constantly called into play in holding and weaving in the slats, and it connects admirably with design in industrial and mechanical drawing.

The slats have long been in use in the school, Slat Work in the School. but commonly are only employed there for number-work and for word-making. Many teachers have as yet little idea of the value of the kindergarten occupations for what is called "busy work." Froebel says in this regard,¹ "The plays and occupations of children should by no means be treated as offering merely means for passing the time (we might say, for consuming time), hence only as outside activity, but rather that by means of such plays and employments the child's innermost nature must be satisfied. This truth has indeed been before expressed; but on account of its deep importance for the whole life of the child and man, it cannot be too often repeated, too impressively stated, nor can its truth be too often established from all points of view."

¹ *Pedagogics*, page 108.

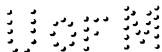
For real "busy work," work done with delight and with a purpose, the slats are admirably fitted, not only for numerical problems and word-making, but for free and directed design. The teacher may draw upon the blackboard large figures,¹ either forms of life or symmetry, which the pupil may reproduce from his seat, or the older children may draw figures which the smaller ones may weave together. She may also write simple problems on the board, such as "Interlace two equilateral triangles, two squares, two hexagons," etc.; or "Use eight slats in making a gate, or sixteen slats in making a picture frame."

All the life forms may be connected with the daily work, or the topic uppermost in the children's minds. How delightful it would be, for instance, in the week preceding Thanksgiving to draw the "Mayflower" and the "Speedwell" on the board for reproduction one day, Peregrine White's cradle and the first log-house another day, and the third, call for slat-pictures of the little Pilgrim Church, the Indian wigwams, and the seats and tables for the first Thanksgiving party.

Suppose a series of these designs, and many others easily suggested by the story,² be fastened

¹ A series of beautiful designs for slat interlacing is published by E. Steiger & Co., New York.

² Kate D. Wiggin and Nora A. Smith, *The Story Hour*, page 107.



on the blackboard and a few ornamental touches in colored chalks added by the kindergartner, and what a light upon the historic meaning of the day would rush into the brains of Ivan Michalitschke and Ingeborg Svendsen and Dinney O'Hoolahan!

Group-work, also, both in school and kindergarten, may be very beautifully carried out when the teacher clearly understands the principles on which it rests and is fully convinced of their importance, and thus the entire band of children be united by the magic of "Together."

We scarcely realize, perhaps, the value of industrial training as so sweetly and naturally begun in the kindergarten. There needs no argument to prove how much more helpful and useful it is to the child, to fall in love with industry, and journey with her willingly hand in hand, than to be bound to her side and lashed reluctantly along in the chain-gang! The kindergarten children love to work, it is their greatest pleasure, their highest desire, — they have to be coaxed and gently entreated to be idle, and they commonly know no punishment so severe as to be divorced from their beloved occupations. When in the future every child in the republic has passed three of his most impressionable years in an atmosphere of hearty, happy industry, and when creative handiwork is continued throughout the schools in connection with

Value of
Industrial
Training.

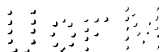
purely mental training, then there needs no prophet to foresee the brightness of the day that will dawn. The popular feeling in regard to the dangers of idleness, is well reflected in the wise proverb, "Idle fingers are the devil's tools," and in Dr. Watts's old couplet,

"Satan finds some mischief still
For idle hands to do,"

and that this popular feeling has a strong basis of fact is abundantly proven by the statistics which show that seven tenths of the convicted criminals in the United States have never learned a trade, nor followed any industrial pursuit.

An eminent divine¹ has lately summed up the matter in most effective fashion in the following words: "Industrial ignorance is the mother of idleness, the grandmother of destitution, the great-grandmother of socialism and nihilistic discontent. So far as the battle of life is concerned, to train children's ideas without training their fingers is like putting a regiment through musket drill; it is healthy discipline and affords pleasant dress parade, but will avail little before the enemy, unless, with all other acquirements, they have learned to shoot."

¹ Dr. Chas. H. Parkhurst.



WEAVING

“The art of weaving is exceeding old,
As we by King Deioeces have been told.
’T is said that Ghelen weaving first began,
Which hath descended since from man to man.
The mothers taught their daughters, sires their sons.
Thus in a line successively it runs,
For general profit, and for recreation,
From generation unto generation.” — *Anon.*

Materials: Square and oblong paper mats of various colors and sizes, cut into strips from one eighth to one half inch wide, and surrounded by an appropriate margin (these represent the warp); strips of similar widths and harmonizing colors (the woof); a steel weaving needle (the shuttle).

WEAVING, perhaps the most ancient of the manufacturing arts, whose invention is lost in the mists of antiquity,¹ is that industry by which threads, or yarns of any substance, are interlaced

¹ “The art of platting, which carries in it the germ of the art of weaving, is of immemorial, undiscoverable antiquity. There can hardly have been a time when men did not weave together twigs or reeds to form a rude tent covering — a primitive house. And one proof of the immense antiquity of this practice is given by the numerous names for twigs, reeds, etc., in different languages, which are derived from words signifying to twist, or weave. The word *weave* itself (Ger. *weben*) is connected with a Sanskrit root *ve*, meaning much the same thing; and we find this same root *ve* reappearing again in the Latin *vimen*, a twig, and *vitis*, a vine, — the last so named from its tendrils, which, we should judge, were used for platting before

NO. 1.

so as to form a continuous web. "The weaving of clothing is one of the three primal Antiquity of the Art of Weaving. race occupations, the other two being planting for food and building for shelter, and Froebel believes that these three forms of activity are essential to normal development."

Among the remains of the lake dwellers in the second stone age we find woven cloths, sometimes worked with simple but not inartistic patterns. Felkin says, "To draw out the locks of hair and wool and spin them by distaff and spindle has been a practice for four thousand years, and to weave them into cloth by that oldest textile instrument, the weaver's loom, is an art traceable nearly to the time of Noah."

After the death of Methuselah the art of weaving appears to have made considerable advance in the East, particularly in China, India, and Persia. The first loom of which there is authentic record was invented by Arkite Ghiden Ghelen about this time.¹ The weavers at work in those long-

they were used for producing grapes. From the same root again, and for the same reason, are derived the Latin *viburnum*, briony; the Slavonic *welle*, willow; the Sanskrit *vetra*, reed. The Latin *scirpus*, reed, and the Greek *γρίφος*, a net, are allied; but these may not be instances quite in point. Such rude platting as this is a very different thing from the elaborately woven cloths found among the remains of the lake villages whose construction involves also the art of spinning."—Keary, *The Dawn of History*, page 334.

¹ Gilroy on Weaving.

ago times in the far East must have presented a charming sight, for we read that their houses were always built near the shade of tamarind and mango trees, under which at sunrise they fixed their looms. The older kindergarten children would delight in a story about these brother weavers, and also in the strongly contrasted picture of the Lapland maiden, as she sits at her loom of reindeer bones, in her dusky ice-hut with its blubber lamp.

The pages of the Old Testament are rich with references to weaving and weavers, — witness Exodus, Ezekiel, Chronicles, and the book of Joshua. We read that the first men to teach the art to the Hebrews were Bezaleel, the son of Uri, and Aholiab, the son of Ahisamach.

From the history of Samson it is evident that the cultivation of flax and the arts of spinning and weaving were practiced by the Philistines, and Solomon greatly increased the industry among the Hebrews. From the far East the art passed long before Homer into Greece, and thence over all the shores of the Mediterranean. In Ovid's "Metamorphoses" we find the following description of weaving: —

“Unto the solid beam the warp is tied,
While hollow cones the parting threads divide,
Through which a thousand shuttles swiftly play,
And for the zephyr weft prepare a ready way.”¹

¹ *Metamorphoses*, VI., O'Rourke's translation.

In the pages of Theocritus, Ovid, Homer, Virgil, Herodotus, and other Greek writers, we find most beautiful word-pictures of woven stuffs and of weaving as an industry. There is no such imagery in our modern literature concerning any handiwork of the present day as can be found in these classics.

The art of weaving was unknown in Great Britain previous to the Roman invasion. After the Romans had obtained a footing, they established a woolen manufactory at Winchester. They also taught the natives the culture of flax and the art of weaving.¹

The simplest form of weaving is that employed in making the mats of uncivilized races. Mat Weaving: Weaver Birds. These are woven in the same way as the first mats in the kindergarten, using in place of paper the fibres of vegetable growths, — the ends of these fibres being fastened to a stick to keep them in place. How the early savage races originated the art of weaving cannot now be known, but it may have been from studying or imitating the habits of certain birds. Among the most noticeable of these are the weaver birds of Africa, the name having reference to the remarkable way in which their hanging nests are constructed; these are woven in a very wonderful manner of various vegetable substances, and are objects of great interest. One of the birds stays

¹ Gilroy on Weaving.

inside, the other outside, and the outside bird pushes a strip of grass through the strands, the bird within pushing it back in another place; and so they weave the strip out and in till the baby's cradle is finished. From a kindergarten point of view, weaver birds might be said to have originated group work also, as some of the species build in company, each contributing something, the whole forming an umbrella-like roof, under which the nests are arranged with wonderful regularity.

In its first stages, weaving is quite difficult for the little pupils. It is not an occupation suitable for babies, and sufficiently complicated problems can be devised with it to occupy a child twelve or fourteen years old. The slat interlacing of the previous occupation is an admirable preparation for weaving, and the slats are used for learning the first principles of the art. For this purpose, they should be a half inch broad (preferably an inch), as strong and thick as they can be found, and if used with oil-cloth or brown-paper mats, are much more attractive if colored. These heavy mats of oil-cloth or manilla paper are easily cut out by the kindergartner, and are used merely as a preparation for the more delicate paper weaving. It will be a great help to the child, in learning to raise and depress every other strip with his wooden slat, if these are painted alternately with water

First
Steps in
Weaving.

colors, or washed with ink, in some bright attractive hue. These practice mats would be much more durable and attractive if they were cut from thin leather, or bright colored morocco, and the expense of the material would be no great matter, as they would last long enough for the children of several successive terms. If the vivid scarlet morocco sometimes used for babies' shoes were employed, one can imagine the joy of weaving white slats in and out of the bright glossy mat, and if the fabric was found too light it might be backed with heavy unbleached cloth before cutting. These practice mats should not be made too large, for it is almost as discouraging to the child to see a vast expanse of mat laid before him and to be expected to fill it with slats in ten minutes, as it was for Graciosa in the fairy tale, when she had the room full of myriad-colored feathers to sort before nightfall. Although these first mats should be small, however, the strips should be at least a half inch wide, lest they cause too great a strain on hand and eye in these early years. Mrs. E. L. Hailmann has suggested, for this practice weaving, cords or tapes stretched lengthwise of a frame, say an old slate frame, into which could be woven, without any needles, bright colored tapes running the other way.¹ The wooden slats might

¹ Some of the early weavers drew the weft through the web with their fingers; others used an implement like a knitting needle with a hook at one end.

also be woven into this warp made of cords, and the work be most appropriate for the younger children.

Considerable practice is needed before the children fully grasp the principle of passing the slat over and under the alternate strips, and we need here all the helps of color and attractive material, as well as of imagination, lest they grow discouraged¹ and get a thorough distaste for the work. Songs and stories are necessary here, and the slat must be played with constantly, and the work made more interesting by "making believe" that it is an engine steaming under archways, or a dog with his nose to the ground following a trail, or a brook playing hide-and-seek with the children, and running out of sight and then emerging suddenly. The bright colored paper mats and the shining needle which are to follow this first work, must also be shown, else the child will think himself a modern prototype of Sisyphus, when he is confronted, lesson after lesson, with the heavy mat which is never finished, and which he never takes home.

But having conquered the practice mat and its accompanying slats, the field is not yet won,

¹ Homer's description of Penelope at her weaving (*Odyssey*, XVII.) very well fits some of these small kindergarten workers as they battle with their difficult mat problems:—

"Lowly she sat and with dejected view
The fleecy threads her wary fingers drew."

although victory is indeed in sight. Before a child can weave in even his first strip with the long-desired paper mat, a certain amount of delicacy of touch is developed in simply learning to place the strip in the needle, without tearing or injuring it. "Opening the mouth" of the needle, as we say familiarly, and placing the strip in it successfully, is indeed no small acquirement for a beginner, especially for one who has heretofore had little acquaintance with tools. However, with patience on the part of both kindergartner and pupil, even this great feat is accomplished; and the joy displayed later, while watching beautiful designs growing under tiny fingers, more than compensates for this and all other labors.

With this difficulty overcome, there remains yet to be practiced the management of the needle with the right hand, while Ambidexterity gained in Weaving. the left manipulates the mat, and when the child is more advanced, we may reverse this process, thus giving greater development to the left hand. In no other occupation does that neglected member play a more important part, and since the aim is the equal and constant use of both hands, weaving must satisfy the advocates of ambidexterity, and be recognized as of the highest educational value. Weaving is also one of the best tests of eye measure. The child who possesses a true eye, weaves "over one and under one," or "over two and under two," as the case may be,

perhaps without knowing the number of strips at all, simply following by eye the strip already woven. Another child who can count pretty well, cannot measure distance at all, but while it is a test, it will also tend to develop an accuracy of eye which will be of incalculable value in all later work.

To return to the little one and his first paper mat and strips. With that mat comes Weaving as cultivating the Virtues. a new responsibility. No material has been given before that required such careful handling, in taking from and returning to the envelope. The child feels this responsibility and is delighted. To be sure, he usually separates all the strips at first (though warned not to do so), but as the mat must still be finished with them, crumpled though they be, he realizes that here "willful waste makes woeful want." Here, too, economy is taught, for when he tears up, or scatters his strips over the floor, he soon comes to grief; lacking the material needed to finish his mat, he learns to be more careful, half unconsciously perceiving the connection of cause and effect.

Weaving has also a high moral value if judged by St. Paul's words, "Tribulation maketh patience; and patience, experience; and experience, hope." Indeed, when inventions are attempted it is only after endless patience and various experiments that one attains success, and

in this very fact lies the danger that the child may become so discouraged by repeated failures to accomplish his design that he will lose all desire to try further.

Besides this necessary virtue of perseverance, industry, too, has here full play; and accuracy is most needful, for one mistake in the introduction of a strip is very apt to produce error throughout the mat. This gives admirable opportunity for a moral lesson similar to that drawn from the illustration of transmitted motion with the fourth gift, and there is ample opportunity, if the mistake has been made through carelessness, to reflect upon the error of one's ways while taking out all the strips and putting them in again.

This occupation seems to further develop the child's impressions gained from sewing. We find the lines and angles appearing again as old friends, though clad in new and shining garments. The bright colored strips correspond to the worsted, and the mats to the cards, on which he sewed his designs. And here we see another illustration of the wisdom of Froebel in ministering to the child's tastes. He has chosen this material, as in all other cases, from a thorough knowledge of the early love for bright objects, — the natural undefined appreciation of the beautiful. Weaving is not especially valuable for teaching form, however. It introduces added difficulties, in producing forms of life, because

Form-teaching:
Forms of Life.

of the absence of all curved lines, and this difficulty tends toward the danger of introducing too few of them. Some authorities argue that as the occupation is really not well adapted to the production of life forms, they should not be attempted at all; but a great source of pleasure to the children would be lost if this advice were followed. It is, of course, extremely difficult to make life-like figures with the broad strips used by the youngest children, but still it is not impossible of accomplishment, in a rough sort of way, and with the finer mats a great variety of forms can be produced, any simple pattern used for Berlin wool-work being suitable for the purpose. No one who has seen the buildings, furniture, clocks, lamps, vases, flags, leaves, ships, etc., made with the finer weaving can fail to acknowledge their value, even though they must all be rectilinear figures; and that they can be poetic also is abundantly proven by the little mat sent us from the Empress' kindergarten in Japan, on which is woven snow-covered Fujiyama, with the white moon shining down upon it.

Since, in all kindergarten occupations, we seek to develop the child's creative power, let us note the effect of weaving upon the inventive ability. The development brought about in all the various things which are taught by this occupation: color, its contrasts and harmony, form, distance, and direction, and the en-

Invention in Weaving.

tirely new manipulation of material, should lead to invention, and the most practical results be obtained. Endless designs for oil-cloths, carpets, wall paper, tile floors, lace curtains, towels, table linen, etc., may be made with this simple mat and strips of paper. The fact is that in weaving the inventive powers of pupil and teacher also are developed, and by it, in apparent play, minds and hands are practically trained as they could not be in precisely the same way in any other occupation.

There are a variety of ways in which inventions are made in weaving. Sometimes the child marks off upon his squared slate or paper a space equal to the size of the mat he is to use, and there makes his design, which he afterwards copies with the mat and strips; sometimes he uses square tablets for the purpose¹ and lays his pattern upon the table first,—and both these methods are valuable, if in no other way, for the exercise in calculation which they give. Again, he may begin directly upon the mat without the intervention of any other material, and weave out his design with the needle and strips. If he invents anything in this manner at first, it will generally be in the nature of a “lucky hit,” for though he intends to make something, he has commonly no idea what it is to be. He can often make very charming effects in these first experi-

¹ *Republic of Childhood*, Vol. I., *Froebel's Gifts*, page 137.

ments if he puts two strips in his needle at once, and weaves them in together each time, pushing one afterwards to the bottom of the mat and another to the top. This will at least make the pattern symmetrical and often produce a very good design. The inventions need not only depend upon form for their beauty, but also upon effective combinations of color. There are two manilla mats which come in every package of weaving which are most useful for invention, as the heavy paper is not as easily crumpled by the repeated efforts of the young experimenter, and if we give him with these mats a box of strips, which are the "left-overs" of many terms of weaving, he will often produce a "rainbow" mat which will be a veritable feast of color. Strips of different widths may appropriately be used for many of the inventions, and so serve the double purpose of using economically all materials and adding variety to design.

It is very useful now and then with the older children to dictate a simple pattern in weaving. When they understand the principle on which the occupation rests, and are familiar with the simple numbers, they can follow directions quite readily. Dr. W. N. Hailmann says in this regard: ¹ "I cannot dismiss the occupation of weaving without pointing out the great value of occasional exercises in dictation, — direct-

Dictation in Weaving.

¹ W. N. Hailmann, *Kindergarten Culture*, page 100.

ing a small group of children in terse language how many strips of the warp are to be successively raised or depressed. . . . Such exercises will enhance the power of the child to work consciously and directly to a fixed purpose ; but I add again, that they should be *occasional* exercises, and must not be allowed to drown self-activity." Before the child can follow a dictation successfully his attention must be called to the margin surrounding the mat, and he must be led to see that it is simply a frame like a picture or slate frame, that the needle is invariably to be slipped under it when weaving in a strip, and that it is not to be counted at all when following numerical directions. Sometimes in dictation, if a figure or design having a centre is to be made, we begin in the middle and give directions for one half the pattern, letting the child finish it himself. If it is a design involving a series of repetitions, we dictate only a sufficient number of strips to give the idea to the child, and then leave him to work it out.

The law of the connection of contrasts comes forcibly to the surface, as usual, in this occupation. In color the pattern is only brought out by the reconciliation of contrasting hues, the mat being sometimes the harmonizing influence between strips of opposing colors, and then again being contrasted in color with one set of strips, while another brings them into re-

Connection
of Con-
trasts.

lation. Every figure and design in weaving, if the element of form be under consideration, is brought about by the connection of opposites, the figure in one row being transposed into an opposite position in the next. The contrasts of over and under are united in every mat, and each strip is kept in place by weaving the one below it in a different manner. Thus, in the simple pattern of over three, under one, the first strip is run in, over three strips and under one, all across the mat, but the second is woven under three, over one, and the two together make the pattern.

It is well to use, for the first paper mats, those Broad and narrow Mats. having regularly alternated broad and narrow strips. Before the child has sufficient powers of calculation to master over one and under one, he may be asked to pick up all the wide strips on his needle and leave the narrow ones; in the next journey across taking up the narrow and leaving the wide. A certain kind of mats is now manufactured cut in alternate wide strips and groups of very narrow ones, two, three, or five in a group. Beautiful patterns may be made by simply weaving over one and under one, and an entirely different design in one mat is made by passing the needle over all the broad strips, from another mat in which the needle has been passed under them. There are other mats, which are graded from narrow on the sides

to wide in the centre, and *vice versa*, strips being cut accordingly. These mats are useful for occasional introduction, and give fresh enthusiasm to a discouraged child, perhaps, but the criticism on them might be that the effort is not commensurate with the effect, the pattern being beautiful, while no skill is needed to produce it. These mats do nothing whatever towards the development of inventive ability, their only purpose being to inculcate thoroughly the principle of "over one and under one." They are more artificial than Froebel's original material, and demand less from the child.

Mathematically considered, weaving seems one of the most perfect systems that could have been devised for teaching children Number Work in Weaving. to count and to calculate. Words are nothing to a child; it is what he sees and what he does that he remembers. He may be told a hundred times that "two and two are four," and he may even learn to repeat it,—but had it been announced that "two and two were five" he would have given the statement the same credence. But when he can realize number "corporeally," so to speak, the impression is a mind-picture, and has become lasting. And since number is inherent in this occupation, it is impossible to use it and exclude the science of numbers, thus making weaving of more value mathematically than any other occupation. We have here the means for teach-

ing the elements of arithmetic, as in paper folding we teach the elements of geometry. First, we have the unit, "over one, under one," then "over two, under two," and so on, thus giving very good exercise in counting, and furnishing, as Koehler says, "an orderly series of object lessons on the first few numbers." When the mats of simple principles have been woven, the combinations of numbers included in them is easy to the child. The mat becomes his slate, or blackboard, on which he weaves out his tables in addition, subtraction, and multiplication, or simple problems, the strip "over two" meaning as much to him as the figure "two" to a child in the primary school. The mental training in calculation, which this combining of numbers gives, is invaluable. Weaving may be considered, too, as bearing the same relation to number lessons with the gifts that drawing does to the laying of forms in sticks and rings, being more abstract than counting with the blocks, and less abstract than figuring. The numerical progression in the ordinary "school" of weaving¹ is, first, simple numbers, — over and under one, two, three, and four strips; then combinations of numbers, two and one, three and one, four and one, two and three, three and four,

¹ Froebel's School of Weaving is to be found in all the kindergarten "Guides," and a great variety of colored plates, illustrating designs for the occupation, may be had of any kindergarten supply store.

etc.; then numbers woven in a diagonal direction, familiarly called "steps;" then patterns in repetition and alternation, and so on through designs for oil-cloths and tile floors, borders and symmetrical figures, all built on the most exact arithmetical foundation.

The school of weaving is always to be varied, of course, by the introduction of life forms, and opportunity is frequently to be given for invention. Here, too, as in all the kindergarten handiwork, we must often encourage the working together for a common purpose. The kindergartner may, perhaps, prepare a large mat, and a number of children weave it into a carpet for the doll's house; a class of little ones may weave a number of small mats, and make a large invention of them to mount on cardboard and hang on the wall; a series of weavings of appropriate coloring and design may be used as a border to the blackboard, — and so on: it matters not so much for what purpose they are made, as that each child shall be enabled, now and then, to use his labors for some end which shall be for the good of others.

Weaving gives the child an understanding of various industries now performed by machinery, and acquaints him with processes employed in the production of many articles, thereby relating him to much that surrounds

Life
Forms,
Inventions,
and Group
Work.

Industrial
Value of
Weaving.

him. It supplies material for creation, it develops the perceptive faculties, sharpens the sense of color, and gives pleasure and profit to children of widely differing ages. Not the least among its values is that the finished work may be made up in so many pretty and useful ways to serve as little gifts. The mats may be cut from morocco, leatherette, cardboard, or ivorine, and woven with strips of silk, velvet or ribbon, and thus serve for blotters, calendars, portfolios, box covers, handkerchief cases, lamp mats, and cornucopias. These are all trifling things enough in one sense; but in another, nothing is trifling which the child makes with an honest, loving purpose, and as carefully and artistically as his powers admit. "In the Paris kindergarten work," says an observer,¹ "the idea of decoration is made inseparable from that of completion. The highest use includes beauty in all work. The weaving is not so much with paper as with worsted, which is a more useful material and admits more easily of decoration. A little woven square of colored worsted may serve as a mat or a holder, and a combination of squares can be used as a cover for table, bed, etc.; each piece may be decorated in harmonious colors and designs or in portions of one large design. All manual training is relieved of its purely industrial aspect by the artistic impulse of the French people."

¹ Mrs. Louisa Parsons Hopkins.

Weaving may be made of considerable value in the school, though it must be so managed as not to require much previous preparation from the unfortunate teacher who has seventy children in her sole charge. Mrs. E. L. Hailmann has devised some small mats on which arithmetical problems may be quickly woven out, and which are thus well fitted for the school; and if the patterns are woven as they should be, so that the strips do not slip about, but remain firmly in place, it is an easy matter for the children themselves to clip the ends and gum the edges of the mat down upon them. Here, too, dictations are especially valuable and easily carried out, and the occasional copying of a symmetrical figure or form of life from the black-board might be allowed;¹ while for the older children, some written problem might be set. This might be, for instance: Weave three different designs suitable for towel borders across your mat; make an appropriate design for an oil-cloth; weave a pattern showing two figures in alternation which could be used for wall-paper; show me upon your mat the various ways in which the number ten may be produced by addition.

Letters and numbers may easily be woven upon the mats, but this would be of no especial value,

¹ Diagrams for Primary School Weaving may be had of the Milton Bradley Co.

save as an exercise in ingenuity and in illustrating the capabilities of the occupation. The mats may also be woven by the older children in the standard patterns used in cane weaving, and thus serve as an explanation of that industry. There is a variety of the work, called Freehand Weaving, which is a union of this occupation and paper interlacing, and which is very useful in the school, as it includes measuring, cutting, folding, and weaving, as well as practice in combinations of color.¹ All the forms produced are definite finished objects, as napkin rings, picture frames, book-marks, baskets, etc., and thus the work, in its relation to later industry, resembles Slojd.

Weaving, when considered as a primitive occupation, related to the industries of animals, offers a delightful field for stories. The marvelous homes and webs that the spiders make may be illustrated, and the incident related of gallant Robert Bruce and the lesson the spider taught him. Then we may tell that sweetest of "Together" stories (translated from the German), "How the Little Boy got a New Shirt," and we may revel to our heart's content in tales of wonderful birds' nests built in wonderful places. We should always have a collection of nests in the kindergarten to show the children, carefully explaining, of course, that they

¹ Manuals for Freehand Weaving may be obtained from E. L. Kellogg & Co.

were not taken until the parent birds had moved out of their homes and the little ones had grown up and flown away. What child would not have more patience with his weaving when he had seen the tiny round nest of the humming-bird, lined with the down from the cottonwood, the wonderful deep hanging pocket the oriole makes, or the sparrow's cosy cradle of moss and hay and hair. And suppose, while the children reverently examine these wonderful products of love and wisdom, we recite to them "The Child and the World,"¹ or Mary Howitt's poem, "The Sparrow's Nest," which tells so sympathetically of that dwelling "large enough for five,"

"Neat, warm, and snug; with comfort stored."

Who would be cruel to the birds in boyhood when his baby years had been filled with such tender thoughts! Miss Poulsson's "In the Child's World" contains many helpful suggestions as to the weaver and his work (pages 407-412), and also abundant material for birds'-nest stories (pages 292-301).

When we come to songs and games, we have scores to choose from, which tell of birds and nest-weaving, for bird life, its sweet content, its joy, its tenderness, its freedom, and aspiration, lie close to the kindergarten heart. Then we have spider games² which show the making of

¹ Kate D. Wiggin and Nora A. Smith, *The Story Hour*.

² "The Spider and the Flies," in *Kindergarten Chimes*, by Kate D. Wiggin.

the web, and weaving games, one of which I append, on account of its particular usefulness.

“First choose a row of children for threads of the warp, standing at such a distance from each other that a child may pass easily between them. Second, choose a child (or children) for thread of woof, who at the third line of the verse begins to pass before the first in the row, behind the second one, before the third, etc. ; after weaving through the line, taking his place at the end.

“The threads of the warp and woof change to children again, sing, and clap in time.”

But we have yet to view the occupation of weaving in its artistic aspect. The great end of art is to give pleasure. The eye and the ear are the chief avenues of artistic delight, and have the power of protracting enjoyment without fatigue. It is for this reason that artists strive so earnestly towards the gratification of these two senses. Among the susceptibilities touched by artistic arrangement, may be noticed the sense of unity, arising when a great number of things are brought under a comprehensive design, as in weaving ; the practical, arithmetical, and artistic making an easily apprehended whole, out of a numerous host of particulars. Besides being a source of pleasure, art has an elevating and refining influence on the mind and character, for there is an inseparable connection between the beautiful and the good. Obser-

Artistic
Value of
Weaving.

vation teaches that the full use of our senses is only to be acquired by suitable training. How fully this training is effected in the gifts and occupations of Froebel, only those initiated can appreciate and understand. Weaving, one of the most beautiful and useful of his occupations, develops the eye and the hand, the memory, imagination, and calculative powers, — all affecting the child's after life, be he artist or artisan. But considering it specifically, as to its artistic value, Froebel says, "The beautiful is the best means of education for the human race." We know the perfection reached by the human race in art has been developed from simple elements as a foundation, so "the child must have the elements of the beautiful, before he can comprehend it in its whole extent."

In the kindergarten occupations we have wonderfully devised means of teaching the elements of art, weaving being not the Color Teaching in Weaving. least valuable; for it may be made most artistic in color and design. And this brings up the most striking characteristic of the occupation, — its color, which was briefly touched upon in the beginning of this chapter. A child craves color as he craves sunlight and fresh air, and in weaving he is feasted with it. But though he admires, naturally, the bright hues and their rich effects, he does not understand that all bright colors do not, when combined, produce these rich

effects, and that subdued tints are just as necessary as the brighter ones. The occupation will be especially beneficial to him, and he will learn to harmonize colors more successfully, if he is allowed — with occasional suggestions from the kindergarten — to choose his own materials. The combination of color in this occupation sets it aside from all others, for in nothing else is combining color an absolute necessity, while the effect of the repetition of a figure either occurring in straight lines or alternating, as in the transpositions, for covering a surface, is a marked feature.

There has been of late some question among biologists as to whether, at the kindergarten period of the child's life, when the brain is developing so rapidly, it is wise to give such strong stimuli as we provide for the color-sense (in weaving, for instance), when we lay before the little one all the riches of the modern color-market. It is best, perhaps, to think of the matter seriously, though so far as our experience goes, there have been as yet no evil results from the practice.

There is a possibility, however, that if we centred the child's attention too much upon matching, classifying, and harmonizing colors, to the partial exclusion of form-work, and if we continued this through the primary school, we might lead the child, as Dr. Harris says,¹ into "habits of impertinent and trifling attention to elements

¹ *Report of the Committee of Fifteen*, page 17.

employed as material or texture, and a corresponding neglect of the structural form which alone is the work of the artist. . . . A child over-trained to analyze and classify colors — examples of this one finds occasionally in a primary school whose specialty is “objective teaching” — might in later life visit an art gallery and make an inventory of colors without getting even a glimpse of a painting as a work of art.”

Although we may consider this occupation under three heads, namely, practical, mathematical, and artistic, there can be Use and Beauty in Handiwork. no sharp line drawn between use and beauty, — one to begin where the other ends; but they must so blend as to make a perfect whole. There is no occupation or calling in life that would not be ennobled and raised to a higher level by artistic influence. In nothing need beauty detract from use, — in God’s creation we do not see them widely separated, but rather, going hand in hand.

PAPER CUTTING

Materials : Squares, equilateral triangles, and circles of white or colored paper, four inches in diameter ; blunt-pointed scissors ; mucilage or paste ; a camel's-hair brush or small pointed stick, and a cloth for pressing.

“ALMOST invariably,” says Herbert Spencer, “children show a strong tendency to cut out things in paper, to make, to build ; a propensity which, if duly encouraged and directed, will not only prepare the way for scientific conceptions, but will develop those powers of manipulation in which most people are so deficient.” The baby of three months delights to tear papers, attracted as much, perhaps, by the sharp, ripping sound and the rustle of the falling fragments as by the sense of his mastery over material, and the fancy that he is doing something of great difficulty and value. Some children who have a strong inherited sense of form are early able to tear forms from paper which are easily recognizable, but when the constructive instinct is thus far developed, the use of the scissors is commonly ardently desired. “The instinct of imitation,” as Perez says, “so active in all young animals, conduces to the rapid de-

Cutting a
Natural
Instinct of
Children.

velopment of this hereditary faculty," for every child daily sees his mother or nurse cutting something, and is fascinated by the movement of the bright scissors, the sound of the sharp steel blades as they clash against each other, and the rapidity of the effect produced. The fascination is overwhelming, — he will and must have the scissors; and as, if the desire is balked, he commonly obtains them surreptitiously and commits all sorts of vandalisms, it is wisest to give him something to cut, and thus make the enjoyment legitimate and above-board. The instinctive mother has satisfied the child's love of cut forms ever since scissors and paper were first invented, and who does not remember sitting at mother's knee and watching her cut out houses and furniture, and rude animals, and, most wonderful of all, strings of moon-faced dolls, with balloon-like skirts and tiny feet set at right angles to each other, — all holding hands and evidently tripping through a sort of stately rhythmic dance?

At about the third year, however, the child wants to do the cutting himself, and the thoughtful mother supplies him with newspaper, or cheap brown paper, and blunt scissors, and lets him experiment in her presence, it being fully understood in the beginning that the young experimenter is to pick up all the scraps from the carpet when he tires of the play. After he has handled the scissors a little, and can cut in a

tolerably straight line, he may be provided with simple pictures, advertisements, etc., from magazines, or newspapers (really good subjects only being provided), and allowed to cut these out and paste them in scrap books, assorting them according to some preconceived plan.

Many children will now delight in free cutting, smooth white or colored paper being provided for this purpose, but there is great difference in ability in regard to the originating of forms in this manner. Preyer mentions a child who, in his fourth year, without instruction, could cut animals out of paper with the scissors (giraffes, greyhounds, horses, lions, camels, fishes) so that everybody recognized them at once. Such a talent, however, if it be a talent, and not an indication of positive genius, is very rare indeed, and in our experience with many hundred little children has only been shown by one in any marked degree. All children, however, when old enough, even if they have no talent for originating forms, will delight in picture cutting, and also in cutting paper dolls and their voluminous wardrobes. Deaf-mute children are found to take particular pleasure in the occupation, and early become proficient in it, if at all encouraged; and any small sufferer, who is long confined in bed, will find cutting his best defense against fatigue and monotony. The universal interest in silhouettes, and the pleasure

Cutting an
Occupation
suitable for
all Ages and
Conditions.

that grown people frequently find in making them, is only a proof that the childish passion for cutting has not been altogether outgrown.

Cutting seems to be a union of the occupations of clipping, pasting, folding, and drawing, three or four of these processes being necessary to most of the more elaborate forms produced. Did we allow the child to go on as the infant does at first, simply cutting the paper into pieces, we should merely be gratifying his powers of analysis and destruction. The synthetic and constructive processes, however, are quite as valuable, and as "all separation exists," as Froebel says, "for the sake of union," we early give the child opportunity to unite the cut pieces into a complete form. Goldammer says in this regard:¹ "It is true that the desire to separate is observed in children much more frequently, and in a much higher degree, than the desire to reunite. But this observation is only partially correct. A child separates earlier, destroys earlier, because this is the easier operation of the two, and because nature has sufficiently provided him with instruments for doing it, even when artificial instruments, such as knives and scissors, are kept out of his reach. But to reunite things he requires some artificial binding material, and this is seldom at hand. . . . To the instinct for reuniting things we direct

Cutting a
Union of
Occupations.

¹ Herman Goldammer, *The Kindergarten*, Part II., page 129.

less attention, because it does not force itself upon our notice in the same unpleasant and occasionally very expensive manner. . . . Ordinarily, nothing is done to aid this natural tendency of childhood, to help the child in his endeavors. . . . Therefore it was that Froebel endeavored to satisfy, as early as possible, the desire of children to reunite things separated."

Cutting has been one of the neglected occupations in too many kindergartens, partly Cutting in the Kindergarten. because the ruled paper sometimes used for it has been thought too expensive, and also because it is supposed to need much oversight for its successful performance. The squares having triangles on one side, crossed in lines as a guide to the eye in cutting, are expensive, it is true, but we may alternate their use with squares of plain paper, by which just as desirable results can be obtained.

The argument that the possession of scissors in the school-room will lead the child to acts of lawless destruction at home seems to have little foundation. The child who is forming good habits, and learning day by day to employ his activities happily and rationally, may be inclined, indeed, to use at home the tools with which he gains so much pleasure at school; but he will be likely, in nine cases out of ten, to use them with care and discretion. We must remember, also, that blunt-pointed scissors are used for kindergarten cutting,

reducing to a minimum the danger of their dealing out death and destruction; that the kindergarten is never absent from the little group making use of them, and that, last of all, children who are appropriately and busily employed have little desire or leisure to use their tools as implements of warfare. "To teach the proper use of such instruments is the best means to prevent their being used improperly," and the child who has learned how to cut something really pretty and interesting from bits of paper, is much more likely to use the scissors at home for that purpose, than for clipping the baby's curls, the cat's whiskers, or cutting holes in mother's apron.

The square will not be a new form to the child when first introduced for cutting, for he will often have drawn it and laid it with sticks, and will be familiar with the faces of the cube, while he has already folded the paper square into some simple life form. It is always best, however, to give a bit of a review in a playful way, in order to be assured that each child knows and can point out the right hand front corner, the left hand back corner, the front edge, the back edge, etc., for any mistake in the directions based upon these terms will in cutting, even more than in folding, bring irretrievable disaster. The material, too, needs an explanatory word, though the children have handled it before in folding, sewing, drawing, and pricking.

Perhaps some little one is now developed enough to tell us where Mistress Wasp, the first paper-maker, gets the materials for her work and with what pretty artifice she uses it. And how does the rag picker help us, and what have the cotton plant and the little blue-eyed flax done for the paper cutting? Ah! and here are the scissors! Where did they come from? . . . and before that? . . . and before that? I wonder who could find me a piece of iron in the cabinet. And so on, . . . not enough to weary; . . . just a word here and there, till at last the children silently think, as one of them indeed said one day, with serious face and wagging head, "It takes a much of helpers to get these little things."

First Exer-
cises. If the children have had in the nursery such exercises with the scissors as have been indicated, they will be quite ready in the kindergarten to do very beautiful work with a little guidance. As a matter of fact, however, one frequently finds only two or three out of a dozen five-year-old children who have the least idea even of holding the scissors. Girls generally understand the work better than boys, the latter often regarding the scissors with a dubious interest, as they might some wild creature which was most attractive, and yet might be suspected of a desire to bite.

For such novices a good deal of preliminary cutting is necessary before they can follow a deli-

cate line, and we often let them experiment at first in making fringe for the paper shawl they have folded, or for bordering the curtains in the doll-house. Subsequently they can cut out the simple geometrical figures which they have traced in outline drawing and arrange and paste them in a group-work design, and after this they can fold and cut by dictation and be trusted to calculate what will be profitable experiments in invention. It is better to use larger paper for this first cutting, and indeed the ordinary size of the squares (4 x 4 inches) is not at all arbitrary, and can be doubled, if thought desirable. The practice paper, too, should be a little heavier than that commonly used, for the child usually holds his scissors at first with a tense grip like that of a drowning man, and needs something tangible between the blades to exert his strength upon.

The regular Froebel School of cutting, in symmetrical forms, may be begun when the child has attained some dexterity. The School of Cutting. plain squares may be folded so as to obtain eight triangles one above another, the *open* side, the one on which all the surfaces are unconnected, remaining *always* at the left; then with a card for ruler the child can draw a line from the right angle down to the middle of the lower edge, one or two spaces to right or left, and so on. White and colored papers may also be bought with ruled diameters, and one triangle ready crossed in lines

as a guide to the eye. The first cuts will be made according to the suggestion of the kindergarten, and later on the child may work out his own ideas. The cuttings having been made, he can make his own disposition of the pieces, using them all in some original design. He may first experiment by pasting them on larger squares of brown paper, and when he acquires sufficient dexterity, may paste them on cards, appropriate colored paper, or in his book of school work.

After the first few cuttings, we would advise leaving the children very much to their own devices, providing they have been so trained that we can trust to their using all materials wisely and economically, at least, if not artistically. If we carry them through the whole sequence of cuts before allowing them to invent, they may well doubt if more worlds are left to conquer.

The first cuttings of the square may be as follows : —

1. Vertically through centre of triangle.
2. One space to right.
3. One space to left.
4. Both sides of centre.
5. Centre and both sides.
6. Centre and two spaces to right and left.
7. Through centre horizontally.
8. One space above centre.
9. One space below centre.
10. One space above and below centre.

11. Centre, also above and below.
12. One or two oblique cuts.
13. Greater number of oblique cuts.
14. Combinations of vertical and oblique cuts.
15. Combinations of horizontal and oblique cuts.
16. One or two curved cuts.
17. Combinations of curved cuts.

The equilateral triangle is also used as a ground-form for cutting, being folded into six smaller equilaterals, one laid upon the other. The forms produced are exceedingly pretty and arrange themselves naturally into figures resembling the triangle, hexagon, and dodecagon in general outline. With the triangle, as with the square and circle, we follow the same course of lines as in linear drawing, — first the vertical, then the horizontal, the oblique, the curve.¹ The child, however, would be a graybeard before he left the kindergarten, if he were detained there long enough to execute the prescribed schools of cutting with these three ground-forms; and not only so, but he would lose the exercise of his free creative activity, which, as Matthew Arnold says, “is the highest function of man; and is proved to be so by man’s finding in it his true happiness.”

¹ Complete series of directions for the Froebel School of cutting with the square, triangle, and circle, may be found in the various *Kindergarten Guides*.

Dr. W. N. Hailmann long ago sounded a few notes of warning to the kindergartner as to the use and abuse of "Schools" of work, and they are given here, because the need for them has not yet passed away. "Make yourself thorough masters of the schools of work;" he says, "artists in them; but at the same time, do not forget that they are *means*, and do not transform them into *ends*. The physical, mental, and moral growth of the child is the end; his physical, mental, and moral vigor and soundness are the criteria of your work. Fair work is thinkable without a knowledge of 'schools;' bad work is not uncommon with a perfect knowledge of them. The kindergartner who makes 'schools' the end of her work, has ceased to be a kindergartner, and has become a *school*-teacher in every sense of the word. She has been seized by the machinery, and has become a part of it. She is aiding in the downfall of the kindergarten, preparing for it the fate of object-teaching."

It was Froebel's invariable rule that in the series of symmetrical figures *all* the pieces cut from each ground-form should be employed in the design into which it is subsequently made. This rule was based, in his opinion, on two principles; first on that of unity or connectedness, binding into a whole by a synthetic process all the scattered elements produced by analysis, and showing their inter-

Using all
the Pieces.

relation, their absolute need, each of the other. Nothing must be left outside, isolated, without the magic circle, for

“All are needed by each one,
Nothing is fair or good alone.”

All through the occupations, all through the gifts, all through the games and songs runs this thought of Froebel's, and in the “Mutter und Kose-Lieder” shines still more clearly this “line of golden light.”¹ Is this too great a truth to teach with blocks and bits of paper? Ah, but so we learn, through the little things, — so we “plant for eternity, into the deep infinite faculties of man, his fantasy and heart.”

Another reason for using all the pieces in cutting is the wise, economical employment of all material, a lesson which has such especial value here in America, and the need for which is so painfully evident that a word on the subject is more than enough. As against these two good reasons for using all the pieces, comes the plaint of the artist that so we disfigure the beautiful form that is frequently produced in cutting, — a clear, simple, graceful outline, which would be entirely disfigured if we pasted around it all the remaining pieces; and that to ruin a design for

¹ “And so, dear mother, weave these little plays
Which have beguiled your baby's happy days.
Many in one he sees; and through the maze
Of his young mind a great truth sends its rays.”

(Henrietta R. Eliot.)

the sake of using all the material is poor economy and worse art. There is evidently much weight in these arguments also, and there are as many prominent kindergartners and training schools who adopt the artist's view of the matter, as there are of those who hold to the earlier opinion advanced by Froebel.

When we begin upon the occupation of paper cutting, and while the children are experimenting with the practice paper, it is important to teach them to hold the scissors easily and comfortably. "In cutting long lines the scissors should be opened wide, so that the entire length may be cut at one time. In cutting curved lines the scissors and paper should approach each other equally, both describing the curve. In cutting around small curves into small places, it will be found necessary to use the points of the scissors with very short cuts." Of course the child will learn all these things by experience, but Madam Experience keeps a very dear school, as Franklin tells us, and it is the office of the kindergartner to save the child from some of the errors which he would make if left to blunder along alone. When the cutting has been done in these symmetrical forms, the child carefully unfolds his central figure and smooths it out, afterwards opening the smaller pieces and arranging the design. If there is not time to fold, draw, cut, and paste in one exercise, each child may lay

Practical
Directions.

his pieces away in an envelope until next lesson, as Froebel used to do with his little ones.

There are various opinions as to the kind of adhesive matter to be employed in paper cutting, some kindergartners recommending flour, or corn-starch, some ordinary mucilage, and some gum tragacanth. The last-named substance makes a useful paste, because it leaves no stain on the delicate-tinted paper, an offense which gum-arabic is very likely to commit. Two children may have a small dish of paste between them, and, if provided with camel's-hair brushes, are less likely to put it on with that lavish generosity which is wont to distinguish their use of the common mucilage brush. They must be taught, too, not to cover the pieces as thickly with paste and stick them down as tightly as if they were to meet the stress of winter and rough weather, but only to touch the centre of the figures lightly with the brush and leave the edges free.

The color of the background on which the designs are pasted is a matter for consideration, and it is most interesting and profitable for the children to allow them to experiment with backgrounds, — pasting a group-work design, for instance, first on a sheet of black cardboard, then a similar one on white, and finally on gray, that the difference in effect may be noted. A background of gray, or light chocolate, is now generally considered preferable for all cuttings.

It is the practice in some kindergartens always to mount, upon the same sheet as the design, a folded paper (either square, triangle, or circle), having the same lines traced upon it as were cut in making the figure. This renders it possible always to reproduce the cutting, which is very desirable if it is a particularly pleasing one; and also makes clearer to the child the processes of his success.

Froebel's interest and proficiency in the science of crystallography are clearly reflected in paper cutting, and he makes the relation more evident in his dissertations on the subject in the "Education of Man." The various forms produced in the series of forms of beauty naturally classify themselves into three, four, six, and twelve-sided figures, and often quite perfect representations of the fibrous, radiate, leafy, laminated, and membranous crystals fall from the shining scissors. The delight of the unexpected waits upon the scissor-work, for commonly in free cutting we have but the vaguest idea of what we are going to make, and when the cut form proves beautiful, we experience a surprise and pleasure like that when a fresh turn of the kaleidoscope brings a new crystalline dance to view.

Those "lilies of the sky," the snow-flakes, can be as easily cut as the "lilies of the rocks," and older children and kindergarten students often

Relation of
Cutting to
Crystallo-
graphy.

reproduce a series of the very beautiful and perfect forms into which these crystals naturally divide themselves.

Cardboard modeling, in its various processes of drawing, folding, cutting, and pasting, is an offshoot from the occupation of paper cutting, and, in its representation of the solid geometric forms, again shows the close relation of the work to crystallography.

A much more practiced hand is required in making life forms than is needed for simply following the lines, or cutting Life Forms. according to fancy, which is all that is required in the forms of beauty. Still we early cut in the kindergarten large, simple figures, such as balls, eggs, fruits without stems, vegetables, simple leaves, outlines of boats, houses, etc., which present no intricate details, and are not absolutely ruined, even if the unwary scissors should slip and cut off a quarter inch too much in some places. When the little artist is more experienced he can cut out any object which he has previously outlined, unruled paper of any appropriate color being used for the purpose and no folding being required. He can thus connect the work with the subject which is temporarily occupying his thoughts, and so forge another link in the chain of impressions. He may also fold the paper down the middle, and cut only the half of an object, which being unfolded appears as a whole.

Dolls, fruits, leaves, parasols, fir-trees, houses, may be made in this manner, and as the work is generally freehand, it gives valuable assistance in making the two sides of the figure alike.

The freehand cutting, as far as life forms are concerned, is very rude at first, and the child is frequently obliged to interpret his work even to the experienced and imaginative kindergartner at his side. When, however, we are tempted to grow discouraged with the crudity of the forms, we can refresh our souls with Froebel's words in the Mother-Play : —

Freehand
Cutting.

“The things a child can make
May crude and worthless be ;
It is his *impulse to create*
Should gladden thee !”

Should we compare the majority of the life forms cut in freehand work, even by our older school-children in America, we should have cause to blush for them when contrasted with the exquisite, graceful, artistic figures, which the Japanese kindergarten baby of five or six years produces. When we gaze upon the cherry-blossoms floating on running water, the fleur-de-lis growing up from the marsh amid its tall green leaves, the purple aster and the many-petaled chrysanthemum waving across the page with their own free gesture, and the fantailed goldfish gasping and undulating down among the sea-weeds, we are minded to devote to the waste-basket the clumsy

efforts of Jack and Isaac and Mikey and Adolph and Hans. And yet the free productions of one child are just as valuable as those of another, when we reflect that the purpose of both is to make "the inward outward and the outward inward," and the immense superiority of the free work of Japanese children may well teach us a useful lesson of the value of heredity in art, and remind us of the centuries of patient, unrewarded labor — art for art's sake — which lie behind this dear brown-skinned, black-eyed little brother.

There is a series of freehand cuttings based on geometric form, which is used in some kindergartens, and from which admirable results are obtained. The first step is spirals.

"Taking a square of paper, we cut into it one half inch from the edge, then follow out a spiral curve, cutting ever closer and closer to the centre, until the entire sheet is one spiral thread of paper. If the children are too young to make a 'snail,' as they call it, it will afford them no small interest or profit to watch the kindergartner, with steady hand, cut on and on. Taking another square, we cut in this a continuous series of squares within squares, never breaking the thread until the centre is reached. As in the effort to pare a whole apple without breaking the paring, so here great skill and foresight are demanded. The second step is that of cutting simple life forms, in which the underlying figures of circle, oval,

square, triangle, or oblong are modified by some outer addition, such as the apple, other fruits, etc. Both the form cut and the background from which it has been taken should be kept and pasted side by side in a scrapbook. The third step is the modification of these forms within the set geometric outline, such as a house front with windows and doors, or a hemisphere which outlines the continents.

“The fourth step is that of artistic designs, — such as snow-flakes, floral or historic art forms. A series in this department may be developed from the seaweeds and ferns, which present such an unlimited variety of fancy traceries. One little lame girl, who began her simple ‘scissoring’ in the kindergarten, developed such skill that in after years she was able to support herself by the artistic forms she created, which were purchased by the city confectioners. Another unique artist cuts at a glance exquisite silhouettes of any face brought before him. The scissors, like the pencil, can become the tool for artistic work, with practice.”¹

The value of paper cutting in the school, for geometric work, for the making and mounting of symmetrical designs and life forms is at once evident, and with drawing and modeling is one of the popular kindergarten occupations among most teachers. Much less pre-

¹ *Kindergarten Magazine*, September and October, 1893.

liminary drill in handling the scissors is necessary with school children, and as the work needs no previous arrangement and no subsequent putting in order, and as much of it can be done with only occasional supervision, it should be even more popular than it is. All the Froebel paper cutting is perfectly appropriate and practical, but in many schools (and kindergartens also), it is largely superseded by the so-called colored paper work. This is preceded by the study of the spectrum, of the various tints and shades of the primary colors, and cutting and pasting these in appropriate succession and by practice in design with circular, square, oblong, and triangular tablets. It develops into the making of borders showing the principles of repetition, alternation, etc., in form, as well as color and position, the making of geometric figures, stars, and rosettes, the evolution of units and their application in design, and the study and production of the historic forms of ornament. In its elementary stages, it is very suitable and beautiful for kindergarten work, but it may be developed into an occupation appropriate for the art school, both in its relation to form-study and in its practical illustration of color contrasts and harmonies.

So much has already been said in an incidental way as to the values of paper cutting, Values of Paper Cutting. that they need only be briefly touched upon here. Chief among them is the early oppor-

tunity it gives for the exercise of creative self-activity,¹ an instinct, which, if denied legitimate expression, voices itself in destruction. It is a great assistance in form-work, teaching by simple concrete means, all lines, angles, rectilinear and curvilinear figures; it serves to still further impress the practical worth of the law of mediation of contrasts; it gives valuable training to hand and eye, and mastery over tool and material; it opens a broad field for design, leading up to artistic productions and beautiful ornaments; it is a useful mode of illustrating stories and lessons, and teaches carefulness and accuracy, and wise use of material. Lastly, when we consider its industrial value, it paves the way to the cutting out of garments, and to designs for house decoration and various other branches of industry.

“In the library of the Children’s Building at the World’s Fair were hung several framed pictures which were made with neither pencil nor brush. They were the original work of an energetic boy of ten years, whose genius demanded a sturdier instrument than either of these. His mother’s scissors had early attracted his attention, and by continued and repeated effort he developed the art of picture making with these tools. He was not satisfied with merely cutting pictures of still life, but he must tell a story about things. One of these pictures told the story of the fairies coming at midnight to dance among the flow-

¹ “Creative imagination,” says Father Girard, “shows itself at a very tender age; for if the little child likes to give proof of his strength by destroying, he also delights in producing, after his own fashion, things new and beautiful.” — *De l’Enseignement Régulier de la Langue Maternelle*, Liv. III. page 88.

ers. The boy took a large sheet of white glazed paper, cutting into it a design which expressed his mental picture of the dancing fairies and the swaying, growing, blooming plant life. The action and the character of the entire scene was unmistakably the result of creative power. The boy dared to work out the fancy of fairy tale with the scissors, and succeeded in producing a beautiful picture. The delicate white tracery was laid over a scarlet background which threw into relief every tiny petal and every graceful outline of the dancing figures. . . . This original boy wrote the lines of a patriotic hymn in the same manner with his clever scissors, accompanying the lettered words with suggestive illustrations. The word "light" was not only traced in delicate letters cut into the paper, but each letter was illuminated with realistic designs. Over the entire word hung a sun, with its rays reaching to each letter. The initial letters of each line were decorated in such a way as to indicate the meaning of the entire line. No description of the work can do it justice, as there was a delicacy and grace, as well as strength and beauty in it, which commanded admiration."— *Kindergarten Magazine*, October, 1894.

PAPER FOLDING

Materials : Squares, triangles, and circles (usually four inches in diameter) of engine-colored, glazed, and coated papers, dyed in all colors, shades, and tints. Oblongs and hexagons are also sometimes used.

PAPER has long been so cheap and abundant a fabric that for many years mothers have used it to delight their children. In the firelit winter evenings, before the days of the useful (and ugly) match, our grandmothers folded dainty lamplighters, under the watchful eyes of an admiring little group, and when the pretty work was over, marvelous paper boats and boxes and windmills were fashioned for the expectant audience.

Many times in the quiet home-life of the German peasant, Froebel with that all-inclusive gaze of his saw parents and children united in this simple art, and noticed the unfailing delight which it evoked, and since his desire was, as he says, to attain the universal elements of proper work for childhood, he gathered this flower also to twine into the garland of kindergarten occupations. Cheap and simple are the materials which these employ, and yet so "frugal is the chariot that bears the human soul" that a mere valueless bit

Paper Folding not a Modern Occupation.

of folded paper may prove a "prancing courser" to bear us "lands away."

"There are indeed great ways of borrowing," as Emerson says, and when Froebel took his means of occupation from the home-life of the common people, he proved himself one of those geniuses that "borrow nobly."

In Folding we again make use of the material which forms the basis of most of our kindergarten occupations, and the only Materials of Folding. limit to the talks and poems and stories on the subject will be the time at our disposal and the interest of the children.

For the smaller pupils we have stories of the Cotton Field, of the Rag-picker, and the Wasp, and questions as to the common uses of paper; for the older we have graphic descriptions of its manufacture, and talks about the different materials from which it is, and has been, made, as reeds, skins, rags, sawdust, wood-pulp, bark, straw, and rice, while all ages will enjoy Andersen's "Story of the Flax" and Mary Howitt's sweet verses about the "goodly Flax Flower."

School-children will delight in brief accounts of the present strange uses of paper which mark our own as the paper age. There are paper dresses, paper dishes, paper hats and bonnets, paper trunks and horseshoes, paper vases, tubs, and pails and baskets and satchels to be bought; and if these employments of so fragile a material

are not astonishing enough, we can cap them by true tales of paper car-wheels, rails, sewer-pipes, cornices, friezes, tiles, mantels, entire houses even, — and also tell of a substance called *papier-sculptor*, which is frequently used in Germany instead of clay for modeling.

The occupation of Folding, though one of the most artistic and valuable which Froebel has given us, is, at the same time, one of the most delicate and difficult, requiring perfect eye measure and great accuracy of touch for its proper performance; indeed these are two of the greatest advantages gained by its execution. The dictations should not be given to the child until he is able, in some degree, to follow them with tolerable neatness, else he will grow discouraged and careless, losing his pleasure in what is, invariably, a delightful occupation, if given at the proper stage of the child's development. If we wish to use it with the younger children, as it is so helpful to eye and fingers, we must make it play and not work. The practice forms may be cut from brown paper, so that the failures of the little people will not be too expensive, and the forms should not be less than five inches in diameter for these preliminary exercises. We begin with the square commonly, and although there must be a little drill on its shape and color, its edges and corners, yet this must all be given at first in the form of play.

First Exercises with Folding Papers.

It is well to accustom the child to select his own color from the first, expressing his preference in *words*, and either taking the paper from a sheaf which we hold before him, or when older, asking that it be selected from the box. There is no need of allowing even the four-year-old child to point silently at what he wants, unless he be a deaf-mute, for even if he does not know the color he can very easily touch the paper, and say, "Please give me that square." Occasionally the kindergartner desires for some special reason that all the papers shall be alike, and occasionally, too, there is not enough of the desired color to go around, which casualty gives opportunity for graceful surrender of preference in favor of some one else. We may be well assured, however, that we give little training in color when we hand out the papers in regular rotation, and that the boasted development of individuality in the kindergarten is not attained by treating every child alike.

It is a pretty and a useful exercise at first to scatter the squares on a low table, and then, having given out the balls according to preference, let each little one select a paper to match. Corners may be taught by playing Puss-in-the-Corner, and if a tiny pasteboard pussy is given to each child, he will be very ready to let her run to the right hand back, the left hand front corner, etc. Edges may be taught by considering the

square a table-cloth and letting the children fringe it with scissors, and if we wish to distinguish the different edges, what so easy as to set the table and put Harry's blue plate (a colored circle) near the front edge, mother's pink plate near the left edge, and so on? Each fold which the child makes in the square at first should open up a new play-possibility, and thus by and by, when the preliminary handling and a few crude notions of dictation have been learned, he will have grown so in love with the work that he will follow difficult directions with delight, and take pleasure in the wide field of geometrical knowledge which opens before him.

Let us play to-day, when we have had a little talk about the shape of the square, its corners, edges, etc., that it is a sheet of paper, and we are going to use it for a letter to mother. Yes, we will all have pencils, and how shall we begin it, . . . and what shall we tell her? Don't write too heavily, little ones! If it's very nicely done, I'll fold an envelope for each one, and you can tuck in the letter and put a kiss on for a stamp. That will carry it safely, I am sure.

Or perhaps it is a sheet of drawing paper, and will you all draw me a pretty picture? . . . (Now you shall see intent eyes, gathered brows, pursed-up lips, stern holding of the pencil, and marvelous hieroglyphic scratches and cryptograms in-

scribed upon the paper.) . . . That was very kind of you, and now you shall watch me tie them all together with a bit of worsted, and put a cover on, . . . and now, see! . . . I have a picture book to look at when I'm tired.

The next week after the preliminary talk, we fold the lower edge of the paper to the upper edge, and now we have made one First Fold. line upon its surface. . . Take it up in your hands, children, now, as I do. What does it look like? Yes, it is quite like a book, is n't it? Shall I read you a story from it?

There's every story in the world in my book; which one will you have? Could not Clara read us a story now? . . . Yes, it is like a singing book, too. Shall we sing something? . . . No, don't look at me, keep your eyes on your book, for we're playing it's a new song, and you don't know the words. . . .

So it is, just as much like a piano-book, Carl. Oh, I know what you would like! I'll get you each a second-gift cube for a music-stand, and you can rest the piano book against it and play a tune on your table. (Froebel's "Finger-Piano" would be appropriate here.) Now I'll write your names on the outside of your books, and next time you can fold some leaves for them and take the little books home to mother.

Another time, when we have made the first fold, we can set it up on the table for a roof;

shingles may be quickly drawn on each one, and the joy is intense if a slit is cut in the ridge-pole, and a tiny folded chimney inserted. A song would be appropriate here.

First Fold.

When we have made the second fold in the paper, it is obviously a window. . . .

Second Fold.

Who is looking from your window, Harry, . . . and from yours, Mattie? . . . Yes, I think it would be charming to make curtains with the pencil, but there are several kinds of curtains, you know. We might make shades with tassels, or sash curtains, or lace draperies, or pretty cotton hangings with pictures on them. . . . Shall we sing "See the Little Window Bright"?

Most of these plays are given on the supposition that the kindergartner is using stiff brown paper for the preliminary exercises. If the paper is stiff and heavy enough, we may pinch it up a little on the two folds, and make a hanging basket from it, suspended by worsted cords; or it may be called a parasol, and gummed upon a stick for a handle, or it will stand up admirably upon the table, and serve as an umbrella-tent.

When first folded into the triangle the paper may be a hill, and adventurous lentils make bold slides down its precipitous height; or it may be a shawl with a scalloped border hastily cut out. If each child then folds it around Thumbkin's chubby shoulders and the

Third and Fourth Folds.

kindergartner pencils a little face on the thumb-nail, then what delicious merriment, what kisses and cuddlings and bye-lows !

The first pentagon may be set up on the table as a ship, and while it skims along, a sailing song be sung; the first hexagon ^{Subsequent Foldings.} may be called a tray, which may be decorated a little, and weighted with a doll's cup and saucer. ("The Little Waiters" ¹ would be a pretty song for such a play.) Then the smaller pentagon may be a house or a dog-kennel, and the first square a handkerchief case, tied with worsted and filled with a tissue paper handkerchief, or an envelope, which may be addressed and stamped and then hold a letter or a valentine with a bit of colored paper for a seal.

Of course it is understood that all these are but suggestions, illustrative of what may be done with the first foldings, which are sometimes rather difficult and discouraging for the children.

There is a sequence of simple figures, all life-forms, and all folded so as to stand erect upon the table, which we call the "Pig" ^{"Pig" Sequence.} sequence, and which we have found very useful before the folding of symmetrical forms is begun.

If you should make the little figures and if the names attached should seem to you unnatural, we can only say that they have met with unbounded

¹ All the songs which have been mentioned are to be found in *Kindergarten Chimes* (Kate D. Wiggin). Oliver Ditson Co.

applause and delight, from those captious critics, the children themselves.

We call the forms successively, the large tent, the snow-bank or hillside, the horse-car, the small tent, the table, the card-case, the fireplace, the box, the two canoes, the salt-cellar, the wood basket, and finally the Pig, — the crowning glory of the sequence, a star of the purest ray and of the first magnitude.

Only two or three of these should be made at a lesson ; indeed, not more than one after the card-case is passed. Great attention must be paid to neatness, and as each simple form presents itself, the kindergartner may join the children in playing with it. The tunnels can be united into a mammoth snow-shed. A blinding snow-storm can appear, and the children may give shelter to a flock of poor little shivering lambs hastily cut out of white paper for the occasion. (This is a charming story-station, and what delight to tarry there a moment and tell a suitable story, and then sing "My Lambkin," and "This is the way the snow comes down.") At their tables they can give dinner parties, and very small bits of paper cut by their own hands to represent dishes will give them great pleasure.

In these half hours spent with the younger ones the kindergartner will be able to give the greatest delight, and it is in these very moments of close and familiar companionship more than in the

formal lesson, that she "comes nearest to the heart of things, and lets Nature be her teacher." Neither should she fear she is accomplishing nothing, or that there is no mental progress with this simple handiwork. For the preliminary training of the senses the child needs an alphabet of things, as Froebel says, and this he finds in the blocks, sticks, clay, and paper of the kindergarten. The unthinking father may laugh at the tiny ships, pigs, and picture frames that the child brings home as his morning's work, but he might be convinced of their value, could he see them in process of formation.

Here let us say again, since iteration is next to inspiration, — strait is the path and narrow is the way where the perfect sort of play is in question, and few there be that tread it successfully. With one kindergartner it is childlike, spontaneous, simple, free, poetic, flexible, appropriate, natural, and full of meaning. With another it is childish, silly, purposeless, trivial, artificial. If you *cannot* play, wait until you can! Meantime suggest, stimulate, interest, influence, charm in some other fashion. The wrong sort of play dissipates, the right sort disciplines the mind and heart. One teacher overlays her lesson or her exercise with a lot of aimless affectations and scatterbrained pastimes, under the impression that she is a magician and the children are spell-bound; the other makes the exact point she wishes and

carries it with contagious gayety and irresistible spirit, mixed with sweet common-sense. We confess that temperament has much to do with it, but if you have not the genius of play you can still do wonders if you have sympathy, tact, quick intelligence, ready wit, — and modesty.

There is another variation of folding called paper pasting, which may be made of great service as the child climbs the hill Difficulty. He is given the usual square of paper, and, after he has made the first two folds, cuts it in quarters, according to the lines, producing four smaller squares. He repeats the folds with the small pieces, thus gaining much extra practice, and then arranges them in a design which he pastes on a square of brown paper. In the next exercise he makes another fold or two, cuts the square, makes the lines again, uses the quarters for an invention, and so on, using successively the open square, the triangle, the pentagon, hexagon, smaller pentagon, etc., until he has arrived at the point where he can complete a fundamental folding in one lesson. The children may also combine their quarters and make large group-work inventions occasionally.

All Froebel's occupations inculcate, in greater or less proportion, the same practical virtues; virtues always requiring a certain amount of education and development in every child, no matter how wonderfully

Paper
Folding
and Plane
Geometry.

endowed he may be, — economy, neatness, perseverance, industry, patience, etc., — but each, too, has its specific value, its salient point of excellence, which sets it apart from all others, and keeps in view the training of special faculties, or capabilities.

While paper folding includes much that is taught in other ways, it lays the foundation, as does nothing else, for the acquiring of the fundamental principles of geometry, the mensuration of all the simple plane figures with which we deal in ordinary daily avocations, the general relations of surfaces, and a knowledge of the different triangles, quadrilaterals, and polygons.

All this is made wonderfully clear by the various foldings, in their simple derivation from the square, circle, or equilateral triangle. By informal questioning, as the child proceeds from one form to another, bringing into view oblongs, triangles, pentagons, and hexagons; in counting their sides, corners, and angles; in seeing the square, as a whole, divide itself into halves, quarters, eighths, and sixteenths; in measuring, with eye and hand, the degrees of the different triangles, sharp, blunt, and equal sided, and noting their development from, and relation to the right angle, is it not easy to make this, by intelligent use, a complete compendium of elementary mathematics?

In commenting upon Professor Denton Snider's

saying, that Dante had the temperament of a Plato and the training of an Aristotle, Miss Elizabeth Harrison writes: "How many lesser Dantes have been spoiled because, having the dreamy, mystical temperament, they have not been trained, as children, into habits of exactness and practical utility; or, having mathematical precision by nature, have been robbed of poetic training by ridicule, or too much dealing with the commonplace things in life."

A full series of questions is appended, some of which are usually brought out in the various conversations between the kindergartner and the older children. Most of them, however, are better adapted to the connecting class, or the primary school, than to the kindergarten. Of course we should only use and vary the simpler ones, until the class is advanced considerably in the study of form and number. The children may be able to fold quite well various simple forms without comprehending all included in them.

What have we here?

How do you know that it is a square?

How many edges has it?

How many corners has it?

What more can we say about the edges?

Why do we call it a square?

But the door and the window both have edges.

Are they square?

Why is the door not square?

Very well, then, look at the sides of the square and tell me the difference.

Show the upper right corner.

Show the upper left corner.

Show the lower right corner.

Show the lower left corner.

Fold the two lower corners to the upper two, exactly, edge to edge, keeping the paper straight upon the table.

What have we now?

What shape is it?

What do we call it?

Is it like the square?

Why not? You see it has four corners and four edges, like the square.

Now open the paper by folding down the upper half, but not turning it. What kind of a crease, or line, have we made?

How does it run?

Turn the paper so that you see the line running vertically, going up and down through the middle of the paper. Now fold the two lower corners as before, to the upper two, across the vertical line.

What have we now?

Open it as before, carefully. What do you see?

Now turn the paper cornerwise, so that the corners point up, down, right, and left.

How do the lines run now?

Fold the lower corner to the upper ; what have we now ?

How many corners and edges has it ?

Are they all the same length ?

Where are the two sharp angles ?

Which angle is the largest ?

What kind of an angle is the upper one ?

And what do we call the other two angles ?

Open the paper, please.

Do you see the folding you have just made ?

Turn the paper so that you see the same line running up and down. How many lines do you see ?

How many parts do you see between the lines ?

Are they all alike ?

Fold the lower corner to the upper again, and open it as before.

It looks quite different, does it not ? Can any one tell me why ?

How many lines has it now ?

How many triangles can you count now ?

Are they alike ?

How many angles in each ; how many in all ?

How many triangles in the upper half ?

How many in the lower half ?

How many in both ?

Can you see one little point where the lines all meet and cross each other ?

Fold one corner, — the lower, — exactly to that middle point, neither above nor below.

How many corners did we fold?

Which one was it?

How many are left?]

Do you know the name of the figure we have made?

How many sides and corners has it?

Which corner is opposite the lower?

Fold that one down, now, just to meet the lower corner. Do not lap it over, but just let them look at each other.

How many corners are folded now?

How many are left?

How many sides and corners has this figure which we have just made?

Shall I tell you its name?

Fold the right corner in to meet the others; now the left, and we have a square again smaller than before.

What do you see on this side of the square?

Turn the paper entirely over and place it cornerwise.

Now fold the lower corner to the middle, the upper corner down, the right corner in, and then the left corner.

Now we have a square again still smaller.

Do you see four triangles, all pointing towards the centre?

Turn the paper entirely over, and what do you see?

A fundamental form has now been folded, and

we proceed, in the first sequence, with the triangular side; in the second, with the reverse side, showing the four squares. For the third and fourth sequences we use a different fundamental folding, much more difficult to give by dictation.

We give exercises with the equilateral triangle, and with the circle, in exactly the same manner, and on precisely the same plan; first bringing out all possible knowledge of the form itself, then proceeding to the simplest possible instructions by which to fold the fundamental figure, finally leading the children to make from this their own combinations.¹

The dictations at first are very simple and constantly diversified by play. The kindergarten "shows how" with a larger piece of paper, when the directions do not seem to be clearly understood, and she constantly moves about through the little flock, inspecting the folding, and giving a word of warning, or encouragement to those who need it. She must see that the children fold *on the table*; that they work always by opposites, and that they never turn the paper about when following dictations. It is easier to fold the right-hand corner in than the left, and the little people must be watched, else

¹ Numerous designs and directions for folding the square, triangle, and circle into forms of life and beauty are to be found in all the "Guides," and to be bought of kindergarten supply stores.

they will twist the paper so that both corners will become successively right-hand ones, and thus the benefit of using the left hand will be lost as well as confusion produced in following subsequent directions. The kindergartner must often have practiced her dictations, so that they will be quite clear in her mind, and clearly and pleasantly expressed, *but the extreme detail necessary at first should be dropped as soon as practicable*, and if the child shows that he knows what is to come next in making a fundamental folding, he should by all means be allowed to illustrate his knowledge, and not be held back by the dogmatism of the kindergartner.

Froebel has apparently divided the various symmetrical forms into classes, or sequences; or, rather, they naturally so Sequences in Folding. divide, or classify themselves to an intelligent observer, — a certain number, coming in regular succession from one fundamental folding, and bearing more or less resemblance to each other. The first and simplest sequence, used in almost every kindergarten, is made from that side of the folding paper which, after the fundamental form is completed, shows the four triangles pointing to the centre; and these triangles are then bent, or folded into various positions, each change making a different design. Another sequence, from the same starting-point, presents quite a different appearance when the reverse side, showing four small squares, is folded.

Two other sequences commonly used grow from a second fundamental folding a little more complicated, and these are classed according to their general appearance. In one sequence the corners point toward, and in another radiate from, the centre, the inner edges of the squares being folded.

These forms are capable of almost endless variations, and are all folded without once cutting the original square of paper. Indeed, this is one of the most telling points of Froebel's system, the development of a thousand beautiful and artistic forms, with scarcely any tools, from the smallest possible amount of material of the simplest kinds, familiar indeed to everybody, but to none except the initiated disclosing these infinite possibilities.

The square of colored paper, for instance, is a very commonplace thing to the outsider, but the children have the "open sesame" with which to transform it into a hundred charming devices, as well as to wake it into mimic life, in the shape of a bird, or chicken, or even to coax it into a miniature ship, purse, or tall hat. It is quite impossible to give, in written words, such an idea of this important occupation as can be gained by practical lessons and repeated observation. Nearly all the forms can be given by dictation to the child, if he is sufficiently advanced; if he is not, we confine ourselves to the simpler foldings, making as many changes as possible, to give vari-

ety to the lessons, until the pupil becomes more expert. In some of the difficult foldings, requiring delicate handling, we show the child by folding one corner ourselves, and allow him to gain his own experience by folding the remaining three. This can be done whenever the dictation becomes very complicated.

We can accustom the children to give lessons to each other, and lead them to exactness from the very beginning. They will see clearly for themselves, that the most infinitesimal deviation from the line, or centre, at any one point of the folding, brings misfortune and failure at every succeeding point, and they will be correspondingly exact in their task, if we have developed in them a striving towards the very best of which they are capable.

Many of the forms of life are too complicated to give to a whole class, and we are obliged to show the children how to fold ^{Life Forms.} them, taking them in groups of three or four, and folding our own piece of paper as a model. These life forms should be repeatedly practiced, as they constitute such a fund of enjoyment for the little ones in the family circle, where they can amuse each other for hours with scraps of newspaper cut and folded into shape. Froebel says, in regard to them: "The paper prepared for this end furnishes opportunity to make experiments on material things, and it is that which the child seeks in the

blind gropings of his undeveloped impulses. The effort of his little powers is increased, by giving him the requisite material, and showing him the right use of it. For example, the child tries to make a form out of a piece of paper, — a box, a little bird, or something else. He does not succeed, because the paper has not the right form, and he does not know the requisite manipulations. In the kindergarten he receives paper of a square form, and is shown how he can bring out the desired thing from it.”¹

Most of the life forms are produced from the square, although a variety may also be made from the triangle, oblong, and circle. Many of them are flat picture forms, but the children enjoy rather better, on account of the reality of their appearance, those that stand up alone, as well as those that can be put to some practical use. A windmill that will revolve when put on a stick or a hatpin ; a boat that will sail ; a basket that will hold something, are obviously most attractive to young persons of great activity and practical ability. When these young persons have attained some dexterity in folding, they can make soldiers' caps large enough to wear on Washington's birthday, stars that may ornament a picture frame, school bags stout enough to carry papers in, balloons for the Christmas tree, and boxes to hold seeds; and the thought that their productions are

¹ *Reminiscences of Froebel*, pages 75, 76.

really of value will make every child's heart glow with honest pride. The various life forms that can be made are so numerous that they can very easily be brought into relation with the other work. We should remember here that the child should always tell us what he thinks the form looks like, before we attempt to name it; but in cases where there could be no difference of opinion, why not say before you begin dictation, "Let us try to make a ship to-day, children," or "Would you like to make a butterfly?"

The wonderful dexterity and inventive powers of the Japanese children are again shown in those specimens of work from the ^{Japanese} _{Life Forms.} Empress's kindergarten in Tokyo, which have before been mentioned.

The perfection with which the kindergarten has naturalized itself there is reflected in the foldings. Here is a mulberry leaf lying by a cocoon, here is a locust, here an airy dragonfly, there a contemplative stork and an absolutely lifelike crab, and here in the book of a five-year-old baby is a picture in paper of the wild goose as he "trails his harrow through the sky." The flock of flying geese as seen in autumn was folded in soft gray paper by the child himself, and was his own thought. He invented the form from a triangle and graduated the sizes of the birds, pasting them in a diagonal direction across the page of his book of work. Dear brown baby! it dims one's eyes to think

what joy your work would have given to that gentle child-lover in Germany forty years ago!

Some allusion has already been made to the color training given by folding, and to the obvious necessity that the child should be left as nearly free as possible to the exercise of his individual preferences in selecting colors. There is no difficulty, of course, in regard to the folding of single forms, but where a number of symmetrical figures are grouped upon a page, artistic combination is requisite to produce a pleasing effect. Fortunately, however, paper folding is not one of the first occupations given in the kindergarten, and by the time the child reaches the stage when blending of colors is necessary, he has received so much training with the other materials of the kindergarten, as to have some little idea of effective color combinations. The expert child may make a charming effect with his inventions if he folds the forms double, that is, lays two squares together and folds them as one, which will give a dainty colored lining to every quill, rosette, and corner.

Invention is easy for the child in folding, if we do not dictate too many figures to him before we set him free to work, thus exhausting all the simple figures which would naturally suggest themselves to him. After we have given him some idea of the law of opposites, we may leave him to the joy of making his own dis-

Color in
Folding.

Inventions
and Group
Work.

coveries, and "the figures thus brought out, which going from the simplest proceed step by step easily to the most complex, only appear difficult, and beyond the child's powers, when we do not know how they have proceeded from each other."¹

Miss Peabody said she had seen in one kindergarten five hundred different figures made out of the simple square, variously folded and cut, and advised that we should call the attention of the children to "the fact of this endless capacity of development of the simplest and most uninteresting form by the exercise of human ingenuity acting *according to law*. Thus they will realize that beauty is not an outward thing, but an inward power which they exert."

The children, in our opinion, invent much more freely with the five-inch, and even with larger squares, than they do with the ordinary sized papers, for the former give them more room to work, and a larger surface seems to offer greater possibilities of transformation.

When we are using the folding for decoration, or for group work of any kind, various sizes of papers may be used, the four-inch square serving as a centrepiece while the inch squares are folded into a border, for instance. Suppose the children are decorating a box together as a present for some sick playmate. They may make a great many tiny foldings and arrange them in the shape

¹ *Reminiscences of Froebel*, page 76.

of a circle, a maltese cross, or a star. If the colors are well managed, the foldings done smoothly, and pressed flat, the effect is very like mosaic. We may also make a sort of inlaid work, resembling parquetry, by folding the design in one or two tones and filling it in with a smooth background of simple foldings in one color. For inventions, too, the plain paper between the folded corners may sometimes be cut out, and thus quite a different effect produced.

Edward Wiebe says of paper folding: "We do not intend simply to while away our own and the child's precious time in folding; but we are engaged in an occupation whose final aim is acquisition of ability to work, and to work well; one of the most important claims human society is entitled to make upon each individual."

The value of folding in geometry teaching has been fully shown, and we should here make the distinction that whereas in paper cutting we produce the figures by cutting away a portion of the ground form, in paper folding we produce them upon the ground form.

Its value in cultivating ambidexterity has also been mentioned, and this indeed could be carried out more fully than is at present done. The occupation has, besides, a certain industrial worth as related to the folding of garments and doing up of packages. It gives wonderful general dexter-

Value of
Paper Fold-
ing.

ity, which is useful in all later handiwork, and affords admirable training to the eye as well as the hand. It inculcates neatness, cleanliness, and accuracy, and like many other kindergarten occupations is a silent, inexorable teacher of cause and effect. Truly, as Eleanor Beebe says, "There is many a truth for the good of a life which the child folds in as he plays with his papers."

Its value in the school is abundantly evident from what has been said, for not one half of the knowledge which could be ^{Value in} _{the School.} inculcated with it can even be touched upon in the kindergarten. The whole geometry of the circle, for instance, — diameter, circumference, radius, chord, arc, circle, semicircle, quadrant, segment, sector, can all be taught in the preliminary foldings of that form, and there really seems no limit to the exercises in plane geometry which might be given with the occupation. Take it in relation to color teaching, and in relation to decoration and historic ornament, the result is the same, for it is one of the most important of the occupations, and one which contributes, in large measure, to the development of intellectual faculty.

All the geometrical forms that can be learned with the solid and plane figures, and constructed with the sticks, or linear drawing, are made with the paper folding; which has, in addition, the merit of drawing out the active individual ca-

capacity. It is, perhaps, the most difficult of all the occupations, when developed to its full extent. All the beautiful developments of the art, by which it is seen how, one after the other, several series of geometrical forms are developed from some fundamental form, are admirable training for the kindergartner and teacher, both as manual art and practical geometry; but a comparatively small range is all that little children can compass. Its value, however, is great, as bringing forward the lessons learned with the gifts, and other occupations in another form, and one which, by requiring the contributive skill of the child, tests the previous acquirement, and gives more thorough possession of it. Between recognizing certain forms and producing them, there is a long distance, which the childish intelligence, attention, and memory must have traversed in its slow and gradual advance before the latter stage is reached.

PEAS WORK

Materials: Dried peas, which have been soaked before using, and slender pointed sticks. Balls of wax and clay are also sometimes employed, as well as tiny cork cubes, and wires.

BEFORE the child begins systematic work with this occupation, he must learn to know thoroughly the materials which it employs; and if hours of time are given to the playful study of the pea alone, they will be well spent. Here he gets a peep at Nature's mysteries of growth and germination, and in the simple botany lessons which must, perforce, be given, his feet are set on the pathway that leads to the "Fairyland of Science."

Let us begin with the study of the dried peas, giving a small boxful to each child, and let us have exhaustive observation by the children of their shape, size, color, texture, practical value, and activities. As the preliminary steps in peas work are suitable for even the youngest children, and, therefore, must be short, we may close the exercise with a group-work play in the sand-table. With small iron rakes and hoes the sand is worked over, and then rolled perfectly level with a miniature garden roller. Now the

peas are brought, and used to lay designs upon the smoothly prepared surface, — circles, stars, crosses, borders, — or even the outline of a pea-vine, with its leaves and flowers, may be followed, if the kindergartner will trace it with a sharp-pointed stick.

For the next exercise two peas may be given, one of which has been soaked for some hours, and their appearance may be contrasted, and the difference between them felt as well as seen. Now comes the golden opportunity for a talk about the baby plant asleep in this pale-tinted cradle, and with a pin we may show the child how to loosen and take off the outer skin, letting the halves fall apart. This must be done very delicately and reverently, and the children will marvel at the perfect division of the seed-lobes, and the tiny, delicate germ that can so plainly be seen. Of course all have eaten cooked peas, but it might be well now to let them taste one of the halves they have produced, so that they can tell what good food the baby plant is to feed on as it grows. The little pea, curled up there in its cradle, must feel something like a little boy asleep in a sugar-barrel, must it not? A pleasant finish to this tiny botany lesson will be to bring a large box of prepared earth, and let each child plant a few peas, allowing them afterward to sprinkle the little garden with a few drops of water. If the box is set in a sunny window, it will not be long

before the green shoots will appear, and if properly tended they will grow finely in the rich soil, and finally rejoice the little gardeners with blossoms and fruit. The children who planted the peas should take entire charge of them, giving them their daily drink, keeping the soil free about their roots, and arranging the trellis for their support. Then, when the pods appear, and when each child is given one to take home, what delight to look in the "treasure boxes" and see the green spheres all a-row, each fastened to its tiny stem.

It is advised by some authorities that after the peas are planted one shall be pulled up each day, examined, and drawn by the children, that the various stages of germination and growth may be seen.

To our minds, however, although to some persons our objection may seem overstrained and sentimental, this method of procedure is a dangerous one, and savors overmuch of vivisection. Better in every way, in our opinion, is to watch the daily growth, by placing a handful of peas on a thin layer of cotton in a bowl of water. "First the children will notice that these peas soon look 'wrinkled,' are getting bigger, then 'a lump' is seen on one side, after which the 'coat' comes off, the pea is split, and a tiny green thing is 'coming right out of it.' From now on the changes are more marked. What some will call

'the baby's feet' are stretching down, and the tender leaves, its 'head,' growing up. Peas often grow several inches high on the cotton, and by this illustration, the downward and upward growth of root and stem, the knowledge of where each part found its food, and of the essential conditions for plant life are clearly shown, in a way which will not be easily forgotten."¹

The best variety of pea for this occupation seems to be the "Philadelphia Early," as it splits much less easily than some of the other kinds. It is best to soak them overnight, and then let them dry an hour or two before using,² as they must not only be soft enough to be pierced by the sticks, but hard enough to hold them securely. The slender pointed sticks may be bought by the package at any kindergarten supply store, and toothpicks may be used for the first exercises, although, as they are all of the same length, elaborate forms cannot be produced with them. The materials should be given to each child in a box, or deep tray, which he may keep upon his table, for there is no need of adding an element of disorder to the lesson by the necessity of chasing the frolicsome spheres wherever they may chance to roll. The peas may easily be split and the sticks broken, even in the

Practical
Directions.

¹ Kate H. Hennessey, *Kindergarten Magazine*, May, 1890.

² Some kindergartners advise drying them as long as they are soaked.

hands of the skillful worker, and these fragments should all be placed carefully in the box again.

The small cork cubes and wires are much stronger and more durable than the former materials, of course, but they are more than twice as expensive, and the wires are scarcely suitable for the nursery, or for very little children, for, though they are blunt, yet too determined a pressure on them is likely to result in injury to the hand. Small balls of common beeswax, or of clay, are employed for the cementing points by some kindergartners, and all children enjoy their use, now and then, as a change from the ordinary materials.

Herman Goldammer speaks of the desire which makes itself more and more observable in a child as he increases in age, — “that of seeing definite results proceed from his activity. He is no longer governed by the instinct which led him, without apparent object, to destroy everything, to reconstruct it again, and then again to destroy it. In its stead has arisen a higher, a creative instinct, which mere action no longer satisfies, which, for its satisfaction, requires a pleasure caused by the objects created.”¹

Although this creative instinct has been somewhat gratified by the use of the peas in flat designs, similar to those made with the lentil, shell, and ellipsoid, yet it is now time to make something real with them, and to associate the line

¹ *The Kindergarten*, page 134.

with their use. A few peas and some long sticks are given at first, perhaps, and the children learn to thrust the stick into the pea properly, holding it near the end, and working on the table. Now they have made a hat-pin, a cane, a poker, a hammer, or a drum-major's staff, — and whatever name they select for the object will give rise to a play or song, or the telling of some appropriate incident. With a pea on each end, the stick looks like a glove-mender, or a pair of wagon-wheels, — or better still, a dumb-bell, and now let us make two of them and have some fairy calisthenics. We should also, during these first plays, practice the stringing a stickful of peas, which repeats the suggestion of the tenth gift work, that a line is made up of a succession of points. We next progress to the uniting of two sticks by a pea, making a right angle, which of course is a carpenter's square, and is used immediately for measuring and for testing the accuracy of the spaces on the table. Put a pea on the free ends of both these sticks and another stick across, and we have a little musical instrument, — the triangle that we use for marching. Now, with another stick and two peas for a handle, make the rod for striking it, and we will beat them in perfect time with a song, first giving each child a bit of worsted from which to suspend his triangle. After this, the child may make acute and obtuse angles, the various quadrilaterals and poly-

gons, and from these will naturally pass to skeleton solids, the cube being commonly the first attempted.

Before he is able to construct the skeleton solids, however, or the elaborate life forms, a number of small objects, such ^{Forms of Life.} as garden tools, farming tools, household implements, picture frames, flags, banners, etc., may be made, and will be found not so very difficult of construction, while they will be most serviceable in interpreting man's labor and achievements to the child. The value, in Froebel's opinion, of making all these life forms is shown by the motto of the "Little Artist," in the "Mother Play:" —

"If your child learns, from anything he makes,
To study, somewhat, things that lie around, —
Follow creative voice whene'er it wakes, —
The building of a rich new world he's found."

The great attraction of the more elaborate life forms is that they resemble the objects made with the blocks in their reality, and have the added charm (which they share in some degree with folding and cardboard modeling) that they are "practicable," so to speak, and can be moved about on the table. They cannot be made, however, by the youngest children, and present some difficulties even to older persons, on account of their irritating tendency to become unsteady and wavering on their legs, or to bend sadly over, like Pisa's leaning tower. Wires and corks hold to-

gether more firmly than peas and sticks, and for delicate forms wires may be used with the peas. The little objects are often very much improved by the addition of tinfoil, which wraps so firmly around the sticks and serves as a seat to the chair, a top to the table, a glass for the bureau, or a mattress for the bed. Wheels may be made out of button moulds for the tiny wagons, carts, and wheelbarrows, and fastened to the axle with small peas, so that they will really turn ; and no child who has ever made one of these vehicles and trundled it along the table with Shem and his wife from the Noah's ark, elegant and impassive upon the seat, but would look upon the chariot of the gods as a shabby affair in comparison.

It is needless to tell of the number of life forms which may be made with peas work, for their name is legion when kindergartner and children are provided with sufficient stores of ingenuity and patience. Doll's furniture, however, is always especially enjoyed, and a delightful group-work exercise is to furnish four rooms in a paste-board doll-house, the various pieces of furniture being apportioned to the different classes according to their age and ability, and the work being executed in successive lesson periods for several weeks.

The buildings the older children construct, houses, barns, dog-kennels, etc., may very well be used in the sand-table and serve as a group-work

illustration of the life of the farmer. Here, too, the farm and garden tools, the hayracks, carts, and barrows may be used, while the roads, garden plots and flower beds may be outlined with peas, the fences made of peas work and the fields and barnyards filled with white sheep and cows, which are easily made of a bit of cotton pulled into shape, with sticks for legs, and eyes of ink.

The work which may be done with peas and sticks in plane geometry has already been mentioned, and much information Geometrical Work. as to the skeletons of solids is gained in the making of life forms, which must all be framed on a basis of forms of knowledge. Peas work, however, except in its simplest forms, requires much patience and much manual skill, and it is not possible for children under six years to succeed well in making the difficult geometrical figures; those, for instance, which are many-sided, and which show the development of one form from another. "It will be reserved," as Wiebe says, "for the primary, and even a higher grade of school, to proceed farther on the road indicated, and in this manner prepare the pupil for a clear understanding of regular bodies."

"The interior of things is known only by its exterior manifestations," says Froebel, "and the skeleton bodies made with sticks and peas are so much more in- Relation of Peas Work to Crystallography. structutive as they allow the observation of the

outer form in its outlines, and at the same time bring to view the inner structure and being of the body." All the regular solids, the octahedron, dodecahedron, tetrahedron, square pyramid, etc., as well as all forms of crystals, may be imitated, and "not only their outward contours, but their imaginary axes, diagonals, and planes can be easily represented, and therefore the peas work is capable of being made an auxiliary of immense importance in teaching solid geometry, crystallography, and stereometry."¹

Its value in the school will be evident from what has already been said, for as a quiet occupation devoted, perhaps, to the making of letters and numbers, the working out of problems written on the blackboard, the constructing of geometrical solids, the inventing of symmetrical figures, borders, and "practicable" life forms, it is eminently well suited. Its great cheapness is another point in its favor, for the boys will delight to whittle out the sticks of different lengths, which they may tie up in packages of one hundred each, and the peas are of very trifling cost, and may easily be raised by the children, if there is a garden plot attached to the school. Dr. W. N. Hailmann's "Primary Helps" will be a useful book to teachers who have no practical knowledge of the occupation, and a complete set of plates illustrating the various forms

Employ-
ment in the
School.

¹ Hermann Goldammer, *The Kindergarten*, page 138.

which can be made may be had of the kindergarten supply stores.

Peas work is obviously a union of two gifts, the eighth and tenth (or straight line and point), and while it ensures familiarity with geometrical forms, and is closely associated with the study of crystals, it develops the artistic taste of the child and his power of invention, and trains his hand and eye. It is also near akin to modeling, which it precedes in the regular order of development of the occupations, and gives the outline or skeleton of the form which we subsequently fill out with the clay. It is of great use in perspective drawing, as it shows so clearly the principles upon which the latter art is based, and Goldammer suggests that it take the place of the expensive apparatus used for the purpose, which few schools can procure in sufficient quantity, and thus by employing wires, and balls of clay or cork, each child can construct his own models in a few minutes.

All the work with sticks and peas in the kindergarten is rich with opportunities for stories and songs. As for the sticks, suggestions for talks on wood were given in the chapter on slat weaving and in that portion of a previous volume devoted to the eighth gift.¹ Some of the sweetest stories ever written by mas-

¹ *Republic of Childhood*, Vol. I., *Froebel's Gifts*, pages 149-151.

ters in the art can be used in connection with the pea, as, for instance, George Macdonald's "Story of the Seeds" in "David Elginbrod," Andersen's tale of "Five Peas in a Pod," and the chapter on "Treasure Boxes" from Jane Andrews's "The Story Mother Nature Told." Then there is the lovely "Legend of the Sweet Pea," and for fitting plays and songs we have Emelie Poulsson's "In My Little Garden Bed," "The Great Brown House;" Froebel's "Little Gardener" and "Garden Gate;" and "Storm and Sunshine" and "Rain Song" from "Kindergarten Chimes." All our music-books hold charming plays and songs on the subject; for planting, gardening, rain and sunshine, springtime, germination, and growth, are favorite subjects in the kindergarten.

CLAY MODELING

Materials : Clay, which can be bought, powdered or in bricks, and mixed to the proper consistency, or which can be found ready prepared at a pottery.¹

ACCORDING to Greek mythology, Prometheus, the wise, the all-knowing, was the first sculptor, for he formed men of clay, Antiquity of the Art. mixing it with water from the rivers and fashioning them in the image of the gods.

There is an ancient Greek tradition, too, that a potter's daughter, Coré by name, once saw upon the wall the shadow of her lover, and, as he was about to set out on a long journey, she sought to preserve the dear image by sketching its outlines with a bit of charcoal. The devoted father then took clay from the pots that he was shaping, and, to make it more enduring, modeled the figure, following the lines traced by his daughter, and thus, so goes the legend, originated the art of modeling in clay.

“It is incontestable,” says Goldammer, “that the forming of shapes in soft material is among the most primitive occupations of the human race, and that it served as the point of departure for

¹ Wax is also used for kindergarten modeling.

all the plastic arts. It is, therefore, one of the best means for carrying out Froebel's idea, that the occupations of childhood should run through a course similar to that of the general development of human civilization."¹

Modeling in clay is as old as weaving, and corresponds with the primeval art of pottery. One of the first things men attempted was the fashioning of tools and weapons, and next, as the first step in civilization, came the making of receptacles, such as baskets and bags, pots and pans. "In all these things form was necessary, and was developed by means of art and industry. . . . The pots had to be moved and lifted, and so handles were added, or the surface was roughened by means of indentations, and of additional forms which made ornaments; and then, also, marks were put upon them, to distinguish the use made of the different pots and the different contents, which ultimately led to the most elaborate decoration."² By and by some bright spirit, who had noted the ease with which objects and figures might be modeled, their durability, and the fact that they were equally well understood by all intelligences, all ages, and all races, conceived the idea of applying the art to the recording of events, and thus history began to be written by means of sculpture. As the materials for model-

¹ Herman Goldammer, *The Kindergarten*, Part II., page 147.

² L. Alma-Tadema, R. A.

ing are everywhere found, these being merely the universal elements and the tools of Nature, so every primeval people has taken it up and used it for art, for industry, or for both purposes united.

Edwin A. Spring says: "With a few exceptions, laughed at as mere child's sport, or remembered in biographies of artists as indications of genius, clay modeling was, until Friedrich Froebel's time, a technical process in the art of sculpture." It was the founder of the kindergarten, he who believed in the parallel development of the child and the race, and who had observed the delight of little ones in playing in mud, in dough, in putty, in wax, — in any plastic substance, — who seized upon clay modeling, systematized it, and made it of greatest use in education. There is no kindergarten occupation, in our experience, which is so gladly welcomed and so universally beloved, as modeling. Eyes begin to beam, and hands are clapped as soon as it is seen, while there is a soft chorus all around the little company, — "Oh, clay, clay, clay!" Sleeves are rolled up as high as they will go, disclosing every variety of wrist and elbow (and a multiplicity of home ideals in regard to personal cleanliness), and fingers fairly twitch with impatience to plunge themselves into the soft mass. The universal desire at first seems to be to slap and to pat it, and it is just as well to pro-

vide some exercise which shall gratify the passion, since, if given full swing for a time, it is much more likely to exhaust itself.

There is absolutely no objection — psychological, physiological, hygienic, artistic, or spiritual — to be made to the occupation, and yet one occasionally meets, in the kindergarten, parents who forbid their children its use, for fear that they may soil their clothing! There is, in fact, little danger of soiling the clothing with clay, and none at all (as is sometimes suggested) of its injuring the skin. It will do no harm even to the most delicate of fabrics, and, even if it did, the question must be decided as to whether the child is to exist for the sake of the clothes, or the clothes for the child.

Teachers also sometimes object to modeling, on the ground that it makes the room and the tables untidy, but this objection (a puerile one in any case) may be reduced to a minimum, if the work is properly carried on.

The common gray clay which costs two or three cents a pound is quite good enough for ordinary modeling, and may usually be bought ready mixed at the larger art stores. A better quality — the artists' clay in bricks, or clay flour in boxes — may be had at the kindergarten supply stores at five cents a pound; but we have commonly used a yellowish, powdered clay, very much cheaper than either of these, such as

Mixing and
Caring for
the Clay.

can be bought washed but unmixed at any manufactory of drain and sewer pipes. Enough of this clay to last fifty children a year can be bought for a dollar or two, so the objection of expense of material, which is sometimes made, disappears at once. An easy way to mix the powdered clay is to tie it up in a cloth like a pudding, and put it to soak in water enough to cover it. After it has been immersed an hour or so, knead it smooth without untying the cloth, or work it with a wooden pestle, and then examine the result. It is difficult to explain in words just how it will feel if it is in good condition for working, but it must not be wet enough to stick to the hand, nor dry enough to feel hard and "crumbly." Of course either difficulty is easily remedied, and experience will familiarize one with the elastic feeling it has when it is just right, and with the requisite oily, glistening look it has when smoothed. Clay in lumps or bricks may be broken in small pieces and prepared as above, but of course requires more kneading. All scraps and fragments left from work, all failures and experiments, if kept clean, can be returned to the stock and again moistened, for the more clay is worked over, the smoother and finer it grows. It is generally better to prepare it the day before the modeling exercise, and it should always be covered when not in use with several thicknesses of damp cloth, or enameled cloth, while if kept in a large

tin box, a wooden box lined with zinc, or a stone jar, it will remain in much better condition.

The tables are covered with enameled cloth by some kindergartners for the clay work, but this is scarcely necessary if each child be provided with a large modeling board, which should be quite smooth, and surrounded, if possible, with a raised edge or rim. Then if the sleeves are pushed up, there need be no soiling of clothing, and if the children are properly trained, no clay will be dropped on tables or floor, while every crumb not employed in the exercise will be saved and worked over again. Large slates are also sometimes used as modeling boards, but have the disadvantage of breaking rather easily if too much pressure is laid upon them; and some kindergartners allow the children to model upon the enameled cloth, without boards. No tools are needed for the kindergarten clay work, — that “wonderful, God-given instrument the hand, with its useful thumb, its delicate and slender fingers, its large and clasping palm,” being all that we require. When the modeling is more advanced, however, the kindergartner may produce her own simple box of tools and lend one now and then to the child, who can use it for some especially delicate bit of work. All we require then, for the occupation, is properly prepared clay, two hands, and a board to work on, — and, yes, one thing more, — we do need

Enameled
Cloth,
Modeling
Boards, and
Tools.

strings (fine druggist's twine) cut in lengths of about ten inches, to divide the various geometrical solids, to cut whenever necessary, and sometimes to separate the modeled object from the board when it sticks too tightly.

Kindergarten modeling is never so useful, so well-systematized, nor so agreeable to the child, in our estimation, as when it is conducted, as Froebel advised, upon geometric principles. When so conducted, it corresponds perfectly with the child's gift work, strengthens every impression that has been made upon him by other instrumentalities, and provides a graded series of exercises which may always be adapted to his individual needs, and which insure his progress. When the modeling is not conducted on a geometrical plan, it is likely to be vague and desultory, and because it proposes to itself no particular end to its journey, never gets anywhere at all. The form which the child models one day may be as much too simple for him as the next exercise is too difficult, — the one is uninteresting, the other discouraging, — there is no connection between the two and no suggestion of the third, which is to come.

When a geometric plan is followed, the children begin with the sphere and spherical objects, then model the prolate and oblate spheroids, the ovoid, and the forms most closely resembling them, which series of objects will occupy them during

Modeling on
a Geometrical
Foundation.

the entire time they are studying the first gift and the sphere of second gift. Now, as they understand the clay better and can handle it more perfectly, they begin upon the cube and cylinder and their related forms, and progress to the cone, the pyramid, and the various prisms, always moulding the typical solid first, and then a series of life forms based upon it, allowing the children to select those which are nearest their interest or fancy. This method is clear, coherent, and systematic, and while it gives play to the child's creative powers in the life forms which are modeled, it strongly insists, at the same time, upon the "constructive principle" of the "external universe." Some artists insist that only natural forms should be modeled in the kindergarten, — as fruits, flowers, and vegetables, — but if the object of kindergarten modeling is not to learn a "technical process in the art of sculpture," but to give a thorough knowledge of form, to encourage exhaustive observation, and to afford a plastic medium for the expression of ideas, — if the latter theory be true, then it would appear to be quite as proper for the child to model a lunch basket as an orange.

The babies will probably make several efforts before they are able, unassisted, to roll and mould the shapeless clay in their hands until they produce a ball. Another exercise may be devoted to making two balls of different

First Model-
ing Exer-
cises.

sizes, which they should do without help from the kindergartner. These may be provided with strings, which are thrust deep into the ball and which will stay firmly if allowed to dry in place. Next a great variety of marbles may be made, and these may be gayly painted if desired, and then the little ones may experiment on making large beads, which of course are only marbles, each one pierced with a hole. After these are dried, they may be colored to suit the fancy or left in their natural state, and then strung on cord or ribbons for bracelets and necklaces, or combined with straws and papers for long chains.

The geometrical solids are not only to be moulded, but they are also to be embedded and impressed in order that they may be more fully understood. The child is always delighted to sink his wooden ball deep in a mass of clay, and to observe the rounded cavity it leaves when drawn out. All the solids are to be treated in this way, and they are also to be impressed upon thick smooth slabs of clay, the impressions generally being made in the form of an invention, which the child works out by himself.

The first essential for successful kindergarten modeling is a teacher who understands the nature of the clay, its possibilities and limitations as a material, who knows how to care for it and keep it in condition, who can use it successfully herself, who knows how the

Essentials
to Kinder-
garten Mod-
eling.

children should use it, what results should be expected from them, and who has a definite plan in mind through which she guides the work. "If given in a fit condition with simple, interesting forms to stimulate the children, perfect results follow," says the Director of one of our art schools. "The response to touch is immediate both in clay and in children."

Upon this first essential depend the other two, which are that the clay should be given out in proper condition, and that there should be models enough for all to see and handle.

We should make the work on a large scale.

Practical Suggestions. "If children are set to making petty balls and blossoms and miniature fruit and similar silly and mean work, they will keep on making mean things."¹

Study the model carefully *before* giving out the clay, noting its general shape, its characteristic and important details, and calling upon each child to point out any individual peculiarities of his particular model.

Teach the children to work as rapidly as possible, and not "fuss" and "putter" over the clay. We are not aiming at careful finish, but at truth of form.

"The juice of the clay is its life-blood." Teach the child to handle it so as to exhaust this as little as possible, and if he has made a series of

¹ Chas. G. Leland.

unsuccessful experiments with one lump of clay, remove it, and give him a fresh one, for he can do nothing with material in poor condition.¹

After the first exercises in rolling and patting are over, model *on the board*. Do not attempt to keep the work in the hands.

Give the child a large enough lump of clay for his work, so that he can take off a piece for a reserve, and not be obliged to rob one part of his form to build up another part.

Respect the limitations of the material and do not try to adapt it to purposes for which it is not fitted. Use it for modeling large objects with strong outlines and little detail.

When the child cannot *see* where he has failed in making an object, let him *feel* the model and find out its peculiarities, for the hand will sometimes perceive what the eye has failed to catch.

Do not allow the child to smooth the surface of the object, and stroke it till the life is all gone. You cannot imitate the velvet cheek of the peach in clay, — you can only reproduce the peach form.

“See that in joining clay to clay both surfaces are smooth. Ragged or torn surfaces of moist clay will not adhere together.”²

Do not roll out strings of clay and stick them on the modeled objects for handles, knobs, roots,

¹ “Be neat. Keep the hands free from dry clay. Do not work in mud.” (Edwin A. Spring.)

² Edwin A. Spring.

stems, and leaves. They are neither lifelike nor artistic, and have the added disadvantage of enduring but for a moment. Many things can be done with wax or papier mâché, for which clay is not at all adapted. It is impossible and undesirable to make a clay leaf or the handle of a cup as fragile as the models, — all we can do is to produce the general form and the characteristics.

Model the edges of any geometrical solid, as the cube for instance, with the fingers, instead of trying to get them by slapping it on a board, or cutting it with a string, or wire. It is not desirable that the clay cube should look as if it were wood.

Constantly watch the children in their work, asking questions which shall act as suggestions, and when necessary *show* the class with the clay how the thing should be done.

If any object is too difficult to be finished in one exercise, scratch the child's initials on it, and lay it away in a damp cloth in a covered tin box, until the next lesson.

Do not allow the children to move the models about on the table. Teach them to place and keep the object, whatever it may be, in one position, and to model it as it looks in that position.

Do not try to imitate detail, as every vein in a leaf, for instance, or every angle in its serrate edge. All we can do successfully is to give the general character of the leaf.

The handle of an object, as a pitcher, for instance, is best modeled out of the lump of clay and not stuck on ; but if the latter must be done, it will adhere better if it is "scratched on," that is, if lines are made in the clay so that the piece has points to hold to.

Particularly good productions of the children may be preserved in little cabinets. It is always well to have such a collection to inspire some discouraged worker, or to show visitors the scope and methods of kindergarten clay work.

The subjects for modeling are clearly indicated, if we follow a geometrical plan, for after the children have modeled any solid, and have embedded and impressed its different faces, they take up a series of related life forms. When they have made the sphere successfully, for instance, they mould an apple, a peach, a teakettle, a round lunch basket ; when they have studied the cylinder they mould a cucumber, a drum, or a spool of thread, always selecting common, familiar objects, of which models can easily be had. When the solids have been modeled, the half-solids and planes are to be considered, with the examples under them.¹

The older children are quite successful with animals, as pigs, ducks, frogs, elephants, or any creature with large, strong outlines and little

¹ *Clay Modeling in the School Room*, by Ellen S. Hildreth, gives suggestions as to these typical examples.

delicacy of finish. The legs may have a bit of stick, or wire, thrust through them, to keep them steady, though we advance the suggestion with modesty, for we know that some persons consider this a vicious practice. We fail to see, however, why it is not as justifiable for the child to strengthen the legs of his pig with a stick as it is for the sculptor to tie Apollo's lyre in position with a cord, or to support Jove's commanding right arm with an iron rod. If it is objected, as it often is, that the child should not model pigs at all, but only geometric forms, fruits, vegetables, and leaves, vases, forms of historic ornament, etc., we can only answer that, in our conception of kindergarten clay work, a pig is just as suitable a subject for modeling as an Etruscan vase, and might have an even more vital interest to a small person of five or six years.

Most of the more difficult objects which the child models, and especially the objects of animal and vegetable life, are to be made on a base, or thick slab of clay, as it injures the form to attempt to lift it from the board before it is dry. The slab, however, may be lifted with a string without injury to the modeled object.

When the children are studying the geometric solids, they may make thick tiles of clay of any appropriate shape, square, oblong, triangular, hexagonal, or octagonal, and impress their invented forms upon them. These

Tiles and
Paper-
Weights,
Leaves
and Vases.

may be dried in a mildly heated stove, and the inventions afterwards painted in water colors. Paper-weights may also be made in the same way. True, this is not sculpture, but the work is pleasing to the children, and is well adapted to the material. The tiles may also be ornamented with simple leaves, which are not difficult for the older children. These leaves, however, are not to be laid upon a piece of clay, and cut out with a modeling knife (as is sometimes advised), for this is like drawing with a stencil; but are to be modeled just as one would a potato, from looking at the subject. Vases, jugs, and urns may also be made and decorated, though perfect symmetry of form is not to be expected here.

Group work is not to be forgotten in clay modeling, for the occupation provides ^{Group} constant opportunities for it. ^{Work.} When the children are moulding cubes, for instance, they may build a house with them at the close of the exercise; they may make their beads, of equal or graduated sizes, into one long string to give away, they may combine in coloring the marbles; they may make a tea-set together, each contributing one article. Many of the objects made are such pretty playthings, and so attractive, that they form pleasant gifts for a sick playmate, who is delighted to receive a box of marbles, for instance, from the members of his class.

There are a number of kindergartens that have

special modeling rooms among their other conveniences, and though these are not necessary, they are, of course, both useful and pleasant. Here there are low oil-cloth covered tables, the most approved fashion of modeling boards, a closet that holds the large clay vessels, the extra stock of clay, the geometrical and other models, the strings, and the kindergartner's tool box; here there are shelves for the tin boxes in which unfinished work is kept, glass-doored cabinets for successful productions, and running water for all the little hands when work is over. Here, too, the baskets or boxes are kept in which the work is taken home, for experience has shown that "unmerciful disaster" generally waits upon the attempt to take it home in the hands.

There is a marked dearth of stories and songs which might be useful for clay work, for the former only two now occurring to us, — Miss Sara Wiltse's "Grandma Kaoline," and Ouida's "Child of Urbino," which is to be found in "Bimbi," her volume of children's stories. There are no really good modeling songs, except "Pat-a-Cake," perhaps, though most of us have something which we have long used, but have thought scarcely good enough for publication. There is unlimited material, however, for talks and conversations, and if we could take the children to a pottery, and let them see the wonderful potter's wheel in operation, a well-spring of inspiration would be provided.

Modeling
Rooms.

Stories,
Songs, and
Conversations.

"The child needs first," says Dr. C. C. Van Liew, "a means of expression that will respond easily and rapidly to both his physical and mental individuality, and which shall accord more perfectly with one of Froebel's soundest principles, the spontaneity of the child's activity."

Value of
Modeling.

This means of expression is supplied by the clay, — a quiet, pliable substance, drawn from Mother Nature's own great storehouse, the simplest of all the kindergarten materials, and the one which offers least resistance. Work with the clay follows the natural order of form study, which is first to make a form in three dimensions, and as it uses "a language which appeals generally to all intelligences, it surely is wise," as Spring says, "to use it as one means of training."

Again, as he points out, "neatness, skill in controlling both hands, and a knowledge of many properties of matter, can very easily be gained by all children through playing, while the few who are born artists will expand in natural growth from the beginning." Clay work is easy for the child, — very easy in its first stages, — for it responds to the lightest touch, and offers little resistance to weak, untrained hands. There is great difference in the natural ability of children to model, and this difference seems to be both individual and racial, the Italian and Mexican children, in our experience, showing marked

superiority in the art. Those who are least successful, however, evidently need it most, and, fortunately, there is little room for discouragement, however unobservant and unskillful one may be, for it is impossible to spoil the generous material. Clay modeling, in fine, in its relation to art and industry, in its cultivation of the powers of observation and expression, in its training of the hand and eye, and in its appeal to the natural delights and instincts of the child, stands pre-eminent among the kindergarten occupations.

SIXTEEN REASONS WHY CLAY MODELING SHOULD BE ENCOURAGED IN THE PRIMARY GRADES OF THE PUBLIC SCHOOLS.

1st. Because some form of manual training, some study of things through the making of them, is a necessary adjunct to an intelligent system of education.

2d. Because modeling in clay is that form of manual training best suited to the early years of childhood ; being a non-resistant, plastic material, it yields to the slightest touch.

3d. Because clay is a plastic medium ; it is the one best adapted to acquaint the child with a knowledge of form, size, and proportion. He cannot increase or diminish size and mass in wood or paper with the same ease and convenience.

4th. Because it is the least expensive material that can be supplied to such a vast army of children as the primary school must provide for, and from which anything like satisfactory results can be obtained.

5th. Because all modeling in clay as it is conducted in the (Chicago) public schools is done without use of tools, only

the fingers and hands being used. It therefore has for its direct aim the training of the intelligence of the child, developing touch, power to grasp and handle, side by side with cultivation of individual observation and perception.

6th. Because it promotes the *self-activity* of the child, and throws him upon his own resources of doing and making.

7th. Because form study must be the basis for an intelligent study of geography and mathematics, and form study unaccompanied by making is but partial and unsatisfactory. Since the earth is not a pancake, all study of geography and mathematics that does not include a study of the third dimension is time wasted and imagination perverted ; for an appreciation of the third dimension depends on actual knowing through doing and making.

8th. Because nature and philosophy declare the necessity of each individual acquiring an experience of his own, a something which in educational matters can only be acquired through producing or reproducing something independently, each for himself.

9th. Because the child under twelve is not the adult, the reasoning faculties are in abeyance and the sense perceptions, such as touch and sight, are in the ascendancy ; and it is through the cultivation of these, by means of handling materials, that his mind is to be awakened to independent thinking and judgment.

10th. Because the tendency to pour in ready-made knowledge, such as is imparted through mere reading and writing, is to make the child a passive receptacle, with an eagerness to accept the opinions of others rather than to formulate ideas of his own.

11th. Because all promotion of a child's activity is a preservation of him as a free, intelligent, conscious being.

12th. Because the mind of the child can assimilate only so much of abstract information ; he therefore may work hours with such arbitrary symbols as those employed in

reading and writing without receiving a new idea or having his individual experience enlarged.

13th. Because excessive dealing with such symbols, unbalanced by hand work, tends to make a child a machine, a parrot-like creature.

14th. Because the development of general intelligence in a child counts for more than any amount of abstract information.

15th. Because reading and writing and arithmetic are not in themselves education ; they are the means to an end, not the end ; and because the cultivation of the taste through a study of form and development of the imagination is a necessity to right choosing of what to read or write.

16th. Because of the prominence of nervous diseases in children, which physicians claim is the result of automatic brain action insufficiently vitalized by physical activity.¹

¹ *Kindergarten Magazine*, April, 1893.

MISCELLANEOUS OCCUPATIONS

Chain Making ; Bead Stringing ; Rolled Strip Work ; Peg Tiles ; Cardboard Modeling.

THERE are various occupations in common use in the kindergarten which have not been mentioned in any one of the preceding chapters, since (with the exception of cardboard modeling) they seem to lie somewhat outside of Froebel's scheme of geometric progression from point to solid.

They are scarcely, however, separate occupations in themselves, but rather outgrowths from, or variations of those that have already been discussed, and as the principles on which they rest have thus been fully set down, we need here only treat of their practical application.

Outgrowths
of previous
Occupations.

These occupations are for the most part very simple ones, suitable for the nursery or for the younger kindergarten classes, and though they afford suitable employment for children in that they direct their "natural activity to the attainment of definite ends," while developing a certain amount of skill, yet their scope in the line of invention is comparatively small, embracing for the most part only experiments in color.

Simple
Nursery
Employments.

CHAIN MAKING.

Materials: For paper chains, strips of colored paper gummed at one end, about four inches long and one half to one third of an inch wide.

The paper strips for chain making will be cut of the requisite length and width at any paper warehouse for a trifling sum, or may be prepared by the kindergartner herself from the large sheets of paper. The strips used for interlacing may also be cut up into chain papers, though this is an unnecessary expense, for the work of preparing them is very simple and can well be done by the advanced kindergarten classes. The younger children commonly receive the papers already gummed, and moisten them with a bit of sponge or a small brush;¹ the older ones are allowed to put on the paste or mucilage themselves as an exercise in daintiness and dexterity.

All little children take the sincerest pleasure in making chains and garlands, whether these be of flowers, leaves, nuts, beans, cones, shells, pods, paper, straw, or beads, and they delight to adorn themselves with the products of their skill when completed, as did their savage ancestors once upon a time.

In the first exercises in chain making, two

¹ At least this is the intention, but the method of Nature has an irresistible temptation for the majority.

colors of paper are always given, and a little time must be spent in sorting them, in explaining the necessity of alternating the two colors, in calling attention to the right and wrong sides of the paper, to the gummed ends, to the proper way of moistening them, and to the necessity of pressing them a moment after they are fastened. We must make haste slowly in these preliminary exercises, for the children are apt at first to moisten the papers too much, to fasten the links wrong side out, to lap the ends unevenly, and to forget the alternation of colors. These practical details, however, are soon learned, and they can usually make a pair of bracelets or a necklace the first time they use the occupation. If only a few links have been made, they may be labeled and put away until the time for chain making again comes around, for it is generally found that the children care little for so short a chain, since it can be put to no practical use.

As dexterity and knowledge are gained, a variety of colors, their shades and tints, are given for the various links, and these are perhaps first fastened together according to dictation, and later the child is encouraged to combine them to suit his own taste. The occupation is especially adapted to group work, and the children often devote their labors to that end, combining their chains to decorate the walls, to garland the Christmas tree, to make portières, or

First Exercises.

Later Exercises: Group Work.

draperies and sash curtains for the windows. It is found that the work is almost invariably appreciated even by the rudest and most ignorant mothers, and there is scarcely a home which the kindergartner enters where she fails to find the children's chains carefully preserved and hung upon the wall out of reach of the inevitable predatory baby.

STRAW CHAINS.

Materials: White and colored straws three quarters of an inch to an inch in length; tiny squares and circles of colored paper (or round glass beads); a worsted needle and heavy thread.¹

Straw chains, sometimes called "Daisy chains," present a few more difficulties, both for kindergartner and children, than those made of paper, but they are very pretty and somewhat more durable.

The straws may be bought by the box ready cut in suitable lengths, or the kindergartner may cut them herself from the ten-inch white ones, after soaking them in water a short time. Colored straws may also be used, of course, but they are more expensive, and are not really necessary, as the charms of color are supplied by the papers. These are commonly cut by the kindergartner from her odds and

¹ In stringing beads and straws a very fine wire may be used and the needle dispensed with.

ends of material, a boxful being constantly kept in store. Each child must be supplied with a deep tray, a box or dish of some kind to hold his straws and paper, and his needle is usually given to him ready threaded, and the thread knotted at one end and tied into the eye at the other.

He must be directed now to thrust his needle through the centre of one of the papers ^{First} and string that first, for if a straw be ^{Trials.} first used it will probably slip over the knot. After this he is simply to go on stringing straws and papers in alternation, until the chain is completed, but those who have superintended the occupation will probably agree with us that *simply* is hardly the word to use here, for the preliminary difficulties which surround the youthful workman are many and serious. The needle refuses to go through the middle of the paper; the paper tears; it is strung on with the colored side down; the straw splits; it slips over the knot; the knot gives way; the needle unthreads; the thread breaks; the chain drops, and the straws fall off; the boxes are upset and materials strewn on the floor; the chain gets entangled with itself, or with its neighbor; directions are forgotten, and twenty straws are strung with ne'er a paper to keep them company, or *vice versa*; . . . we need scarcely go on, for experience will supply all omitted details. The picture is perhaps painted in too dark tones, however, for

all these catastrophes will scarcely occur in a single exercise, and some gifted ones among the children never meet with any of them.

The making of straw chains has certain definite values, and though more difficult than paper chain making, is somewhat more educative. The child gains with the occupation a more definite knowledge of position, as the centre of each bit of paper must be found with eye and needle; his attention is directed to the various colors, and he learns to alternate them in stringing the papers, or to follow a certain sequence in their arrangement; and, finally, he receives much drill upon the number one.

These straw chains are often used for sash curtains in the kindergarten, and if longer straws and round glass beads are employed, really useful portières in the Japanese style may be made. Long cylindrical glass beads may also be used, instead of straws (but of course are vastly more expensive), and with these materials the vexatious thread and needle may be dispensed with and fine, pliable wire used, with a loop or twist at one end to hold the beads.

BEAD STRINGING.

Materials: Half-inch wooden beads (spheres) in the six colors; half-inch wooden beads (spheres, cubes, and cylinders), both colored and uncolored; white and colored glass beads (spheres and cylinders).

The colored wooden spheres which supplement the balls of the first gift are commonly strung on a stout shoe-lace, the tag serving as needle, and are used for color and number work, and for various fanciful plays, in connection with the balls.

Stringing
First and
Second
Gift Beads.

The use of Mrs. Hailmann's second gift beads, spheres, cubes, and cylinders, is described in a previous volume,¹ and they are commonly employed to deepen the impressions of contrast of form, gained with the second gift, and are strung on sticks, on shoe-laces, or wire, or used in sand-table work. The child plays with, and uses at his pleasure, these beads, illustrating first and second gift forms, but does not take them home, for they are really only smaller gifts, and as such are permanent stock and for all children.

Glass beads have been strung in the nursery since they were first manufactured, and most of us can recall most vividly the joy with which we wore rings, bracelets, and necklaces of our own manufacture. This pleasure of the child in personal decoration is a perfectly healthy

Stringing
Glass Beads.

¹ *Republic of Childhood*, Vol. I., *Froebel's Gifts*, pages 46 and 50.

and simple one, an innocent vanity which is an instinct and an inheritance, and as such deserves gratification rather than suppression. He can learn combination of color, alternation of form and size, etc., with the beads, while stringing them for his own or his playmates' adornment, and thus accomplish a variety of objects at one time. The stringing of glass beads has never been a universal occupation in American kindergartens, to our knowledge, at least, but it is very common in some parts of Europe, and also in Japan. If fine, pliable wire be used, instead of needle and thread, the work becomes very simple, and the articles made have the advantage of durability. As various sizes, a great number of colors, and at least two kinds (spheres and cylinders) of beads are to be had, there is much opportunity for variety of arrangement; and symmetrical forms, as well as forms of vegetable life, — flowers, fruits, leaves, etc., — are easily made with them, the designs being subsequently sewn into place on paper or cardboard.

The various purposes which bead stringing may serve have been touched upon in the foregoing pages, but it must not be forgotten also that the work is of value in its equal employment of both hands, and that, like all the other occupations, it gives free play to the child's activities, and leads him to see that his productions are of certain definite value.

Value of
Bead
Stringing.

The objection to bead stringing, as it is sometimes used, is evident enough, — that is, the minuteness of the beads, and the strain on the eye and on the accessory muscles in picking them up, holding them, finding the perforations, and stringing them. If beads no larger than those commonly used for embroidery are employed in the kindergarten, the occupation, in our opinion, becomes unqualifiedly harmful.

BUSY WORK TILES.

Materials: Boards six inches square, drilled with holes one half inch apart; wooden pegs one inch long, in the six colors.

The busy work tiles were invented by Mrs. Alice H. Putnam, of Chicago, and are well adapted to the use of the youngest children, being employed to teach elements of color, position, direction, and number. The child is given a tile and a little dish, or box full of pegs, and is then asked, perhaps, to pick out all that are of the same color as a ball held up by the kindergartner, and to put them in the holes, either in a horizontal line across the tile, or in a vertical line up and down it. A second line of the same color may be made, and then another ball matched, and so on until the tile is filled; or, if the colors are known by name, directions for the different rows are given. Thus the six colors may follow each other in regular order on each line; the whole tile may be filled with one color;

the colors may be arranged in twos, in threes, in fours, etc.; the direction of the lines may be changed, as vertical, horizontal, slanting; or various figures, as squares and oblongs, may be described with the pegs. Only the merest suggestions are necessary as to the use of the busy work tiles, for no kindergartner can fail to understand their capabilities for simple exercises, when once she has seen them. They may be used to represent a flower garden sometimes, a double row of pegs outlining the square and serving as a fence, while the inner holes are filled with flowers; they may simulate a farm-yard, and the inclosure be filled with small animals from a Noah's ark,—it matters not to what purpose they be devoted, so long as it is in line with the general thought, and such as to interest the children. Unless the tiles be used with such a definite purpose, their effect upon the child is positively harmful. Let no one suppose that the little one is learning anything by their use, when he carelessly takes up the pegs, without regard to color, and sticks them in the holes automatically, intent only upon finishing the task. Such work is fit for a machine, but not for a human being, and, if long continued, will stifle the creative and expressive instincts.

Necessity
of Definite
Plan in
their Use.

ROLLED STRIP WORK.

Materials: Strips of colored paper, of various lengths and widths, such as are used for intertwining; Le Page's glue, and a wooden slat, or brush.

The work with rolled strips is not as commonly seen in the kindergarten as some of the other occupations, but it is none the less very simple and pretty, and especially pleasing to children, on account of its adaptability to the production of forms of life.

In a somewhat more elaborate form, it was popular as a kind of "fancy work" Rolled Strip Work an old Occupation. for many years, and though seldom seen in America now, is still in use in a few places where fashion has not yet introduced newer and less laborious handiwork. All kinds of fancy paper were used, — gold, silver, bronze, black, white, and innumerable bright colors, — and the strips, which varied in width from an inch to an eighth, and even a sixteenth of an inch, were rolled into stout cylinders as thick as one's finger, or into tiny ones as delicate as the stem of a violet. These cylinders were afterwards glued together to produce all manner of forms, animals, buildings, leaves, fruit, flowers, or symmetrical designs, and the gradations in the height and thickness of the cylinders, and their variety in color, made very elaborate effects possible. Two panel pictures, illustrating this work, about three

feet long and a foot or so wide, are familiar to us, and were made in an English convent in 1639. One is a coat of arms, executed in colors to the minutest detail, surmounted by the family motto, and surrounded by a border of impossible flowers, which certainly represent a year's labor,—the other a most fantastic illustration of the Apocalypse, with the seven stars, the seven candlesticks, the four beasts, the tree of life, and as many other objects as could be crowded into the limited space,—the whole wrought out in rolled paper strips.

The papers used for this occupation in the kindergarten may be bought in packages at the supply stores, may be cut by the kindergartner, or can often be purchased very cheaply in large quantities at printing houses, or wholesale paper stores, as the waste left from cutting sheets of a certain size is exactly what we require. A strip one half inch wide and six or eight inches long will serve for the first exercises in rolling, and quite a little practice is required before the children learn to moisten the end slightly, in order to take the stiffening out of the paper; to keep the glazed side out; to hold the strip firmly, and roll it into a straight, compact little cylinder. Even the first efforts, however, though they be comparatively unsuccessful, are not without their pleasure, for they are used at once by the children in all kinds of fanciful

The Rolled
Strip in
the Kin-
dergarten.

plays, and serve very well for curls, such as we used to make with dandelion stems.

By and by, however, the art of rolling is learned, and then the cylinders are ^{Forms} pasted tightly. Now they serve as cans, ^{of Life.} spools, rolls of carpet, oil-cloth, or matting, and can be used very nicely to play keeping store, while the children soon learn to pull out one end of the roll in conical shape and make it into a candle, or a potato masher. One of the greatest joys of the occupation is to make fire-crackers, and with the proper width of red paper and bits of string, which are rolled into the cylinder at the beginning, each child can easily make a number of crackers, and finally twist them together into a bunch in regulation style. All kinds of furniture, musical instruments, tools, kitchen utensils, and various articles, such as music rolls, field glasses, step ladders, etc., can be made with a number of the cylinders of various shapes and sizes glued together. One wide strip for instance — tightly rolled and fastened — serves for a rolling pin, with two narrower, smaller rolls glued on for handles; the legs of a table may each be made of two rolls, fastened one on top of the other and glued to a square of pasteboard for a top; a mirror frame may be fashioned of the rolls and silver paper serve as the glass; and, as an exercise in group work, a model kindergarten may be made, completely furnished, hung with

pictures, and equipped with piano, drum, horn, triangle, and other musical instruments. The children will learn, with practice, to roll the strip in tapering style, as for the old-fashioned lamp-lighters, and this introduces new possibilities of making objects. The rolled strip work is, in truth, one of the most suggestive of the minor occupations, and the forms produced share with the building gifts, with peas work, and clay and cardboard modeling, the great advantage of standing erect, and thus lending themselves more perfectly to purposes of play.

CARDBOARD MODELING.

Materials: Card and pasteboard; scissors and knives; rulers; glue, or paste; a cloth for pressing, and a hard board.

Cardboard modeling seems to be a union of the occupations of drawing, cutting, pasting, and folding, and in order of geometric progression lies between peas work and clay modeling, since the representation of objects by means of connected surfaces follows skeleton objects (lines connected by points), and precedes solids.

The occupation, in its more elaborate form, requiring the use of pasteboard, knives, metal rulers, glue, and heavy weights for pressing, is better adapted to the connecting class than to the kindergarten, and can easily be made of sufficient difficulty to suit the powers of much more advanced pupils. It may be made

Advanced
Cardboard
Modeling.

most useful as an accompaniment to the study of elementary crystallography, the following solids being easily produced: "the five regular ones, tetrahedron, hexahedron, octahedron, dodecahedron, icosahedron; then the cone prism, parallelepipedon, rhombohedron, and their derivations, such as the pupil would learn to discover in crystals. Froebel considered this occupation as one of the best for older boys, and not only had these figures made of cardboard, but of wood, clay, and even of potatoes and turnips."¹

Cardboard work, even in its simpler form as used in the kindergarten, is only suited to the older children, since it demands a well-trained eye and considerable previous practice in drawing, cutting, folding, and pasting. If pasteboard is employed, knives are necessary, but we commonly restrict ourselves in the kindergarten to cardboard and simple forms for which scissors can be used. The first efforts are generally little baskets cut on the ground form of a square, an oblong, or a Maltese cross, the sides being gummed, or laced together with worsted or ribbon. Then follow trays, hand-bags, lamp-shades, card-cases, etc., then variously shaped boxes with covers which will open and shut, and then the simpler solids. The ground form of all these objects is geometrical, and a paper pattern is often first drawn, folded and cut, and then

Cardboard
Work in
the Kinder-
garten.

¹ Eleonore Heerwart, *Froebel's Course of Paper Cutting*, page 7.

worked out in cardboard. There are certain prescribed formulæ for making all the forms, geometrical and artistic, which have been mentioned, but they are much too detailed and lengthy to be given here. A little pamphlet by Emily A. Weaver, called "Paper and Scissors in the Schoolroom,"¹ gives full and clear instructions for making an elaborate series of forms, and Hermann Goldammer, in his Guide, especially recommends Seidel and Schmidt's "Arbeitsschule" and Georgen's "Orbis Laboris," as furnishing a variety of valuable models.

Many of the little objects may be made of celluloid or ivory instead of cardboard, the sides laced together with ribbons, the edges cut out in curves or the shapes of flower petals, and so make very pretty and useful gifts. When the children are strong enough and experienced enough to use a knife, the trays and boxes may be made in conveniently large size and cut from heavy pasteboard. Then if they are covered with colored paper and securely fastened with glue they will make most useful receptacles for the various kindergarten materials. Such a set of trays and boxes would be an admirable exercise in group work for the older children.

The printed sheets made in Germany for cardboard modeling are familiar to all of us and are

¹ Milton Bradley Co.

to be had in every large toy store. These are more often seen in the nursery than in the kindergarten, but even there are frequently used as models for dolls' furniture, the children cutting the various pieces from cardboard and decorating them like the patterns with crayons or water colors. Each child of the highest class is often given a heavy pasteboard box at the beginning of the school year, which he decorates like a room and furnishes with his own handiwork in cardboard modeling during the term. The exercise is a very useful one, as it gives ample room for the development of individuality, and the little rooms when finished are charming gifts to children who have been less favored by kindergarten advantages.

Printed
Sheets for
Cardboard
Modeling.

There are also sheets printed in colors which show all the buildings in a village: the churches, schoolhouses, shops, cottages, barns, inns; and even bridges, canoes, steamboats, and trains of cars. These are all drawn with perfect accuracy, and can be cut out with knives and scissors and glued together so as to stand up in the most life-like way. Such a village is very useful for sand-table work, but many of the buildings are quite difficult to put together, and require help from skillful and interested grown people.

SAND WORK

**Instinct of
Child to dig
and play in
Earth and
Sand.** WHO has lived so many years that he cannot bring back his baby days for a moment and recall the dear delight that once he felt in playing with earth and sand?

Who does not remember the cool touch of the soft earth, the pleasant cohesion of its particles, and the ease with which it could be smoothed and patted into shape; and who can ever forget the happy days by the sea-shore, the long stretches of hard, wet beach,—fit drawing-board for giants,—and the shining white heaps above the tide-line where we played for hours together? We can hear again in fancy the scratchy whisper of the grains as they poured into our pails, and see the caves and forts and towers and battlements that we builded once upon a time.

The instinct which leads every child to dig or “grub” in the earth is almost equally general, as the Baroness von Marenholtz says, with the need of bodily movement, but it can seldom develop itself unhindered, particularly in the educated classes of society, and is often repressed as soon as it is manifested. “Thou shalt not make thyself dirty,” is the first commandment of

the maternal catechism, says the Baroness, and seldom do town-children find an opportunity to indulge the tendency which attracts them to a dust-heap for want of better material. We may be well assured, however, that the suppression of any legitimate natural instinct leads to deviations from the normal development of our nature, and robs us of the best and most appropriate means for the first education of the heart, of a means which no other can replace.

Like Antæus of old, the children renew their strength at the touch of Mother Earth, and yet we arbitrarily hold them back from this store-house of power. If the authorities should order a sand heap put in every back yard of our cities, being especially careful not to neglect the tiny inclosures around which the very poor hive together, there would be less vagabondage and less youthful ruffianism. The child must needs be busy, and lacking legitimate means of occupation he will seek out those that are unlawful.

Sand Piles
should be
provided for
all Children.

In Germany they seem to understand the needs of children better than we have ever taken time to do in America, and one of the beautiful acts of the Empress Frederick, in accordance with a suggestion made to her by Frau Schrader, was to induce the Emperor to set apart certain portions of all public parks for play-grounds, with sand hills upon them, for the little children. Any one

who has frequented the parks of the larger German cities knows what an attractive picture the children make in their busy, happy play of digging and packing and building in the easily moulded soil. And any one who has studied psychology watches with keen delight the clear, rapid expression of these children's crude impressions of the world about them.

The Pestalozzi-Froebel Haus in Berlin, of which Frau Schrader is the leading spirit, is provided with a most beautiful sand garden shaded by trees, over which all visiting kindergartners rhapsodize. This is no petty box of sand such as we in America think ourselves fortunate in possessing, but a "truly" garden, as the children say, where there are glorious heaps of sand in which they can dig with their little shovels, and which they can carry about and load and unload in their toy carts. There is no reason why all our children in this country, save those prisoners of luxury who are pent in hotels and boarding-houses, should not have a sand pile for outdoor amusement. A load of sand is not a matter of much expense, nor is a low board fence to surround it and prevent scattering, when once it is landed in our yards. One load will last several years where only a few children use it, and if no convenient tree grows near to shade the spot, a light awning would not be impossible of achievement. Into this garden of Eden we can usher the little ones,

and, provided with iron spoons, toy shovels, one or two old pails and pans and some muffin rings and scallop-tins for cake-baking, they will amuse themselves quietly and happily for hours. To be sure, if they are naughty, they will throw the sand in each other's eyes and all about the yard; but such children cannot be trusted to be less than troublesome under any conditions, and they will probably be better contented and less quarrelsome in the sand pile than anywhere else.

"The little child," as Froebel noted, "employs itself for a long time merely by pouring water or sand from one vessel into another alternately,"¹ and "for building and forming with sand and earth, which precedes clay work, opportunities should be afforded even to the child of one year." Even the baby then may safely be set in the sand pile, and can play with the rest at digging, and moulding and burrowing, and pouring the grains in and out of the tin vessels.

The sand table, sand box, or sand garden, as it is variously called, seems to have been first suggested to Froebel by Hermann von Arnswald, a former pupil at Keilhau, and a devoted friend and admirer of the great educator. He writes Froebel from Eisenach, May 13, 1847:

"DEAR, FATHERLY FRIEND: Yesterday I was engaged in studying your Sunday paper when an

¹ *Pedagogics*, page 146.

idea struck me which I feel prompted to communicate to you. I thought, might not a plane of sand be made a useful and entertaining game? By a plane of sand I mean a low, shallow box of wood filled with pure sand. It would be a kindergarten in miniature. The children might play in it with their cubes and building blocks. I think it would give the child particular pleasure to have the forms and figures and sticks laid out in the sand before his eyes. Sand is a material adaptable to any use. A few drops of water mixed with it would enable the child to form mountains and valleys in it, and so on.”¹

True to Emerson's saying that it is only an inventor who knows how to borrow, Froebel seized upon this suggestion of Colonel von Arnswald's, and the sand table has ever since been in use in the kindergarten.

It is, as commonly seen, a water-tight box about five by three feet, and at least a foot deep, is set on short stout legs with rollers and filled with sand to within two inches of the top. The box is sometimes lined with zinc, as it is often necessary to pour enough water into the sand to represent a lake, or the boundless ocean, but it can be so strongly made as to need no lining, or may have a double bottom. It may be five feet square instead of oblong, or it may be somewhat smaller

¹ *Froebel's Letters*, edited by A. H. Heinemann, page 61.

than the size mentioned, but it must be large enough for a dozen children to gather around, as it is used only for group work, and must be low enough to be convenient for little people. The sand is always kept quite damp, as it lends itself to moulding much more readily in this condition, and the particles are thus prevented from rising into the air in the form of dust.

The kindergarten, with its explanation of the universal instincts of childhood, shows us the source of the pleasure which all children take in playing with sand, and gives adequate opportunity to satisfy the universal desire in such a fashion that it may aid in real self-development. All the exercises at the sand table are coöperative, and so lead the children to feel more sensibly the pressure of those "bonds that unite us one and all, whether it be by the soft binding of love, or the iron chain of necessity." And herein lies the greatest value of the work, — that it requires coöperation; for as Froebel says, "the feeling of community is commonly not only not early awakened, or later nourished in the child, but on the contrary is early disturbed and even annihilated."¹

In the first exercises with the sand the children are allowed to pour it through their fingers as much as they like, to bury their hands deep in the shifting grains till not even a dimpled wrist is

¹ *Education of Man*, page 74 (Jarvis translation).

visible, and then suddenly withdraw them, making a sort of hide-and-seek play, which they especially enjoy, and which contains the element of alienation and return which Froebel dwells upon so thoughtfully in the "Mother Play." They like, too, when the sand is quite smooth, to print their open hands and finger tips and knuckles upon it, rejoicing in the ready response of the material to the lightest touch. Of course they are all this time experimenting upon heaping the sand into mountains, which they level as speedily, or raking it with Nature's five-toothed rake and smoothing it with the open palm, but now another simple exercise will be found to give the greatest joy. They may each be provided with a tray and a number of little forms, — squares, oblongs, circles, hearts, which are made in great variety for the purpose. They place these forms, which are merely rims like muffin-rings, on their trays, fill them with damp sand, then carefully withdraw them, and lo! what an array of cakes for a party! The pleasure which the play gives to babies need not be dilated upon, but there is an element of useful information in it also, in the knowledge it gives of differing forms, as well as the practice in dexterity required to fill them without scattering the sand, to press it down carefully and withdraw the little pans without injuring the baker's delicate handiwork.

Another simple exercise is garden-making, for

which the children are provided with toy rakes, hoes, and spades, which can be bought anywhere for a cent apiece, and, as they are made of iron, are indestructible. Of course the ground is properly prepared by the laborers, and then if a flower garden is to be planted, consultations are held in regard to the shape, size, and position of the various beds which are laid out, fenced with slats, and then planted with flowers that possess the magical property of blooming as soon as set out. A real garden, however, may be made in the box, if desirable; for peas, canary-seed, etc., will sprout and grow very well for a time in the wet sand.

Again, the children may mould spheres from the yielding material, calling them snowballs, cannon balls, apples, oranges, or anything they consider appropriate, and when they are using the second gift, a delightful exercise is to make group-work inventions by pressing the spheres, cubes, and cylinder into the smooth surface.

“The hands of children commence their first rough trials at building,” says the Baroness von Marenholtz-Bulow, ^{Later Plays.} “whilst digging in earth and sand. The scooping of caverns, the building of houses and bridges, forming and fashioning of all kinds (from the dirt-pies made with mother’s thimble to the proud edifices made with the contents of the brick-box, or with a pack of cards), and lastly drawing and

modeling, — all spring from the instinct of construction, the true instinct of work.”

Implanted in each child of the human race is this instinct, and the corresponding desire to make use of the materials which nature provides to satisfy the craving. The yielding sand affords the most suitable material which can be found for the purpose, far better than the clay at first, as it offers practically no resistance to hand and will. There is nothing in the kindergarten which is capable of such varied, helpful, and beautiful uses as is the sand table, and it alone, were all our other helps to child training removed, would support the claims of the system to be considered as a great educational agency. All the gifts and many of the occupations may be used in it, and in every exercise where individual powers have been strengthened, these may subsequently be devoted to the common welfare by a coöperative play at the table.

The first-gift balls and beads may be laid as garlands of flowers in the sand; the second-gift forms and beads be used for impressing inventions and for symbolic plays; the gifts from third to sixth give wonderful opportunities for building of every kind and for the illustration of stories and games, while even the sticks and rings and seeds, as Colonel von Arnswald suggested, may be laid into charming inventions on the smooth plane of sand. Many things which the child has

made in slat interlacing, weaving, cutting, folding, peas work, modeling with clay and cardboard, bead stringing, and rolled strip work may be appropriately used in the sand table, and thus be doubly blessed to the child in that they have been a pleasure to himself in making, and yet may be used for the service of others. Miss Emma Marwedel thus speaks of sand work: "Everything can be made visible on it, — the longest as well as the shortest paths, the high hill and the deep dale, all softly curved, all sharp mathematical lines, come into view in gracefully laid-out gardens. The knowledge of home, geographical sketches (even as far as the snow line and the breaking of the wind by mountain chains), climatic scenes, *e. g.*, views of Greenland and South America, windings of rivers, — all these things and many others can be executed by means of the various materials at hand in the kindergarten. Scissors, hammer, knife, modeling, cardboard, paper cutting, — all that incites the child's creative ideas comes into application."¹

Some of the above suggestions are better suited, perhaps, to the primary school than to the kindergarten, but even here we can make a beginning with geography by laying out in the sand first the kindergarten and its immediate surroundings, then the neighborhood, and lastly a simple outline of the city with its principal streets, and a

¹ *Childhood's Poetry and Studies*, page 24.

few of its public buildings. If there are mountains, rivers, and lakes in the vicinity, these may be added, and as the exercise would occupy a great many work periods, it may be left upon the table, and added to from time to time. A series of group-work plays for the entire term might be made by illustrating the homes of the "Seven Little Sisters," and prove as useful in geography teaching as in showing the brotherhood of man.

And how may the sand work aid us in the study of history? Let us consider one of the incidents of the Revolution, for instance, and see what impression we may make on the child's mind by illustrating the "Midnight Ride of Paul Revere." We suppose, of course, that the exercise is to be carried out by the older children, who have often heard the poem recited and remember its main features. The city of Boston is laid out on one side of the table, the North Church conspicuously placed among the buildings, and having a "practicable" belfry.

While one group of the children is making the city, two or three more are representing the bay with water, or glass, and placing a toy ship in it to stand for the "Somerset," swinging wide at her moorings.

Directly across the bay another group builds up the village of Charlestown, from which Paul Revere rode forth,

“with his cry of alarm,
To every Middlesex village and farm.”

A few more children construct the historic bridge across the river leading to Concord, this being a small village, with flocks of sheep asleep in its fields, and having for its main building the storehouse of clothing, food, and ammunition of the Americans.

The remainder of the class lay out the villages of Medford and Lexington, not forgetting a cock and a dog for the former hamlet, a meeting-house with a gilded weather-vane for the latter, and clock-towers for all three towns. The teacher must, of course, from her knowledge of the distance of all these places from each other and from Boston, and their relative direction, give a good deal of advice as to laying out the sand table advantageously, and she will probably also need to be consulted as to the shape of the bay and the windings of the river, “a line of black, that bends and floats.”

A number of exercises would be well spent in arranging Boston and the neighboring villages in the sand with their various buildings; in constructing the bridge and making two lanterns for the North Church tower, a row boat and oars for Paul Revere, clocks for the three villages, a weathercock for Lexington meeting-house, and in gathering together from the group-work stores a horse and rider, a cock, a dog, a flock of sheep,

and some trees. Finally when all these preparations are completed, and all the objects set in place, the poem is recited, and at the right moment Paul is rowed across the bay and stands impatient by his horse until the lanterns are hung in the tower. Then eager hands mount him and hurry him from village to village in time with the recitation, till at two by the village clock he comes to the bridge in Concord town. . . . Such is the exercise, and clear enough its value in teaching literature, history, and patriotism. What child could leave that heap of sand without a word in his heart that shall ring forevermore, and an echo in his memory

“Of the hurrying hoof-beats of that steed
And the midnight message of Paul Revere”?

There are many stories, not necessarily historical, which the children enjoy illustrating in the sand. Very well do we remember an occasion when one of the authors told the fairy story of the Princess and the golden ball, at the sand table. Across years of time comes the memory of the eagerness with which the children constructed the king's palace, which was quite a wonderful sixth-gift creation, how they designed gardens, planted them with flowers and trees, laid the walks with pebbles, and finally set in the midst a silver lake represented by a broken looking-glass. Then when the golden ball (a second-gift bead) lay on the surface of the water and the

story told of the enchanted frog's appearance, and his offer to return it on certain conditions, — all was so real that the story teller herself half expected to see him emerging from the lake, and to hear his harsh croak.

In all these exercises the teacher must endeavor simply to be one of the children and not force her ideas upon the community. We are constantly, as Dr. C. C. Van Liew says, "forcing the child's representations into channels not his own, that do not express his own conceptions, and that even defraud him of his rights to individuality in error." Spontaneity of activity, which sand moulding is especially fitted to foster, will be utterly crushed if the kindergartner leads instead of follows, and it is her highest duty in these group-work exercises to keep herself in the background.¹

After a season or two's work with the sand table, a number of objects are necessarily collected, which have been bought, Cabinets for Sand-table Objects. brought from home, or made by the children and kindergartner to embellish the work and make it more realistic. These may be wooden, china, and

¹ "It is very important not to force on the child, in the symbolic stage of his culture, say from four to six years of age, the ideas of others in the details of his work, for that will produce arrested development, and he will not have the vivid sense of personality that he ought to have. The kindergarten method encourages spontaneity, and thus protects the fountains of his originality." (W. T. Harris.)

tin animals of all sorts; Swiss villages; toy trees; houses, churches, boats, and bridges in cardboard modeling; houses, implements, and furniture in peas work; tin vehicles, garden benches, railroad trains, steamers, garden tools, Noah's ark figures, sticks and pebbles for fences and walks, — a motley collection which requires much space to keep sorted and in order, and which the kindergarten closet, though it held as much as Pandora's box, would never find room for. Miss Marwedel suggested that a cheap wooden cabinet with drawers should be provided and used for this purpose alone, and that certain children should be deputed to keep the various objects in order, taking turns with the duty week by week. One of these children might be called the gardener, one the shepherd, one the architect, etc., and it would be the duty of each one to keep his material in order and know where it was to be found. The plan is perfectly practicable, and will give a glimpse of great joy to those who have hunted a half hour for a certain flock of cotton-wool sheep, known to be in existence, and yet nowhere to be found.

There is hardly a kindergarten exercise suggested in this chapter, save perhaps the first plays for babies, which would not be equally as practical and useful in the school, and could be carried out much more fully there, on account of the greater age and ability

Use of Sand
in the Pri-
mary
School.

of the children. One obstacle to the introduction of the sand table into the crowded primary school-room would be, of course, its size and the amount of space it occupies. Perhaps, however, it might be fastened to the wall with hinges, and opened and filled only when in use, which would dispose, in part, at least, of the objection. An enthusiastic teacher thus speaks of its use in the school-room: "With the sand box," she says, "the children gain permanent and correct ideas of the world in general, of the construction of houses and bridges, of habits of animals and plants. The study of geography is, through its possibilities, made a most fascinating pastime; mountains, hills, volcanoes, rivers, ponds, maps of states, counties, cities are formations in the sand, over the construction of which, little heads bend in happy thought and fingers work with joyous zeal.

"No child thus taught is ever heard to say, 'I hate geography,' for to his mind it has no associations with dull, weary memorization of the printed page, but is suggestive, instead, of scenes full of reality to the imagination, and of pictures delightful to the eye. Even the smallest children get intelligent ideas of the planet on which they live, and know more than many a grown person of the topography of the city which is their home. They map it out as a whole in the sand, and locate carefully the street and block in which they

live, not forgetting the trees in the home neighborhood, nor even the lamp-post and letter-box. Thus are habits of observation stimulated, and the walks to and from school made something more than idle wanderings."

Many teachers already use the sand for instruction in geography, and Alexander E. Frye's "Child and Nature, or Geography Teaching with Sand Modeling," will be found most helpful for this purpose.¹ The use of sand in the beginnings of history has already been hinted at, and could be developed as fully as the spirit and intelligence of teacher and children would allow. Imagine, for instance, how well Jane Andrews's story of "Ten Boys on the Road from Long Ago to Now," could be worked out, and how the ingenuity and power of planning of all the children might be devoted to picturing the homes, the life and surroundings of Kablu, the Aryan; Darius, the Persian; Cleon, the Greek; Horatius, the Roman boy, and all the other lads from Long Ago to Now.

A part of the sand table, too, might be used for botanical observations, and this has been done quite successfully. While in one portion, peas, beans, flax, and some grasses were sown, and the whole process of germination and care experienced, the other part was used for any coöpera-

¹ Another useful book of this nature is *Map Modeling in Geography and History*, by Albert E. Maltby.

tive labor. Local scenes, imitation of a park, geographical scenes of Greenland, of the Eskimo huts and the snow, scenes of South America, illustrations of the life of Robinson Crusoe, the animals being represented in great numbers, attended by their special herder, — all these were arranged according to the capacity of the children, who did all the labor in common.¹

In another school, after the story of "Little George Washington"² had been told, the children prepared the sand table, and when the older ones had traced the letters of his name and the date of his birth deep in the soft sand, the lesser ones filled them with seeds and covered them carefully. Then in a little time the whole appeared in fresh green letters, and so recalled a tale of the childhood of Washington, and proved a useful footnote to history.

Again, the sand may be used for learning the principles of architecture, for cellars may be dug, foundations laid, and walls built as in real life. A spirit-level would be of great service here, for in erecting a large building, the whole structure is likely to fall to the ground if the foundation is not properly laid, and of this it is difficult to judge with the eye alone.

Let us remember in the school, however, as

¹ Emma Marwedel, *Hints to Teachers*, page 12.

² Kate D. Wiggin and Nora A. Smith, *The Story-Hour*, page 115.

much as in the kindergarten, that the *children*, not the teachers, are to be the leaders in the work, and how far they may be trusted to be so is shown in Dr. G. Stanley Hall's wonderful "Story of a Sand Pile."¹

Some of the processes, institutions, and methods of administration and organization carried out in that load of sand could only be attained by a gradual growth in ability, and would perhaps require more time and concentration than could well be given during school hours, but in all sand plays, to quote Dr. Hall, "the power of motive arising from a large surface of interest can be turned on to the smallest part." Not only has the work this value, but it is an unexcelled teacher of social morality and of self-control, and lastly, it develops the creative instincts, which if suppressed, entail a loss of power upon the whole being of the child.

¹ *Scribner's Monthly*, June, 1888.

GENERAL REMARKS ON THE OCCUPATIONS

THESE occupations of the kindergarten, so old,—as old as the playing child, and yet as new as the last-born baby among us,—seem indeed to prove themselves worthy of Froebel's saying that they contain the universal elements of proper work for childhood.

Yet as we have tried to show in the preceding chapters, they must be applied according to Froebelian principles, or they lose all their power for good and even become harmful.

One of our commonest kindergarten sayings is that self-activity is the watchword of the new education, but it is questionable whether we always thoroughly understand what we mean when we use the phrase. Self-activity in the child means more than his being busy, more than his voluntary performance of work, more than his overcoming of difficulties by personal effort, more than his accomplishing any result unassisted, and by force of his own powers; "it implies," as Miss Peabody said, "that, at all times, *his whole self shall be active*, for no activity accomplishes all the good it can, unless it

enlists his entire self in all the phases of being. The law of self-activity is not more opposed to the leading-string and cramming practices, than it is to one-sidedness in the work of education; it demands not activity alone, but all-sided activity of the whole being, the whole self.”¹

If we judge our ministrations to the child's self-activity by the above definition, how far do we come short of the standard?

“The whole body of investigations upon childhood,” says Dr. C. C. Van Liew, “points to the fact that the most vivid perceptions and memories are associated with self-activities, — a fact which demands not only that education proceed early along the lines of motor activity, as in the kindergarten, but that the entire intellectual development aim to stimulate the child's self-activity.”²

Let us ask ourselves specifically here, have we or have we not furnished the right conditions for such development?

The worth of knowledge obtained by individual effort cannot, of course, be too highly estimated; the mental and spiritual discipline gained by persistently struggling with difficulties and bravely overcoming them, is one of the most valuable of life possessions, but this effort and this personal struggle on the part of

Self-Activity
in Teacher.

¹ *Kindergarten Messenger*, April, 1879.

² *Transactions of the Illinois Society for Child Study*, Vol. I. No. 1.

the child need not and should not be carried on without the participation of the teacher, — in other words the self-activity of the learner should not exclude a similar activity on the part of the leader. It is not his office to give the child a problem to work out, and then leave him to grapple with it alone, for the whole reason of the teacher's being is that he shall supply the experience the child lacks,¹ that he shall "show, when showing enables the child to do, and must even do, when his doing enables the child to appreciate the bearing or value of his own activity."

Of course it is a delicate matter to give the pupil just aid enough, and not too much, to hold out a helping hand when the road is very rough for small feet, and yet to withdraw the hand and encourage walking alone as the obstacles grow less. It is a delicate matter indeed, and demands good judgment, experience, and sympathetic knowledge of all children, as well as of the particular child.

Have we this judgment and experience, and are we gaining this knowledge?

Nothing is more noticeable in visiting various kindergartens than the marked difference in the way the materials are treated by the children. This difference, like that exquisite and delicate

¹ "Experience without instruction is wastefully extravagant; instruction unattended by experience is valueless. The former exhausts, the latter starves life." (W. N. Häilmann.)

thing, the kindergarten "atmosphere," is, and must be, a direct emanation from the mental attitude of the kindergartner.

Handling
Kindergar-
ten Mate-
rials.

Let no one suppose, who sees a company of children hastily stuffing their weaving mats into the envelopes regardless of creases and crumples, folding their papers without thought of correct diameters, dropping their clay on the floor, smudging and smearing their drawings, — let no one suppose that those children are a horde of wild and lawless Arabs.

There may be, there certainly is, some one in the room who deserves to be called by that name, but just as certainly she is not among the children. No, for subjected to another influence you shall see the same careless, heedless company become careful and orderly, intent upon getting things "just right" and keeping them so, and vying with each other to produce work which shall be spotless and daintily neat. We do not say that cleanliness, neatness, and order are necessary to art and artistic productions in maturity; but we do say that little children cannot deal successfully with the kindergarten materials and can never produce good results with them until they have learned to treat them with respect and care.

Let us open our eyes more widely and look upon our own children with critical gaze. Are they orderly and careful, do they respect the materials which they are handling?

There has been so much insistence in the preceding chapters upon the ideal use of the kindergarten occupations that we should hardly dare to touch upon the subject again, were we not assured that "repetition is the sheet-anchor of the teacher." We need to disabuse ourselves of the too prevalent idea that there is a certain magic in the materials which will work its beneficent way, no matter how they are applied. True, the magic is there, but it is only set free by the right touch, by the understanding hand. They may be used to cherish the art-impulse in the learner, or to crush it out and stamp it under foot; they may be used to further every generous thought and feeling of the child, or to foster selfishness and egotism; they may develop his individuality and his creative and expressive powers, or simply train his hand and eye and make him a deft automaton, alert in carrying out the ideas of others.

Ideal Use
of the Kin-
dergarten
Occupations.

How are *we* using the occupations, dear kindergartners? Are we developing from within, or imposing from without? Are we giving the child the fullest possible control of himself and his powers, or are we turning him into a superior kind of machine? There is no safer time than this to ask and to answer these questions: —

"The clay is moist and soft; now, now, make haste
And form the pitcher, for the wheel turns fast."¹

¹ Persius, *Satires*, iii. 23.

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