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THIRTY VOLUMES

VOLUME NINETEEN

PRACTICAL AND AVAILABLE MEANS OF DEVELOPING EXACTNESS AND SKILL BOTH MENTALLY AND PHYSICALLY. THE CULTIVATION OF QUICK AND ACCURATE DECISION AND THE GROWTH OF CONSCIOUS POWER AS ESSENTIAL ELEMENTS OF SUCCESS

"Men, my brothers, men the workers, ever reaping something new." TENNYSON.

"Patient training is a necessary ingredient of genius."

"The secret of success is constancy to purpose." DISRAELI.

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VOLUME XIX

INTRODUCTION

By JASON E. HAMMOND
Superintendent of Education, State of Michigan

THE education of the child is admittedly the most important question that can engage the thought of this or any other age. It is the most pressing question of to-day. The child is so soon a man; he is so soon to take charge of human affairs, so soon to be the arbiter of human destiny, that we look upon him with feelings of awe; and to-day, standing in his presence, aghast at the responsibilities resting upon us, we whisper: "How shall we educate him?"

This is not a new question. For generations it has been the burden of the world's educators and philosophers; and it has received many answers. The general answer to-day is: "Educate him in the schools"; and in response to this answer, schoolhouses by thousands and tens of thousands crown the hilltops and dot the valleys of this broad land.

But what shall be taught in these schools? For what elements of child-growth shall the school stand? How much and what shall be contributed by the home? how much by the church? how much by the companions of the child? These are some of the questions that force themselves upon the attention of thoughtful parents and educators.

The school product is not satisfactory; it has been a disappointment in various ways. The nineteenth century was one of condensation. "Boil it down!" was the motto. Thought, decision, and action have thus been intensified; the life-pace has become swift. Success demands that it be accurate; there is no time for "correcting up."

These conditions have forced us into specialization; it is a necessity, a self-preservative. Specialization consists in focusing the mind's powers upon a small area; it is a narrowing process; its beginning usually marks the end of symmetrical development in a person. It has forced its way into the schools, and as a result, young people come from them lacking in many essentials of character which a broad education is intended to give — self-reliance, force, executive ability, as well as those broad sympathies that alone fit men to live in society.

It has been forced upon even the casual observer that the school must provide more than intellectual brilliancy; it must build character. The heart — the emotions — must be trained that man may be a blessing to his generation; and also the executive faculty, that he may be able to marshal and command the forces that are in him. The foundation for all this must be laid before the pupil reaches the period of specialization. The kindergarten and manual training work are calculated to supply this need, — the former, heart education; the latter, executive ability.

Thus, education has come to mean much more than memory training. It means all development, whether of muscle, nerve, brain, or heart; it means character-building. The "three R's" have been supplanted by the "three H's"—the heart, the head, the hand. Any system of education that does not include all these is a one-sided system. "Send the whole child to school" has become the motto.

Neither will it do for us to think the education of the hand as the least of the "three H's." The close relation that mind-growth sustains to hand training has not been generally understood. If thought expression is the test of intellectual power (and I know of no other), then, as a test, manual training stands preëminent. Literary work, oratory, and sign-language present but a fragment of the thought springing in the human mind when contrasted with manual expression. Every structure, however noble or mean; every sculpture, every painting, every invention, is a manual expression of thought; and that means by which a man most intensifies his thought expression to others, is the means by which he can best intensify his thought to himself. Hence, manual expression means concentration of thought.

Now, the educational value of any exercise is measured by the number and power of thought pulsations or movements necessary on the part of the individual performing that exercise; the more concentrated the thought, the more rapid the growth of mental power. The educational test for every exercise, whether physical, mental, or moral, should be: "How much added child does it stand for?"

But where shall education begin? Shall we not better ask, where does it begin? Ordinarily we think of the child's education beginning about the fifth year, but every thinking parent knows that much that shapes the child's future develops long before the school period. If we go back to the cradle, back to the first dawn of consciousness, we shall find that education was there; and who shall say how much of after joy or sorrow may be but the expression of the education developed during semi-conscious months of early life? Who shall measure the influences that are woven into the warp and woof of character, as the child lies in that peculiar, suggestion-waiting, half-hypnotic state, dreamily watching the flying canopy of its crib, listening to the crooning of the happy mother, sung to the accompaniment of nature's orchestra—the droning of bees, the singing of birds, the sobbing of the winds, the ebbing and flowing of harmonious waterfalls, and the *pianissimo* of the pattering rain-drops; or, on the other hand, feeling the jar of the high-keyed voices of an irritable household, or the shocks of commercial life in the clatter of the busy city—the rumble of the street car, the shriek of the locomotive, the startling, nerve-trying ring of the telephone or door-bell? Education begins in the home and the mother is the child's first teacher, aided soon, however, by all the household.

This, then, is the twofold proposition: First, the child has a threefold nature; and yet the child is a unity. His education, therefore, should be a

unity. There should be no such thing as an effort to train the intellectual nature, without also training the physical and moral natures.

Second, the child's mind is not a tank into which facts are to be poured. The child does not expand by absorption, but by growth induced by his own activities. Every muscular action develops muscle-cells; every nerve action, nerve-cells; every thought, brain-cells. The child is thus the product of his own activities. We cannot force growth upon him. We can do no more than to surround him with the environment that shall induce those activities which produce growth.

How shall this be done? Here is the old question. We may not have been able yet to answer it fully, but we have learned much; and the child has been our teacher. If we but watch him and study his nature, we shall be able to contribute the necessary aids to him in their season, and he will do his own educating; in a sense, he must always do that.

First, we note that all the early efforts of the child have to do with the sensuous world. His senses are his teachers; and it is the duty of the parent to let him see, hear, feel, taste, smell, and weigh.

Again, we notice that he is essentially a creator in spite of the apparently contradictory fact that his desire to change the appearance of things leads him to destroy. This is thought by some to be the desire to see how things are made, but a little observation will convince us that he has no care as to that. He does not stop to see how they are made. When he has changed the appearance of a thing, he seems to be satisfied, and exhibits all the signs of delight that belong to achievement. The careful parent may to a degree prevent the activity of this desire, but at what a cost! It is the creative element of the mind calling for activity, and should be given every opportunity for growth. The child sees in the mirror which he demolishes nothing more than material for his purpose, just as the carpenter sees in the board, symmetrical and polished though it may be, material for his purpose; or as the lumberman sees in the towering pine, material for his purpose. Building cob houses and making mud pies rest upon a sound psychological basis. No, give to this creative, this executive element of the mind, sunlight and air that it may develop. Provide the child with material for its activity, and we shall hear no more about the "lost years" between the ages of three and five.

We therefore hail with delight the effort to supply a system of graduated manual training exercises for use in the home during the most impressive, the most critical years of child life, exercises that will add to the joys of childhood and at the same time give free play to all the faculties, thus guarding against a one-sided growth. And it is our belief that this alone will add to the life of the normal child those qualities of self-reliance, energy, and perseverance, which are so sadly lacking to-day in the mass of our young people. For, let these faculties begin to develop in early life, and they will continue to grow with the growth and strengthen with the strength, giving a robust, intellectual manhood and womanhood qualified to meet the tension of the present civilization.

MANUAL TRAINING AS A FACTOR IN EDUCATION

By ARTHUR LYMAN WILLISTON
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WE ARE often asked why it is that we place so much emphasis on Manual Training here at Pratt Institute and devote so much time and thought to its development. It is not an easy question to answer in a word, because there is so much more in the subject than appears on the surface. Let me illustrate: Take, for instance, a child at work on any typical exercise, such as constructing a printing-frame of the kind photographers use in making prints from their negatives. He is eager to begin because he knows something of the beautiful results of photography; and he is anxious to have a frame himself with which he may make some experiments. We can count, therefore, on his putting his best energies into the work to make it as good as possible; and we have his active coöperation until the frame is finished.

He is ready to begin, and we will notice the mental operations which he goes through if the exercise has been wisely planned. What is the first step? He must read the drawing carefully and interpret it. He must use his imagination and picture the finished piece. Then he must analyze it and plan the method that he will use. He must lay out each piece accurately so that the whole will fit together. He must use method to get the best results. As the work progresses, each step involves some principle which he must remember and apply, and at each step he must exercise reason and good judgment if he is to accomplish his purpose and get a perfect frame. As the work approaches completion, more nicety is required, calling for closer observation, greater power of concentration, and greater need of accuracy.

A spirit of self-reliance and careful earnestness has been necessary from the start if the pupil is to realize his desire in the finished result, and throughout it all the motive force has come from within. Prompted by his own desires, he exercises his powers to the utmost, in a way to make the most lasting impression.

The frame is finished, and is a just source of pride to the pupil, and to his friends and parents as well, but its influence on his life may not be ended. During its construction an interest in its use was

created, and that interest may and should lead on to further action and further development.

Thus, briefly outlined, are the powers brought into operation by every exercise in Manual Training, each succeeding piece taxing the resources a trifle more than the last, or calling for the exercise of some new faculty. And as we note the growth of intellectual power, we begin to understand the statement that Manual Training makes its appeal to the reason, the will, and the emotions, as well as to the physical side of the child nature. He is learning through his own experience just as the race first acquired its knowledge — and we all know that experience is the best of all teachers.

When we realize the meaning of Manual Training, we see how misleading is the name, for its object evidently is not alone the training of the hand,— however desirable this may be — but rather is cultivating and developing all the mental powers through the hand. It is mind and character training *through* hand-work, and not as the name might indicate, merely hand training. Of course we appreciate that the hand training has a very distinct utilitarian value, and that the training of hand and eye and the acquiring of skill and dexterity may have a very positive value in after life; and yet the mental development that is acquired through this work is of far greater importance. At first it was difficult to realize how this could be, and how a boy could, by performing some task at the bench or at the forge, obtain a certain mental development that might be impossible through the study, for instance, of Latin or mathematics. Indeed, it was some time after Manual Training was first introduced that those most interested in the subject fully realized this and appreciated its true educational significance. It was first introduced into schools in this country because of its technical and practical value, but soon its deeper value was discovered.

The reason for this is now very apparent, for we have come to realize that education consists not of the acquiring of knowledge which may be administered to the child's brain, much as we might administer generous slices of watermelon to his stomach. Modern psychology and physiology teach us that education is the development of faculties — the unfolding of the child's nature from within, much as a plant grows and unfolds; and for the motive force we must rely largely on the natural instincts of the child toward activity and discovery — instincts which nature put there for the purpose. As soon as we accept this theory of education, we begin to understand how it is that through action and thought — work in which there is absorbing interest — the child may gain more of intellectual growth than in any other way. In fact, we profoundly believe that lessons learned

through work which is closely related to natural interests, are by far the most impressive and intelligible of all lessons, and produce the most lasting effect on the learner.

I cannot emphasize too strongly the importance of the idea which is fundamental to Manual Training, that the development should be from within, outward, and not the other way. Children, stimulated by their own desires and interests, should be led to discover, to invent, to produce; for it is only by this means that we can properly fit them to take their part in life. The need of the day is for men of action; men and women who can do, as well as think; individuals with power, as well as with knowledge.

It is because of this peculiar value of Manual Training to train the will, through the continual overcoming of difficulties to cultivate power, to stimulate individual action, and to develop executive ability to the limit of the pupil's mental capacity, that I would urge every thoughtful parent to consider it. And I would urge every mother and father who is anxious for these advantages for their children, to provide some form of Manual Training for them during the formative years.

But there are other reasons, which I cannot pass without mention, why Manual Training should enter all our schools, both public and private. Professor James tells us that all education is but the "organization of acquired habits of conduct and tendencies to behavior." If this be so, how can we overestimate the value of forming in early life, through Manual Training, habits of care and accuracy, neatness and order, system in thought and action, the habit of overcoming difficulties by perseverance, and the habit of putting thought into action.

Manual Training leads to an appreciation of the beautiful and of the esthetic side of life. This is very different from the idea that many have who have not given the matter any thought. They say: "We don't want our children to waste their time on work that is meant only for mechanics"; but they do not understand. Imagine a child given, as an exercise in turning, a vase form. He is given photographs of many of the most famous and beautiful vases to study. He becomes interested in them, for he must choose which of the various forms he will copy. As his work is gradually rounding into shape, he is getting an insight into and an impression of the beauty of form and outline that will never desert him; for we only thoroughly understand and appreciate that which we can produce ourselves. So also can feeling for perfect form, harmony of color, and other elements of design be made the basis of many exercises.

CHANGED CONDITIONS AND NEW SOCIAL NEEDS

Faster than we can possibly realize, have the conditions of life in this country changed, and they will continue to change. Mighty forces are at work, and if we accommodate ourselves to the new conditions, we shall find these changes vastly to our advantage. If we try to meet the new conditions by methods adapted to other times, however, we shall find it quite different. The changes are of two kinds: social and industrial. Rural life has given way to life in large communities, and modern science has been harnessed to the problem of production and transportation, without which the recent marvelous progress in material wealth would have been impossible.

The world has discovered the gain that may come through combined effort and united action, where large numbers of human beings with common interests are brought together, and it will never go back to the rural conditions of isolated individual effort of the generations gone by. The world has discovered the value of steam to industry, and will never go back to the old form of manual labor as a source of power. Steam, electricity, and the other forces of nature are of too much service to man to render that possible. On the other hand, they are each day making new inroads into our industries and finding a wider and wider application.

The conditions which our children will have to meet in getting their start in life will therefore be very different from those which we ourselves had to face but a few years ago. It is to meet these new conditions, both social and industrial, that Manual Training has sprung into being, and it is to this demand that it owes its very rapid growth in our school systems.

The question most naturally arises in the mind of the reader: "If Manual Training is so essential to the development of mind and character, how does it happen that we have been able to get along without it in the past? We have produced great men and fine minds, long before Manual Training was a subject taught in any school." It looks as though there were some mistake, but there is none. The old conditions of rural or semi-rural life, and the men who grew up under them, prove the strongest argument for Manual Training.

Take the small boy or girl growing on the farm or in the country village, surrounded by those influences which were typical all through the early history of this country, almost from the date of its settlement down to within a very few years. The whole of the child's life, from the time that he first became old enough to be of service to his parents, or to take an interest in things, was a care-

fully arranged course in Manual Training. The district school formed but a part — and usually a very small part — of the whole training which the child received. The plain common sense of the people put our latter-day theories into practice,— that education through productive and useful work of the hands is essential to right intellectual and moral training; and every mother and every father saw to it that the boy or girl had some useful occupation, on the farm, at the work-bench, or in the kitchen, or dairy, to supplement the school training. Neither was complete without the other; and the common school which trained the memory and the purely intellectual faculties only, was intended to be supplemented by the home training to cultivate the more practical side of the children's natures.

But, as we have seen, the times have changed. Crowded together as we are in cities, with little space about us, parents have neither the time nor the means to give their children Manual Training at home. To-day, children cannot, as a rule, help their parents in their work, as of old, because the work is done either at the office or factory or else it is relegated to employees or servants.

On the other hand, the school which used to occupy but a few hours per day for a few months in the year, has gradually encroached on the children's time, occupying as it does the greater part of the day for ten months in the year, until there would not now be time enough left for the home training, if opportunity for it could otherwise be offered.

INFLUENCE OF MANUAL TRAINING ON THE LIVES OF GREAT MEN

How many of the men who have risen to prominence in every walk of life owe much of their success to the mental development and character-building, which came to them in their youth through the manual work which they did for themselves or their parents! Doubtless many examples occur to all of us, and it is hardly necessary to add to the list. It is easy to choose names from almost any occupation, and it is interesting to note that practical and mechanical training in early life seems to have been of as much value to men of letters as to men of affairs. Thus, Benjamin Franklin had but two years of school training, and the rest of his mighty mental equipment was mainly the outgrowth of the shop of a candle maker, and the printing-room where he did the manual work himself. Horace Greeley had only what a country school could give him, but the country life where he spent his early years did much to

supply the deficiency. Lord Byron had nothing beyond the Grammar school, but was passionately fond of out-door sports — riding, games, and athletics. Alexander Dumas was an apprentice, getting all his early education at home. George A. Gordon and Robert Collyer, two of the foremost preachers in the pulpits of Boston and New York to-day, are men who were blacksmiths by trade. The two Presidents foremost in our country's history had little schooling, and much of out-door work in their early life. Washington was largely self-educated, fond of sports and exercise, and the plantation life of Virginia in his time gave him excellent opportunity for self-development on practical lines. Lincoln had but a single year of school, and much hard work throughout his boyhood. Who can doubt that this early training on a Western farm did much toward developing the qualities of mind and heart which won the Nation's love and admiration?

The men of science, too, who have been of most lasting service to the world and who have made the most important discoveries, have been men who had manual work or training through early life. Galileo made his own telescopes; and Newton was a skilled instrument maker, even grinding the lenses himself for his famous telescope. Edison had but two months of school training. The great inventions, with very few exceptions indeed, have been the work of men who toiled with their hands. The steam-engine, the locomotive, and the steamboat came into existence through the native genius of the instrument maker, Watt; the brakeman, Stephenson; the jeweler's apprentice, Fulton. Printing, the telephone, the phonograph, photography, in black and in colors, were all invented by practical men, and were not the result of abstract thought.

The reader may think that these names have been carefully selected and that other names could be given which would show the reverse. To some slight extent this may be true, of course, but large lists of several thousand names of prominent men have been taken when the selections have been made for other purposes; as, for instance, the list of names admitted to an encyclopedia of biography, and it has been found that a very considerable majority of those about whose early history anything could be learned had had more than the average physical training of one kind or another.

Are not these facts significant? If we wish to give the best advantages to our children, must we not admit that it is impossible to fully develop their minds for all the varied necessities of life, and to give them the broadest culture, unless the whole body share in the development? And under present conditions, are we not forced to agree that it is the business of the school to provide for the culture of the whole child,— not merely of his mental faculties?

THE HEALTH OF THE CHILDREN

Before leaving this subject, let us inquire into the conditions as they exist to-day in most of our large cities, and see if the experience from courses consisting entirely of book training are satisfactory, and are of the benefit to the children that they ought to be. Let us consider the matter of health. Do the children come from the schools strong and robust, full of health and vigor, as they entered them? If they do not, surely reform is needed, for the most precious thing in life is life, and that which shortens life and impairs health is dangerous.

I wonder if it is generally known that a year ago, in five cities alone in this country, there were over sixteen thousand children, between the ages of eight and fourteen, taken out of the public schools because they had broken down — their minds incapable of going further, and their nervous systems shattered. These are simply the children that we know about; but consider the number whose health is permanently injured but who may still be able to keep at school. Would it be unsafe to say that the number of those would be two or three or even five times as great? I think not. This would mean fifty to one hundred thousand of our younger children each year whose lives are injured and whose health is impaired. These facts are most appalling. Do they not answer the question: Is reform needed? Shall we go on cramming the minds of the helpless children with things that they do not understand, at the expense of their physical nature?

But it is not necessary to go even to statistics for our answer. The common experience of every child tells the story. He goes to school active and alert, full of energy and play. Five hours each day he sits bolt upright in an uncomfortable chair, with books before him in which he has no interest and which have no meaning to him. Fortunately Nature asserts herself, for while the body is held prisoner, the active brain wanders from the unknown lessons to the realities of tops and marbles, base-ball and kites, and the child is perhaps saved from becoming a fool. But every time he seeks to give outward expression to the pent-up energy within him, he is restrained. "Don't" is the atmosphere in which he lives. Listen to the joyful outburst and enthusiasm and interest in all things that pertain to natural and unrestrained child life, and judge whether the influence of the school is to repress or to develop the child's power. The habits formed through all the school years, of remaining inactive when natural impulse says act, will follow the child through life.

It is, therefore, to give wholesome physical activity to the school life and to improve the health of the children that Manual Training demands admission to the schools. It is to give reality and meaning to the lessons that are dry and dull without concrete illustrations; it is to give natural outlet to the pent-up energy and activity, and to direct them to useful purpose for future needs, instead of repressing them; it is to preserve and cultivate the interest and enthusiasm and power of youth for the necessary activities of later years; it is for one and all of these reasons that Manual Training demands admission to the whole school system, from the kindergarten to the college, not merely once or twice a week, but five times a week.

THE IDEAL SCHOOL

The ideal of modern education is not reached through Manual Training alone, any more than it is through language, science, mathematics, or art. But manual instruction should take its place in the lower and secondary schools alongside of the other recognized means of culture. It should be closely correlated to all the other subjects and furnish, as far as possible, the concrete illustrations of the principles brought out in them. On the other hand, as far as possible, the principle underlying Manual Training should be applied to all the other subjects. They should be made constructive, and the pupil should be led through natural interests and desire to discover laws himself, to apply principles and classify facts. Creative power, as well as perception and receptivity, should be cultivated in all subjects.

SUGGESTIONS TO PARENTS

Many of the readers who have followed my thought through the foregoing, and who have agreed in the main with the arguments presented, will, nevertheless, feel at a loss to know what can be done for the children in whom they are interested, and how they can secure for them the benefits that they believe are most desirable. To these I make the following suggestions: —

Of course, if it is possible, have the children attend a modern school, where they will have the advantages of a symmetrical training such as I have tried to describe. But if this is impossible — and in most cases, unfortunately, it still is — the only hope is through the present schools and through such outside influences as may be brought to bear on the children's lives, to make good the deficiences of the school curriculum.

First — I would urge parents to become interested in the schools; to get their friends and neighbors to take an active interest, also; and to use their influence, wherever possible, to get the school boards and committees to introduce Manual Training upon a rational basis.

Second — I would urge them to come into touch with the teachers, so that they may better understand what their children are doing, and to persuade teachers not to push the children forward faster, but rather to hold them back; not to have them begin more subjects, but to be satisfied with thoroughness in few.

Third — I would urge them to take a greater interest in their children's work, and to encourage reading and conversation related to the work (but not helping them directly in the day's lesson), which will stimulate a deeper interest.

Fourth — With the school sessions lasting from nine until twelve, and from one until three, there is so little time left for play that every hour is precious; and play is one of Nature's methods of caring for both physical and mental needs. I would therefore urge parents to encourage all legitimate forms of play,— especially those which call for activity, skill, and judgment. With older children, athletics, if not carried to excess, may do valuable service.

Fifth — Encourage activity in every natural direction during vacations, especially during the long summer vacation; and, if possible, give the children an opportunity to get away to the country or seashore, where the greatest variety of outdoor activity is possible. For older children, some form of work during the long vacation should be found, if continual outdoor activity and sport is impossible. But in all cases where sports and out-door pursuits are encouraged, children should be urged to apply their minds to them, as well as their bodies. If they are interested, for instance, in boating, let them study the different forms of boats, the different kinds of rigging, the conditions under which each is best, and encourage them to try to understand the reasons for these things in which they are interested.

Sixth — I would urge the parents to encourage children in constructive work. A place for a few simple tools can easily be found where the child can have a course of Manual Training of his own, where he can plan in detail what he is going to make and carry it to completion.

In one or all of these ways, I believe, it is possible for every parent, if he or she will give the time and thought to the matter, to be of very material service, not only in helping the schools to do better for the children, but in helping to supplement the training that the schools give, through the outside interests and activities of the children.

THE IMPORTANCE OF MANUAL TRAINING

By FRANK ROE BATCHELDER

TWENTY-FIVE years ago, Manual Training was looked upon with contempt or positive disfavor by the majority of teachers and school directors then engaged in the education of youth. In a quarter of a century the wheel of opinion has made a complete revolution. It is true that some educators still affect to despise Manual Training as a factor in the education of youth; but these individuals no longer constitute a large class of teachers, as they once did; they are now looked upon as the Rip Van Winkles of pedagogy.

The first Manual Training schools were those established by private enterprise or attached to endowed institutions. To-day they are included in the public school system in all the larger and more progressive cities. The old education depended wholly upon books. The child was required to absorb a series of statements which narrated facts, but there was no appeal to the reasoning and creative powers. The proper function of books is as an aid to other factors in education. They are valuable in giving direction to the line of work; the work itself should be original and creative.

One reason why a common school or even a college training is so often barren of results is that the student is told a great many things and not required to think for himself. If everything worth knowing is contained in books, why undergo the exertion of original investigation? This must be the natural conclusion of the student, and unless the fallacy of such a doctrine is exposed, he will develop one side only. The brain may be stored with information and lack the knowledge that makes it available for practical uses. It is essential that the information we acquire should constitute a working capital on which we can draw interest.

In childhood and early youth it is more important to care for the health of the body than for the development of the mind. This cannot be attained by confining the child to a routine of lessons to be learned from books — things repeated by rote, with no appreciation of their significance. Too constant application to books weakens a child's mind and is likely to shatter the nervous system. All the forces of the animal nature are exceedingly active at this period and they must be given outlet and employment. The eye and the hand need to be kept busy as much as the brain does. The hand is, in

fact, but a servant or tool of the brain, and unless it is set to work, the brain suffers from the disuse of the tool.

Ideas are not born of memory alone. Observation, contact, and experience, are also necessary to the formation of new ideas. For this reason the study of nature and observation of the activities of men are the best teachers. Little is gained by requiring a child who has never seen a bird's nest to memorize a list of materials with which the bird constructs the nest. The process of converting iron into steel may be learned in the class-room, but the mere statement of physical changes has no educational value to be compared to the student's personal observation of the work in a steel-mill. Nature is a rich mine of facts, a storehouse of ideas. Children who ramble in fields and woods, with their eyes and ears open, discover new things which impress them for all time. The same facts learned only from books may fade and be altogether forgotten. We should not give them the symbols and tokens of knowledge when we can set before them the material processes from which knowledge is derived. A fabric of word information is too thin and tender; the rude material forces of life demolish it quickly. A fabric of facts woven from observation and experience will, on the other hand, stand the roughest wear and tear.

It is this fabric of facts that Manual Training seeks to supply. Aside from its general merits, in the side-by-side development of all functions of the mind and its tools, it has a direct bearing upon the future. Mere book-students will not graduate into the most successful spheres of life; the ability to apply knowledge will be demanded of young men and women who have to make their way in the world.

The disfavor with which Manual Training was first regarded made its adherents cautious and timid in seeking to introduce it in educational systems. It no longer timidly seeks recognition; it has proved its merits by the good already accomplished, which is to be seen in the happier, more useful, and more successful lives of those who have embraced its benefits. The boys and girls in the Manual Training school to-day will begin life with an equipment so far superior to that afforded their fathers and mothers, that their chances of success in life are immeasurably greater than those of their parents at the same age.

No plea in behalf of Manual Training is necessary. It has come to stay. It has accomplished more than its most ardent advocates claimed for it in the beginning, and as yet we are only at the threshold of its possibilities. Those who still look upon it with doubt are confronted by the facts of experience. The boys and girls who have

enjoyed its advantages are healthier than the book-students of the preceding generation; they have higher ambitions in life; their general outline is broader and their knowledge more substantial and more accurate; they have been taught the dignity of labor, and have been emancipated from the idea that a profession is the only respectable calling.

The demand for recognition of Manual Training as an important factor in education comes from thoughtful parents, sincere and devoted teachers, and from the children themselves, who, from the earliest age, long to "do something." The quiet evening hour in the library is the more delightful, and has a keener relish, after the day's delving into material things. When a boy carries home from the Manual Training school shops his first important piece of cabinet work — a chair, perhaps, or a table — he takes vastly more pride and satisfaction in exhibiting it than he does in the mere statement that he has had perfect recitations in his classes. This pride is shared by his parents. The fact that he attained excellence in recitation will be forgotten to-morrow, when another series of recitations displace those of the day preceding; but the chair which the young cabinet-maker brings home will last indefinitely — a visible proof that he has attained excellence in his work and that he has created something which did not exist before.

Manual Training is in line with the practical education which the twentieth century will demand. In the era upon which we have recently entered there will be little room for the man of theories or the mere bookworm. The young men and women who are confronted with the problem of "How to make a living" will find scant welcome in the active world, if their only qualifications consist of stores of book-knowledge. "Beyond the Alps lies Italy," the typical commencement address of the sweet girl graduate, will not avail her as a recommendation to the business man who needs a designer of carpets or wall-paper. A Latin prize will not appeal to the bridge-builder who wants a draftsman, as will a thorough knowledge of mechanical drawing. The demand of the time is for workers, not for theorists. The professions are overcrowded; multitudes apply for positions as clerks; but skilled, intelligent workers in the arts are lacking. There are not places enough for the clerks; there are not men enough for the places in industrial pursuits. "I have a place waiting for a man to whom I will pay $10,000 a year, but he must fill the place," said a great manufacturer recently. An assistant superintendent in a wire-mill gets $2,000 a year; in ten years he has worked his way up from $1.75 a day, and it is greatly to his credit. But the superintendent whose assistant he is gets

$3,200 a year, and has been at work only a year. He is a Manual Training graduate.

Even if a profession be finally selected as the pursuit to be followed in life, a practical course in Manual Training will not have been wasted time. An illustration of its advantages to professional men is found in the experience of many graduates of technical schools who have entered the Patent Office at Washington, fully equipped for the work of that important bureau by reason of their accurate knowledge of mechanics. No inconsiderable number of those who enter the Patent Office do so with the distinct purpose of entering the legal profession. In the work of the Patent Office they become familiar with the practical workings of the patent laws, and meanwhile they study at evening law schools. In three, four, or five years they are graduated from the law schools, leave the Patent Office, and enter upon practice as specialists in patent law. Their advantage in having had practical Manual Training is twofold; it enables them to become specialists and to devote themselves to a lucrative branch of the legal profession; it also makes them better judges of the inventions submitted to them, and from a working knowledge of mechanics they are able to give a client an opinion, not alone as to the patentability of his invention but as to its probable effectiveness in practical use. Thousands of inventions are patented which never net the inventor a dollar; on paper they are magnificent, but in use they do not work. A patent attorney who had never worn overalls might not see the hidden, fatal defect, whereas one who had had a thorough shop training would perceive it instantly.

Thus, in any profession or business, the value of early Manual Training makes itself felt. No one can have too much knowledge, and if the faculties of eye and hand have been properly developed, they enable the individual to judge accurately of the work of others, as well as to apply himself to the solution of minor mechanical problems which are constantly arising. A man who has had the Manual Training instinct developed may be able to turn from a profession, in which for some reason he does not succeed, and take up a mechanical pursuit, even when he is past the heyday of youth, winning permanent success.

Every day, new fields of industry are opened to pioneers. The world wants workers, men and women who can direct because they can also execute, if need should arise. The mere theorist has no place in the rapidly expanding scheme of industrial progress. No one doubts that within our generation Porto Rico will be girdled with railways, though the ox is now the motive power in moving Porto Rican products to the seaboard. Even the mountains will offer but

temporary obstacles to the engineering genius of Americans. The men who will develop the resources of that fertile island are not those whose only knowledge has been acquired by memorizing; the larger knowledge in which eye and hand participate will be demanded.

Unquestionably, the twentieth century will see the development of new methods in railway locomotion. Already a train has been constructed so as to present a nearly smooth surface to the resisting atmosphere, and this train has attained a speed never before reached. The universal substitution of electricity for steam as a motive power on railways is but a question of time. Problems of this character are engaging the attention of men, and those who may be expected to solve them will be graduates of Manual Training courses, in fact if not in name. For these workers, fame, power, and wealth are waiting.

Manual Training has a many-sided value in education. It teaches skill in turning the hand to manual labor, and teaches love of labor itself. It teaches industry, persistence, self-reliance, exactness, and attentiveness. It inspires respect for the man who works with his hands, and broadens the philosophy of life. It promotes physical development to thought which shall end in action.

The hand must be made skilful before it seeks to use tools effectively. When you see a carpenter saw a piece off a board, it looks easy — merely a pushing forward and pulling back of the hand that holds the saw. But try it and see. Ah! the saw sticks and bends and does not follow the line. It has not been held in a vertical position, and you are bending the board instead of sawing it off at a right angle to the plane of the surface. Moreover, you have made a jagged edge instead of a smooth one. Now watch the carpenter perform the same work. In the first place, he chooses a saw in which the teeth have a different set — experience taught him to select a "cutting-off" and not a "rip" saw. He starts the saw with a few short strokes near the end and then draws it back and forth with steady regular motion, holding it absolutely vertical and using four-fifths of the cutting-edge at every stroke. The saw does not stick nor bend; he saws across the board without stopping, rubs his finger across the edge and finds the surface even and at a right angle to the long side. He did the work quickly and easily, because his hand and eye were skilled.

Take another example, a common one. You are trying to nail a lid to a box. You hold the nail in place and begin to pound it with a hammer. After a couple of blows, you remove the hand that holds the nail and pound like a pile-driver. The nail sinks in the wood,

but it persists in slanting to one side. But in it goes and splits the side of the box. A bungling job, and the lid is not securely fastened in place, after all. A good carpenter would have judged accurately the thickness of the side of the box, given the nail direction with a few taps of the hammer before releasing it from his fingers, and then driven it home without twisting it.

Skill in the use of tools, like that represented in these two simple acts, comes only from experience. Manual Training gives such experience, and may enable a man to turn failure into success by using his skill in hand and eye where there is no market for the skill of the unaided intellect. It may make all the difference between a happy life and a miserable one.

Manual Training inspires a love of labor. "Art," says Elbert Hubbard, "is the expression of man's joy in his work." When we learn to create beautiful and useful things, to give graceful form to raw substances, we immediately find delight in the accomplishment. When a man comes to love his work, he goes

> "Not like the quarry-slave, at night,
> Scourged to his dungeon, but sustained and soothed
> By an unfaltering trust . . . "

trust in the future, a belief that he is producing something whose merit will be recognized, and an intense satisfaction in having a definite something to do, and doing it.

The unhappiest people are those who look upon their daily work with aversion, always wishing they might be employed in something else. This may be the fretful fickleness of the sluggard, who wants an easy task or none at all, but in many cases it is merely the natural dissatisfaction that comes from a want of appreciation of labor as a means of expression. The daily work is looked upon as something that must be done in order to make a living, not as a means of expressing the worker's appreciation of beauty and usefulness.

Manual Training begins at the beginning, and teaches the child to understand the charm of creating. To see a piece of work grow under the hand, and from rough outlines take on lines of grace and precision, until the finished object is a thing of beauty that tells its own story, should fill the heart with delight; and so it will, if the work is entered upon as a means of expression, not as drudgery to be performed.

The Manual Training pupil comes to regard labor as the source of happiness — a secret that the bookworm misses. A young man, known to the writer, was taught to work with tools, as a boy. He studied for the ministry, and is now the successful pastor of a Philadelphia

church. But he has not lost his love for tools. In his house he has a completely furnished workshop. His recreation hours are largely spent here. He delights in making fine cabinet work, and some of the articles he has produced are regarded as marvels of beauty and precise workmanship. He does not need to make these things, but he loves labor.

Another man, in a humbler walk of life, was bred a farmer. He worked for a few months at coopering and acquired an ardent love for tools. In five years he had charge of inlaying work on fancy furniture which was produced at high cost. He worked in the shop ten hours a day, yet so much delight did he find in his employment that he worked at home, in the evening, on the same lines. This man, who never had six months continuous schooling, has produced chairs, sideboards, tables, and similar articles which are the admiration of experts and connoisseurs. "Why do you work so hard?" he was asked. "Oh, I like it," he replied. He had learned the true love of labor. It is this spirit that Manual Training inculcates; and it is never learned from books alone.

The value of industry as a stepping stone to accomplishment makes a strong impression on the mind of the Manual Training pupil. In the world of mechanics there is no sphere for idlers and dreamers. The people who are always going to do something, yet never arrive at the point of action, are out of place in an environment of material activity. The student learns that the way to do a thing is to do it, not to speculate on the subject. If Manual Training did no more than teach industry, it would be above reproach. Industry does not mean ineffective haste or fruitless experiment, but the constant pressing forward to a legitimate end always kept in sight.

The Manual Training student knows that after a time, comparatively short, he will arrive at the point where he can make his knowledge effective in practical ways. He must learn something of lines and of tools and their use, and then he sets about the making of a box. After the box comes a chair, then a table, and so on. Steady application, he finds, is effective; it is not a matter of passing examinations creditably, but of acquiring the skill to create things.

Even if the product of a day's work is afterward discarded altogether, the habit of industry is nourished and retained and in the end brings results worth having. This is true of literature and of other professions, but it is still more largely and importantly true of the mechanic arts.

In every industrial pursuit, the worker is hampered by lack of time; there are not enough hours which may safely be employed in labor to accomplish all that is needed. Hence the necessity of indus-

try. Slothful workers must give way to those who know how to make every minute effective. Manual Training teaches a contempt for sloth and fires the worker with a desire to reach the goal quickly, not at the cost of inaccuracy or incompleteness, but with a triumphant sense of satisfactory accomplishment.

It is not to be expected that the Manual Training student will be exempt from disappointment and failure. His first drawings will be crude; his first models will lack proportion; his first joiner work will be inexact. Then the work must be done over again. It must be repeated until it has been done correctly. This teaches the student persistence. "To keep everlastingly at it" is a good resolution for a beginner in any branch of work to make; and persistence counts for much in real life. Charles Goodyear worked for years to discover the secret of vulcanizing rubber; he found it, at last,—by accident, the biographers say,—but in reality his repeated experiments and failures had taught him to recognize the truth when he saw it. If Goodyear had abandoned his quest after the first year of failure, the secret of vulcanizing rubber might still be awaiting a discoverer.

To be able to fail and to rise above the failure to success, is an attribute that has distinguished the world's greatest men. Persistency is a large part of the price of success. The plodder who will not be turned aside by failures, but pursues his work doggedly, often eclipses the brilliant man who "sees through things" at a glance but lacks staying power to bring them to pass. A well-ordered course in Manual Training cannot fail to develop this quality in a boy. He knows that inanimate things have no will of their own, they cannot thwart his purpose; he must master them and use them intelligently, and he knows that he can do this by persistent application. When he has at length learned the secret of controlling the forces he employs, he is repaid for his persistency.

Proper instruction in Manual Training contemplates keeping the pupil on one grade of work until he has attained a certain degree of excellence therein. This differs from the system of book memorizing, which strikes a general average and "passes" the pupil, if he can bring his work high enough in one branch to offset approximate failure in another. The Manual Training student must necessarily know the one thing thoroughly before he undertakes a second, which is based upon presumed skill in the first. He cannot make a desk until he has learned the rudiments of box-making. It is idle for him to attempt carving in oak until he has learned to model in clay. This compels him to persist in doing well the work he has in hand.

Self-reliance comes readily to the Manual Training student. He cannot lean upon an interlined translation, as the student of Greek

or Latin may do; his brighter fellows in the class cannot prompt him, as in the recitation-room; he must do his own work. He is given certain instruction in the use of tools and suitable material, and told to produce something. His own intelligence must be employed in doing the work; skill in the use of hand and eye cannot be borrowed; they must be acquired. As he goes forward with his work, and finds that by proper attention to correct principles he can accomplish the desired result, he finds that he is able to do something in which no one else has had part. His instructors may criticise and suggest, and he will learn to heed their suggestions, but the actual work he must do independently. To know this, raises him in his own esteem, and gives him a feeling that he has a place in life.

The great captains of industry who are seeking able lieutenants, want men to whom they can intrust important work, with a sense of assurance that it will be accomplished without recourse to them for advice in detail. If a manufacturer had to tell each of his employees how to do a piece of work, he would have no time for the general conduct of his business. What he wants is skilful helpers, who are able to depend upon themselves, and to push work forward without asking why, how, where, and when.

The Manual Training student is forced to think things out, to find reasons of his own for certain existing facts, rather than to take them on hearsay from other persons or from books. He may be discouraged by unforeseen obstacles, but when he is told that he has the right principle and must find the solution for himself, he does it, and thereby gains confidence in himself against the next problem which perplexes him. The simple act of selecting the right kind of nails with which to fasten the parts of a box together, is a step forward. The student's own judgment is appealed to and the lesson in nails is learned for all time. He will not need to ask someone else which kind to use when a similar piece of work is to be performed. Having learned to depend upon himself, he will be able to go through the world with his head erect, to look people in the eyes, to say yes or no, and mean it, and, in the face of misfortune, he will not be overwhelmed because there is no one who may be expected to pull him out of the ditch and set him on his feet. He will know that he can recover his footing by his own exertions.

There are no misfits in nature. Her work is planned and executed with exactness; part joins to part without defect; there is no waste of space or material. The greatest of man's work, like the least, is a copy of nature. The suspension bridge across the Niagara has its counterpart in the gossamer thread which the spider throws from tree to tree; our most magnificent buildings are not more wonderful than

the ant-hills. The beaver built his dam, changed the course of rivers, and flooded meadows, before man dreamed of irrigation. In proportion as we are able to imitate the exactness of nature, we achieve success in the production of material things.

Manual Training teaches the practice of exactness, as nature teaches its theory. Perfect skill of eye and hand are not achieved until the work presents the appearance and effectiveness of a thing made in one piece. A cube is not a cube unless its six sides are equal one to the other; approximate equality is not enough. When a boy becomes imbued with the spirit of Manual Training, it does not satisfy him to make a picture-frame that is mitered at faulty angles. The joints must be absolutely accurate, with no gap between the parts. In some of the modern Manual Training schools, you may see boys making inlaid work that presents a marvel of exactness. Take, for example, a table whose top is inlaid with alternate light and dark squares so as to form a checker-board. The slightest loss of accuracy in shaping and fitting the several pieces of the work results in disproportion that distresses the eye and destroys the effect sought to be attained. "Almost correct" will not do in Manual Training; from elementary drawing to the highest form of wood and metal work the motto is, "Absolute accuracy."

Training in exactness affects the whole life of the pupil. If he becomes an engineer, he understands the importance of placing the strain of a bridge at the exact point where it can be overcome; if he becomes an architect, he will not order steel beams an eighth of an inch too short after the walls of the building have been partially constructed. He may become a teacher, or an author, and even then his training in exactness is of immense value to him, for he will choose words and phrases with conscientious care for their exact meaning and effect; he will teach accurately and write forcibly. As a lawyer, he will draw leases that cannot be set aside because of obscurity in terms, and he will present indictments that will indict. All this may come from the training of the eye and the hand in using tools so as to produce exactness of form — for the eye and the hand are trained through the mind — and the mind is thus unalterably committed to the same principle in all its workings.

In the ordinary class-room, the want of attentiveness is often apparent, even to the casual visitor. The teacher begins with Adams and goes on down the list of pupils to Wood, calling upon each to recite what all are supposed to know, and to answer questions that all are to a greater or less extent prepared to answer. The pupil who has not yet recited knows what has gone before and what is to come; the one who has recited is through with the ordeal for the day; and

it is impossible for either to concentrate his attention upon the dreary repetition of something known or disposed of. The mind refuses to be chained to a memory of the printed page and wanders afield; out of doors, fleecy clouds float across the sky, treetops quiver, and birds are singing. Jones dreams of a day in the woods, or an afternoon on the lake; presently he hears the teacher call, "Jones." He stands up and delivers himself of the prescribed formula, and then relapses into speculations concerning affairs foreign to the classroom.

The Manual Training student, on the contrary, has objects immediately before him to which his attention must be given, whether he is drawing from original design, or working upon iron with tools. The moment he relaxes his attention, the work stops and he falls behind. It is necessary, therefore, that he should concentrate his mind on the work of the hour and make every minute effective. How few men, wholly book-trained, are able to do this, we know from everyday observation of those about us. Manual Training reduces the percentage of dreamers and theorists, and increases the number of those who give close attention to work from which practical results may be evolved.

A boy learns that to operate a lathe successfully he must acquire the habit of paying strict attention to the work he is producing; a slip of the tool, too deep an incision, may ruin the work. He cannot set his stick of wood to whirling, apply a tool and leave it to achieve the desired result, of itself; he must keep his eyes on the work; he must have constantly before his mind the image of the perfect result he expects to attain. There can be no lapse into dreamland, as with the pupil in class whose attention wanders until he hears his name called. The boy at the lathe knows that presently the instructor will examine his work and pass judgment upon it as satisfactory or imperfect; and to get a favorable verdict, he must dismiss all outside speculations and attend exclusively to the work in hand. Attentiveness makes the difference between poor work and good, in any occupation, and the habit, ingrained by Manual Training, is lasting. It is not merely a habit, however, but the application of a sound principle of success, and this fact the Manual Training student learns quickly, while the book-student, if he appreciates the value of attentiveness, must practise it by a mighty effort of will, under conditions of monotony and counter-attraction, which in nine cases out of ten are fatal.

The importance of Manual Training in the physical development of the student should be emphasized. The growth of the body must keep pace with the growth of the mind, or nervous wreck results.

In most cases, book-trained pupils have recourse to athletic sports, which, undoubtedly, are of great value and should be encouraged. They tend, however, to special rather than general physical development. Again, not every boy and girl cares for out-door sports, and some children must be driven to participate in them, only by repeated urging and admonition on the part of parents or guardians. To such children, predisposed to sedentary habits, Manual Training offers the greatest advantages.

Education of any sort, rightly regarded, is simply a means to a noble end — the making of good citizens and self-reliant men and women. It is not merely to enable the boy and girl to become rich and famous that we give them educational advantages, often at great sacrifice and inconvenience; it is because we are inspired by the thought that they will become factors for good in the life of the community. No parent, looking at his child, hopes simply that the boy will become a millionaire. He sees the boy, in fancy, developing into a citizen who will leave an impression upon his time and be known for his loftiness of character, rather than for the possession of wealth. This breadth of character is developed only in those who are able to see the eternal fitness of things, and to recognize and give credit to the part played by the humblest worker in the general progress of the race. The day has gone by when the man who toiled with his hands was regarded with contempt. "A man's a man for a' that!" is the later gospel; labor is no longer regarded as degrading; it wears the badge of honor.

But there is still a tendency among youth who have never soiled their hands, and have learned the philosophy of life from books alone, to look upon rough manual labor as discreditable. If this opinion becomes permanent, they enter upon life with false ideals, and are incapable of reaching the highest effectiveness as good citizens. Manual Training effectually removes such notions and inspires respect for the man who works with his hands. The boy who has toiled at the bench or the forge can better estimate the usefulness of the mechanic who spends his life in the machine-shop, and he respects him for what the man is, rather than for the externals of his occupation. Many a young man who would find his sphere of highest usefulness in one of the mechanic arts, enters a store or an office and remains a poorly-paid clerk to the end of his days, not because he is really afraid of work, or devoid of ambition, but because he fears that grime and overalls will keep him at the bottom of the social scale. Yet the mechanic who lives on the next street may be his superior, intellectually, and is almost sure to be, physically, while the chances are that he makes better wages, can supply his family

with more comforts and luxuries and has a greater capacity for enjoying life, with fewer disappointments, heart-burnings, and jealousies from trying to "keep up appearances." The Manual Training student learns to admire the work produced by the practised eye and hand of the mechanic, and to respect the man who does the work. Familiarity with manual labor teaches him that toil is not inconsistent with nobility of character and uprightness of life. The man who digs the ditch in which the water-pipes are laid, is doing his share of the world's work as surely as the man who measures off silks and calicoes, or the man who pleads before a jury. To see life in its true perspective, the individual must recognize the dignity of labor and give credit for accomplishment, not for appearances. Manual Training should give him this perception and catholicity of spirit.

WHAT PROFESSIONAL MEN THINK OF MANUAL TRAINING

The importance of Manual or Industrial Training can hardly be exaggerated. It is an essential branch of popular education. It ought to be taught in every public school in the city, in fact in every school in the land. I have long been an enthusiast on the subject. For many years I have lost no opportunity to advance the cause, bringing such powers as I possess to bear upon it. The public schools have been doing very little along this line, and for that reason I started an industrial school of my own about fifteen years ago. In spite of limited means, the school has prospered and has done really good work. Such specific schools are valuable, but they do not supply the want. There is need of a general application of the principles of Manual Training, so that it may be taught, not merely to a few individuals in specialized schools, but to all young people as a part of their regular schooling.

I. One conspicuous benefit of such Manual Training is that it will enable us as a people to hold our own in competition with the industries of the world. It is not safe for us to rest in the brilliancy of past achievements, or to depend too much on present prosperity. American prosperity is the result of superior skill and of a high grade of practical intelligence. But in this day, other nations are giving closer attention than heretofore to the industries, and, if we wish to keep at the head of the procession, we must not neglect the children who in a very few years must supply us with such skilled artisans as we shall have. The new generation will soon be in charge of the shops and factories, and they should be fitted at once for their duties.

II. The teaching of Manual Training will raise the grade of the public health. This is a physical benefit of no mean importance. One must be familiar with the masses who are born and bred in our tenement houses to appreciate this. The boys and girls are undersized and under-muscled. This is plainly the result of their conditions and surroundings. It is not possible to reach these tens of thousands of people with gymnasiums and scientific athletics. If Manual Training is made a part of general school instruction, they will be reached. It is the only way they can be reached. It will give them a reasonable amount of healthful exercise. It will interest them in mind. It will tend powerfully to check this physical degen-

eration. Incidentally it will be a preventive of sickness and of resulting pauperism.

III. The right application of the principle of Manual Training will restrain vice and diminish crime. The act of learning is itself a benefit. It gives to growing boys and girls something to think about and something to do, during the very years when the danger is greatest that they will begin the habits that result in vice and crime. These habits once begun, are not easily shaken off. A child cannot harbor evil thoughts when his mind is absorbed in useful designs, nor will he be exposed to the thousand and one temptations which arise from idleness, while he is busy with the hammer or chisel in useful work. And the benefit of this course of training does not cease with the end of schooling. The pupil's skill leads to permanent and lucrative employment in manhood. This saves him from the dangers and temptations of those who are chronically out of work. It substitutes a useful life for a life that is a menace to society.

Our schools are not yet what they ought to be, but much has been done. Good citizens cannot be sufficiently thankful to that band of self-sacrificing men who, under the leadership of Mr. Hubbell, late president of the Board of Education, of New York City, gave much of their time to a task that was not only arduous, but was made particularly distasteful by the opposition of ignorance and bigotry. Their work has not been in vain, and Mr. Maxwell, the present school superintendent, has continued it so that much may confidently be expected from it. Progressive citizens throughout the country have reason to take courage, but they should not rest content until Manual Training takes its reasonable and just place in every scheme of education.

WILLIAM S. RAINSFORD.

ANY person who succeeds in awakening a general interest in Manual Training, lays the public under a great debt of gratitude. A publication that is designed to produce this result should be cordially welcomed. It would be difficult to exaggerate the value of Manual Training to children of all classes. It educates their moral as well as their intellectual faculties; its benefits are marked in both directions.

The phrase "Manual Training" is not altogether felicitous. Although it has been generally accepted and adopted, it is misleading. It does not mean the training of the hand alone; it means education through the training of the hand. Just as reading is not a mere training of the eye, but a means of general education through the use

of the eye, so Manual Training is a means of general education through the use of the hand. The hand is the means that is emphasized, but it is not the only one used in this method of education.

This is the new education. It starts with the kindergarten and proceeds in an orderly way through industrial and technical schools. The genius of Froebel's system lies in this fact, that it recognizes the instinct of young children for play and converts this into progressive education. That force which, on the playground, is largely wasted, is conserved in the kindergarten. It is the most important force and yields the best results. Manual Training is a later application of the same idea. It grows directly out of the kindergarten and completes the work there begun. They are both parts of one system and rest upon the suggestions of nature.

Some of the benefits of this method of education are the following: —

I. It interests the child. This results from the very nature of the work. Even a child who is dull at work, is bright at play. So far as manual education is play, it brings the faculties to the highest degree of activity. So far as it is work, it is an interesting sort of work, and that fact is of high educational value. The pupil attends to what he does for himself; he does not attend to what another does for him. The mind that is dull by nature needs to be excited, and the mind that is dull by indifference to the subject needs the same stimulus. Here, then, is the value of Manual Training. The task to the hand is a stimulus to the mind. Manual dexterity aids mental dexterity. Harriet Martineau was right when she said: "It should never be forgotten that the happier the child, the cleverer he will be."

II. It gives the child a sense of power. He learns that he can make something. He discovers that the materials and forces of nature are his servants and may be compelled to obey him. This strengthens his will and develops his character. It reveals his capacity and exercises his aptitude. It compels habits of self-observation, increases self-reliance, and shows him how to make the most of himself.

The practical side of Manual Training is brought out in after years by its relation to the business world. The training of the hands, eyes, intellectual faculties, and will power, is precisely what is needed for success in the serious affairs of life. It is of equal value to the merchant and to the professional man. There is no place in life where alertness is not of value. At the same time, the child's natural talents are especially developed, and this gives the best training for that vocation for which he has a natural bent. The value of this in earning a livelihood is apparent.

III. It rounds out the character. The ethical advantage of Manual Training is, after all, its chief value. It is a very difficult thing for a child to make a true cut with a cross-cut saw. After each attempt he asks: "Will that do?" The answer is: "Test it." He must bring his work to the test of the square and be his own judge. The standard is invariable. He rejects his imperfect work and requires of himself good work, true work. It is thus that he acquires thoroughness and accuracy. It is thus that he learns by concrete example to distinguish between the false and the true.

These advantages have been practically illustrated by various schools of Manual Training. Two, which so far as their constituency is concerned are at nearly opposite extremes, are Miss Aleer's school in Boston and the Manual Training school in Chicago. The former had a few children from cultivated homes, the latter had the miscellaneous classes of the public schools. The results in the two cases were the same. Both schools afford decisive evidence of the value of this method in the education of children of all classes. It is effective and eminently practical in the all-round development of the child.

CHARLES H. EATON.

[THE Rev. Robert Collyer, the venerable and distinguished Unitarian divine, was, as is well known, a blacksmith before he entered the pulpit. Consequently, in a very practical sense, he early became acquainted with the value of Manual Training. As a minister he has always taken a deep interest in educational work in that direction. His views on the subject are therefore of peculiar value.]

MANUAL Training I regard as a branch of educational work, the importance of which can hardly be over-estimated. Especially is it desirable that the opportunities for obtaining it, which now exist in large cities, should be extended, as far as possible, to the small towns and rural districts.

The man who can use his hands as well as his brain, is doubly armed for the battle of life. Of course, Manual Training does not imply a mastery of any particular mechanical trade. But it is a help in that direction. The lad who has learned to handle tools, has gained something which will be of great value to him in acquiring proficiency in any trade which he may subsequently elect to follow.

Too many young men are now flocking to the large cities in search of clerical positions. Wider facilities for acquiring Manual Training would tend to check this by developing skill and talents in other directions and by suggesting more profitable means of earning a livelihood. The youth whose education is gained from books alone often does not have a fair chance to find out for what he is best

fitted, and in consequence he is in danger of going through life a misfit man.

"The man with a trade in his hands is fit to stand before kings," says the Talmud. It is worth something to feel that you can earn a living, whatever betides you. When I first went to Chicago to preach, I used to fear that I would preach myself out in a year. My fears proved unfounded, but I used to console myself with the reflection that in any event I could still fall back on blacksmithing.

Whatever a man intends to make of himself he gains something by being a "handy" man, and that is the sort of man Manual Training tends to develop. It opens up means of obtaining healthful recreation. It cultivates in him respect for the dignity of labor. And it better qualifies him to cope with the emergencies of life. Hands as well as brains were made to be used.

ROBERT COLLYER.

I BELIEVE most firmly in the value of Manual Training. Every movement that undertakes to provide enlarged opportunities for obtaining it has my most hearty sympathy. I believe it should form part of the available education of the boy or girl, from the primary to the high school. I would go farther than that. I would have the City of New York build and thoroughly equip a technical school that should be second to none in the world. Then, with our existing facilities for educational work, and the Commercial High School completed, New York City would be in a position to fit our youths for professional, business, or mechanical careers.

Obviously, that education is the best education which gets out of a boy the best that is in him. To do this, the boy's natural aptitudes must be taken into consideration and be given opportunities to develop. Hence the necessity for Manual Training. Obviously, hands are the most wonderful machines ever made. But if the boy is never encouraged or trained to use them, how is he to find out that his chief skill — his highest possibilities of achievement — lie in his hands rather than in his head?

Of course, Manual Training alone does not fit a youth to be a mechanic. But it does give him a chance to find out if his bent lies in that direction, and if he discovers that it does, and decides to adopt some mechanical pursuit, it makes his subsequent technical training much easier.

One of the purposes of educaton should be to find out what a boy is best fitted for. Undoubtedly there are thousands of young men in this city earning wretched wages as clerks, who would have made excellent mechanics had they had the opportunity, early in life, to

get started in that direction. Especially is it to be desired that country youths should have, as far as possible, the advantages of Manual Training. Then fewer of them would seek employment in the cities, and swell the list of the poverty-stricken and incompetent.

The wars of the future for supremacy will be industrial wars. In fact, the battle slogan has already sounded. The world-wide battle has begun. And in this struggle, in which America is playing a great part, and is destined to play a still greater part, her chief dependence must be on her mechanics and artisans. And in their development, Manual Training must play an important part. It is not alone philanthropy, but also wise foresight, that prompts our captains of industry, such as Charles M. Schwab, to found Manual Training schools. They are paying investments, but in their dividends the country has large shares.

MILES M. O'BRIEN,
President of the Board of Education, New York City.

HOW PARENTS MAY HELP

VERY early in life, usually by the end of the third month, it becomes apparent that the baby's hands are made for use; and that long before they are capable of performing any service of value to others, they are of the utmost value to their owner. They bring to him information as to the nature of the world in which he has come to live — more, they bring him into living relationship with that world. This function, as it is the first function of the hand, is also the last. The value of Manual Training is not at all the value of the things made, but is the value of the development brought about by the act of making.

It is evident then, that before the child is ready for formal Manual Training, fundamental Manual Training is already taking place. The child's hands are constantly busy, and his brain is as constantly growing, through the necessity of registering the impressions received through the sense of touch and of directing the activities of the fingers. Left to themselves, children will obtain the bare necessities of Manual Training; in unnatural surroundings, or under unwise restriction, they may miss even these bare necessities; under favorable conditions, helped by a sympathetic and intelligent mother, they may gain much more than the bare necessities; they may gain superior hand and superior brain power. The way thus to help our children is not yet clearly marked. Another generation of observers, a larger list of recorded and verified experiments, is necessary before it is possible to form any adequate plan for complete training of the hand, and of the mind and character through the hand, from infancy to manhood. In the meantime, our best hope is in non-interference and the stimulus of a rich environment.

There are a few simple activities which, at the worst, are not harmful, and, at the best, give room for a fair degree of controlled use of the muscles and nerves of the hand and eye. Some of these will suggest themselves to any mother, a few are given here, and many more will be discovered by the child himself. These last are of the greatest value, and it is the part of wisdom to give to such spontaneous activities the preference — to clear the road for them and to permit no prejudices or regard for mere housekeeping conveniences to stand in their way. When, however, the eager little child, whose interest is as evanescent as it is intense, has exhausted all the ordinary means

of employment, the suggestions here given may suffice to set him going again.

There is one consideration, however, which must enter into the planning of the simplest occupations: It is an accepted theory, based upon physiological psychology, that the small muscles of the fingers and the nerves controlling them, as well as the delicate centers in the brain which control both nerves and muscles, are of late development; and it is therefore held that the use of these small muscles — of the fingers rather than of the whole hand and arm — is to be avoided in the early years of a child's life. In the most progressive schools, the children are permitted to do no small hand work until they are ten or eleven years old. In Colonel Parker's school even the handwriting is kept large. The children in the primary grades write upon sheets of manila paper two feet square, and in letters at least an inch high. It will be seen, then, that the natural instinct which provides little work for little fingers is at fault, and that, as far as the physical strength of the child will permit, we must give him large work that will compel him to use the muscles of his whole hand and arm, and, if possible, of his whole body.

It is well to bear this fact in mind in buying blocks for the child. The larger and more numerous the blocks, the greater is their educational value. They retain their attraction for the child longer, lead to more favorable results, and call for the employment of more muscles of the body. Miss Allen, the kindergartner in Colonel Parker's school, applying to blocks the same principle that he applies to handwriting, furnishes her children with large wooden blocks, most of them shaped like bricks and about eight inches in length. With these the children can make houses big enough to get into themselves. To lift and carry the bricks requires the exercise of real physical strength, and they are therefore means not merely of Manual Training but of physical training. Such blocks, or the wooden paving blocks sometimes to be bought of paving contractors, with the addition of a sand pile in the back yard, are an unfailing source of delight to any child, and tend to make him as good as he is happy.

But when it must be that children within the confines of a city flat, or of a crowded family sitting-room, must be given things to do, they will be compelled by the nature of their surroundings to engage in smaller occupations. An effort should, however, be constantly made to have these occupations pursued as much as possible by means of the whole hand and as little as possible by means of the fingers. This precaution must be observed in carrying out any of the following suggestions. In the instance of the soap, for ex-

ample, the child should have a large mallet and be encouraged to swing it with his whole arm.

A cake of kitchen soap, a few large-headed tacks, and a wooden mallet may well be kept in the toy closet in preparation for empty and restless moments. An old piece of board, about the size and shape of a bread-board, will add to the completeness of the outfit. Put the board upon the seat of a chair or low table, press the points of two or three of the tacks into the soap, and give the baby the mallet. He will soon find its use and will stand contentedly hammering for a long time. When he gets tired of this he will begin to hammer the soap itself; but if you wish to economize and save the soap for another time, you will take it away from him at the moment he begins to show this desire and will give him instead a long shoe-string, and show him how to weave it in and out of the seat of a cane-bottomed chair.

Shoe-strings may be used in several ways. Once the child has learned to tie a knot, some bits of paper, string, and his old toys will suffice to set him up as a shop-keeper. The oldest playthings, wrapped in paper and out of sight, acquire an air of mystery that renews their youth, and the happy child, tying and untying, selling his little packages to members of the family, develops, as he ought to do, unconsciously. When he is tired of these games, the shoe-strings are still of service, for the large, colored wooden beads to be had at the kindergarten supply stores may be strung upon them without too great taxing of the undeveloped little finger muscles. The shiny glass beads and needle and thread of our own childhood days are bad. They may find a place among the occupations of the girl of ten or twelve, but, much as they may please the younger child by their glitter, they must be denied him.

In cutting the paper for his parcels, he will need scissors, and these will be valuable as a permanent personal possession. It is told of Gibson that he got his feeling for clear-cut outlines from the habitual use of scissors in his early childhood. He was accustomed to go about with a pair of blunt-pointed scissors hung by a ribbon around his neck. He cut out all sorts of pictures, which some interested and sympathetic member of the family preserved and mounted upon paper of a contrasting color. They now form a most interesting collection, showing clearly his natural bent and the development which

came from this childish occupation. In buying the scissors for a child, get as large ones as you can, so long as they have blunt points. Provide also plenty of fairly stiff paper, that will not bend too easily and thus blur the outlines which the child is seeing mentally and trying to follow.

Pencils are, of course, a great resource, and it is well to lay in a supply of them, choosing soft ones with a broad lead. Sheets of smooth, brown wrapping-paper are excellent, but, if possible, they should be bought new for the purpose. The wrinkles in the surface of paper that has been used are discouraging to the child who is trying, as he ought to try, to draw as good a picture as he is able.

Better than pencil and paper, is the large blackboard. One of these ought to be hung upon the wall of every nursery. If it is regularly washed with a damp cloth when the room is done up, it will not be so dusty and disagreeable as blackboards are frequently allowed to become. If, however, there is an important picture upon it, it must, of course, be allowed to stand as long as the young artist finds it necessary.

This brings us to another point — the preservation of the child's work. In many households, there is a constant guerilla warfare between the maid who tidies the rooms and the child who untidies them. It is her instinct to throw all scraps of paper into the fire or the waste-basket, and children may often be seen pathetically searching this ignominious receptacle for treasures of art and imagination to which they cling with their whole hearts. It is a genuine problem to know what to do with the clutter that is so dear to them and so annoying to us. It is only fair to both parties to provide a box, or drawer, or other receptacle, wherein can be put all sorts of "flotsam and jetsam" of doubtful value. Of course, the box will soon be a terrible mess, and then, on some rainy day, the child should be encouraged to look it over and put into a more permanent and well-ordered place the things which still retain their value after the lapse of time. It goes without saying, of course, that each child should have some such drawer, or closet, or box of his very own, which no one has a right to go to or interfere with without his permission. Being provided with a place for the keeping of what he makes, he will be encouraged to go on and make better and better things — things which will survive the ordeal of lying for a week or two in the flotsam box, and yet come out with unimpaired value.

When he sews — and a boy, as well as a girl, should sew — he will sew with more thoroughness, in view of the comparative permanency of the result. In sewing, the rule of largeness must be observed as far as possible, and the little children should therefore sew with big

worsted-needles, through perforations made with a conductor's punch. Such sewing can be done with the whole hand, and so also can the sewing on the machine, which is so full of attraction for all children. A very little teaching will make it possible for even a young child to sew upon the machine without injuring it.

Many of the toy-stores now provide pictures of houses, carpenters' shops, and soldiers' encampments, painted in good clear colors on cardboard. The older children can find much satisfaction in cutting out these pictures and pasting them together again according to directions, but they are too difficult for the very little children, under seven. The pasting books, with blanks left in the middle of large pictures, in which are pasted smaller pictures cut from another page, tax their utmost powers. When the cutting out is too difficult, the little ones can do the pasting and fitting while the older ones cut. Scrap-books are not only a means for preserving and classifying pictures, but, like all other occupations which call for the use of the hand, are also a means of Manual Training.

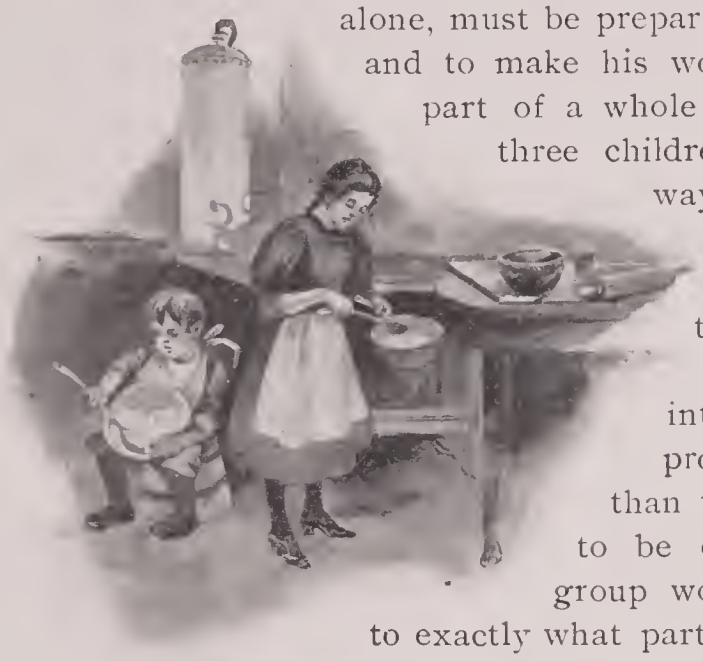
Perhaps none of these home activities are more attractive to the child, or can be made of greater service to him intellectually, than cooking. Even when he is popping corn in the dreamy, vacant-minded fashion natural to him, he still cannot fail to gain some skill in the use of his hands, and some valuable impressions as to the function of heat. The fact that his imagination comes actively into play, does not in the least detract from the value of the operation. The dancing, popping, cracking kernels of corn have many a lesson for him — lessons which we perhaps have missed, but which we must take care he does not miss.

Realizing that candy-making may mean more to the child than a moment's amusement, with a sweet taste at the end of it, the mother may perhaps see her way to permitting it. It is not easy to sacrifice a neat kitchen to a group of eager and sticky children, unless one is very well assured that the result is worth while. Measured in weak and loppy candy, the result is evidently not worth while. Measured in growth, the result more than justifies the expense. Less troublesome, and on the whole more satisfactory, is the making of bread and biscuit, or the cooking of vegetables or cereals. In addition to the other desirable results of these beginnings of domestic science, is the fact that children who ordinarily would refuse to eat bread and cereals and vegetables, develop a great fondness for these useful articles of diet when they are permitted to cook them themselves.

The only child has this compensation for his lonely estate: he is permitted to share the labors of his mother and the life of the adult members of the family to a greater degree than is a child who has several brothers or sisters.

"I would let you come into the kitchen and cook," the mother tells the coaxing child who is one of many, "but, if I let you come, all the rest will want to come, too, and I cannot have my kitchen just full of children."

Of course, the obvious way out of this difficulty is to let the children take turns, but there is an advantage in a kitchen full of children which must not be overlooked; individual work is helpful, but group work is often more so. The child who is preparing to take his place in a complex civilization, in which no factor stands alone, must be prepared by early training to work with others and to make his work fit in as a subordinate but perfect part of a whole to which many contribute. For two or three children to make a pan of cookies, is in its way a training for this end. If the baby in his high-chair daubs butter all over the pans with his little fat hands, while the next older child beats eggs, and the oldest does the final mixing and superintends the baking, they are all in the process of gaining a social grace sweeter than the cookies. Children, who are inclined to be quarrelsome, are especially in need of group work. Make an agreement with them as to exactly what part of the work is to be performed by each one, and see to it that the division of labor thus brought about is strictly adhered to. Group work thus inaugurated leads to definite prevision and to conscious justice; and usually results in an increased respect for the rights of others. When this respect is firmly established, there is no more quarrelsomeness.



In all these occupations, nothing demands more patience on the part of the mother or teacher than the fact that the child so often scorns the assistance of which he nevertheless stands in need. To see him struggle ineffectually with a piece of work too difficult for him to master, and to refuse the bit of help which we fairly ache to give him, is a foretaste of the bitterer days to come when we shall discover that all of our dear-bought experience is cheap to him, and that what we have suffered cannot save him a single pang. Yet we must remember that it is after all by his own efforts, by his own disappointments and failures, that he must learn, and that the way to make him prize our advice is to withhold it until he feels the sharp need of it. To importune the child with offers of assistance is to confirm him in a habit of defiant independence. To give him advice when he asks for it, is to form in him a rightful habit

of mingled dependence and independence. Better to let him fail, and know the sorrow of defeat, and even the temporary paralysis of despair, than to make him feel that every well-meant offer of assistance is an assault upon his freedom.

Some carping critics have been known to object that such simple home activities are not either domestic science or Manual Training. While they are, of course, not science, they are the beginnings of those things out of which these sciences are afterward made, and if they are lacking, the later science has but an inadequate foundation upon which to build. The principal argument against these primitive attempts is that such home work is seldom thorough; and any mother who has proudly preserved her child's first paper cuttings, and has afterward visited an advanced public school, and has there seen the neat exhibitions of such work hung upon the walls and preserved in the museum, must feel doubt invade her and be ashamed of the crude results of the home work.

Home, however, is not school, and is not to be measured altogether by school standards. It must remain true for some time, though probably with less and less primitive crudity, that the school is a place for intellectual training, and the home for moral training. The mother is looking more to the motive for which the child works, watching more for the result and character, than is the teacher. She is pleased and proud when Jamie presents her with a paper-knife of his own whittling, and does not even see that the knife is lopsided and needs sand-papering. The teacher would insist upon another knife, and more care in its manufacture.

But, as Stanley Hall once said in a lecture, thoroughness is unnecessary and unchildlike. Of course, he meant thoroughness as measured by an adult standard. The child can be and ought to be as thorough in his work as in his thinking and observation; that is, he ought to make his work look so that it satisfies him, and not to stop until it does. For this reason, he should be encouraged not to hurry with his work or to plan to get it done on a certain day. Unchecked, his desire to finish will hurry him beyond his gait, and he will force himself to be satisfied with a result below his power of unhurried accomplishment. He will then use his vivid imagination to convince himself that the finished article is all that it should be, thereby lowering his standard.

To prevent this—which is the innocent beginning of much harm—help him to a wiser division of his time; encourage him to persistency, and accept his product at its true value. Its true value is measured by the effort he has put into it. Raise his standard by showing finished pieces of the same work, and at the same time be

careful not to discourage him by showing him things too far beyond his ability. Suggest to him that the next time he can improve, in this particular or in that, being sure that the suggestions are well within his reach; and call his attention to the beautiful accuracy which makes the superiority of the model. In short, without demanding unchildlike thoroughness, you can and should demand childlike thoroughness — the thoroughness of growth.

Not only occupations, but a great many games, embody the educational activities known as Manual Training. This is especially true of all games of skill. The commonest, as well as the most valuable, of these is ball-playing. This little toy, the ball, has borne a great part in the education of the race, and it is safe to say that if mankind had never learned how to play ball, it would be a scale lower in evolution than it is now. Ball-playing demands skill in the use of the hand and arm, and coördinate control of all the muscles of the body. The various games have been so fully described in Volume IV that they are merely referred to here in order to show that they have a direct educational value, as well as a recreative value. This is true of croquet, tennis, bowling, rowing, skating, and swimming — indeed all games in which the player depends for success upon the skilful and intelligent use of the muscles of his body.

All the drawing games serve this end — as for instance the little game which can be played by very young children, and which consists in drawing at the top of a long strip of paper the head and neck of an animal, then folding down the paper and giving it to another who adds the body, to a third who adds the legs, and to a fourth who names the composite creature. As drawing is one of the fundamental forms of Manual Training, it appears at once that this or any other drawing game, however foolish it may seem to be, is in reality worth encouraging. The fitting together of dissected maps and other puzzles comes under this same head, but is not worth so much as the making and cutting of original puzzles, to be put together by others. It is a fact to be deplored that so few of the games for sale in the toy-shops call for any degree of manual skill, but a concerted demand for such games, coupled with a prompt appreciation of the few games of the sort now upon the market, would soon create a supply.

While many of the out-door games can be played without special apparatus, still a certain amount of it is of advantage. The making of such apparatus should be left as far as possible to the children themselves. Very young boys can make a trapeze or a swing. A child under six can make a ladder. Having made it, he will love to climb upon it and will thus, as in all the large out-door games, get as much physical as Manual Training.

This leads to the consideration of the necessity of correlating Manual Training with physical training, domestic science, and all the other forms of knowledge needed in daily life. The claims for Manual Training made in this book would be excessive and almost absurd if they applied to the mere making of things, without any regard to the use to which they were to be put, or to the motive which led to their making. The mere use of tools, as such, in the most skilful possible manner may make a man an admirable machine and thereby lead to his material prosperity — for a good machine is sure of a market — but it cannot make of him a well-rounded, healthful, and happy human being. The day is already dawning in which Manual Training is to be closely connected with all the work of the school life; and it will not be long before the child's spontaneous activities in the home and on the playground will be similarly connected with his moral development. He will then work to express an affection — to put into beneficent operation forces otherwise too likely to be scattered.

In the attempt to bring about this desirable state of affairs, parents who are so fortunate as to live in a neighborhood where there is a vacation school will find themselves much helped. Unable to rely upon any truant law or public sentiment to enforce attendance, these schools are forced to rely upon the power of attractive work to draw and keep their pupils. The consequence is that they have for the most part made for themselves a curriculum much better adapted to the child's needs than the artificial curriculum of the regular public schools. By attending such a school once or twice a week with her children, a mother can soon get an idea of the practical work of Manual Training and of its proper relation to the rest of the child's life.

If, however, as is most probably the case, there is no vacation school in the neighborhood, a tutor for the summer months may profitably be engaged by a group of parents. It is not at all impossible to get a young Manual Training student to teach a group of boys and girls for an hour or two a day through the vacation months; neither should it be expensive. Two or three carpenter's benches fitted up with tools, in a light basement, will be all the equipment that is needed, and to keep it up will cost only the price of the supply of lumber and the repair of the working tools. Once acquired, such an equipment ought to be of service, summer and winter, for several years.

The tools supplied should be of good quality. One would never expect a man to do good work with poor tools. But, with strange perversity, the man often expects the boy to do it. It should be remem-

bered that cheap tools are invariably bad and therefore dear in the end. In this category are the tools found in most of the ready-filled tool-boxes for boys, simply because they are generally sold at too low a price to be anything else. It is a good plan to leave the selection to a practical carpenter or mechanic.

A few tools will suffice to begin with. A jack-knife, chisel, gouge, small saw, gimlet, and brad-awl, will be enough to start the boy on his way rejoicing. As his ambition grows with his dexterity, other tools can be added to his stock as indicated in this volume. But with all workmen, and especially with the beginner, more depends on perseverance than on the number and variety of the tools used. Perseverance is one of the most valuable lessons that the boy learns from tools, and it is a lesson which the judicious parent will wisely encourage.

It is desirable that a room be set apart for the boy's workshop, and this should be so situated that the juvenile architect or artisan can make as much noise as he deems necessary, and not feel the risk of a gruff admonition to "keep quiet!" Of his workshop he should be absolute master. He should have the key to the door. No intrusive housemaid should be allowed to enter it at will, ruthlessly to sweep out chips and shavings, and perchance, along with them, some cherished product of youthful ingenuity. Even the parents should be chary of entering uninvited the boy's workshop. Few men care to submit their work to critical scrutiny while it is getting "licked into shape"; neither does the boy. And he delights to surprise his parents. Above all, the boy's mother should not insist on things being kept in apple-pie order in this juvenile workshop. It is not easy for the average healthy, impetuous boy, with a normal amount of natural carelessness in his make-up, to be neat in such a place — to have at all times a place for everything and everything in its place, and to clear up the chips, shavings, and sawdust before he runs off to play. If he be compelled to do this his workshop will soon become a taskshop for him and he will grow to hate it; and then no possible good can he get out of it.

Happily for the solution of the problem how best to start a boy to working with tools, he is usually so constituted that he takes to them with as much avidity as he displays aversion to his school books. The boy is nearer the savage than the man, and delights in the work of his hands rather than in that of his brains. Wherefore, if you want to keep the boy's hands from the mischief which "Satan finds for idle hands to do," put tools into them.

All boys of the normal type delight in keeping pets, and they should be encouraged to do so if by any means the arrangements of

the household may be made to admit of it. Rabbits, squirrels, guinea pigs, white mice, and white rats, make interesting pets, and the boy who becomes the possessor of a set of tools cannot be better started on his career as an amateur architect and designer, than by constructing houses for them. A tea-chest, or a soap-box, a few nails, and some wire netting will furnish about all the material needed for a first attempt. More elaborate animal houses may be undertaken as the skill of the juvenile worker increases. (Further suggestions on this subject may be found in the article on woodwork.)

After giving the boy tools, his parents should do all in their power to encourage him to make things for himself instead of buying them for him. The pride of possession is enhanced tenfold when the object is something which the boy has made himself. Never can the writer forget the delight he experienced when one morning, as a boy, he beheld a matronly white rat walking down the stairs of a miniature house he had built for her, followed by eleven snowy young ones, intent on getting a breakfast of bread and milk. He then felt well repaid for the bruised and cut fingers, and the toil which that little rat house had cost him.

If the boy live near water, he should be encouraged to make miniature boats and sail them against those of his companions. A victory thus won by a model boat, built by a boy's own hands, will fill to the brim his cup of happiness. There was a boy once who had a handsome little model yacht that his father had purchased for him, for something like $10. And this beautiful model yacht was much admired by another boy who had none, and ofttimes the canker worm of envy gnawed into his feelings when he beheld the little craft skimming across the surface of the water. He confided the state of affairs to his father, but his father, having already supplied him with a set of tools, refused to buy him a boat. One day, however, he brought home with him a sailor, and that sailor showed the boy how to make a boat. For beauty it did not compare with the boat bought in a shop, but it was a good boat for sailing. It had a tin keel, made of a tomato-can beaten out flat, and at the bottom of that tin keel was a lot of lead. Wherefore, with her lead ballast placed lower down than the shop boat, she was able to carry much more sail than her rival, and in a race for the championship of Mud Pond, won a great victory. The boy who had before been consumed with envy was now afire with joy. He blessed his father, who, instead of buying him a boat, had made it possible for him to build one for himself.

When the vacation is over, the skill gained by such employments will be found useful at school. The power of observation having been quickened, the ability to plan having been developed, and the mental powers generally having put forth vigorous growth, all the school exercises will be easy. Those little doings which, under the name of busy-work, really form the entering wedge of Manual Training in schools not yet sufficiently progressive to have adopted Manual Training in full, will come easy to the child who has played with tools, or even with scissors and pencils during vacation, and his interest in such work will help to bridge over the dreary gap between the freedom and wholesomeness of his summer life and the indoor artificiality of his winter life. So far as the schools teach drawing, painting, and modeling, he will find himself thinking in school with the vividness and originality of his holiday time — the time when his work was his own and was a strenuous delight, compared to which play was only a mild recreation.

If he is so fortunate as to be able to go to a school where they teach cooking and sewing and Manual Training, he will probably awake with surprise some day to the fact that he actually likes to go to school — that his school is like a larger, more orderly home, wherein, with a small multitude of his companions, he works out fine results with materials always ready to his hand and expert assistance waiting for his need.

Such a devoutly-desired consummation cannot be brought about, however, by little dabs of manual, physical, and domestic training. An hour once a week in the domestic science-room may be a break in the monotony of school existence, and may so far reconcile the boy to his school life that he will toil through the desert of the rest of the week for the sake of these occasional oases, but it is scarcely more. These occupations should be continual; they should be matters of every-day life — opportunities to express in form, in constructive work, what has been learned from books and observation. Only by such constant recurrence to the constructive activities can their real worth become manifest. The child's habit ought to be to put what he knows immediately into practice, and only by always doing so can he form the habit. The Manual Training shop and the Manual Training teacher ought to be constantly ready to help him to such concrete and useful expression.

If the educational value of these studies, so often considered more ornamental than useful — accomplishments rather than genuine studies — had been sooner understood by parents, those devoted teachers, who, like Dr. Dewey, Colonel Parker, Felix Adler, and the manual trainers generally, have been endeavoring to get these activities rec-

ognized as a part of the school curriculum, would not have had so severe a struggle. As it is, the struggle, while practically over in the more progressive cities, still lingers in country places and in large towns. For the most part, teachers are ready to admit the excellence of the ideal, and wait only for the coöperation of parents to realize it. This coöperation is sure to come with the spread of educational intelligence.

Without the intelligent coöperation of parents, school reform cannot go far in these directions. The coöperation is most quickly and effectually brought about by the formation of Parents' Clubs in the public schools. Such clubs, discussing the advantages of Manual Training, for example, listening to papers on the subject, and sending out committees to visit and report on other schools, soon become capable of forming an intelligent opinion on the subject, and what they want comes into existence as if by magic.

In Chicago, for example, there is a very fine public school, whose principal is an unusually able and progressive woman. For six years she worked to get Manual Training in her school, and succeeded so far as to get the right to send her children for an hour a week to a neighboring school, which was fitted out with a shop and a teacher. Further than that she could not get. To all of her appeals, the Board of Education replied that she already had more than many principals had, and that, until all the schools in the city had at least as much as she, she need not ask for more. She thereupon called the parents of her children together and formed them into a club. She had much more for them to do than to get Manual Training into the school, so she formed them into several committees, one of them, being a committee on Manual Training. This committee went into the question thoroughly, found that there was no valid ground for objection, and that some one school would have to show what could be done with Manual Training as a part of the daily work, before the Board of Education could be convinced of the need of daily Manual Training in all schools, and proceeded to insist upon Manual Training in that school whether any other school had it or not. In six weeks they had a completely equipped shop and a fine teacher.

In all such ways, by intelligent appreciation of the worth of the child's activities, by affording him proper opportunity at home, out of doors, and at school, parents can, without great expense or labor, secure for their children the wholesome advantages of Manual Training.

WHAT THE WORK SHOULD BE

The real value which a child derives from a course in Manual Training depends not only upon the application of correct principles in general, but also upon the character of the work he undertakes. It is essential that the work done should be useful. Children are fond of making real things, and they like still better to make things which they believe to be of practical use. This is an instinct. It is shown in the boy who picks up a shingle and begins to whittle, with no definite purpose in mind, but merely to pass the time. He may make at first a few haphazard, slicing cuts at the shingle; but in a few moments he begins to whittle out a definite something. It will resolve itself into an arrowhead, or the hull of a boat, or the form of a gun or an axe, according to the whim of the moment. He is almost certain to make some real thing, not a mere formless chip. This shows that he has the instinct for producing something of definite, practical form.

One reason why children get little good from text-books in proportion to the time spent upon them, is that they do not understand the practical utility of the information they acquire — they cannot see how the thing they are studying is of any real use to themselves, their parents, or their associates. The object which the child is set to make should, therefore, be understood by the child to be of some real use. Even the tots who make bead work and worsted work believe that they are useful. It is the parents' part to admire these things and make actual use of them. This affords the child intense satisfaction and is a spur to renewed effort, as well as an incentive to excel in the quality of the work.

This work should not be fatiguing. The memorizing of declensions becomes so wearisome that the pupil dreads the sight of a grammar; and in Manual Training work this sort of discouragement should be avoided. To make an endless number of cuts in a piece of wood, all to be of the same direction and depth, might seem to be a sure method of imparting accuracy; but it is likely so to fatigue mind, hand, and eye, that the last specimens produced are worse than the first. Preparatory exercises are sometimes unavoidably tiresome to the pupil, but for him, it is better when possible, to work on something that excites interest and in itself answers the question, "Why do I do this?"

Variety is an important consideration in selecting work for children. Young children are content with the same toys and the same stories for a comparatively long time, but as they grow older, they demand new amusements with remarkable frequency. This desire to see, know, and handle new things continues for several years, until manhood, when tastes are fixed and employment and amusements follow settled courses. In the period of Manual Training the demand for variety is strong, and it should be recognized. A variety of objects should be set as models, and these should have variety not only in form but in size and substance, and they should be employed in a variety of ways. A cone may be drawn from a model resting on its plane base, but it need not then be discarded. It has yet to be drawn as it rests upon the side, shaded from the right, and again shaded from the left.

The use of square, compasses, and scroll affords more variety in drawing than the pencil and ruler alone. A boy may tire of using the saw too long at a time; but, if it is once in a while laid aside for the plane, the chisel, and the hammer, this variety will hold his interest in his works. It is not hard to understand why a box-maker grows tired of nailing together, day after day, the same kind of boxes with the same kind of nails and the same hammer; and, as Manual Training is not designed to create box-makers, but to develop workmen educated on all sides, there is no excuse for inflicting this monotony on the young worker. If a boy is set to making boxes, therefore, some may be put together with nails, some with screws, and some may be dovetailed; in some of them the lid may be hinged and in some made to slide; the exercise should not always be the same. The imaginative instinct of children demands variety, and it is the imaginative instinct that Manual Training seeks to develop and control for practical uses.

The work in Manual Training should be such as can be carried through to completion by the pupil himself. It is idle to assign to a beginner in woodwork the making of a sideboard, or to the beginner in metal work the construction of a steam-engine, because in tasks so elaborate the teacher would soon have to come to the practical help of the pupil. Children like to do all the work themselves. When it is necessary to show how a thing is done, the wise teacher gives this instruction not by doing the work for the pupil, but by illustrating from a similar piece of wood or metal. Experience has shown that the piece of work of which the child can say: "I made it myself without any help," educates him far more than the one on which he has had help. The desire to create is not satisfied unless the creator produces a perfect whole. The work assigned should, therefore, be within the capacity of the pupil. Naturally, it must begin with

simple forms, and proceed from the easy to the difficult. He grows more expert in the handling of tools and comes to understand exactly why he undertakes each task. This shows the importance of method. The student must know that he is proceeding on rational grounds, that there is a reason for doing the one thing before the other.

If he is able to finish his work without assistance, he feels a greater sense of power, and this makes him self-reliant. A boy who begins the construction of a steam-engine will soon find that work beyond his capacity. He undertakes the impossible, and will quickly meet discouragement, disgust, and a sense of helplessness; he would far better make a poker and do the work by himself. There is a real satisfaction in making even a poker, if it turns out to be well made.

A course in Manual Training should demand real work of the pupils. It is not designed as a pastime; and, if they merely play with tools, they acquire neither that love of labor which it is desired to implant in their hearts, nor the educational results which are the chief aim and purpose of the system. The baby spends his first few years in play. Amusement, pure and simple, occupies his mind while the body is growing, in the process of nature; but the Manual Training pupil has reached the age when a certain portion of his waking hours must be devoted to legitimate work. He should be made to feel that he is working for his education when handling saw and hammer, as surely as when he concentrates his mind upon books. Excellence in the class-room is not the sole test of education.

The work may be entertaining and delightful to the pupil, and it should be so. By that means he may arrive at a higher appreciation of it, and instead of dreading it as drudgery or looking upon it as a horrible imprisonment upon which he must enter when he goes out into the world "to make a living," he will understand that he has the power to find attractiveness in work, and he will choose his vocations the more wisely because of the inspiration of his Manual Training. Yet after all it is work, not play, and it should not be made easy and pleasant solely for the amusement of the pupil; he must toil for the sake of the results. There are men of large affairs who have learned to make of their work a pastime; it absorbs and fascinates them. The chemist steals back to his laboratory, after hours, and works eagerly to find the elusive secret; he enjoys his labor, because it has purpose and meaning to him, but it is still real work, hard work. The Manual Training pupil will learn the joy of work, but he must make a distinction between work and play, not flitting from one attempt to another, nor turning to it simply as a pleasant means of passing the time, but with a goal of results always before him — practical results, such as the world will later demand of him.

It is desirable that children, in Manual Training, should put their work upon articles of practical use and intrinsic value, as distinguished from knick-knacks and articles of luxury. This tends to make the work real, and to strengthen the bent of the pupil toward producing things that will command the approval of his elders. A boy might acquire practice in the use of tools by making a miniature windmill, but the toy would soon be cast aside and find its way to the rubbish heap. The making of a simple wooden spoon will afford equally valuable practice with tools and be in itself an article of permanent value. The boy's mother will use the spoon in her kitchen and he will see it put to practical use. There is danger that work upon articles of luxury will alienate the pupil from a liking for the rougher, honest labor which produces articles of intrinsic and not of sentimental value.

A girl will get more profit from learning to do plain sewing — the hemming of sheets and pillow-cases, and the cutting out and putting together of simple garments — than in making doilies or doll dresses. Doll dresses and doilies have their uses, but for the young learner practical work should be the foundation. A girl who can cut and make a neatly fitting, tasteful dress is better prepared for the actualities of life than one whose only experience with the needle has been in embroidering forget-me-nots on white satin suspenders. The real aim of Manual Training, of course, is not to make carpenters or needlewomen, but to give a roundness and symmetry to the pupil's education, by imparting wholesome views as to labor, stimulating the imagination and planting seeds of knowledge which will germinate in ideas. At the same time it develops power to embody the ideas in practical form. It is at this point that knowledge memorized from books fails of results.

The articles made by a pupil should become his property. In some Manual Training schools the practice has been, and may still be, to regard the articles made by the pupils as the property of the school; and they have been sold at a considerable profit. This resulted in placing at the disposal of the directors of the school a more ample supply of funds for promoting the work of the institution, and may so be justified, on the face of it. But the real result to be considered is the effect upon the pupil. The wood from which a spoon or a chair is made is the property of the school, but after the pupil has put his labor into it, has given it form and value as a finished product, he becomes a part owner in the product, and taking it away from him is an act of confiscation.

An example of this occurred in a large institute of technology, where the boys, or young men, complained because their time for "shop practice" was requisitioned by the directors of the school in

the labor of setting up hydraulic elevators. The students did not object to the rough work in itself, but they had no interest in continually setting up the same kind of elevators, a large part of the work on which had been done by journeymen. They felt that their labor was being utilized merely to enable the institution to sell elevators at a profit, which it did, in fact, and in such ruinous competition with other elevator concerns that a public protest was made. In the same institution, the writer talked with the young men in the machine-shop, who were taking a course in mechanical engineering, and they complained bitterly of the commercial greed of the directors of the school, who kept them at work on certain parts of wrenches for days, and even weeks, at a time. Undoubtedly they derived benefit in increased skill, but the knowledge that their labor was being requisitioned for the profit of the school, or, as they claimed, to enable the directors to make a creditable financial statement to the trustees, destroyed their interest in the work and led them to believe that they were suffering injustice.

The child is justly proud of the work he produces at the Manual Training school. He is anxious to carry it home and give it permanent place in the household, so that it may be appreciated and admired by his parents and visitors. If he begins a piece of work with the knowledge that it will become his property and he may so exhibit it as proof of his skill, he will have the highest incentive that can be given him to do the work well, and his interest in it will not flag during its progress. On the other hand, if he knows in advance that the work, when completed, will become the property of the school and that he cannot take it away, exhibit, or control it, but must recount his progress without exhibiting the proof, he has less incentive to excel, and feels a certain sense of injustice in being deprived of the fruits of his labor. It may be said that the educational benefit received by the pupil is sufficient compensation for his labor and that the profit derived from his labor does not compensate for the material he spoils or utilizes; but this would put Manual Training upon a commercial and not an educational basis. And the point here is that this confiscation diminishes the educational value of the teaching. The school is maintained for the benefit of youth and the civic welfare in general, and it must give, not take away. Practical experience in many schools, where both systems have been followed, shows conclusively that, in order to achieve the greatest benefit, the school must allow the pupil to retain completed work as his own property.

It has already been said that it is important to assign work that corresponds with the capabilities of the pupil. There are some observations, in addition to those already noted, which may be properly

emphasized at this point. If the work assigned is too easy, it does not demand enough exertion on the part of the pupil, and so the development which results from exertion is missed. The lack of stimulus to exertion tends to belittle the work and degrade it into play, and to quench ambition. There will be, then, no increase of self-reliance and the whole scheme of Manual Training may fail at this point.

On the other hand, if the work be so difficult as to compel the pupil to have constant recourse to the instructor, and even then to find himself constantly baffled by mechanical principles of which he as yet knows nothing, the same failure occurs; for the pupil cannot rely on himself and push forward, nor is his ambition stimulated. He becomes disheartened, and chafes under the consciousness that what is easy to others is impossible to him; that his inability to progress may attract unfavorable and harsh criticism; and that he is not meeting the evident expectations of his instructors; all this, not through carelessness, idleness, or unwillingness to do his best, but because he naturally has not the power to execute a work which is beyond his capacity. When he is fully convinced of this, the slightest impatience or condemnation on the part of the instructor will utterly unnerve him and he will persuade himself that he is wasting his time. Manual Training loses its charm for him, and he returns to books or drags through a monotonous course in further ineffectual practice, eager for the close of the term which will bring him emancipation from bondage.

Inasmuch as the cultivation of habits of order and exactness is an essential feature of correct Manual Training, the work should necessitate the exercise of these habits. By order is not meant a precise method of taking up and putting away tools, nor cleanliness and neatness, which are in themselves important, but rather the procedure of the work from point to point in accordance with a reasonable and logical method, which enables the student to master details before attempting the whole. A distinction is to be made, however, between order and exactness. The making of a ruler may proceed in an orderly way, from point to point and the result may appear to be satisfactory, but if the ruler is a fraction of an inch too long or too short, the work is not exact. Even if the ruler could serve its purpose as a tool as well as one of the prescribed dimensions, still, if it has not been made exactly, the educational value of the work is minimized.

The term exact is used, of course, in its approximate sense. No one, not even the highly skilled journeyman, produces absolutely perfect work, but in a relative sense and to a reasonable degree exact-

ness should be required, and that the pupil may attain it, the work must be of such a character that it can be attained. To assign a piece of inlaying work to a beginner, with the expectation that it would be completed with exactness, would be folly; the same pupil, however, whose inlaid work was a botch, might complete a simple box with exactness. Only work which has been so done should be accepted; the pupil should not be allowed to take home a poorly made piece of work and exhibit it to overkind parents and friends, who may praise it without warrant, and so give rise in the pupil's mind to the belief, fatal to progress, that anything that will pass is good enough. For obvious reasons, it is possible to attain a greater degree of exactness in metal work than in wood or in fabrics, but for work in the early stages of Manual Training, wood is always to be preferred, as more easily handled and susceptible of greater variety in work. In woodwork the requirement of exactness, must, therefore, be reasonable, and hence the importance of the choice of work to be assigned.

Manual Training does not seek to do away with theoretical training, but to supplement it and make it worth while. Its aim is to develop the thinking powers as well as skilfulness of eye and hand. The pupil's work should be of a character to set him to thinking. The mere copying of a model may become a purely mechanical operation, unless the model has a meaning which the child can comprehend. He should be stimulated by the work itself to think about it, to ask himself why it is useful work, and to understand fully the use to which the finished article will be applied. His tools should not be mere dummies, to be used on certain pieces of wood, in a certain manner, but instruments to enable him to arrive at a result clearly thought out and determined upon in advance.

One source of hindrance in teaching pupils who memorize from books is that they do not think out the meaning of the things they learn. A professor in a woman's college was so irritated by this lack of thought on the part of her pupils, that after proposing a question to her class, she invariably added: "Think, young ladies, think!" and became locally famous for her oft-repeated admonition. In Manual Training, however, the pupil soon realizes that he must think and not allow his attention to wander. The work given him should keep his thinking powers constantly busy. Automatic work is not desired. Manual Training, it cannot be too often said, does not seek to train children to be mechanics, but to develop their mental and physical powers, to the point where they will be most effective in any trade or profession.

The schools of theoretical knowledge have long been engaged in developing the mental powers, at the expense of the physical. But it

is not the soul alone that should be made beautiful and symmetrical; the soul's house should be a worthy dwelling for it. The body must be cared for scrupulously, if the brain is to be kept in order. The nervous diseases of children, headache, and defective eyesight are so often directly traceable to confinement at the desk in the class-room, and consequent overwork of the brain, that Manual Training need make no apology, in seeking to alter this condition and let physical development have place along with mental. It is not contended, of course, that Manual Training affords the same opportunities for purely physical development that are found in active play and gymnastic exercises; but only that it does afford a measure of physical exercise while educating the mind and the hand. It affords the freedom of motion which is denied to the pupil who sits at a desk during the greater part of five hours each day.

The work selected for the pupil should be such as will give motion to all parts of the body, as far as practicable. There must also be judicious oversight as to the amount of physical exertion to be put forth. To overstrain the body is unpardonable, but it is only worse than insufficient exertion, which tends to indolence and does not produce development. There is, of course, a happy medium, and since the pupil is rarely experienced enough to judge wisely of the exertion that should be made, the work must be so selected and graded that at first the exertion will be comparatively slight, increasing as the work procceds, and concluding with diminished effort. The compression of the chest must be minimized and the head should be kept as erect as possible, in order that there may be no interference with the circulation of the blood. For the same reason, the neck should be suitably dressed with a loose collar; and the dress in general should be such as accords with the character of the occupation.

Manual Training has ever in mind the importance of developing both sides of the body in harmony. Nearly all persons use the right hand to the exclusion of the left. The reason is that the artery on the left side of the brain, where are the centers that control the right hand, gives a freer supply of blood. Where the reverse is the case the persons are left-handed. Nevertheless it is an advantage to have the weaker member developed to its full capacity. Now and then we discover a person who is able to write equally well with either hand, and he is looked upon as a mild form of phenomenon. The reasonable use of both hands should be the rule, not the exception. In manual labor exclusive use of one hand invariably develops one side of the body more than the other. A carpenter who uses plane, saw, chisel, and hammer with the right hand only, becomes lopsided. Not only the hand, but the entire side of the body is developed more than

the other side. Manual Training should seek to make the hands share their work equally. The physical benefits derived from ambidextrous drawing by public school children have been marked. A Manual Training wood-worker should be able to shift the saw from one hand to the other and make a neat and regular cut with equal facility, whichever hand is employed. The same is true of the hammer and the plane. There are some tools, like the knife, which involve the use of the hand, rather than the hand and arm together, with which it is more difficult to attain ambidexterity, and the time spent in giving the left hand equal skill with the right may perhaps be better employed otherwise; but with all tools involving arm as well as hand motions and therefore motion of the whole side of the body, ambidexterity should be cultivated.

The enjoyment derived from looking at a beautiful picture or sculptured marble is greater or less according as the eye has been trained to recognize the correct and the incorrect in form, or, as we usually say, according as the taste has been cultivated. There are innumerable people who do not distinguish between the beauty of Powers's "Greek Slave" and some of the impossible statues which have been set-up in public parks. Manual Training emphasizes the training of the eye in the sense of form, so that the pupil may distinguish good from bad, and appreciate accuracy of proportion. The culture of this sense of form not only contributes to the enjoyment of beautiful creations of art but is of material use in any constructive occupation. It is evident that the designer of the Capitol at Washington, with its symmetrical dome, and beautiful proportions, had this sense, and that the designer of the misshapen pile known as the Bureau of Pensions entirely lacked it. It is desirable that children should have models which embody good form, and that their deviations from the model, which produce bad form, should be carefully explained by the instructor and fully understood by the pupil. The pupil himself will be the poorest judge of his attainment. We are always in love with our own work, and an unprejudiced critic must discover and explain to us its defects, which, though they seem to be slight, are yet often fatal.

The proper cultivation of the sense of form involves the use of touch as well as the use of sight. The seemingly marvelous powers of the blind to describe accurately the form of an object, by merely passing the hand lightly over its surface, are not really marvelous, but seem so only because we are accustomed to judge form by the eye alone. A man's hand has wonderful powers, and can do the heaviest and coarsest, or the lightest and most delicate work, according as it has been trained to distinguish form. There are men who cover a

sheet of note paper with a few dozens of words, coarsely scrawled, and others who can write the Lord's Prayer on a surface no larger than the top of a lead-pencil. It is said that two hundred and twenty words have been written on a grain of wheat, and a gold chain of many links has been produced, so fine that it could be seen only against a background that afforded strong contrast. These feats are of no practical use, but they serve to show how delicate a sense of form may be developed in the touch.

Manual Training seeks to impart the sense of form through both the eye and the hand. How little it is developed in the average individual may be determined by simple tests. Ask a person to draw a spoon, showing the curves with approximate correctness, and not one in ten can do it. A man may visit the Congressional Library at Washington, one of the most beautiful works of architecture ever produced, be impressed with the majesty of the rotunda, and yet not be able to tell whether it is circular, octagonal, or hexagonal in form. When the sense of form has been developed, such details are remembered with accuracy.

The practical application of this training concerns so nearly everything that we make, that it is unnecessary to point out examples of its material usefulness; its higher usefulness is in the general development of the powers of the mind, which learns to distinguish more readily between good form and bad form, in speech or in music as well as in architecture and the arts.

Manual Training work should encourage the manipulation of various tools and, when it is practicable, each child should have a set of tools for his exclusive use, and be required to keep them sharpened and in order. To become dexterous in the use of a single tool has small educational value, and useful work almost always requires the use of various tools. The saw to cut off, the knife to pare, the plane to smooth, the chisel to make joints and angles, the hammer and the screw-driver to adjust or put together, the sandpaper to finish, all play their several parts in the production of good work. The proper use of the tools must first be learned, of course, for the knife should not be used to do the work which the chisel will do better, but it is desirable that there be a diversity of tools. This gives variety to the work, teaches general and not special dexterity, and makes possible a due regard for proper physical development. The ability to use many tools carries with it a quickening of the judgment in the selection of the proper tool for a certain part of the work, and produces facility in getting the most out of things. This habit will become ingrained and will manifest itself not only at the bench but everywhere in life.

It is not intended to suggest that a beginner should be provided with every form of tool to be found in the hardware store. Too many fancy tools may lead the pupil to waste his time in using first one and then the other, merely for the sake of change, as a child's fancy flits from one toy to another until he has exhausted his store and begins again with the first. But to make the work satisfy the educational requirements, on such lines as have already been suggested, the outfit of tools must be carefully chosen and adapted to the work intended to be done; and the work itself must be such that every one of the tools will be called into frequent and important use. To undertake the instruction of three pupils and set one to sawing off lengths of board, another to using the smoothing plane, and a third to nailing the pieces together, would utterly fail in educational development. Each of the three pupils should use the saw, the plane, and the hammer and produce the completed box.

THE KINDERGARTEN GIFTS IN THE HOME

FIRST GIFT

CHILDREN living in small or remote communities are not necessarily cut off from all of the advantages of the kindergarten system. With some general knowledge of the principles of this system as founded by Froebel, and with a few simple materials, the mother can conduct a home-kindergarten, which, while not, of course, equal to a kindergarten conducted by a trained teacher, will prove of

much pleasure and benefit to the children. The materials needed can be easily manufactured, or they can be obtained from a kindergarten supply store in any large city. Some of these are called "gifts" in the Froebel system, and they are graded to meet the needs of the growing child, from the elementary colored balls of the first gift, to the seeds and shells of the thirteenth gift.

These "gifts" are more than playthings. The genius of Froebel perceived a correspondence between them and the various stages of the child's intellectual growth. He therefore organized play as a means of education. He saw that the baby noticed colors, and liked the feeling of a round surface, therefore he made his first gift the colored ball and string. He saw that children liked to make mud-pies, therefore he gave them clay modeling. He saw that they liked

to take their toys apart, therefore he gave them the divided cube. He chose the ball as his first gift because it is the shape most easily grasped by both the hand and the mind; because in its unity of form it is symbolic of the child's mental state; and, in its tendency to motion, of the child's activity.

The first gift, then, consists of six worsted balls, each ball having one of the colors of the rainbow — green, blue, yellow, orange, red, and violet; to each ball is attached a string of the same color. With these balls and strings, the child is to gain its first impressions of unity, color, form, mobility, direction, and motion.

Lessons in color can be learned through a number of pretty games. The children can sit down in a circle on the floor of the nursery, or kindergarten, each with a ball, and roll the balls to each other as the mother, or teacher, calls out "Forward red ball"; "Back red ball"; or "Forward orange ball"; or she may say "Who has a ball like a cherry?" or "Who has a ball like an orange?" In this way the child not only learns to distinguish colors, but to associate them with natural objects. Games should be accompanied by songs. The children can stand in a row and swing their balls by the strings while they sing together: —

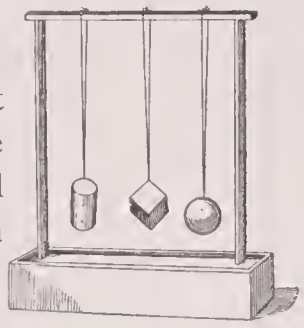
To and fro, in and out
Swing our pretty balls about;
Red and yellow, green and blue,
Every lovely rainbow hue.

The child learns much from the motion of the balls; games should be played in which the balls are thrown from one to another; in which they are tossed in the air; in which they are rolled in opposite directions. Four children may make the corners of a square, or three the points of a triangle, and roll the balls to each other. Skill of hand and quickness of eye are thus cultivated, the muscles are trained, and the limbs brought into play. The child begins thus early to prepare for the games of tennis, of golf, of base-ball, of polo, for all those games in which the ball plays the principal part. He learns the general properties of form, size, weight, color, density, and volume. He is prepared to handle more complex forms, and to engage in less simple games.

SECOND GIFT

Froebel's second gift consists of a wooden sphere, cube, and cylinder, two inches in diameter: standards and rods from which to swing the three pieces are used with this gift.

Its symbolism is of variety and of contrasts. The first gift taught unity of form and variety of color. The second teaches variety of form, and stimulates the powers of observation. The sphere and the cube are sharply contrasted forms, and the cylinder forms a connecting link between the two.



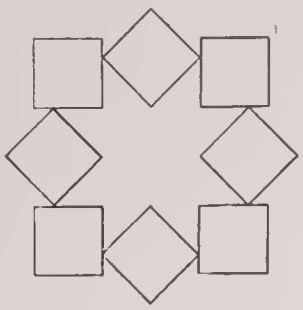
The child first of all contrasts the sphere with his first plaything the ball. He finds that the ball is soft, the sphere hard; the ball quiet, the wooden sphere noisy; yet they roll equally well; he finds that the cylinder also rolls, though it is different in shape from the ball. When he comes to contrast the sphere with the cube he finds a variety of differences. The cube will not run away from him, as the ball does when he lets go of it but stands firmly on one of its six surfaces. The ball is the symbol of motion, the cube of rest. The child can gradually be brought to understand why this is so — that the ball rolls because it stands only on a point of its surface, while the cube stands on the whole of its surface.

Many pretty experiments aid the child in understanding the qualities of these forms. The sphere can be placed on a plate and made to go around and around the rim by simply inclining the plate. The cube can be spun around on any one of its axes, and thus can be shown in many varying aspects. This variety of aspect can be increased by painting the faces of the cube each a different color.

The child should be taught to connect the shapes of cube, cylinder, and sphere, with other objects. He can play that the cylinder is a log which he is rolling home to chop up for firewood; or a barrel of flour that is being carried to the pantry. He can be shown a lump of sugar in the form of a cube; and a stick of candy in the form of a cylinder. Then he can be taught to build, placing his cylinder upon the cube, making thereby a pillar and its base; upon the top of the pillar he can learn to place the sphere and thus to add the touch of ornament. He can also be taught to count with these objects, saying "the sphere one, the cube two, the cylinder three." The cube is provided with eyelets through which to pass strings. On these strings it is revolved, teaching the child many phases of motion, swift or slow, or motion increasing from slow to swift. His faculty of discrimination is thus awakened and cultivated.

These three simple forms — the cube, the cylinder, and the sphere — wrought in marble, are part of the monument of Froebel, who first adapted them to the child's mental needs.

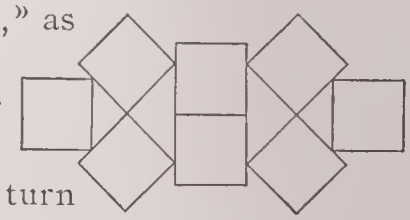
THIRD GIFT



Froebel perceived that an early instinct of the child led him to take his toys apart, and to try to put them together again. Every child is an investigator and builder. The so-called destructiveness of children, for which they are often punished, is in reality not a malicious instinct, but a natural desire to explain for themselves the causes of things. They want "to see the wheels go 'round"; to understand what makes dollie's eyes shut; to know what is inside the drum; or in the little music box.

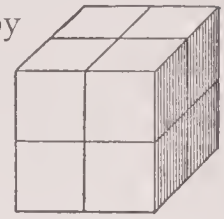
Realizing the importance of this instinct in aiding the child's development, Froebel chose as his third gift a wooden cube, subdivided by three cuttings into eight equal cubes, each representing the large cube, but on a smaller scale. The child is now in possession of a divided unit, which he may take apart and build up again. He is thus introduced to the idea of relativity: the relation of the parts to the whole, and of the whole to its parts. He sees that the parts are similar in shape to the whole, but dissimilar in size. His powers of analysis and synthesis are thus awakened and exercised. The uses to which the child can put these eight little blocks, and their influences upon his mental development, are manifold.

He should first be taught the mathematical significance of the divided cube by separating it into two equal parts, then into four, then into eight; the halves can be subdivided, the child learning to say "a half," "two quarters," "four quarters," as the case may be. He can pile the blocks one upon another, counting one, two, three, etc., or he can make two columns of four blocks each, or four columns of two blocks each; or he can turn the cube into an oblong, formed by two rows placed together. Numerous mathematical combinations can be thus made, the child receiving by these pleasant means his first lessons in the science of numbers.



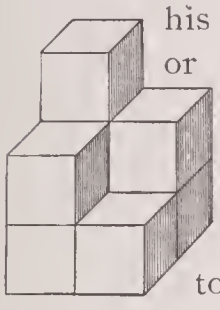
When the child has learned to count up to eight with his blocks, to add and subtract with them, he may then be taught to make what are termed in kindergarten phraseology "Forms of Life" and "Forms of Beauty." Forms of life represent things which the child sees in his every-day world, as a house, a clock, an arm-chair, etc. With the blocks he tries to reproduce these objects, and thus he becomes a workman in embryo; he is made familiar with common things; through his imagination he is for the time a carpenter, a builder, an

architect, a cabinet-maker. Chairs are easily made with the blocks of the divided cube; or a castle with towers, or a high cross, or a sentry box, or a station house, a bridge, a church, a clock, or a windmill. The child can construct an entire village of forms, by means of this symbolic building.



While he is engaged upon some work, the building of an engine for instance, questions should be asked him: what the engine does? where the engine goes? etc. He should be told all that he can understand about the uses of the engine. If he is building a bridge, he should be asked what bridges are for; if a window, what windows are for. He can thus be taught to reason, to use his powers of observation, to think for himself.

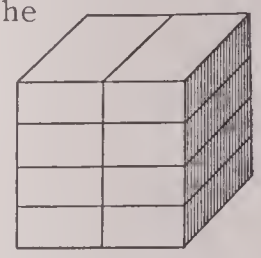
When he has exhausted his powers of ingenuity in building, he may then be shown how to make forms of beauty and symmetry. Forms of beauty are forms of the imagination which please by their symmetry — by the harmony of the parts. They appeal to the esthetic sense, to the innate love of beauty. They are made by placing the eight cubes in various relative positions so as to form stars, squares, octagons, crosses, and a variety of geometrical patterns. In making these forms of life, of beauty, and of knowlege, no order of procedure can be absolutely binding. The mathematical use of the blocks may appeal first to some children; the practical use to others. A child may prefer making forms of beauty to making arm-chairs with his eight cubes. He should be allowed to follow his fancy, or the purpose of the gift will be defeated. The teacher or mother may, however, suggest building enterprises. She may say she is in need of a house, or of a well in the garden, or of a windmill to grind her corn; and thus awaken the imagination of the child and his desire to accomplish a given task.



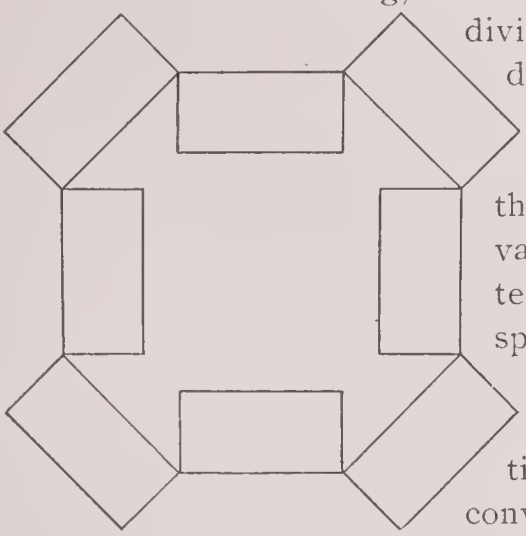
If several children are playing, each child should play only with his own eight blocks, and should not be allowed to take those of the other children. He thus learns to do much with limited material, to use the gift as it was intended to be used. When the play is over each set of eight cubes should be packed neatly in its own box, as a hint that "order is heaven's first law."

FOURTH GIFT

"A NEW gift is demanded — a gift wherein the length, breadth, and thickness of a solid body shall be distinguished from each other by difference of size. Such a gift will open the child's eyes to the three dimensions of space, and will serve also as a means of recognizing and interpreting the manifold forms and structures with which he is constantly brought in contact."

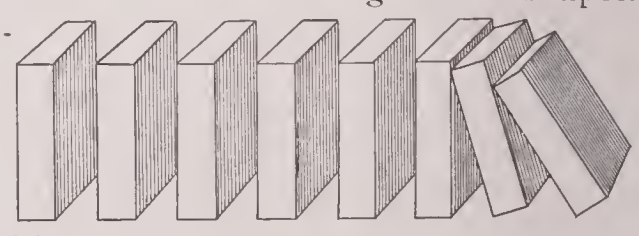


Froebel writes thus of his fourth gift, which consists of a cube divided into eight blocks, each two inches long, one inch broad, and half an inch thick. The lines of division are three in a horizontal and one in a vertical direction, making eight bricks. The fourth gift differs from the third in the shape of its parts. In the cube, similarity was everywhere; in the brick, the child is introduced to a form distinguished for its variety; there are "greater height and greater extension, resulting in a greater possible inclosure of space." The gift shows the progress of the child in the greater difficulties of manipulation which it presents, and in the many positions and combinations which the bricks can be made to assume. It conveys to the child a clearer idea of dimension. The dimensions of the brick being unequal they are more deeply impressed upon the child's mind. Of the brick form Dr. Seguin says: —



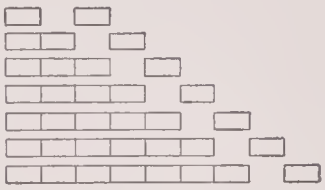
"What a spring of effective movements, of perceptions, and of ideas, in the exercises with this form where analogy and difference, incessantly noted by the touch and view, challenge the mind to comparison and judgment."

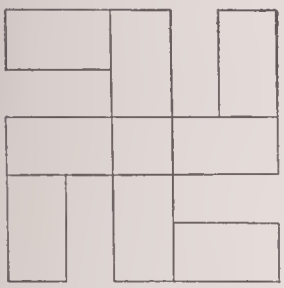
Perhaps the simplest method of showing the child the difference between the brick and the cube is to stand the eight bricks upon end and in a row; then by touching the first or last brick to throw the whole row down. By this illustration the child understands that he is playing with a form which requires more careful handling than the cube, and which admits of greater variety of combinations.



As with the third gift, the fourth can be used for forms of knowledge, of life, and of beauty. By making combinations of two, of four, of six, and of eight, bricks, the child learns the first principles of multiplication. By adding two bricks to four, or three to two

he learns simple addition. On the other hand he can learn to subtract by placing the eight bricks end to end in a line, and removing one at a time or two at a time, then counting those which are left; or saying, "Eight less one is seven," "Eight less two is six," etc. The mother or teacher can do the counting, until the child learns by imitation and by reasoning to count for himself. A simple rhyme is sometimes an aid in counting, as,—





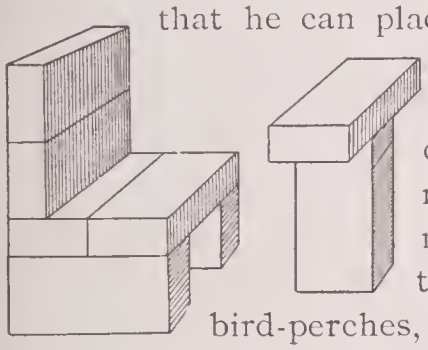
Eight little bricks I see;
Take five away and then there'll be three.

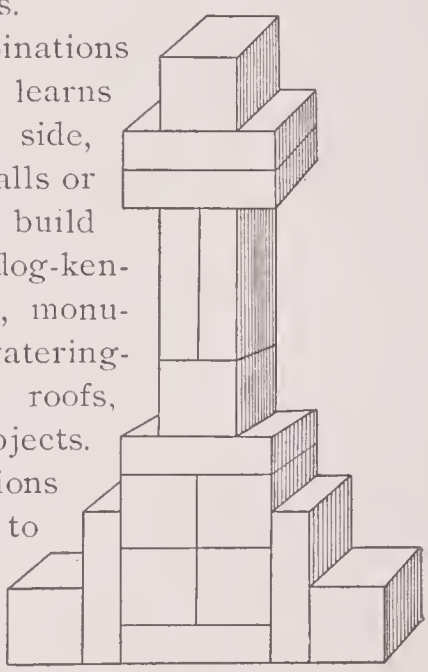
or,—

Eight little bricks like soldiers tall;
Count them one and count them all.

The forms of beauty which can be made with the eight bricks are elaborate and numerous. The child should be encouraged to invent a new one each day; or, if there are several children, they can compete with one another in the forming of original designs.

The forms of life which can be symbolized by combinations of the eight bricks are innumerable. The child soon learns that he can place his bricks on end, or on the side, or can use them for roofs or walls or supports. From them he can build chairs, tables, summer-houses, dog-kennels, sheds, arbors, guide-posts, monuments, staircases, bedsteads, watering-troughs, houses with slanting roofs, bird-perches, and a hundred and one other objects.



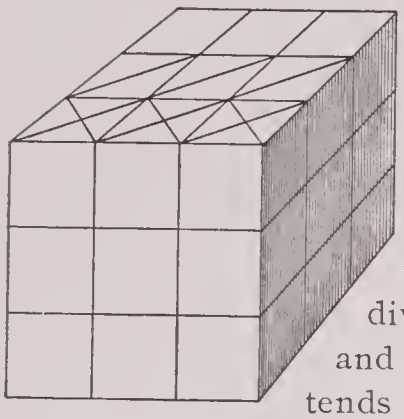


As the little architect grows more skilful, and his visions of building become more complex he should be allowed to use the cubes of the third gift in combination with the bricks of the fourth. He can now attempt villas and colonnades, two-story houses, tunnels, and towers. With the combination of bricks and cubes, elaborate forms of beauty can also be made, the child learning the value of contrast from the juxtaposition of the brick and the cube.

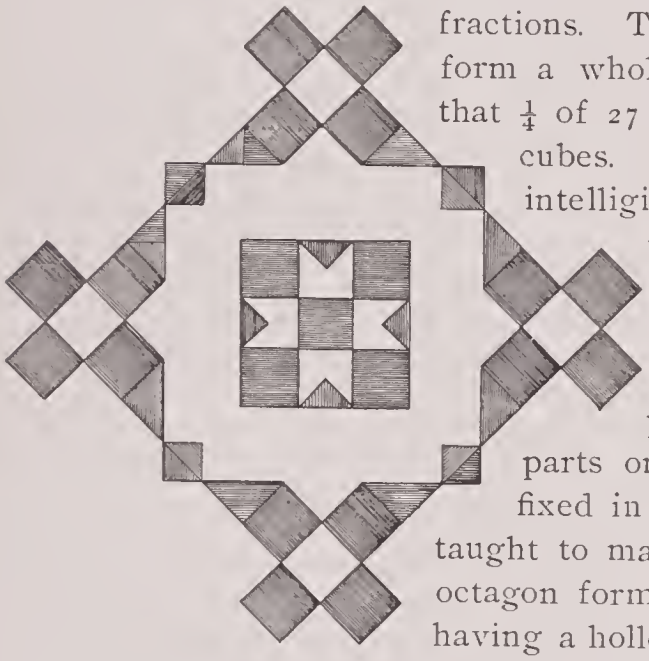
FIFTH GIFT

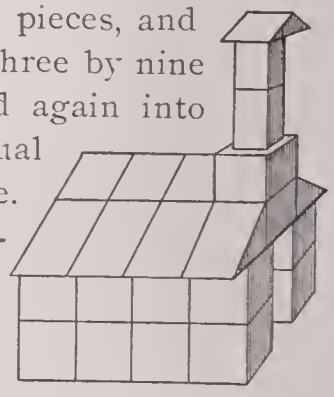
In Froebel's fifth gift, which, as a rule, is of use to a child only after he has passed his fifth year, more complex methods of education are taken up. This gift consists of a three-inch cube, which

being divided equally twice in each dimension produces twenty-seven equal cubes, each cube being of the same size as those of the third gift. Twenty-one of these cubes are solid; three are divided diagonally into halves, and three twice diagonally into quarters, making thirty-nine pieces. The novelty of this gift consists therefore not only in the greater number of pieces but in new forms, which introduce the oblique line and the triangle. The element of form is thus extended; while the division into thirds, ninths, and twenty-sevenths, extends the mathematical knowledge of the child — the subdivision introducing him to fractions and to the forms of the inclined plane. The elements of geometry are inculcated through the uses of this fifth gift. The ideas of multiplicity and diversity are fixed in the child's mind.



The forms of knowledge developed in this gift have reference not only to the addition, subtraction, and multiplication of units, but of fractions. The child learns that two halves of a cube form a whole; that the half of 27 cubes is $13\frac{1}{2}$ cubes; that $\frac{1}{4}$ of 27 cubes is $6\frac{3}{4}$ cubes; that $\frac{1}{12}$ of 27 cubes is $2\frac{1}{4}$ cubes. He learns these facts not from dry and unintelligible figures on a slate, but from the little playthings in his hands. He can count the quarters of a cube, because he sees them before him. He should be encouraged to count them over and over, to make every possible division, until the relations of these parts one to another, and to the whole, are firmly fixed in his childish mind. Advanced pupils can be taught to make complex geometrical figures, such as an octagon formed of eighteen triangular pieces, and having a hollow center; an oblong of three by nine cubes, which can be changed into a rhomboid, and again into a trapezoid. By dividing the trapezoid into two equal parts, and rejoining them, a pentagon can be made. The entire cube can be made into an oblong hexagon, or an oblong octagon two cubes high, or a pentagon three cubes high with three right angles.



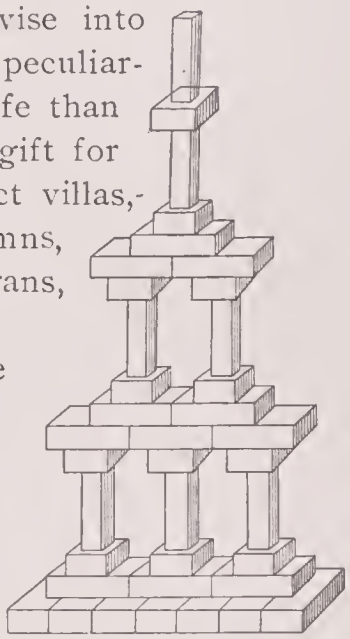


The forms of beauty admit of the most complex treatment, every variety of kaleidoscopic design being possible through the combinations of cubes and triangles.

The forms of life in the fifth gift are equally complex and varied. The child has now become a master-builder. The triangles furnish him with sloping roofs; and with a variety of forms hitherto unknown to him. Castles and towers, and three-storied houses, rise beneath his hands.

SIXTH GIFT

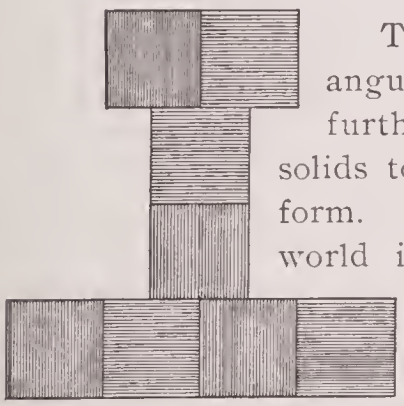
The sixth gift is a cube divided into twenty-seven oblongs, of the same size as those of the fourth gift. As the fifth gift is a development from the third, so is the sixth gift a development from the fourth. Three of these oblongs are divided lengthwise, each into two equal pillars; six of the oblongs are divided crosswise into twelve squares, making thirty-six pieces altogether. The peculiarity of this gift is that it admits of many more forms of life than forms of beauty and knowledge. It is preëminently the gift for the advanced child architect, out of which he can construct villas, pedestals, park-gates, triumphal arches, monumental columns, look-outs, stoves, kitchen-closets, book-cases, church organs, baptismal fonts, and high altars.



The most important characteristics of the sixth gift are

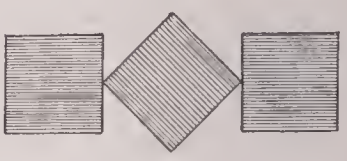
a. Irregularity of division.
b. Introduction of column.
c. Extent of surface covered by symmetrical forms.
d. Greater inclosure of space in symmetrical forms.
e. Introduction of distinct style of architecture.
f. Greater height of life forms.
g. Severe simplicity of life forms produced by the rectangular solids.

SEVENTH GIFT

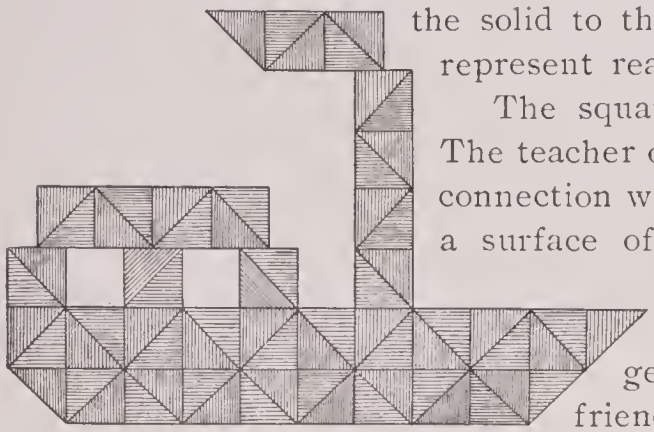


The seventh gift consists of square and triangular tablets. In this gift, the child passes still further from the concrete to the abstract; from solids to planes; from the form to the idea of the form. He is prepared by this gift for the abstract world into which he is introduced when he goes to school. Froebel understood that the abrupt transition from the nursery of concrete playthings to the school of abstract ideas and conceptions is often injurious to the child's mental growth. He wished to make that transition as natural and as easy as possible, therefore he originated the gift of tablets.

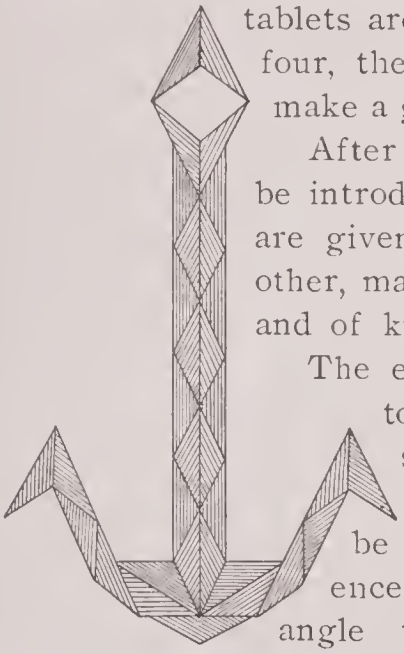
This gift is the direct outgrowth of the others. In the first gift of six balls the child was introduced to color and to perfect form; in the second, the ball, cylinder, and cube, to ground-forms of contrasting shapes; in the third, the divided cube, to a whole and its parts, similar in form, but differing in size; in the fourth, to difference of form in the parts; in the fifth and sixth, to still greater differences of form in the parts by the subdivisions of the whole.



Up to the seventh gift, the objects are solid bodies; with this gift begins the spiritualizing of the material by the transition from the solid to the plane. With the tablets the child cannot represent real objects, but only pictures of objects.

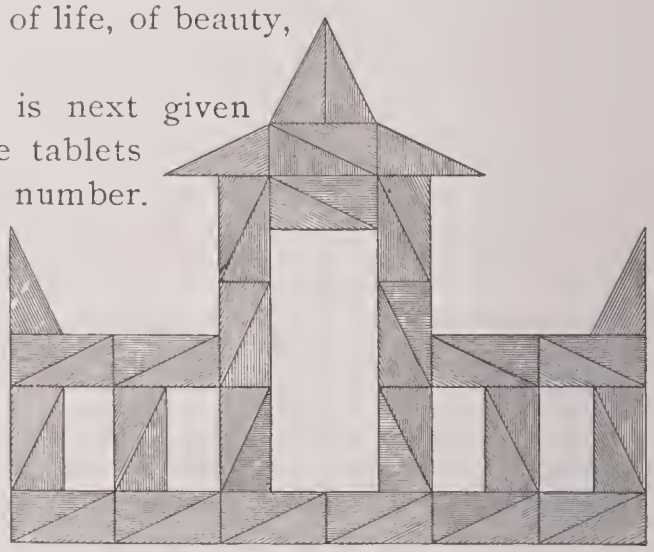


The square tablets are first presented to the child. The teacher or mother must impress upon his mind their connection with the cube by placing one of them against a surface of the cube, and then removing it, as if it were a section of the solid body. Next two square tablets should be placed together, that the child may recognize an old friend, the oblong. Every combination of the two square tablets should be attempted by the child before the three square tablets are given to him. After having had three, he should have four, then six, then eight. With the eight square tablets he can make a great variety of forms of knowledge, of life, and of beauty.



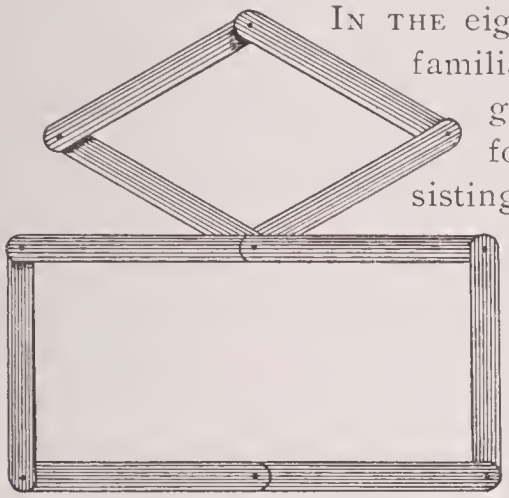
After he has thoroughly mastered the square tablets, he should be introduced to the right-angled isosceles triangle. Four of these are given him at first, then eight. He combines them with each other, making further forms of life, of beauty, and of knowledge.

The equilateral triangle is next given to the child. These tablets should be nine in number. The child should be shown the difference between the right-angle triangle and the equilateral triangle, and should be taught to combine these triangles into forms of life, of beauty, and of knowledge. The child is next introduced to the right-angled scalene triangle, or right-angled unequal-sided triangle. A vast number of combinations can be made from triangles of this shape.



The obtuse-angled triangle is next given to the child. This is the fourth and last of the series of triangles. After combining the triangles of this form, all four forms of triangles may be used with the squares to make mathematical designs or forms of life, or of beauty. By coloring the tablets, many beautiful kaleidoscopic effects may be obtained.

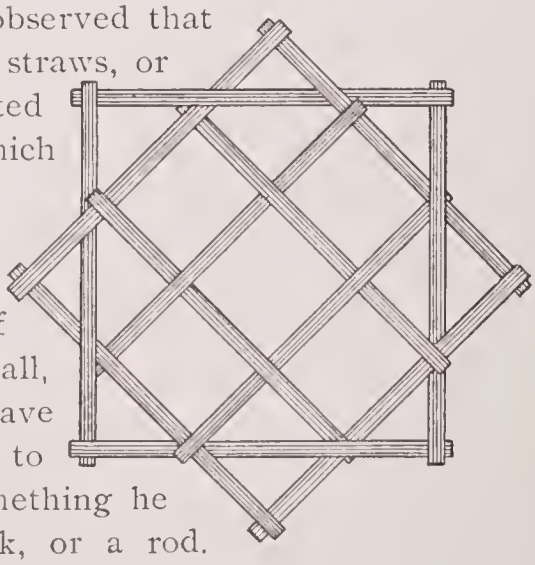
EIGHTH GIFT



In the eighth gift the child, being now thoroughly familiar with the plane, is introduced to a still greater abstraction, the line. This is found in the connected slat, a form consisting of ten slats, each four inches long and half an inch wide; each overlaps the next one at the extreme end, and is fastened to it with a rivet. All the slats may thus be folded together, or be moved into various forms such as right angles, acute and obtuse angles, triangles, pentagons, squares, trapezoids, etc.

NINTH GIFT

The ninth gift is the disconnected slat, and the use to be made of it is slat interlacing. In this gift, as in the others, Froebel has considered the natural instincts of children. He observed that they plaited grasses together, or willow sticks, or straws, or rushes. He gave them, therefore, the disconnected slats of various sizes, widths, and textures, by which they could gratify their love of plaiting.

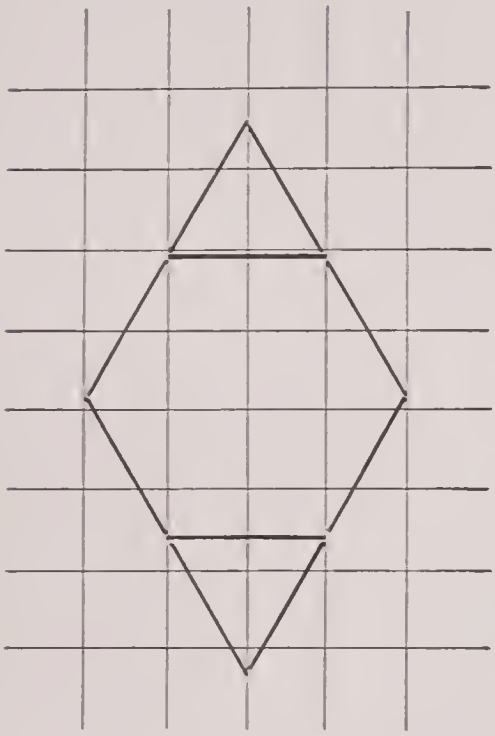


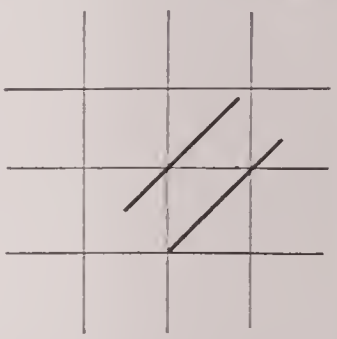
Slats may be given in bundles of ten or twelve, and may be of wood or of paper. If of paper, many colors can be employed, and much variety of design be thus secured. The wooden slats are small, elastic, and easily handled. The child should not have too many of them at first. One should be shown to him, and he should be asked to compare it to something he has seen. He may say it is a rafter, or a plank, or a rod. When he has become interested in its qualities, he should then receive another little slat and be taught to place them at right angles to each

other, to make a right angle with them; then an obtuse, then an acute angle; then to place them parallel to each other. When he has exhausted the combinations of two slats, he should have three, and be taught to make a triangle of them; then four, and be taught to make a square. With five he can make a pentagon; with six, a hexagon, lattice work, and a variety of other forms. Additional slats give him additional scope in the forming of designs.

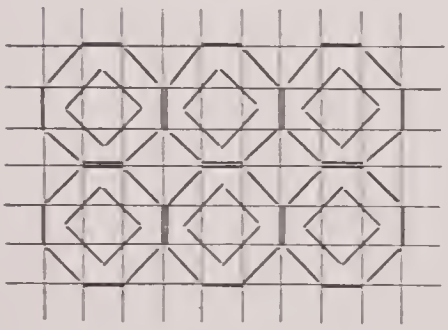
TENTH GIFT

The tenth gift consists of a number of little sticks, which may be one, two, three, four, or five inches in length. These sticks should be given to the children in bundles of five and ten. Before beginning to play with them, the kindergartner tells the children how the little stick was once a part of a tree in the forest; how the tree was cut down; then sawed up into logs, and the logs then used for many things; for planks and boards, and even for the little sticks, so that the little sticks really came from the great forest tree. The children should be asked what the little sticks look like. After their interest is awakened, then they should proceed to lay the sticks. Two sticks should first be laid in as many relative positions as possible; then three sticks should be used; then combinations of four should be made; then of five, and six, and eight; then of ten.

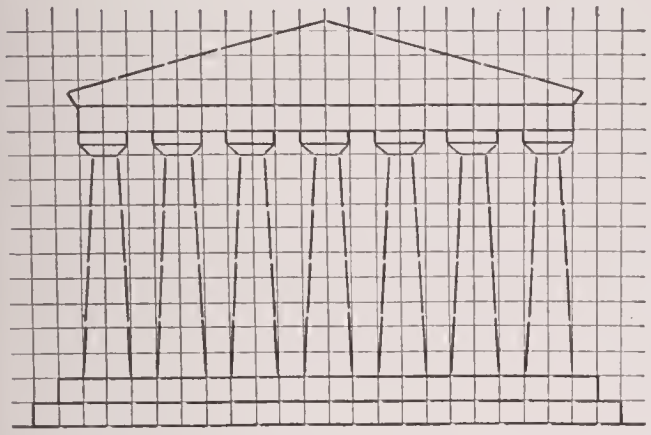


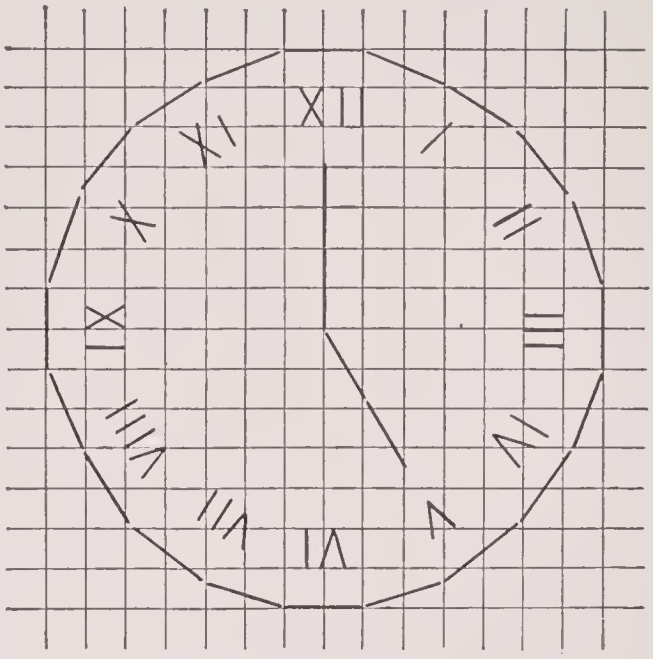


Addition and subtraction may be taught by means of the sticks. The ten may be placed in a row, and three removed, or four removed, the child being called upon to state how many sticks remain. He may say "Three sticks from seven sticks leave four sticks" or "One stick and seven sticks make eight sticks." The Roman figures may be made; and the face of a clock, with two sticks for the hands. By moving these around the children can be taught to tell the time. Arabic figures and the letters of the alphabet can also be made, and the children thus be taught to spell.



Forms of life, chairs, tables, stars, steeples, bureaus, gable roofs, can be made with the sticks, the child thus learning the first principles of line drawing. More elaborate forms, such as the façade of a Greek temple, can

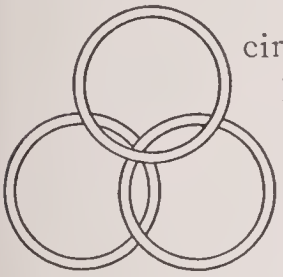




be attempted when the child has become expert in the manipulation of the sticks. He can also learn to make symmetrical patterns for a carpet or wall-paper design by repeating a set figure indefinitely. These figures admit of great variety of design.

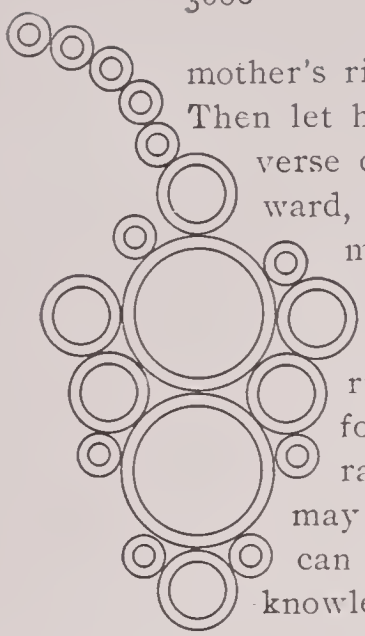
ELEVENTH GIFT

Of this gift Froebel wrote: "The Egyptian temples show us only straight-lined figures, which consequently show mathematical relations. Only in later times appeared the lines of beauty, that is, the arched or circular lines. I carry the child on in the same way."

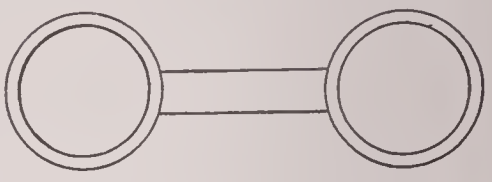


The material used in this gift are wire circles and half-circles of three different sizes, one inch, one and one-half, and two inches in diameter. Twenty-four rings of each size are contained in each box; and forty-eight half-rings of the three sizes corresponding to the whole rings. This gift embodies the curve, illustrating the circumference of the sphere, and the edge of the cylinder.

The mother or teacher should first tell the children what the rings are made of; then she should explain what a wonderful and useful metal iron is; how it enters into the composition of engines, stoves, fences, grates, gates, locks, and a thousand other familiar things. The child should first have one whole ring and two half-rings to play with; should be asked what the whole ring is like; what the half-rings are like. He may say that the whole ring is like a hoop, or like his

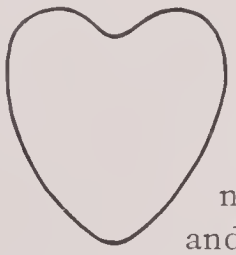


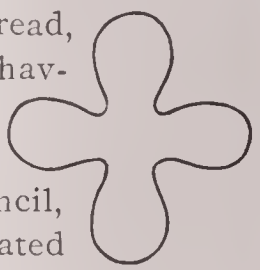
mother's rings, or like the moon; that the half-ring is like an arch. Then let him combine the two half-rings in various ways, making reverse curves, curves to the right, to the left, upward and downward, and opposite. Next he may make figures with two large rings, or with a large and a small ring, or with three large rings, or with three rings of graded sizes. He may then use four large rings; then five or six large rings. Such elaborate forms of life as a pair of scissors or a bunch of grapes may be made by combining rings of varying sizes. The rings can also be combined with sticks to make forms of life and of knowledge.



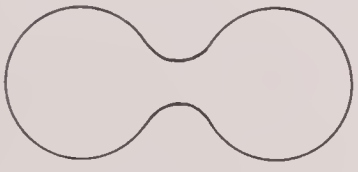
TWELFTH GIFT

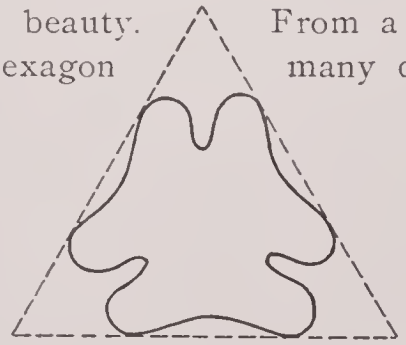
This gift, in which a wet thread plays the principal part, is of great use for teaching a child delicacy of manipulation. He needs first a red-colored cotton or worsted thread, about eighteen or twenty inches long, having its ends tied together, a slate the surface of which is cut through with a network of squares, a cup of water, a pencil, and a sponge. The thread is first saturated with water, until it is pliable and can be easily shaped to any form; then it is laid on the slate, and with the aid of a sharp-pointed pencil it can be drawn into a variety of beautiful designs. A square should first be made. By drawing the sides of the square toward the center, the design of a cross appears.





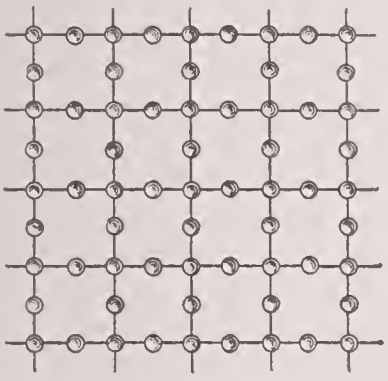
From a circle, a bean or heart-shaped figure can be made, or a ladyfinger, or a silk winder. From an oval, a dumb-bell can be made, or several designs of beauty. From a triangle, from a pentagon, and from a hexagon many designs of rosettes can be evolved. Forms of life, caps, gloves, shoes, bedsteads, chairs, cups and saucers, pitchers, etc., can also be made from the primary geometrical forms. The thread gift constitutes indeed a preliminary course in drawing. It trains the child's faculties, and prepares him for more serious work.

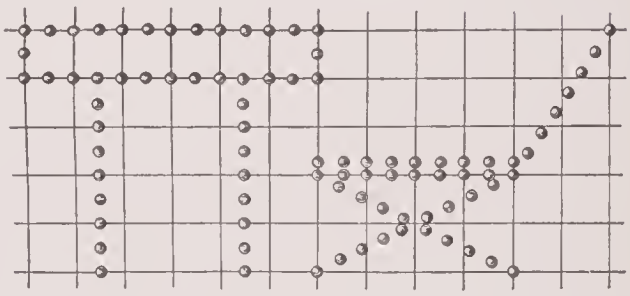


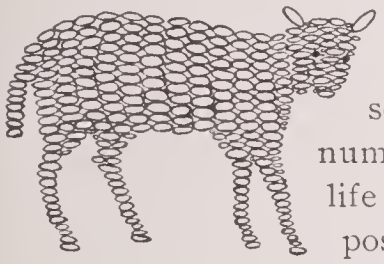


THIRTEENTH GIFT

THE thirteenth gift consists of the point, an abstraction which has in reality no dimensions, but which may be represented by something tangible, as a pebble, a seed, or a dried pea, by anything round and small, which the child can grasp with his fingers, and combine into designs. If seeds are used, the child should be told how they are planted, and what springs from them. Then the seeds should be placed in rows on the square lines of a table-top or slate. He may form first the outline of a square by placing four seeds at four corners; then these lines may be filled in with other seeds; then the lines which divide the square may be treated in the same manner. While the child is making the square, he should count the seeds, that he may have an even number on each of the four sides of the square, and an even number in each of the dividing lines. Forms of life may be made by placing the seeds in various positions on the squares; forming a bedstead, a ladder, a pair of scissors, a table, or a chair. As the child becomes more skilful, he can fill in the design, making a solid figure; a sheep may be made in this way, using white split beans for the body, sago and shells for eyes, ears, mouth, tail, and feet.







THE OCCUPATIONS

EVERY gift and every occupation of the kindergarten is fitted to produce large numbers of finished articles that are either useful, or beautiful, or both. The number of such articles in the aggregate creates an embarrassment of riches. All of these should be put to some use, for it is one of the first principles of the system that there shall be no waste, and therefore none of them should be thrown away.

Because of some perception of this duty, in every family where there are several children who attend kindergarten there are appalling collections of useless, fragile, and yet precious articles. Yards and yards of paper daisy-chains hang about on gas-fixtures and collect dust. Red circles meant to represent apples, sewing cards without number, paper mats that have cost hours of toil and are of no avail, multiply past human endurance. Every little while the family is called upon to go into ecstasies over some new specimen of the child's skill in pasting and cutting, and if the ecstasy is a trifle late in putting in an appearance, a little lip trembles and bright eyes are veiled in tears.

There is no escaping the fact that the things must be welcomed and preserved. Costing about two cents apiece in money, they cost incalculably in effort, and have a genuine value, both as proof of the child's loving good-will, and as a record of his advancement. Provide, then, a place for their orderly bestowal. The portfolio is excellent for the cards and flat articles; a large box containing smaller boxes, each duly labeled, for the things which must not be crushed. The chains and pictures may hang about in plain sight for a day or two, and then be carefully put away for future reference. Each article should be dated. Such care reacts upon the quality of the child's work. He feels that his effort is honored, and that therefore a greater effort may be worth while.

When such a festival as Christmas approaches, the child worker has the most eager interest in the coming event. There are many friends to provide for, and he may make for each some gift, in token of love. Under all circumstances, it is better for the giver to make his own gift if possible. The gift is in this case intensely personal. It comes from the child's hand and brain as well as from his heart. This is what a gift should be. "The gift without the giver is bare." A present that is merely selected in a store, and paid for with the

father's or mother's money cannot possibly have this sentimental value. Let the child, then, make his own presents, but let him make them well.

The making involves careful planning: First, there are presents to make for the family. Every person, from grandmother to baby, must be remembered. Then there is the tree, and indeed the entire house to decorate. The chains of alternate white and red papers, or other brilliant colors, may be used in great profusion for festooning, and no ornamentation could be gayer or prettier. Mats, transparencies, and other decorations are suitable for preparing the home

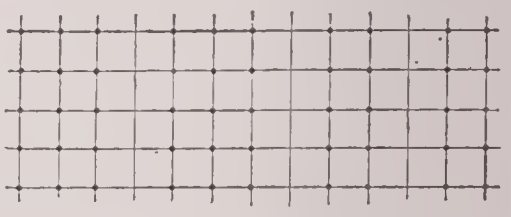
for the brief and mysterious visit of Santa Claus. This work will keep the hands busy,—and therefore out of mischief,—the mind active, and the heart happy for many weeks. The best part of it is that when Christmas comes it is found that no festival is so satisfactory as that in which the children bear a large part of the preparation. The warmth of heart, the cementing of love, pay back a generous return for all the time, money, and care which have been invested in this training.

FIRST OCCUPATION: PERFORATING OR PRICKING

The general principles which underlie the occupations are the same as those that underlie the gifts, and the purposes also are in both cases the same. But they work by opposite methods. The gifts begin with the solid, and work down to the point, whereas the occu-

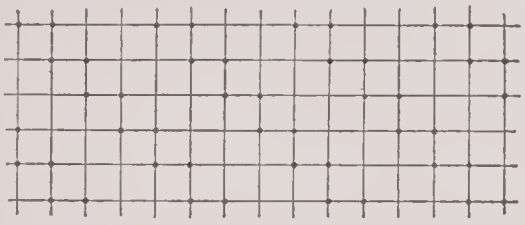
pations begin with the point, and by a process of synthesis, work through the line and the plain surface up to the solid. Thus we start with unity, and work through diversity back to unity. The gifts after their transformations return to the solid form from which they started, but in the occupations the transformations effect a change of the material itself, so that it cannot return to its original form.

The first occupation is perforating, and it deals with the point. The materials needed are:—



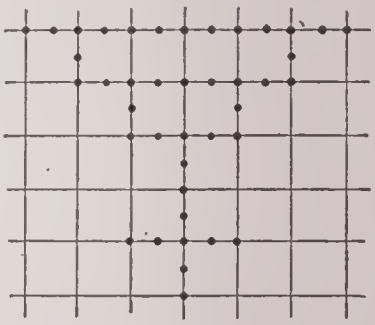
1. A needle. This should be about an inch long, the thickness of a darning needle, and firmly inserted, like a brad-awl, in a handle.

2. A piece of cardboard covered with lines about a quarter of an inch apart and at right angles, the whole covering the cardboard with squares.



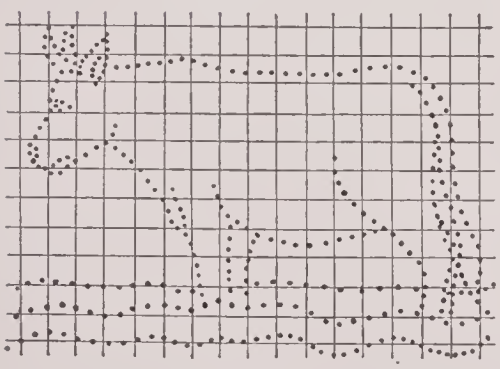
3. A perforating board made of thick felt or a dozen thicknesses of blotting paper. This should be about 7 x 9 inches in size. The purpose of this is to receive the needle as it passes through the cardboard.

In introducing this occupation, it is easy to rouse the children's interest by telling them about paper,—of what it is made, how it is made, what uses it serves, from the wrapping of a stick of candy to the manufacture of a car wheel.



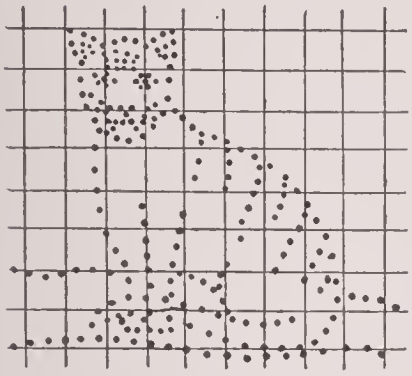
They will observe for themselves the differences in the paper, some coarse, some fine, some smooth, some like blotting paper, and they will understand how each kind is fitted for its own particular purpose.

A similar story may be told of felt, if that is used as a perforating board. The children are then told to hold the needle straight up and down, not slanting. This will make perfect work, and each child should understand the importance of this from the first.



At this point, the child should be taught to think before he acts. His impulse will be to perforate the cardboard first and think afterward, but when the correct habit is formed it will go with him through life. If he makes his perforation carelessly, it cannot be erased. After he makes the single perforation, the exercise may be varied indefinitely. He will perforate the dots from right to left, from left to right, from top

to bottom, and from bottom to top. Then he will perforate two dots and skip the third, then three dots and skip the fourth. He will also perforate diagonally in one row, diagonally in two rows, and so on almost without limit. Some idea of what may be done in this matter can be had from the accompanying illustrations.



When the first perforations are made, the child holds his paper against the light and, seeing the bright points of light, calls them stars. These never fail to delight the young worker. Some points of advice may here be given:—

1. Perforating should not be introduced too early — generally speaking, not before the age of five.

2. Do not let the children work at this too long at one time nor too often — say once or twice a week.

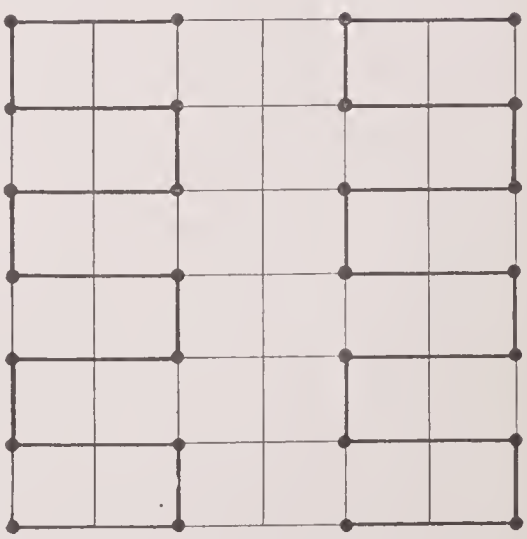
3. The light must always be good.

4. There should always be free conversation about the work. The conversation is a part of the instruction.

The finished work will be a pleasure to the child, and doubly so if he finds that it is a pleasure to others. It may be hung in the window or in some other way used for decoration, and that will lend it importance and dignity in his sight.

SECOND OCCUPATION: SEWING

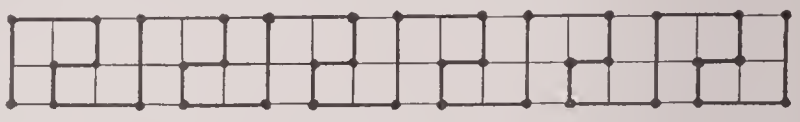
Sewing does not belong exclusively to civilized communities. It is universal. Even savages sew skins of animals by means of fibers which answer for thread. Embroidering is common among aborigines. Children are naturally interested in sewing. When the mother is engaged in this occupation, the child will be greatly pleased to be allowed to imitate her and have sewing materials himself. Sewing is naturally allied to perforating. It unites the training of the hand and eye. The eye sees the hole, and the hand finds it from the reverse side of the cardboard, and thus the two senses are educated together, while the needle is plied back and forth.

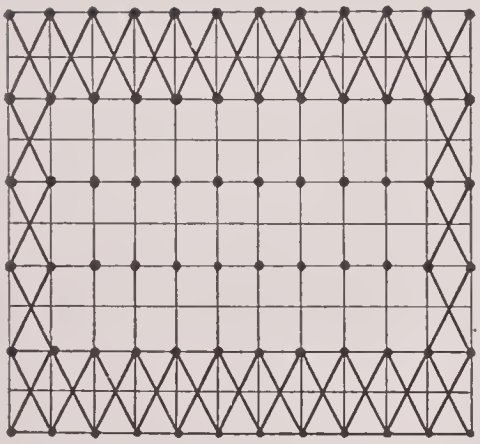


The materials for sewing include a large worsted needle, and threads of double zephyr, or knitting silk, of various shades and colors. The zephyr should first be selected for the child. At a

later date he may make his own selection. As soon as he can do so, with taste, he should be encouraged to do it, since this is an effective way of cultivating his sense of beauty.

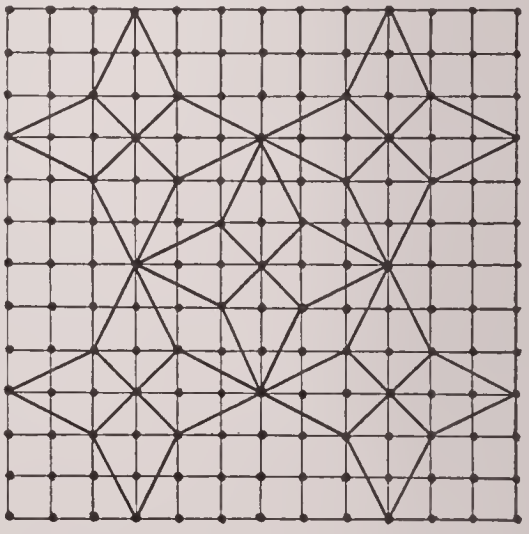
The cardboard should not be punctured by machinery. This takes away from the child an important part of his lesson. He should perforate it for himself. The lines forming the design should be marked upon it, simply because the child cannot at first do it himself. But that which he can do, he should do. So let him begin with the perforations. However faulty his work is at first, let him never get away from the idea that he can do better and better. Let him keep in mind the beauty of the design, which he must not spoil by his carelessness. The child should also be encouraged to exercise his own inventiveness, and to make his own designs as soon as possible.





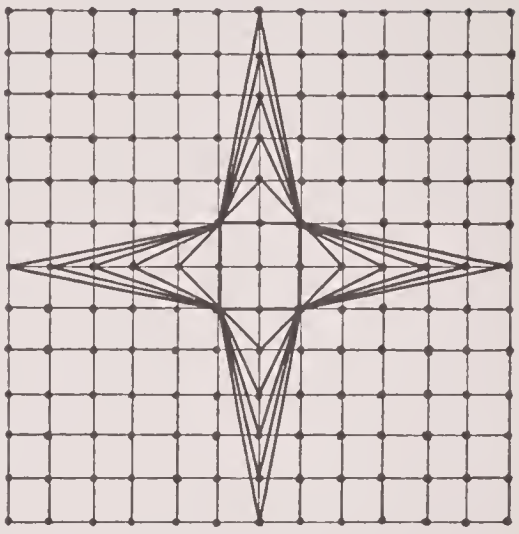
A conductor's punch makes holes of about the right size for the first sewing. The holes made by the needle perforator are too small. To sew through them strains the eye and taxes the young muscles of the fingers. Too close an application to small sewing has been found to lead to nervousness, and therefore in advanced kindergartens large perforations and double worsted, or sometimes baby ribbon, are substituted for the small cards and fine perforations originally used.

Leatherette is now sold at all the kindergarten supply stores, in a variety of soft and attractive colors. It is easy to perforate, and does not easily tear. Pretty and serviceable portfolios, pen-wipers, needle-books, and many other articles may be made from this useful material, suitably decorated with embroidered designs.

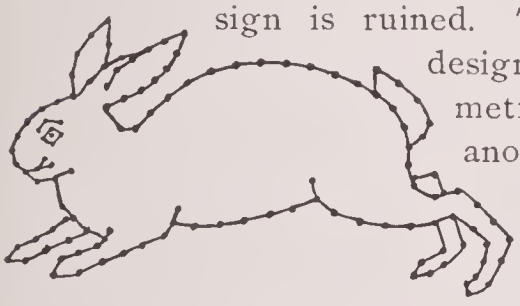


The purpose of the kindergarten sewing is to train the mind, not merely the fingers and the eye. Sewing, especially plain sewing, is valuable, in and of itself, but in the scheme of the kindergarten it is a means to an end —it is the means of training the mind. The parent or teacher must never overlook this purpose. Its educational value consists in its obliging the child to think, to be attentive, to count, and to plan.

The number of tasteful designs for the occupation of sewing is so great, that it is not possible even to catalogue them within the limits of this volume. A few patterns are here given, since a glance at them will give a clearer idea of what can be done than one can convey in many pages of written description. These patterns represent the first, the middle, and the later stages of this kind of work. It may be added that increased variety can be secured by the use of a diversity of colors.



First among the lessons that may reasonably be taught by means of the second occupation, is order—Nature's first law. In this occupation everything must be done according to rule, or the result will be spoiled. Then comes an appreciation of the importance of number. The worker must count correctly, and if he mistakes a perforation the design is ruined. The next lesson is symmetry. These designs are so arranged as to form a symmetrical whole, one part corresponding with another. Accuracy and neatness follow. If the colors are to blend harmoniously, the needle must be inserted precisely at the proper place. Then the thread must not be pulled impatiently or jerked, as it may tear the card, or snarl the thread, or otherwise injure the work. These intellectual and moral results of the second occupation prove its importance, from an educational view of the work.



THIRD OCCUPATION: DRAWING

A KNOWLEDGE of drawing is useful to all people, not to artists only. The ability to express ideas in this way is of value to architect, carpenter, gardener, cook, tailor, or teacher. The child has an instinct for drawing. He loves picture books. He loves the rudimentary pictures with which his mother embellishes her stories and songs. From earliest infancy this instinct is displayed. When the window pane is clouded with mist, the baby loves to draw his fingers over it, streaking it for the housekeeper, but making rude pictures which perfectly express his own mind and are a source of keen satisfaction to him. If the mug of milk is spilled on the table, the child is almost certain to draw his finger through it, thus again making rude pictures. The blackboard, which ought to be in every

nursery, is used almost every day, and many times a day. This shows that the child has an inborn desire to represent by the means of drawing the ideas that crowd his mind.

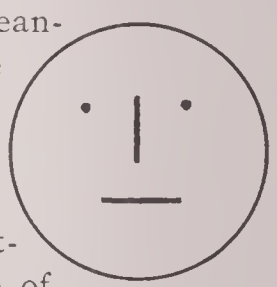
Of this instinctive desire Froebel says: "This inner demand of the child to produce and draw, to show what he can create, is in conformity with the creative power of nature, which brings forth everything from air, light, and earth. It is in drawing, particularly, that the child proves himself to be a free and capable creative being. While thus occupied, he does not need to use much physical force, and has a material which he can easily master: hence we are enabled to see what his power of will, his mind's eye, desires to create. Drawing, therefore, is a most important means of culture, and as such demands —

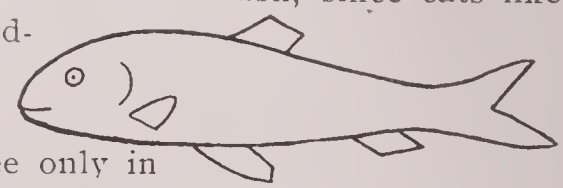
Observation,
Attention,
Recollection of what has been seen,
Power of invention,
Logical thinking.

Drawing enriches the mind and spirit with clear ideas as well as correct and beautiful forms, and demands a free, active use of the senses — in particular, sight and feeling."

The child will begin with the easiest form of drawing, which is in outline. Let him place his hand on the slate and draw the outlines of it. A few simple marks may be added to his outline to represent the nails and wrinkles of the knuckles, and the finished product will be a source of delight to the child. Then he will outline various other objects, such as a coin, a pair of scissors, a table knife, a key.

The child loves to have his chalk or pencil go round and round. Utilize this desire. Let him make such marks on the blackboard or on a piece of paper; it is easy to give meaning to the circular marks by inserting a couple of ovals and calling the whole a picture of a bird's nest. A circle may be made into a fair picture of the moon by the addition of two lines and two dots. A very satisfactory picture of a kitten may be made by the use of two ovals and a few curved lines. And a fish, since cats like fish, will be an interesting addition.





After this the child will draw certain things which he can see only in imagination. This imaginative drawing, so long regarded as of the least importance, is in reality of the greatest. It is the beginning of

creative art; and that it shows itself long before accurate representation of commonplace objects, is significant of its final place in the scale. We have come to know that these earlier impulses are the most important. It is as if the faculties,— of self-preservation and imagination, for example,— which were most necessary to our adult life, most necessary to the life of society, struck the deepest roots. The early appearance and the persistence of imaginative drawing, therefore, point to its value. Mere copying should never be allowed to take its place; but closer observation, a nearer approach to truth, should be encouraged.

Many plans for instruction have been worked out, some of them based upon charts that can be secured from any good supply store. But much better than any such artificial progression, are the child's own spontaneous efforts to represent what he sees, or express what he imagines. Help him to a stimulating dissatisfaction with what he has accomplished, and encourage him to observe more and more closely. The first attempts at a horse, for example, will probably be little more than a body, a head, and four legs. Presently the tail will be added, then the ears, the eyes, the hoofs. The body will round out, and the front legs be differentiated from the hind legs. Little by little the rude outline will increase in accuracy, and the horse will begin to show signs of life and motion. This natural evolution upon the blackboard is the picture of the evolution of an idea. To force a true picture of a horse upon the board, before there is a true image within the mind, is to inculcate a kind of formal hypocrisy.

The educational influence of such drawing is not far to seek. While the child is producing these various forms, his fingers gain skill, his eye is trained in accuracy, and his mind is busy in creating or developing ideas. He first sees, then does, then knows; he learns by doing, and his knowledge is his own. The work is creative and, therefore, strengthens his power of will. Froebel says of this: —

«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 man, *i. e.*, the representation of the human figure.»

Against this logical deduction of Froebel, however, stands the practical experience of the mother and teacher — of all who have ever observed children. Almost the first thing the child attempts is the human figure. It is the thing he is most interested in, and therefore

he does his best to express that interest. His drawing seems to be an effort to grasp his impressions more clearly by uttering them. He draws a picture of a man, compares it with the real man, perceives its inadequacy, though, of course, very vaguely. He finds, perhaps, that the real man has fingers, which his picture-man is without. He adds the fingers, compares again, and so studies the man as he studies the horse. First comes his interest in man, then in animals, then in surroundings, and probably last of all in the flowers and pretty designs which he is usually expected to do first. Froebel is nevertheless right in his conclusion, for the final aim of all art is indeed the representation of man; but it is not the representation of the human figure, but the expression of the human spirit — the human spirit in contemplation of itself and of the world it lives in.

FOURTH OCCUPATION: COLORING AND PAINTING

Color is introduced into the kindergarten with the first gift, in which the six balls are of six different colors. It presently becomes evident, however, that this is not enough. The love of color, roused by play with the balls, as well as by increased appreciation of the similar colors in the natural world, must be utilized — it must bear fruit in action. Merely to contemplate and enjoy color is sensuous at best.

Therefore the children in kindergarten are supplied with colored crayons, boxes of water-colors, and blocks of drawing paper. The colored chalks give the quickest results, are soft, and easily used. But they get on the floor and the clothes, and children cannot be left safely in possession of them without some older person in charge. The water-colors, also, demand attention from the mother or teacher, but the result of unwatched work is not quite so disastrous. The chalks are chiefly used for blackboard drawing but they may be effectively used on coarse brown paper. The water-colors lose half their value if not used on drawing paper.

One of the simplest and most effective forms of painting is the stenciling of leaves and branches. In the autumn, when the children are eagerly collecting the bright-hued leaves, let them take a maple leaf and lay it upon a piece of drawing paper which has previously been prepared, by having been washed over with clear water and then allowed to dry. Fasten the leaf to the paper,— which in its turn should be laid upon a drawing board,— by means of small pins. Then take any chosen color and fill the space around the leaf with

a solid wash. Gold paint is particularly effective when applied in this way and children especially delight in it. After the painting, of course, the leaf is to be removed, leaving behind a white picture of itself against a colored background. The veins of the leaf may then be painted in.

Cardboard figures of animals and people can be cut out by older persons and treated in the same way. By grouping the various figures, all sorts of attractive designs may be formed. By washing the lower part of the paper in brown and the upper part in blue, men and animals will seem to stand upon the ground, with the sky behind them. The juncture of the brown and the blue will then be the first suggestion to the child of the way to represent the horizon line.

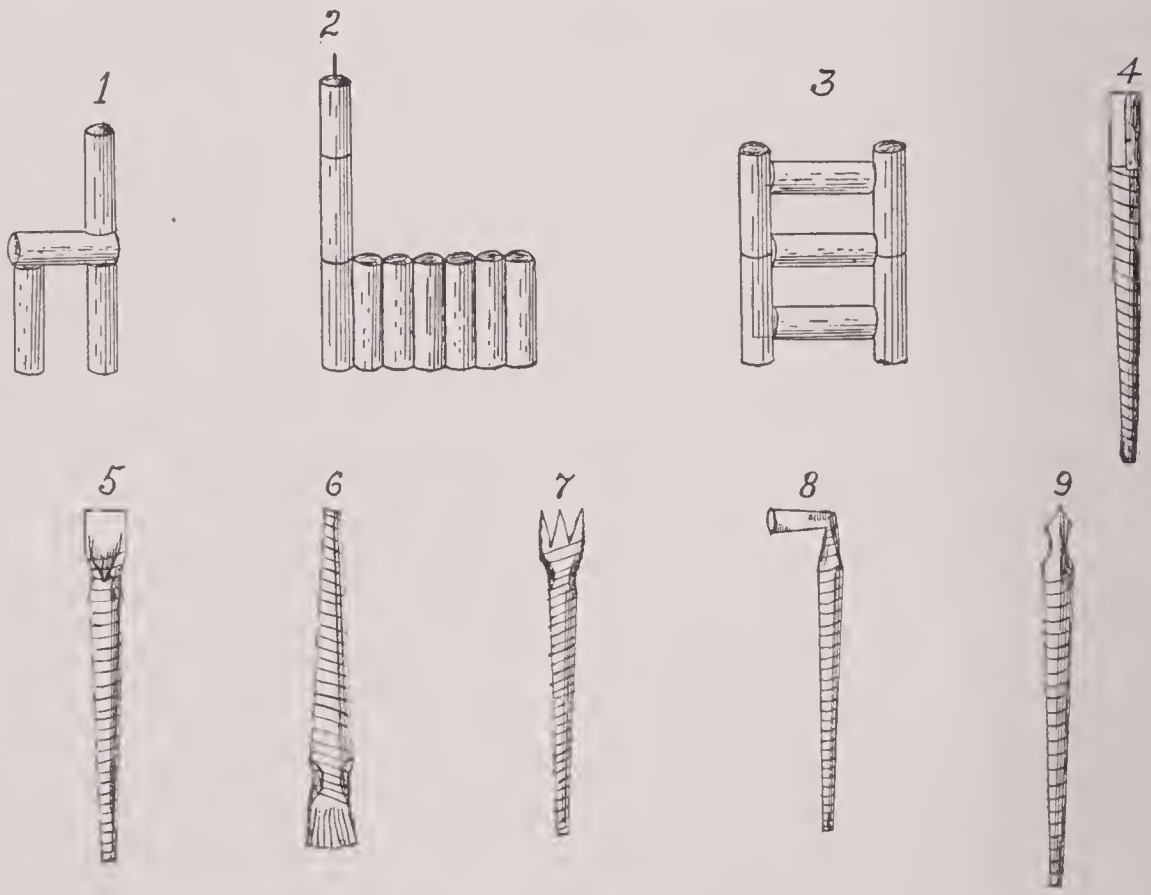
Stencil borders for the playhouse walls or for the ornamentation of the portfolio may be made by older pupils. In this case, a design is drawn upon cardboard, cut out with a sharp knife, and the color-wash applied through the openings. Very young children can do the washing in, the older children having made the patterns.

The use of painting is, of course, to represent the surface of things. Drawing represents the outline, modeling the form, and painting the surface. Stenciling gives the feeling for surface by what it does not do, rather than by what it does. The child's surprise at the result of this leaf-work is always complete. Repeated many times, he is bound to distinguish the idea of surface from that of outline, or of solidity, and thenceforward to deal with it more intelligently.

The way for real painting having been broken in this fashion, give the child his paints some day when he is full of a story he has heard. Help him to prepare his paper, for without proper preparation his efforts will fail to bring forth the best results. Give him a little bowl of clear water, brushes of two or three sizes, and an old piece of muslin on which to wipe them. Let his box be fitted up with paints that are of a fairly good quality. Most public school stores keep satisfactory paints for about thirty-five cents a box; no paints cheaper than this are worth buying at all. Having thus supplied him with ideas and materials, leave him to work out the problem of representation by himself.

As long as he is satisfied with objects in the flat or without perspective, let him remain so. When he progresses beyond this stage the directions in Volume VI. will be found helpful. In the earlier years he needs little more than the knowledge of the horizon line and the general fact that objects grow smaller as they retreat into the distance.

Those who have seen the painting by children who have not been taught, but encouraged to express themselves in color, are continually surprised at the excellence of the results. Faulty as the arrangement and perspective must be, and absurd as the coloring often is, the air of naïve life-likeness,—of a sort of primitive innocence,—which often characterizes these productions is most winning. But if the results on paper had no charm at all except for the young artist, the occupation would still have its great educational value. Not only would it open the eyes more fully to the world of nature, the heart to nature's secrets, but it would also open the mind to the great world of art.

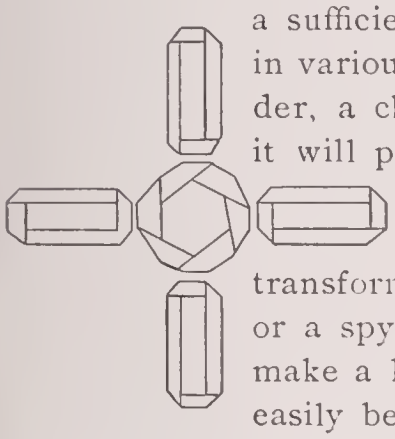


FIFTH OCCUPATION: PAPER-INTERLACING

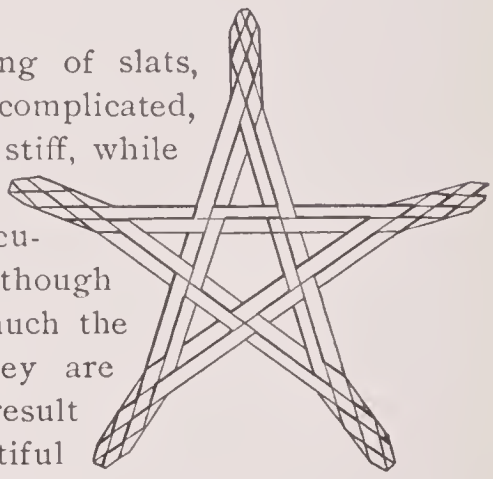
PAPER-INTERLACING was first devised for the purpose of saving materials which would otherwise be thrown away. "No material," said Froebel, "should be thrown away as useless." The materials are strips of white and colored paper about an inch wide and of various

lengths. What these represent in the first place will depend on the imagination of the child. To the girl, they are likely to be ribbons. The boy may fasten one to a stick and call it a whip, for an imaginary horse. Or he may fasten it around his waist and call it a soldier's belt.

The strips should first be rolled tight into the form of a cylinder and the outer edge be pasted to keep it in shape. When there is a sufficient number of these cylinders, they can be used in various ways. They may be arranged to make a ladder, a chair, or a church. If the strip be not fastened it will partly unroll itself and will thus represent curls, which children hang over their ears. If the inner end be drawn out, the cylinder will be transformed to a horn which may be called a trumpet or a spy-glass. If the end of this be bent over, it will make a hammer or a pipe. A penholder and pen may easily be made. If the large end is flattened it makes a shovel. If it then be fringed, it makes a broom. A fork may be made in a similar manner.



The interlacing of paper is similar to the interlacing of slats, the chief difference being that the former is more complicated, and therefore adapted to older children. The slats are stiff, while the paper is pliable and can be bent at will. Further, the corners of the paper must be folded, and for accuracy this requires great care. But in the two cases, though the material is quite different, the forms in view are much the same. The figures produced are geometrical or they are founded on geometrical figures. These combinations result in a surprisingly large number of interesting and beautiful forms. To describe a considerable proportion of these would occupy more space than can be given in this volume, and so a few cuts are here reproduced simply to show what can be done.



SIXTH OCCUPATION: WEAVING

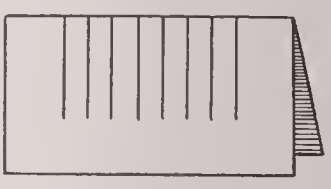
Weaving is the art of producing cloth, or other fabrics, by so interlacing threads as to form a continuous web. The art is doubtless of ancient origin, for it is by this means that all clothing, except such as comes from the skins of animals, has been made. Its first forms were necessarily coarse, for reeds, rushes, and fibers, were employed in the place of threads. The intertwining of these, over and under, makes coarse mats. As experience gave skill, the threads could be

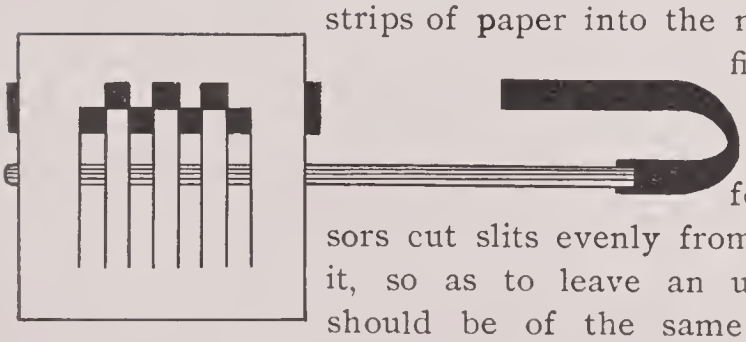
made longer and finer. So the first cloths were made. The child following the development of the race, must share in the occupations which educated it, and therefore he, too, begins to weave.

In these days, not only cloths but carpets and mats are woven in the loom. Threads of indefinite length are placed parallel, and these are called the warp. The transverse threads which are intertwined successively over and under the warp are called the woof or the weft. The shuttle is the instrument used for shooting the woof from right to left, forward and back. The threads now used are very different from the primitive fibers, and the fine silks of the twentieth century do not closely resemble the rude mats of prehistoric man, but they represent the evolution of these mats. Similarly, the child's crude weaving has, as a finished product, very little value; but his later clearness of thinking or completeness of sympathy represents the evolution of the ideas he gains by sharing the experiences of the working world.

The sixth occupation of the kindergarten, mat-weaving, is the beginning of this good end. Besides enlarging his share in the race life, the occupation demands certain intellectual operations. It compels him to count, to group, to find contrasts, and to reunite these contrasts. He may make an immense variety of patterns; and thus he creates. It requires much care, but a very young child can succeed with some of its simpler forms, while it may still be a favorite occupation, up to maturity. It exercises both hands about equally, it satisfies the love of color, and it cultivates the sense of beauty. It thus furnishes an agreeable and educative occupation to the active, restless child.

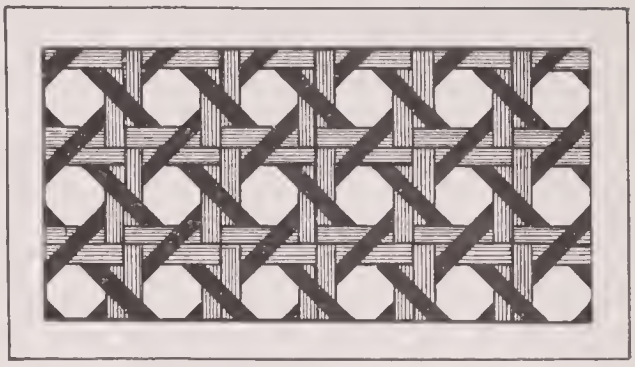
The simple materials for paper mat-weaving are two or more sheets of paper of different colors, a pair of scissors, some paste, and a weaving needle. The latter is a long, flat tool made of wood or steel, with an opening in one end for fastening the paper strips, and represents the shuttle. It is used for weaving the loose strips of paper into the mat. In weaving,



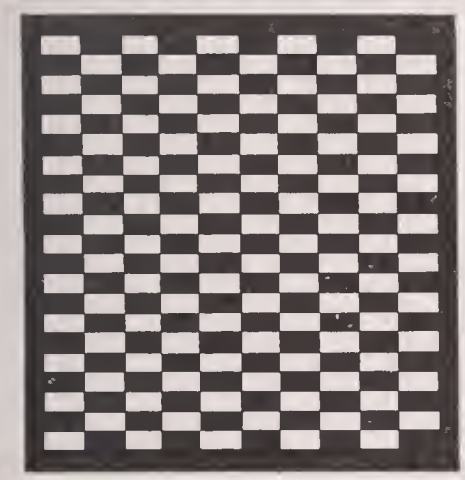


first cut one sheet of paper into strips about a half-inch wide. Then take another sheet about 5 x 7 inches, and folded across the middle. With the scissors cut slits evenly from the fold toward the edge but not to it, so as to leave an uncut border all around. These slits should be of the same width as the strips already made. Fasten a strip to the weaving needle and weave it through the slits, alternately over and under them. A second strip should be woven in

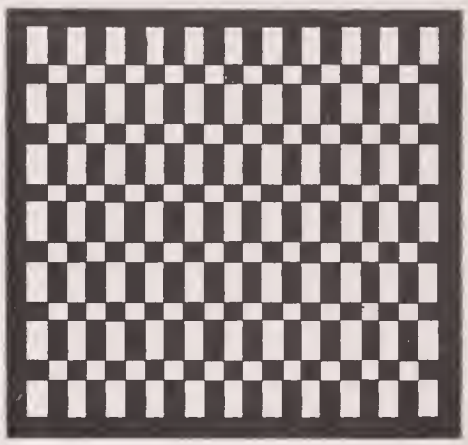
the same way, but alternating the under and over. The ends of the strips are to be pasted to the borders of the mat. These processes are plainly shown in the illustrations given below.



A variation of weaving is found in open-work patterns. The simplest form is made by cutting out every alternate strip from the ground work of the mat and omitting every alternate strip of ribbon. Diagonal strips may be added and this will give the child the idea of the weaving of cane-bottom chairs.



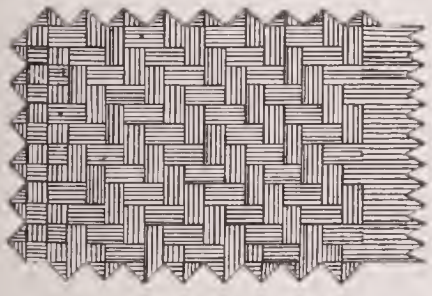
A further variation of this occupation is found in what is called free weaving. In this there are no borders to hold in place the strips which represent the warp, and therefore it must be so constructed that no border will be needed. The simplest beginning is with a broad strip of paper slit through the middle from one end nearly to the other, and the strip is woven diagonally, over and under, back and forth.



The next step is to imitate this broad strip by a narrow strip, so folded as to produce about the same effect.

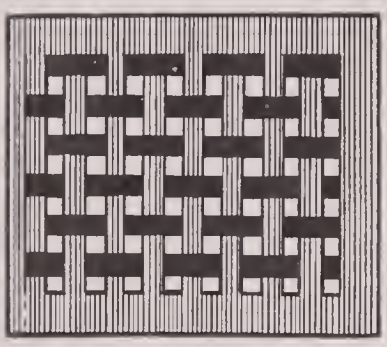
The number of strips representing the warp may be increased at pleasure.

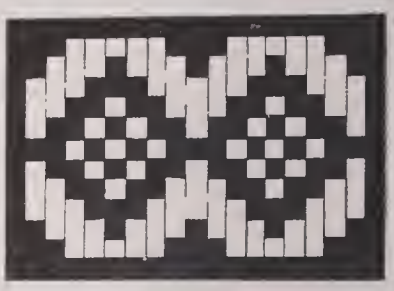
This weaving may produce book-marks, mats, baskets of five or six sides, round baskets, and various articles of interest. In all this, it is well to attend to the harmony of colors, so that the esthetic taste may be cultivated along with dexterity. The pupil should also be encouraged to invent designs of his own.

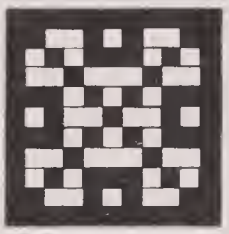


In many kindergartens, this weaving with strips of paper has been supplanted by weaving with cloth, braid, or strips of leatherette. A very good iron-holder, for example, is made by cutting slits in a square piece of felt, and weaving a piece of black skirt braid in and out of the slits. Any of the designs given for paper-weaving can be carried out in cloth or leatherette. The advantages of the latter

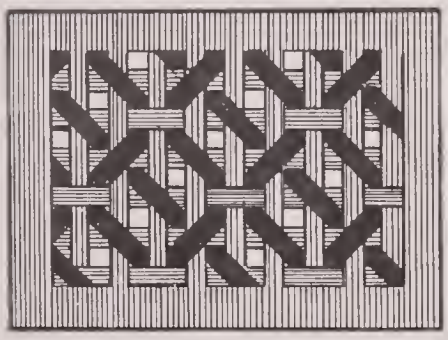
method are twofold: First, cloth or leatherette is stronger, and does not tear and spoil the work at a critical moment, as paper is likely to do; second, the work, being larger, calls for the use of the large muscles of the hand and arm, and is less of a strain upon the eyes and nerves. Add to this the fact that the result is more durable and useful, and the advantages of the plan, are obvious.

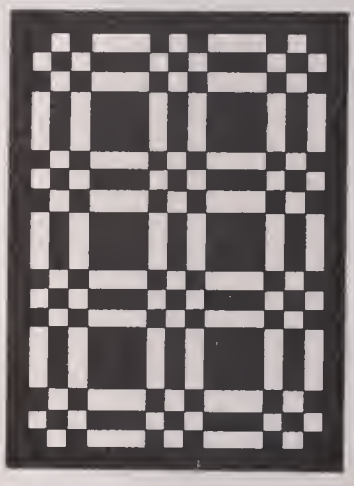


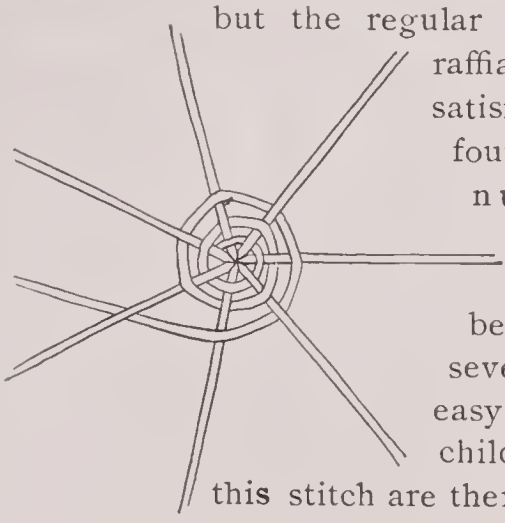


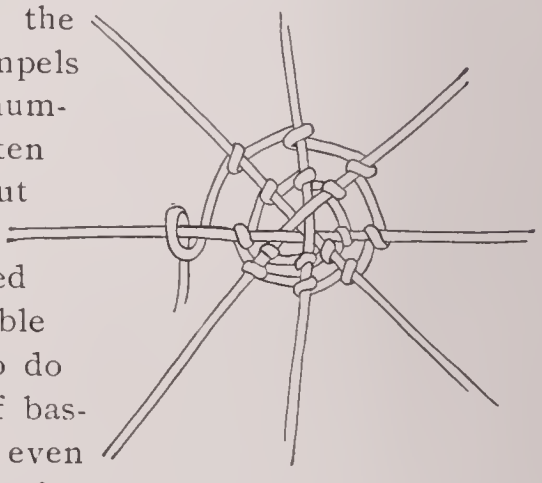


Basket-weaving has been found valuable. For this purpose the raffia fiber, for sale at florist's shops, is usually used. The foundation of the basket is made of soft copper wire or rattan. Seven pieces of either material about three inches long are fastened together in the center by a few strands of raffia. The mother or teacher will need to make this beginning, when the weaving is to be done by very little children. The raffia is then woven in and out between the sticks or wires until the bottom of the basket is formed; the wires are next bent up so as to make the skeleton of the sides of the basket, and the weaving is continued. The simple weaving in and out is easier at first, but the regular weaving stitch, in which the raffia is wrapped once around each wire is much more satisfactory in the end. Moreover, with this stitch, the foundation of wire or rattan may be made of an even number of pieces; the other method compels the use of an odd number; it is difficult to fasten seven pieces together, but easy to fasten six. The children who have learned this stitch are therefore much sooner able to make their own beginnings and to do all the work themselves. All sorts of baskets may be made in this way, and even complete lit'le sets of furniture will be found within the child's power of execution.

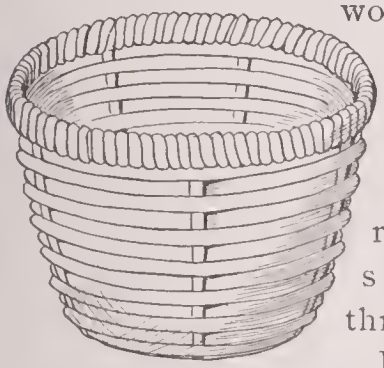




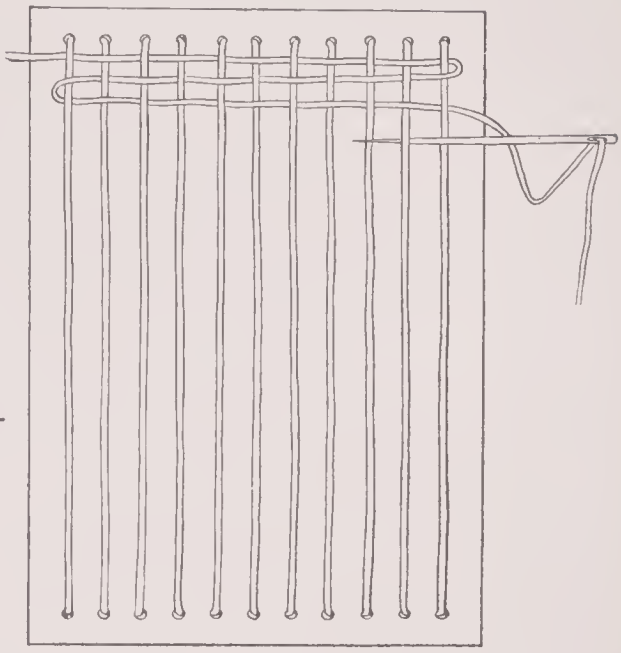




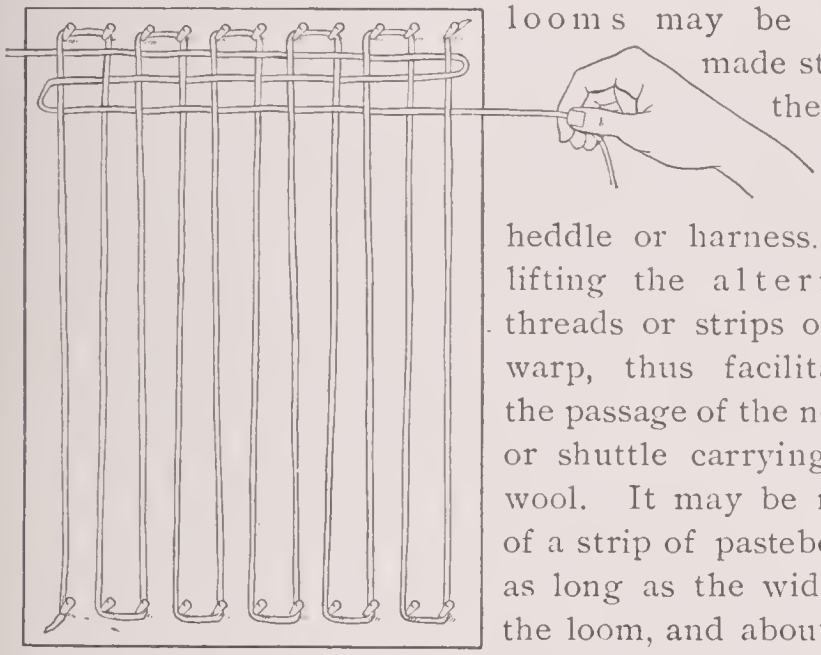
Cardboard looms for cloth-weaving may be devised by making a row of perforations a half-inch from each end of a strong card. Heavy worsted, or baby ribbon, is then strung through these holes in parallel lines, to form the warp.

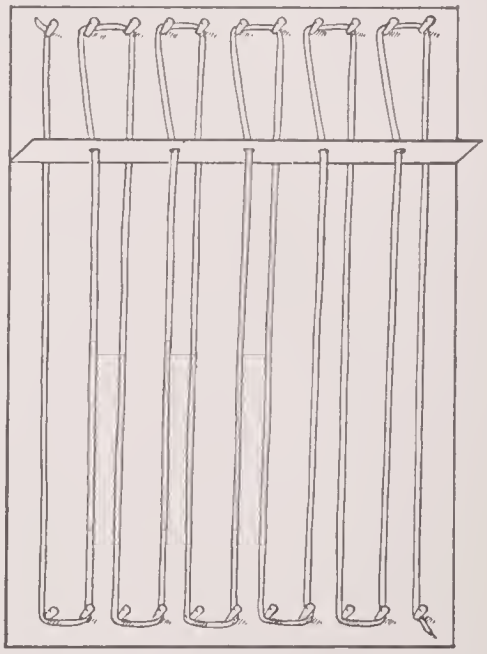


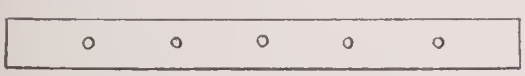
A large tape-needle may be used for a shuttle, and by its means ribbon of a harmonious shade can be woven through the warp.



Larger looms of wood, may be made by the older children. They consist simply of a piece of board of any convenient length,—usually about twelve inches,—across each end of which is a row of large-headed nails, or preferably, wooden pegs. These pegs, like the holes in the cardboard loom, should be of an uneven number. The looms may be made still more elaborate, and the weaving correspondingly simpler, by the addition of a primitive heddle or harness. This is a device for lifting the alternate threads or strips of the warp, thus facilitating the passage of the needle or shuttle carrying the wool. It may be made of a strip of pasteboard, as long as the width of the loom, and about two inches wide. It should contain half as many holes as the loom has pegs. Through these holes every alternate thread forming the warp is passed. When the woof thread is to be put under these alternate threads, the heddle is raised, drawing the threads up with it; when the woof thread is to be put over the strips, the heddle is laid flat. In weaving with strips, the mesh may be pressed close by means of the fingers, but thread or worsted needs to be pressed closer. A common comb will serve this purpose.







In these simple processes are all the essentials of the most elaborate weaving. As the children grow expert, they will notice more and more the texture of the clothes they wear, of the carpets on the floor, of baskets, of everything woven. They may then want to undertake the building of a large hand-loom, like the one shown in the cut. In some schools the boys of the seventh and eighth grades have made these looms and presented them to the school, where they formed part of the permanent equipment. Even if their interest never reaches so great a height, however, children should be taken to visit a cloth mill, and be encouraged to find in the midst of the whirling machinery, the spinning spools, the flashing shuttles, and the clashing heddles, the orderly outgrowth of their own familiar activity.

SEVENTH OCCUPATION: PAPER-FOLDING

> "So MUCH does the dominion of man over inferior animals, crude materials, and natural forces, depend upon the hand that, were it possible to deprive the human race of this important member, and put in its stead a mere paw or hoof, it might well be asserted that man would soon find a common level with the beasts, notwithstanding his superior knowledge."

How often have we seen in church or concert-hall a mother,—who has either had to take her restless little one to the meeting with her, or stay at home herself,—folding her handkerchief into the ever-delightful "rabbit" or "baby in the hammock." We all know it, have done it, or had it done for us. Or perhaps on a boat excursion, owing to the power of suggestion, a magic fleet of big boats and little, concocted out of discarded newspapers, has helped to while away the time, of not only the little people, but big ones as well. The mother's instinct tells her that these simple playthings will satisfy for the time being; and while her fingers, through long experience, work automatically, her mind is free to attend to other things. How about the child's mind?

His mind and heart are filled with wonder at the great possibilities of a common piece of paper. Perhaps he is getting his first lesson in law or evolution when he sees a simple square of paper transformed into a "book," out of which he may sing or read one of his nursery rhymes, by merely doubling it together (Fig. 1); or, if the paper is plain, in which he may draw. By opening the book and folding top to bottom and opening it again, he has a "window" with four panes in it (Fig. 2); again, by folding the two opposite sides to the center line, creasing it well, and standing it up as in Figure 3, he has a dining table; and so he is led on through many other folds, new forms

appearing out of the old, until he exclaims, as did one little boy: "Isn't it funny, the way one thing busts into something else?"

The child's needs are transient. He has to have something so plastic at this early stage of development, that he can easily modify it, such as clay, paints, etc.; but, just because of his limited knowledge and skill, he also needs some guidance along definite lines, in order to make any progress. Because of the limitations imposed by the boundary lines of a sheet of paper, his energy has to exert itself within limits suggested by the material itself, and whatever the results may be, they are all products of his own energy. In the too early use of wood-work on the other hand, in the attempt to make permanent playthings, the child's part too frequently consists in merely helping to drive a nail and adding a coat of paint.

This occupation should be used, like the others, in moderation, making the most of it when it is used, and keeping in mind its whole educational value, a value which may be thus summarized:—

1. To please and satisfy.
2. To utilize physical energy.
3. To work out thoughts, thus clarifying ideas of form, number, position, etc.
4. To give exercise in right doing, leading to accurate thinking.
5. To engender respect for hand-work, by understanding its difficulties.

In giving him these lessons we must, however, bear in mind certain precautions. One has been referred to before, the fact that since the large muscles of the hand and arm develop first, and the fine ones later, we must avoid using the finger tips. Therefore, as large paper as the child can manage and as will suit the purpose must be provided. It should never be smaller than 5 x 5 inches, and if possible 8 x 8 or 10 x 10. For the same reason, the pressing or creasing that is necessary should be done with the hand.

In the degree of accuracy required of the child when measuring and folding, much discrimination and tact are necessary, that no physical injury may result, by straining to meet the teacher's ideal of accuracy. On the other hand, if the child is not held to his best (not the teacher's best) he is acquiring a loose, slipshod way of doing things, which begets a loose habit of mind. The importance of this is aptly illustrated in the old saying:—

> "Sow an act, and you reap a habit;
> Sow a habit, and you reap a character;
> Sow a character, and you reap a destiny."

If the child wants the result, he will be careful of the means of getting it. Some one says: "The lack of thought on the child's part

is the result of lack of experience of results." Here comes in the will-training. Desire is the basis of will, and this results from memory of previous experiences. Is not this kind of will-training worth while?

Keeping well in mind, then, the stage of the child's physical development; the moral question that arises in the degree of accuracy required; and the interest which is necessary to any healthful work or play, we are ready to begin.

The steps in folding, with the four or five-year-old child, are at first so simple that he is easily and happily led to the making of very satisfactory temporary playthings, such as furniture for paper doll houses, caps of various kinds, baskets, and other suitable articles.

When the child makes for a definite object, his model should be good, that is, as good as the material will permit. If the object is to be a doll's bed, due consideration should be given to proportion. To make it, fold a 6 x 8 oblong of Japanese manila paper in half, both vertically and horizontally, or in half both ways, open and fold two short edges to center line, open again and fold two long edges to center line. Cut on dark lines, and place in a vertical position; lift paper, and bend lines to form side boards for bed to rest upon; bend little oblongs forward by the cuts for head and foot of bed to rest upon, then paste and reinforce both head and foot with pieces of paper 3×3 and $3 \times 3\frac{1}{2}$; bend the upper edge of the foot-board over the 3×3 piece; then paste again.

In the accompanying sequences, we can readily see wherein the child has had to utilize to the utmost his limited store of knowledge of form, number, position, and to work this knowledge over, correct, and add to it; and when the end is attained, the feeling of satisfaction over work well done is sure to give a healthful mood, and he is ready to receive his just due of approval.

The child is seated at a low table with a perfect square of smooth, uncreased paper in front of him. Let him point out the front edge, the back edge, the left and right edges, and the center. Then proceed to show him how to fold the following forms, being careful not to give him too many at once. As long as he is contented and interested with one form, let him play with it; when his interest begins to flag, give him another.

1. Fold the edges of a square of paper together and crease. (See Fig. 1, the book.)

2. Open "book" and fold top to bottom, crease, then open, and we have the window. (Fig. 2.)

3. Fold side edges of window to center line to get the closed blinds. (Fig. 3.)

4. Lay paper with blinds down on table and fold top and bottom of window to center line. This when made to stand up is the small square table. (Fig. 4.)

Fig. 1

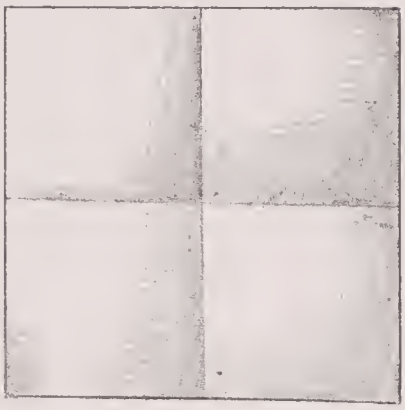


Fig. 2

Fig. 3

5. Close and turn the table so that the four small squares are on top.

Place finger under one of the squares and lift it out sidewise until a triangle is formed, then crease.

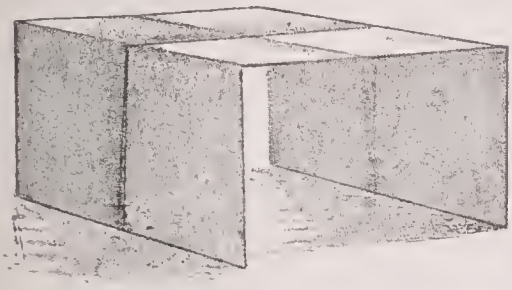


Fig. 4

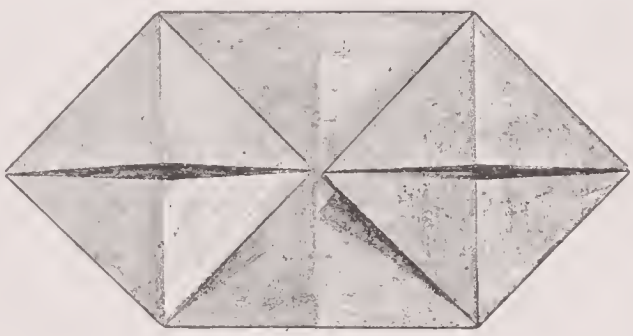


Fig. 5

Turn the three other squares out in the same way.

Fold top to bottom, crease well and we have the double rowboat. (Figs. 5 and 6.)

If desirable to go slowly, each article may be played with, in the manner suggested by each successive step. It might be well to give only one or two forms at one sitting. The idea is to let the child go as fast as he can without needless expenditure of energy or interest.

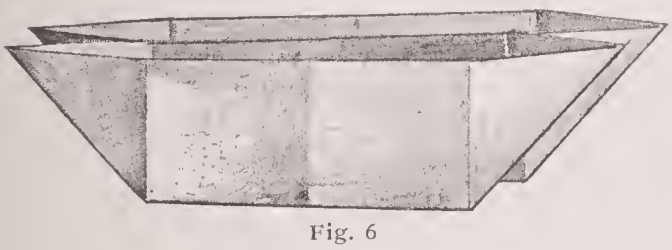


Fig. 6

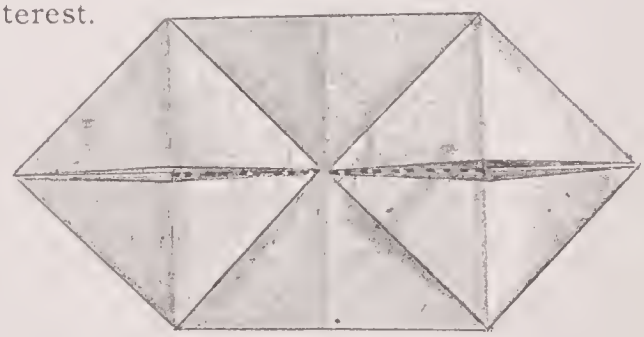


Fig. 7

A Trough

(*A Memory Test*)

Fold a book.

Fold a window.

Close the blinds.

Fold the table and turn squares into triangles as we did for the boat. (Fig. 7.) Cut on dotted lines and put the two triangles thus made one

inside the other, thus forming ends for trough. The remaining triangles at each end serve for legs.

This, lined with tea-lead, filled with water, and placed outside the window, may serve for a birds' drinking dish. (Fig. 8.)

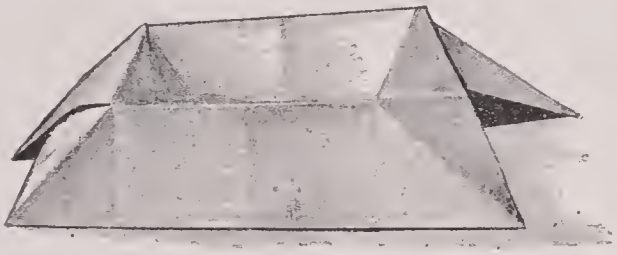


Fig. 8

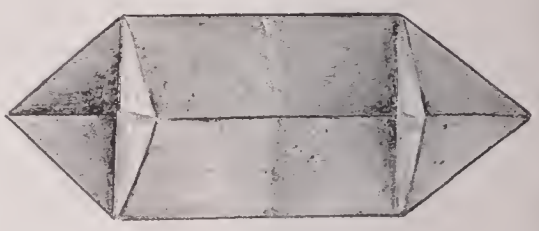


Fig. 9

Corner Bracket

Fold as for trough.

Hold open edges of paper toward you; fit one sharp corner into the one nearest to it, and a corner shelf is formed.

Do the same with the two other sharp corners, paste, and the double corner bracket is ready for use. (Fig. 9.)

Comb-case

Fold a 10x10 sheet of Japanese manila into a window.

Fold four corners to center.

Fold one of the new corners to center.

Paste this last fold upon the two folded corners upon which it rests, and the comb-case is ready for use. (Fig. 10.)

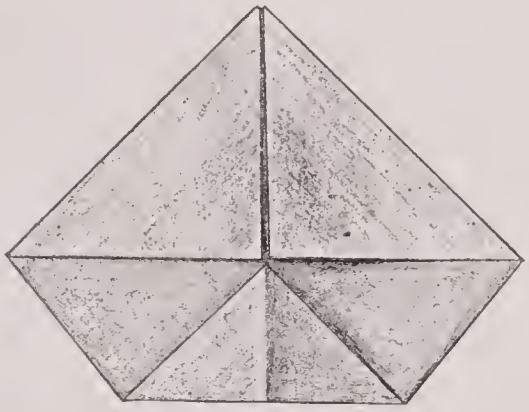


Fig. 10

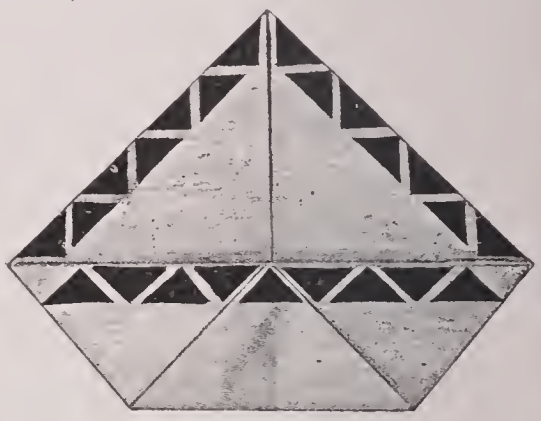


Fig. 11

If you wish, a border of colored-paper, triangles may be pasted on and the present for some one is done. (Fig. 11.)

A border of circles requires less delicacy in pasting and handling than one of triangles, and may therefore be found useful for the younger or less skilful children.

Sail-boat

Fold the window, then fold the four corners to the center.

Turn the paper over and fold the four corners on this side to center and crease well. Undo all of the folds and we have a table-cloth for a

square table. (Fig. 12.) Turn the table-cloth over and hold down the four triangles that fit the center of the cloth, then crease the standing-up corners from corner of cloth to corner of center square or table-top.

Hold paper with corner toward you and fold together two opposite corners of center square or table-top.

Push the two large triangles on those same corners together, and here is the sail-boat. The last triangles may be pinned or pasted together if desired. (Fig. 13.)

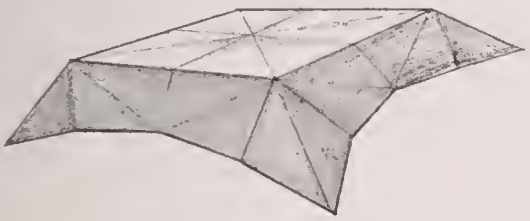


Fig. 12

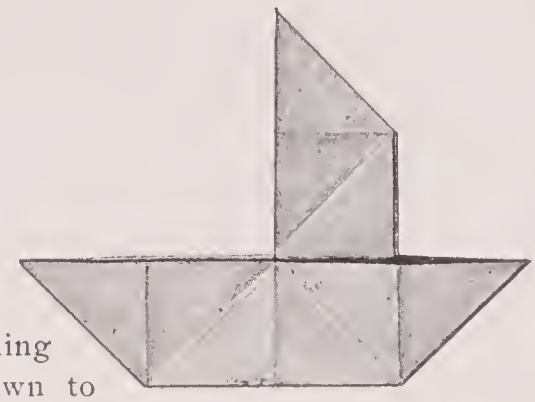


Fig. 13

By folding the table-cloth form, turning it over and pressing the four corners down to form four squares on top, we have a form (third fundamental) from which quite a number of satisfactory decorative forms may be made.

With third fundamental, cornerwise on table before you, fold the right and left corners of the front and back squares, underneath: fold

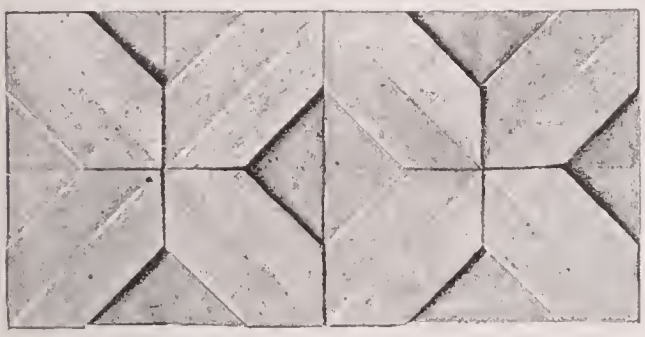


Fig. 14

the two other squares to look the same way. A number of these in a row may be used as a frieze. (Fig. 14.)

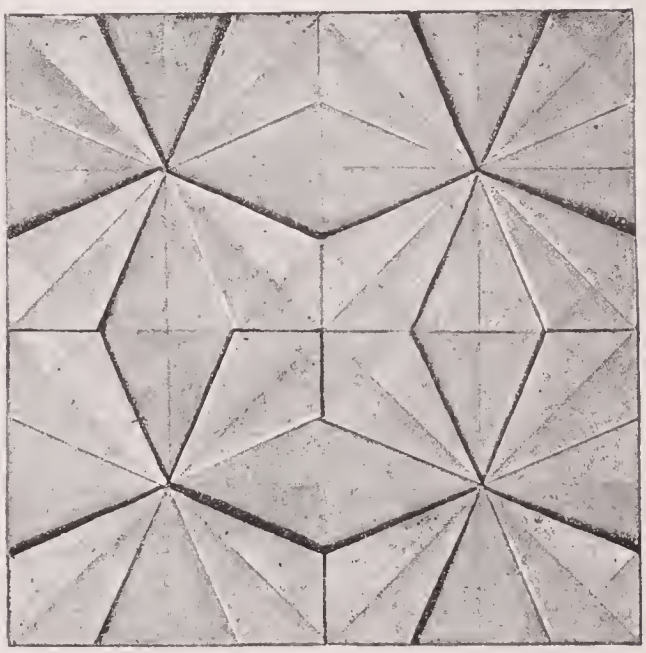


Fig. 15

By folding these squares on top into kite form, or diamond form, four papers folded or placed around a common center make a quite pretty rosette form, which might be used to decorate the top of a box. (Fig. 15.)

Some Pieces of Furniture

In order that the child may work thoughtfully, he must have a clear mental picture of his bed, or lounge, or whatever he is to make. If, for example, he has not a finished model before him, his varied experience of lounges would interfere with his making one that the material supplied

would suit. He has been given time to experiment, but now he is limited to his material.

The bed has been described. (Fig. 16.) The lounge to go with the bed is to be folded from oblong 4 x 8.

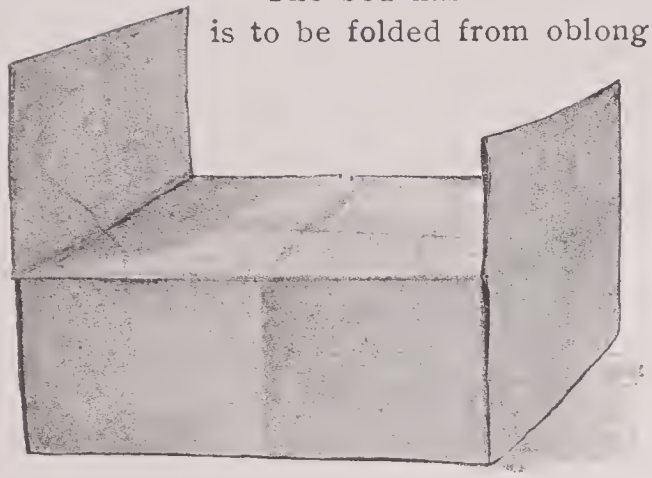


Fig. 16

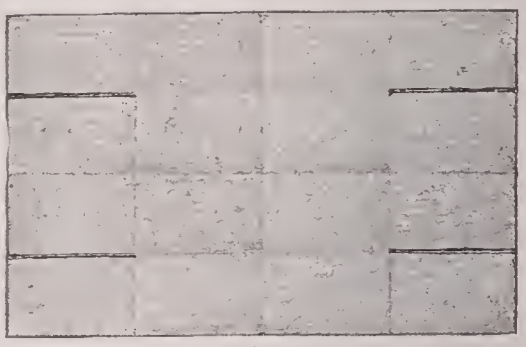


Fig. 17

Fold the oblong into half.

Fold the oblong into half the other way.

Fold each half in two again, forming eighths.

Fold each eighth in half so as to give sixteen small oblongs; cut in dark lines (Fig. 17) and paste together the two little oblongs on each end.

Fold and paste the overhanging squares over and under these end-oblongs to make it strong, and the box seat for the "davenport" is done.

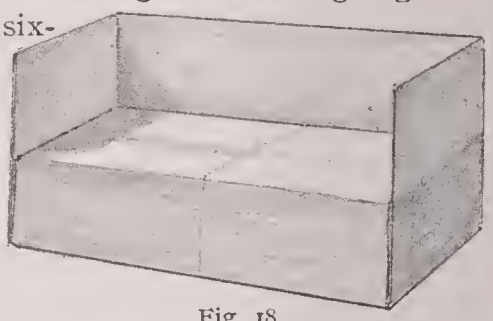


Fig. 18

Paste on a 2 x 8 piece for back and arms. (Fig. 18.)

A Chair

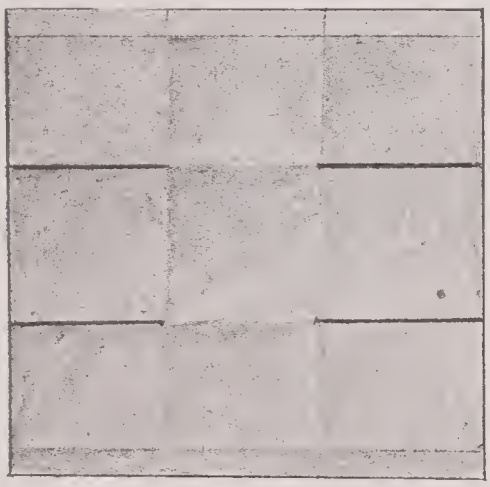


Fig. 19

Fold a 5 x 5 paper into three equal parts.

Fold into three equal parts in opposite direction.

Cut in dark lines. (Fig. 19.)

Fold over about one quarter of the three joined squares on two sides.

Bend these folded edges under, overlap, and paste the squares at front and back and fold one of the loose squares under, to fit, for front of chair. The remaining square serves for back.

To make an easy chair, add an extra piece 5 x 3 for back and arms of chair. Curve the arms to suit taste. (Fig. 20.)

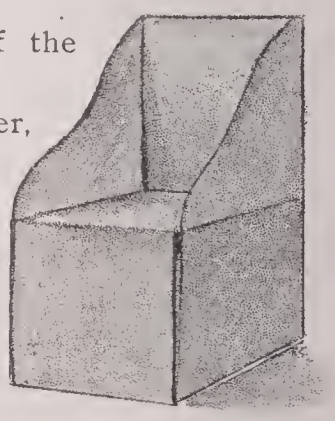


Fig. 20

EIGHTH OCCUPATION: PAPER-CUTTING, PAPER-MOUNTING, AND SILHOUETTING

The child early shows a fondness for the use of that curious tool, the scissors. This is not surprising. He sees his mother cutting so deftly, absorbed in her own work; he sees the interesting results. It would be strange if the child did not try to imitate this. If he is able to use the scissors only by stealth, he will probably use them to damage curtains, clothing, or bedding. When the mother permits him to cut only shapeless bits of paper and cloth, she loses an opportunity for training the child. He intuitively recognizes that this is mere destruction, and not creative work, and it fails to satisfy his nature. The purpose of the eighth occupation is to make use of this instinct for cutting. Unless the parent directs the activity of the child, the latter will misdirect it for himself.

Some of the comments made upon drawing are equally true of cutting, for cutting is a kind of drawing. Correctness in folding and precision in cutting lay the foundation of habits of accuracy which are valuable through life. The eye is trained, the muscles of the fingers and the hands are trained, to obey the orders of the will. In cutting and mounting, the two opposites, analysis and synthesis, are combined. The act of cutting divides or analyzes the plain surface that is cut. The subsequent restoration of the parts to form a new unity is a synthetic process. In this occupation, the bits, even the smallest ones, are not thrown away, but they are saved up to be mounted on a cardboard.

Before the cutting begins, the child should be interested in his tools. Every child has looked with wonder on the scissors-grinder, and listened to the ringing of his automatic bells. The grinding wheel that throws out sparks from the steel is alluring to the infant mind, and the man who apparently comes from nowhere, and goes on again into nowhere, but leaves behind him the boon of sharpened scissors, is a good starting point for a lesson to the pupil upon this subject. It is interesting for the child to know the large variety of instruments that may be classed under the general name, scissors. There are button-hole scissors, manicure scissors, and a number of straight scissors, in sizes from the tiny embroidery scissors up to the large shears. Above these are the tailor's shears, and those used by the plumber for cutting tin or sheet iron.

Mucilage is used in mounting; and the child should be told of the country of Arabia, where the tree grows from which the gum is

taken; the Arabs who gather it, the camels who act as freight cars for transporting it across the desert, and other pertinent matters.

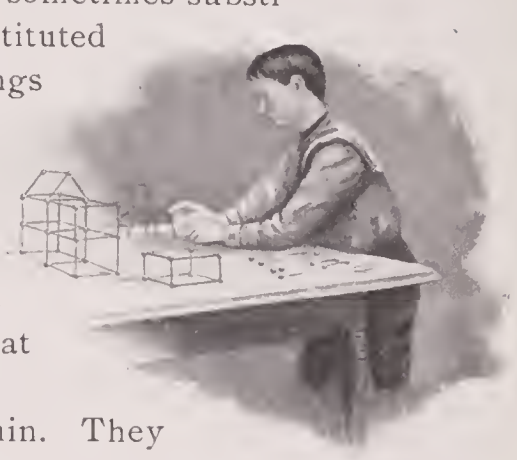
The various stages of paper-cutting are fairly represented by the statement of the following grades. First comes cutting off. In this the paper is folded, and the pupil cuts off a piece, following a line of the simple fold. Secondly, there is the exercise of cutting out. In this stage the pupil cuts into the paper along given lines and takes pieces out of it. The third stage is called free cutting. This is a variation of cutting out, but the determining principle of it is that the pupil does not follow creases or other given lines, but cuts according to his own design or fancy. These permit more latitude to the invention of the worker than the other forms allow, and the designs are sometimes of great beauty or oddity. The illustrations below, not remarkably difficult, are of varieties of the eightfold ground-form cutting, to which the pupil comes by easy stages. The designs, when suitably cut out, will be preserved by mounting them neatly upon cardboard. This part of the work does not give play to inventiveness, but it requires much care and patience.

Silhouetting follows free cutting. The silhouette is an outline portrait, or profile, in black. It was first made by projecting a shadow from a candle upon a piece of white paper. In imitation of this shadow, the silhouettes were outline figures cut out of black paper and pasted on a white background. In every nursery, the children are amused by fantastic shadows cast from the hands upon the wall. These give the idea of the silhouette.

Black glazed paper is used for kindergarten silhouetting. The forms, beginning with the simple and proceeding to the difficult, are cut from this paper and duly mounted. Another kind of shadow picture is made by cutting out portions from a piece of paper in such a way that, when held between the light and a white wall, the open spaces form the lights and the remaining paper forms the shadows of the picture. This gives something of the effect of a crayon drawing, and may be the source of much entertainment.

NINTH OCCUPATION: PEA-WORK

The materials used for the ninth occupation are marrowfat peas and long slender sticks. Corks or balls of clay are sometimes substituted for the peas, and wires are sometimes substituted for the sticks, but the materials named are, all things considered, the most satisfactory and the easiest to obtain. The peas should be soaked for twelve or more hours in water, and dried a little after being taken out. In this condition they are soft enough for the purpose and will receive the sticks without splitting. It is hardly necessary to say that they should be as nearly uniform as possible.



The sticks should be about a foot long and quite thin. They will then be easily broken into desired lengths by the pupil, and they will readily pierce the pea. They should be stuck into the cheek of the pea, not into the eye or the crease, as the latter may cause splitting. After the pea has dried, it holds the stick fast so that the work is, comparatively speaking, permanent; at least, it is strong enough for the pupil to carry home from the kindergarten school, and, if not unreasonably disturbed, it will last a long time. Wires have the advantage of sticks in that they are thinner and stronger. On the other hand, they cannot be broken into desired lengths, and common wires are liable to rust.

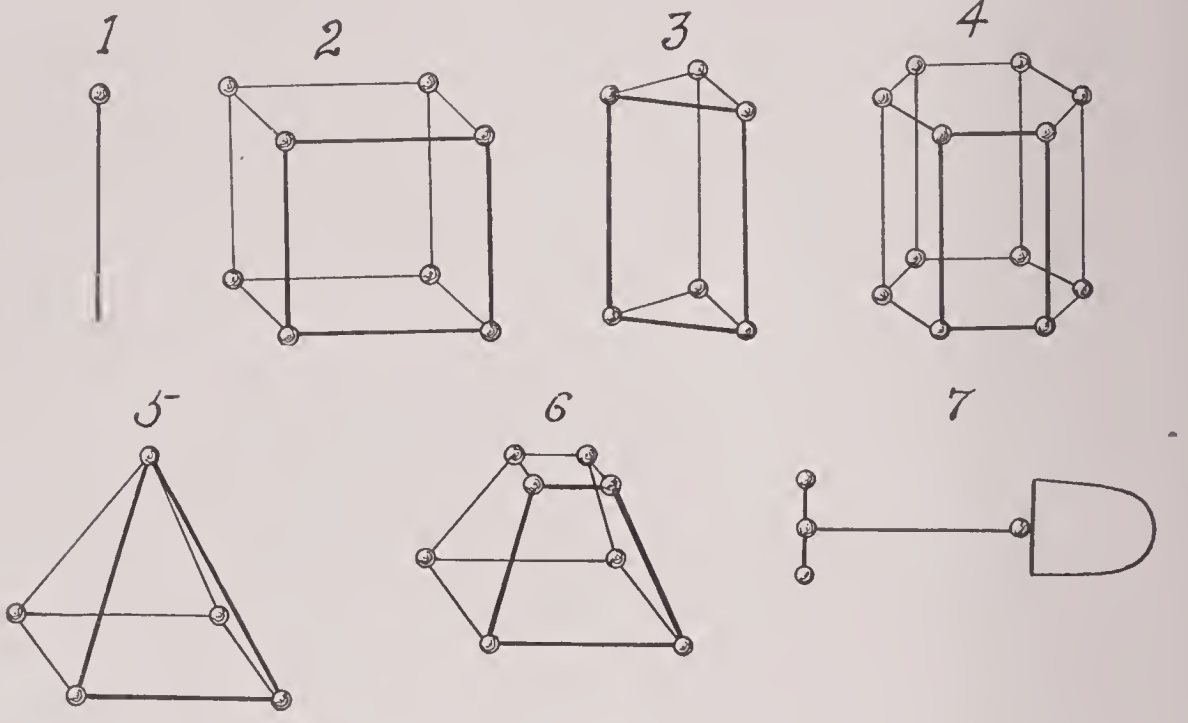
The simplest exercise in this occupation is pushing the end of a stick into the cheek of a pea. This makes a cane, a drumstick, a shawl pin, or whatever else strikes the fancy of the child.

When the other end of the stick is thrust into the cheek of the second pea, the result is a dumb-bell. If a second stick be pushed into the pea at right angles with the first, there is a square corner. By means of four peas and four sticks a perfect square is completed. In a similar manner a triangle may be constructed, and figures of five, six, or any other number of sides.

Take two squares and, with the addition of four sticks of equal length, it is easy to make the outline of a cube. This will be helpful to the child, for, by enabling him to see through the solid, so to speak, it will surely give him additional understanding of the cube. In the same way, prisms may be constructed from triangles, pentagons, and other plane figures.

It is not necessary to give additional instruction as to the method of forming an outline pyramid or the frustum of a pyramid, as these will readily occur to the teacher, or even to the pupil himself. The illustration makes them fully plain.

Circular figures, or circular parts of figures, may be made by substituting wires for sticks, and plane surfaces may be represented by the use of silvered paper. A variety of objects may thus be constructed.



Many ornaments may be made of pea-work, but its real value consists in this, that it enables the pupil to see into things, not to see the outer surface only. The study of geometry is no part of kindergarten work, but the child who, from training in pea-work, has had the benefit of this seeing into things, will, in later years, have an inestimable advantage when he takes up that branch of mathematics. It will give him a firmness of grasp upon the subject which too many students of geometry lack.

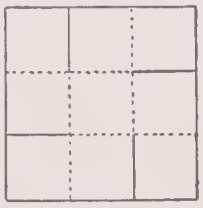
TENTH OCCUPATION: CARDBOARD-MODELING

This occupation represents hollow surface-bodies. It is the link between the plain and the solid. Both open and closed forms are made, and the latter, since they inclose space, are allied to solid bodies. In paper-cutting, the paper is first folded and then cut; in cardboard-modeling, the cardboard is first cut and then folded. In pea-work, the attention is directed chiefly to the corners and edges; in cardboard-modeling, the attention is, in a subordinate way, directed to edges and corners, but the surfaces receive the chief consideration.

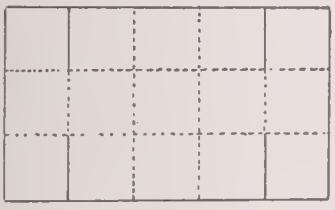
The materials for the tenth occupation are cardboard, or stiff paper, mucilage, and cutting tools. Knives and similar cutting tools are

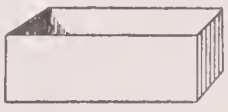
dangerous for young children, and for this reason the only tool used in this occupation is a pair of scissors, with rounded ends in place of points. If cardboard is used it should be pliable, and not too heavy. The paper or cardboard should be covered with a network of lines at right angles. For beginners the spaces in this network should be about a half inch, but the size may be varied according to need. Cardboard, like paper, will stretch when moistened by mucilage, and so great care is demanded to fit edges and corners to a nicety.

The first lesson of the tenth occupation will be to make a box. Children are generally interested in boxes. They convey many suggestions to the infant mind. Candies and various sweets dear to the child's palate, come from the store in fancy boxes. Among the boy's possessions will be found boxes of marbles, stones, nails, strings, fish-hooks, and other articles highly prized. The mother has an assortment of boxes containing buttons, ribbons, bits of silk, pictures, and innumerable other treasures. It will not be hard to interest any child in the making of a box for his personal use.



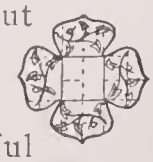
Give the child a piece of paper, on each side of which there are three squares of network. Then let him cut along the line of the lower righthand square, cutting one space from the bottom upward. Turn the square piece of paper one quarter way around, until the left side becomes the bottom, then cut again precisely as before. Turn once again in the same way and repeat the cutting, and repeat this process a fourth time. There are then four slits in the paper, one at each corner. Then crease the squares along the marked lines, turn up the sides, fold over the ends, secure them by a little mucilage, and the box is complete.





Oblong boxes may be made in the same way, using oblong paper instead of square. This simple box illustrates the entire principle of the tenth occupation. The forms may be varied so as to make prisms, pyramids, octahedrons, cones, cylinders, and other figures. More ornamental and still more interesting to the pupil will be the simpler forms of trays and baskets.

It is desirable always to encourage the pupil to design original forms. This will be a valuable preparation for future work. But in this they need supervision, in order that they may not depart from the principles which underlie kindergarten work. The work of the tenth occupation will result in many beautiful and useful articles, thus giving pleasure and developing the sense of beauty, but it will also train the worker to concentration of thought.

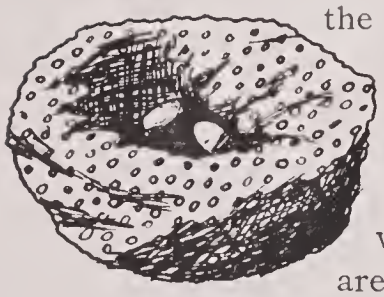


ELEVENTH OCCUPATION: MODELING IN CLAY*

In the previous work, the material had a shape of its own. In the eleventh occupation we deal with a shapeless material — clay, or wax or sand which may be substituted for clay. All children love to create shapes out of shapeless material. When they play in the sand, they are continually making stairways, wells, tunnels, houses, and such forms. Most children have had experience in modeling a snow man. They almost universally serve an apprenticeship in making mud pies, and they have done so time out of mind. This occupation purposes to use this instinct, and make it a means for the development of the child's various powers.

In kindergarten work, clay-modeling is used as a means of education, and not for the sake of its artistic value. It trains both hands to dexterity. It develops the appreciation of beauty. In an unusual degree it trains the eye to accuracy. Finally, it trains the observation and memory, for the worker must see how the object looks and carry it in his mind. If he fails in this, his attempt to reproduce it will be grotesque and hideous. The work will require much patience, and the worker must be content not to try to get on faster than his improvement will justify. The help he receives should be in the way of suggestion, and the teacher should not do his work for him.

The first forms which the child will naturally make are the sphere, the cube, and the cylinder, and these bring him back to the gifts, the starting point of kindergarten work. The sphere may be slightly modified so as to make an apple, an egg, a plum, a pear, and a number of them will represent a bunch of grapes. Then let the child place the sphere in his left hand, and work into it with his right thumb, and he has what interests every child, a bird's nest. A couple of ovals are put into it and these are the bird's eggs. Then a rope-like form is rolled out between the palms of the hands and is fastened to the edges of the nest, curving over the top, and the nest becomes a basket.



The cube is made from the sphere by striking the latter upon a flat surface, such as the table, upon the six respectively opposite sides, until these sides are square and parallel or at right angles. The cylinder is made by rolling out the clay and flattening the ends. Out

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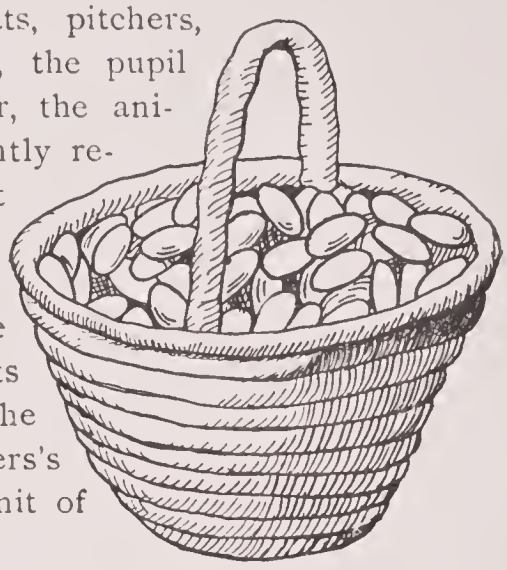
*For a fuller treatment of this subject see page 3799.

of these three fundamental forms, the sphere, the cube, and the cylinder, by slight additions or variations, large numbers of subjects may be modeled. These forms will include fruits, hats, pitchers, pails, vases, trunks, bureaus. At the proper time, the pupil may go on to such life forms as the leaf, the flower, the animal, and the bird. But the teacher must constantly remember that the primary purpose of this is not sculpture, but education. It is the training of the eye and hand, and the cultivation of the mind through the eye and hand. The work is very fine and there is no limit to it. The child who starts from the rude imitation of an orange may reach the point of Thorwaldsen's "Lion of Lucerne" or Powers's "Greek Slave," and still he has not reached the limit of possible beauty.



SEWING

INTRODUCTION

A STUDY of the occupations designed by Froebel for the kindergarten shows plainly that they have a twofold interest: for material, they point back to nature, while for explanations of themselves, as means for making things, they point to the great industries that have flourished from prehistoric days to the present.

For instance, when a child begins to learn how to weave a mat out of strips of paper, he steps into line with the weavers of all ages. As men wove at Babylon and on the Nile, three thousand years before Christ, producing fine textile fabrics with rare and beautiful harmonies of color; and as in the dim days of early Europe, men sat and wove together coarse fibers of uncolored grass to make their first barbaric cloths and coverings; so the child of to-day, working in the kindergarten with his slips of paper, repeats the simple principle of weaving. The long threads stretch parallel and true in one direction to make the length — the warp; the short strands, crossing at right angles, straight and true, make the width of the material — the weft, the woof, the woven-in threads of the pattern.

In time the child comes, through experience and knowledge, to see all these things for himself, but at first he is absorbed with the process. He is weaving — over and under, some strands up and some strands down, to bring out a pattern of contrasted colors. Neither history nor geometry exists for him; nevertheless he is sharing both life and law, and practising the industry that has brought into the world all of our innumerable fabrics — silk, cotton, linen, and wool, in their varied combinations, from a ship's canvas to the chiffon for a lady's veil. He is not an imitator, merely playing; he is a student, learning the principle of weaving. He takes a piece of cotton in his hand to ravel out threads from a cut edge, and sees for himself the simple, regular crossing of the threads, and he partly understands the fabric, for he has learned by doing.

The thoughtful mind will not fail to observe that the child, without knowing it himself, goes back to nature for his elements of form. All woven substances — a ribbon, a rug, a web of Lyons velvet — are geometrically woven planes, and these are made by means of right lines, crossing and recrossing at right angles, never varying in the repetition of this single principle. We again look back to nature

to see where the child gets the elements of form. He is using the plane, the line, the angle, the point. The point is revealed in its first greatness as the center of every sphere. From this point of force, energy moves outward in every possible direction, and, as we follow its movements, we come to the chief elements of form which are found in the works of creation, and which man repeats in his own industries.

With the whole sphere man seldom works. Its place and use are mostly that of ornament, or to serve as a means of amusement and physical exercise. But all things come from within, and in their own natural order. The elements of this sphere lead industry along a line of its own, in a natural development; for, reversed, the sphere reveals the cube. The faces of the cube are square-plane surfaces. From this model come the square tablets which, in the occupation of the kindergarten, are given for form-laying. The division of the cube by straight lines, perpendicular, parallel, and diagonal, gives oblongs and triangular prisms. The faces of these prisms are models for oblong and triangular tablets. So elements multiply and the child moves on into greater diversity of form as he has more means at hand with which to express himself. All that he has he combines, learning for himself what things he needs, and finding out what he wants to do with them.

Coming to the edge of the cube, we find the straight line, from corner to corner outside, and inside another straight line, the diagonal, leading from corner to corner. These lines, with the angles which they make, and with the point, give models for use in all occupations that the child needs in his earliest manual training. The line as an element of design leads everywhere; and it may be of any material — a pencil line upon slate or paper, a thread of silk or wool, a wire to use in upright construction.

In human industry, the line is a means of mastery, a sign of power. By the stretching of a cable's line beneath the sea, man has said, with Puck: "I'll put a girdle round the earth in forty minutes." A look upward at the telegraph wires in any city shows what place the wire has in the daily service of life; and we go far into the country before we lose sight of this sign of industrial progress. The wire holds first place now in scientific work and discovery, as the lightest form of material that can be used for doing the greatest work. It thus becomes a marvelous sign of human thought. The fact that the wire itself can now be dropped, and that in wireless telegraphy currents of force can be used without the visible line to mark their pathway, only sets the line itself in its place the more clearly. From the beginning, the line has been man's means of measurement, the sign of his constructive power and its growth. In marking out the ground

for his home and for his workshop, man has measured so many feet this way and so many that way, and from this groundwork upward he has made the line speak for him as a constant sign of his own thoughts, his desires, and his maturing projects.

In sewing, also, the line appears as an element of formation; it is the line pursued by that moving point, the needle — a line of construction, signifying some human requirement or imagination.

The sewing that is given to the children in the kindergarten follows, in general, the lines that are developed by Nature's own plan of progress. In this plan the round comes first. The child sees that he does not produce the round in reality. He sews a circle, only. Still, his mind reverts to the balls he has played with and he calls his design a ball, or a hoop, or a ring, carrying his thoughts from his stitches out into the world of his own realities. In sewing these outlines, he goes the long way round. He returns to the point from which he started. In his work it is his point of departure and his point of conclusion. This point disappears when the work is done, and the circle appears as a whole, regular, uniform, and endless, suggesting no point but its center. These things are not to be told and taught as facts, but frequently the child learns them by doing, and of his own accord he will show what he sees. When he does so he should receive a pleasant remark of appreciation, and the subject of circles will always be suggestive to him.

Within the circle the center must be marked. From it go its first great measures, up and down and across, and after these, the radiation of other lines.

KINDERGARTEN DESIGNS FOR PRICKING

Cards are prepared for this first sewing. The design is printed with points at regular distances. Some of these cards are perforated; others are to be pricked through by the children. This is sometimes good practice, especially in alternation with the other. The points to be pricked should be far apart and not too many. These cards are to be sewed with wool in gay colors. A needle with a comparatively blunt point is best for first efforts at threading and holding.

The advantage that a child has in the kindergarten is that all the "occupations," all the details of industry with sticks, tablets, strips of paper, wires and peas, needles and thread, grow out of some knowl-

edge of material that has always been used by the child. He has learned to see difference in form by handling solids — the ball, and the blocks that follow it when it is divided by cubic measure; he has gained a knowledge of color through the use of the prism in the sunlight, separating for him the ray of light into its seven colors, in their natural tones and unvarying order. This sequence of the gifts of nature underlies the sequence of the child's industry and his use of the materials of nature; and it provides the best possible training of intelligence in work. It carries him along by a regular gradation of natural steps. Each thing that is done is not only complete in itself, and therefore satisfying, but it is also a continuation of what went before, as well as a preparation for what is to follow.

For these reasons, while any occupation can be taken from the kindergarten course and used separately, the mother at home will find herself greatly helped if she grasps the great principles that lie beneath these simple industries. Their study begins with the sphere, from which all forms, all lines, all points are derived. The training begins with the child's own impulses. A choice of form and of material are at once necessary. Sewing is a pleasure to the child. It is constructive. To use sewing materials, he must follow the law of that especial industry; he must do what others do, what the material requires. He must produce something that others can understand and use. This constructive work is a variation, in pleasant contrast with other occupations, and it therefore offers the child an entertainment and an enticing interest. This sense of doing a thing that is complete in itself should not be broken. But it will be of advantage to the teacher to look upon the work as a link in the chain. She will be better able to lead the child.

After the round figures, come those that are made with the elements of the cube. These are combinations of vertical, horizontal, and oblique lines, with the angles and triangles that come from the first divisions of the cube. They are purely geometrical, but none the less beautiful, for this linear work is subject to principles of balance, proportion, and relationship. In following these ideas, the children are but reproducing the forms that figure in all geometrical decorative work.

For the free working out of these various simple and elementary lines, plain sewing cards are used. These have been made for kindergarten use, and are more desirable than those with printed designs. These cards are of fine gray cardboard, six inches square. A margin of half an inch is left, within which are holes for sewing — ten holes in a row and ten rows of holes on the card — one hundred openings awaiting the outlining of some design for or by the

child himself, along the lines of knowledge that he already possesses, a sign of something that he has already learned.

In the kindergarten, all that is new unfolds from the old. The first ideas of form and line are given to the child in the most concrete form — that is in the solid — in blocks that can be set out on the table and used in all possible ways. Thus it is that the child gets his first ideas of form and color, in a large and regular way. When he comes later to the use of lines and color for the making of forms to please himself, he really has a power and range of intelligent choice. What he has already learned lies in his mind; he thinks of things in a connected way; his mind is growing; mere fancy about things is becoming clear thought; and the work which he is producing becomes significant of that mental progress.

In a class, however, the teacher does give some rules to the children, and when these are given they should be followed. There may be one day a general rule, as that all the children must use vertical lines, up and down, and those only in that morning's work; or, that they must all use horizontal lines for sewing that morning; or, that the class must use horizontal and vertical lines; or, that one-half of the class may use one set of the lines and one-half may use the other; or, it may be that each child gets a different instruction — one to use squares; another to use right angles, none touching; and a third to work with slanting lines, or with right-angled triangles. Here a certain limitation is imposed. Each child takes his rule, understanding it perfectly, and each begins to form his own design, working from the idea in his own mind, or gradually clearing his mind. By means of the tool, his needle, and his material, the cardboard, he finds out what his thought is, and how he may bring into being some well-balanced figure while still working within the rule.

In the work of such a class, different children working from one rule with one set of lines will produce designs strikingly different. The cardboard is a field of labor wherein each is free, and where each loves to display his own force, and his own creative instinct. The discipline lies in the mental control, the habit of thinking by the rule, and not from some object set before the eyes, while the process of the needle working in and out, learning to thread the eye, to tie a knot, and to fasten a thread, are all so many points of muscular training, and of harmonizing body and mind through "doing." Philosophically speaking, the child with the sewing card is not being taught to make things; he is being taught to use power and to find out for himself how it may be used.

It is sometimes complained that this following of precise geometrical relation of line and point has a cramping effect upon the child's ideas

of things, and especially that it restricts his native artistic impulse. It is asked why these stiff, limited forms are used in place of designs of well-known flowers, birds, animals, human figures, and their groupings. The reasons lie deep in the nature of things and of the human mind. A brief consideration of them may help to illuminate the whole subject for those who are interested in these questions.

In the first place, as a principle of education from infancy upward, Froebel read from nature that the unfolding of force in the visible creation followed the same law that guided the unfolding of power in man; and that the order of form and extension produced by nature indicated the order of form that a child should produce, and showed the first steps for him to take in any construction.

For this reason, the kindergarten forms, lines, and points, follow one another in what are called "gifts," and "occupations," after the plainest and simplest way, from the center outward, from the round to the straight, and from the few to the many. The child is made familiar with these first of all, as a means of work. Also, in reading from nature, Froebel points out what science and art now teach us, that all the complex forms, both in nature and in human industry, grow out of a few simple first ways or principles. These first movements of nature give the first principles of geometry. The first movements of nature are not lost, but are preserved and expanded as when, in the progress of growth, the plant proceeds to leave mere use for beauty and to put forth blossoms; or when power arises, from the form of a jellyfish, lying flat on the shore, to the form of the horse on the prairie or the eagle in the air. Nor are these geometric principles lost when man, having created mill wheels, bicycles, and telephones, seeks a further happiness and a further expression of his own nature in what we call fine art. If a statue excels in force and beauty and holds its place, beloved of all nations through centuries; or if a picture awakens the love and admiration of the throngs who see it, it is because these things are fundamentally true and, in their measurement, pose, color, and general relation of part to part, have the correctness as well as the freedom of nature and life.

It is this primary correctness of plane, line, angle, and point, in bare and clear presentation, that the child is working with when he sews a geometrical figure on a plain sewing card. He is learning to see when things are straight and true and precise, he is learning also to see that without changing any of these lines to form the head of a man, or the curve of a leaf, he can so follow a principle as to produce forms of beauty. These forms are stiff and straight, to be sure, but in themselves they are interesting because they represent a certain

stage in the development of nature, and because they have the qualities of proportion, completeness, and elegance.

In the line of development, the child passes out from the spherical forms to the arranging of many branching lines, turning corners, making varied slants, and often producing intricate harmonies of lines all related to one center. These figures are related to the lower kingdom of nature as being like the crystals in plan and structure, while they are also related to the higher floral kingdom, by being in many cases an outline plan of the faces of flowers, especially those that are round and star-shaped. The work is in the line of progression, then, and for this reason it is not cramping in mental effect, but is truly most suggestive.

It cannot be said too clearly, however, that the child learns because he is using the law of formation. He feels and obeys its control — the restraint and compulsion by which alone he can attain his end. To break away from it would be to retard his own progress, and that he very quickly learns. To work out what is in his mind, he must go to certain holes in his card; to go on, he must bring his needle out at some other point already destined. His choice lies in his design. He may do anything the rule of the day allows, but when a figure is once begun there is but one way to completion. It is to make the child know this, that the card is given.

The geometrical principle applied in linear work is decorative, but it is subject to calculation, and the greater the variety of lines, the more delicate and clear becomes the evidence of restraint. This is a great and beautiful law, to be seen anywhere throughout nature. The more superior the growth, the finer are the limitations under which it expresses itself — as, for instance, the cabbages, beautiful in color and formation, stay near the ground, spread their leaves broadly, and shape themselves into thick heads of a heavy odor; while in contrast with this, the catalpa tree shakes its blossom down to the garden pathway, a marvel of tissue finely woven, crinkled in texture, delicately painted, and altogether prefiguring the most refined oriental weavings. So in nature each thing obeys the law, and, as Ruskin says: "From the poising of the planets to the gravitation of a grain of dust — the power and glory of all creatures and all matter, consists in their obedience, not in their freedom" — that is, not in lawless movement.

This "power and glory" is the child's rightful heritage. Born under the law that works from within outward, he is not being imprisoned by his worsted stitches, but in reality his mind is grasping the truth that there is a way to the attainment of mortal "doing," and that he is working and producing thereby.

In the kindergarten, this precise, conventional work in sewing is occasionally varied by "life forms," flowers, houses, figures, and faces, which come ready-printed. Still, by common consent, the geometrical figures are held to be the best. A flower carefully drawn, and worked out with worsted on cardboard, is farther from nature, and therefore farther from art, than is the five-pointed star that may be the underlying plan of the flower. The higher life forms call for a freer treatment. This is provided for in the kindergarten by the free-hand drawing and by the clay-work.

It is because of this alternation of material and method, that this sewing of geometrical forms on plain perforated cardboard is especially good as a discipline for mind and hand. Technically, it is scarcely sewing, but it is an admirable preparation for sewing, and any mother who can grasp the idea that underlies the work, can also, if the child is not in a kindergarten, find in this work a field of interest for herself and for the child.

It is asked sometimes, and with good intention, how a mother, with her own life maturing and filled with experiences, can take a real interest in the special employments that belong to the life and education of a child. How can she fail to find the process tedious, and how can she set herself to carry out schemes of work apart from the routine of a school program?

These things are to a degree a matter of temperament and of circumstances; but admitting all of these native differences, and acknowledging that what is easy to one is to another almost impossible, the real way by which the older mind can best accompany the younger one is to see life and labor as a whole, in their great, united aspects — to see things and methods of training not as ends, but as means of growth for the human soul.

We have to remember that the object of education is to supply the child with that which he has not. He has force of his own. It wells up within him, daily demanding an outlet. He wants to do something; he wishes to express himself. Nature offers him the means. How shall he use them? At this point the child needs the revelation of law. He is to learn how he can and how he cannot use his power, but he can reach the fulfillment of his dream and vague desire. Here the parent stands as the lawgiver, and here the mental upholding and refreshment come, for the laws of life offer the meeting place for all ages, and the mother is watching the growth of a human soul, the unfolding of mental power.

In early technical work, the charm is in the law — to see how it brings things out. This becomes to the intelligent child more than personal approval. It holds him from too much appropriation of result

as the outcome of his own cleverness; it keeps him from applauding things as his own contrivance; it satisfies him for the moment as being the best that he has done; it suggests that there are better things to do, that out of himself more power can come. These things are not clear to the child. He only feels them, but here it is that the mother can find sustaining grace, needful patience, and a great wise interest in the work of a child.

The wide outlook, the look back into nature for law and process; the look into history to see how man has followed the ideals that still lead the people on in science, industry, and art; the relation of the child to all the rest of society — these are the thoughts and ideals that enlarge the horizon of the home. These stimulate us to read, to think, to perceive, to speak wisely and well, and to feel interested even in teaching a child how to sew. And also it makes a difference to the child whether he is taught just to do a thing, or to realize in a broader way the relation of this thing which he is doing to other things; and the value is equal to the child or to the teacher, if the person who leads in the industry holds always the large thought that everything that is without refers to something that is within, and that "all things are links in the chain, and there is no stray or vagabond truth in the universe."

Another point that offers assistance to a parent or to a teacher is to comprehend clearly that as a child passes out of the first period of his life, which will be when he is about seven years of age, he undergoes a decided change. New needs develop within him and new response should be made thereto. In the first period of growth he is satisfied with his own activity. If he has room for free motion and for doing things as his fancy may prompt, and if he has leisure for dreaming quietly over what pleases him, he will often be entirely content with an occupation that accomplishes no lasting result. The play of the moment engrosses him. It will be dramatic, probably. The cane that he rides will be his horse, the rug may be a boat. Details need not be accurate, for his versatile fancy fills out what is wanting, and his fancy is so much more than his thought that he is easily satisfied with a little. It is not wise to force on him a definite occupation too long at a time.

But as the child wakens from his first natural condition, he realizes the world outside more clearly, and begins to reflect the sense of results and of their importance. He takes a longer thought about the things he sees, he sees them as others see them, and he wishes to see also, as the conclusion of his own industry, something more permanent than mere play. His possessions are now of more intrinsic value, and in all that the child does of work or play he shows

that he has passed from joy and content in mere *being* to a well-defined desire for *doing* and *having*. The force of life now turns to the garden-bed, to the play-house, to building a camp, to tools, and to efforts at work. Here it is that to learn by doing becomes the child's refuge from his own new forming impulses, and also the parents' right response.

If parents, in studying the child, see and heed these natural divisions and turning points of life, they will be able to understand that the child is a growing being who must pass through his own stages; and in seeking to follow out what the school begins, or to use ideas and means that educators have found useful and good, they will plainly understand the reason for doing certain things at certain times, and will experience an intelligent and sympathetic satisfaction. For it is the ideal of manual training to understand each stage of child-life and to respond rightly to the developing energy of children. This is the reason why it has taken its high place in education.

It is in this earlier period that the kindergarten cards are most valuable. It is the time when a straight line can be anything. A child sewed ten lines, up and down, standing in a line. They were evenly graded from ten inches high downward. "What are they?" asked the kindergartner. "O, some children," said the boy — but who could tell the drama of his fancy in which those children had taken part? At a later stage, those vertical lines might have been pure drudgery. So, by living with the children, we learn how and when to pass onward from one occupation to another, keeping step with the native ways of life.

History shows what man's progress has been as he has dealt with rock, metal, and soil; with wood, fiber, and bark; with skin, bone and sinew; with water, fire, and air. Slowly he plodded along his way, rising by stern endeavor and, by new effort in the face of defeat, learning what could and what could not be done, and how he must act to gain support in place of rebuff, when new mental impulse prompted him to new active undertaking.

In this long story, we see that all real progress has been made by man's perceiving and obeying the demands of the laws of nature. By experience he has discovered that nothing in creation moves irregularly, but that all things have ways of their own. These are to be accounted for, explained, and used, only when man has learned their qualities, their powers, their reciprocal influence, their habits of imitation and of resistance. The objects of nature are strongly characteristic and individual; they will and they will not. The sum of man's knowledge, then, taking the centuries through, is what he knows of the laws of action, by which each thing comes into being and by which it

holds its place and acts its part; and evidently, since this is so, man's power can be asserted only when he abides by the law and acts in conformity with it, himself. He may have knowledge of the value of steam; in fancy he may see his railway train speeding across the land; but not an inch can he travel until he has met the homely demand of nature — water and fire. Just what she wants must be given, and, each to each, her parts must be rightly related. When this is done, she befriends her helper and puts her gifts to his own good service, realizing his thoughts for him, and bringing into actual existence what at first was but an image in his mind.

The habit of looking for laws in nature, in society, and in education, is one of the results of man's intelligence. Still with every new generation, new problems arise. And while this question of the training of children involves continually new complications, each younger parent and teacher naturally first looks back to inquire what has previously been learned, what has been practised and tested, and what are the ways and the means; the wisdom and the laws that so far have been discovered and called good.

The answers given to these questions should be not only in sympathy with the mother's spirit of inquiry, but also, and in the highest possible degree, enlightening. For, in dealing with our children, we need insight, not imitation. We seek real knowledge that will apply to the facts of life, and show what may and what may not rightly be done. To many a mother there comes at times a keen sense of inability — a sense of not knowing what to say in reply to the incessant little voice that questions; or what to do for the restless little hands that reach out into space, grasping at everything; or how to impart wisdom to the importunate spirit. When these seasons come to the mother, she is seized by a feeling of anxiety that at times approaches despair. She earnestly questions, is there a way to do? Is there a way that by nature belongs not to mothers alone, in their grown-up methods of life, nor to children alone, in their years of transition — from four to seven, let us say — but one that belongs equally to both? Is there a natural, orderly method of living, a path that both child and mother may tread, step by step, in peace and without battle of forces?

Does not this very fact that mothers, generation after generation, have thus longed for and dreamed of such a way, make it probable that it does exist? If such a way does exist, why have not mothers found it, and why is it not clear and plain, a veritable "King's Highway" for all mothers in all ages?

Many a pang does a mother conceal as she looks upon her child and recognizes the limitations of her knowledge, and of her power to

deal with that child. She is conscious of the rightness of her desires, and she cannot doubt that the problem — so vital, so absorbing — is capable of solution, could she only see the way, or find the clue.

This cry for "the way" is not of modern origin. Man has wanted to find his way, not alone for his children, but for himself, as he has stood looking into existence and striving to attain its blessedness. This existence is a threefold world. It presents three great divisions,— the earth, the sky, and humanity: the earth on which man lives; the sky above him, wherein shines power in its greatest signs; and the race of human beings, of the society of which he is a part.

These are the ancient elements of life, and these present also the three great modern aspects of the problem of child-training; and the mother of to-day may realize that she has fellowship with the mother of past centuries, even with the man of mythological ages, in the search for "the way." For the mother, also, has clearly in mind the three phases of life. Here is nature, well-explained by modern science; there, in highest relationship is the infinite, under whatever guise her chosen theology may have led her to accept; and here again is society, organized and regulated by its laws, religious, civil, national, commercial, military, and industrial.

The Eastern man looked upward from his earth into the sky, and demanded of the Light that ruled above an interpretation of all that he did not understand. He believed that there must be some explanation, for amid continuous changes he perceived the signs of law. By observation he gained some knowledge of the movements of the bodies that he saw revolving above him, and, thus reading from that great book of nature, he set forth for himself his own conceptions of supreme power and rational organization.

The ancient poetry, in which men poured out the profound longings of their deepest being, is significant to us. A second thought will bring it home to us as an expression of our longings. Power has been and is the world's ideal; and with the mother of to-day, as with the Orientals of six thousand years ago, the yearning is not for power alone, but for knowledge of how to use it. The tracing of this quest for the possession of power and its control has been continuous from earliest times. The individual repeats the experience of the race. The child rises to his feet. He has power. He feels it, he starts upon his way; the laws of equilibrium are his dependence; gravitation is his stay. By instinct he feels the law of his physical being and follows it. So the Eastern man read from the skies; "the way" was an ordered course, from which not even the sun might depart. The law came first of all; obedience followed. The Aztec said: "Our father, the Sun, must have another lord more powerful

than himself who orders him to make this journey." In Egypt "the way" was marked by a goddess — Ma or Maat — "the lady of the heavens — she knows the path through to the other world and leads the way." In India the path is Rita — "the broad way, excellent, undeviating." Under its control "the sun does not transgress the places indicated."

The mother of to-day lives in a world of scientific knowledge and of practical industrial life; yet, in seeking to be a guide to children, she too stands pondering, observing, questioning, and coming to her own conclusions. For to this personal conclusion every one is more or less compelled. We now know very much of the laws of *things*, but we have no sure grasp upon the laws by which *life* should move. Our chief consolation is the conviction that there is a real and orderly way of life; that this way certainly belongs equally to all; that it must, like the sun's path through the sky, be the great plan and pathway of man's being, as he moves with other men; and it must repeat itself with constancy as a way for all mothers guiding their children.

It would be a curious thing if, with all that men have done and are doing, nothing could be gathered up as token of progress in real education. It is certain that man has gained some knowledge of himself and his child; and it is also certain that some things can be plainly told which the mother can test and verify through her own experience. Fortunately, the things that have proved to be of greatest value in the training of children are in themselves simple, and, if comprehended, they can be applied naturally in the conduct of daily life.

The clearing and laying out of any pathway of thought and action is like the same work in the external world. The designer and the workmen are met at first by the obstacles that lie upon the surface. Up the mountain, down the hillside, or through the woodland, the way is to be cut, in its own direction, through whatever growth the busy hand of nature has caused to appear. This progress is step by step, winding here and there as may be needful to avoid the forest tree, the boulder, or the steepness of hills; and as the advance is made it requires a constant felling of trees, a lopping off of boughs, a clearing through thickets and underbrush, where shrub and bramble combine to bar the way.

In such an enterprise, the guidance of the whole rough work, whether it be a boy's path by the riverside, or the projection of a railway through wide unopened country, is first made by human thought. The idea of the pathway, the plan for the railway, is formed in some creative brain. The plan is elaborated in detail, its methods of progress, the value of its accomplishment, are all consid-

ered, and the entire thought or plan is completed, before any ax is lifted, or any external work is done.

This simple illustration of thought and consequent action is constantly repeated in every one's experience. It is the way everything is done. The little gingham apron for the child is seen as a whole in the mother's mind when she buys the material. The pattern, the cutting, the sewing, follow only as consequences of the thought that sprang up in her mind. And so, through all the day, in the cares of home, in the amusement and instruction of children, in the ordering of the household, the same method rules — all human action is based upon human thought.

The thought world lies within. It is invisible until it comes forth and of its own will takes shape where other men may see and know it. This outer manifestation of thought may be anything that is known to man. It may be language pure and simple — a song, a story; or it may be some work of large design, the calling together of other minds to adopt a plan and form a company, an organization, for its furtherance; or it may be the theory and practice of any science — of surgery, or of education. Great things or simple — all that is done in the world of action — are expressions of thought and lead us back to the inner world for their origin.

The way, then, that the mother seeks to find and to lead her child is, first of all, some way of thought. It is here that she feels herself to be perpetually busy, pondering the questions that constantly arise as to what should be done for the highest advantage, or for the highest that she can give to the growing powers of the little human being who looks to her for guidance. When she can think clearest she feels herself strongest. Not that every true thought can be embodied in true completed action, for life teaches us that this cannot always be done. There is often great difficulty in carrying out, amid the obstacles that beset us, the idea with which we started. Nevertheless, we know that the order of life and all the fruition of hope lie in the clear mental conception that precedes a human action.

To see this, to master this truth, brings to the mind a sense of strength and of repose. It is at least something to know that the starting point in all educational processes lies, not without, not in any book, not in any chosen means of technical training; it lies within, in the thoughts of the child, in the thoughts he cherishes and seeks to express, and in the thoughts of those who have him most in charge.

The two worlds — the world of thought and the world of action — appear to be distinctly separate, but a little study of life soon shows that the two are, in reality, but one. And here begins that careful investigation of our own modes of life. It is the study of human

labor, insight, and experience that has given to all leaders in education the ability to point out to others the things that result from the workings of nature, and are, therefore, nearest and clearest to the intelligence of any one who chooses to observe life for himself.

Here we may gather a few leading points to begin with, holding to the simple aspects of life as we all know it, and speaking only of the great principles that make, as it were, the introduction to all other knowledge, on which all action is founded, and out of which all human growth proceeds.

First, then, the way of thought is threefold. In this lies a principle that makes complex things simple. The three great divisions of life are Nature, or the force and the forms that make up the external world; the Infinite, or the First Cause, the Creative Power from which all visible things proceed and have existence; and Humanity, or the mass of beings, of souls, who, in association, occupy and possess the earth.

In these three points we have the outline of our extent of thought. They contain all that we can think of, both separately and as a whole. They include all that the child is to learn to see. In this realm of human experience, the child is to learn to live. Here he is to recognize his birthrights, his duties, his powers, and his joys. Before him lies Nature. To study her various departments of life is to study Natural Science. Above this "universal frame," within all its forms, and above, yet within, himself, lies the Source of Power, the Infinite. The natural aspiration of the human heart for this great Cause of Life, under whatever name it be called, is man's religion. The ways in which he has thought about it and the ideas and beliefs that he has come to hold and to set forth make the world's theology. Between these two — the natural earth and its unseen source, stands man himself. The study of his life brings us to Humanity — the central point of creation and of finite knowledge; and here, among his kind, we meet the child — the child of nature, of God, and of man. To see how it is that man may be called the center of things created, we have to look at him largely, as a whole, to perceive his wide relationships, his connections, and the influences that control him; and to understand how, amid them all, he exists and progresses toward higher development. In this way only do we discover where we are ourselves, and so only do we perceive where the child is standing, and thus do we learn how to approach him and how to suggest to him the way he should go.

In a large picture, we best understand the position and action of any single figure by standing back and looking at the canvas, as a whole. Though we know this to be the rational method, yet we

sometimes forget to follow it. We stand close to the canvas; in other words, we are closely bound up in one routine of daily life, and in that near view of many details we lose the idea of relation, proportion, and combination of interest that belongs to things in their own wholeness.

It is, therefore, worth while to pause for a brief study of this truth —that the first step in the *way* of education, whether for the teacher in school or for the mother at home, is the frequent looking at life as a whole and understanding it as threefold in character,—man standing as the center, with the currents of force, natural, divine, and human, sweeping constantly about him, holding him to his place, and by their interrelation, their action, and their reaction, urging and assisting him along the course of his own advancement—the unfolding of his powers.

Looking, then, at these three departments of our existence, and seeing how among them order is maintained, we observe that man, in the outer phases of his life, is a part of nature. In physical substance he is one with the earth, his mortal frame is composed of sun or solar elements. When this equipment of nature is laid down, it changes in form and character, and, by her own law of transformation, its elements are resolved into dust and gas, drift upward into lightness, and await, in the treasury of nature, beneath the sun, some further reconstruction.

In these common ways, too, man exists throughout his life as a child of the great mother. With all the rest of her living forms, he eats, breathes, sleeps, swims, walks, and runs, sharing with plants and animals the order of the years, the coming and going of seed-time and harvest, the order of birth, of life, and of death. In this he is subject to law. A certain limitation is imposed upon him. He is what he is born, and physically he cannot be otherwise, but, under the power that is greater than himself, he moves regularly through life along the great "way" that his own powers and his physical form fit him to pursue.

The study of man as a part of nature has increased that part of knowledge which is now set forth in the sciences of anatomy and physiology. These are an expression of the facts of the physical life which man lives here, under the sun, whose child he is, and on the earth to which he is, by birth, closely akin. This relation of man to the other forms of creation is sweet and beautiful. It is the external, the purely natural method of our existence. It sets each man in his own place, gives him his physical advantages of strength, motion, and power of speech, classifies him with his kind, as a black man or white, a man of the tropics or of the pole, and shows the great prin-

ciple of order that rules humanity. The orderly statement of all these known facts and laws composes the science of anthropology — the division of men into great races according to the measure and formation of their skulls, the growth of their hair, and the character of their language; and that kindred science of ethnology — the distribution of these different races through various parts of the globe, their separations, their union, and their growth in the growth of nations.

It is a great realm, this natural life of man. Studied by itself, it is full of progress and power. To every child born into its domain, a fair inheritance belongs. In these later days all educators, parents included, are realizing that the child has need of acquaintance with the forces, the forms, and the laws of nature, as a means of complete development. This is what has brought manual training into favor, for it is a means of knowledge and encourages a nearness to nature's laws.

From the consciousness of nature, lying near at hand, the mind turns to its polar opposite, to the Supreme Power of which all existence is a sign. In education, this First Cause is recognized as the Creative Force, and holds its place above all distinctions of creed and modes of worship. In this unity, all children may be taught the way that, beyond dispute and intolerance, leads to the acknowledgment of One Source as the origin of life in all its forms, and to the expression of rejoicing love that is the heart's natural mode of worship. "My son, give *Me* thy heart," is God's greatest command. In this all religions agree. Even in education that is not called religious, the teacher has the freedom of leading the child to expressions of love for the Divine through enjoyment of the gifts that make up our social and natural life. In order to enjoy perfectly the things which we see and have, it is necessary to comprehend them intelligently. This knowledge we gain most fully by seeing the law by which the objects of nature and the forms of human life exist, and by which they act together. We shall speak later of this truth, and the methods by which the mother may lead her child to natural love and reverence for the Giver. In this first thought of the threefold nature of human life as the basis of education, it is enough to emphasize the preliminary facts that love leads the way to God, and that love is embodied in life by the child's right relation to nature and to society.

In the third and last degree of this threefold way of life, we come to man. Here we find the child as one member of mankind among his universal kindred. To all men, known and unknown, he is related; for all are, equally with himself, children of nature, children of God, and children of human society; and here it is, among men, and by means of association with them, that the child is to come to his own

growth and to get his higher education. In this fellowship with the race he treads at once the three great ways — the Divine, the natural, and the human ways; while his spirit and mind, though as yet untaught, unconsciously reach out after means through which to satisfy his instinctive desires.

Here, then, the study of the child himself begins. And to come quickly to the keys that have unlocked the thoughts of man as to education, and have served to open the way of natural training, we must speak of natural law.

Life lies outspread before us. How does it work and how shall we and the child work with it, so that we may feel the power within us, expressing itself according to its own nature and degree of greatness? Our questions keep us at home within ourselves.

The problem of life is that of the human spirit. As the spirit of man looks outward into the greatness of earth, of heaven, and of life, it realizes that all things are its own. Along all its lines of outgrowth, the heart, the soul, the mind, go forth readily and with sympathy. All things are attractive, all things belong to us by the great right of our own human interest, whether it be the pathway to the Northern Sea, the distance to the sun, the great shifting of interest and authority among the powers of the nations.

This universality of interest makes education possible, but at this point also the danger lies. The questions arise, What a child should learn, and why? and, What should be given for the training of his hands, and why? Learning in itself is easy, but education frequently goes astray. This natural instinct of relationship and the diversity of lines along which human attention and sympathy may easily be beckoned out, confuse the spirit of education, so that it loses sight of its real pathway in the labyrinth of things interesting, but not essential.

It is evident that through our responsiveness we may easily run wild, so great and so varied is the display of power in the world outside. For this reason, the first question must always be, not what the child should know about these results of power in the world of men and of things, but how he shall be taught to use the force that is within himself. This brings us back to the starting point, and we must deal with life within the child as it stands facing all things.

Here, to begin with, two great principles become our help. The first is the unity of life — the unity, the perfection, and completeness of each human life as it exists in itself; and the next is the principle of relationship in life, or the connection of one life with others.

In the philosophy of the educator Froebel, to whom the world owes so great a debt, this idea of unity and of relation lies at the foundation of all study of the child, and all his methods of work and play serve for its illustration.

In a first study of this principle of unity and of relation, and in order to see it in a large and simple way, we may take life as it exists everywhere and begin personally with any member of society. For every child is born into the three great existing forms of life, and, as he comes into existence, brings with him by inheritance an established claim, clear in title. Life itself is a coördination or adjustment of essential parts. It is not one incoherent mass; it bears within its completeness certain lines of division by which relation appears. This division of humanity is threefold, and the relationships which thus belong to all alike, are the familiar forms of the family, the race, and the nation. In his birth the child, by natural law, comes into existence as one of the family. He bears by right his father's name, he has identity and place thereby, and certain claims to shelter, protection, and teaching. In this his position is complete. He is an individual, a whole in himself, and he comes into the family, which is also a whole, complete in itself, as a sign of relationship so perfect and harmonious that the circle of family life, or more properly its sphere, is not broken, but merely enlarged, by the natural expansion of its growth.

Beyond this relationship of family lies that of race. Each child is by birth the member of some natural division of humanity — black, white, or yellow. And as he is born, so he remains, related to others of his kind, and showing his relationship by certain characteristics of physical aspect and language.

But by a third degree of life, the child comes still more widely into related unity with his fellow-men — that is, through the name and power of his nationality. Born when he may be, he belongs to his nation. He bears its name, partakes to some extent of its chief elements of development of character and being, shares its general temperament, and speaks its especial tongue. By means of his national inheritance he grows up to certain political allegiances, rights, and duties, and through these he passes, as circumstance, condition, and personal power direct, either to fill whatever he may of high offices in public administration, or to follow such leadership, giving it his support. Within the life of the nation, each child has his own completed, individual life. He comes into it as a person and he comes as an inheritor. The past of his country belongs to him. He reads its history knowing that it explains and defines his own place in the world; and through what his country has been, and what, under its

flag, he feels it yet may be, in the assertion of its independence and authority among the nations of the world, he comes to an estimate of his own place and power as a birthright, political and social.

Thus, by observation, which we all may make, and out of experience which belongs to us all as a matter of daily existence, we can see the working of these two fundamental principles of life and of education — the unity of life in each person, and its unfolding relationship with other life through which it rises to degrees of development and power that it could never reach alone.

This idea of the wholeness is invaluable in dealing with the child. In himself he is complete. He is an individual. His powers, his general character and temperament, his special gifts, and his inclination to imperfection are born within him, and lie within ready to manifest themselves as opportunity shall allow.

These two ideas — the threefold connection and display of life, and the principle of unity and relationship that rules created things — are of themselves enough to reveal the way of child development. In these two we come to the opening of the way — the way of nature, the way of the Divine, the way of the human soul and mind.

What we need is to study nature and life until we see how the great law of growth reveals itself in common things, and how we can apply it in dealing with the common things, conditions and circumstances of daily life. Froebel says: "In all things, rests, works, and rules an eternal law."

This law is the law of force, the law of power, the law of growth. Universal in character and continuous in action, this law works and expresses itself where man may see it in the outward world, in nature, and also in the inner world, in the spirit of things and of men; and finally it appears in the union of these two, in the production of all that makes life itself — the life of nature, the life of man. In this we have the groundwork of Froebel's theory of education as a process of growth.

In harmony with this, the advance of scientific knowledge has tended to make the world of nature a means of instruction, not alone because its external forms have been better understood, but because the law of nature's productive power, *i. e.*, the law that guides and directs. or "rules," all her powers of transformation of material throughout her great kingdom, has been recognized as being one and the same with the law that is born within the soul of man, and by which all of his development of power is ruled.

To see how these things are, we notice that Froebel says: "*In* all things." When we turn to science we are taught that all the forms of nature, from the sun to the earth, and up, through all forms of

rock, to plants, to animals and men, are but so many signs of force. Within each thing—a tree, a flower, a fruit—force exists. We do not know force as a thing in itself, or as visible, but as the power which produces motion. In the motion of anything, a rolling wheel or the unfolding growth of a tree, we see the display of force. It comes from within the form it uses. Its movement outward is energy. Force may lie latent—the mere spirit of a thing—as in a seed which does not reveal its energy until rightly provided with conditions for growth, such as earth, darkness, moisture, light, and heat; or the power within may be called out by favorable conditions and so controlled as to propel a train across the continent; or, escaping from control and diverted from its true direction, it may burst into flame and burn to the point of death and ruin. In nature the chief elements of force are heat, light, magnetism, electricity. These are modes of energy and are made known to us through motion. The great law of force is that it works from within all physical forms outward, rising from stillness to action; and the result of force in action is, in general, to produce changes in the forms, the condition, and the character of things. We see constant changes going on about us. The coal burns to ashes; ice becomes vapor; the flower rises from the seed. This is transformation of material, the transmutation of substance rising from masses compact and undeveloped, into new forms, as in the evanescent flame, or, as in the flower, delicate in texture, fragrant, and rich in color.

Keeping this law of change in mind, we turn from nature to the child, and in him find the same law at work. This we perceive from his actions. His power lies within him. The force of his spirit is his own. He brought it with him, and each movement of his outgoing energy reveals it. The law by which his force displays itself is one with that of nature. This force moves from within outward, to occupy space, to seize upon what it needs for nourishment and, by dint of growth, it goes on to reveal its own possibilities. In the child the chief modes of energy are love, intelligence, the power of attraction by which he gathers to himself whatever appeals to him, and the electric current of his will—his desire to have, to do, to be. Whoever the child may be, or whatever his condition in life, these general principles define him and are an indication of what education should do for him. It should befriend him and help him to reveal himself among his fellows, as a form of power, not running wild, but developed and controlled. It should be used to good purpose and so become the means of his own highest joy.

In this view of the child we are led to think of education, not as acquisition but as development. "The human race is to enjoy

knowledge and conceptions; it is to possess a power of work and action which you, which we, do not now anticipate; for who has measured the limits of humanity born of God? But these, knowledge, etc., are to grow out in the freshness and vigor of youth, as developments from each individual, as newly created self-productions." Froebel also says that man "must be viewed, not as already become perfect, not as fixed and stationary, but as constant, yet always progressively developing — eternally living, yet always advancing from one stage of development to another, and toward the aim resting in the supreme and eternal." This law of growth applies, then, to child and man. The mother realizes this. As the child beside her proceeds along his own way of unfolding intelligence, he strives to draw her with him. In new paths must she walk; out from her own beaten modes of thought and speech must she go, even many times a day, if she would see and know what this new human soul is beginning to see and to know, to feel and to think. For the child follows no beaten track of life. With his own feet he marks out a new way, one never trodden before by any human being, one that no one can ever completely share. But all pathways of life run outward from one center to one consummation — the human life. So the mother, having lived through her own youth, is called upon to learn, as the lesson of her maturity, the art of adjustment of her own forces to those of a newly entered soul. The task is often severe in its demands. It requires constantly a double study of life; on the one hand a study of its principles and requirements, and on the other hand a continuous concession of points that are not essential, even though they may be dear.

In this the education of the mother is of the utmost value to herself, if she perceives what is going on within his circle of existence. Thus when the child comes to her with the question, "May I do this?" she will see that the question is not merely for the child, but equally for herself. How far can she go *with* the child, remembering that he belongs to a new generation, to which new horizons reveal themselves from the very first, within which she will become an ever lessening power, unless she can join the forward movement in which the child is leading. For instance, a certain mother had never danced. Her child danced to every melody. Wisely, the mother foresaw that, to be the child's companion in the passing years, she must dance. It was a new step on life's highway, a yielding of tradition; but since it was done purposely and with clear vision, this exercise of wisdom gave her harmony and joy in life. As time advances, the task of the mother, or the teacher, grows not less, but rather greater, because of

the rapid development of life about us. Here it is that principles of life and nature guide us.

In earlier days in this country, the mother had her personal interests and personal instruction closer at hand than is now the case. The national life was more limited in scope and purpose than at present, but partly through ancestral influence and partly through the movement of life in a new country, the family and its institutions held a leading place.

At present, society is undergoing changes. This is a transition period. Men and women are seeking for new methods and feeling after new ideals; and consequently new movements in life are appearing. This change is seen in the nearer circles of life, in the family, in education, physical and mental, in business, in politics, in the churches and in the administration of local affairs where the relations of men and women are steadily enlarging their scope and changing in character; and beyond this, in the larger degree of society and in the impulse of forces belonging to the time, historically speaking, the people as a whole are being carried forward through a wide international movement, the effect of which is to change the entire outlook and atmosphere of the times and to create new influences about children and youth. The United States has taken her place now among the powers of the world, and with increasing force and rapidity our political and commercial interests will reach out over the earth and return to their center at home, to change the thoughts, the knowledge, and the ideals of the people.

All these things have an influence on the growth of every child. More than ever before, each child belongs to his own day and generation, and more than ever before is it needful for parents to learn how to live with their children. In these things we have been following the play of force as it appears in some of its largest aspects, affecting us in our historic progress as a people. This large thought of the world outside should never be disregarded. It is the ultimate of existence. It is the far surface of life which the child, starting from the center in his own near family life, is at length to reach. Many a boy, who twenty years ago played ball at the door steps, is to-day in the Philippines, the advance guard of the life that still centers here at home. But in education we realize that, owing to this expansion of our general life, the family has a lesser place as an element of what we call success in the world than when life was more restricted. All now depends upon the man himself and his own alliance with others. While the individual is, in a way, of less importance, being but one among a constantly increasing population,

he has also greater opportunities than ever before. Our cities are becoming cosmopolitan centers; European people, language, and methods of thought are familiar to us here, as well as through our frequent journeys abroad; and the American is already, in a sense, a world citizen.

In this progress, while we speak of education for the masses, the work of the educator is, in reality, to make the most of individual power. How to accomplish this is the question that comes home most pertinently to the mother. The child plays on the floor, but his seed-time is short, and harvest is set for seasons far earlier than they formerly were. This is the inevitable condition under which the child is to grow. As a person, therefore, he should in justice be fitted out with the armor of his own personal power, in so far as he may be persuaded to acquire possession of it.

The true theory of education holds that this power must come through development of the child's natural endowment. "The first expression of the child is that of force." It may also be said that the continuous and the last expression of any life is the display of force. To recognize this power within ourselves and to see how to use it, is the aim of our highest education.

It is in reality, as a means toward this comprehension of life and a right control of its energy, that manual training has taken its place in education. "We learn by doing" is one simple statement that sheds light on the way of life; and if we add to those words, that by doing we learn the *law* of action, we see still more clearly in what direction the child shall lead us as he, by the energy of his own life, pursues the path of nature. The child leads us — whither? Out into the world. Out into the plane of external existences, the plane of incessant industry, where all things are mingled in action, where all things are seeking for completion of their own possible forms and for display of power. In the quietest landscape this is the story — up and out from their own beginnings all things are rising, passing on to completion, then yielding to some new growth, the arising of some new impulse of life, which presents anew the law of progress. In the busiest city the story is repeated. The grass gives way before humanity, and again upon the human plane we see the power of life at work. Here at any point before us lie plan, process, and result. It is the building up of life, the building of a house, the collapse of enterprise, the success of a mine, a new invention that becomes a household necessity, the passing into oblivion of old ideas and of old forms no longer needed. This is the world of change, the world of diversity, the world of transformation, where nothing is stable, where forms multiply and vanish, where the unexpected happens so often that the mind of man

is fast acquiring the habit of expectation and losing the sensation of surprise — a world that would be sad if in itself it were all of man's power and possession.

But for relief, the mother will, in the education of the child, follow the idea of his "doing," and her eye will continually look both to the source of power and to its result. All things accomplished are produced by action in accordance with law. The source of power remains. The flowing forth of power in its own unity is a reality, ever fresh, steadfast, and reliable. Result is transient, but the force of life is undiminished. What it has not done it will do; what it has not revealed is yet to come. And all of this unknown power lies near at hand, invisible, yet ready to declare itself in the world of natural things and in the great sphere of the mind and by the skilful hand of man. So we look out into the busy "external" life, and we look into the seed and into the child for the greater and busier "internal" life, which we call the force or spirit of things and of man, and feel that we hold the key to these two worlds at once, when we reflect upon the order of movement of each. For as the simplest steady observation of life teaches us, all force acts by this one law — the law of growth. And here we may study the action of this law further, remembering that it leads us in the way of education.

"The law rests," Froebel says, "in each thing. Take a grain of corn for instance. Its law is familiar. If favorably placed, it will germinate, root itself in the earth, send its green shoots up to the light, unfold its leaves always after one method — that is as an endogen, growing from the inside upward — and finally, also, after its own method of blossoming, which it always repeats, it will close its life by storing up all its once outspread essence and powers in its seed. This seed it will arrange after its own law, imitating no other growth, but steadfastly preserving a peculiar method of storage, doing its own work and thereby asserting its own individuality." The law, as we see, "rests" in the plant. It abides there through its dry season, holding the germ of life closely packed within needed covering. Two processes await the seed. It may pass on to become food for animal or man, or it may be planted and rise from the earth to reveal its personal character. The only way we can explain these things, continuing, as they do, through centuries, is to say that the law abides, or "rests" perpetually within, and that the corn repeatedly comes into being as a form of nature produced by the repeated action of that law of force. For the law not only abides, it also "works and rules." The interpretation, then, of anything that we see is found in the law of its own being, and all things, when looked at deeply, are signs of the inheritance, the process, the unfolding and the fulfilment of law. We

observe that all growth reveals what Froebel ealls "the inner essence of things." In the corn for instance, something is produeed which, in character and quality, is unlike all other things that grow. Nothing ean repeat it. By itself and out of itself it appears in the world and no one could foretell this especial interior essenee of life, that makes the corn an individual thing, as no one ean forbid or deny it. "Everything inward is recognized from the inward to the outward and by means of the outward." Nature makes this plain to us. So, too, education of the human ehild "is based upon eonsideration of the innermost." "We are to *grow* in wisdom and understanding." "Man is to *become* conscious of his essenee." "In edueation, then, the divine essenee of man should be unfolded, brought out, lifted into conseiousness, and man himself raised into free, eonseious obedienee to the divine prineiple that lives in him, and to free representation of this prineiple in his life."

Through these things we eome to see that in the order of life all power lies within the form it wears. Nothing begins outside. The farmer must indeed prepare the earth, there must be environment and supply, there must be stimulus from without, a constant change and adaptation of means, *a calling out* of this interior power, even in the ease of the seed. Sinee the child is of delieate, sensitive spirit, eager to go forward, yet ignorant of the way, there must be provided from outside, even more wisely and plentifully, the means that can both draw him out and provide him with guidanee and support. These faets underlie all educational theories, and nowhere have they been more diseussed than in connection with the idea of the use of the hands in modern edueation. It is all beeause of the power within that the hands are to be trained, and the first thought of the parent or the teaeher is simply the growth, the expansion, and the training of this power. This being our point of departure, keeping in mind that we are eonsidering not things, but the power that produces them, we need to follow farther this law of growth, to see how of itself it aets. Its progressive aetion is evidently by means of its relation to other things. The buried seed, for instance, immediately comes in contaet with various forees outside of itself. With these it asserts its own relationships, and by means of its connections with earth, air, water, light, and all that goes to make up its garden ground, the plant develops and proeeeds to manifest its own "internal" powers — its detail of charaeter, form, and general life, as one part of the seheme of nature. As we watch this living proeess and examine its method, we perceive that there is a routine in the work. We see that results are produeed by the working together of things that are unlike. Eaeh form of life seeks and uses

as a means of growth, not another form like itself but something absolutely different, its "opposite," its "related opposite." One form left alone remains stationary — not lifeless but incapable of advance, unable to produce results. The seed must have the earth, the right hand of man must have its fellow, not a duplicate, but a companion. It is from the harmonious action of two forms, opposed and yet related, that results arise. These results occupy the third place. The owner builds a wall. He has taken materials, each of them so many signs of force; he has put them together after his own will; and the work stands something new in the world, a formation for use. In the first place, it points back for its origin to the man, to his mental power, to his thought and plan, to his directive force; in the second place, it points to the earth for its substance and materials; and in the third place presents itself as the combination of these in a form that implies the progress of industry, ownership, human existence in relation to its surroundings. Thus, in any page of passing life we may read the action of this law of growth, and see how steadfastly this threefold principle repeats itself as a means of progress. This principle is perfectly natural and apparent, and the recognition of it indicates a rational way of presenting ideas to children. As Froebel says, pointing out this law of relation: "In nature and in life a third connecting appearance always shows itself between two purely opposite appearances," as a result of their union. This is the law of harmony between created things, the law of execution and progress. For a large example, the sun and the earth are in themselves extremes of difference, yet by their interrelation and by the interaction of light and dark, heat and cold, with all solar agencies at work between the two, due to all the forms of life, arise the forms that are neither like the sun nor like the earth, but that stand in the third place, showing the power and the relationship of the great bodies to which they are equally and harmoniously related.

This law of relation is quite simple, yet it is of much practical use when applied to education. It is based on the nature of man. It is the exponent of his own native way of life — his way of doing all things. This law is exhibited, too, in nature. It is her independent way of working. Were man to leave the globe, the great relations of the sun and the earth would still produce the seasons; the seed and the soil working together would still produce their harvests; and through the cosmic harmony so attained, the earth and its products would stand as a tangible indication of nature's method of work, a suggestion of the Infinite — the source of law. To the parent, as to the teacher, refreshment lies within these analogies by which progress is made visible.

Turning from the detail of the labor which we may at the moment have in hand, to the consideration of the greatness of all labor as a sign of law, puts us in connection with life universal and with its working as a whole. It takes away from littleness, and gives us the breath of one whole life horizon, reminding us of our origin and destiny; for, in the largest aspect of this law, man himself stands as the product of the Divine and the natural, the child of God and the child of nature, uniting the highest with the lowest, the spiritual with the earthly. The human form of life is produced by this union of "polar opposites." From all these things that lie intermingled, yet outspread before us, we learn that a few elementary laws lie at the portals of the way of the education of a child or a man. For, whatever our age, it is when we first begin to look consciously through the "external" to find the "internal" that we come to reality in knowledge, and begin to see how to reply to our own questioning of life, or to the child's. The outside appearance of existence is diverse. The many are here, visibly — the many ways, the many forms — interwoven, crossing one another at every angle and producing all that belongs to our varied existence. Perception of the laws that underlie this variety of life, brings us back to the sense of unity and relation, to the unity of force, to the relation of force to form, and the relation of form to form, as one thing works with another in the great world of nature and humanity. So the parent at home, or the wise teacher who sees these things, holds fast to the inner unity, and uses things outside, never for his own sake, merely, but as a means of illustration for the teaching of some great principle. In this lies rest of mind, content of heart, the highest education; and it is well worth while for every mother to dwell upon these things, to study the unity of force, the diversity of form, the intricate and endless relation of things about her; for so does she become mentally fitted to answer the child's question,— "What is this?"

This study of unity leads to the perception of variety as a means of completion. The perfection of a thing lies in its growth or in its being put to some wide usage. This great law of creation must be followed in education as a guide, illuminating, indicating, and leading on in the way of the child's natural growth.

We see from nature that the process of this law of growth, is from the whole to the parts, from the general to the particular. By this movement the form attains to a new character, a new display of power, and a new unity. There are numerous examples of this, both in nature and in life. In the seed, for instance, all the parts are born at once. From the tiny hay-seed rises the grass, from the capsule of the poppy a single sphere ripens into the perfect plant. The plan of the whole was contained within the infinitesimal compass of the seed.

Its structure, the design of the leaves, their tint of green and their texture, the blossom, whether single or double, the color, the strange repellant odor, all that makes the poppy a marked character among flowers, went into the earth with the planting of its seed. And up from the earth, arising out of that small compacted whole, come the parts. Their relationship arises from their unity. The purpose of the plant is to bud and to blossom. This intention it pursues from the first. The flower is its fulfilment, and as soon as that point is reached, the plant drops off the parts which are no longer needed, and withdraws them to storage in its seed. This same general movement is also seen in the process of human life. It is the way force acts in man. The first impulse to do a certain thing arises in the mind. As a thought, it is a whole. It exists internally as a plan,—a plan to do, to make, to produce. This may be the thought of a child with his blocks, or the idea of a king—a Solomon's Temple to arise as a sign of the glory of a people great in their nationality. Its unity lies within the mind of man. It proceeds to make itself manifest by expansion. From everywhere its parts are brought, gold, silver, brass, and iron, purple, crimson, and blue—"three score and ten thousand—and four score thousand" to labor therein, and "three thousand six hundred" to oversee the work. And the conclusion is manifest in the Temple itself, a harmony of related parts, set together as so many signs of the ruling thought from which the process sprang. The parts united to make the whole. The outer work represents the inner life of a single soul, but by the expansion of the work, and by its placing as a center for the love and joy of the people, the thought itself has gained in greatness, yet losing nothing of its unity.

So by any outlook into existence, the surface movement shows the law of all growth. Growth is achieved by doing. This growth is from within outward, it is from the close, concrete form of thought and plan, to the outspread manifestation of its power, and includes in its working the life of other men. Thus the law of progress carries man forward in all that he does, from the government of a nation to the education of a child. This is, of course, a truth known to all, yet the statement of it helps to mark out the natural way of life, and holding it in mind helps to interpret what is going on about us with childhood or with full-grown man. We seek to express ourselves, and the process is this: First, force is exerted as an impulse merely, as some vague dream, fancy, or longing, rising to life within. We say sometimes at this stage, the child is restless; he does not know what to do. Secondly, in its way outward to expression, force takes the form of thought. Here it shapes itself and becomes clean, strong, and definite. The child asks: "Can I have?" "Can I go?" "Can I do?"

The third and final expression of this process, when it is complete and finds expression, is the force in action; it is deed and life. It is through this third expression of force that man recognizes himself and perceives the value or the folly of his thoughts; and so it is that he is known, not only to himself, but by those to whom he is related; for action is thought made visible, and "if man would know himself truly, he must represent himself externally, must place himself over against himself, as it were." This knowledge is gained by the use of nature, by the use of things and material. Thus man makes a double progress,—he finds out the power that lies within himself, and he learns how to ally himself with Nature so as to use her forms as an aid to his plans. Always, to begin with, the man pictures the whole within himself. He says, I have an idea.' He goes out to dig, to buy, to sell, to invent, to paint, or to model. He works from the whole within to the parts and so reveals himself. This the child also strives to do. To enable him to do this, is to give him education.

It is through the observation of the commonest things in life, along the instinctive ways of the child and along the ways of nature, ever repeated and ever beautiful, that we come to the philosophy of education. By the study that is within reach of us all, we penetrate the maze of appearances and actions that make up the moving exterior of life, and apprehend the germinal principles of all growth. The philosophy itself is for the parent, not for the child. The time is far distant when he is to *understand* mentally, how life acts within himself. This will not come to pass until he is grown to maturity. In the meanwhile, it is enough that he shall enjoy his existence and be cut off from none of his natural rights of expression along his own natural lines of unfolding power. But for those who have the child in charge, nothing can so enlighten the mind and give cheer and assurance in the question of what to do for him, as a clear view of the way in which the principles of life unfold, one achievement leading to another in a steady sequence of steps. Thus the child himself constantly illustrates to the eye that can read through his actions, the principles and law of his progress.

The principle of unity in life, and the relation of forms and phases of existence, one to another, lead us to the perception of the following facts: That unity, human and natural, lies in force and its law of action, while the relations of life and of nature are seen *through their embodiment in different forms.* The unity of the family, for instance, lies in the force of its inborn spirit of love; the relation of its parts, as a whole, is seen in the grouping of father, mother, and child, one at heart, essentially different in form. In nature, when tracing this unity of created things, we have the habit of speaking in the

plural. We speak of the forces of nature,— of gravity, of magnetism, of electricity; of forces centripetal, centrifugal; but in reality, these are truly not different forces, but different forms of force. The plural term applies to the forms and manners of action, not to the essential power within. Force is one, but form is manifold. It is a means of expression, and herein lies the reason for its existence and for the interest that it holds as an element in education. Form is the result of the operation of law. In that world of results we live. Here are our means of life, our means of education. There are two principal aspects of the general subject of form. The first of these is its infinite variety, its distinctness in each separate mode of its appearance, from the cloud and the rainbow, to the rocks, and all that they support,— the forms of growth, of labor, and of life. The second is the aspect and process of form as it begins, and grows and changes. In this we inquire *into* form. This inquiry leads us straight to the science of mathematics, and to all questions of construction, and to the consideration of the ways by which things *begin* to work and grow. To this we come later, since the outer "manifoldness" of the earth we live in rightly detains the eye and thought of those who purpose to deal with the occupations of children, and with the training of children's hands. This world of form is a great exchange. The energy of the universe is here at play; the energy of the child's ball is a part of its ceaseless ever-changing action and re-action. Everywhere work is going on to bring about change of form. The process of this work is a reaching out into nature, a bringing home, a growth, a change of form, color, size, or texture, and finally, a giving back to the sum of general life all that the individual thing had taken for its means of production. So in the plant world, for example: "That wonderful laboratory of nature, the chlorophyll of the green leaf, calls to its aid the power of the sunbeam and rends the molecules of water and carbon dioxide, atom from atom, stores the carbon and hydrogen in the woody fiber and throws back into the air the pure oxygen. It has required energy to produce this chemical separation which is stored in the woody fiber, and when the wood is burned as fuel, it gives back in the form of heat the measure of the energy expended by the sunbeam in the growth of the wood."

The first apparent result of this plant labor has been the production of form, the leaves, the stem, the flower, the fruit. This is the gift of the earth to humanity — the apple that he stores in his cellar, the fire that calls him to his hearth. This is the large result, so far as appearance goes. But in reality, the highest work of the tree was in the full expansion of its energy, in the beauty of its blossom and its return to the subtle wonder of its seed. In this lies the cycle of

its being, and when we know the tree we shall be able to watch this course of its life, and to see how, when uninterrupted, it goes out into the world to express itself in all its native methods, and returns to its starting point. To go out, to unfold, to return, to grow year by year, to increase in power, and ever to repeat the law by which it makes its rhythmic progress,— this is the lesson of nature and this is the movement of life in the child. In this connection, reading the action of one law in the child's life and in the life of nature, we can follow the idea and principle of the expansion of life and its return to its own center, and find its value as an educational principle. It is a refreshment to look away from the detail of any labor and to lift the eyes to a wide view, observing the work of other hands in other spaces, the action of nature in fields beyond our own. And to look away from the child at home or in school, to the life of man, and to the life of nature, working by one law, is ofttimes an illumination of heart and soul and mind, that results in clearness of thought and power of judgment when we return to the problem of life that we have in hand.

In this outlook upon nature and upon the action in nature of the great law of growth, Froebel says in regard to the variety of forms in creation and in society, that the outer life calls for a separation of parts in things as "an unavoidable requisite for higher consciousness. For separation is permitted for the observing, thinking, and comparing intellect, and the outwardly representing life, and is, indeed, *required* by it, but must by no means on that account be permitted to appear in the mind which is destined constantly to grasp and retain in its original inner union that which is outwardly apparently separated by the thinking intellect, the reason and the life." The result of this principle of "separation," as Froebel speaks of it, is easily seen in nature, and when we turn to the oak-tree, for example, or to the rose-bush by the door, in order to read this lesson, we feel afresh the joy of recognizing our nearness to the great Mother. Her gifts are not forms merely. They are not mere outward objects standing on the earth — as field and forest — as gems, or birds; but they are equally inner gifts, and all — the plant, the crystal, the bird — are in reality so many signs of the law that "rests, works, and rules," in nature and in man; the law that every new book of science makes clearer; the law of growth that education should make plain to parent and teacher alike. So we turn to the plant world to read this lesson. In the process of form-production, separation of parts appears. It is the life of the tree, or of the daisy, displaying its power. Outward it goes, setting its branches widely apart, setting its twigs out into the air, stretching itself to fill its largest space and to go as far as

its power shall allow, a little plant in the border, or a mighty king in the forest. This process each thing repeats and expresses to the uttermost, even cutting the edges of its leaves into notches and the petals of its flowers into fringes, composite, innumerable, as in the familiar crown of the dandelion. This is the work of the life of nature "outwardly representing" itself. We have seen it all our lives. To it is due the loveliness and variety of the landscape. To this expansion of individuality in nature's way of growth, we owe the beauty of the waving forest, the free lift and fall of its green masses, the rise of the harvest, the wind-blown beauty of green meadows, the infinite variation of form and movement in nature. We know that this separation of parts for the purpose of expressing the power within, has a scale of gradation all its own. It begins in the separating of particles of rock, one from another, until the solid mass becomes the sandy beach; and, more beautifully, it is shown in the flowing together of certain chemical elements and the building up of crystals. Next above this come the plants, rising, class upon class, from the ruffled kelp of the seashore to the intricacy of the purple passion flower hanging in the sun; and beyond these come the living creatures, rising in their separate orders, from the jelly-fish to the horse, to the bird with its delicately organized power, and to man, the master, blessed with the human hand. In all of these the principle of progress is the separation of parts, for the purpose of expressing greater power. Nature begins in the mass and works herself out into detail. The law "rests" in each thing. It rises into action and the result is growth.

Here, then, we see that these things are of use to us because they illustrate and point out the way of the child. We read, indeed, from the two books at once, from nature and from human life. The plant teaches us what the child is doing, as he follows the law of his being; for the physical life of nature is a picture of the life of the child, as, trying one thing after another, he works from his own center of power out into details of life. To complete this reading, we look again from the child to nature. In a tree, the principle of separation is not brokenness. The life is one throughout. The tree is a unity. It exists because of its own force of life; and, as science teaches, one principle of that life is coherence. This is the principle of holding together. Thus we see force at play in two ways at once, interior and exterior. Outwardly, by the energy of motion, change goes on, producing new form. Inwardly, the spirit of the tree holds fast to the plan of its first intention. After its own law, the idea and character of the oak, the birch, the maple — of all trees and all growing things, go on in each. The separation of form is an out-

ward process, "required" to make the idea apparent and useful in the world. "It is the destiny and life-work of all things to unfold their essence." This unfolding becomes possible only through the enduring nature of the "inner essence"; through the coherence of plan and power of life upon which all expansion is built; but, because of that unity at heart, the tree may go on to fill the largest sphere possible to its reach, extending new branches, new leaves, new life-buds, repairing its losses, making its presence in the landscape significant and valuable and beautiful, losing nothing, but gaining at every step.

It is by this law of growth that we really understand the tree and perceive that its two movements of cohesion and stability of plan within, and its separation and movement without, are the parts of a harmony; the exterior form depending upon the inner essence and expressing its will and intention. From the tree let us then look to the child. Here also is he, born under the same law, endeavoring, though unconsciously, to follow it and to live by it. Here, then, nature teaches the mother, showing her the way — first, her own way, which must be that of observation and of comprehension; next the way of the child, which is inwardly that of coherence at the center, the coherent force of his own life which he brought with him into the world and which it is his prerogative to assert and make clear and to hold steadfast; and, outwardly, the separation of this inner force into distinct and widely differing actions. In this comparison of nature and man we see that the tree is a limited form of life. So far it can go and no farther; the round of its life begins and ends visibly and in one place, its only mystery being the plan of its growth, the coherency of its being. This is its principle of power and points inward. It leads away from the display of form in its separateness to the unity of life, which lay at first condensed in the seed; and by this inward way, as we drop off all outer parts, we come to the question of origin, of Source. Froebel says: "All things have come from the Divine Unity, from God, and have their origin in the Divine Unity, in God alone." Thus as we come to the inmost essence, the Divine in nature, we explain all things that follow as coming from that single source. In the child, life reaches out to the wider plane of action, the whole earth. His limitation is not so marked as is that of the tree. Nor do we find his separate actions so closely related and bound together in one whole, nor so clearly apparent, as we find the parts of a tree. What man does, appears frequently as so many distinctly separated wholes. It is only when we regard him in his greatness, and consider his whole method of being, that we realize the full meaning of this movement of existence. But when we keep clearly in mind

the unity of force and see that, while it coheres and makes the individuality of the child (for the child or man, it is all the same) it also, by the energy of motion, is busy outside in a "required" representation of itself, then we are able to look from the child to his actions and to recognize them as so many ways and means for his self-expression.

And here to the mother are given means for aiding herself and the child, in this way. Froebel says the mind should "grasp and retain in its original inner union that which is outwardly apparently separated."

In reality there is no separation. While one act stands far from another, as using stones to build a house is widely different from using them to break a window, yet the origin and the consequences of action are felt within, both in their rise and in their fall. We escape from nothing that we do. Reaction brings all things home, not in form, but in consequence, and in influence upon our own individuality. This appears through experience, and this the wise mother remembers; still it is the process that we now are watching,—the process of the expansion of life,—and here the thought of inner union and of outward separation, of the force of life and its impulse to express itself in many forms, explains the phenomena of the child's activity. His task is to "grasp and retain" his own plan of being. He brings into the world the right to express himself, and this right is also a duty. Through the process, which is the transmutation of energy, he is to make acquaintance with the forms of nature and of life. Each thing appears to him as distinct and individual; each is to be valued for itself in its own place, and also both for what it will do, and for what it will help him to do. The stream that he visits goes of itself, but it will lend its power to him and will help him to swim, to sail his boat, to turn his water wheel. Through this response of power to design, the child gets his thoughts clear as to the world outside, and in education he passes from one thing to another, adding to his knowledge of material facts. This has seemed admirable as fitting the child for life, but in the highest knowledge of child growth it is now understood that to "grasp and retain" consciousness of one's own individuality, brings man at last to the fullest rounding out of the potentialities of his existence.

With these thoughts, the mother will not feel that she is teaching the child by leading him to the mere acquisition of fact and leaving him there. She will rather see that whatever she gives is to be first an allurement to awaken thought in the child. His interests, his delight, his investigation should first of all be given to the thing itself, but he should not stop with that step. He should not see and

know things merely in an outward way. Knowledge should lead to usage, and the usage of a thing should finally lead to some growth in the child himself. For the natural course of human power is from itself out into nature and life, and from there back to itself again. When this circuit is complete the child grows. This completed round of movement happens of itself naturally and frequently, especially if children have things not too rapidly or in too much outward and visible connection. If there is time and place, a child often gets back to himself, to his own ideas of things, to conclusions and thoughts which are a mental growth; but again, if left to himself, this getting back does not always occur. The process is sometimes broken up. The child stays out in the open, as it were; and, while he may see many things and receive various impressions, he may also, unless the world of things is in some way related to himself, be restless and unsatisfied, aimless in his seeing, idle as to doing, incapable of bringing his own impulses to the finished expression.

In such cases the mother may render efficient help, if, understanding what is passing, she draws the child into speech. Indeed there is nothing like intelligent conversation (a means always within reach) to break the spell of childish *ennui*, or to gather idle drifts of incoherent thought into the force and pleasure of expression. A gentle question, put seriously and sincerely, may touch the individuality of the child, and rouse "the power within" to call home and focus its straying energy. For instance — Is it raining still? Yes. Which way does the rain slant; show me; draw it for me. Do you know why the rain slants that way? Does it ever change? etc. The simplest things will serve for subjects. The intention is to direct the attention of the child to what is passing outside, and to lead him to clear, intelligent speech about it. The rain and the wind may easily be related in the child's mind as companions, for such in reality they are, and the helplessness of the rain, its obedience, its departure from straight courses of descent to whatever line the wind compels, make a pleasant, even a charming, topic for conversation; and if the child is led along naturally, not told too much, but waited for while he makes his own observations, questioned somewhat and replied to, it will rarely fail that he will be interested and satisfied.

The lessons that, in such ways as this, are chosen from nature, are not arbitrary. They do not admit of personal opinion as to the facts. The two observers look out together, and talk together impartially. The subject concerns them equally and it concerns all others in just the same way — the subject being a general principle in nature's economy and action. But the child is led to a certain consciousness of relationship between things outside and things within, and, upon this

mental alertness, dullness disappears, and gives place to the enjoyment of one of life's pleasures — the pleasure of intelligent conversation.

In this principle of quiet, unfeigned interest in ordinary things a parent finds great assistance for recalling the wandering quality of mood and mind. When the mind goes too far abroad, and does not by itself get home to do its own questioning or to make its own comments, it will often return, most happily, in response to a beckoning word.

In this endeavor to keep the child's mind clear by carrying thought from the things of nature back to its own center, the point from which energy went out upon its quest, we are guided by this fact — that all things that exist have a threefold natural relationship of their own to all other things of creation.

The rain for instance is thus related to the sun, to the earth, and to all forms of life, including man. A solar agent, born amid heights of air and cloud, by chemical law changing from gases to water, the rain descends to penetrate the earth's surface and to replenish all water sources. From this low estate, however, the water rises, some of it indeed to become mist and cloud again, but chiefly to be caught, held, and used as an element in forms of life. Here it does its greatest work, rising from the roots of the grass upward, to be of service to all forms of natural life, and of prime service to man. How large a part of every body is water!

The parent and the teacher may make valuable use of such simple thoughts of the continuity of nature's action. It is wise to cultivate the habit of tracing connections and of observing the law of unity and relation whereby things, like the rain, preserve their character and pursue their ends, while separating into many *forms* and appearing under many manifestations. These connections give ground-work for suggestions to the child, at whatever point he may be observing the action of force about him; and they keep before the educator's mind the law by which the force of life works in nature and in the child.

This law of growth which "rules and works" gives us always the triune wholeness of nature's movements, culminating in human usage; and leads us to see that in attaining this completeness, it reveals its most interesting aspects. The great circuit is perpetual — the sun, the earth, the life that rises between the two; and to follow any movement in nature from origin to conclusion is to become conscious of the vastness of the cosmic harmony in which we bear our daily part. In leading the thought of a child along this pathway of nature's progress and work it is only necessary to be suggestive to set him on the way, as it were.

For, so soon as the faculty of observation is roused, if the interest of a child wakens, he is more than ready to tell what he knows; and frequently he may astonish us by the extent of his knowledge and the good way that he has of thinking and speaking about the things that are familiar to him. With a little guidance by means of question and suggestive remark, the whole round of nature's action may be indicated; and any one who has experience will recognize the restfulness and self-control that follow a child's perception of unity — the getting back to human life as the goal of nature's journeyings.

Especially useful in connection with Manual Training is this habit of related thought — the wide manifestation of separated activities, the final reaching to the hand of man. For in this work the child is busy giving form to material. He is the transformer. To this power and production of nature, he is adding the power and productive quality of his own human mind. In his work he takes what nature has given him, and whatever these materials may be, wood, wool, cotton, or clay, they already indicate by their condition, the time and the process that nature has carried them through — being in themselves signs of growth, design, and intention. The work thus begun by nature the child continues and expands, his method being to separate and to recombine the elements and substance by means of which creative law has already been made manifest, and by a new use of these same things to carry the "inner essence" of his own creative thought out onto the plane of human industry, with its skill, its scientific knowledge, and its art.

The child, himself, is always busy with some small piece of work, some detached point of observation, and in his second period of growth, from seven years upward, he begins to feel with distinctness that the things he deals with are "something separate, something different from him, something foreign to him." To destroy this sense of separateness by bold statements of the unity and relation of created things, or by trying to make a child see the law of growth as a *mental* conception, is far from a true order of nature in education. Each thing that the child attempts should be to him a whole in itself, a thing to be studied and done in completeness; each being, as Goethe said, "a perfect part of a perfect whole." But one who seeks to be the master and the guide of a child can hold no surer position than that which gives this outlook from the center of existence; for he sees the interchange of life moving constantly through its three great phases, divine, natural, and human, and he sees also action brought to its fullest expression in the forms of daily life. To hold this view is to see the way of education. By working with things the child is to be led gradually to realize the laws of things. Beginning with the outer, as

to form, material, and action, he comes to recognize the law, the unity, the "inner relation" of things. This insight is man's highest knowledge. The best instruction leads to it — "to demonstrate the inner nature of things to himself and to others and to bring himself and others into an insight into this nature" is, as Froebel says, to be a schoolmaster.

The way of education, then, is along the line of natural principle. Its point of departure is the child himself, the play of force within him, the energy with which it rises from within and goes forth on its search for companionship and means of development. Any parent who bears in mind this law of growth understands that the most natural way to train this moving human energy, is to supply it with materials, not only in language and forms of speech, but in concrete form, to lay in the hands that which shall concentrate that roving energy so that body and mind can work together. This result is, apparently, in the main, technical. But in reality the employment touches the child's whole nature. His senses are not astray. He is absorbed in his work, its substance, its tools, its design, its resistance, its expression. He is learning the art of control and of production. He is training his own energy and he is doing all these things through following the law of development, which, whether in wood or clay, or human nature, works from within outward.

Thus, the way of education leads us step by step. In its pursuance we are brought to another principle that has the highest practical value in the daily, hourly question of the child's training, and of that inevitable accompaniment, the training of his parents and others who have him in charge.

This principle is the subordination of personal authority to the authority of law, and the idea of obedience as a yielding to the guidance of law rather than a yielding to personal command.

Life constantly furnishes examples of this. Man hastens to declare laws in order to escape from despotism, for by following any statute the personal element and opinion of men are put in abeyance, and by the acknowledgment of a law an ideal is established to which all are related equally and by which the relation of man to man is established.

So simple a thing as the sign above a bridge entrance — "Turn to the right as the law directs" — is an illustration of this principle. All who enter are subject to its control; all submit to its direction; all are equal beneath this law, and, in consequence, all move freely, without danger, and without personal conflict.

So, as Froebel says, "between educator and pupil, between request and obedience, there should invisibly rule a third something, to which

educator and pupil are equally subject. The third something is the *right*, the *best*, necessarily conditioned, and expressed without arbitrariness in the circumstances. The calm recognition, the clear knowledge, and the serene, cheerful obedience to the rule of this third something is the particular feature that should be constantly and clearly manifest in the bearing and conduct of the educator, and often firmly and sternly emphasized by him. The child, the pupil, has a very keen feeling, a very clear apprehension and rarely fails to distinguish whether what the educator, the teacher, or the father, says or requests is personal or arbitrary, or whether it is expressed by him as a general law and necessity. This obedience, this trustful yielding to an unchangeable third principle to which pupil and teacher are equally subject, should appear even in the smallest details of every demand of the educator and teacher."

As a principle of control a law is an expression that by its own nature belongs to all men. It is equally apparent to all and rules all alike. Thus, the rule of even a family properly established by the will and judgment of either parent or both, to meet certain requirements, as, perhaps, exact hours for meals, bears upon the action of all the household and therefore excites less resistance than a personal mandate to a child, which may not be so willingly heeded.

To consider this leading by the "invariable third" of law, is not, of course, to set aside proper authority in the family or in the school. But to have the habit of abiding by law personally, and the habit of looking for obedience thereto, gives to one who is in authority an impersonal standing with children that commands their interest and respect. This position is large and inclusive. It provides a place for all individuality, in a school or in a home, both in the children and in the elders. It in no way makes influence less, but it does make room for the growth and encouragement of charm and agreeableness in living, with the mutual exercise of personal attraction and power. The reason for this lies deep within human nature. Man establishes law because he desires to see his ideals of power expressed in life; it is because of his innate desire for harmony that he sacrifices his momentary desire to his sense of the greater right; and it is the greatest "measure of a man" that he, whether as a child or as a mature person, is sensitive to the habit of inner listening to the voice of this "third something," that is neither himself nor another, but is the right that is common to them both. It is, indeed, by this means that man touches and combines the extremes of his life, the inner and the outer, and carries his energy from the plane of his desire to the plane of action, making to appear in industry and in society what otherwise could not be expressed.

The principles of life have persisted since man was born into history, and slowly has he come to the knowledge of them. Very gradually the unity between the action of force in nature and the action of force in man has become clear to human understanding; and step by step have these laws, by which energy moves in man and in creation, been seen to be one and the same.

But with the advance of knowledge, this unity of law throughout all departments of life has become the basis of all true educational practice, and it leads us away from the narrowness of personal opinion, away from the arbitrary management of children, to ideas of wholeness of life and the harmony of creation.

The comprehension of these things has most naturally led to the consideration of industry as a means of training children; and the reason for all that is done in these directions is that work is an outward result which is also significant of interior meaning.

So to us all, at home or in school, the way of education is the way of law. It is the training of man's energy to move by methods that are akin to its own nature toward the attainment of its own highest desires. For these reasons, the idea of the everlasting presence of principle, and of the naturalness of working by it, is of first importance to those who are destined to have authority over the lives of children.

If with these thoughts in mind we look closely into Nature for knowledge of her ways, we see that while her method is that of change, her great law, acting independently of man, is the law of growth and production. This is not always apparent until we look deeply and consider the whole circle of points that are included in any one doing. Things appear to be negative in condition; destruction predominating. But here we learn a lesson that by analogy may suggest to the teacher the real significance of what sometimes appears in the child as energy unintelligible or destructive in tendency.

For instance, a rock by the roadside is crumbling to powder. Weathered and worn, its softer particles gone long since, its most solid qualities have at last yielded to the action of heat and cold, ice, snow, rain, and to the chemical dissolution of its elements. It holds as yet its place, but a careless step, or the touch of a child's finger, may crush its last semblance of form and scatter its material abroad. But this decomposition and scattering are for a purpose. The rock thus escapes from its limitations and now its essences go out upon wide errands. It becomes soil, rich and new, fertile and supporting, to offer ground for new plantings, to feed and cherish and to produce new growths of vegetation. The results of nature are always somewhere in view, and the process is always one that can be translated as being some step on the way, in the following out of the law of

growth. Therefore, in dealing with nature the gardener seeks first of all to know the essential character and requirements of each separate plant, and, knowing it, he yields to its law, and speeds it on its own pathway of development, by acting with and not against its chosen methods of growth. He knows that, if he plants the roots of his rose too deep, they will restlessly work upward to relate themselves, after their own nature, to the earth they live in. And all this action is evidence of this law of production, for the rose's intention and destiny are not mere existence in the garden, but the fulfillment of its power in the great result of its blossom. So even above the gardener and the rose, as above the child and the mother, hangs the invisible and invariable "third something"—the law of life, by which results are gained.

The mother, looking into life, sees that its way is indeed its own, as to its great and fundamental principles; and, looking from life as a whole to the life of the child at home, she realizes that his life is a part of the whole and that his education is truly to be accomplished by giving him opportunity and means to unfold his native powers. The questions of the mother's day and hour, then, resolve themselves into the questions, what point of growth the child has reached, and what he is really trying to do for himself. The inner nature can make its progress only by means of the outer life, and the question always is how to find some form of the outer life to give to a child, as a means for working out the force that wells up, unceasingly, within him. By the study of life we come to see that its great, simple ideas and its greatest laws, lie underneath its mazy, complex exterior. Led by the study which we are perpetually making in our own circles, we explain a form in natural science by the principle beneath, and in the science of living, we teach the child by falling back upon the law out of which his action grows.

Inward and outward the idea of education leads us: inward to the force that impels, outward to the form with which life clothes itself. The connection between the two is law, and it is the province of education to see by what law a thing may be done, and by what law the energy of the child is endeavoring to take form and relate itself to outside life.

The law of force by its action produces the world of form. For this reason the law of growth is seen to work *within* things, so that by reading from within outward, as from the apple-seed to the tree, full-grown and fruit-bearing, we best understand what we are beholding. And for knowledge of all that nature teaches, we are obliged to turn from the outer aspects of creation and go back to the beginnings of things, to first expressions of law. But first, before faeing inward

for this interior study of life's action, we observe one general method of progress, common both to nature and to human beings, and this is the principle of organization as a natural method of work and growth. A study of this principle shows a teacher the naturalness of the great laws that are lights along the way of the education of a child. It also offers a further solution of the question how to employ the force of a child and direct its native growth.

When man undertakes any work for a definite, tangible end, he sets together parts to make a whole. In a house, for instance, the parts are gathered — wood, metals, brick and stone — and these, piece by piece, are fashioned and related until they are fitted to each other throughout. Thus they become expressive of an idea. Each part is essential, whether it be foundation or roof-tree. Each part is complete in itself, a brick, a door, a window, yet all hold their highest position through their relationship in a common use, for thus the idea through which each thing has come into existence is realized.

In human life, this principle of organization appears at its height. Men are in themselves organisms, complete, separate, individual, yet man is born and lives and works by the principle that he shall ally his life to that of others. This principle is apparent, and illustrations are found on every side. We are born into organizations — the family, the race, the nation. These are without our choice, but we move with our kind. Later we enter new circles, the school, the church, the club, and even the chosen group of friends; and, in business, companies are formed or organized by strict formula and contract so that men bear their part officially and represent, by their unity of action, the unity of idea that at first drew them together.

This common practice of life reveals the nature of man, and shows us how, under a universal impulse, age after age, humanity has pursued this method of expression, this principle of organization, as a means for representing in the world the ideas that have ruled within. Life takes its own way of revealing itself, and that way is the systematizing of powers and setting them together to produce a harmony of result, no matter how unlike may be the forms under which these powers appear. Changes in form occur continuously; the stage-coach gives way to the steam-car, to the automobile, but the process of transportation continues, grown only more delicate, more subtle, dealing with power in its invisible, more elusive, yet greater forms. So the lightning, in order to become a carrier of messages, submits to an organization of wires and chemical materials which man has learned so to adjust as to bring into working condition.

Organization, then, is a principle of order, a means of expression, and man's natural way of progress. It is an idea that keeps the

mother at home, both that she may translate for us the life that is going on about us, and that she may help us to understand what the child, following his instincts, is unconsciously trying to accomplish. As an idea, the child knows nothing about it. All things are wholes to him. Moved by the blind impulse of force within him, he casts about among things outside until some object appeals to his fancy, and suggests to him some form to which his own energy can apply itself; but, so soon as his play begins, he renews the world-wide historic process, and in his little drama he turns to the organizing of material and action to make it represent the ideas that, by these means, he is expressing or making clear to himself. He may convert his blocks into buildings, or into a railway; he may carry out some imaginary enterprise among men, driving a horse to a country store, or keeping a school. His people may be invisible, his team may be some chairs, or there may be other children to join him, but the process is always the same — the child, of whatever age and by whatever means, is giving organic form to the life that is in him. He is following out a native impulse; he is showing forth the method by which the world works its life into form.

These wider thoughts as to what is passing as a child's life unfolds, bring to the mother the sense of world-movement and world-unity, and are an aid to her own use of thought, word, and deed, as she ponders upon the unfolding energy to which she longs to give a true support.

We are all doing the same thing — putting force into form. We are busy with the construction of life, weaving our dreams, our desires, our thoughts, into form, into action, into organic connection with all the rest of life.

Seeing these things, we instinctively turn to nature to trace the principle of organization among the things we call inanimate; and here we are reminded again that the law of growth is indeed "in all things," for Nature presents herself to the inquiring eye, both in her completeness and in her varying parts, as a result produced by the existence and action of this principle of organization.

Look where we will, this is the method of nature's progress. The sun, the earth, the planets that move with us, are a system — an orderly collection of bodies representing a plan, solar in origin and control.

The process repeats itself upon this earth. The trees unfold into organic wholes; the animals in their growth extend the principle of organization into still fuller manifestation, and all things present illustrations of the plan that man in a still higher degree exemplifies first, unconsciously, in his physical being and, later, in his conscious efforts at order and unity in society.

Here, then, in nature and in life, we find the way that education seeks to follow; and the visible signs of growth in the external world are a living text, unchangeable and full of interpretation for human life, for those who are able to read the text and to observe the revelation. Froebel says: —

"The observation of nature and the observation of man are mutually explanatory, and naturally lead to deeper knowledge, the one of the other. Man is compelled not only to recognize Nature in her manifold forms and appearances, but also to understand her in the unity of her inner working, of her effective force. Therefore, he himself follows Nature's methods in the course of his own development and culture."

As we have seen, the domain of nature outspread before us teaches the existence of force and its energy in action, the existence of law, or modes of action, and, finally, the production of form which is the result of that action. We readily comprehend that the scene we look upon is an exhibition of attainment, of results. Some of these results have been perfected, some are in process of formation, some are yielding to the law of change and are just passing away. The mountains and the sea remain apparently unchanged, the oak-tree endures for a season, the flower smiles and is gone. Still, what we are looking at, as we move about beneath the sky and over the earth, is, in the main, a work that has been done, or that is on its way to completion. We do not see the beginnings of things. It is evidently the plan of creation, and in accordance with the law of power and growth, that these beginnings are invisible. The bare lines of nature's first constructions are overgrown with foliage, covered with soil, lifted, by the expansion and unfolding of power, from original early estates into the affluence and beauty of outspread and varied form. Turn where we will, within doors or out, we look into a world of results, and see that the great process of creation is the production of form.

In this world there is infinite diversity of form. Every possible shape is here, every conceivable curve, line, and point is before us, every combination of color, and these woven into every variety of form and figure, intricate, exquisitely finished, separated, yet wonderfully harmonized in adaptation and interweaving.

Where shall we begin amid all this finished work? Where shall we begin with the instruction of the child? Here he comes, another working agent, eager to take his part in the great laboratory. His desire is to do something. In a world where man and nature are so busy, he, too, would take his part as a producer. The force at play within himself is kin to the great world force into which he has been born. In a sense he is not a stranger, for he is born an heir, he

enters life with a birthright of power. The force of creation displays itself before him and his own energy responds. What shall he do? Where shall he begin? What is the right course of *form* for the child to follow in order to become a producer of form?

We turn to nature for reply; we turn also to the work of man. Is there anywhere a natural starting point for observation? Here is form — the round, the square; the solid earth, the fluent wave, all floral forms, all works of man, his engines, his towers, his cathedral spires.

As the eye ranges at will among this "manifoldness," the thought arises, that the great world of nature and of life belongs just as it stands to the child who enters it. It is his equally as a whole and in all its parts; as a *whole* it is an influence; and since Nature presents beauty at every point, and since she is the mother who teaches man, the question forces itself, How can instruction be given that will not break in upon the natural and beneficial influences, that of themselves steal over the being of a child?

An answer to this question has come through modern scientific knowledge, through knowledge of the human mind, and through experience with children.

The effect of more perfect knowledge of the laws of nature has been to open and enlarge the mind of man in every way. As the nations have advanced in their knowledge of one science after another, they have increased in mechanical skill and inventive power, and at the same time they have produced, more nobly and completely, the fine arts,—sculpture, painting, music, and literature. The love of nature has not lessened as the study of mathematics has increased, nor has our greater knowledge of geology hindered us from watching the sunlight flame against the mountain tops, like the glory of God upon the earth; nor has the wider perception of the action of law in nature caused man to grow less religious, but rather his reverence and his practice of worship have increased.

Now our modern progress is summed up in the knowledge of law. It is not that we know or see so much more of *form* in the world than did our predecessors, but because we know more about the laws of force and the laws by which energy results in the production of form. To the teacher or parent who has the subject of Manual Training in hand, these facts are of use; they show that the child is not merely to *make things*, but, through making things, is to learn the laws that underlie the construction and use of materials.

In the study of the human mind, also, certain facts have been ascertained and established which mark out the natural way of study. Stated as educational principles, these instructions have become familiar,—that the child, or the man, naturally studies from the known

to the unknown, from the whole of a thing to the parts, and that all minds study by the comparative method.

With these points in mind, it is easy to see that the child who is born amid the prodigality of nature's forms, and the forms that man has made from nature's material, is not to be taken from form to form to be taught merely as an external lesson, but he is to be taught, what all have striven to learn, the art of construction.

This is to be his means of expressing his own power. To express his power he must know how to do. He must learn by doing, and his work will teach him the most interior ways of nature's work — the law by which a form may be produced.

For these reasons, the simplest of nature's forms, those that embody simple and fundamental laws, have been given to the child, and he has been set to work to use these so as to show what he can do with them, that is, to produce other forms.

It is at this point that the teachings and general principles of Froebel are set forth in the kindergarten, and as has been said: "It is in the department of Manual Training that the schools are now gaining their clearest ideas of Froebel's use of material things for the development of the inner life of the child." For those who, apart from the schools, look to industry as a means of developing "the inner life," and who use the materials of the kindergarten for the younger children, there is an especial interest in seeing how Froebel answered the question of what to begin with and how to begin, in choosing the very first steps for children.

He begins with light, with the science of mathematics, and with the art of design. Of this point of view, he says that it was his habit to look to nature for instruction "and let nature, life, spirit, and law speak for themselves." This is the model for us to-day. Any one may, therefore, look from the printed pages and from any theory out into creation, and may read at will from the great pages that are ever open.

In the book of nature, the beginning of all things is recorded as creation itself — the heavens and the earth. This is man's oldest knowledge. This creation, both as a whole and in its separate greatest parts, is in the round. The sun, the earth, all the bodies that we see in space, apart from the earth, are round bodies — spheres. The great lines that the eye follows, the horizon, the line of the sea, the sky's arch overhead, the rainbow, are circular outlines. All creation is built upon this model, and the sphere is thus the first idea that nature expresses in her production of form. Later, in the course of the earth's history, in the forms of rocks, plants, and animals, the straight, the square, the oblique forms come into visible existence;

but the sphere comes first in the form of the earth as a whole, and in all the diversity of organic life it remains the form of beginnings, as the cell — "the smallest element of an organized body that manifests independent, vital activities," a fundamental form of life.

As the sphere is then the earliest, it is often also the latest form of life. This appears in the formation of many seeds, and most beautifully it is seen in the finishing of fruits, the delicate fruits of summer, the oranges, apples, grapes, and nuts of later seasons. On these spheres Nature lavishes color, setting her first great form forth in elegance and beauty.

It is noticeable that all these things belong most intimately to man. He lives by the sun, he delights in the perfection of his fruits; and all these things are natural joys at all times and seasons — in age, maturity, or childhood. As we study the association of human life with this first form of nature, as we still look for this along the line of man's action, we come to this same elemental form of force in the hand of man, his greatest single means of amusement. The ball, "man's earliest plaything and his last," is the joy of the infant on the floor, the companion of the boy, the test of strength and skill in man, the means of social, companionable sport among men and women; and in its aerial, evanescent form of the bubble, reflecting the colors of light, it enchants the child, the poet, the scientist.

The gifts of nature are so near to man and so dear by every line of their connection, that the unfolding of any one of our alliances brings us anew into a wide companionship with creation on the one hand and the doings of man on the other. All of these things are of service to the teacher who remembers them, enters into them, and uses them, when a child comes with a question. The question relates to some detail of work or play. The teacher who cultivates the habit of thought that holds these universal points in connection, will know how to give replies that satisfy the native craving for "inner connection."

As we ponder upon these things, we see them unfold; they carry our own thoughts with them. For the elements, nature and life, of themselves reveal their own character; they present themselves not merely as so many forms, but, by their action and relationship, they show us the law by which they act, and the great cosmic interchange and continuity of their action.

In nothing are these principles of world connections more clearly seen than among the spheres and balls of earth and air. It is true indeed that the sciences appear in their wholeness, and in their separation one from another; and a little study of that unfolding of human knowledge will show how the steps of human industry also unfold from the simplest forms into the more complex.

The first of the sciences is astronomy. This gives the idea and relation of the spheres in space, as bodies moving together, regulated by law. The effect of that unity and harmony of action on the earth is to make the life of man regular, giving him his calendar. The earth on which he is placed is correlated with other bodies "in the sky," as Tyndall said. Astronomy is thus the science of creation taken as a whole. It includes all that is to be seen, most widely and afar off, in the circuit of our human days and years. Its forms are large and visible. Though they move separately in their own wide orbits, and in outline present themselves as distinct and distant, they are never unrelated. In this outward aspect, which is symbolic and poetic as well as scientific, the science of astronomy produces the sense of sublimity and suggests to man his highest and deepest relationships.

Passing within this great outer line of human knowledge to knowledge near at hand, we come at once to the three sciences of mathematics, physics, and chemistry. The first is the science of measurement; the science of form and number, size and quantity, limitation and expansion of material. This, in a large way, appears in the bodies of creation, lesser and greater, in their number and in their size. But close at hand, man finds this science of mathematics to be one of his first and chief means of expression, as he deals both with human nature and with material things.

The first result of energy in creation is form. Number follows as the spheres appear in space, one after another, thus taking a place secondary to that of form. Right here it is interesting to observe that this order of nature is instinctively repeated in the child's life. The mother gives her child the ball to play with long before she gives him numbers to learn. The first learning of form comes through his own experience; the second comes through directed observation, through comparison with other numbers, and through language. But the ball needs, at first, no object for immediate comparison, being in itself a unity, and having also such varied powers of its own for attracting the first interest of the child. It teaches truly by its own form and motion, and makes a direct appeal to the intelligence and joy of a child through its quick and varied response to the impulses of his own energy.

The sphere is essentially primary in the world of form. It leads the way. All other forms follow it. This we see as we continue to read from nature. Looking anywhere, we pass from the round to the straight, to the flat, to the square. The science of geometry leads us on. The streets of any town, the houses we occupy, the books we use, are illustrations of later elements of form, which diverge from its

first appearance in the round. The first thing that strikes us is the very great natural contrast between the large spherical outlines of nature and the forms of these things that are close at hand. What, we then ask, is the line of development? What comes in the order of nature, next to the sphere? To what great movement of force shall we look for all these other measurements, these other forms, so strikingly unlike the sphere? Geometry replies. As in the floral world, the plant, with all its variety of form, unfolds from the seed, so the power within the sphere unfolds into the elements of all other form. The "measuring power" works in three leading ways along three axes, and produces the three results of length, breadth, and thickness. We see this process, if, taking any spherical form, we cut it from top to bottom, from back to front, from side to side. If we do this with an apple for instance, we see before us all the elements of form that are most directly and completely unlike the sphere as it lies before us as a whole. When it is cut open evenly, there are planes, lines, angles, all radiating and proceeding outward from the center. The center is the great single point of power. From it, this power moves outward, by these three regular and equal pathways, and as it goes, and at each new movement, it reveals the elements of form that we put to daily use in our own construction of things that are of service in our daily life. So simple a thing it is to cut an apple; so great a thing it is to behold the unveiling of the laws of nature, to see the mathematical foundation of form and number in a way that a child may perceive as he cuts this natural growth into even dimensions, or pieces these divided parts together again to see how perfectly they fit.

Once more cut an apple from top to bottom, from side to side, from front to back. Eight pieces result. Reverse them from their natural position, turn the outsides to the center, let the inside planes, lines and points stand outside, and the result shows that the sphere, when evenly divided by its own threefold measurement and turned inside out, produces its own opposite — the cube. The cube is, then, as geometry teaches, a regular solid, with six equal square faces, each looking outward, each equally related to the point of power that makes the center; and the solid is measured as was the sphere before it, by the out-go of power, along three axes, illustrating the threefold standard of measurement.

So nature speaks to man, showing him how force, acting by its own law, produces form in the external world. And man sits down before these simple illustrations that nature gives him, studies the law, comprehends it and becomes a mathematician. So, on the basis of nature, we have our books of written law, by which the engineer

is taught to build his bridge, and the child to know that form and number belong to man as a sure foundation of life and work. There, too, the teacher who looks to the use of material and of design in Manual Training, and the mother who studies the question of employment for children at home, find enlightenment and guidance. For, as nature proceeds, so man proceeds also. Man works from Nature's models and follows her methods of measurement, as he takes up his tools and lays out his materials, draws his designs, and perfects his inventions.

From the first simple movements and results of nature's activity, man gets his first ideas of law. As he follows out these ideas, he establishes his centers of power, and balances and constructs and measures materials. Thus he gradually learns that he is indeed the child of Nature and turns to her the more for further teaching.

Nature leads man on another step, showing him that, where two steps have been taken, a third is required to complete what has been begun. The next production of form is neither a repetition of the sphere and its circular elements, nor of the cube and its flat, square, and angular, elements, but a combination of these two in the cylinder. In this, the round and the straight unite and the cylindrical becomes the typical form of growth — the form adopted by all the ascending growth of plants, by the animals, and more fully by man in the perfection of his physical frame. In the cylinder no new lines appear. It is simply a new combination of the old elements, and plainly shows that the geometrical elements of all things that appear outside of the sphere in reality come from within it. It is confirmation, in geometry, of the truth that is presented by all nature, that, when a thing first comes into the world it brings all of its own nature and inner essence with it. Whatever cultivation may do for a seed or for a child, all the innate capacity is born within itself. Education, therefore, is development of that which lies within. As Froebel says, we know what has come out of mankind, but "what human nature is yet to develop, that we do not yet know." We do know, however, the law by which that growth is to proceed, and for this reason it is of value to us to follow that law, as it is shown in nature.

In the sphere, then, lie concealed all the principles and elements of form and its measurements.

From the sphere all these are to be developed and, as they are taken out into the light of observation, they come in an order of their own — first, the hemispheres with their flat circular faces; next, by another cutting, the production of the quarters with their faces — the first presentation of the triangle. The center is disclosed, and from it every conceivable path may be taken, giving lines, angles, and

points, finer and finer with every new separation. Thus are furnished means of work, and it is to be observed that just as nature works from the whole to the parts, so in a child's work — his own work or that which others give him — the first is simple, plain, and large, in outline, while the progressive steps are from the general to the particular, by a steady increase of detail, and the use of finer angles, lines, and points.

In modern science, energy is spoken of in two ways — as "energy of position," when it retains its place, creating no changes, but standing in position, or at rest, ready to be called upon; and as "energy of motion," when vibration is increased, when changes of objects and of condition are constantly produced. "In the beginning" we see energy at its height of motion. The spheres of space are on their orbits, flying obediently, swift and true, under the control of solar law. This is the manifestation of power in extreme activity, giving no hint of pause.

Turning from these spheres to find their opposite, the cube, in nature, we come to the earth — to its substance as rock, to its crystal formations. Here the cube appears, the simplest, the initial form of crystallization, as rock salt, as galena, or lead, and the other substances. Ready to be acted upon by outward agencies, by the forces of nature, by the miner, by the manufacturer, the crystal remains in darkness and stillness, fully formed, complete, elegant, and above all, stationary. In order to prepare this for practical use, man destroys the steadfast crystal form, grinding it to powder, melting it to liquid, and mingling it with other material things. But while the form may thus depart, the principle of the form remains and is constantly reproduced by the instinctive craft of man. In our buildings, in our books, our railroads, and telegraphs, the elements of the cube are seen — straight, long, high, wide, steadfast, stationary, reliable, and responsive to the needs of man, who is ever near at hand. So, in the process of life, man takes up the geometrical elements of nature, and of theoretical science, as mathematics on the one hand, and applied science — applied in handicraft — on the other, and these progress together, step by step, outward from the first point of power in the center of the sphere. And so the teacher in school and the mother at home may look into creation and, following its order of development, may see prefigured, the steps that in sequences of educational work she is giving to the child, whose energy, always in "position," is most happily and most advantageously employed when it becomes the "energy of motion," along nature's regular pathway.

Froebel said: "The human being, in order to understand nature, must create it anew as it were, in and from himself, in a manner

peculiar to himself." The child does this by himself, for every line, every wheel, every stick he uses; and all that he makes and does with them can be measured and defined by the laws of geometry, which are first shown in nature. But, in a course of Manual Training, the creations of the child are based upon the teacher's knowledge of the way in which nature begins, continues, and finishes her own work, and the better this order in nature is known by the teacher, the clearer will be the educational guidance in the choice of sequences in work.

By reading the lesson of nature we see the sphere in the sky, the cubic formation — such as the crystal — in the earth, and the next higher grades of life rising into a combination of these two principles in the cylindrical forms of plant stems, tree trunks, the higher animals, and man. We thus trace the natural history of form as it is produced after its own order, without the aid or the will of man.

In such a large view of creation we observe the free and orderly motion of the spheres, by which, although each body is independent, and each orbit is constantly changing on its way through space, yet all hold a perfect and apparently unchanging relationship. The face of the sky is to-day, to the general observer, what it was when the Lord demanded of Job, if he could "bind the sweet influences of Pleiades or loose the bands of Orion."

Very different from this greatness of the sky is the crystal kingdom of the earth, rigid, fixed, limited in position, in capacity, and in scope of existence; yet the latter serves a purpose great and strong, as the foundation, or the lowest formation, upon which the next degree of life and form must arise. And in the next and concluding step of this first triune movement of force, we come to the cylindrical figure which, like the tree, is stationary yet waving and changeful, and which finds its final expression in man, with his free movement over the globe.

The sense of this great *way* in nature, beginning with the singleness and simplicity of creation and leading on to its diversity, gives a mental support to one whose immediate task is to guide a child's hand along the lines of production; and especially it gives the reason why certain forms are first given by Froebel to the child, and why the "occupations" follow in certain regular steps.

SEWING

While many industries have drifted away from the home, sewing, in large measure, still remains. The loom, for instance, belongs now mainly to the factory, and only in isolated places, or for small special industries, such as the weaving of rag carpets, and of the more elegant silk-rag hangings, do we find the loom in a home, or a person working alone at weaving. But in spite of the factory and the shops where the great work is done by sewing machines, and in spite also of the sewing machine itself as a chief element of help in family sewing, the needle still holds its place, and the workbasket is as faithful and as significant as ever.

The teaching of sewing in schools has for its aim not merely to produce handiwork, not merely ability to advance the physical comfort of oneself and others, as every one who sews may do, but also to be a means of the expression of force in the children along the lines of trained and skilful doing. This is done in the recognition of the principles that the head and the hand belong together and that each should help the other in learning.

In the family, or in any little group of children, this principle should be remembered, and all the learning should, as far as possible, be made a joy to the child; not a task severely enforced solely for learning's sake. This ancient spirit of compulsion and drudgery should be replaced by better things.

For work beyond the kindergarten grade, where regular sewing is to be learned, a child at home enjoys having a pretty workbasket of her own. If a class is to be taught, it is more convenient for the children to use bags, and to have these large enough to hold not only the materials for work, but the article that is being made. In either case, certain things are wanted and their collection is of interest to the child. The list may be:—

I. A small pair of scissors for cutting threads and small bits of cloth.

II. A thimble, thin and well fitting; silver is best.

III. Spools of white cotton, Nos. 50–80, and one spool, No. 60, of colored thread for basting.

IV. Needles — one paper assorted, Nos. 5–10.

V. An emery cushion.

VI. A small cushion or ball for pins.

These are the essentials for beginning. As the work goes on various things will be wanted — a tape-needle for running a string of

tape or ribbon into a hem, a stiletto for eyelet holes, varieties of needles for different kinds of work, and with them varieties of thread — wool, silk, linen, and cotton — and a thin, flat rule marked by the inch and its fractions.

For materials on which to begin to practice stitches, nothing is quite so good as Java canvas, and coarse burlap. Still, these satisfy the child but a little while, and they must soon be followed by materials for making real things for definite purposes. Among these, checked gingham is helpful, as the blocks and lines are a guide to the eye in the evenness of the work. Plaid nainsook also is good material, especially for the making of aprons. Cotton with as little dressing as possible should be chosen. The soft Lonsdale is very good.

NEEDLES

To OPEN a paper of needles is to see what an amount of work has been done in their preparation. There they stand, side by side, in regular order, polished, sharp-pointed, with fine little eyes ready for service. They have an elegant appearance and look as if they were fitted, as they are, to be great helpers in many fine and interesting ways; and as we examine them we can have no doubt that they have gone through many hands and taken many steps as they were made, first into uncut steel wire and finally into these perfect little tools.

Needles come in three lengths — sharps, ground-downs, and betweens. The middle lengths, called betweens, are good for beginners, as children are likely to hold the needle too tightly at first and the sharps are the most easily bent. Needles range in size from No. 1 to No. 12 and are suited to all kinds of sewing, from the seams of carpets to the hem-stitching of finest lawn. In a paper of assorted needles we see most of these sizes at once, the coarsest, No. 5, in the middle, the finer ones on each side, Nos. 6, 7, 8, 9, and 10. By a little use we become accustomed to these various sizes, and can tell at a touch what size is best for the work in hand.

When a needle has been selected for use, the paper should be refolded and put back in its place. This place may be by itself, or it may be in one of the many folding cases made for sets of needles. These folding cases are popular and very useful.

For darning and for worsted work, special needles are made. They are either sharp or blunt and they have a long eye. In sewing with these and other kinds of needles, keep them bright and smooth, first, by using them with clean fingers and, when necessary, by rubbing them in the emery ball. If they become bent they should be

thrown away, for to make true stitches and good lines in sewing, one must have true and well-kept tools. When the work is put away, the needle may be carefully fastened into the material ready for use at the next lesson.

To Thread a Needle.—Sit up straight, take the needle between the thumb and forefinger of either hand, hold it so that you can see the eye easily and put the thread through it. In doing this, each may take her own easiest way, using one hand or the other, or sometimes one and sometimes the other. Very few people do this in just the same way, and trying a thing in several ways makes many children quicker and more skilful than following a single rule.

To Thread the Long-Eyed Worsted Needle.—Take the worsted between the left thumb and forefinger about an inch from the end. Lay the point of the needle across the worsted as it lies on the forefinger; with the left thumb draw the end of the worsted down tight over the needle, draw the needle out and thread it with the loop that you have made.

In breaking the thread from the spool, take off about the length of the arm. The end must be twisted between the thumb and finger, to make a fine point that will enter the eye of the needle. When this simple connection has been made, the child has in hand a long line, flexible and yielding at every point, but terminated by the straight, inflexible, unyielding cylindrical form—the needle. The child works with the point, from point to point, leaving behind him a line of construction; he works to its definite conclusion, and usually he works to produce something that has relation to life, that can be used, or worn; or he works to decorate something, a mat, or a table-cover, with color and design.

In elementary sewing, boys are often happy to learn how to do the first simple things with a needle, and there are always men who use the needle in regular industries—as tailors, harness-makers, shoemakers, and sailmakers. This is not home sewing, however. It belongs to shops and is done in preparation for business, for buying and selling the things that are made. The sewing that is simply for personal comfort and for the family good and pleasure, is done at home, and in that sort of hand-work, people have for generations been taking the stitches that each child has now to learn, and for which the needle is threaded.

KNOTS

To make a knot — first thread the needle. Take one end of the thread between the thumb and forefinger of either hand, just as may be most natural to you, pass the thread about the tip of your forefinger to make a circle, and press tight against the thumb, holding the thread tight with the other hand; then slip the forefinger out of the loop of thread and, with the end of the next finger and thumb, draw the twist downward into a little, hard knot. In a few days this will become a habit.

The knot for sewing is one of the simplest knots in the world, but it serves a great purpose. In sewing it marks the beginning of the work, and the beginning of every new thread that is to be used along every new line that we are to produce. As we make these tiny knots, we may think, by way of contrast with them, of the knots that are being made elsewhere, by other hands, for other purposes, though these be but the continuation of our purpose, the perfecting of our life-work. There are the knots that are tied about packages that are to be sent out on journeys — hard knots, simply tied with string that is to be used but once; cut open and thrown aside at its journey's end. Then there is the great work where, as at sea, the heaviest ropes are used, and when the greatest care is taken that they shall never be cut or injured in any way because so much depends upon them. The ways in which these ropes are woven tell their own story.

Our thread for sewing is usually made of three light strands loosely twisted together. For fine work, we split our silk and use each strand separately. But the ship's cables, the great ropes that are made to bear the severest strain, are of thick strands, woven together three times three, in order that they may hold against the blowing of the wind and the beating of the water. With all these ropes that belong to great industries, men have, by practice, acquired great skill in tying knots of various kinds. Tying the ropes quickly and well is a great part of a sailor's training; and each knot has its name and its own particular use. We hear of the bowline knot, the square knot, two half-hitches, the wall-knot, the crown; and there are many others, some for one use, some for another.

The little sewing knot also has its place with a host of greater ones, and every one who sews must make it well and often. It is not necessary, however, to begin all sewing with a knot. We can often take a few stitches and then tuck in the loose end of the thread under the folded-over edges of the material. That is a very little

thing, but all hand sewing is done stitch by stitch, and as the sewing-machines now do so much for us, and we do by hand only the very nicest work, it is well to learn all that helps to make the sewing beautiful.

THE STITCHES

The stitches that we take in sewing are all straight lines, set in different positions. They are horizontal, vertical, and slanting. The work that is done with them in different ways is mostly known as basting, running, gathering, hemming, stitching, backstitching, overcasting, overhanding, the sewing of edges with the blanket-stitch, the well-known buttonhole-stitch, and darning.

In learning to sew, the horizontal lines come first. These are most easily made and are often used when work is begun in the simple lines of basting — running a thread to hold two edges of cloth together while they are being sewed. The stitches may be learned by practice on a sampler, that is, a piece of canvas on which all kinds of stitches can be worked in rows, one after another. This is interesting to make, and useful to look at if one forgets just how a stitch has to be taken. To make a sampler, take an oblong of Java canvas, nine inches by six; or a square of eight inches. An inch or more below the top choose a line for the first row of sample stitches. The first of these should be for basting.

To Baste. — In ordinary basting, the stitches should be short on the under side, and long on the upper. To mark this on the canvas, one thread can be taken up, and three or four of the threads can be passed over to make the long stitch on the outside. In basting gingham or any of the light materials that children use, No. 50 cotton and a No. 8 needle are suitable. The thread must not be too long, as it will kink or break; it also hinders in the sewing because it takes too much time, and too much attention and movement on the part of the sewer to draw the length through the cloth.

To baste a hem or a single seam the stitches may be uneven — that is, half an inch long on the outside; but for strong and careful work like the waist of a dress, the baste is made with very short stitches even in length on both sides. Also, when work is heavy the baste may hold better if we begin with a couple of short, even stitches, with a long one following.

For practice in basting, the child should first see the process as a whole. This is the correct principle, indeed, in teaching any stitch. First, show the child some finished work so as to give an idea of the use of the stitch, its general effect and appearance, the slant and

nearness of the threads, and the neatness with which the work has been done. This will satisfy the inclination of the mind which naturally works from the whole to the parts. The child will be more at ease mentally if he understands the result before he begins, and this will make the lesson a smoother progress for both teacher and pupil.

To learn to baste, put together evenly the top and bottom of a small piece of cloth. Take the cloth between the thumb and fingers of each hand, fold the top over toward you about one inch deep, hold the cloth tightly, and with the left thumb nail and the left forefinger make a sharp crease along the top of the fold. Lift the right thumb, make a few folds of the creased cloth, and pinch them tightly. Do this across the cloth, open it and you will have a straight line to sew by. This little preparatory movement will soon become easy, as it has to be repeated with many things that are done.

To baste on the creased line, have a knot in the thread, and at the right of the crease take up one little stitch. Leave the needle there, set the edges of the cloth very true together, and set two pins, one at the end of your line, another in the middle. Now draw the needle through and sew across, taking a long stitch on the outside, and holding the cloth straight before you between the thumb and finger tips of each hand.

It is best to take the trouble to baste almost any work that is to be done. It saves puckers in the sewing, it holds the edges of the cloth true, and leaves the hands free for the close work that follows. The basting threads are taken out when the work is quite done. In doing this preliminary work, the child should think of its purpose to hold things true, rather than of an exact and special nicety in the stitches. It is a good practice; it guides the eye and the hand to a method and a result. The question should always be whether the sewing is helping the work as a whole, rather than how the stitches may look.

To work the basting stitch on the sampler, run one line of three threads up and five down.

To Run.—As children can easily see, running is used for long light lines of work—for tucking, and for seams that have no great strain upon them. It is a convenient, quick way of fastening any two edges together, the needle *running* along, after some practice, with swiftness. To run, make a knot in the thread. Take the work in the left hand. The baste is, of course, in its place, holding two edges of the cloth together. The run is to be made just below the basting. At the right-hand corner, set the needle between the two edges of the cloth, pointing the way it is to go, straight across. Take small regular stitches, an even amount of cloth up and down, holding the needle and work between the thumb and forefinger of

the right hand, and taking the stitches against the ball of the left forefinger.

There are many motions to be learned in all this first use of the hands in sewing. The alternate lift and fall of the forefinger of the right hand to set and to free the needle, the push with the thimble finger, the drawing out of the thread; and this, with the teaching of the eye to see and to guide the work, makes the practice valuable to the child. It is this training of the muscles to obey the idea that the mother should think of in this first work. It is true she teaches the technical movements; she teaches to baste and to run, and leads the child to compare his work with that of a good model so that he may see what he is trying to do, and what excellence is; but all the time the emphasis lies naturally in the physical action of the child, as a sign of his own force adapting itself to the limitation and the law of a given material and of a regular trained action. This new spirit of adaptation of the force within to the force without, needs encouragement. The power will straighten itself out, and in time the sewing will be good, but at first every effort should be sustained by encouraging words rather than depressed by criticism of the result.

On the sampler skip three lines, then make one line of running stitches, even up and down.

To Gather.— It is often necessary to gather up a long line of material so that it can fit into a shorter space, as a belt or a collar or a wristband. The stitch is horizontal. In running, the stitch is even, or nearly so. In gathering, the rule is one short stitch, then a space twice as long before taking the next. If you take up two threads, pass over four. This gives even gathers. A No. 8 needle with No. 40 cotton is right for use on cotton or gingham, although a practiced worker often prefers a finer thread. The thread should be a little longer than the band for which the gathering is to be made. A fine thread doubled holds the gathers best, but is not so easily used by beginners. The knot must be strong.

To gather, hold the right side of the cloth toward you. Hold the work in the left hand resting on the ball of the forefinger. Put the needle through from the wrong side and take a tiny stitch to make it hold firmly. Point the needle along the crease of the cloth the way the gathers are to go, take two stitches at a time, then draw the thread through. If the thread breaks, go back and begin again. When the end is reached, draw off the needle and make a knot in the thread. Set a pin up and down, at this end, draw up the gathers and wind the thread over and under the pin. Now place or lay the gathers. Take a larger needle, hold the work in the left hand, and with the

needle lay each gather back smoothly, pressing it down with the thumb. In this you work back from left to right, and end where you began to sew.

In gathering, the parts are to be measured. The middle of the cloth and the middle of the band should each have a notch and these should be set together when the work is basted. A double gathering or gauging is sometimes used. This is good for woolen materials and the stitches are to be longer than in fine cotton. The stitch must always be lengthened when there is much cloth to be put into a short band, for this makes the gathers deeper. In double gathering, the thread nearest the top is first put in. The second thread is to be set on a line below it — about half an inch lower. The first line of gathers is not to be drawn up. The stitches on the second line are to be directly under those of the first. At the end take both threads in hand, and draw the gathers gently up to the length of the band they are to fit. They do not need placing. In all gathering, if the raw edge is to be put inside the band, the gathers are run through the cloth singly. If not, the edge must be turned down, and the gathers run through it double.

In fine materials, as Swiss muslin, a close gathering or shirring is often used, to draw the goods into puffs. This is done with finer needles and thread. Two fine runs may be made one-quarter inch apart, and an inch or more below this two more rows may be run to match those above. When all are done, the threads are to be drawn up and the shirring arranged evenly upon them. This work belongs, however, to dressmaking rather than to children's sewing.

On the sampler, skip three lines, then run a line to show the gathering stitch, two down, one up.

To Stitch. — The next horizontal line in sewing is called stitching. In what has been done so far we have had a stitch and a space clear across the work. Now we are to have a line of stitches set close together, showing no space between. This makes a solid line of thread on the outside of the cloth, and gives a very nice finish to many kinds of work. To do this, one should have a very true line of basting and should work close below it. A sharp crease will also be a help. A No. 8 needle and No. 50 cotton can be used for practice on soft cotton cloth. Make a knot and, beginning at the right one-eighth of an inch from the end, put the needle through to the outside, holding the work over the ball of the left forefinger. Now take the point of the needle back two or three threads, to the right, and push it out just as far beyond the starting point, to the left. In this work the thread is always in the middle of the long stitch that the needle keeps taking on the wrong side.

This close stitching has always been used for the finishing of linen collars and cuffs. It is the stitch that appears on the outside of all sewing-machine work. It is rarely done by hand now, except for special use and in embroidery and worsted work, yet if hand-sewing is done, this is the stitch for all seams that are to bear a strain, as in a dress waist, or children's clothing.

There is also a half-backstitch made by leaving half of the space uncovered, putting the needle half way back only; and there is a third way — running and a backstitch — three stitches running and one backstitch to strengthen and hold a seam. These are used for inside work and on short seams.

On the sampler, skip three lines of canvas, then make a line of stitching, covering every thread as you go. Set a line of backstitch two threads below.

To Hem. — We now come to the slanting stitches, for, next to those already learned, these small stitches, slanting both ways, are most in use. The first is for hemming.

To make a hem, a straight edge of cloth is to be folded over toward you one quarter of an inch, and creased down. The cloth is then folded over again, in the same way, and basted down any width that may be wanted. As we see by looking at common things, handkerchiefs or aprons, hems can be as deep as your finger, or more, or as narrow as fingers can fold. A wide hem should be measured with a little rule every two or three inches, and in woolen goods it is best to baste the first fold, as the fiber of the stuff will not crease. This will secure evenness, and the beauty of a hem lies in its being true and even.

To hem, we make no knot. For gingham or fine cotton, use a No. 9 needle and No. 70 or 80 cotton. Begin at the right, put the needle under the fold, pointing away from you to the right about one quarter of an inch from the end. Draw the needle through carefully, leave a little end of the thread showing, take the needle and tuck it under the fold and sew it down as you begin to hem.

Hold the cloth over the left forefinger. Keep it in place with the help of the long finger beyond. The needle will point across the cloth the way of the hem. Take up one or two threads of the cloth and also one or two threads of the fold. Draw the thread through and go on repeating the stitch. In time it is easy to set the stitches close, and to have them all slant alike, from right to left. When a new thread is needed, the end of the old one can be tucked under the fold, and the new thread start just where the other left off, as at the beginning.

If there are seams or stripes in work that is to be hemmed, they should be made to match exactly. If the hem is not to turn a corner,

as in a handkerchief, but is to be straight, as in an apron, the ends should be sewed over and over before the hemming is done.

To make a line of hemming stitches on the sampler, lay them over a single thread of the canvas.

To Overhand.— If we watch the motions of a person who is taking this stitch, we see at once what it means, for the hand is constantly carrying the needle and thread over the seam, from back to front.

We use the stitch to sew together two selvedges or two folds of cloth. Lay the edges evenly together and baste them just below. Use a No. 8 needle and No. 60 or 70 thread. Hold the work as in hemming. Begin without a knot, holding the loose end of the thread down with the first two or three stitches. Put the needle over the cloth, point it then directly toward you. If the needle is put through perfectly straight, the stitches will lie in a regular slant, which will be the reverse of the slant in hemming. At the end of the seam, take three or four stitches back to fasten the thread. When this seam is done, it can be laid flat. Take out the baste, open the seam, and rub it down with the thumb nail.

In this work, the difficulty is to hold both cloth and needle steady, putting the needle in straight to keep from fullness. It is a good plan to use a check or stripe and to keep these even, while one is learning the stitch.

To make the stitch on the sampler, the sewing can be done over a single thread of the canvas.

To Overcast.— Very often the loose edges of seams must have some slanting stitches cast over them, to keep the cloth from raveling. This is overcasting. The stitch is nearly the same as in overhanding, but the needle need not be set quite so straight. Hold the cloth over the left forefinger, make a knot in the thread, begin at the right hand up over the left thumb. The stitches should be about an eighth of an inch deep and about a quarter of an inch apart. They must not be drawn too tightly.

Overcasting is simple, but it is not so easy as it at first seems to be. If a child learns the principle, however, and the use of the stitch, the practice and appearance will come in time.

In working this on the sampler, the stitch should be taken over two threads of the canvas.

The Buttonhole.— We leave now the slanting stitches and come to the vertical — to those that stand up and down. In contrast to other stitches taken in sewing, these are few in number but they are useful and effective.

To make a buttonhole on white cotton, take a No. 9 needle and No. 60 cotton. Cut the slit a quarter of an inch from the edge of

the cloth. Hold it across the left forefinger, and with one or two small stitches at each corner, and with long stitches down each side, make the strands or bars that help to secure the edge of the buttonhole. Overcast this barring so that it will stay in place.

To make the buttonhole stitch, or purl, begin at the end of the buttonhole farthest inward. Take up three or four threads, push the needle half-way through, with the right hand take up the two threads as they lie in the eye of the needle, put them over the point and draw the needle through. The buttonhole is to be rounded at the end that points outward. It is to be drawn close together at the inward end and barred across with three or four buttonhole stitches.

Before trying to do this work, the sewer should see varieties of buttonholes on heavy and light materials, and should have a clear idea of all the steps that are to be taken. These can be shown and learned best by work on canvas, with colored wool and large stitches; or colored embroidery cotton can be used on white goods. The buttonhole should always be strong, and if it is also handsomely made, it becomes one of the finest points of finish for our nicest garments. On the sampler, a button hole can be worked without cutting a slit.

The Eyelethole.—This is to be punched through the material with a stiletto. To keep the hole round, use the little tool now and then while working. The eyelet can be worked with the buttonhole stitch. It can have the corded edge inside, or lying in a circle outside with the single stitches pointing to the center; or it can be sewed very closely over and over, with strong thread and even stitches.

To Darn.—To darn is to weave new threads where old ones have been cut or torn apart, or where a place has worn thin and needs staying. Darning is an old and familiar process. In the days when goods were not only made up but were also woven at home, cloth had a high value, and the darn was culitvated to an extent that has now gone out of fashion. To-day materials are bought for low prices, and a mother spends less time in repairing, and gives more thought to the supply of new garments for the family. But the darn can never go out of use, and to be skilful in making it, is often to be a friend in need.

The stitches for darning must be taken according to the tear. If the tear is straight across the cloth, the stitches will be taken up and down. If the tear is up and down, the stitches will go back and forth across it—or they may better lie in a long slant, and be woven into the material to draw it together, showing as little as possible. If the tear lies in a slant across the cloth, the stitches of the darn are to be taken up and down, side by side, following, however, the tear itself.

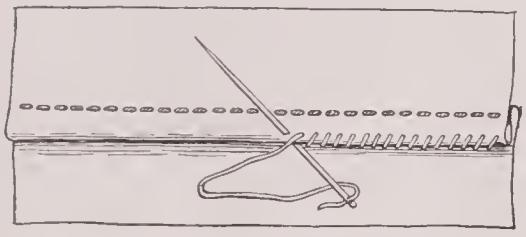
If it is necessary to put a piece of the cloth underneath a tear to give strength to the darning, it should be placed with care, thread for thread, on the goods, so that the two will pull together evenly.

A few simple principles underlie all this handling and sewing of materials. In learning any process, the child should be made to understand what is really to be done, and to see the relation of his own sewing to the work that was done by the machine in preparing the goods. This gives a mental impression that enlarges the intelligence, and awakens a sense of relationship in "doing," which makes the work educational, and saves it from being merely an industry pursued for the sake of a narrow, purely personal end.

It is with these few stitches that the great variety of our usual plain sewing is done. In all the making and finishing of garments they are used, one with another, to produce different effects.

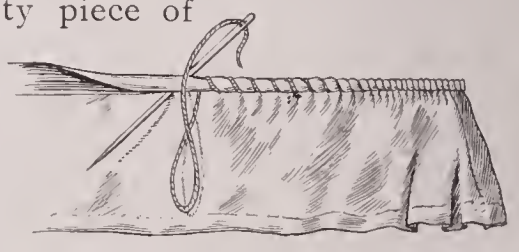
The French Seam.— A very nice seam, for instance, is the French seam. The two edges of cloth are run together first on the right side of the garment. The cloth is then turned, and the seam is made as usual on the wrong side of the garment, thus inclosing the raw edges between the two seams. The stitch is a fine run or run and backstitch.

French Hem.— There is also a French hem that is sometimes used on linen or on damask table-linen. For this, first fold a very narrow hem. Hold it toward you, fold the cloth back even with the bottom of the hem, crease it sharply, and with a fine needle and thread overhand the edges, laying them flat when the work is done.



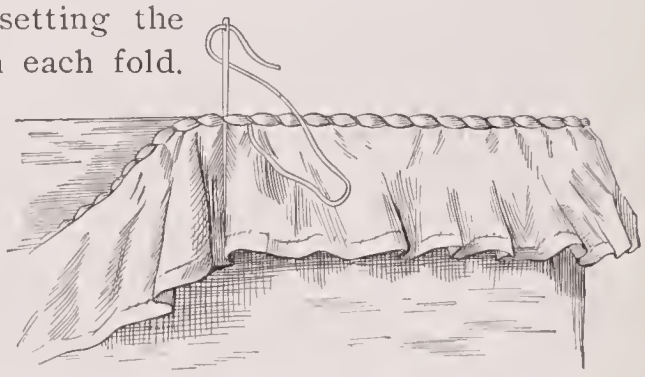
Felling.— Another nice finish to work is the felling of seams. To fell is to hem. First run the seam, or use a run and backstitch. Trim one edge of the seam down so that the other remains a little wider, or in preparing the seam for felling, one edge may be basted an eighth of an inch below the other. Fold the wide edge over the narrow one, and with a fine needle hem it down, keeping all threads tucked under with the point of the needle.

Whipping.— To whip is to gather by use of an overcasting or a hemming stitch. This is a very pretty piece of work to do. The materials, needle, and thread must all be delicate and fine. The use of the whip is for making ruffles. The strips of ruffling may be of any width. A good material for use in learning is cambric. After that, finer muslin may be used.



To whip, hold the wrong side of the goods toward you. With very clean fingers, begin at the right-hand corner, and with the left forefinger and thumb roll an inch or less of the material. Have a knotted thread — No. 50 cotton and a No. 7 needle are suitable. Take one or two close stitches to fasten the thread firmly. Hold the cambric tightly between the thumbs and forefingers, and continue to make the small close roll between the left finger and thumb. Hold the roll over the left finger, and take overcasting stitches over the roll, or hemming stitches up through it. Set the stitches evenly. Before beginning, the ruffle should be measured into half and quarter lengths, and the thread for whipping may be for half or for a quarter of the length. If too long, it is liable to break.

To gather the ruffle, draw up the thread and fasten it about a pin at the end. If the ruffle is to be sewed to a band or to a hem, as at the bottom of a sleeve or of an apron, the half and quarter should be pinned evenly in place. Then, holding the ruffle toward you, with the overhand stitch, take up each gather, setting the needle so that the thread will come between each fold.



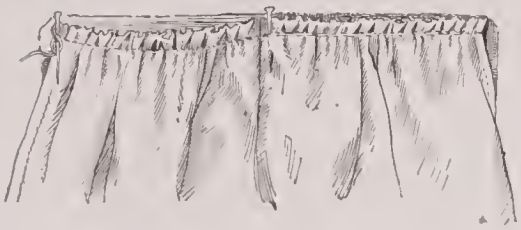
Ruffles.—Many times a ruffle is put on a garment in other ways. A thread can be run in an eighth of an inch from the top, the gathers laid very smooth and even, the ruffle basted to a band, and the gathers backstitched down. If this band is to be used as a facing, the bottom of the garment to be trimmed must be also basted even with the facing and sewed in with it. In this case the ruffle falls from between the facing and the outside material. The facing is then to be turned up, basted carefully, and hemmed at the top.

A ruffle may also be made with a heading. To do this, after the lower edge is hemmed, fold over the upper edge an inch or less, and at any depth that is desired run a thread through this fold. One or two threads may be run below, especially if the ruffle is of woolen goods. Sew through the gathers to the garment below, after careful basting and measurement.

To Put on a Binding.—Bindings or bands are often needed when material is to hang full, having been gathered. For straight bands, such as the wrists of sleeves, or for any waist bands whatever, the cloth should be cut the long way of the threads, as they pull more evenly, and hold the garment in place better than cross-cut bands.

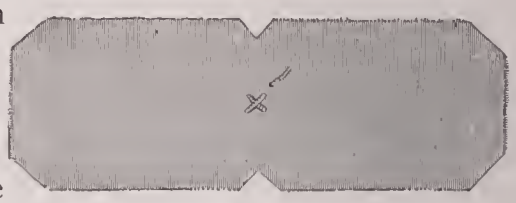
The middle of the band must be marked by a notch. The middle of the gathered material must also be marked. Lay the outside of the band against the outside of the gathers, setting the edges even. With

a strong thread, baste the gathers to the band, just above the gathering thread. To do this, take one or two stitches at the right, loosen the gathering thread, make it the length of the band, and wind it again around the pin at the left, which should also fasten the gathers to the band at the end. Set another pin in the middle to fasten the two notches together. Now baste the gathers across. Just below the baste, on the gathering thread, stitch the gathers to the band. Take out the baste. Turn over the band, crease down the edge and the two ends, trim off the corners of the gathers, fold the band down on the inside even with the outside, baste it, and with a stitch in each gather hem the band down, not allowing the stitches to show through to the right side. The ends of the band should be overcast before hemming down, and in cutting the band the ends may be cut slanting, so that they will offer less material to sew through.



If a band is to be put on delicate lawn, or any very fine material, the gathers can be basted as before, and the band can be hemmed down first on the outside, and then on the inside, with fine thread and very even and fine stitches.

To Make a Button Bag.— As soon as the needle can be used and stitches can be taken with some knowledge of their purpose, the child naturally proposes to make something with them. Whatever is undertaken should be as short a piece of work as possible. In contrast to the idea that "patient continuance in well-doing" should be taught by a child's overhanding the seam of a sheet, and taking it out if not done well, the modern teacher comprehends that the child conceives the picture or thought of a whole thing, and that encouragement lies in the ability to produce it without too much time spent on the way. So the little bag presents itself as something possible, and also attractive and useful.



To make a bag, select a blue checked gingham. The piece may be twelve inches long, and four in width. Turn the material wrong side out, and baste. The sides are then to be stitched from the bottom up to within two inches and a half of the top, when the thread is to be well fastened. The seams should be overcast. Next fold a very narrow hem from the seam up to the top, on the four open edges. Fold over the top of the bag for a hem, just even with the end of the seam, and hem it down. Just above, run a line of stitches, fine and close. This makes a casing. With a tape-needle, run in two strings of very narrow linen tape, one to draw each way, and to fasten

these lay the ends flat, one on another, sewing them down hard and tight, along the edge and across. The tape can then be slipped along until the joined place is in the casing. For this work, use No. 70 cotton and a No. 9 needle.

To Make a Muslin Apron.— A muslin apron of white plaid nainsook is interesting to a child and very good practice. The needle may be No. 10 and the cotton No. 90 or 100. The length of the apron must be measured for the child who is to wear it. The width also should be in proportion to the height and size of the figure. The hem at the bottom can be of any chosen depth, but this must be decided and allowed for in cutting. The sides of the apron should have hems one eighth of an inch in width. The top is to be gathered, the band basted on, middle to middle, the two are to be stitched together, the band turned down, basted and hemmed down, one stitch for each gather. If strings are to be made, they should be hemmed, laid in one deep plait to match the width of the band, and sewed closely with a French seam.

Cutting Out.— When the child comes to the making of things to use or to wear, the first step is the choice and cutting of the material. In the first place comes the suitability of goods for a certain use, the study of weight, texture, fabric, and general appearance; and with this comes also the kind of sewing that the cloth may require to hold it. These things, familiar to the mature mind, offer points for information, for observation, and for pleasant task among the children. If time is given, the unfolding of new material, and the comparison of weavings, will occupy a child for some time. In a class where results are to be reached at a given time, the teacher is not at liberty to let children lead in these matters; but in a small class, or especially with the mother at home, it is well to linger over every single point until interest flags. The result will be some growth of thought, and it should be remembered that thought takes time, and that much thought may arise in the mind from simplest starting points and from things that in themselves are ordinary and usual.

The process of cutting is the movement from the general to the particular. It prefaces the development of an idea. In this lies its first interest. It calls for the use of the scissors, and here all children find enjoyment. Unlike cutting a thing for destruction, or from the undirected impulse of force, astir within and trying to find a way of expression for itself, this guided and limited cutting is a step in progress. It destroys the material in its first unity so that it shall be representative in a higher degree of the life, the labor, the device and the industry of man; it puts the product of nature, whatever the fabric, to its highest use in intimate association with human life.

In cutting a garment from cloth, the threads of the goods are the guides. If a child has been trained in the kindergarten, he will be familiar with inches as a standard in measurement, he will know his right hand from his left, and will be in the habit of watching the up and down of lines, the straight crossing from side to side, and the slants of lines at different angles. What is bias in cutting and sewing, he will have learned, first as the true diagonal of the square, afterward as the varying lines of his triangular tablets, his paper folding, and his sewing. If a child has not had that training, it will be necessary to study the lines of cloth, to show how with the line of the woof folded true to the side of the warp, the exact bias is found — which is necessary for cutting a silk or velvet collar, for cutting a bias ruffle, etc.; and how, following exact patterns, many other slanting lines are to be cut, as for the breadth of skirts, the shaping of waists and of sleeves.

With these things comes the observance of inside and out, the up and down, the cutting to match a stripe, or to set a flower on a vine after the order of nature, and not upside down.

In teaching children to sew, all directions should be clearly given and all stitches should be made plain to them. For this purpose, a board checked in squares can be used for illustration of a stitch, or, better still, a piece of coarse canvas or crash can be hung before the class, or handed about among the sewers to show just how a stitch is to be taken and how it appears when done.

In sewing there is no invention of new stitches to be looked for. The process remains the same. But as fast as stitches are learned, the children may have liberty to apply them as they please, in any shape, or form, or use of material, that is sufficiently simple to be finished. The end should not be too far off from the beginning; and also whatever is begun should be carried through to the end, and put to some use, invariably.

In the methods of work, too, it is wise to allow as much freedom to each child as does not interfere with progress. It is customary for stitches to be taken with the right hand, and for work to be held so that the sewing, in general, is done toward the person. But it is noticeable that many bright children have ways of their own, using both hands alike, or reversing work, and doing it outward and away from the person. In all these individual ways, it is best to allow time and freedom and to observe the result. To enforce tradition often baffles a child, and hinders progress. The result, the ease, the swiftness, the accuracy desired, may be much more easily gained in one way, than in another.

As in teaching writing the letters may be made on a board, or on paper, and the child left to hold his pen or pencil just as he

likes, so that he makes plain, clear letters and words, so in sewing it is well to show the stitch and the usual way of taking it, but if variations occur, these should be studied and observed, and perhaps allowed. For among grown people it is noticeable that, as in writing each takes his own way and holds his pen as he pleases, so in sewing the needle is held differently by different hands.

There are of course some general principles that are of use to any one — the habit of holding a needle lightly to avoid a strain upon the muscles; taking it far enough from the point to get easy control of it for the stitch, and with the thimble finger; holding the work gently so that its edges fit together easily; and an easy upright position for the body, on a seat low enough to make the lap straight for work to rest upon.

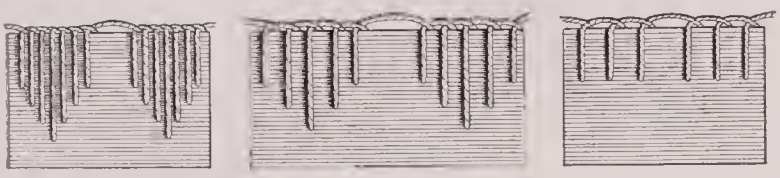
Ornamental Stitches. — Besides the cutting and sewing of garments, there is a field for needlework in the decoration of things that are made for daily use. For this we have embroidery, — the application of designs beautiful in form and line, and brought out in color carefully studied and harmoniously related.

To embroider with elegance is the fine art of needlework. It covers a wide field of knowledge and of skill, and has been pursued with labor and with love by the people of every great nation. Eastern embroideries are now well known to us through the importation of goods from India, China, and Japan, and from the markets of Persia and Turkey. In our museums we treasure the fragments of Egyptian fabrics, finding in them much beautiful suggestion as to lines and harmonies of color. Indeed, from all ancient work in textile fabrics, and especially in design for different kinds of material, and the use of certain forms and colors for especial uses, and in the modern oriental work, also, the people of Europe and of this newer western country have always much to learn.

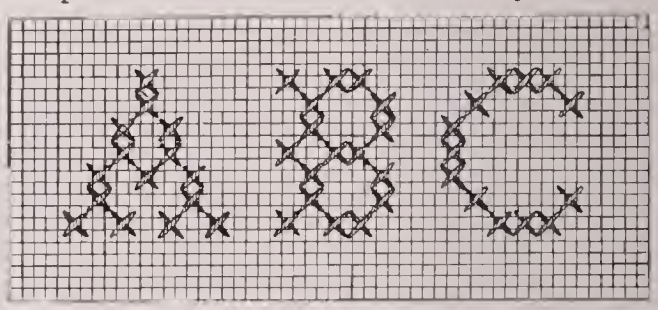
But this art of embroidery applied to shawls, scarfs, and laces, and to the heavier garments of both men and women, stands quite apart from sewing. It is decoration. It follows upon the earlier skill of the needle which is confined to the first making of things, and as art-work it has its own methods, peculiar to each people, which have to be learned over and above all knowledge of sewing. But while this is true, there are a few very simple ornamental stitches that can be learned as soon as the child begins to understand the needle, and the management of thread and material.

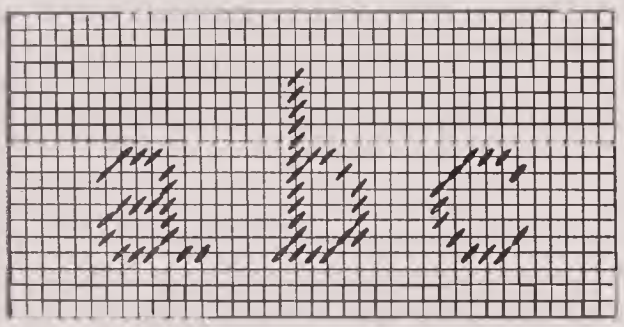
The Blanket-stitch. — This is a vertical stitch, suitable and convenient for the finish of raw edges. It is used often on blankets, to keep the edge from raveling. The stitch can be learned on canvas, or on heavy flannel. Use a worsted needle, and zephyr or Saxony wool. Hold the edge of the flannel toward you and work from left to right.

Begin by taking one or two running stitches from a point one quarter of an inch above the edge, straight downward. This brings the needle to the edge of the cloth, ready for the work. Cover the running stitches with one long one, bringing the needle out again on the edge. Hold the thread under the left thumb, pass one-quarter inch to the right, take a stitch straight up and down, parallel to the first, drawing the needle through over the thread and taking care to hold it loosely and evenly on the edge of the work. The blanket stitch can be taken at any distance, close or far apart, and the height of the stitches can be varied, graded, and alternated at pleasure.

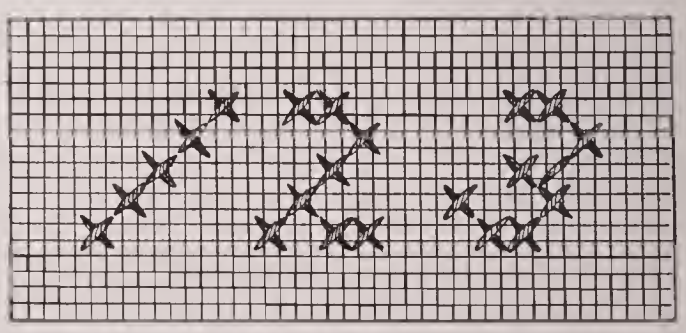


The Marking-stitch. — This may be learned on canvas, with clearly open spaces. It is the simple cross-stitch. Its beauty lies in having all the stitches crossed in the same way, to give a uniform slant on the outside. Letters, capital and small, and figures, can be made, and also simple borders for burlap — a pen-wiper cover, little mats, a splasher, or a bureau-scarf. The large letters should be learned first, and the canvas and worsted should be coarse rather than fine.



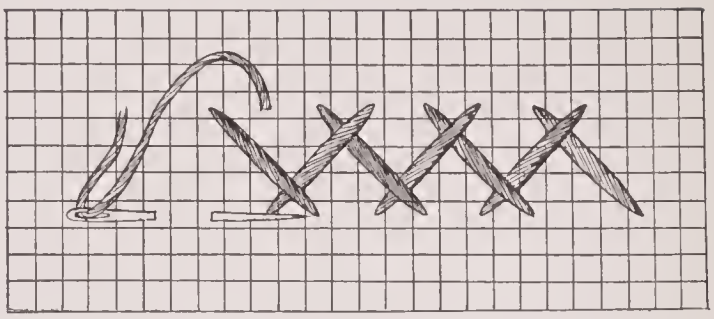


To make the stitch, we notice that each one fills a square of the canvas. The child should see this by looking at stitches ready-made before beginning. The square may be two threads of the canvas. The outside stitches may slant from left to right. To begin, draw the thread from underneath through the lower right-hand corner of the square, and cross to the upper left-hand corner. This makes a diagonal. Bring out the needle at the lower left-hand corner, and cross the thread to the upper right-hand, making a second diagonal. This may be done as a first exercise by making a larger stitch across half-a-dozen threads of the canvas.



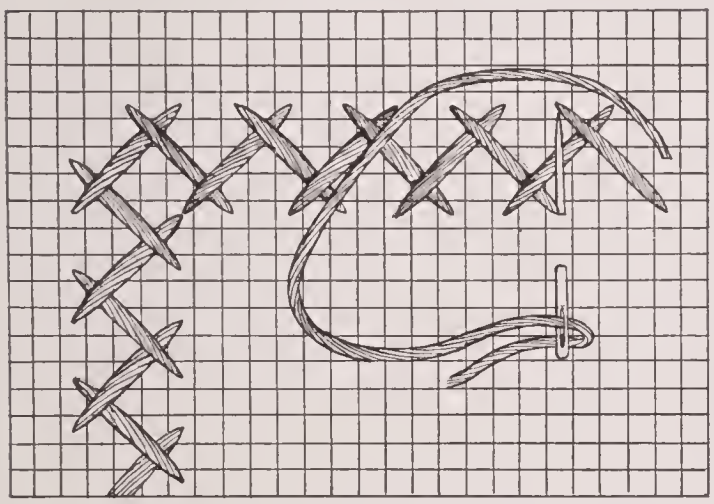
In making the stitch, care should be taken to fasten the thread without a knot, and to cut off the worsted between each two letters or figures, sewing the end down

with a stitch or two on the back. For fine marking, when the stitch has been well learned, baste a piece of open-meshed scrim over the linen, work the letter, then carefully pull out the threads of the scrim.



HERRING-BONE OR CATCH-STITCH. — Another cross-stitch, which is used to finish seams, is also to be learned on canvas. The work may run up and down or across the material, but it is made of one width throughout, and stands on two parallel lines of the canvas. These may be four or more squares apart.

To make the catch-stitch, begin on the line, at the lower left-hand corner, bringing the thread up from underneath. Hold the canvas over the left forefinger. Count to the right six threads, for a first lesson, then upward on the canvas count the same number. At that point put in the needle and, turning it directly downward toward yourself, bring it out three threads below. The needle must go in and come out exactly on the lines. This will give the work precision, and make it suitable for ornament.

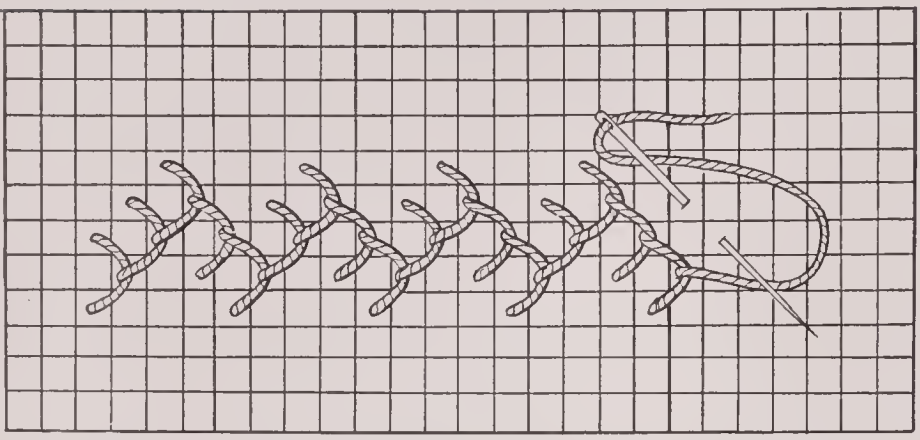


To go on with the work, reverse what has just been done. Count to the *left* six threads from the place where the needle comes through, and six threads upward. Then, as before, take up three threads of the canvas, pointing the needle straight down the line. After this, work again to the right. This brings the stitches in regular alternation, the small crosses opposite the open spaces.

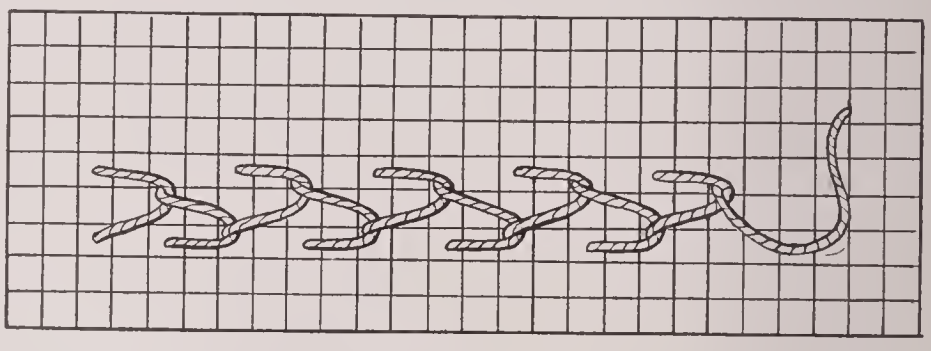
To turn the corner, take a stitch from left to right, but at the right change the course of the needle, pointing not downward but straight across to the left. Take up three threads. Turn the canvas on the left forefinger and work along the new side, as before, taking the stitches away from you. This catch-stitch can be used to hold open the seams of flannel, or to hold down any raw edge when a hem is not wanted.

FEATHER-STITCH. — In making this stitch, hold the canvas over the left forefinger, and work toward you. The stitches are to lie between two parallel threads of the canvas. To make a large stitch while learning, four threads may be taken for the width of the sewing.

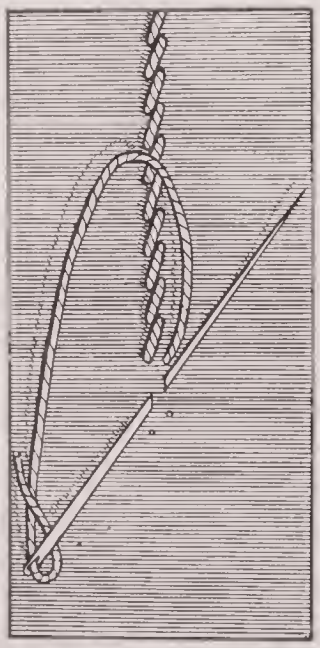
Begin at the upper left-hand corner. Draw the thread through and pass it under the left thumb. With the needle turn to the right, count three threads of canvas; then, exactly on a line with the first stitch, put in the needle, point it toward you, and take up three threads of the canvas, always holding the thread under the left thumb until it is drawn into place. Take the stitches in regular alternation. From the right count three threads to the left, point the needle toward you and take up three threads.



In this way, the stitching appears branching and with slanting lines, but the work itself is done by taking steps up and down, right and left, with no change and with no slant to the needle at any point.



Feather-stitching can be made wider by taking up several threads in succession on each side. If the needle is at the right, instead of next taking one stitch only at the left, continue to go to the left, counting three threads down from where the needle last came out, and then three down. Doing this will bring a slanting line of stitches into view. When three have been so made, reverse, and do the same thing at the right. The needle follows the threads of the cloth, always keeping true to the lines from which the work was started. When this stitch has been learned, it can be worked on flannel skirts for a doll, or for a child herself, or as an ornament to a crib blanket, or an infant's wrapper.



KENSINGTON OUTLINE-STITCH.—A pretty stitch for outlining a design upon crash, heavy linen, or upon any material taking silk or wool decoration, is made in this way: Hold the cloth over the left forefinger and do the work from you. The sewing is to run along a single line at a time, not requiring any guide but the line of canvas that is being followed. From underneath at the lower end bring the needle through. Count three threads to the right and, from there, about one

eighth of an inch above, put the needle into the cloth, pointing in a slant to the left and *downward*, and bringing it out half the distance down to where the thread began. The thread must not be drawn tightly, but must rest easily on the cloth. A heavy linen thread of blue upon white crash, or on white coarse linen, makes a very pretty bureau mat with this stitch.

The stitch is to be repeated in regular order, the end of each underlying the beginning of the next, the thread having thus the semblance of a twist along the line.

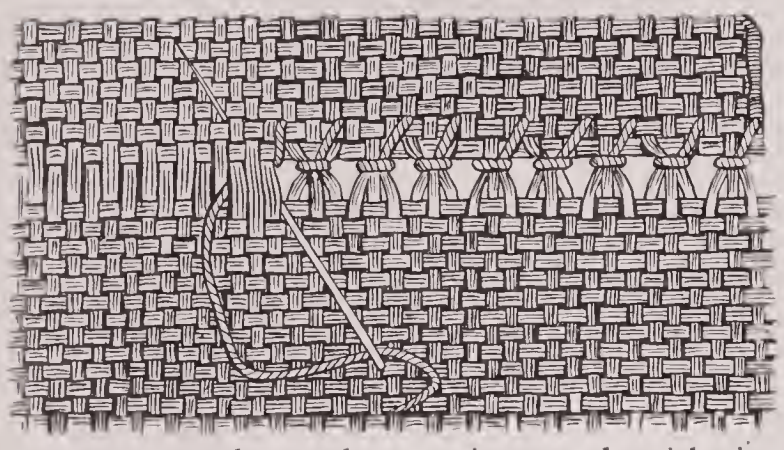
The Chain-stitch.— This is an exceedingly simple stitch, easily learned, and sometimes of use in making a border above a fringe or edging, or to outline a design. It can be taught with embroidery silk on muslin, or with worsted upon canvas. The stitch is made toward you, the cloth being held over the forefinger. Begin at the upper end, draw the thread through, pass it under the left thumb, set the needle exactly where it came out, point it toward you and draw it through about one-eighth of an inch, or over three or four threads of convas, bringing it up so as to make the thread into a loop. An especial point is to hold the thread down for each stitch and not to draw it too tight at any time. The stitches continue exactly alike and can be taken along any line.

To Hemstitch.— Among ornamental stitches, nothing is so much used as hemstitching. It gives a simple line of decoration that is delicate and elegant, yet is equally suitable to light or to heavy fabrics. It is beautiful wherever seen — on the hems of sheets and pillow cases, on linen for the table, on ruffles of lawn, and on lawn and linen collars, and above all it is the chosen finish for handkerchiefs, of every size and description.

It is one of the most useful of all stitches, as it is not an addition merely to what has already been made, but is in itself the hem, holding down and finishing the raw edges of articles. The stitch itself is hemming, but it moves backward as well as forward, and the work is specially prepared by drawing out some of the threads of the goods. To do this, it is well to practise on a piece of soft crash.

First, four or five threads are to be drawn out across the goods. If a coarse thread is taken first, it can be started with the point of the needle. Take the end of the thread in the right hand, hold the cloth in the left, working the gathers gently to the right. After the first thread is drawn, the others come out easily. When the threads are drawn, we have only the up and down threads left. The top of the crash should now be folded over very narrow, and then folded again to meet the edge of the drawing, and basted down.

To hemstitch this edge down, choose a certain number of threads to take up each time — three or four. Make a knot, put the needle under the first cluster of threads and bring it out between them.



Now carry it back, and take up the same threads again, but bring the needle out this time through the fold of the hem. When the thread is set back over the cluster of cross-threads, it must be drawn tight. This gathers the threads, binding them like tiny sheaves, broad at the base and with clear spaces between, toward the top. Each of these clusters is sewed with its own stitch to the hem above, and the hem is made secure with a line of spacing below, that is distinct and that gives character to a plain surface.

To those who by practice learn to do hemstitching easily, the making of fine linen handkerchiefs is a pleasure. A small square of linen lawn can be cut, allowing for a wide hem, or one of any width, even exceedingly narrow. The needle should be a No. 10 or a No. 12; the cotton No. 100 or 150. In drawing the threads for a handkerchief, they are taken out each way of the square, at even distances from each edge. At the four corners, the drawings cross each other The corners are folded over square, and basted down very flat. The hemstitching extends across each corner to the outer edge of the linen, making a solid square for each corner, with a well-marked space, made clear and strong by the meeting of the stitches that hold the threads.

This drawn-work is trying to the eyes. It should be done on fine materials only, by persons who are mature, and then in a good light, and not too long at a time. But a handkerchief hemstitched by hand is a dainty gift, and for holidays or for weddings, it proves an excellent resource for those who know the work; while on coarse material, children can easily learn the principle of the stitch. All of these stitches can be worked upon the canvas sampler. The blanket-stitch can be used upon the edge.

In a class at school, sewing is done with no reference to the sewing-machine. In a home, where the mother sews, and the family work is done on the machine, the child may not have the pleasure of being with other children, but she still has the incentive of working in companionship with the elders. For as soon as stitches and methods have been learned, they can be applied to the preparation of seams for stitching and to the finishing off of work.

There is also the cutting out, which is so materially aided by the patterns now popularly sold. The instructions given with these are interesting to a child who has begun to study the ways of threads in materials, the virtue of long threads for the length of garments, the needed evenness of threads across them, and the use of bias cuttings to give the pliant yielding that the round human figure requires in what it wears.

In cutting any simple work, a gored skirt, an apron with bib and pockets, a housekeeping apron, or any garment made with a few pieces, a child can easily learn to pin a pattern to material, to observe straight edges and slanting lines, and, when all is right, can help to cut them out. The basting, too, is very good for practice, and the putting parts together, the bias edges to the straight, the careful closing of seams, the allowing for hems,—all things that call for observation, careful handling, and judgment, can well be intrusted to a child who is at work at home. In fact, a cheap print bought for the purpose, and given to a child for experiment in cutting out and basting, may lead to most excellent results.

It is doubtless easier to work on clothes for children than to dress a doll; still, the doll's wardrobe may well be considered, and if it proves an interesting subject of study, there are plenty of patterns that give complete directions as to how the garments are to be cut and made. In this work the cutting is, of course, done after the principle of all good work, and the stitches that are required are those that are taught as the standard ways of sewing. Everything is to be done with absolute accuracy, and everything that is done on larger garments can be worked out for the various grades of dolls — whether they are boys or girls, servants, fine ladies, or children. To be able to dress a doll prettily is an advantage, as is any use of the needle in a special direction. Educationally, it covers all the ground of cutting out and sewing for which learning to sew has prepared the child.

In a family, especially where the life is at all isolated, the fitting up of a doll's house may become a help to a mother in teaching a little daughter to sew. There are the sheets to be made, cases to cut and hem, and both of these to be hemstitched, if that stitch has been learned. There are blankets to be cut, and these must have at each end the blanket-stitch. There can be a coverlet in strips of silk, and these can have the cross or feather-stitch laid on the outside of each seam. There are curtains to make; and these, besides the hem, can have ruffles of edging, or of sheer muslin, or of the curtain material, to be put on with fine, neat whipping and overhanding, or set between the edge of the curtain and a strip for facing, to be hemmed down with fine thread and delicate stitches.

A very pretty toilet-table can be made by taking a small box of a size to suit the doll's room, and nailing on one end of it a half-round — the bottom of a salt-box, for instance, cut across the middle. The straight edge stands against the wall; the circular edge is the front. A padding of cloth and a cover of stout muslin can be tacked on this top, and the stand is then ready for decoration. Here is a good opportunity for any of the finer work that has been learned. The drapery can have a heading, with a cord run in the casing to draw it up. This can be put on with a long needle and stout basting cotton. The top of the stand can have a scarf of linen, hemstitched, or with a lace edge.

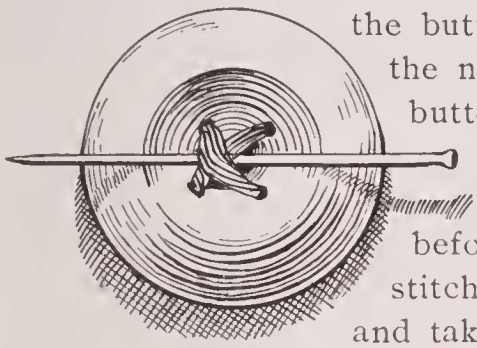
With burlap, very good rugs can be made for the floors. These can be in any design that the child may devise, and worked with the cross-stitch, or the Kensington outline, the edges being finished with the blanket-stitch.

So, for a definite purpose a mother may fill a child's time educationally, using very simple means. In such work as this the materials should be very good. But little is required, and the effect should be an agreeable recompense to any child who has taken an interest in doing the work.

In choosing work for children who are taught to sew separately and not in classes, the individual inclination should be watched and cultivated as much as possible. While the drill and discipline are to be valued and maintained, care must be taken not to force the doing of a thing too long at a time, or to make the work a theme for too close and constant praise or blame. The *spirit* with which the child enters into the work is the vital thing, and work may be poor, even quite bad at first, yet if the fingers have been following the idea of a stitch, — and every stitch is a new idea to a child, — and if the principle of the stitch has been intelligently recognized as a process, and as a result, the teacher should see that the most important point has been gained, and should teach by degrees the things that are the greatest drudgery to a child, and in connection with the effect they are to produce, and to show how useful and how necessary a tedious step may be toward having what we want. In a class there is stimulus and support in the fact that all are doing one thing. With the mother at home, the child may feel the learning more of a task, unless the work hour be made gently and happily companionable.

Buttons. — Most children enjoy sewing buttons on a garment. This is good practice, and the various kinds of buttons may be given at different times, with instructions for each, as a diversion and relief from other sewing.

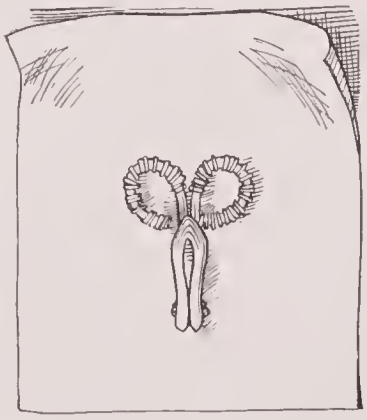
To sew on a flat button with four holes, the needles may be No. 7 or No. 8, with No. 50 cotton, or coarser if the material has heavy threads. The button may be held in place, and, running a pin through the holes, its place can be marked on the goods. At this point a few stitches, set as a cross, will hold the cloth steady for sewing. Make a knot, having the thread double. Put the needle through from the outside downward, just at the center. This brings the knot where the button will cover it. Close to the knot, push the needle part way through the cloth, put the button on it, and draw the needle through. Make the first stitch through the button an up and down line or a diagonal. But before putting the needle through for that first stitch, lay a pin across the top of the button, and take the stitch over it. Take the next stitch across the button from right to left, or a diagonal to cross the first from right to left. This makes a cross on the outside. Take several stitches each way having, at last, the needle underneath. Now remove the pin. The stitches will be a little loose. Bring the needle up from underneath between the button and the cloth, wind the thread several times round the stitches, drawing them tightly together. Push the needle through, and fasten the thread on the underside.



To sew on lace, crochet, or tailor-made buttons, the needle and thread must be chosen to suit the goods. The stitches are taken through and through in a cross or circle, and the threads wound round to make a neck under the button.

In sewing on a button with a shank, it should be laid on its side and sewed over and over in the middle, with a number of stitches taken well into the goods underneath. This makes a cluster of threads just under the center of the button.

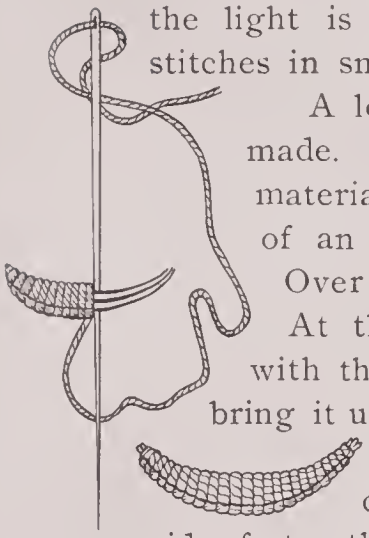
Hooks and Eyes.— Children may also learn to sew on hooks and eyes. These may be placed to fasten from right to left, or the reverse. The needle should be as fine as will do for the thread, as they need to pass through the rings a number of times.



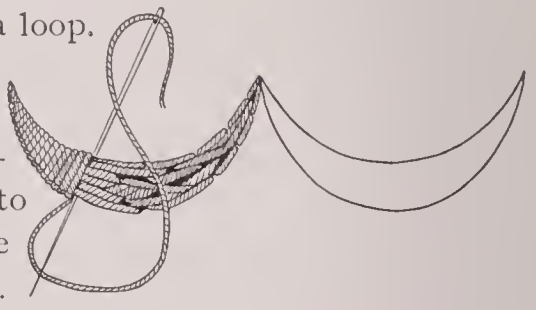
Begin with the eye. It should stand a little over the edge of the cloth, which should be a fold thick enough to bear the strain of fastening. Hold the eye between the left thumb and forefinger. Sew around the circles of the eye, a close over-hand stitch. If the fold

is thick, do not let the stitches show through to the outside. In finishing on each side, sew on from the circle, toward the loops of the eye, some firm, close stitches, and fasten the thread underneath.

To sew the hook, first see how it is to be placed on the cloth opposite the eye. This we do by putting the hook into the eye, and laying on it the cloth, as it should be when fastened. Hold the hook with the left forefinger and thumb and unhook it from the eye. Overhand the two circles as before, fine and close, and continue with the stitches along the back of the hook. To fasten the thread, go back to the circles on the underside and sew several stitches there, on each side, so that it will pull evenly. With large hooks and eyes, this is good practice for a child, but care must always be taken that the light is good, and that the eyes are not strained over close stitches in small spaces.



A loop is often desirable in place of an eye, and is easily made. For cotton goods, No. 40 thread is best, or finer if the material is light. To make the loop, take a stitch one quarter of an inch long across the space where the hook is to fasten. Over this, lay two or three more stitches of the same length. At the left, bring the needle through, hold the thread down with the left thumb, pass the needle under the cross stitches, bring it up over the thread, and draw the thread up lightly. Take the next stitches in the same way, setting them as close as possible all the way across. Then, on the wrong side, fasten the thread securely to hold the loop in place. The buttonhole stitch can be used also in making a loop.



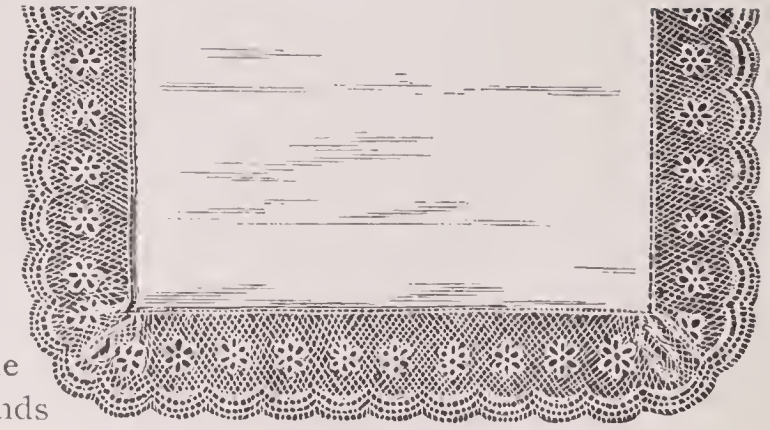
The Scalloped Edge.— After the loop stitches have been learned, the scallop, which is the first step in embroidery, can be learned and applied to simple edges in underclothing, or be done in silk and worsted for little mats.

The scallop should be well marked. It is begun at the left and worked, as the loop is worked, to the right. The stitch for this is, in reality, the blanket stitch, following a curved edge.

To Sew on Edging.— A lace edging makes a suitable finish for very many garments. It is especially good for handmade handkerchiefs, and should be put on evenly and with care.

For a handkerchief, the edging should be basted, at least until the sewer can sew evenly without that help. Put the outside of the lace to the outside of the handkerchief, leaving the edging loose. Begin to sew at one corner, using a No. 10 needle, and No. 80 cotton, or finer or coarser as the quality of the work may need. Overhand the edge

on to the linen across one side, leaving one quarter of an inch each side of the corners unsewed. At the corners, the edging must be gathered. For narrow edging allow twice its own width. For wider edges more fullness is required, so that the outer edge may not pull or loop over. Overhand the gathers around the corner, pushing them tightly together, and setting a pin to hold the right measure of the edging just at the turn. In this way go around the work to the corner where the edge began. The ends of the edging can be hemmed and felled together, or they can be rolled together, and overhanded with the closest possible stitch.



By these small niceties of form in sewing, by the stitches that man has devised and has practised for centuries, the idea of the human mind in regard to clothing has been expressed. Sewing is an intimately personal occupation, and the greater part of it is done for the shaping and decoration of garments. In its historic development, sewing has reached a perfection beyond which we do not at present look with expectation. As to that long history, we may see its starting point in the sewing materials that are treasured in our museums, pathetic in their crudeness, eloquent in their suggestion of the days when man, like a child, ignorant of all that we to-day call science, began to grope his way through the world of nature, and to find out by experience what he wanted, and what he might find the way to do.

We look into a cabinet and see a discolored fish-bone, long, thin, and sharp; we notice the small, carefully drilled hole at the end; we see hanging from it the fiber of tough grass and we realize, by this token, what must have been the little knowledge, the earnest longing, and the great delight and satisfaction of those who, in the early twilight of European history, sat in the wilderness of the north, beside their own camp and home fireside, plying their latest invention, the polished fish-bone needle. This is the opening page of needle work. When it is shown to children, in specimen or in illustration, it should be presented, not merely to touch curiosity, as something vaguely far away and odd, and not to awaken scorn or proud content, but as a sign of the whole process and history of the art of sewing—as a thing in itself good and useful, and as the beginning of the long continuance of a single industry. As the opposite to this beginning, stands the perfected steel needle of to-day, with its thread of silk, in the hand of the skilful sewer;

and also the needle of the sewing machine, where, as children should be shown, the formation of the needle is reversed in this — that the eye is set in the point of the needle instead of at the farther end — a step in thought and in process which, being invented, quickened the speed of production and lightened the labor of people all over the earth.

Interesting points in the history of sewing can be chosen and, after careful reading, can be told to children for their interest and benefit. These periods should be described in their large aspects and movements, with the date clearly defined and with the geographical location well understood.

For instance, take the thirteenth century in Europe: The arts that had arisen in Asia had then in a general way been carried into Europe, and had been taken up by the people of the new nations there as their greatest means of progress. So we read of the growth of the towns, of the rise of new industries and the better practice of old manufacture, and see how, by this use of their hands, the people worked their own way out of ignorance into the power of a greater industrial, mercantile, and commercial freedom.

As manufacture increased, new materials had to be raised and the industrial impulse spread from the towns to the lands beyond them, arousing the energy of the people and directing it to new and varied ends. With the production of new and finer textile fabrics, the art of needlework took a higher place — and so the children, here to-day ranging over the map to find these old centers of industry, from Florence, Venice, Nice, Genoa, Marseilles, to Strasburg, Vienna, and Nuremburg, to Lübeck, Cologne, Ghent, Bruges, Paris, Lyons, and all the towns that were first to rise, preceding by a little the best work of Holland and England — the children in this western home, in the twentieth century, can be set, in connection with the long story of the weaving of goods, to the cutting out and shaping of these better materials, and the final practice of swift and superior sewing.

In all true education, the teacher perceives and constantly observes the connections of things, and on this basis of a large view of life, lessons can be given to a class, or to a child at home, which in themselves are as entirely unlike as are geography and sewing, yet by the teacher's wise institution, are given as a sequence wherein one thing leads by natural development to the next.

At the time that this is being done, the child does not see the connection. To see it mentally belongs to the teacher only, but the child feels the effect of it and responds to such a course of instruction by a sense of unity with his kind, a sense that the past is his as well as the present, and by a keener intelligence in what he under-