

## THE INDUSTRIAL IDEA IN EDUCATION.



HAT our public-school system is not so fully utilitarian in its results as it should be is undoubtedly a growing conviction in the minds of many earnest and progressive educators throughout the country. It appears to be equally true that public opinion is quite generally tending in the same direction, especially among the large class of business men and mechanics whose personal experience has convinced them of the inadequacy of the preparation of the schools to enable their graduates to undertake the business of life at a proper advantage. What the progressive educators want to ingraft upon the public-school system of the country, and the thing which public opinion seems to favor the most, is what may be called the industrial idea. What this is, or rather what results are expected from its general adoption, is thus broadly defined by Dr. C. M. Woodward, of the St. Louis manual-training school:

We want an education that shall develop the whole man. All his intellectual, moral, and physical powers should be drawn out, and trained and fitted for doing good service in the battle of life. We want wise heads and skillful hands. There has been a growing demand, not only for men of knowledge, but for men of skill, in every department of human activity. Have our schools and colleges and universities been equal to the demand? Are we satisfied with what they have produced?

He then makes a statement which is quite significant because it is truthful. It is this:

There is a wide conviction of the inutility of schooling for the great mass of children beyond the primary grades, and this conviction is not limited to any class of intelligence.

The reason for this appears to be obvious—that what is acquired beyond these grades does not compensate the average boy for the time expended, and that for prime utility there is little gained by what is taught in the secondary schools. But this conviction should not prevail if our common-school system is to bear its proper fruits, and the industrial idea seems to be the saving measure which has opportunely presented itself to lift the system up to a proper elevation in the respect and confidence of the people. As, therefore, public opinion favors the ingrafting of this idea upon the school system, the question occurs: How is it to be done? This is not so clear, but a way will doubtless be found in good time. In

the mean time let us inquire what has been done and what can be done in the desired direction.

The methods of industrial training which seem to have had some development in public educational work comprise the manual exercises of the kindergarten, the special schools for boys above the age of thirteen years, and the special instruction in sewing which has been connected with the public schools in various ways. It being agreed that some manual work is desirable for primary and grammar grades, the results of this thought have manifested themselves by various spasmodic efforts, which, however, lacked a proper educational connection with the common-school system. "Industrial exhibits," the result of children having been asked to make objects at home, have begun to attract attention, though such work was not the result of systematized study originating in the school-room. Excellent results, it may likewise be said, have been obtained in private or semi-private schools having workshops and special instructors. But workshops and special instructors are things which cannot be generally provided in connection with our public-school system. It is suggested, however, that the best means of creating general interest in industrial methods of education among teachers, school committees, and the public would be by a plan which does not require these accessories.

Interest in the manufactured products of manual-training schools and the incidental courses of instruction in the use of tools seems to have taken attention away from industrial drawing as an indispensable factor to their success; but its great importance in developing the skill of the hand and the eye in obtaining and expressing knowledge should not be lost sight of. In every manual school the thoughts to be expressed in wood, metal, etc. are first expressed by drawing. If, therefore, manual exercises are to be introduced into schools, the first thing as a preparation for them is to introduce industrial drawing. This should be so taught that pupils may be led to express their thought not only by drawing but by making it—that is, by constructing the object of the thought. The extent to which this method may be carried cannot be determined at this time, when our experience with it is still in the first stages. That it is possible to do something, however, has already been fully demonstrated by the excellent results obtained

by the pioneers in this movement in such cities as St. Louis, Chicago, St. Paul, Columbus, Worcester, and Quincy.

This leads directly to a plain statement of the object of this paper, which is to show how manual exercises may be made an outgrowth of industrial drawing, without workshops or special instructors; and it is hoped that what is here presented will be so well understood, and its merits be deemed so apparent, that it will be accorded the same just and discriminative attention and consideration that every honest effort after better methods usually commands.

The plan of work to be here described originated at the Massachusetts Normal Art School, and is used as the basis of work under direction of the Massachusetts Board of Education. The results stated were obtained by an application of the plan to the schools of Quincy, Massachusetts. Briefly, then, the plan is based on the idea that drawing is an outgrowth of the study of *form*: First, that attention is given to obtaining knowledge of form through observation, using hands and eyes in the process; secondly, that expression of these ideas is made through construction (*i. e.*, making objects), drawing, and language; thirdly, that the acquired knowledge is arranged in new forms by invention or design. The method is objective, everything being studied from the forms themselves and not from their pictured representation, which is the result of the observation of others. The theory is, that observation directs the attention of teachers and pupils to the necessity of obtaining clear conceptions of forms; having gained which, the hands, eyes, and mind are again exercised by expression or design.

In the lowest primary schools the pupils are first taught to know spheres, cubes, etc., as representative general forms. They express what they have learned by constructing these forms of clay, and afterwards objects based on them are made of the same or other material. That this work is a delight to children, those who have vivid memories of the mud pies, etc. of their early youth can readily understand. The skill shown in expressing thought through little fingers is often remarkable, teachers declaring that they could not do as well themselves. The discovery that the forms first presented have certain common qualities, such as variously shaped surfaces, lines, and points, leads the children naturally to make use of drawing as a means of expression. But the making of objects does not cease, however; for the children now take pleasure in cutting out of paper or wood the shapes of triangles, spheres, etc. which they have previously drawn. Describing in lan-

guage what is presented is also practiced. The children have thus become imbued with the thought by its threefold expression. Work is not confined to the geometric form alone, but is extended to the various exercises based on it. The drawings may express either the facts of form, as in working-drawings, or the appearance of these facts by freehand perspective. The plan regards every line that expresses a fact of form as being a working-drawing. The drawing, therefore, by which a child represents the true length of an edge, or of a surface bounded by edges, is regarded as a working-drawing. Thus the teacher leads the class to represent the side or the top view of a simple object, as a box or a sled, the children as readily drawing from the object as from a picture of it. The result is a working-drawing. As the pupils advance, mechanical drawings are made from the preliminary freehand views, accuracy being insured by the introduction of compasses and geometric problems. Freehand perspective as a means of pictorial expression is practiced in all the grammar grades.

Exercises have been given in various practical ways; as, for instance, a wooden match-box is presented for study. First, there is placed rapidly on the blackboard freehand drawings of the front and the side. All dimensions are added to the illustration, which is then an exact counterpart of the preliminary sketch made by the draughtsman. Questions are asked as to the size of each piece of wood, and illustration of each separately is made on the board. It is seen that the example for the occasion is composed of, let us assume, five oblong pieces of wood. The teacher asks the boys if they could not cut out of wood oblongs corresponding to the drawings. It seems simple enough, and many eagerly volunteer their willingness to construct the object. But that cannot be done directly. There must be accurate drawings made to work from. Consequently these are made mechanically from the sketches on the board, either full size or to a scale; having produced which, those who have volunteered to make the object are allowed for that purpose to take the drawings home, it not being practicable, as a rule, to have such work done in school. The teacher having been able to give but few hints regarding the construction of the object, the child, naturally enthusiastic, seeks the aid of the folks at home, who thus unconsciously become teachers of manual training. It is true that home surroundings vary, but, notwithstanding, it has been found that pupils receive many practical hints in this way. Having completed the object, it is returned, together with the drawing, to the

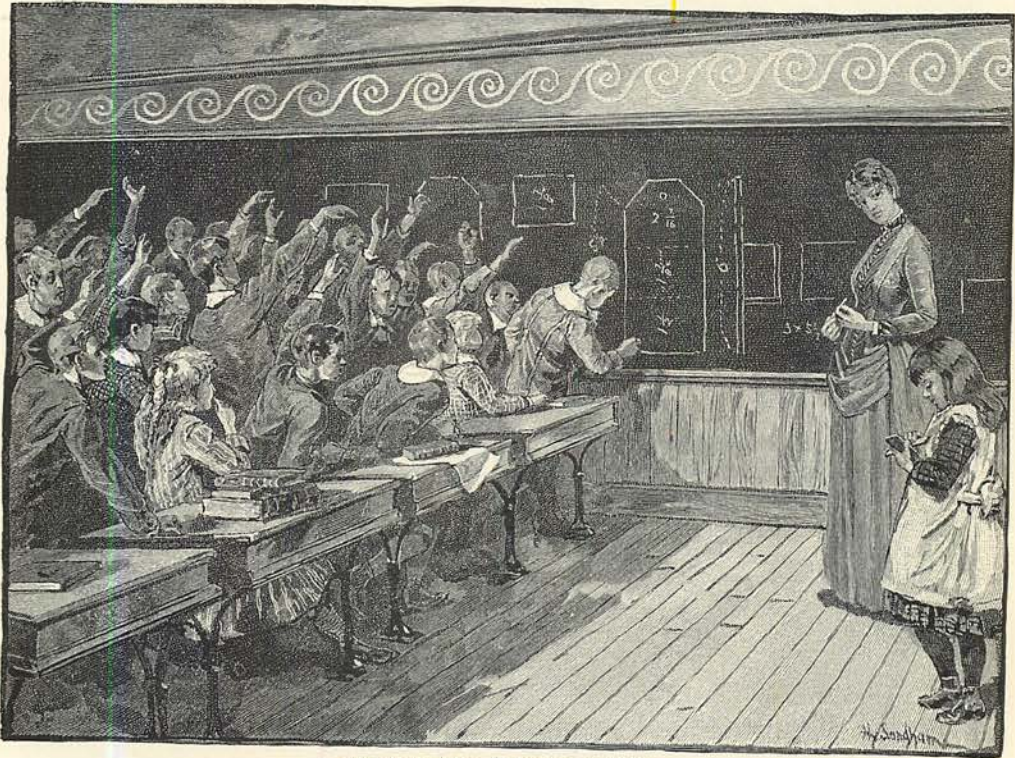
teacher, for careful examination, comparison, and criticism.

Now no thoughtful person can fail to see that the pupils who have thus gone through such an exercise have been benefited in many ways, for throughout the whole experience the mind has been exercised in studying the thought to be expressed, first by drawing, and secondly by construction. Drawing and otherwise expressing these ideas have exercised both the hand

tates a certain orderly procedure that cannot fail to result in an orderly habit of thought, good judgment, the power of concentration, economical use of time, etc.—qualities which cannot be too highly valued as contributing the most important elements of a useful life.

Says Dr. Woodward:

The habit of working on an exact plan of analyzing an apparently complicated operation into a series of simple steps enables one to solve many a new prob-



AN EXAMINATION IN DESIGN DRAWING.

and the eye. All the energies of the mind, and the skill of the hand and eyes, being thus enlisted in behalf of a true expression of thought, the moral effect is assured. Indeed, the tendency of this work must be obvious. Especially is it suggestive of an easy method of introducing manual exercises, making them an outgrowth of industrial drawing, which may be termed the mainstay of manual training. Children, who are ever desirous of making or constructing something, have their efforts directed by this means into an educational channel. The three means of expression, construction, drawing, and language, each offer an excellent mental training, aside from increased skillfulness in the use of hands and eyes. Yet these means will not give accurate results unless they are the product of systematic thought. To draw, make, or describe a thing correctly necessi-

lem, even with new material and under entirely novel circumstances.

Of the moral effect he says:

Its influence is wholesome. It stimulates the love for intellectual honesty. It deals with the substance as well as the shadow. It gives opportunity for primitive judgments. It shows in the concrete, in the most unmistakable form, the vast difference between right and wrong. It substitutes personal experience and the use of simple, forcible language for the experience of others expressed in high-sounding phrase. It associates the deed with the thought, the real with the ideal, and lays the foundation for honesty in thought and in act.

How suggestive, then, is such an exercise! Suppose that but one came in the course of a year, would it not do more to show the practical usefulness of drawing than any number of exercises limited to flat copying? But it is not proposed thus to confine such exercises.



WORKING AT HOME FROM DESIGNS DRAWN AT SCHOOL.

From time to time the drawing regularly done in the school may be given so as to admit of drawing from objects and the construction of objects from drawings.

The exercise which has been described will no doubt be judged to be purely utilitarian, but attention is called to another important outgrowth which may result from it. In discussing the beauty of the match-box it was agreed that it might be made more pleasant to the eye if curves were substituted for the straight lines of the back. It was also agreed that the front of the box might be decorated by the addition of a simple design to be cut out or painted. Pupils were allowed to make suggestions of improvements in their

drawings, thus exercising their taste and producing results which may be noted in the illustrations.

This particular exercise has been described somewhat in detail in the hope that teachers may be induced to try similar ones. At Quincy a great variety of objects have been produced, and many of the pupils have become so much interested that they have attempted work that was much more ambitious than that given out by the teachers. Indeed, an interest having once been excited, both teachers and pupils have worked with the finest enthusiasm. Let it be noted, also, that the objects produced were all of a useful character, being either of full size or in miniature.

Consideration was had, of course, for the materials and the appliances for working them into shape which the pupils would naturally find at home, thin wood, cloth, etc. being the materials most likely to be found there. The hammer, saw, etc. of the family tool-box were the means of execution. Can any one doubt

exercises have been given in which a class had for a definite purpose the design and decoration of pen-wipers, pin-cushions, book-marks, tidies, etc.; and it was interesting to observe that many girls had made their first experiment of needlework in this connection. In Quincy it is hoped to make drawing a



ARTICLES MADE AT HOME BY SCHOOL CHILDREN.

that these little workmen had a genuine love for their work?

The third main part of the general outline has reference to new combinations of known forms, the exercises in connection with it being a natural outgrowth of observation and expression. Every exercise is designed to illustrate some principle, such as symmetry, repetition, etc. Remembering that professional designers require something to furnish suggestions, the children make use of sticks, colored papers, plant-forms, and historic ornaments. By means of these they exercise the inventive faculty, imagination is trained, and the power to conceive with accuracy developed. The first exercises are termed elementary. In the higher grades the designs refer to both the construction and the decoration of the objects, and may be presented by any of the means of expression. This department of the subject is suggestive of many exercises in which girls may apply their designs to examples of needlework, by which their taste may be refined and home beautified. Having this object in mind,

necessity in connection with the design and cutting of female garments. But needlework alone has not occupied the attention of the girls, for in one school an exercise in woodwork was better done by the girls than by the boys. In order to provide pupils with work best adapted to their ability, it has been found necessary to have two exercises in progress at the same time. Thus boys made pencil-sharpeners, while the girls made pen-wipers. The boys were gallant enough to make extra sharpeners for some of the girls, while the latter, not to be outdone, showed their appreciation and thoughtfulness by making extra pen-wipers for the boys; the objects in every case, it may be added, being made from drawings.

The work which has been briefly outlined above is regarded simply as a beginning. It is hoped that there will be a more general study of this manner of connecting the manual work of the kindergarten with that of the special school. It cannot be doubted that industrial drawing will be the foundation of any attempt to combine manual training with the

existing studies of the primary and grammar schools. Eyes and hands are means by which ideas are brought to the mind, and also the means by which they are afterwards given out in tangible form. Exercises in observing, expressing, and combining these ideas give training alike of mind, hand, and eye. In what other way can these ends be so well accomplished as through industrial drawing and manual training combined? And what can be better made the means of inculcating ideas of beauty, refinement, and morality?

The extent to which manual exercises may be introduced into public schools will no doubt be governed by certain peculiar limitations. To begin with, it is not expected that boys generally will be able to handle heavy tools until about thirteen years old. Give them, therefore, exercises in which the lighter means may be employed, such as glue, the jackknife, etc. Again, we are limited by the absolute impossibility of generally connecting with common schools work-shops and special

instructors. Furthermore, courses of study already overcrowded, and the lack of specially prepared teachers, are obstacles which the average country school, at least, cannot overcome. Industrial drawing is largely taught throughout the country. We would urge that exercises connected with it be arranged for an outgrowth of constructed objects. This is not only practicable, but applicable to all common schools. Depend upon willing parents, brothers, and sisters for whatever home instruction is necessary in the manual execution of the thought, and we shall at least have wisely directed the natural tendency of children to make things, and have aroused an interest which will assist materially in the establishment of special manual-training schools whenever they become practicable.

In conclusion we would say to teachers everywhere: Give one exercise to your pupils in the manner described, and we are confident that the interest which you will thus arouse will lead to others.

*Charles M. Carter.*

## THE WHITE COWL.



IN a shadowy solitary valley of southern Kentucky, and beside a noiseless stream, there stands to-day a great French abbey of white-cowled Trappist monks.

It is the loneliest of human habitations. Though not a ruin, an atmosphere of gray antiquity hangs about and forever haunts it. The pale-gleaming cross on the spire looks as though it would fall to the earth, weary of its aged unchangeableness. The long Gothic windows; the rudely carven wooden crucifixes, suggesting the very infancy of holy art; the partly encompassing wall, seemingly built as though to resist a siege; the iron gate of the porter's lodge, locked against profane intrusion — all are the voiceless but eloquent emblems of a past that still enchains the memory by its associations as it once enthralled the reason by its power. Over the placid stream, and across the fields to the woody crests around, float only the sounds of the same sweet monastery bells that in the quiet evening air summoned a ruder world to nightly rest and pious thoughts of heaven. Within the abbey at midnight are heard the voices of monks chanting the self-same masses that ages ago were sung by others, who all night long from icy chapel floors lifted up piteous hands with intercession for poor souls suffering in purgatory. One almost expects to

see coming along the dusty Kentucky road which winds through the valley meek brown palmers just returning from the Holy Sepulcher, or through an upper window of the abbey to descry lance and visor and battle-ax flashing in the sunlight as they wind up a distant hill-side to the storming of some perilous citadel.

Ineffable influences, too, seem to bless the spot. Here, forsooth, some saint, retiring to the wilderness to subdue the devil in his flesh, lived and struggled, and suffered and died, leaving his life as an heroic pattern for others who in the same hard way should wish to win the fullest grace of Christlike character. Perhaps even one of the old monks, long since halting towards the close of his pilgrimage, will reverently lead you down the aisle to the dim sepulcher of some martyr, whose relics repose under the altar while his virtues perpetually exhale heavenward like gracious incense.

The beauty of the region, and especially of the grounds surrounding the abbey, thus seems but a touching mockery. What have these inward-gazing, heavenward-gazing souls to do with the loveliness of Nature, with the change of season or the flight of years, with green pastures and waving harvest-fields outside the wall, with flowers and orchards and vineyards within?

It was in a remote corner of the beautiful