

MANUAL TRAINING.

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Annual Meeting: Proceedings, Constitution, List of Active Members, and Addresses

American Institute of Instruction

1888

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No phase of the history of civilization is more interesting than that which deals with the theory and practice of education. In the educational theory of an age we find the summation of its philosophy, in the educational practice, an epitome of its activities. The school is a microcosm and properly studied it will furnish us the clue to the proper estimation of the status of every problem that vexes a particular generation. It will not solve these problems, but it will tell us how their contemporaries tried to solve them. The reason for this is that the school is the point of contact between each generation and its successor. It is the only point at which one generation meets its successor systematically and with a definite purpose in view. And to the attainment of this purpose—the preparation of the rising generation to take its place in life—it brings all its best energies and all its ripest experience. There is much confusion in the popular mind between the end and the means of education, and this confusingly prevents any proper estimation of the meaning and the lessons of educational history. Unless this confusion is removed it will be impossible to understand the latest development of pedagogic thought, the one which we are to consider briefly this morning.

The immediate end in all formal education is the development of the mind's powers and capacities. This end is always the same and is never absent. The means of education, on the other hand, are continually changing and depend upon two varying factors—our knowledge of the child's mind and the character of its environment. These two factors vary with the progress of knowledge and are not quite the same in two consecutive decades, probably wholly different in two consecutive centuries. The psychology of Descartes is not that of Aristotle, nor is the psychology of Locke that of Descartes: and neither Aristotle, Descartes or Locke approximated the knowledge of the workings of the human mind that we possess to-day. The changed conditions of practical life and the altered characteristics of civilization are even more marked than the advances in mental science. It is far easier to contrast than to compare the civilization of Greece at the time of Socrates, of England at the time of the Stuarts and that of the New World to-day. The magnitude of the changes and their rapidity do not admit of appropriate expression and defy the power of statistics to portray. It is plain, then, that the means of education,—what is sometimes called its content as distinguished from its form,—should and must vary to keep pace with our widening knowledge and our broadening and deepening civilization. Some difficulty is found in making this argument plain, especially to teachers. They are quite unwilling very often to believe that the curriculum in which they themselves were trained and on which they are now actively at work, is not the best—or at all events good enough for an indefinite length of time. Many of them would doubtless be considerably surprised could they see clearly what changes are wrought almost annually. The course of study to-day in the common school is not what it was ten years ago, and any comparison between our school programs and those of Horace Mann would exhibit a striking diversity. This diversity is even more marked in the manner of imparting the instruction than in the material imparted. The truth is that progress in this as in other matters, goes on without our knowing it and it is

only after the lapse of considerable time that the visible effects of this progress engage our attention.

It would be a gross error for those who attach themselves to a new educational movement, to denounce preceding systems and conditions as misleading, worthless, bad. The most beautiful flower depends for its existence upon a clumsy and unattractive root. The flower loses its beauty and attractiveness if torn from the source of its life and strength. So it is with educational systems. The last makes the next possible, and the newest has quite enough to do without undertaking the profitless task of pointing out how all earlier systems would have failed had they been called upon to do something which in the nature of the case it was not possible for them to be called upon to do. Growth is continuous. Each stage is necessary; and it is worse than useless to attempt to exalt any one at the expense of that which laid the basis for it. Each system and each theory of education may have been the best for its own time. It can not be fairly judged by the standards of a later period. All of these points must be borne in mind in coming to the consideration of the question, shall manual training be given a place in the school curriculum?—for that is the concrete form in which the latest development of educational thought presents itself to us.

The two phrases, "manual training" and "industrial education," the latter term being intended to signify an education which recognizes and includes manual training, are ambiguous and subject to serious misconstruction. It is a misfortune that no acceptable substitute for them has yet been found. Industrial education is an education in which the training of the pupil's powers of expression goes on side by side with the training of his receptive faculties, and in which the training of both is based on a knowledge of things and not of words merely. Industrial education is not technical education, though many persons confound the two. Technical education is a training in some particular trade, industry or set of trades or industries, with a view to fitting the pupil to pursue it or them as the means of gaining his livelihood. It is a special education, like that of the lawyer or the physician. It takes for granted a general education and builds upon it as a foundation. Industrial education on the other hand, is the foundation itself. It is the general and common training which underlies all instruction in particular techniques. It relies for its justification upon the nature of the human mind, its powers and capacities. It may fairly be asked, then, why if this is the case, is the word "industrial" used ; why is not this general and fundamental training denominated simply education? Though the question is natural, the answer is plain. We cannot give the word education the signification intended, because at present, another and narrower signification attaches to the word. Education shifts its meaning continually to accord with the ideas of the age. To the Athenian it meant the pursuit of *kalon kdgathon*, music and gymnastic, were its characteristic elements. To the Roman, eloquence was an important and much esteemed attribute of culture. The preparation for life as an orator, therefore, is that which Cicero and Quintilian have in mind when they write of education. The ideal of early Christendom was the antithesis of that of the Greek. The latter urges the development of all the natural powers to their fullest strength and beauty. The early Christian insisted that the fall of man from God involved the consequent untrustworthiness and worthlessness of human nature. So instead of fostering the development of human impulses, the education of early Christendom hindered and endeavored to uproot them. This was what was meant by education in the Cloister Schools, and the products of the system were ascetics and monks. And so we might trace the history of educational theories to the present time and we should find it a continual illustration of the fact that education means something different at each stage of the world's progress. If, then, the argument for manual training is as sound as I believe it to be, what we mean by industrial education to-day will be included in the concept of education as understood by the next generation. For the present, however, the prefixing of some adjective is necessary to mark the divergence. For this purpose the word "industrial" was unfortunately selected.

Origins of Manual Training Movement

The manual training movement as we know it, is new. It was put upon a strictly scientific basis a very short time ago indeed. But it has been "in the air," as the saying is, for a long time. Over two hundred and fifty years ago Comenius prescribed manual training as part of the true curriculum. The *Didactica Magna* contains specific directions concerning it. Locke, Rousseau and Fichte all emphasized manual training, though for different reasons. Locke agreed with Comenius and regarded it chiefly from the standpoint of its value in practical life. Rousseau and Fichte, however, saw that its influence on the growth of the pupil, mental as well as physical, was to be desired. Froebel in his Kindergarten reduced theory to practice, and in the Kindergarten all manual training as well as all rational and systematic education has its basis. But Froebel's work did not include the development of a scheme of manual training for older pupils.

This was furnished many years later and from an unexpected quarter. M. Victor De La Vos, director of the Imperial Technical School of Moscow, took the initiatory step. His report, made at the Exposition in Philadelphia in 1876 and Paris in 1878, contains this passage: " In 1868 the school council considered it indispensable, in order to secure the systematic teaching of elementary practical work, to separate entirely the school workshops from the mechanical works in which the orders for private individuals are executed. By the separation alone of the school workshops from the mechanical works the principal aim was, however, far from being attained. It was found necessary to work out such a method of teaching the elementary principles of mechanical art as, first, should demand the least possible length of time for their acquirement; secondly, should increase the facility of the supervision of the graded employment of pupils; thirdly, should impart to the study of practical work the character of a sound, systematic acquirement of knowledge; and fourthly, should facilitate the demonstration of the progress of every pupil at stated times."

This Russian experiment was made known to the people of the United States in 1876, by Professor John D. Runkle, then President of the Massachusetts Institute of Technology. In his annual report for 1876 Professor Runkle gave an elaborate account of the Russian system and pointed out its application to the work of the institution over which he presided. In consequence a school of Mechanic Arts was added to the equipment of the Institute. In 1879 the St. Louis Manual Training School was organized, and the subject of manual training was formally put before American educators for investigation and criticism. Both the Boston and the St. Louis experiments, however, only suggested the real question at issue—they did little or nothing to solve it. They made it plain that for boys of high school age manual instruction could be devised that would be practical yet disciplinary, educational not technical.

The next step was to recognize the unity of principle which underlay the Kindergarten at one end of the educational scheme and the manual training school at the other. It was observed that both recognized the activities and the expressive powers as well as the receptivities and assimilative powers. It was seen that the Kindergarten and the manual training school were evidences of one and the same educational movement, though appearing at different points on the line. The observation of investigators was then directed to schools of the grades commonly known as primary and grammar, in order to determine whether or not their curricula were organized in accordance with the principle in question. It was soon found that they were not, and it then remained to be decided whether the application of the principle extended to them, or whether for some peculiar reason it could not be applied there. When this stage was reached the very essence of the manual training movement was involved. If it was based on a pedagogic principle and if that principle was sound, then manual training

must be placed in schools of every grade. This question has now been fully answered. The manual training movement is based on a sound pedagogic principle and manual training must be introduced into schools of every grade. To the statement and brief elucidation of that principle we may now turn.

In the first place, let me remind you of the distinction already made between the end and the means of education; that the one, the development of the mental faculties, is always the same, but that the second varies according to our knowledge of the child's mind and the changing character of its environment. The manual training which is to be introduced into the school must accord with the end of education and also be abreast of the present requirements of the means of education.

It is objected as to the first that manual training is not mental training, but simply the development of skill in the use of certain implements. This is bad common sense and worse psychology. Manual training is mental training through the hand and eye just as the study of history is mental training through the memory and other powers. There is something incongruous and almost paradoxical in the fact that while education is professedly based upon psychology and psychology has ever since Locke been emphasizing the importance of the senses in the development of mental activity, nevertheless sense-training is accorded but a narrow corner in the school-room, and even that grudgingly. Industrial education is a protest against this mental oligarchy, the rule of a few faculties. It is a demand for mental democracy in which each power of mind, even the humblest, shall be permitted to occupy the place that is its due. It is truly and strictly psychological. In view of the prevalent misconception on this point, too much stress cannot be laid upon the fact that manual training, as we use the term, is mental training. What does it matter that the muscles of the arm and hand be well nourished and perfectly developed, that the nerves be intact and healthy, if the mind that directs, controls and uses them be wanting? What is it that models the graceful form and strikes the true blow, the muscles or the mind? Do the retina and optic nerve see, or does the mind? It is the mind that feels and fashions and the mind that sees; the hand and the eye are the instruments that it uses. The argument for manual training returns to this point again and again not only because it is essential to a comprehension of what is meant by manual training, but because it furnishes the ground for the contention that manual training should be introduced into the public schools. No one with any appreciation of what our public school system is and why it exists, would for a moment suggest that it be used to train apprentices for any trade or for all trades. It is not the business of the public school to turn out draftsmen, or carpenters, or metal-workers, or cooks, or seamstresses, or modelers. Its aim is to send out boys and girls that are well and harmoniously trained, to take their part in life. It is because manual training contributes to this end that it is advocated. We will all admit, indeed I will distinctly claim, that the boy who has passed through the curriculum which includes manual training will make a better carpenter, a better draftsman, or a better metal-worker than he who has not had the benefit of that training. But it is also true that he will make a better lawyer, a better physician, a better clergyman, a better teacher, a better merchant—should he elect to follow any one of those honorable callings—and all for the same reason; namely, that he is a better equipped and more thoroughly educated man than his fellow in whose preparation manual training is not included. Therefore manual training is in accord with the aim of education.

We may accept such psychological postulates as we will, yet for educational purposes we may agree that the mental powers are roughly divisible into two classes, the receptive and the expressive or active. By means of the former, the child is put in possession of new facts, and by means of the second he makes these facts his own and uses them in practical life. As food will not nourish

unless assimilated, so knowledge, or mental food, is not really knowledge, is not really possessed, until we have so gained control of it as to be able to express or use it. The power of expression, therefore, is a very important adjunct of the power of reception. Man can express his mental states or ideas by the use of language, by gesture, by delineation and by construction. Of all these modes, language is the most difficult, the most abstract, the latest acquired. When carried to any great degree of fluency and accuracy, it is universally considered an accomplishment. Yet in the ordinary school-room it reigns supreme, and the other modes of expression are passed over as if they did not exist. The argument for manual training insists that each of these modes of expression must be considered and that for the training of each a method must be devised.

It is hardly more than half a century since Sir Charles Bell discovered that the nerves which carry impulses out from the brain to the muscles are wholly distinct from those which carry stimuli in to the brain. For twenty-five years researches have been making in cerebral and nervous physiology that have revolutionized mental science. The dependence of mind on body, the relation of the various mental powers to each other and the importance of the distinction between the in-taking and the out-going powers of the brain are now recognized as they never were before. Naturally we expect to see these scientific conclusions reflected in any course of study which is abreast of them.

It is essential both in the powers of reception and in the powers of expression that the child deal with things and objects and not alone with what some one has said or written about things. Education from the Renaissance until Pestalozzi, despite the protests of a Ratke or a Comenius, did not recognize this principle. It taught words and words only, Rousseau, Pestalozzi, Froebel and the hundreds of humble teachers whom they inspired, burst these verbal bonds and inaugurated that training of the receptive powers, now almost universal, by which the pupil sees things, touches things, handles things, and is not held at arm's length by the interposition of words. This is the philosophy of the object lesson and it is because of this sound, scientific reason for its existence that it has become permanently established in the school-room. While this wonderful improvement in the training of the receptive faculties was making, the active or expressive faculties were left to shift for themselves. When we examine the ordinary course of study with reference to this point we find that the powers of expression by delineation and construction are entirely overlooked. Heading and writing are the only studies in the traditional group that train expression and they are wholly inadequate; and until very recently they were taught in such a way that they lost most of their disciplinary value. But even when well taught they are not adequate to the full demands of the mental powers of expression, for they rarely occupy more than ten per cent. of the school time, except in the very lowest primary grades. Furthermore they must be supplemented in another direction if the active powers are to be trained as they should be. The advocates of manual training come forward and demonstrate that their scheme of instruction will adequately and properly train the powers of expression. The powers of expression by delineation and construction are trained by the reciprocal instruction in drawing and in constructive work. It is proved that the boy who can draw a cube or he who can carve or mold one from wood or clay, knows more that is worth knowing about the cube than he who can merely repeat its geometrical definition.

Because of this psychological and practical soundness of manual training, the argument in its favor calls for the remodeling of the present curriculum. Manual training cannot be added as an appendix to any other study; it must enter on a plane with the rest. It is suggested that much time now wasted could be saved by better methods of teaching, that logical puzzles over which so much time is now spent be eliminated from arithmetic, that spelling be taught in conjunction with writing and history in conjunction with reading. The time thus saved is to be appropriated in about equal parts to

drawing and constructive work, both together to occupy from one-quarter to one-third of the pupil's time. Drawing lies at the basis of all manual training and is to be taught in every grade as a means of expression of thought, only incidentally as an art. The constructive work is in material adapted to the child's age and powers. It is at first in paper and pasteboard, then in clay, then in wood, and finally, in the academic grades, in metal. These means are so far as our present experience goes the best ones for the training desired. But wider experience and deeper insight may alter or improve them at any time, just as our readers, our spellers and our arithmetics have been improved.

The curriculum which includes manual training, in addition to meeting the demands of our present knowledge of the pupil's mind and its proper training, is better suited to prepare the child for life than that curriculum which does not include it. The school is to lay the foundation for intelligent citizenship, and as the conditions of intelligent citizenship change with the advance of civilization, the course of study must change in order to adapt itself to these new conditions. No one who can read the lessons of history will assert that the ideally educated man is always the same. Greek education sought beauty, mental and physical; monastic education sought asceticism and a soul dead to the world; Renaissance education sought classical culture and minute acquaintance with the literatures of Greece and Rome; modern education has broadened this conception of culture until it embraces the modern literatures and natural science; common school education in the United States in these closing years of the nineteenth century has broadened its idea yet further, and is now demanding that the pupil be so trained that the great, busy life of which he is so soon to form a part be not altogether strange to him when he enters it. It demands practicality. It demands reality. It demands that the observation, the judgment and the executive faculty be trained at school as well as the memory and the reason. Despite the fact that the three former are the most important faculties that the human mind possesses, it is astounding how completely they are overlooked in the ordinary course of study. You will remember that Henry George tells of a bright girl, thirteen years of age, about to graduate from a grammar school, who had no conception that the back-yard of her father's homestead was a part of the surface of the earth that she had studied about in geography. She knew how thick the earth's crust was, she knew how it was formed, she could recite by rote a dozen more or less important facts concerning it—but she did not know it when she saw it. A professor in a normal school in a neighboring state lately took occasion to examine a new class of students averaging sixteen years of age, in order to determine the value of their judgment as to distance. I will read his own report of the test:

In order to ascertain how well our public school course fits pupils for any actual, accurate work in life, I asked a class of seventy-four (74) in the State Normal School to do about the easiest thing that I could think of, viz;—measure the width of my class room. Our pupils come from all sections of the state, city and country, are all necessarily over 15 years old, have passed our entrance examination, or have finished the prescribed course in the public schools and have received a certificate from the superintendent.

They all used the same yard stick as a measuring rod. No directions at all were given, the rod was not even called a yard stick; it was marked off and numbered in inches, though the word inch was not on it.

But one student was allowed in the room at a time, and all comparison of results was forbidden. As soon as the pupil had finished measuring the room, he wrote his answer on a little slip of paper and then dropped it into a locked box kept for the purpose.

Notwithstanding the fact that the same rule was used in every case, the results varied more than 300 feet, the lowest answer being 10 ft., 10½ in.; the highest 350 ft.; 36 of the pupils had answers

within one inch of the true result, which was 31 ft., 1 in.; 9 of them made errors in the number of times they used the rule in crossing the room; 4 of them making it 9 instead of 10 times; 4 others calling it 11 times, while one called it 13 times.

At least one of the pupils considered an inch a foot; while two others thought the whole yard stick but a foot.

This simply means that these pupils had been taught words, not things. They knew that twelve inches made a foot and could rattle off the tables with surprising glibness. But of what a foot really is, they had not the dimmest idea. **Manual training would correct this by bringing the pupils into contact with objects.** It would so familiarize them with objects in all their details and points of interest that mistakes like these would be impossible. It would have them draw, sew, cut, saw and plane in order to appeal to the faculties now so neglected. The executive faculty will be trained by the handling of material and the applying it to specific purposes without waste or loss of time. The judgment and the faculty of careful and accurate observation will be continually exercised in the process.

At certain stages of civilization and national development there is a natural training of the expressive or active powers which through desultory, is by no means ineffective. I refer to the training which is the result of an active, out-of-door life, especially in rural districts. The country boy receives this training in the hundred and one small occupations about the farm and the old-time mechanic's son obtained it in his father's shop. The conditions which once made this natural training available for a large proportion of the rising generation are now altered, and the alteration goes on year by year, with increasing rapidity. We must bear in mind the growth of large cities and our unprecedented commercial and industrial development. The specialization of labor has destroyed one of the above mentioned possibilities, and the growth of great cities is rapidly removing the other. When our first national census was taken in 1790 only 1/30th of our population lived in cities having more than 8000 inhabitants, and there were only six such cities in the country. Their total population was scarcely more than that of Albany to-day. At the present time we have over 320 such cities and their inhabitants number almost 30 per cent. of our total population. This fact has a most important bearing on practical life and thus on the public school. We must remember also that between 1850 and 1880 our manufactured product increased in value 550%, and the number of those employed in factories increased 325%. This, when interpreted, means that indefinitely more people than ever before have to employ their observation, their judgment and their executive faculty, and employ them accurately, in the performance of their daily duties. For them—and through them—and for all of us—the conditions of practical life have changed and are changing. Has the school responded to the new burdens thus laid upon it? The argument for manual training says no, it has not. A more comprehensive, a broader, a more practical training is necessary.

There is a further argument for manual training, but I have not touched upon it because I desire to place the subject before you from a strictly educational standpoint and according to the requirements of a rigorous pedagogic method. If we permit other than educational considerations to enter into the discussion of questions purely educational, we may be setting a bad precedent. Having premised this, it will not be amiss to refer briefly to the social and economic arguments in favor of manual training.

It is unquestionable that many of our social troubles originate in misunderstandings about labor and in false judgments as to what labor really is. They originate, I take it, from the same misunderstanding that causes the average young man to think it more honorable to add columns of figures for \$3.00 a week than to lay bricks for \$3.00 a day. Some of us affect to despise manual labor. It must be because we do not understand it. It must be apparent that if manual training is accorded its proper place in education, if we come to see that manual work has in it a valuable disciplinary and

educational element, our eyes will be opened as to its real dignity and men will cease to regard it as beneath them and their children. This is what I would call the social argument for manual training. The economic argument is similar. It points out that the vast majority of our public school children must earn their living with their hands, and therefore if the school can aid them in using their hands it is putting just so much bread and butter into their mouths. Now I have no sympathy with the purely utilitarian conception of the school, with what we may call the dollars and cents idea of education. On the contrary I cordially endorse the pungent aphorism of Dr. Hunger:

"Education is to teach us how to live, not how to make a living."

But while standing firmly on that platform, I do say that if the best and most complete education happens to aid a boy in earning his living that is no reason why it should be supplanted by something less thorough and less complete. The movement which would place manual training in the school course has commended itself to the ablest and most thoughtful educators all over the world. I do not recall a single name of the first rank that is in opposition. Huxley and Magnus in England, Sluys in Belgium, Breal and Salicis in France, Salomon in Sweden, Paulsen and Goetze in Germany, Hannak in Austria, Seidel in Switzerland, and Gabrielli and Borgna in Italy, are leading the thought of their respective countries on this subject. In Sweden, in France, in Germany and in the United States, professional schools for teachers are expounding the philosophy of manual training and the methods of teaching it, together with their other subjects of instruction. More than two score of the most progressive cities of this country are placing manual training in their public schools as fast as the means at their command will permit. Successful private schools in New York City, St. Paul, Louisville, and elsewhere are doing the same thing. In twenty-five of our States and Territories manual training of some kind is taught in some manner. No one who saw the magnificent exhibit of manual training work at the last meeting of the National Educational Association at Chicago, will ever forget it. It marked a progress and a thoroughness that were inspiring.

A movement at once so philosophical and so far-reaching as that in favor of manual training, has not come into educational thought since Comenius burst the bonds of medievalism two and a half centuries ago. It is the educational question of the time. Other matters are important as affecting administration, organization, methods of teaching, and other details—all having to do with the applications of principle, but the manual training movement is a principle itself. As might have been predicted, it meets with no little opposition and considerable misrepresentation. The forces of conservatism are arrayed against it as something new; and it is, doubtless, well that it is so, for education is altogether too important a matter to be swayed by any and every crude theory. Any new movement to establish itself in education must run a gauntlet of opposition and criticism, the safe passage of which is a guarantee of excellence. This gauntlet manual training has successfully run, and it is to-day the newest phase of educational thought. In the first place it is a deduction from our increasingly complete and exact knowledge of mind, and in the second place it meets the demands for a more practical education made by the conditions of contemporary life. It so happens, and happily, that the education which our increased scientific knowledge points us to as the best, is more practical, in the best sense of that much abused word, than that which it supersedes.

DISCUSSION

Mr. C. E. Meleney, Superintendent of Schools, Somerville, Mass.—It is unnecessary for me to discuss the argument for manual training. That has already been done,—ably done. You must be convinced that the argument is based on the true principles of education. You see that the two sets of powers, those of knowing and those of doing, claim equal attention in education; that in acquiring knowledge as well as

acquiring skill, expression is as important in training as acquisition. I am well enough acquainted with Dr. Butler, to know that he would leave nothing more for me to say on this subject, unless it should be something of practice from my own experience, consequently I shall be satisfied if I can, in the ten minutes allotted to me, make one point in favor of manual training. What I have to say is the result of my own observation and experience. Demands for the establishment of manual training courses have come from many directions. I present to you to-day the argument as based upon the demand of the child himself for a feature in education that can satisfy the dominant element of his nature,—activity. The child is constantly *busy*, he wants to see everything, handle everything-, arrange everything and represent everything. The impulse to do, to make something, is intuitive, every child is born with this desire and it must be satisfied. It is as natural as it is to breathe. A profound text book on philosophy begins with the sentence, " Man is a lazy animal." We all know that this is not true. Whoever saw a lazy child unless made so by the training it received or by inheritance from parents who had been made so by their training. I admit that this activity will die out unless it is satisfied with material and opportunity to gratify it. It will become laziness, and " man will become a lazy animal," not by nature, but by neglect of training, or bad training. This is my argument for manual training. Give the child a chance to satisfy his natural desire and he will become a *worker, a student, & philosopher*. This idea carries with it the other part of my argument, *that the opportunity must be given early* and maintained during the whole course. I will not say that it is too late to begin the training after a child has passed through the grammar school, but I will say that he runs great risk of becoming lazy before he reaches the manual training school, and that wonderful opportunities are lost to a youth who has not had a chance to exercise his skill during the years of his childhood.

This activity takes the form of play. This play, if profitably directed becomes occupation and develops into industry. It is hardly necessary for me to bring proof of what I say; every teacher knows that the only trouble in school comes from the fact that the children can't be given enough to do, that is, of the right kind. It is easy to give them enough and more than enough of what they do not want to do and ought not to be required to do. The wise teacher finds out what a boy *wants to do* and *likes to do* and directs this to his education. The old way, I admit, was to find out what the boy did not want to do and punish him if he didn't do it. That was education, I suppose. Did you ever try it ? Or did you ever have it tried on you ?

Every teacher in a primary school feels the need of putting into the hands of the children some kind of material with which to busy them, and every wide awake teacher has collected sticks, pegs, beads, buttons, blocks and what not, to keep the children busy. Such teachers are applauded and prized; school committees are after them. The children *must do* something, they cannot study all the time, who can? Require a child to study five hours a day! Or even four hours! It cannot be done. They can *pretend* to and deceive you and themselves. What is the moral effect of such imposition ? I once visited a primary school where the children had not been to school a month. The teacher was hearing a large class say their letters and because they didn't know them, she sent them all to their seats in shame and mortification and told them to " *study* them." Study them! Think of it! Study their A B C's! Was that the "New Education?" But they slunk away and made believe. What else could they do? I have seen the effect of using material properly in primary grades and I know there is interest and delight for the children and inspiration for the teacher. I could bring many to testify to it. I have seen boys and girls become aroused and eager to do in Grammar Schools, when given things to do in connection with Geography, History, Arithmetic and other studies. Does not every child want to draw? I have seen boys thoroughly interested in the wood working room and the only moral danger in connection with it was in the case of a boy who called himself 14 when he was only 13[^], for the sake of getting a chance to put on his apron and go with his class. Yes, I have even seen High School boys thoroughly absorbed in making

their plan at the bench, more anxious to make their wood or metal true to their idea than they ever were to translate their Latin correctly. Now why is this ? It is because every child loves to work, wants to do something, and these powers and impulses must be satisfied. Do you say this is not learning, not intellectual training? Nobody could say so who has seen the operation. Every one who has observed and every teacher will testify that these occupations whether of construction or drawing require no effort on the part of the teacher to compel attention, while there is no other work of the school that does not require the almost constant urging of the teacher to compel attention to the study. It is because of the natural tendency and impulse of the child. Do you say that we should not allow the child to do what he wants to do ? It is by *cultivating his tastes, his desires, directing his inclinations and tendencies* that we make him a *doer*, a *student*, and eventually get him to do what, may be, he did not want to do. Is that based upon the " true philosophy of instruction ? " I think it is.

Now I believe this impulse of the child may become a *wonderful power in education* if properly directed. The first educator to realize the importance of it and to direct it as an educational force was FROEBEL, and the *first systematic use of material for instruction and expression* to develop all the powers of the child was in the Kindergarten. I said a moment ago that every live teacher of the youngest pupils puts material into the hands of the children and is commended by the school committee. But do you know that very many of the same committee-men and many of the same teachers do not favor the kindergarten and would not have it introduced? Why ? Because they know nothing or little about it. Prejudice, that is all. Why these sticks, pegs, splints, miscellaneous blocks, etc., are only the "*crumbs that fall*" from the kindergarten table, and are our children *dogs* that they should only have the crumbs ? Which is better, to put into our primary classes a whole lot of miscellaneous articles that have no particular relation to each other, and allow the children to "make what they like," or to use *material expressly prepared for instruction, arranged in systematic gifts and occupations*, and used by a *trained teacher* who understands the nature of the child and the method of instruction, and who can direct the little worker with definite ends in view. If the former is good, how much better is system, and trained, experienced teachers. The kindergarten system satisfies the child's desire to *learn* and *to do*. The material is arranged and graded according to his wants and powers. With it, he *acquires all the knowledge he needs* or is capable of acquiring and he *puts into form all he learns*. He gives expression to all his ideas. He is a *discoverer* and a *creator*. This is the most perfect system of manual training ever devised or discovered and it is a type of what a manual training system ought to be in any grade, that is: every grade should furnish the *appropriate knowledge* and the *means* of expression suitable to the powers of the pupils of such grade, just as the kindergarten does. For instance, while paper or clay as means of expression may be suitable for the little child, the youth may need harder materials, as wood or metal, and while the fingers of the child are strong enough to manipulate and change the form of material in the Kindergarten and Primary School, the youth in the Manual Training School would require tools. As the powers of acquisition and expression grow, the course should change in its *methods* and *appliances* to satisfy the *growing demands* of the *growing child*. The manual training course is intended to furnish these modes and means of expression for all grades of school, through systems of *drawing* and *construction*, which I need not here describe. The usual school course provides for the acquisition of knowledge and for expression in language, oral and written, and in some instances by means of drawing, but this is not enough as you have already seen. People who have become skillful in the use of material have acquired their skill after leaving school, by happy fortune having enjoyed opportunities that made their training possible, and they have usually left school at an early age. These talents must be exercised early in life or they may never be of service.

All children in their normal state, possess the *germs of power*. These germs need exercise to bring them into action. If the appropriate stimuli are not applied at the right time, the *opportunity* is *lost*

and the power can never be developed. Every genius the world ever saw, showed early indication of the power within him, fortunate circumstances made the development of the power possible. Many people have shown early indication of genius, but have been suppressed, the germs have been allowed to wither and have become extinct from disuse. It has been asserted by those who oppose manual training that there will be opportunity enough after school is finished for children to develop these talents if their inclinations lead them to such employment. But the facts are that there are *not such opportunities*. The boy *seldom has a taste* for employment and *if he has* any inclination to use his hands, he does *not know* in what *lines* he will be most likely to succeed. Why should a boy be *left to chance* for the proper exercise of his talents ? *How many establishments* are there where a boy can receive systematic instruction that will properly train his powers. Why leave him to sink or swim ?

There is *something wrong* in education when so *many boys* leave *school* without *any* idea of what they would like to do, and when their *teachers cannot tell* for what occupation they are fitted. Why should not the education develop all the powers of a child and indicate his leading tendencies? If there are talents that have not been exercised by our educational system why not change the system ? If a *system* cannot do it, how is *chance* going to do it ? The majority thus left to chance never find their opportunity.

The manual training that is demanded is that which is fundamental, which will cultivate the native powers of every boy whatever occupation or profession he may undertake. We should go just *so far* as the training will meet the *necessities* of *every child*. No one can deny this. We have as much right to *go further* than this and give instruction and training that *will prepare a boy* for *mechanical pursuits* as we have to train for commercial occupation or for professional life. Why has bookkeeping become such a prominent study in Grammar and High Schools, and why is so much of the arithmetic devoted to business operations if not to fit pupils for commercial pursuits ? Our system of education has all been directed to the needs of those who are to graduate. Everything has led up to the college. What right have we to prepare boys for college and not prepare them for the *great industries* of life that occupy such a large proportion of the people of our country ? *We have a right to go* as far in *industrial education* as in *commercial* or in *classical* education. Who denies it ?

Supt. S. T. Dutton, of New Haven.—Mr. President, only through manual training can the great laws of natural selection and differentiation take effect. Only by those laws can the public school system be made to reach every child and secure the largest and broadest evolution of character. I think there has been no greater discovery in the nineteenth century than this, that the manual arts can be so taught as to be thoroughly educational and to violate no rules of pedagogy, and I am thankful to-day that I see public sentiment crystallizing in favor of this movement. I need not detain you at the close of this long exercise, and after this able address, to bring forward further arguments in favor of manual training. Let me briefly inquire what we may expect to see in the immediate future as the result of this new education. We shall see, in the first place, a sort of fertilization of our whole school system, not a revolution, but a gradual reformation. We shall see teachers everywhere learning what teaching is. We shall see them learning lessons from the effect which manual training has upon those who are engaged in it, and we shall see them carrying into their teaching the same principles. We shall see arithmetic simplified and brought closely into connection with the business of the world, vitalized and made more useful. We shall see the teaching of language conducted upon a better plan. There will be a larger, richer and more ample use of language in the schools. We shall see the windows of the soul opened to all those scientific subjects which offer such a delightful, suitable field of study to children.

Secondly, we shall see the school becoming a brighter and more delightful place for children. Through these activities of which we are speaking, all idleness will be dispelled. There will be a

different atmosphere, the whole training will be different, seeing that the schools will be radically changed by these innovations.

Thirdly, what I regard perhaps as important as anything, we shall be able to remove that charge which stands against the public school system, that it is a partial failure because it does not reach that large class of children in our cities who come under the general head of neglected, vagrant and truant. It seems to me, teachers, there is something to carry from this meeting. Instead of setting our teeth against manual training, and bracing ourselves to resist it, let us inquire whether there is not something for us to learn. Those children toward whom teachers feel, and, perhaps, justly many times, that the best thing for them is to be out of school, and if they leave school regard it as a kind of dispensation of Providence, should be taught with the feeling that there is moral power enough in our improved education to save them. And if we study what has been accomplished, even in England in industrial schools and in the reform of prison systems, we can see that there is moral power enough in this system of manual training to help a very large class of children. It comes under the head of the economical phase of this subject which has been spoken of, and what can be more economical than to save those children who are ignorant and in danger of becoming criminals? I am willing to work for them and willing to give the experiment a full trial. [Applause.]

Fourthly and lastly, we shall see, I think, a larger and better sympathy between the home and the school. We must not expect that parents will at once recognize and appreciate that unseen spiritual influence which is coming from manual training. But we may expect them to apprehend the practical results which come from it at once. These results will be recognized when they see their children largely interested in the industrial arts and in domestic affairs, when they see labor dignified and elevated to its proper place, and the home cherished and made more beautiful. I say that at school and at home we shall see the children work better than they ever have done. We live in a peculiar age of progress and we may hope by manual training to accomplish for the cause of education greater things than we have dreamed of.

I hope most sincerely that we shall be able, during this discussion, to hear something from Dr. Fitch, particularly upon this point. We were very much interested in what he said yesterday. I should like to hear him speak upon the particular point which we are discussing now.

Dr. J. G. Fitch, of London, said that the arguments in favor of a fuller recognition of the importance of manual training in schools had been clearly and forcibly put by Dr. Butler. In England, children from five to seven years of age were generally taught in separate infant schools or departments, and up to the year 1880 almost the only legal requirements for such schools were that the children should be taught the rudiments of reading, writing, and arithmetic. At least an elementary examination in those three arts was the chief test of efficiency. In 1881, when the code was recast, the requirements were made to include not only simple lessons on objects and on the phenomena of nature and of common life, but the varied and interesting manual employments usually known as the kindergarten gifts and games. Two facts came clearly into view after seven years' experience of this change: first, that the happiness of the little ones and the attractiveness of the school to them and their parents were greatly increased, and next that the children of seven or eight years of age who had passed through this discipline were even more proficient in reading, writing and arithmetic than other children who had been kept to those subjects only. Hence, thoughtful educators in England as well as in America were led to consider, as Dr. Butler had done, whether this same principle might not with advantage be carried further and manual training duly graduated and adapted to the growing powers of the scholar might not be continued concurrently with other studies all through the school course. If this is to be done to any real educational purpose it must not be by substituting manual for intellectual work, but by harmonizing the two in such a way that

each should help the other,. A great mistake would be made by treating technical instruction merely as a means of obtaining greater industrial skill and adding to commercial prosperity. The education of the eye and of the fingers should be accompanied from the first by the training of the intelligence, otherwise merely to turn boys out of the school into the workshop would be a retrograde and not a forward educational movement.

Remarks of Professor J. C. Greenough. —Mr. President, the subject of manual training has been presented in the paper before us more clearly in its proper phase than is customary at our educational gatherings. If manual training is to find a permanent place in our schools it must be something more than a means of fitting for employment. It must be wisely used as a means of developing manhood. Everything in the school-room depends for its value upon the relation it holds to the true object of education. This question is blindly discussed because some men think it is the business of the schools to make workmen and they are demanding in our cities that the boys be taught in the common schools to work with their hands because they want them to run their factories and do manual work. Those of us who understand what education is must contend against this error and demand that the appliances of practical education shall be employed in the public school as a means of developing manhood and no further. We must recognize that it is wrong to deceive a boy with the idea that skill in carpentering is in itself an education or that skill in the molding of iron is in itself an education. We are to instruct him that such work has educational value only as a means of developing the powers God has given us. So far we are working to-day and there is not a school in this land but is demanding that its students shall be taught to observe and to gain a knowledge of things by the use of their senses. There is not a school to-day, worthy of rank among progressive schools, that would take the material objects out of the hands of its pupils or would not have its students construct with blackboard and pencil the forms that they have gained knowledge of in their primary lessons. I approve of all that has been said this morning in reference to the correct method of construction. Let this manual instruction go on, not to train the pupil for productive employment, but as a means of making men.

Mr. E. S. Kellogg, of New York City, was the last speaker of the forenoon and he emphasized the need of manual training. He related the experience of the government school at Albany, thirty years ago, for the education of the young men of the Six Nations of Indians, showing how utterly it failed on the old fashioned theory of education, and said that in the new method of manual training we have at last found a way by which the Indians can be educated and now, for the first time, we are properly fitted for settling the Indian problem. He also told of an interview with Thurlow Weed and of the strong opposition of that busy veteran to the college system of educating men, on account of its failure to adapt them to the real work of life. To illustrate the other side, he told of a carpenter who worked for him, who was a very poor scholar, but a most excellent carpenter and a thorough business man. He warmly approved the system of manual training on the ground that it supplied a great lack in the practical development of the school children of to-day.

