



# TEACHERS MANUALS

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No. 11.  
THE ARGUMENT  
FOR  
MANUAL  
TRAINING

NICHOLAS MURRAY BUTLER, M.A., PH.D.

President of Columbia University

WITH A COURSE OF STUDY

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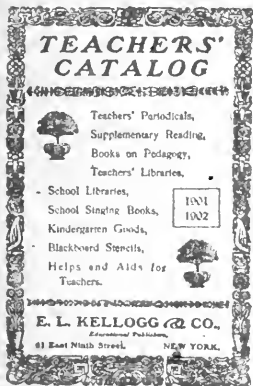
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# THE ARGUMENT

FOR

# MANUAL TRAINING.

BY

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*The following paper was prepared at the request of the officers of the American Institute of Instruction, and was read at the meeting of that body at Newport, R. I., July 12, 1888.*

N. M. B.

9 *University Place, New York City,*  
*October 1, 1888.*

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*There being sufficient room, the publishers have given the course of study in Manual Training employed in the Jamestown (N. Y.) public schools, as an appendix.*

## THE ARGUMENT FOR MANUAL TRAINING.

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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 vexed a particular generation. It will not solve those problems, but it will tell us how its 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 confusion effectually prevents any proper estimation of the meaning and the lessons of educational history. Unless this confusion is removed it

**The end and the  
means of edu-  
cation.**

will be impossible to understand the latest development of pedagogic thought, the one which we are to consider briefly in this paper.

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, nor Locke approximated the knowledge of the working 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 in the common school to-day is not just what it was ten years ago, and any comparison between our school programmes 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.

**Progress in educational practice.**

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;

**Progress is continuous.**

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. **Industrial education vs. technical education.**

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. **Why the word industrial is used.**

Education shifts its meaning continually to accord with the ideals of the age. To the Athenian it meant the pursuit of *kalon k'agathon*; 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 Greek urged 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.

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

Comenius pre-air," as the saying is, for a long time. scribed manual Over two hundred and fifty years ago training. 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 train-

ing, though for different reasons. Locke agreed with Comenius, and regarded it chiefly from the standpoint of its value for 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 Della-Vos, director of the Imperial Technical School of Moscow, took the initiatory step. His report, made at the Expositions 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

**The Russian experiment.**

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 Prof. John D. Runkle, then president of the Massachusetts Institute of Technology. In his annual report for 1876 Prof. 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 **The universality of this principle of manual training.** 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 **Manual training** skill in the use of certain implements. **is mental train-** This is bad common sense and worse **ing.** 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 nerves see, or does the mind? It is the mind!

feels and fashions, and the mind that sees; the hand and the eye are the instruments which 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 **Public schools** that it be used to train apprentices for **not** any trade or for all trades. It is not **trade schools.** the business of the public school to turn out draughtsmen, or carpenters, or metal-workers, or cooks, or seamstresses, or modellers. 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 draughtsman, 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-giving 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 in training both the powers of reception and 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

**Knowledge must  
be of things,  
not words only.**

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. Reading 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 remodelling 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 does not ask admittance as a favor; it demands it as a right. 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 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 to be 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 citizen-

ship, 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 **Manual training** natural science; common school edu-  
**accords with** cation in the United States in these  
**modern necessi-** closing years of the nineteenth century  
**ties.** has broadened its ideal 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 an Eastern 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 quote 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 classroom. 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 make 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 devel-

opment there is a natural training of the expressive or active powers which though 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 1-30 of our population lived in cities having more than 8000 inhabitants, and there were only six such cities in the country. 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 per cent., and the number of those employed in factories increased 325 per cent. This, when interpreted, means that indefinitely more people than ever before have to

**Has the school kept pace with civilization?**

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, 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 discuss the subject 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,

**Other reasons in favor of manual training.**



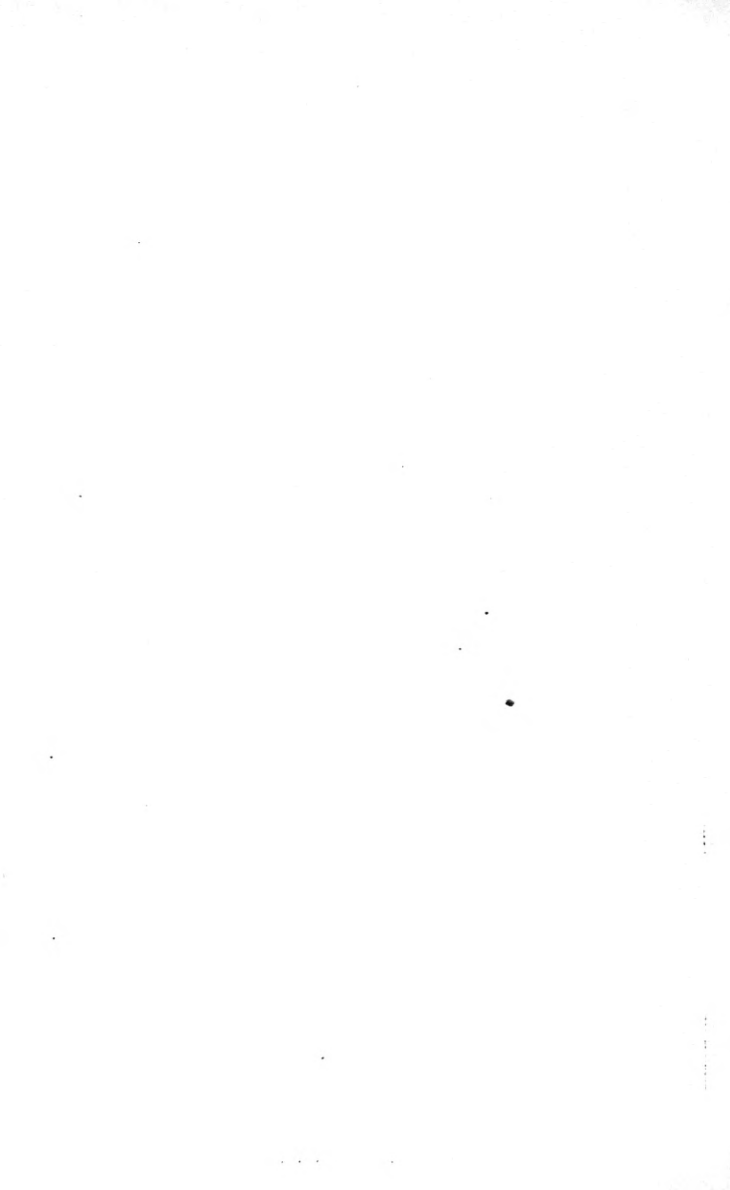
if we come to see that manual work has in it a valuable disciplinary and educational element, our eyes will be opened as to its real dignity and men will cease to regard it as beneath them and their children. This is what I would call the social argument for manual training. The economic argument is 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 indorse the pungent aphorism of Dr. Munger: "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, Bréal 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 meeting of the National Educational Association at Chicago, in 1887, will ever forget it. It marked a progress and a thoroughness that were inspiring.

A movement at once so philosophic and so far-reaching as that in favor of manual training, has not come into educational thought since Comenius burst the bonds of mediævalism 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 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 conser-

vatism 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 the manual training movement 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.



## APPENDIX.

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BY THE PUBLISHERS.

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THE earnest teacher who has read the foregoing argument by Dr. Butler will ask for a practical plan of manual training that may be given in the ordinary school. The publishers know of nothing better to meet this demand than the course devised by Prof. Samuel G. Love and employed in the Jamestown (N. Y.) schools under his superintendence. It is found in Prof. Love's work, "Guide to Manual Training," and they select therefrom such portions as seem to have a practical bearing on the question.

### *SUGGESTIONS TO TEACHERS.*

Supt. Love suggests to teachers as follows :

It is not necessary to put manual training into all the classes at once. One or perhaps two of the classes that can be cared for the most conveniently may undertake it at first, leaving it to be introduced to the others as circumstances may permit. As the difficulties in the way of introducing it in the primary classes are much less than in others it is well to begin with them.

It should be remembered that elementary manual training is quite as important as elementary training in reading or numbers.

In all the primary classes the lessons in manual training should be put in the *programme for regular work as a daily exercise*: at all events, so as to come up on alternate days.

The teacher must have some inspiration upon the subject; must arouse interest in the class by the contagion of his own enthusiasm; must himself show belief in the work and awaken it in the pupils.

It is highly essential that the teacher be thoroughly acquainted with the specific details of each occupation. Preparation must precede teaching in manual no less than in mental training.

#### CAUTIONS.

A few cautions should be observed in introducing manual training. In the first place, too much should not be attempted. The teacher, however ambitious, will perhaps have to be satisfied with short time, few materials, small classes, and those of the lowest grades and inconvenient arrangements.

He must make the work popular by the power of his own interest in it. He must make it so attractive that the children will like it and like books because of its indirect influence.

He must be economical, using such materials as require small expenditure of money, such as may be used and reused. However cheaply or easily the material may have been secured, he must remember that nothing will justify extravagance or wastefulness in its use.

He must use tact and wisdom in introducing, conducting, and enlarging the work. A natural appetite is often spoiled by overfeeding. The work must be needed and asked for, and the pupil stimulated to the best exertion of which he is capable, by a knowledge of something beyond, worth striving for, and which honest striving will obtain.

Attempt little, and be satisfied at first with simple work and modest results.

Allow any pupil to take home with her any satisfactory piece of work which she has completed.

The active co-operation of patrons cannot be expected unless they have some knowledge of the enterprise, its object, its working, and its results.

#### *THE PRIMARY CLASS.—FIRST YEAR.*

**Blocks.**—In the primary class the materials first to be used will be the blocks. For a class of 15 pupils, 75 cubes, and 50 half-cubes and 50 oblongs, will be required.

**Straws.**—There should be 15 of each length for each pupil.

**Beads.**—An ounce of beads for each pupil of assorted kinds will be needed for each pupil.

**Colors.**—For learning colors small exertion and no expense with *large interest* will procure an abundance of materials.

**Tablets.**—The four kinds mentioned are the square, oblong, equilateral triangle and isosceles

triangle. 50 of each kind will be required for a class of 15 pupils.

**Paper.**—The materials for paper-folding will not make much expense.

### *SECOND YEAR.*

**Second-year Occupations.**—In the second year, stick-laying, picture-cutting, scrap-book making, spool-work, paper embroidery and braiding, are introduced. The amount of material depends on the number of pupils to receive benefits therefrom, and must be decided by the judgment of the instructor.

### *THIRD YEAR.*

**Third-year Occupations.**—In the third year, perforated card-board embroidery, slat-plaiting, and mat-weaving are adopted.

### *FOURTH YEAR.*

**Fourth-year Occupations.**—In the fourth year, slat-plaiting (advanced), crocheting (chain-stitch), paper-folding (advanced), and perforated card-board embroidery (advanced) are adopted.

### *FIFTH YEAR.*

**Fifth-year Occupations.**—In the fifth year the following occupations are adopted: sewing over and over, crocheting, paper-folding, and mounting.



*SIXTH YEAR.*

**Sixth-year Occupations.**—For this year the following are well adopted: hemming, pease-work, knitting, paper-flower making.

*GRAMMAR-SCHOOL WORK FOR GIRLS.*

In the grammar-school a class of girls for manual work should not contain more than seven members.

**First Year.**—The occupations for the first year are classed under plain sewing, viz., sewing over and over, running, hemming, stitching, overcasting, and gathering. For this work, to supply a class of seven pupils, six or eight yards each of bleached and unbleached muslin. A few yards of calico may be added if desired. Add a dozen spools of white thread, Nos. 40, 50, and 60, and a half-dozen papers of good needles, No. 8; a convenient pasteboard box for each member of the class, a dozen cheap thimbles, a paper of good pins, several pairs of shears and scissors, some pieces of beeswax, and a tape measure.

**Second and Third Years.**—The occupations for girls in the second and third years of the grammar-school are knitting, crocheting, patching, darning, and making button-holes. A crochet-hook and set of good knitting-needles will be required for each pupil.

Also, type-setting and printing.

*GRAMMAR-SCHOOL WORK FOR BOYS.*

**Room.**—The bench may be set up in the school-house, to be used after school, if there is room; but a

neat little cottage may be put up at small expense on the school grounds. To do the work that is planned above, a room must be had.

**A Bench.**—A bench may be made by placing a plank fifteen to twenty inches wide on two wooden horses: this can be taken down in a moment and laid aside. This is called a “knock-down” bench.

**The Tools.**—There will be a need for hammers, nail sets, rules, squares, try-squares, thumb-gauges, straight-edge poles, knives, scratch-awls, chalk, and lines and saws.

**Materials.**—A few pieces of planed pine and hemlock, and three sizes of nails, 4's, 6's, and 8's, will be needed. One side of both the sewing-room and shop should be fitted up with pigeon-holes 12×15 inches and 15 inches deep, in which each pupil may place her or his work when about to leave the room.

**Cautions.**—Every piece of work completed by the pupil should be submitted to the instructor and accepted before another is taken in hand.

Do not undertake too many kinds of work; master each kind before taking up the next.

The pupil must be encouraged to make original devices.

#### *COURSE OF STUDY IN MANUAL TRAINING.*

[In this course of study the year is supposed to be divided into three terms. The pupils are supposed to spend six years in the primary classes and three years in the advanced (Grammar) classes. In the

manual training it will be noticed that drawing, penmanship, and gymnastics are included.]

*PRIMARY DEPARTMENT.—FIRST YEAR.*

Penmanship, drawing, gymnastics, block-building, straw-stringing, stringing beads and learning colors, tablet-laying and paper-folding.

*SECOND YEAR.*

Penmanship, drawing, gymnastics, stick-laying, picture-cutting, scrap-books, spool-work, paper-embroidery, and braiding.

*THIRD YEAR.*

Penmanship, drawing, gymnastics, perforated card board embroidery, slat-plaiting, mat-weaving.

*FOURTH YEAR.*

Penmanship, drawing, gymnastics, slat-plaiting, advanced crocheting, chain-stitch, paper-folding.

*FIFTH YEAR.*

Penmanship, drawing, gymnastics, sewing over and over, crocheting, paper-folding, and mounting.

*SIXTH YEAR.*

Penmanship, drawing, gymnastics, hemming, pease-work knitting, paper-flower making.

*GRAMMAR-SCHOOL.—SEVENTH YEAR.*

**For Boys.**—Use of hammer, saw and plane, chisel and auger.

**For Girls.**—Plain sewing, running, gathering, stitching, overcasting, and hemming.

**For Boys and Girls.**—Penmanship, drawing, and gymnastics ; to set up type, also to distribute it.

*EIGHTH YEAR.*

**For Boys.**—Lessons in construction with tools.

**For Girls.**—Lessons in crocheting and knitting.

**For Boys and Girls.**—Penmanship, drawing, and gymnastics; to set up type; correct proofs; make up forms.

*NINTH YEAR.*

**For Boys.**—Lessons with tools, mitering, dovetailing, doweling, etc.

**For Girls.**—Knitting, mending, patching, darning, etc.

**For Boys and Girls.**—Penmanship, drawing, and gymnastics, setting up type, printing, etc.

Full details of the lessons in the above course will be found in the "Guide to Manual Training," by Prof. S. G. LOVE, published by E. L. Kellogg & Co., New York City.

Manual training was begun in the Jamestown Union School in 1874, and it has steadily made progress there, meeting with the approval of the citizens, until in January, 1887, all of the pupils of the primary classes (about 1400 in number) receive lessons three or four

times a week at least in some form of manual training. 125 girls and 65 boys receive lessons in the sewing-room or shop twice or three times each week.

20 boys and girls set type one hour four days of the week.

The people of Jamestown, judging from the action of the Knights of Labor (numbering 1000 or more), and the Board of Education, cordially approve of the introduction of manual training into the schools.

It seems to be clear that the general course of study is the same as in other schools, and that the introduction of manual training has not diminished the general scholarship of the pupils; on the contrary, the scholarship is reported to have been improved.

A few plates, representing the work of pupils in stick-laying and paper-embroidery, are given.

# BOOKS ON CHILD STUDY

**Hall's Contents of Children's Minds on Entering SCHOOL.** By Dr. G. STANLEY HALL. Details the results of an inquiry into a matter of much importance to primary teachers. A knowledge of what the average child already knows when he first goes to school will be a valuable guide in determining not only what to teach him but how to teach him.

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