THE MACHINE IN EDUCATION.

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The American variety of the human species might be fitly characterized as the man who works with a machine. Great is the Yankee's faith in combinations of wood and iron, geared together, and provided with self-acting feed attachments, regulators, indicators, and what not. Does a demand arise for any given result, be it in the haunts of toil or in the fields of fancy, be it the product of the factory or the fruit of intellect,

"He'll make the thing, and the machine that makes it."

This machine spirit is, from one point of view, the phenomenon of the age. The age has an insatiate demand for "methods." Everybody believes he can do anything, if only he can adopt the very latest improved "method" of some other body, be it in making shoes or in conducting a revival, painting a picture or running a campaign.

But there are things which no machine can fashion, there are results which will come from no mere "method," there is work unto every moment of whose endurance must come the patient hand, and there are products which are of no value unless brains were mixed in the making. It is to point out some encroachments of the machine spirit on education that I address myself.

I shall consider: I. Organization. II. Government and Discipline. III. Instruction.

I. Organization.

In the organization of schools, of systems of supervision and control,—city, county, State, and national,—the age is unique. Turn to any statistical report, any encyclopaedia, every place or country is described as having a "system" of education, more or less perfect.

Unhampered by traditions, in a virgin soil, the newer States and communities are in position both to profit at once by the completed results of the toils of many before us, and to make experiments. Their danger is that they forfeit the advantage of their position by assuming burdens unfit for their immaturity; forgetting that the law of nature is development, not adoption, and fancying there is virtue in high-wrought and logically perfect "systems" of themselves.

We must have organization? Doubtless, much of it, much more than we have. There is a wide field for purely mechanical appliances in the management of education, private or public.
But none of these things are education,—they are not even the essential conditions of true education,—else were all the past woefully uneducated; and no one can be more short-sighted and self-deceived than he who expects the regeneration of society and the development of national character to come out of these things. It is poor wisdom that deceives the great and careless public into a blind reliance upon any system of organization and administration, however perfect on paper, and however hearty and intelligent the zeal that is endeavoring to realize the scheme.

I recognize the disheartening fact that there is a kind of practical necessity in the case, which makes ideal results impossible. I know that the public school must always be largely a machine; that it is and must be framed for averages; that the individual must suffer in its operations; that there is necessity for its rigid rules, its hard and galling mechanism, and wisdom in that effort to lift up above their purposed endeavor the unwilling and uninspired pupils, which bring such a drag upon its working.

Yet there are certain very obvious evils connected with the graded schools, which must be pointed out again and again. The ungraded schools are not fairly subject to criticism under this head.

Let us only hope that in bringing into use the "course of study" recommended in many quarters, great tact may be exercised to avoid the evils suffered already in the graded schools. Chief of these is the ordinary system of promotion. The characteristic of machinery is that it cannot take account of the exceptional. But in school work, in young communities more particularly, the exceptional is the rule. No system that depends solely or mainly on time, no plan that makes examinations and class standing the sole criteria, however frequent the quizzing, however ingenious the scale of marks, can furnish an adequate test of fitness for advancement. The free judgment of a competent teacher is worth them all, not only in point of justice, but in likelihood to secure the real ends of school labor. And here we touch the root of all evils connected with graded schools. The tendency of all devices is to obscure the end of effort. The great need of every school is that its head and all his helpers shall be continually asking and answering that hard question which the hard-headed public will ask, What is the use?

II. **Government and Discipline.**

When we enter the realm of discipline, and begin to consider that wide field of education that has to do with the moral nature, manners, and habits, we are less struck by the perception of failure, simply because so little is attempted.
Can a code of rules transform a boy's heart? Can any number of marks develop refined manners? Can infinite reportings to the principal eliminate stubbornness, or eradicate sloth? Can any elaborate system of reprimands, suspensions, and expulsions strengthen the weak will, waken the dormant power of self-control, train the wayward sense of honor? Never!

Yet are not good and conscientious teachers daily laboring at this hopeless task? and are they not shut up to this futile endeavor by the necessities of the "system"? Moreover, it is easier to fall back upon a code of rules than to solve a moral problem; it costs less of heart pain and nerve weariness to send the erring one to the distant seat of awful authority in the principal's room, or the superintendent's office: and then, the overworked teacher has not the time. I suppose, from my personal experience, that quite half of the boys and girls in our schools are not really "nice." From our thrones on the rostrum, we see in every corner stupid faces, leering and repulsive brows, sensual mouths, the sour and unhappy, the cold and indifferent. Will a machine system of government make good and happy young men and women out of this material? Does it? Is there not a growing army of vicious, disrespectful, tainted children in every town and village,—not truants and stay-at-homes, but legitimate products of the public school? Is this the best attainable, fellow-teachers?

The moral nature cannot be reached thus. Personal care, often enough painful and laborious, heart-ache, anxious thought must be lavishly contributed by the teacher, if he expects to do his whole duty. You must have rules? Doubtless; but you must not depend upon them to quicken the dull sensibilities, search out the secret source of bad temper, chasten away the impure thought, make the child as nearly as possible what it might have been if evil had not thwarted the good design of God in its birth.

Machine discipline cannot train the growing nature, but it can secure two things to which a vastly exaggerated importance is attached by some: it can secure stillness and outward obedience. This kind of thing is held up for our admiration and helpless envy. To this Sahara of paralyzed enthusiasm, of blunted interest, and of extinct curiosity, we are to look for the sweet fruits of culture. Shades of the great and glorious teachers of the past,—men bursting full of living force, resonant with ringing enthusiasm, charged high with the leaping electricity of knowledge,—rise and rebuke this absurdity, this emasculated and benumbing tyranny of the non-essential!

But these things tell on the community. Teachers who do these
things are spoken of with great respect. Herein lies a great temptation. These things, hard as they are to accomplish, and great as is the waste of time and energy spent on them, are easier to attain than is true education,—the rapid, joyous communication of real knowledge, the kindling of the child's whole nature, its wise and judicious direction in the proper course, the contact of mind with mind, of heart with heart,—and these things can be seen and admired of men much more than the true process of growth.

For myself, I own with abasement I never could treat living flesh and blood as if it were mere plastic clay. Childhood to me has sacred rights. Rather would I fail in many technical details than do aught to stifle budding originality or suppress individuality. Rather would I choose many mistakes in facts if I could be sure that healthy thirst for knowledge, vigorous intellect, keen perception, and strong love of what is beautiful and good should be found in all who have called me teacher. The object is more than all the means. Perfection of detail too often means loss of true advantage. Yet I believe neither need be lost. There is a more excellent way.

III. Machine Methods in Instruction.

This is the main point; for teaching is, after all, what all systems are for. Organization, government, discipline exist because of, and ought to be modelled by the necessities of, the teaching; and it is when they are not so directed and fashioned that they become obnoxious to our criticism. But the machine has gotten far into the work of teaching itself. Let us be specific here. Mere text-book grinding, parrotism, book-in-hand recitation hearing, cramming unappreciated facts,—these absurdities we have all renounced in theory, and most of us avoid in practice. I do not mean these, but other phases of the machine in more pretentious guise.

Any idea in education, however good, may be made mechanical in operation, and most ideas have suffered that fate. Our schools, our best schools, are full of tag-ends of the so-called "science of education," scraps of "systems," bits of new "methods," caught from some much befuddled "manual" of teaching, carried home as treasures of great worth from a brief sojourn in some normal school. There is a demand among teachers for the latest new-fangled "method," and a continual rivalry among publishers to introduce their latest patent protected system of something or other. All this is no sign of progress. It is sure evidence of the machine spirit. It seems to be peculiarly characteristic of this mechanical age to seize upon every
new suggestion, fruitful in itself, to reduce it to drill-master routine, and to run it at high pressure.

The essential difference between true teaching and machine teaching is that there is individuality in the former. Its ways and means are not servile copies from another, but are evolved from the inner sources, are devised for the occasion. "Principles are eternal, methods are not."

If you will think of it, there is a wonderful amount of machine work in our best teaching: analyzing problems *ad nauseam*; parsing by model; insisting always on complete sentences; the exhaustive study of diacritical marks; giving back the question in the answer; dreary reading and rereading of a passage that never meant much, to get the exact shade of inflection; much care for the pronunciation of á and thó, rather than for the meaning; vain repetitions daily of long formulas called rules, as the only logical justification of every fresh occurrence of a familiar fact in language; object lessons cut and dried beforehand and doled out in the inane imitation of baby-talk, or senseless adoption of fragments from some kindergarten manual, under the impression that we are following in the footsteps of Pestalozzi and Froebel; forcing children's talk into the stilted formula of the text-book, forgetting that for school use, clay is better than marble,—these are a few examples. Wherever the school-boy, when helped at home in his lessons, merely grows befogged and says, "That is not the way our teacher does it"; wherever the pupil gladly escapes from his Latin and Greek; wherever the standard argument for a specified course of study or for the ways of an individual teacher is that they are "valuable for discipline,"—there you may be sure the machine is in full operation.

The gist of Grant White's criticism on our public schools, so far as it pertained to the results of instruction merely, was just this: That the schools were drifting from their true aim; that, given up to machine formulas, managed here by devotees of impractical system, there by immature reliers on new copyrighted methods hastily acquired at institutes and normal schools, they failed to produce that solid and tangible familiarity with primary knowledge that was once their sole aim. This, too, is the residuum of truth in the Norfolk County report. This is the significance of the Quincy idea, which is making such a stir among us. For teachers, the lesson of Quincy is summed up in what Superintendent Parker says: "My main reliance is in slowly leading teachers to understand the principles of teaching. If principles are understood, methods will take care of themselves." This, too, is the meaning of that fresh tide of energy
in the language teaching of our colleges, which begins to send its influence down into the high schools; which will ere long, I trust, sweep away the last remnant of that kind of teaching whose ideal was to ask seventy-six questions on the first three lines of the "Anabasis" and one hundred and twenty upon the first three lines of the "Æneid," and will forever deliver us from what Prof. Fisher, of Yale, calls "the 'gerund grinders,' who pretend that there is no such thing as thoroughness apart from their pedantic methods."

These ideas are none of them new. Indeed, some of them are the oldest in pedagogy. They are the ideas of Plato, of Comenius, of Ratisch, of Ascham, and of John Locke. It is one of the functions of great ideas now and again to break up the dead formalism into which things will fall. And it is a great mistake to suppose that what I call machine methods cannot produce very brilliant results. A skilful and energetic teacher can get a school into a fever of excitement by cooping words and phrases into little boxes, or wake intense enthusiasm in the endless repetition of "If John bought two pencils and three pencils, he bought the sum of two pencils and three pencils, which are, etc. Therefore, if John," etc.; hard and long application to what some people call "drill" will make a boy take an unmistakable pleasure in chasing a fugitive vowel through all the hiding places of Greek euphony; and months of such and similar perversions of mental faculties will enable a school to present the chance visitor a wonderful display of apparent knowledge. The more the pity: does it pay? do scholars trained in this way acquire culture? What is culture? Consider the word. Culture is preparing the ground that something may grow there. Are the sweet flowers of refinement and literary taste, the precious fruits of sound and independent thinking, to be expected from ground trodden down by the incessant hoof-beat of such drill? I suspect a great fallacy in that word "discipline." I imagine we shall yet recognize that to make discipline the prime object of any study is to commit a palpable absurdity. Soldiers are not drilled for the sake of drill, but to make good soldiers. No discipline can be worth acquiring which is not acquired while on the way, and as a means, to some higher and better object.

If I have at all made clear my criticism on certain prevailing tendencies, it will be seen that the remedy I would propose is a very old one,—to lay greater stress upon the individual. The individual teacher and the individual scholar,—these are the fundamental elements. Yet this is easily lost sight of.

What has made the great schools of the world? Their teachers. Why did Rugby send an influence through the English-speaking
world? Because Arnold was there. Looking back to our earlier years, what do we recognize as having made us what we are? Not some famous school which we attended, not certainly some peculiar method,—even though method there was, and we still feel its influence,—but some man or woman who was in that school, who used that method, was behind it, and, greater than all the mere surroundings of his craft, impressed himself upon us. This element of school life, this "send-off," or impulse, without which we fail to utilize all the rest, we are losing, have already lost to a great degree. The district schoolmasters of the last generation, with all their faults and absurdities, had more personal power and pervasive influence than the well-equipped and systematic teacher of the present, who is too often merely an appendage to a machine.

The inevitable propensity of the human mind to seize upon the form to the neglect of the real is as fatal in teaching as in literature or religion; and machinism is as hurtful when it lurks in Grube's method, or when it lies behind the phonic and word method, as when it is embodied in the old alphabet and multiplication-table sing-song. It is as bad and less hopeful, when teachers worship the fetish of the object method, and the synthetico-inductive process, as when they give homage to mere memoriter task-work.

Individuality in the pupil is a result which would follow normally from a perfect system of education. That it is now rather the exception than the rule, is a bodeful sign of the tendency and value of our methods. The fact that comparatively few great men are now the fruit of "regular" training, that most of them come up some other way, is one of great moment to every educator. Who has not seen a pupil enter school, who has been taught at home till ten or twelve, full of originality, with curiosity intense, mind all awake, still retaining the quaint and expressive language of childhood, keen for the fact, careless of the form, bold in opinion, eager in expression? and who has not seen such a pupil, after two or three years of "drill," hesitating, timid, painfully accurate, dreadfully slow, the intellectual "go-ahead." all gone out of him? This is mental murder, a crime of the deepest dye. The majority of children's minds are hopelessly spoiled by their first three years in school. Get those three years right, and we can afford to take great chances thereafter. It is the recognition of this fact that gives such immense importance to primary instruction. And yet able school boards hire flabby-minded girls at $300 a year to teach at this end, and cultured men at $3,000 at the other; and an intelligent community thinks this is economy. What but intellectual dry-rot can be expected from such absurdity?
I believe there has been and is an overweening confidence in the
efficacy of our education, public and private. I believe we have
deceived ourselves and tricked the public with words. I see in the
public prints the repeated expression of a growing distrust. I hear
in the talk of men and women in their homes the voice of a spread-
ing disappointment. I look for an awakening of public thought. In
the eager interest with which attention turns to the few places where
something really satisfactory seems to be doing, I discern the symp-
tom of an anxiety which is not to be allayed. Reality must take the
place of factitious and overestimated standards. Originality of na-
ture must be sedulously preserved. Individuality in teacher and in
pupil must be made an essential element in all instruction. The
machine must give way to the intelligent adaptation of natural
means to a well-defined end, under the guidance of principles
established by a scientific process. Teachers must be selected and
retained primarily for natural fitness. They must have generous
culture; they must daily refresh their minds at the fountains of
thought. They must mingle with the world and watch the world's
ways. They must be more than mere teachers; they must become
artists in human souls.