

# SCIENCE.

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FRIDAY, FEBRUARY 18, 1887.

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## COMMENT AND CRITICISM.

BY THOSE WHO READ aright the signs of the times, it is seen that important advances in education are destined to be made in the not very distant future. And those advances are not to be, as some have been in the past, wholly or partly destructive. For a true philosophy of progress, a destructive advance does not exist. The present is rooted in the past, and the future will draw its nourishment from the present. Any change or development is conditioned by that which is changed and developed. We cannot destroy present conditions if we will. We may alter, amend, or counteract them, but their annihilation is possible neither in thought nor fact. Therefore it is that those educational reformers who would sweep away all that now exists, before they begin their work of construction, are harmful agitators. They raise a demand that they cannot supply. They waste time, and thought, and money. The true educational progress is going to be more scientific, more philosophic, than this. It will take things as it finds them, and mould them to its purpose. It is no sign of sound educational thinking to join the senseless clamor for the sweeping-away of Greek, or philosophy, or every thing else that cannot be at once coined into dollars and cents. Utility is never going to be the test of the true education. The true progress will suffer no such lowering of its ideal. It will keep before it, as its aim, the development of man, and the whole man, as man. But it will ask whether we have not overlooked some of man's faculties. It will inquire with what reason we have in the past instituted a feudal system among the human powers, which relegates some of them to an undignified servitude, and gives to others all the honor and esteem. Have we not overstepped the limits of science in this respect?

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Locke called the senses the 'windows of the soul,' but we have, to a great extent, closed or defaced those windows, without reflecting that by so doing we were denying to the soul some of its

possibilities of development. Some senses we have neglected entirely, others we have educated only in part. The eye is taught to read, and the hand to write, but neither is taught to draw, or to mould and fashion. Many of the refinements of the sense of touch are also entirely passed over. To remedy these, and similar omissions in our education, not destruction but construction is necessary. Keep what we have that is good, but rearrange it, that the elements hitherto neglected may find a place in the scheme. The education that will do this, is the new education, but it is sadly in need of a name. Words merely stand for ideas, to be sure, but sometimes a word adds to the definiteness of the idea it represents. 'Manual training' will not do, for that conveys the idea of teaching a trade. The new education will not do this. 'Industrial education' will not do, though a meaning, not explicitly conveyed by the words, may be read into the phrase. Yet this means ambiguity, and ambiguity means loss of force and directness. A name is wanted, but it must, to be satisfactory, stand for the idea we have outlined. It must not mean the training of the hand and eye alone, but the training of the mind through the hand and eye. And it must not exclude the older instruction, which is excellent as far as it goes, but which does not go far enough. It is this — the old plus the new — which we mean by the new education.

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THE RECENT ARTICLE in the *Contemporary review* on university education in the United States, by President Charles Kendall Adams of Cornell, is a very clear and succinct account of the progress of thought on university subjects in this country during the past half century. It should be particularly welcome to those European students of educational science who desire to understand the development of educational thought in this country. President Adams shows very clearly that the establishment of our scientific and technical schools, the founding of parallel courses, as at Cornell and Michigan universities, and the building-up of the elective system, as at Harvard, were all the outcome of the same desire, — to satisfy the increasingly critical demands as to higher education. President Adams sustains President

Eliot in all the latter's recent controversies respecting his favorite elective system, and seems to show himself quite as favorably disposed toward the elective system, pure and simple, as toward the scheme of parallel courses, to the development of which he has hitherto given so much thought. The article will shed a flood of light upon the educational discussions in this country as they appear to foreign readers, and it will set some facts even more clearly before our own countrymen.

WHAT TEACHERS SHOULD READ, is an interesting question, and one about which there is more or less misconception. Some persons seem to think, that, because teachers are teachers, they cease to be men and women. At least this is the inference which we feel justified in drawing from much that is written and said on this subject. Lists of books that it is desirable that teachers should read, are drawn up, but in nine cases out of ten they contain none but professional works. This is undesirable, for a variety of reasons. In the first place, it narrows the teacher's view, confines his sympathies, and aids in the development of notions and methods best denominated as 'cranky.' Then, too, pedagogic literature is not a thing to be indiscriminately recommended to teachers. It needs severe critical revision, before all the harmful and time-wasting elements in it are eliminated. Rosenkranz points out, in his 'Philosophy of education,' that the treatises on education abound more in shallowness than any other literature. Short-sightedness and arrogance, he says, find in educational literature a most congenial atmosphere, and uncritical methods and declamatory bombast flourish there as nowhere else. All this must be recognized and guarded against; and from what we see of current educational literature, periodical and otherwise, it is not yet recognized and guarded against sufficiently. An inconceivable amount of nonsense is talked and written about education. Dr. William T. Harris, in a recent note on this subject of reading for teachers, very sensibly urges a course of reading for teachers that will secure general culture, and furnish new inspiration in the task of instruction. Dr. Harris mentions a number of books as suitable for this purpose, and, though neither complete nor satisfactory, it serves well enough to emphasize the fact that teachers retain their humanity, and by how much the more they cultivate and broaden it, by so much do they increase the value and efficiency of their teaching-powers.

DR. WITHERS-MOORE'S ADDRESS on the subject of the higher education of women, delivered before the British medical association, has raised a great storm of indignation among the advocates of women's higher education, both in England and in this country. We have, from time to time, called attention to various phases of the argument as it has proceeded. Mrs. William Grey, in a paper read recently before the ladies' council of education, at Leeds, is the last participant in the controversy. She passes by Dr. Withers-Moore's argument, with the remark that no time need be wasted in 'flogging a dead horse,' and criticises at some length the statement of Dr. B. Ward Richardson, that, "there is nothing in women's constitution, physical, moral, or mental, to prevent their competing successfully with men in any field of labor whatsoever, *provided they will pay the price for it.*" This price Dr. Richardson had asserted to be the loss of grace and beauty, and the renunciation of all the joys of home and family, especially motherhood. Mrs. Grey admits that marriage so severely handicaps a woman that there is little if any chance of her reaching the top of the professional tree. She claims, however, that Dr. Richardson's arguments, in common with those of nearly all writers and speakers opposed to the 'claims of women,' are vitiated by the fact that they apply, not to women as a sex, but only to that small minority whose circumstances permit them to choose between work and idleness, — "between going into the battle of life, or sitting at home at ease, while it is fought for them by others."

This minority is so small that Mrs. Grey prefers to regard it as constituting the exceptions to the universal rule that women, as a sex, take, if anything, more than their fair share in the hard work of the world, while fulfilling at the same time their special function of motherhood. She quotes some instances from her experiences in Italy, and becomes indignant at the idea that the strain upon a woman's physical powers unfits her for her peculiar functions as a mother. "The hollowness of the talk about woman's work, and what they have or have not strength for," says Mrs. Grey, "is made manifest the moment we look outside drawing-rooms to the real facts of woman's life as a whole." It might be suggested, in reply to this argument, that it is precisely this class of women, whom Mrs. Grey treats as exceptions to the general rule, that the higher education

reaches. It certainly cannot reach women as a sex any more than it now reaches men as a sex. It may be that the classes of women, the majority who work hard and the minority who lead a life of relative ease, have become so far distinct that the same argument will not apply to both. If so, considerations drawn from the study of the class which the higher education is not expected to reach, become no longer pertinent when applied to the class of women who will, if any, receive the benefits of the proposed training. There is, unquestionably, much hasty and impulsive expression of opinion on this important question, but may it not also be true that there is some loose thinking concerning it?

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THE ELEVENTH ANNUAL REPORT of President Gilman to the trustees of the Johns Hopkins university is largely a retrospect of what the university has accomplished during the decade of its existence. Much that the president says, he has told us before, or it has been embodied in the university publications. The aim of the collegiate instruction is defined to be, "the training of the mind and character to habits of fidelity, attention, perseverance, memory, and judgment," and in pursuance of that aim, the well-known group system has been put in operation, so as "to secure a positive amount of regulation with a certain amount of freedom." During the decade, fellowships have been bestowed upon one hundred and thirty-four individuals, and to this fellowship system President Gilman ascribes — and with reason — much of the success of the university. By far the major number of these fellowships have been bestowed upon students of science, — biology, chemistry, mathematics, physics, geology, and engineering having had seventy-eight fellows, while all the languages, together with historical science and philosophy, have had but fifty-six allotted to them. In apparatus, library, and publications, the university is well supplied, though much remains to be done in all these directions. President Gilman also has something to say regarding the effect of scientific advance on the moral and spiritual nature of man. He expresses the conviction that "man's consciousness of his own personality, with its freedom and responsibility, his belief in a Father Almighty, his hopes of a life to come, his recognition of a moral law and of the authority of an inward monitor, will stand firm, whatever discoveries may be made of

the evolution of life, the relation of soul and body, the nature of atoms and of force, and the conceptions of space and time. Science shows us that all knowledge proceeds from faith, — the assumption of premises in which the investigator believes."

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An interesting feature of the report is the selection made by President Gilman from papers submitted to him by the several heads of departments, summarizing the work performed by each, and the theory on which the department has been organized. Of the classical instruction, Professor Gildersleeve writes: "In organizing the classical department, the importance of both sides, the scientific and the literary, was carefully considered. Without scientific study, the cultivation of the literary sense is apt to degenerate into finical aestheticism; kept apart from the large and liberal appreciation of antique life in all its aspects, the scientific study of the classic languages divorces itself from sympathy with tradition, and relinquishes its surest hold on the world of culture, on which the structure of the university must rest. . . . All university students should work in common. The leader should assign no work that is without its lesson to the most experienced student, or without its stimulus to the merest novice. . . . The history of the last ten years shows that the steadfast adherence to these lines of work has won for the university an influence that manifests itself far beyond the domain which it now occupies, and which it has been persistently extending." The work in history and political science is adapted to the needs of three classes of students, the undergraduates, the undergraduates who want to give special attention to historical studies, and the graduate students. Professor Remsen's idea has been, that it is better "to train thoroughly a small number of chemists than to make a large number of mere analysts." And in a similar way other professors outline their scheme of work. Thus, President Gilman has brought together, not merely data of interest to the friends of Johns Hopkins university, but expressions of opinion from eminent men as to how higher instruction in their several specialties can best be organized.

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SOME EDUCATIONAL JOURNALS, in taking notice, as we did, of the action of the authorities of a state teachers' association in mitigating the text-book and school-journal peddling nuisance at a recent meeting, are disposed to blame the authorities for

having taken an unjustifiable step. We are disposed to believe that these papers must have been among those whose activity was curtailed at the meeting in question. One of them, for example, naïvely inquires whether it is "a worse crime to exhibit and explain a book at an educational gathering than to show the use of a plow at an agricultural fair." We would point out that this analogy is fallacious. The end and aim of an agricultural fair is to see and examine all the new agricultural implements and products, and the demonstration of the virtues of a certain plow is precisely what the spectators have come to see. An educational gathering, on the contrary, is not called together once a year, or once in six months, to examine and compare books and papers, but to study and discuss, under the guidance and leadership of appointed speakers, questions pertaining to the theory and practice of the teacher's profession. If an exhibit of text-books and school-journals can be arranged so as not to interfere with the proper carrying out of the object of the meeting, let it be done. Such an exhibit can do little harm, and may do much good. But the representatives of publishing houses do not always stop here. They make themselves a good deal of a nuisance, and interfere with the work of the association. We fancy that it was this feature of the exhibit that was objected to in Massachusetts, and we heartily commend those in charge of the arrangements for the meeting, for putting a stop to it.

#### LEFT-HANDEDNESS. — A HINT FOR EDUCATORS.

DR. DANIEL WILSON, president of the Royal society of Canada, has lately contributed a paper to the Proceedings of that society on the subject of left-handedness, to which he has managed to give an unexpected and very practical interest, affecting all who have children or who are concerned in their education. The author had written previously on this subject, but not with such full and effective treatment. He reviews the various causes to which the general preference of the right hand has been ascribed, and also those to which the occasional cases of left-handedness are attributed, and finds them mostly unsatisfactory. He shows clearly that the preferential use of the right hand is not to be ascribed entirely to early training. On the contrary, in many instances, where parents have tied up the left hand of a child to overcome the persistent preference for its use, the attempt has proved futile. He concludes

that the general practice is probably due to the superior development of the left lobe of the brain, which, as is well known, is connected with the right side of the body. This view, as he shows, was originally suggested by the eminent anatomist, Professor Gratiolet. The author adopts and maintains it with much force, and adds the correlative view that "left-handedness is due to an exceptional development of the right hemisphere of the brain."

A careful review of the evidence gives strong reason for believing that what is now the cause of the preference for the right hand was originally an effect. Neither the apes nor any others of the lower animals show a similar inclination for the special use of the right limbs. It is a purely human attribute, and probably arose gradually from the use, by the earliest races of men, of the right arm in fighting, while the left arm was reserved to cover the left side of the body, where wounds, as their experience showed, were most dangerous. Those who neglected this precaution would be most likely to be killed; and hence, in the lapse of time, the natural survival would make the human race, in general, 'right-handed,' with occasional reversions, of course, by 'atavism,' to the left-handed, or, more properly, the ambi-dextrous condition. The more frequent and energetic use of the right limbs would, of course, react upon the brain, and bring about the excessive development of the left lobe, such as now generally obtains.

The conclusions from this course of reasoning are very important. Through the effect of the irregular and abnormal development which has descended to us from our bellicose ancestors, one lobe of our brains and one side of our bodies are left in a neglected and weakened condition. The evidence which Dr. Wilson produces of the injury resulting from this cause is very striking. In the majority of cases the defect, though it cannot be wholly overcome, may be in great part cured by early training, which will strengthen at once both the body and the mind. "Whenever," he writes, "the early and persistent cultivation of the full use of both hands has been accomplished, the result is greater efficiency, without any corresponding awkwardness or defect. In certain arts and professions, both hands are necessarily called into play. The skilful surgeon finds an enormous advantage in being able to transfer his instrument from one hand to the other. The dentist has to multiply instruments to make up for the lack of such acquired power. The fencer who can transfer his weapon to the left hand, places his adversary at a disadvantage. The lumberer finds it indispensable, in the opera-