

be turned the other way they must be touched. To read text books on science is of no more value than to read a catalogue of a collection of pictures without seeing the pictures themselves. The most dismal, the most useless of dead formulas, if we regard the true meaning of education, is to present a text book in lieu of scientific knowledge—to present an instrument instead of the thing which the instrument makes. Granting that ancient life, ancient languages, ancient beliefs are so many dead formulas, we might well ask whether the knowledge of science, derived, it may be, from a mutilated text-book merely, is an improvement on them. If it is felt to be a shameful thing not to know some chemistry or botany or physiology, now that these subjects and subjects like them have assumed imposing proportions, teach them, but teach them rationally or do not teach them at all. I am told that wherever these subjects are taught in schools a practical knowledge is insisted on. Is it? Here, again, wherever knowledge of science is required for entrance into a University, things will not be in a healthy state unless some proof of a very simple practical working knowledge of science is shown.

And if subjects of education are numerous now, in the future they will be more numerous still. There is no escape. Already schools are divided off into classical and modern sides; indeed, the knowledge that is sufficient for the activities of the commercial world has long been taught, without reference to anything that lies outside its own immediate sphere. As the horizons enlarge, and new and unsuspected grounds become the fields of human effort, it will be more than ever a vain task to obtain education by making the youthful mind scamper to and fro in an attempt to get a passing glimpse of everything. The limit of the ground common to all will have to be set further back, and the element of choice, which now appears in high school and college life, will have to be made yet more prominent. As it is, the school life which looks to higher intellectual development ends too soon. This is not the fault of the schools but of the colleges which open their doors to the youth of sixteen. The work of the college should begin at the point which the teaching in the average high school has reached, and that point is largely determined by the requirements of the college. Colleges can easily lower their standards and encroach on the ground which legitimately belongs to the schools, unless they are careful, and the result will be that all school work of a fairly advanced character will disappear.

And now a few words on University life, with reference chiefly to the Faculty of Arts. The professional Faculties are part of the body corporate, but the working out of their destiny lies strictly within themselves in its essentials, as it ought to do. When we think of a plague-stricken mediæval world, in which hundreds of thousands died from diseases since practically extinguished from civilized life or made amenable to treatment—a world, too, ascribing all this havoc to Providence, which we discover to be largely synonymous with dirt and careless habits of life,—we are

inclined to use the language of others and to call the intrusion into Medicine of anything not directly bearing on it a crime. The knowledge which concerns the activities that tend directly and indirectly to self-preservation as well as to social well-being is largely presented in these Faculties, so that their professional work removes them from the dead formulas of Herbert Spencer. On the face of it, our Faculty has to do with formulas, some of which the modern spirit calls dead, others living. Suppose that we could annihilate time, and stand in presence of the crowning race, towards which science has done much to move us, the race

Of those that, eye to eye, shall look
On knowledge; under whose command
Is Earth and Earth's, and in their hand
Is Nature like an open book;

No longer half-akin to brute,
For all we thought and loved and did,
And hoped, and suffer'd, is but seed
Of what in them is flower and fruit.

Will not the flower and the fruit, think you, be quite curious to trace the growth of the seed from which they have developed? Will not the science of human paleontology, as Prof. Huxley calls antiquity when speaking sympathetically regarding some aspects of classical training, be an all-interesting science to them? It may seem strange to some persons that a work like *Looking Backward* looks backward not to American life but along a continuous chain of thought to Athens, where its greater outlines, not its details, were discussed by a little knot of men more than two thousand years ago. Indeed, a great deal of science, even, does not bear on activities that lead directly or indirectly to self-preservation. A knowledge of algebra does not bid us go to the poll, or determine us to vote for an alderman who promises asphalt instead of mud. We have to thank science for asphalt, clean cities, and, as an infallible consequence, a lowered death-rate, but we cannot all of us be running about laying down asphalt. The result would be eminently unsatisfactory; accordingly, we leave asphalt to a limited class of experts. But, on the other hand, no thoughtful man would abolish algebra, because so far as the activities of life are concerned, algebra is required by a professional class merely; it has an educational value, and, therefore, is included in a course of mathematical education.

(To be continued.)

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