the place which the nourishing fluids fill in the animal economy, and the influence which respiration exercises on the physical properties of these fluids, it is evident that they must be in continual movement, in order that all parts of the body may receive the materials necessary for their nutrition. This movement constitutes that which physiologists call the circulation of the blood." We may here note the change from the inductive and experimental method to the deductive and dogmatic method in the teaching of the sciences. Instead of telling us by what prodigies of patience and of intelligence the circulation of the blood has been discovered, we are merely told, "It is evident that the blood ought to circulate and in fact does circulate." Or it is merely added, This phenomenon was unknown to the ancients. The discovery of it is due to Harvey, who was physician to Charles I., King of England (1618)." Presented in this way this fact, more important than a battle, remains a mere dead detail — another little weight for the memory. "Among the higher animals the circulation takes place in the interior of what has a very complicated appearance—composed, first, of a system of canals or of numerous tubes,"—and then follows a minute description, illustrated by anatomical sections, but without any of those experiments which are the support of the teaching of physics. The pupils look on, and they try to fix in their memory the different names of the arteries and veins, and their definitions. They will not here, any more than in the previous case, have called into exercise any other faculty than memory, which, while their fingers have written mechanically on the paper, will have written, not less mechanically, in the circumlocutions of their brains, a certain number of facts and of words. And yet certain scientific men smile at the pupil who makes Latin verse or writes a Latin composition. We, on the other hand, maintain without paradox, that the scientific spirit—that is to say, the spirit of induction, of research, of foresight, of hypothesis, of observation, of guessing, of ingenuity, and of patience—the patience of a Newton, is more developed by the study of grammar and of literature than by the study of the sciences. In order to analyze a sentence, to seize properly its meaning, or to translate his own thoughts into expressions which shall convey his ideas, especially if it should be in any of the ancient languages, the pupil will require to make inductions, to observe, to make attempts, to experiment, to exercise his ingenuity, to make suppositions and hypotheses of every kind. And this exercise will render him more like the inventor of the thermometer or of the barometer, than if he assisted, from a distance, seated on the bench of his class, at the construction of a theremometer or a barometer. All the summaries of a pupil of science are, for the purpose of cultivating a spirit of scientific invention and of speculation, not worth a translation, a composition or the making of Latin verse. The spirit of acuteness is more necessary for the physicist, for the naturalist, or the geometrician himself than the geometric spirit. During all the time he was at Eton, Gladstone read Homer, and wrote Latin verse, and was scarcely taught the elements of arithmetic. Let us reverse matters, and suppose that his literary studies were neglected, but that he was well grounded in arithmetic; it is extremely doubtful if he would have made the incomparable minister of finance he afterwards became. Claude Bernard began by writing pieces for the theatre, and experimenting ideally on characters, before experimenting really on organisms.

There is, however, very great ex-