THE

# JOURNAL OF EDUCATION

Devoted to Education, Literature, Science, and the Arts.

**Volume XIV.** **Quebec, Province of Quebec, November, 1870.** **No. 11.**

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## On Teaching Natural Science in Schools.

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(*Continued.*)

It is time now to make some remarks on the introduction of science into practical school work. Every schoolmaster, and every one who looks at the subject of this Essay on its practical side, will wish to know exactly what the advocates of instruction in science want. Is it desired that science should be taught as a necessary subject to all boys through their whole education? or as an optional subject? How many hours a week ought to be given up to it? How can we spare them? What subjects ought to be taught? and how?

I will take these questions in order, and answer them to the best of my judgment; disclaiming, of course, entirely the position of spokesman for others. I will at once say that I do not think that science should be taught through the whole of a boy's education; we do not, I think, make our teaching in schools sufficiently progressive as it is; there is no difference between the subjects of the lower and higher teaching: in the Lower School and in the Sixth form, precisely the same things are done, if we except Greek composition. This is contrary to the judgment of many who have thought on the working of the system, and is contrary also to the system of the French and German schools. And science is one of those subjects which I would, on many grounds, not introduce into the lower part of the school at all, or at least only in a modified form, which will be explained hereafter. There, more arithmetic, more French, and some geometrical drawing might be taught with great advantage. Science should be introduced into a school beginning at the top, and going downwards gradually, to a point which will be indicated by experience. At this point it should be compulsory, and be necessarily learnt by a boy until he reaches the higher part of the school. Here Science may be made alternative with something else, and here also some small portion of classical work may be allowed to be commuted for further scientific work, such as chemical analysis, or higher physics and mathematics; and *vice versâ:* any of these being remitted on the understanding that the time so given is really devoted to some other study.

Then as to the time to be devoted to science. Two hours a week, with the same for preparation out of school, is the time given at Rugby, and is as much as I would wish to see the subject started with. I do not doubt however that ultimately it will be thought better to increase this, in the upper part of the school, to three or four hours a week. This seems too little to ask, and the advocates of science outside schools will disallow so petty a claim. But there is very little experience of the working of scientific teaching in great schools; there is at present so slight a recognition of science in schools on the part of the Universities, that any public school which gave up much time to science, would be hopelessly out of the race at the Universities. And this would be suicidal. If the reform is on sound principles, let science gain a footing only, and a friendly struggle for existence will point out whether the foreigner can be naturalised, and flourish.

Next as to the part of science to be taught, and the methods of teaching; and the discussion of these must be given at some length.

It is important to distinguish at once, and clearly, between *scientific information* and *training in science.* "In other words," to quote from the Report of the Committee appointed by the Council of the British Association to consider the best means for promoting Scientific Education in Schools, "between