SCIENCE EDUCATION ABROAD.

Every one who reads must know that in our time no subject is more extensively agitated and debated than that of the present lecture. In every civilized country it has become a question of first-rate importance, not only for educators but for business men and statesmen, how the largest amount of success can be attained in the practical application of science to the arts of life. Everywhere, as a means to this end, it is felt to be necessary to provide the widest extent of science education for the mass of the people, and the highest perfection of such education for those who are to take leading places as original investigators or as directors of business undertakings.

From the time when I first had the honour of addressing a Canadian audience, until this day, I have not ceased, in season and out of season, to urge this subject on the attention of the friends of education here, as one of the pressing wants of this country; and within the few past years, feeling that we were falling farther and farther behind other countries, I have made some special efforts to collect additional information as to the state of science education abroad, and to bring this to bear on the public mind here, as opportunity offered.

In my recent visit to Great Britain I had this object specially in view; and found it to be one much before the minds of all educated men, and prominent in conversation and discussion whenever education was referred to. The results of recent industrial exhibitions had painfully impressed the minds of Englishmen with their actual and growing inferiority in important arts and manufactures to better educated nations. Great efforts were being made to erect new schools of science and to introduce science teaching more effectually into other institutions. The usual expedient in England in all doubtful and urgent matters of national importance, the appointment of a Royal Commission of Inquiry, had been resorted to; while the Commission already engaged in the improvement of the endowed schools had taken high ground on the question of science education. All this was very interesting to me, and I availed myself fully of the many opportunities which offered to visit schools of practical science, and to learn the views of those most concerned in their management; and who, in the true spirit of the brotherhood of Science, were ready to place all means of information at my disposal. What I learned I would now desire in some measure to lay before this audience, with practical deductions bearing on our own condition. While however, most desirous to convey to your minds the impressions made upon my own, I feel that the subject is too vast to be discussed in an hour, and that I can present but a mere skeleton, unless I confine myself to notices of a few of those institutions which appear to be most instructive with reference to ourselves. I shall therefore, first, shortly define what I understand in this paper by science education, shall then notice a few science schools in England and elsewhere, and shall conclude with some practical applications of the subject.

WHAT IS SCIENCE EDUCATION.

In speaking of science then, I would restrict your attention to the physical sciences, or those which relate to what we call material things. In this great group of sciences we may recognize three subdivisions, distinguished by the modes in which they are pursued, though shading into each other. (1) Mathemetical sciences, or those in which the methods chiefly pursued are those of mathemetical reasoning and calculations, as, for instance, astronomy; (2) Experimental sciences, of which chemistry and several departments of natural philosophy may be taken as examples; (3) Observational sciences, such as zoology, botany, and geology. Each of these classes of subjects must be treated according to its own methods; and unless so treated is useless whether as a means of training or for practical application. The learning, for example, of any of the natural sciences by "getting up" a text book, without actual examples and work, is not of the nature of science education; and much of