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## SCIENTIFIC EDUCATION BY PROF. HUXLEY.

From Appleton's admirable *Journal of Literature, Science and Art* we take the following abstract of Professor Huxley's recent, able address on scientific education. He says:—

I hope you will consider that the arguments I have now stated, even if there were no better ones, constitute a sufficient apology for urging the introduction of science into schools. The next question to which I have to address myself is, What sciences ought to be thus taught? And this is one of the most important of questions, because my side (I am afraid I am a terribly candid friend) sometimes spoils its cause by going in for too much. There are other forms of culture besides physical science, and I should be profoundly sorry to see the fact forgotten, or even to observe a tendency to starve or cripple literary or æsthetic culture for the sake of science.

Such a narrow view of education has nothing to do with my firm conviction that a complete and thorough scientific culture ought to be introduced into all schools. By this, however, I do not mean that every school boy should be taught every thing in science. That would be a very absurd thing to conceive, and a very mischievous thing to attempt. What I mean is, that no boy nor girl should leave school without possessing a grasp of the general character of science, and without having been disciplined, more or less, in the methods of all sciences; so that, when turned into the world to make their own way, they shall be prepared to face scientific discussions and scientific problems, not by knowing at once the conditions of every problem, or by being able at once to solve it, but by being familiar with the general current of scientific thought, and being able to apply the methods of science in the proper way, when they have acquainted themselves with the conditions of the special problem.

That is what I understand by scientific education. To furnish a boy with such an education, it is by no means necessary that he should devote his whole school existence to physical science; in fact, no one would lament so one-sided a proceeding more than I. Nay, more, it is not necessary for him to give up more than a moderate share of his time to such studies, if they be properly selected and arranged, and if he be trained in them in a fitting manner.

I conceive the proper course to be somewhat as follows: To begin with, let every child be instructed in those general views of the phenomena of nature for which we have no exact English name. The nearest approximation to a name for what I mean, which we possess, is "physical geography." The Germans have a better, *Erdkunde* ("earth-knowledge," or "geology," in its etymological sense), that is to say, a general knowledge of the earth, and what is on it, in it, and about it.

If any one who has had experience of the ways of young children will call to mind their questions, he will find that, so far as they can be put into any scientific category, they come under this head of *Erdkunde*. The child asks, "What is the moon, and why does it shine?' "What is this water, and where does it run?" "What makes the waves in the sea?" "Where does this animal live, and what is the use of that plant?" And, if not snubbed and stunted, by being told not to ask foolish questions, there is no limit to the intellectual craving of a young child, nor any bound to the slow but solid accretion of knowledge and development of the thinking faculty in this way. To all such questions, answers which are necessarily incomplete, though true as far as they go, may be given by any teacher whose ideas represent real knowledge, and not mere book-learning; and a panoramic view of nature, accompanied by a strong infusion of the scientific habit of mind, may thus be placed within the reach of every child, of nine or ten.

After this preliminary opening of the eyes to the great spectacle of the daily progress of nature, as the reasoning faculties of the child grow, and he becomes familiar with the use of the tools of knowledge—reading, writing, and elementary mathematics—he should pass on to what is, in the more strict