

## NOTES AND QUERIES.

I.

### A NOTE ON THE TEACHING OF SCHOOL SCIENCE.

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THE word "science" has at least as many meanings attributed to it as it has letters. In spite of the fact that one of them, in the sense implied when used in the phrase "scientifically accurate," seems to mean that it is more exact than accuracy itself, it is frequently used in a way that is anything but clear. There was, for instance, considerable confusion of thought when the word was used in that *cause célèbre* of the Victorian age, "The conflict between religion and science." There is, at the present time, a broad distinction made between science and the humanities, even to the extent of considering that the methods of acquiring knowledge in each must of necessity be different. In common talk, in advertisement jargon and in the popular press, the word "scientific" is rapidly losing any power of definition it once may have had. It is indiscriminately used to infer "wonderful," "mysterious," "clever," "ordered" (a correct use), "unusual" or "pedantic." It is frequently contrasted with the words "practical" (at any rate to the extent that the practical man rather prides himself on not being scientific), or "matter-of-fact"; whereas, of course, if the word means anything at all it means matters of fact.

But there are two further and more limited meanings conveyed by the word "science," which I should like to consider here. These are the interpretations put upon it by Miss Mason in her philosophy and by the elementary and secondary education of the country in general. Miss Mason approached science, as she approached all other knowledge, in the widest possible way. Everything connected with nature, birds, beasts, flowers, weather, stars, rocks, geography itself, and even architecture, all meant science to her mind. She interpreted it to mean, in its broadest aspect, what our immediate forefathers so finely called "Natural Philosophy."

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But she was very insistent in demanding that science should not be divorced from the humanities, that, because a subject was scientific, it should not therefore be presented to the child in the dry and precise manner so frequently found in school scientific textbooks. She went so far as to decry the detailed experimental methods of the school laboratory. These she considered as tending to confuse the issue, rather on the lines of the old saying that "you could not see the wood for the trees." Her whole attitude towards it went even further. You should also be made to realise that the wood was part of the swelling countryside, was, in fact, at one with God's universe.

It was our knowledge of this wealth of nature which Miss Mason felt was the due of all children. It supplied a framework of "natural law" into which detail could be fitted according to individual tastes and pursuits. This combination of detail with general principles, the former gained by personal observation as far as opportunity served, was Miss Mason's method of approaching science.

Turn now to the conception of science as more generally taught in the schools of this country. To the average schoolmaster, or schoolmistress, the word means Physics and Chemistry, with Botany as an extra and Mechanics, possibly, as a concession to the

engineering tendencies of the age. Natural History, in the public schools at any rate, is usually left to a school society which is run by the boys themselves, whilst the richer schools have their own astronomical observatories—as side shows. As for the grand manifestations of nature all around us, things are, I fear, not much better than in the days when F. C. Selous had to climb out of his Rugby window in the dead of night in order to study bird life.

This conception of science, though narrow, is quite logical, if science is to mean a definite branch of learning divorced from the humanities and from art. It faithfully fulfils the demands of examinations which are interposed between the school and the university. The two chief subjects, Physics and Chemistry, are well taught in considerable detail and every school is expected to have laboratories for experimental demonstration and practical work by the pupils themselves. The feeling of the best teachers is that these subjects cannot be properly grasped without actual experiments carried out in the laboratory, though the difficulties are considerable. To set a

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class of twenty boys to work through even one experiment in an hour's time is not easy, and laboratory manuals in use, it is to be feared, frequently fail to stimulate satisfactory thought.

On the other hand, boys and girls who show promise have facilities for inspiration and development of which they are not slow to avail themselves. There is a type of enquiring mind which is best stimulated by experimental proof and in this respect the school laboratory more than justifies its existence. But that is only one aspect of the question. "Should schools be run for the brilliant few or the dull many?" the discussion of which is rather outside the scope of this note.