and provides much instruction of great value for the occupations of after life."

Mr. Wilson, one of the assistant head masters at Rugby School, strongly supports this view in this evidence, and proposes that the elements of certain branches of science, to which he gives the general name of "*Natural History*," should be taught to young boys as part of what he aptly terms "*the common ground for all*," and he has so well described the nature of this common ground, that I quote the main parts of his sketch: "An orrery and globe and a little astronomy form the natural beginning. Let the boys make the effort involved in realizing the plan of our solar system; and our earth in space, with its atmosphere mantling round it; its kinship to the planets; its relations to the sun and moon. These and some of the common phenomena—day and nihgt, summer and winter, eclipses and changes of the moon—form the natural and old well-established introduction to science. They are still objects of surpassing interest to every successive generation. *They take boys on all their sides—memory, imagination and reason.* They show, as nothing else shows, the connexion of cause and consequece. And there is a deep satisfaction, a real pleasure of the intellect, which boys attain when they first understand the causes of these common great phenomena. They stand thence-forward on a higher platform. The universe presents to them not a mere wonderland, but a reign of law. These are the '*literæ divinæ*' written on the universe by the hand of God." Then we pass on to the earth itself, and all its activities; the effects of its still remaining internal heat; its volcanoes and earthquakes; the slow oscillations of level, and the great changes slowly taking place in the familiar outlines of the continents and islands, and the proofs still visible of past changes.

These things must be well thought out by the class, and illustrated and brought home to them *by pictures and specimens.* We come next to the more complicated consequences of solar heat and light, which have to be explained and illustrated. It is with peculiar pleasure that a boy learns the causes of winds and currents, of trade winds and cyclones, of evaporation and rain, and its distribution on the earth. There is a sense of power obtained by finding out that these great and familiar phenomena are subject tow laws, and are not primary facts. "All these are matters," he says, "towards which it is only necessary to guide the thoughts of the boys and they can, with very little help, think them out for themselves." He rarely finds it necessary to give any regular explanation of anything except as a kind of *resume* of the suggestions thrown out by the class, and successively criticised. Fresh information as to facts must of course be given when it is seen to be wanted, and not before. And this incidentally gives them a much higher respect for knowledge and the value of facts than they had before.

The consequences of these activities must then be traced out; and these constitute the principles of geology. To teach them is not hard—*a good supply of pictures, photographs and drawings*, will be found very useful. The work of frost and snow, the glacier and iceberg, the geographical distribution of plants and animals, and many other principles of geology are intelligle, and all, if I may so call it, are *exciting*—they excite the mind to further reading and a good deal of thought; they show, moreover, the regions of knowledge, the necessity of chemistry and meteorology and astronomy and zoology are felt, without being stated in so many words. Mr. Wilson then goes on to say that, "It may seem to some that the amount of positive knowledge gained is too little, and indeed it is not much, not so much as would be gained by half the time spent in learning and being examined on somebody's advanced text-book. But from the one system the boy emerges hungry for more knowledge, and his own reading will supply his wants; he emerges with a clear understanding how science grows, and what it is, and as a frame-work in which he can fit all knowledge he subsequently acquires; which from the other he comes out with a vast deal of information, but with very little knowledge of permanent value. These subjects," he continues, to say, "give a solid foundation, of familiar facts, which form the basis of subsequent scientific knowledge, and they attract the strongest and finest minds, which is not found to be the case with all branches of science."

Again: "It may be urged that this teaching cannot be thorough; that boys will be brought in contact with studies at an age when they cannot understand them. This is, of course, partly true; but it is no objection. The logical order of ideas is not the educational order. A boy learns grammar, which might be said to precede logically; he reasons before he can learn logic, and so he has learn d a thousand things by experience and observation, and reading and conversation, which form the material out of which science grows. The teaching is thorough, *so far at is goes*, and it is delusive to suppose that the teaching of mechanics or physics can be made exhaustively thorough to a boy. He apprehends only by comparison of one thing with another; and when experiment takes him out of the range of his experience there his conclusions are not his own but his teacher's. These subjects, which may be put aside as mere scientific information, have a double value, *stimulative and intellectual*, that no one who has not tried them can well estimate. They would plainly be incomplete by themselves; they do not admit—taught in this manner—of the careful study of detail, the minute and pains-taking work and drudgery that makes every science so valuable as an instrument of education—to form a common ground between them—to be science to the man of literature, and literature to the man of science." The foregoing views of Mr. Wilson have impressed me so forcibly, and have been expressed so pointedly, that I make no apology for quoting at such length from his testimony before the *commission.* Canon Cromwell, Principal of St. Mark's College Chelsea, expresses very much the same ideas as those of Mr. Wilson, when he "insists on the importance of introducing the elements of physical geography and other parts of natural science into the primary schools." He says, "Understanding by primary schools those in which boy are generally under thirteen years of age ond over seven, I know by experience that the elements of physical geography can be very well taught, almost throughout the school. The first step in geography should be made in physical geography, and one advantage possessed by this subject, from an educational point of view, is this, that almost everything in it can be presented to a child in a concrete form. He may learn something about the principles of heat, about air and water, about natural history and the action of the elements upon the surface of the globe. He can have illustrations of many of these things pointed out to him in his own neighborhood, wherever he is. It seems to me it is the best introduction to any knowledge of physics that might be hereafter required. Wherever the teacher had a special bent for chemistry he might illustrate what he had to say about the laws of physical geography by his knowledge of chemistry. If again, he were a man who took great interest in natural history, (*i. e.* zoology and botany), he would dwell more upon these portions of the subject. Physical geography connects itself with almost the whole circle of what are called physical sciences. I know that