which does not appertain to the other treatise. The practice of instruction as given in all of these treatises, is with children from four and five to twelve and fourteen years of age.

The lessons are taught by means of Objects, showing color, form, number, size, weight, sound, language, reading, dictation, geography; lessons on the human body; lessons on animals; lessons on plants; moral instruction and drawing. Under form, is included the elementary principles of geometry, and writing. Under number, the simpler rules of arithmetic. Under language, the principles of grammar; and under lessons on the human body, animals and plants, elementary physiology, zoology and botany. This comprises a sufficiently extensive range to embrace all the branches of study necessary for public schools generally.

The rules of the system require, that the teacher shall give full explanations in regard to the matter which is the subject of the lesson; that the properties, nature, qualities and uses of the object, shall be brought out by the examination; the terms given and explained, and ideas developed, and the whole impressed upon the memory by numerous repetitions, and by writing, and drawing upon the blackboard. The system requires numerous variations of detail, which must be left to the skill and tact of the teacher; but the general order indicated above, must be followed. With the youngest children [say four years of age] the object of the teacher must be to exercise the perceptive faculties. With the next oldest [five years] a more minute perception is developed, and the conceptive faculties. With the third class [twelve years of age] the reasoning faculties are exercised, especially in the matter of distinctions, differences and comparisons, while the perceptive faculty is still kept in activity. In a fourth class [four teen to sixteen years of age] the imagination and the powers of analogy, and generalization are developed.

Such is a brief account of the system of object teaching, which *in reality forms the basis of the teaching of the sciences in schools.*

Many prominent teachers in Europe, as well as in this country, have extolled the system, and have adopted it, in order to break up the routine which had deprived the best plans in use of much of their vitality. A teacher of great experience, writing, some fifteen years ago, on the great schools of England, and the importance of introducing science studies, said: "Science as a branch of education, cherishes the instinct and promotes the habit of observation. Interest a boy in astronomy, in geology, in chemistry, in zoology, in botany, and he yearns not only for astronomical, geological, chemical and natural history books, but finds a freshness in books of every kind, through the freshness of his own perceptions."

This has been the key note of the "*Reports of Her Majesty's Royal Commission on Scientific Instruction and the Advancement of Science*," from the *first* to their *sixth report.*

After the first of these reports, the head masters of the schools of England, realised, and recognised in the main, the fact that science teaching must come, and that it would be better for them to shape the system to be adopted leisurely and in consert, that to wait until it was forced upon them.

The Royal Commission, to which I allude, was composed of the most enlightened and trusty of the nobility and scientific men of England, such as the Duke of Devonshire, the Marquis of Landsdoune, Sir John Lubbock, Kay Shuttleworth, Mr. Samuelson, Sharpey, Huxley, and H. J. S. Smith, named to be commissioners, to make inquiry with regard to scientific instruction, and the advancement of science, in the several universities in Great Britain and Ireland, and the colleges thereof. Information was also sought from the head masters of 202 schools, which appear in the report of the "Schools Inquiry Commission." These reports are so full of information on the subject, that I shall make free use of them.

In the sixth report, paragraph 7 of preliminary remarks, it is written: "*that languages and mathematics are by universal consent regarded as indispensable parts of a system of education, but any system from which science is excluded must in our opinion be incomplete and unsatisfactory.*"

Again, in paragraph 8, they say: "We feel it the more incumbent upon us to insist on the introduction of scientific training, as an integral part, of school instruction, because in our third report we have recommended, that students at the universities, should at an early period, if not from the commencement of their academic course, be left free to choose for themselves, among the principal lines of study, and should not be hampered by being compelled to pass examinations in subjects having no direct bearing on their subsequent career."

From the first report to the last, it has been urged, that the incorporation of science studies into the regular system of instruction, "would tend to cherish the instinct and promote observation, enliven the mind, and give it force and direction in its general action, besides its tendency to disrobe industrialism of its repulsive features."

The opinions in favor of the teaching of science in the *public and endowed schools* by the Royal Commission, making the sixth report may be summarized as follows: "Of the large number of men, who have little aptitude for science,—especially for science which deals not with abstractions, but with external and sensible objects,—how many such there are, can never be known as long as the only education given at schools is purely literary; but that such cases are not rare, or exceptional cannot be doubted by any one, who has observed either boys or men. We believe, that many pass through life, without useful employment, and without the wholesome interest of a favorite study, for want of an introduction to one, for which they are really fit."

Sir Charles Lyell has remarked on the advantage which men of literature in Germany enjoy over men of other countries, in the general acquaintance the former possess with what is passing in the scientific world; an advantage due to the fact, that natural science to a greater or less extent is taught in all the German schools. "It quickens and cultivates directly the faculty of observation, which, in very many persons lies almost dormant through life, the power of accurate and rapid generalization, and the mental habit of method and arrangement; it accustons young persons to trace the sequence of cause and effect; it familiarizes them with a kind of reasoning which interests them, and which they can promptly comprehend; and it is perhaps the best corrective for that indolence of memory—merely mechanical." They go on to say: "With sincere respect for the eminent schoolmasters, who differ from us in this matter, we are convinced that the introduction of the elements of natural science, into the regular course of study, is desirable, and we see no reason why it is not practicable."

In the report of the "Schools Inquiry Commission," it is stated, "We think it established that the study of Natural Science develops better than any other studies the observing faculties; disciplines the intellet, by teaching induction as well as deduction; supplies a useful balance to the studies of language and mathematics,