

have finished next July 1st, and illustrate the amount of work that one of our men could accomplish with fair exertion:—Ed. study of man, 1 double term; free-hand drawing, 2 terms; English and American history and civil government, 1 term; general history, 1 term; preliminary and advanced chemistry, 2 terms; botany, preliminary and analytic, $1\frac{1}{2}$ terms; geology, 1 term; gymnastics, 2 terms; model school observing, $\frac{1}{2}$ term.

In my work I have noted one especial characteristic involving a principle as old as Pestalozzi, but woefully neglected in Colleges, in Science, and indeed all other courses: *object study is everywhere applied*. Geology and Botany are good illustrations. These subjects are taught *almost exclusively* from the student's own study of specimens,—hand specimens, such as rocks, minerals and plants; features of Home Geology; maps and charts of *too distant places* to visit. From the facts gathered by the students the laws and forces of nature are inferred and confirmed under the skilful direction of the teacher. Here are given two samples of class work in Geology: (a) an illustration of the student's own study of hand specimens. (b) Illustrating part of a class exercise by the teacher on the same facts.

(a) IRON ORES.

| Name. | Form and Structure. | Color and Streak. | Relative Wt. |
|-----------------|------------------------|-------------------|--------------|
| 1. Red Ochre .. | Amorphous and friable. | Red. | Light. |
| 2. Etc..... | Etc. | Etc. | Etc. |

(b) FORMATION OF IRON ORES.—(1) Coloring matter in rocks = insol. silicates. (2) Organic matter deoxidizes rock: Ex. $9 + \text{CO}_2 = \text{Fe. CO}_3$. soluble. (3) Fe. CO_3 losses, in absence of excess of organic matter, CO_2 and absorbs O: $4\text{Fe. O} + 3\text{H}_2\text{O} + \text{O}_2 = 2\text{Fe}_2\text{O}_3 + 3\text{H}_2\text{O} = \text{red ochre}$. (4) In xline beds, becomes $\text{Fe}_3\text{O}_4 = \text{Magnetite}$. This is a mere fragment: All the work is done in this thorough, thoughtful way, and is neatly recorded in the student's note book, together with numerous drawings and charts of all important Geological features. Large collections of minerals, rocks and plants are required to be made by all the students.

I also give an illustration from each of my note books in History, which is pursued along the same line of individual investigation. The students investigate *in many text books*, different topics, and the teacher discourses with the class the facts presented, the results appearing in neat topical form on the blackboard to be taken into the students' note books. As far as possible, pictures of architecture, etc., maps and actual relics (as in Old South Church) are the objects of study for facts. The students are required to draw many maps, and sketch important historical buildings, etc.