

"Because that's copper wire, and the magnet doesn't seem to pull anything that isn't iron."

Much to Johnny's satisfaction, the copper wire had to be placed with the things not affected by the magnet. Then I took up the two stones, one rusty red, the other quite black, and said:

"What about these?"

"I guess they must have iron in them too," said Johnny, "Have they?"

"They have," I replied. "They are iron stones as the miners call them, or ores from which iron is made. But what made you think there was iron in them?"

"Because they wouldn't have stuck to the magnet if there wasn't, would they? Anyhow all these things that do stick have iron in them."

"Quite true. So you have learned another very important fact about the magnet. Can you tell me what it is. The fact, I mean."

"The magnet pulls iron," said Johnny.

"Good," said I; "and it is also true that the magnet does not pull—"

"Things that are not iron," said Johnny.

"True, again," I said, "so far as our experiments go. There may be things besides iron that the magnet will pull, and there may be times when the magnet will not pull iron; but, so far as we have tried it, the magnet pulls iron always, and never anything else."

"But you haven't told me what makes it pull iron."

"That I cannot do any more than you. We see that it does pull, and can study generally the manner of the pulling—it will take you a long time to learn all about that; but just how it is that the pulling is done, or what makes it, no one has yet found out. For convenience, we call the pulling power *magnetism*. You can keep the magnet, and study its action further. When you've tried it in every way you can think of, come to me, and I'll show you ever so many curious things you can do with it."

3. WORDS WITHOUT IDEAS.

Said Kadiga: "Shall I get you the wonderful parrot that sings all languages, and is the delight of all Granada?"

"Odious!" exclaimed the princess. "A horrid, screaming bird, that chatters words without ideas; one must be without brains to tolerate such a pest!"—*Irving's Atham-bra*.

Go with me into yon school-room, and let us listen to the exercises of the pupils. The first is a spelling lesson. What do we hear! Words are pronounced by the master, and the letters expressing them are named by the pupils. The exercise is generally this, and no more. This teacher (?) never makes an effort to have his pupils understand, much less to comprehend the thoughts or conceptions of the mind which these words represent. The reading lesson is no better. The pupils are taught to pronounce the words correctly, to raise the voice at the close of a direct question and to let it fall at a period; but little effort is expended to make the pupils vigorous thinkers, and to read for the purpose of acquiring knowledge, and of expressing thought, feeling, and purpose. In geography the questions of the text-book are asked *verbatim*, and answered *verbatim*. In grammar, ditto; in arithmetic ditto,—except that the pupils explain (?) their solutions of "sums" by saying; "I did just as the rule directs and so got the answer."

Now how can we help exclaiming of these pupils as Irving's princess did of the "wonderful parrot that talks all languages." "Horrid, screaming things, that chatter words without ideas!"—and of the teacher: "One must be without brains" day after day to enact and re-enact such a senseless farce! And parents of common sense permit this thoughtless, brainless, dementing process to be pursued year after year with their children under the pretence of educating them—of fitting them for the duties of life! with here and there one only, when the case becomes remediless, perhaps who exclaims, "I don't see that sending to school does much good." But, how long, oh, how long, is this to continue in so many schools! Until the press, the pulpit, lecturers, leading educators, and persons of intelligence, shall unite in saying, "Thus far and no farther!"—until mere rote-teaching and rule teaching shall in most branches, be banished from all our schools.—*M. M. Baldwin, in N. Y. State Educational Journal*.

It is not by frequent lectures on etiquette, or by reading daily to the school, extracts from the writings of Chesterfield, that these matters are to be taught. The teacher must lead the way by his own example, and if this prove what it ought to be, there will be little trouble with the school. It is to be regretted that teachers are still to be found, who are slovenly in their dress, and exceedingly coarse in their manners and conversation. By any or all of these we are not only enabled to read the true character of the teacher, but we know what we may expect of a school. It is often possible to tell what the merits of a recitation will be by the manner of the pupils in coming to class, and the teacher's skill to conduct a recitation is often shown by his manner, even before he asks a question.—*Pennsylvania School Journal*.

4. PROFESSOR AGASSIZ AS A TEACHER.

BY PROF. W. J. BEAL.

Perhaps I can best give an idea of Professor Agassiz's mode of teaching by telling how he taught myself in the museum at Cambridge. He was glad to see me there. He said: "You must make up your mind to be a poor man all your life if you become a naturalist. With my mode of treatment students are about sure to be discouraged at first. I shall try your patience. You have read books, but have not studied the subjects themselves. If you study with me you must not look at a book for some time—several months. You must learn to see, to observe for yourself. After students get started once in this way, the longer they study here, the more they like it, and the more reluctant they are to leave." After some questions, he handed me half a dozen or more dead sea urchins, and left me with the remark: "I want you to see what you can make of them, and in a day or two I will see how you get along."

He assigned me a table in the laboratory, where cords of new specimens were stacked up in tray-like boxes sitting tightly over each other. This was a queer way to study, six dry specimens and no books! I looked them over, using part of the time a small pocket lens. I was glad when night came, for it seemed as though I had learned all there was to be learned of sea urchins. I broke them in pieces and made some small drawings. The next day the Professor called with a smile, saying, "Well, what have you seen?" He glanced at the drawings and I told him what I had done. He gives a few hints of what to look for, gives names for a few of the parts (perhaps half a dozen), notices some mistakes, but makes no corrections. I supposed new specimens were to be given me. Not so; I was to study those longer. Thus he called every day or two for three weeks, generally hearing what I had to say till I made a mistake. Then he says, "You are wrong," turns and leaves me to work it over. I was surprised at my own work, surprised at the end of that time to find something new every day. This was my only business, my only study for all day except two to six lectures a week.

After this I dissected specimens which had been in alcohol, and occasionally went to Chelsea beach to get fresh specimens. In a similar manner one species of star-fish was examined, occupying only a week or so. Agassiz says: "These two animals, the sea urchin (a flattened sphere) and the star-fish (with five rays or arms), are composed of similar parts arranged in a similar manner. Learn how it is." This comparison occupied several days.

The next specimen was a spatangoid, an animal somewhat like both the others. "Now homologize these three." Then a third and fourth species were given me, very different in appearance from the others, and I was told again "Compare. It is easy enough to observe isolated parts—any one can soon learn to do that—but when you compare two objects, you take a step in philosophy." In one case I was to make a paper model of a coral, to show my idea of it. Corals were compared with sea urchins and star-fishes. I looked two weeks at the corals, but did not then see all of them to suit him. It took more time still.

Books were allowed in a few months. Their contents were then carefully read, and understood with much interest. He often said: "Study specimens and refer to books, and not the reverse, as is usually done. Text-book knowledge about nature does not amount to anything; it is a very poor basis of culture."

After realizing the effect of this mode of studying natural history upon myself and my students, and seeing the progress of others pursuing this course, I am sure it is the correct way. With small scholars it may be somewhat modified, but to take a course of a few weeks in a text-book, with a few references to specimens, is time poorly spent. Better by far, give each student a grasshopper and a small microscope, let him work at it and tell you all he has seen, give a few hints now and then, and ask some questions.—*Michigan School*.

POLITENESS IN THE SCHOOL-ROOM.—The utmost refinement and courtesy should mark all the intercourse between the members of the school, and between teacher and pupils. No matter how great the scholastic attainments of a teacher, or how rapid the progress of the pupils in the various school studies, if the cultivation of the conversation, manners, and habits of the pupils be overlooked, the teacher neglects that part of his work which is the most important.