

inquiry at length elicited, after a little uncertain hovering about Louis Napoleon, the decisive opinion that the man who made bread was Sir Robert Peel. "If you please, sir," said an argumentative little fellow, "he did not make the penny loaf bigger." "Why not?" "He did not make the loaf: he made the baker make it." The difficulty thus started having been properly gone into and further statement of the riddle having been given, it was at length fairly guessed that the teacher's object upon which he meant to talk with us that day was a Penny.

We ascertained that it was round, that it was hard, that it was brown, that it was heavy—by which we meant, as some of us explained, that it was heavier than the same quantity of water—that it was stamped on both sides and so forth; also that it was made of copper. Pence being next regarded purely in the light of coppers, the name of the metal, "Copper," was written at the top of a black board, and a line was drawn, along which we were to place a regiment of qualities. We began easily by asserting copper to be hard; and showed our penetration by discovering that, since a penny would not do for framing as a spy-glass, it must be opaque. Spell opaque? O dear, yes! twenty hands were out; but we were not all so wise as we imagined. No matter; there are folks of bigger size elsewhere who undertake what they are not able to do. O-p-a-k-e ought to be right; but, like not a few of which we could argue that they must be right, it happened to be wrong, so what was the use of talking. We heard a little boy in the corner whispering the truth, afraid as yet to utter it too boldly. It was not the only truth that has appeared first in a whisper. Yet as truth is great and shall prevail, it was but fit that we all finally determined upon o-p-a-q-u-e; and so we did; and we all uttered those letters from all corners of the room with the more perfect confidence as they grew, by each repetition, more familiar to our minds.

A young student in a pinafore, eight years old and short for his age, square and solid, who had been sitting on the front row, nearly opposite the teacher, was upon his legs. He had advanced one or two steps on the floor holding out his hand; he had thought of another quality, and waited to catch Mr. Speaker's eye. But our eyes wandered among the outstretched hands, and other lips cried, "It is malleable;" so malleable was written on the board. It was not the word that still lurked in the mind of Master Square, who in a solid mood kept his position in advance, ready to put forth his suggestion at the earliest opportunity. What malleable meant, was the question over which we were now called upon to hammer, but we soon beat the answer out among ourselves; and then we spelt the word, and malleability into the bargain. Master Square uplifted his hand the moment we had finished; but there rose other hands again, and the young philosopher, biding his time in sturdy silence, listened through the discussion raised as to whether or not copper might be called odoriferous. This debate over, Square was again ready—but an eager little fellow cried that copper is tenacious, upon which there was a new quality submitted to our notice, which we must discuss, explain, and of which the name had to be spelt. But Master Square's idea had not yet been forestalled, and he, like copper, ranked tenacity among his qualities. At length he caught Mr. Chairman's eye, and said with a small voice, "Please, sir, I know a quality." "And what is that?" the teacher asked. Little Square replied, as he resumed his seat, "It's INORGANIC."

Here was a bombshell of a word thrown among us by this little fellow, but we did not flinch. Inorganic of course meant "got no organs," and we all knew what an organ was, and what a function was, and what were the grand marks of distinction between living and dead matter, and between animal and vegetable life. So we went on, with a little information about mining, and display of copper ore; a talk about pyrites, and such matters. Three quarters of an hour had slipped away.

Botany in the Common School.

BY DR. THOMAS HILL.

When we consider the rank which the vegetable kingdom takes in the world, Botany will appear, even at first sight, to be a study of prime importance.

All organic life must begin with the plant. No animal has power to digest and feed upon the raw inorganic material of nature, but he must of necessity eat organized food, either vegetable or animal; so that in the last analysis the animal kingdom is wholly dependent upon plants; and man himself, though not living by bread alone, could not live without it,—without vegetable food; for himself or for the flocks on which he lives.

Plants lie, therefore, between animals and minerals,—the necessary connection between man and the earth on which he dwells,—the first teachers of the simplest forms of physiology and anatomy. And as surely as a knowledge of the human body is requisite for an intelligent mastery of the human mind, and of the highest and most important subjects upon which the mind can be exercised; so surely must a knowledge of food be prerequisite for a full knowledge of the body, and a knowledge of vegetable chemistry, and of the botanical peculiarities of many plants, be requisite to a knowledge of food. Some appreciation of botany is therefore absolutely essential to success in attaining any high intellectual life. The only question is, whether that knowledge shall be given systematically and intelligently in school, or whether it shall be acquired by general ordinary observation. Before we decide this question let us consider, a little further, the general importance of the plant.

Not only is it the only source of food to the animal, but it is the great purifier of the air by which the atmosphere is kept fit for respiration. As this effect is not usually immediately and locally visible, it is overlooked. But when we consider the immense amount of carbon withdrawn from the air, and of oxygen returned to it, by the annual growth of plants, and deepening of the layer of vegetable mould, we must acknowledge that its effects upon the whole atmosphere is worthy of grateful recognition.

The economic uses of the plant, other than in the great multiplicity of forms of vegetable food, are not to be forgotten. Our clothing from hemp and flax, and from the mulberry tree through the agency of the silk worm,—not to mention wool manufactured by sheep from grass,—will recur at once to mind. Add to this timber for ships and houses and the mechanic arts, and charcoal, a necessary ingredient in gunpowder,—and we may pass by various resins, gums, and coloring matters. But we must not forget our fuel, whether in the form of wood, or of coal, the product of forests a thousand centuries old,—nor our illuminating agents, oil, and kerosene, and coal-gas.

Nor must we forget that the plant not only feeds and clothes, and shelters, and warms, and lights us, and gives freshness to the air we breathe, but feeds the soul also, by its beauty, and by its manifestation of the Divine thoughts. Even the winter landscape owes its chief charm to the forms of the leafless trees, or to the varied appearances of the hills and plains as covered with evergreens, or deciduous trees, with forest or brushwood, or wild dead weeds or seared grass, or green grass peeping through the snow. And in summer, who can measure the tides of joy that flow in upon us from the inexpressible beauty of the forests and of the fields, of trees and flowers, of both the forms and the coloring of plants, whether in groups and masses or standing alone? From the giant trees of California down to the minute lichen staining the weather-beaten stone, all plants have a certain beauty, felt even when not consciously recognized.

They are, in short, messengers from God, bringing us gifts of every kind, offering to teach us invaluable lessons, and giving us assurances of His illimitable love.

The lessons which they have given and still have to give to man, in the intellectual problems of classifying them, studying their physiology, and their relations to the earth, and to each other, and to the various tribes of animals, are innumerable.

Now it seems to me self-evident that so vast and so important a field as this should not be left untrod,—that botany should not be neglected, or left to be studied by a few,—that it makes imperative claims upon us to be considered, in its great features, a study for all men,—an essential part in a liberal education. And it must never be forgotten that in a democratic government all men are entitled to a liberal education,—an education for a freeman and a gentleman.

The question next arises: At what period of the scholar's progress, and in what form shall Botany be introduced?

It may readily be shown that while, in general, Botany must succeed Physics, just as Physics must succeed Mathematics, yet the Anatomy and classification of Plants may succeed immediately upon Geometry. The dandelion blossoms by every roadside and by every door step (except where the barbarian practice of allowing swine to run at large prevails; there nothing but iron-weed and fetid camomile are found), and the child is no sooner able to talk than it can learn to name it, and to distinguish it from every other flower. Geometrical forms determine every species, every germ, every family in the vegetable kingdom, and geometrical forms are the earliest of all distinctly intellectual objects of perception. The child may therefore take plants as his first objects of study. Nay, does not the plant springing under every footstep, and the universal love of flowers implanted in every child's heart, indicate the purpose of God, that these should be the