

while I therefore believe every teacher of Science ought to have that knowledge, yet that by no means implies such a knowledge in those taught. And the more acute the mathematical ability of the teacher, the less will he require to presuppose that ability in those whom he teaches. There are some of the processes of nature which are most generally represented in the language of differential equations, to translate which requires a very thorough comprehension of them; but yet it can be done, and that in many complicated cases. I mention this, for it behoves us to remember that in teaching Science to women we have to teach it to those who, in the present state of women's education, for the most part are quite ignorant of the usual preliminaries, and especially of the Mathematics; on which account it has been that, generally speaking, there have only been small portions of Science to which women have been admitted, and those rather of a vague and indeterminate kind; whereas one of the chief benefits of Science is in its freedom from vagueness. And on this same account it has been that most of the scientific teaching that has been given to women has consisted rather in the mere enumeration of simple unsuggestive facts, or of the detail of theories, that is, the results of processes, the processes themselves being omitted.

There can be little wonder that such study has never prospered among women, who thereby get a distaste, and exhibit a disqualification, not for Science, but for that which they are taught. But the true education which may be brought to us by the teaching of Physical Science consists not in the detailing of facts, nor in the detailing of results; nay, or even in the detailing of a process, but in so presenting facts that the learner shall at each step be able to advance along the next step of the process for himself. For as we advance along our thought, we come at each succeeding step to many diverging roads; to throw a light across the whole landscape bewilders the young traveller, to carry whom blindfold to the end leaves him unstrengthened for the next attempt. But true teaching is so to hold the lantern that he may at each turn choose the right road for himself. Thus, if I were to conclude in a word, I should say that the true process of scientific teaching is to lead the learner along a road of continual discovery. For that process of ourselves repeating a discovery is that whereby, far beyond all talk of it, we learn what suggestion means; and that whereby we learn, from the repetition of our own success, that which no argument could lead us to.

To teach a process suggestively we must of course adapt ourselves to that which will be suggestive to the person taught; so that teaching of this kind is somewhat of a sympathetic thing, for some need more prompting to a suggestion than others. And it is on this account that nothing can ever supersede the oral teaching of Science and the Mathematics, for in oral teaching alone is there that facility of adaptation.

What is exactly meant by suggestive teaching is, like all good things, best learned by that most practical of answers, the invitation to the practice of it; and within the limits of an Essay like the present it is hard to give an example. If some one were to ask me why the moon has phases; then, if I were to call his attention to the fact, and bid him look for several nights to see, that it was rounded towards the sun, and bid him watch how its bright part increased or diminished, and then were to show him a dusty ball illuminated by a candle,—that would be a piece of suggestive teaching. To some the process would have to be carried a little farther ere their minds would anticipate the explanation. To others, their first observations would be sufficient: these are they to whom so far Nature is herself suggestive, which she is in a large way to those called discoverers, whose frame of mind it is that we aim at, and not the making of discoveries in the natural world. Let us steer clear of that error that the only reason that Science is to be taught to us is that we may extend its boundaries; but that for which we learn it is this, that we may learn its habit of mind in all things, and that habit of mind is one in which we see what things have to do with one another. It is a mistake into which men sometimes

fall, to see in each piece of instruction nothing beyond its own specialty, wherefrom there arises that utilitarian argument that those things which are of immediate use are the rather to be taught.

### Give Your Boys a Trade.

The above caption contains excellent advice. The remuneration now secured by skilled mechanical labor is far in excess of that offered in mercantile or professional pursuits. A result of the overcrowding in mercantile and commercial pursuits has been also a reduction in the compensation of those occupying subordinate positions. And in proportion with this reduction, or rather loss of increase to conform with the increased cost of living, has there been a corresponding advance in the pay of skilled mechanics, and likewise in the pay awarded those who are but indifferent workmen. For the scarcity of workmen in most of the trades is such that men but half educated in a knowledge of their craft and ignorant in all else, command good wages. Why, there are plenty of instances that might be cited of men well educated, having a knowledge of the modern languages, thoroughly posted in all branches of mercantile business, who are yet eking out a miserable existence on a salary one-third less than that received by indifferent mechanics who can scarcely write their own names. Parents having sons to rear should ponder this fact. Let them reflect that had these men, with their superior education, adopted a mechanical pursuit, their knowledge and address might have made them master workmen, or peradventure given them a capital wherewith to start in some other business with good prospects of success. Recently a firm advertised for a clerk to fill a subordinate but laborious position at a salary so low none other than a single man of the most frugal habits could possibly subsist upon it, and yet they received over three hundred applications for the place, some of them from parties bringing the highest testimonials as to character, capacity and long mercantile experience. Such men, if skilful masons, could earn \$5 per day; if tailors, or printers, or harness-makers, \$35 a week; if fresco-painters or stucco-workers, higher wages still: if blacksmiths, even, they might show a better exchequer when Saturday night closed their week's toil.

But it is not to be denied that a foolish prejudice, born of mistaken ideas, has existed against most mechanical employments. This, is, however, fast disappearing. It must soon fade from sight altogether; for all callings in life are respectable or otherwise in proportion to the character and calibre of the men who adopt them as a means of livelihood. If mechanics as a class have not heretofore occupied a high social position, the fault is in themselves rather than in their vocation. It is commanded from on high that man should earn his bread by the sweat of his brow, but the curse, if curse it be, makes no discrimination in favor of any particular kind of labor. Whatever may have been the case in days past, we believe that the "dignity of labor" is appreciated by the great mass of the people at the present time, and except by the few "born aristocrats" it is allowed its proper place in the social scale.

We have said nothing of the advantages which a knowledge of a trade confers on those who may, from inclination or circumstances, be called to engage in commercial or other pursuits. They must be apparent to every one who reflects on the fluctuations and uncertainties attendant on trade at all times.

Again, we say, give your boys a trade if they have the slightest mechanical turn—not, of course, neglecting their educational interests, even to a collegiate course if they ask it, and your finances will permit—and then whatever betide them, if they have health they never need want for bread: they are possessed of an unfailing source of supply—a bank which will always honor their drafts.—*Boston Journal.*