

teacher find himself in the position of Marshal Beresford on the gloomy, gory field of Albuera, when he, after having dragged *vi et armis* a Spanish ensign to the front, in the hope that some few of the thirty thousand Spanish troops would follow and relieve the pressure on the British, saw with disgust that not only none attempted to follow, but that the ensign released trotted back leisurely with his country's flag to his country's soldiers. If my own experience, as a science teacher of over ten years' experience be deemed of any value, I must say that it has shown me clearly that the tendency to rest on experiment, and to go no further, is far too common, although vigorously combated by the teacher.

Again, the pupil, even if he do thus push on in the path from experiment to principle, acquires the vicious habit of basing a broad sweeping generalization on the result of one or two successfully conducted trials. An American humourist has aptly said that there is no more profitable investment than modern experimental science; "because," he says, "one can get whole tons of conjecture by the investment of one grain of fact." Be this statement true or false, the vile habit of inferring a general, even an all-embracing law or principle, from the results of one hastily performed experiment, certainly does not tend to disprove the statement, and the habit is one only too commonly formed. It is entirely out of the question to expect the pupil to

perform an elaborately detailed set of costly experiments, in order to verify a "law of Nature"; and yet, in order that the student may acquire the correct "scientific method" of reasoning, nothing else ought to be done. In other words, the ability to correctly infer the general proposition from a single hastily-performed experiment belongs not to the unfledged tyro, but to the finished experienced *savant*. To expect aught else than crude guesses, hasty generalizations, imperfect abstractions, confusion of analogy with induction, etc., is to put an altogether too sweetly serene a faith in the embryonic student nature, besides losing the value of chemistry as a "mind-trainer." If the untrained student can perform these wonderful feats, and realize law after law by an experiment or two, how will chemistry train and develop that which has already gone so far?

In conclusion, let me say that my own experience as an educator leads me to conclude that chemistry as a mind-trainer is for the above-given reasons—costliness of apparatus, want of time, risks of failure, and above all, risks of developing vicious mental habits, in spite of the vigilance of the teacher—far inferior to botany or physics; and that the Collegiate Institutes and High Schools of Ontario would be benefited rather than injured, were it relegated to the first year of the courses of our Standard Universities, as a subject to be pursued by minds already to some extent trained and disciplined.

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"THAT school or that system of schools," says D. C. Tillotson, Superintendent of Schools, Topeka, Kansas, "which succeeds in preparing ordinary children to be ordinary men and women, and fits them for the ordinary duties of life, is a remarkably successful school. Geniuses are not produced by the schools. The universities could not produce a Shakespeare. Because he was so poor in English composition, Harvard College questioned the

propriety of granting a diploma to the man who is to-day the greatest American in the field of letters. Men of talent have ever done more for the schools than the schools have done for them. It is my opinion that that man is of greatest value to any community who urges and assists the schools to quietly persevere in fitting the average mortal for the commonplace duties of everyday life."