

dissect and to learn, by practical illustration, the anatomy of the human body, and in walking the hospitals he sees the various diseases of mankind operated upon, and treated for cure—and this to him is practical training. Should a youth prefer to follow the profession of an architect or an engineer, he places himself, after leaving college, under the tutelage of one practising in either of those professions, and there he learns to draw and design, and then to superintend men in the construction of buildings; he has an opportunity to see the precautions used in obtaining a sound foundation, and the method of piling on unsafe ground; he is taught the construction of stone walls and brick work, carpentry and all the other branches of a builder's trade, so that when he comes to start in the profession for himself, he is competent to direct the men under him and not be taught by them. And so, in one of the so-called higher professions, whether in chemistry, painting, music and others of a similar kind, every student thereof has an opportunity, after leaving school or college, to go into practical training, before entering into the practice of his profession. But how is it now with the ordinary classes of mechanics who neither possess the means nor opportunities of obtaining a practical training in all that appertains to their trades? It is quite evident that unless the youth who is to become a mechanic has not received practical training whilst at school, he stands but little chance of obtaining it in after-life. Let us take for example the following trades: Agriculture, Masonry, Carpentry, Painting, and Mechanical Engineering in all its branches. Now upon the intelligence, talent, and practical acquirements of the men who follow these trades the progress of every new country depends. They are in fact the busy hive of workers who build the cells and store the honey for all the rest. They form a very large portion of the community, and from their more humble ranks have arisen many who have founded the wealth and greatness of nations, and yet those who follow these trades, whilst being educated in our public schools, are taught almost nothing in connection with the sphere of life they are destined to fill, and when they enter upon agricultural pursuits or into a machinist's shop, they know nothing of the practical application of what little they have been taught, and have to grope their way to knowledge the best way they can. Is it any wonder, then, that we have so very few talented mechanics or perfect workmen? If the education afforded at our public schools was more adapted to the sphere these men have to follow in after-life, and mental study and practical instruction went hand in hand together, every subject would be more permanently impressed in the mind. One single lesson in Euclid or trigonometry, practically applied in the field, would do more to fix it clearly on a boy's mind than months of its construction or demonstration on the blackboard. Our children, in fact, are wearied with the study of subjects which are of little utility to them in after-life, and are at best but little understood.

The boy who, with a retentive memory, will rattle off a problem in mathematics, can receive little benefit from this gift of memory, unless the practical application of a problem to things in life is explained to him. His school mate, less gifted perhaps, although unable to commit to memory the exact words of a problem or rule, will, when its practical application is explained to him, bear it on his mind, and perhaps never forget it, and eventually, under practical illustration and practica

training, far outstrip in knowledge more gifted boys. It is in the early dawn of life that children imbibe a taste for certain studies, which, if encouraged, and made plain to their comprehension, stimulates them to the desire to learn, and the facility with which they see obtruse studies practically applied, goes a great way to remove their dryness, so that eventually, instead of feeling a disgust for study which they can never thoroughly comprehend the use of, a thirst for information grows upon them. But let a boy be simply told by his master that learning by heart of certain rules and certain studies will be of service to him in after-life, and do not explain to him at the moment for what purpose and how they will be of service, he soon grows weary of school, and leaves it without a desire to improve his mind by after-self-study in those subjects, because he never was taught their practical bearing in the trade he has adopted.

The term *practical training*, apart from practical teaching, has a much wider meaning than generally understood, and it will be well to inquire the meaning given by Webster to the word. First—What means practical? and, second—What is training? Under the first meaning a man may be a practical builder, that is, having a practical knowledge of his trade, and yet not be a *practical* man in another sense; that is, he may not be capable of turning things readily to some use or account, nor will he waste time and money in endeavouring to turn to use or account things which are practically impossible, as, for instance, endeavouring to extract metal from a rock which contains small particles of it, but which, when extracted, would not be worth half the cost of the labour expended. This is an instance in which so much money has been uselessly expended in Canada. When the late Sir William Logan, as a practical geologist, positively asserted that the copper in the Acton mine would terminate in a *pocket*, only one or two persons connected with the mine could be brought to realize the truth of his assertion; but those two were, in the end, the only persons who made money out of the transaction. The practical man would scarcely be guilty of the folly of attempting to do that which his experience had taught him would be futile, but the unpractical man would run the risk, and only know the result when he had sunk his money in it.

Many mechanics having good practical knowledge, in the first sense of the word, have come to us with inventions to patent for them, which have never been of any practical utility, simply because they had had no practical training in the working of their invention. Had they had experience beforehand, the unpractical use of it would have been foreseen. Now, as an instance of a practical invention, we may mention that of Howe in putting the eye of his needle in the *point*; he thus rendered a sewing machine possible and practical; also that of Lyall, in carrying his loom shuttle by friction rollers (instead of batting it through), thereby rendering it possible and practical to weave a fabric of almost unlimited width. There is also another definition of the word *practical* given by Webster: "Evinces practice or skill"—that is as a practical man, one who is always ready to solve new difficulties as presented. Of this class we may mention the sailor who, when the Pope's workmen were raising to its place the obelisk of Rome, and the tackle proved insufficient or ill-calculated, cried out "Wet the ropes!" and by the contraction thus