

we may be able to exhibit the results in museums and national curiosity shops, or to amuse people by experiments and popular displays. We must become acquainted with these sciences through a feeling that we need their assistance, that their help has become an absolute necessity.

It is notorious that in a majority of our workshops the workmen are not only ignorant of the principles they are continually developing—they seldom make reference to them—but work on as if entirely independent of their aid. The processes which they daily see taking place and the mechanical manipulations which they daily perform are productive, in their minds, of no intelligent series of reflections. They have too long been accustomed to work by rote or to pattern, and the system has borne its natural fruit—a carelessness and indifference as to whether there are any such ultimate principles, and if so, whether these are being fully developed or thoroughly understood. It is time such a state of matters was brought to an end, and that our workmen were taught, not only to do the mechanical part of their duties in a proper manner, but that they should be taught that underlying all their processes and all their manipulations is a set of principles or system of sciences to which they are, in spite of themselves, giving force and expression.

But we must not suppose that the workmen are the only ignorant parties. Masters are often as oblivious to the existence of principles as the stupidest among their men. For their sakes, therefore, as well as for the workmen, we consider that technical education has become a great necessity—a necessity we must supply if we are to keep our place among trading nations.—*Edinburgh Reformer.*