

they admit only of the indirect application of the laws of quantity; and are the result, not of reason, but solely of experience. Indeed, so much is chemistry the creature of actual experimental research, that its simplest truths have seldom been anticipated *a priori*. Thousands of years of observation and experience, for example, had not taught mankind that water is composed of two elementary gaseous principles; much less the proportions in which those principles combine to form water. Nay, even now the fact has been established upon the clearest evidence, we are unable to explain why it is so, or even to comprehend the nature of the union, or its result. In all chemical operations, therefore, (to adopt the language of Paley),—"our situation is precisely like that of an unmechanical looker-on, who stands by a machine, as a corn-mill, a carding-machine, or a threshing-machine, the fabric of which is hidden from his sight by the outside case; or if seen, would be too complicated for his uninformed understanding to comprehend. And what," continues this energetic writer, "is that situation? Ignorant as he is, he does not fail to see that certain materials, in passing through the machine, undergo remarkable changes; and what is more, changes manifestly adapted for future use. Is it necessary that this man, in order to be convinced that design, that intention, that contrivance,