

and indirect prosecution of chemical industry. These facts seem to me worthy the consideration of those countries which do not encourage the study of Chemistry, for, according to HUMBOLDT, "An equal appreciation of all parts of natural knowledge is an especial requirement of the present epoch, in which the material wealth and the increasing prosperity of nations are in a great measure based on a more enlightened employment of natural products and forces. Those States which remain behind in general industrial activity, in the selection and preparation of natural substances, in the application of Mechanics and Chemistry, and in which a due appreciation of such activity fails to pervade all classes, must see their prosperity diminish, and that the more rapidly as neighboring States are meanwhile advancing both in science and the industrial arts, with, as it were, renewed and youthful vigor." These remarks, to the truth of which, I think, every one will assent, prepare us for setting a due value on Natural History, which deals with exactly those substances of which mention has been made. The services of Mineralogy in this respect have been so obvious that it has for a long time maintained a respectable position in most countries favoured with civilization and more or less rich deposits of minerals; and this has also been the case with Geology, since it began to be understood, although it is a much younger science than the other. A knowledge of the forms in which things so valuable to man as lime, sulphur, lead, tin, gold, iron and coal exist as minerals, in order that they may be recognized, and the learning whether they are, from the circumstances of the case, likely to repay the trouble and expense of working, are among the teachings of Mineralogy and are sufficient evidence of its direct or indirect utility. Geology, for its part, tells us where to look for the minerals just named, and while an acquaintance with its principles has led many a man to wealth, an ignorance of them has involved not a few others in ruin, from a fruitless expenditure of time, money and labor in the search for valuable minerals in localities where from the geological formation no such things could, so far as we know, possibly be found. In one of the cases on record in England, a sum not less than £20,000 was wasted in a search for coal where it could not exist. The same science too, instructs the Civil Engineer in what direction he may most profitably make his roads, and it now forms part of his professional education; it points out to the settler where to select a site for his farm, and benefits the agriculturalist, who from an acquaintance with the nature and chemical composition of strata, is at once able to see his way to the best mode of cultivation. In the all important subject of drainage a knowledge of the strata of a district is of the first consequence, as it is also in the sinking of wells. As the study of rocks, Geology is a sure guide in the choice of fit building materials, where wood is not the only requisite for such purposes; and in the selection of a site for dwellings; in either case, the clean dry soil, clear air and pure water of certain districts, as compared with moisture, malaria and impure waters of others, being circum-