chromium, &c., that the proportions of these elements in the ores must be known before their reduction is undertaken. The iron industry has been revolutionized during the past fifty years by the labors of chemists and metallurgists directed toward discovering the influence on the properties of iron of minute proportions of various elements. An English writer has recently pointed out that Great Britain has fallen behind Germany in many chemical and metallurgical industries. This he ascribes to greater generosity of the German Government in supporting technical schools. In and about these schools an army of investigators is constantly at work on scientific problems. The spirit of research pervades the land. The Germans understand the economic value of scientific research.

As data are accumulated we may expect exploration for valuable minerals to be aided by systematic and minute chemical analysis of rocks. For example, careful examination of talc found in eastern Ontario shows that it carries a very small quantity of nickel. This recalls the serious competition felt by our Sudbury nickel producers owing to the greater ease with which the metal is reduced from the New Caledonia ore, *garnierite*. Garnierite is, doubtless, talc changed by the infiltration of nickel compounds. At least its composition and physical properties admit of that explanation of its origin. It is at least within the range of possibility that the same process may have produced garnierite somewhere in Eastern Ontario. Nickel is found in small quantities in some of the commonest rocks of this district.

Careful and complete analysis of rocks and minerals may also bring to light the existence of paying quantities of those rare substances, at one time exclusively subjects of scientific investigation, but sooner or later finding their place in manufacturing industry. The manufacturers of the Auer gas burners pay at the rate of from $100 to $150 a ton for the monazite sand, from which is extracted part of the material for the incandescent mantles. The discovery of a considerable mass of material containing a small per cent. of "thorium," the oxide of which enters into the composition of these mantles, would be a very fortunate one. And yet, in an incomplete analysis, it would be very easy to pass over such a quantity of so rare an element. New elements have been discovered because careful determination of all known constituents of a mineral did not add up to one hundred per cent., but fell considerably short of it.