

sounds almost comical to say that sulphur was the essential thing, yet that one of the by-products was an alloy of nickel and steel so far superior to anything else of the kind known to commerce that, when offered to the Krupps of Essen, they made a contract with him for all that could be produced in the next five years! That meant the erection of great reduction works and a ferro-nickel plant which will in the end put nickel-steel on the market in fully completed form as armour plate, rails and structural materials of all kinds, for there is scarcely anything now made of iron which will not eventually be made rather of nickel-iron or nickel-steel. It meant more. For, in carrying on his nickel experiments, it was found that the Sudbury ore is too rich in nickel content, its average being 7 per cent., whereas the amount required for armour plate is only $3\frac{1}{2}$ per cent. That made him prospect for iron ore, and at Michipicoten, about 12 miles back from Lake Superior, his prospectors found a great deposit of red hematite, "iron enough to provide the admixture we required," that is, five hundred tons a day, as well as to supply furnaces elsewhere. How can we explain this extraordinary success in discovering, in a howling wilderness, everything that is needed? Go into the well-constructed laboratory at Sault Ste. Marie and you get the explanation at once. A number of scientific young men are carefully examining, classifying and labelling every bit of mineral-bearing rock brought to them by outside members of the staff or by prospectors or settlers. Everyone in the country knows that specimens will be tested for him or her free of charge, and so many specimens are brought that six chemists are kept constantly employed. There is no luck about the success. The simple explanation is common-sense, utilizing and systematizing knowledge. There is a lesson for us here which we should have learned long ago. But Canadians are only beginning to believe that they have a country of vast undeveloped resources, and that they need for its development

properly-educated brains even more than capitalists, though the two must go together. The capitalist will come to the resources as readily as a fly to honey, but he is helpless without a staff possessed of honesty, industry, capacity and scientific training. Millions have been sunk in Canada in enterprises which would never have been undertaken had there been such a staff, and one million lost keeps back twenty times as much from being invested. I saw a map of our Province the other day, with the respective sizes of Old and New Ontario indicated, and truly it was an eye-opener. It almost seemed as if the infinitely little and the infinitely big were side by side, and the comparison spoke in tones of thunder concerning the need of a legitimate "Big Push" being made, if we ourselves are to enter on the possession of our great heritage. I could not help reflecting with just a little bitterness on the representations I had made, long ago and in vain, for years to leading members of the Legislature on the clamant need of a well-equipped school of mines in Ontario. I simply bored them. Nothing was done till some of us who could ill spare the money put our hands into our pockets to start a school. It is only fair to say that a better day is dawning. For this, *laus Deo!*

Think for a moment of the story just told and who will cavil at the expression, "fairy tales of science." A captain of industry needs sulphur, and—instead of sending to Sicily for it—looks at home and finds it in his neighbourhood. He roasts it out of nickel ore and saves it in the form of gas. One-third of that is converted into sulphite liquor, which extracts the resinous substances from the woody fibre used to make pulp. For the remaining two-thirds, a ready market is found in the forms of sulphuric acid, sulphurous anhydride, and sulphurous acid. The ore, freed from the sulphur, is smelted into ferro-nickel pig iron, and that is refined into ferro-nickel steel. There being a superabundance of the valuable nickel in the ore, red hematite