almost offensive to repeat that there is a United States duty of 6 cents per pound on all refined nickel entering that highly protected country. Were this duty removed it is possible that other trade considerations might still compel the company to refine in the States. But it may be safely taken for granted that refining will always be carried on, either by International Nickel or by any other concern, exactly at those points where it can be performed with most profit.

It has taken about twenty-five years of continuous effort to build up the industry that centres at Copper Cliff. In this year of grace, the International Nickel Company is firmly entrenched. Its position could hardly be stronger. It furnishes about 70 per cent. of the world's supply of nickel, its ore reserves are sufficient for many decades to come, and it is about to double its mining and smelting equipment. In fact the whole plant may attain three times its present capacity before a new concern can possibly become a producer.

For these and other reasons we believe that it is beside the point to look upon any new organization as a rival, or even as a competitor, of the International Nickel. With larger production the price of nickel may be, we hope will be, lowered. This is a function of the market and of improved metallurgical methods. But it is obvious that the present purveyors to the market will for an indefinite period hold a practically unassailable position. It must be remembered, also, that unlike Jonah's gourd, no industry can spring up overnight. Unlimited money cannot perform miracles. Every organically sound enterprise must be built up slowly and wisely.

HYDROTHERMAL ALTERATION.

The study of hydrothermal alteration is one of the most pregnant phases of geological research. It bears directly upon the origin of quartz veins, and, hence, is of distinct professional interest.

The latest contribution to the literature of this subject comes from the pen of Dr. Elwood S. Moore. In an article published in the December (1912) number of Economic Geology, Dr. Moore presents the results of his investigation of the granite and quartz of the St. Anthony mine, Sturgeon Lake, Ont.

The St. Anthony lies on the contact of granite and an extensive area of Keewatin greenstones, acid eruptives, and schists. The quartz veins include certain amounts of calcite and siderite, principally when they occur in the basic schists. The granite, except near the contact where it is higher in soda, is of the ordinary type. "The absorption of the Keewatin, says Dr. Moore, "seems not only to have increased the so-"dium content, but also to have caused a disturbance "in the chemical equilibrium of the granite magma "which resulted in a considerable amount of differen-"tiation." A specimen of granite taken from a spot one-quarter of a mile from the mine proved to be low in silica and potash, and high in alumina and sodium, the result of regional metamorphism.

At the mine, and for a quarter of a mile to the westward, the granite has been shattered and the interstices filled with a network of quartz veins. These appear to be irregular segregations, disappearing gradually in the granite.

Apart from the effects of weathering, the granite surrounding the fissures shows strongly the effect of hydrothermal alteration for distances up to twelve feet from the veins. Pyrite, galena, sphalerite, and chalcopyrite occur in the veins accompanied by the gold except where the latter has been removed by secondary enrichment. In some cases the walls are impregnated with the sulphides.

Selected analyses of granite specimens demonstrated that the silica content decreased regularly as the veins were approached. The increase in alumina and soda and the variations in silica and potash contents are explicable mineralogically. Microscopic examination of their sections, together with chemical analyses, enabled Dr. Moore to reach the following conclusions: "The most important changes in chemical composition "are in the loss of silica which seems to have served, "to some extent, to build up the quartz veins; the rela-"tive increase of alumina, the loss of calcium, potash, "and sulphur, and the increase of iron and soda. The "chief mineralogical changes are in the alteration of "the feldspars to scaly mica, sericite, and paragonite; "the recrystallization of the quartz and its partial seg-"regation into veins; the oxidation of the pyrite and "its removal, to some extent, from the rocks adjacent "to the veins; the introduction of sulphides with the "vein quartz."

The bearing of this kind of investigation upon the mine itself is of demonstrable value. It not only helps to indicate the character of the ore, but, carried further, it assists in delimiting the area wherein mining may profitably be conducted. The St. Anthony mine is one of the few really promising gold developments in Western Ontario being worked at present. Little attention has been paid to the economic geology of the region. We hope that Dr. Moore's paper is but the first of a much needed series.

"THE RICHES OF THE EARTH."

A pungent reminder of the halcyon days of Rossland and of Cobalt comes in the shape of a full page advertisement in the Toronto Daily Star. On Friday, February 7th, the Salvator Silver Mine was the subject of a page of ardent publicity. It comes by way of Montreal. We hardly believe that Toronto itself could originate such piffle nowadays.

A brilliant allusion to "aviation methods" is the proem of the advertisement. Then Cobalt's output is conciliatingly, if insidiously, worked in. "Just look "around Toronto to-day and see the number of men en-