

V.—NEW MINERAL DISCOVERIES IN NOVA SCOTIA.—BY EDWIN GILPIN, JR., A. M., LL. D., F. R. S. C., *Inspector of Mines, Halifax, N. S.*

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The early operations in mining, metallurgy, engineering, etc., were much more simple than those of the present day. They were based of course upon the same general principles that underlie them to-day. The difference, however, in exactness and precision have permitted of vastly greater and cheaper productions. In smelting iron ore, for instance, the composition, weight, and relative proportions of the fluxes, fuels, and ores, are calculated to a nicety, so that the analysis and composition of the resulting pig iron can be safely predicted. The direct outcome of the application of exactness is the opportunity for increasing and cheapening productions. The day of the rule of thumb has passed in iron making as well as in other metallurgical processes.

In this Province we are to some extent interested in iron ore, but at present the adaptability of our coals for coke making is a subject of much enquiry. For many years coal was made into coke by burning off its volatile ingredients in round ovens, resembling bee hives, with more or less admission of air. The matter driven off somewhat resembled in composition the gas made in gas works, and contained a large amount of combustible matter. The illuminating gas made in gas works was produced from retorts into which no air was admitted during the operation of heating. The problem was the production of coke in ovens, on a large scale, equal to that used in the blast furnace, and at the same time to secure the largest amount of gas, or volatile matter, from the coking coal, with as little deterioration as possible from the admission of the nitrogen bearing atmosphere.