As results of exploratory drill holes become available, the estimates of the tonnage of high-grade potash that can be economically extracted are continually being raised. The most recent estimate is about 6,500,000,000 tons and this includes only material that is in beds 5 to 10 feet thick, grades 25 p.c. K_2O equivalent or better, and is recoverable by room-and-pillar mining which leaves 60 p.c. of the potash in the pillars. If a grade of 20 p.c. K_2O or better is considered, the estimate is increased to 8,000,000,000 tons, and if the deeply buried material is taken into account the estimates enter the realm of fantasy. It would seem that the availability of the Saskatchewan deposits has forever allayed any fear of a shortage of this indispensable mineral.

Sulphur.—Preliminary statistics indicate that in 1958 for the fourth year in succession a new record was set for production of sulphur in all forms in Canada. Production in that year amounted to 950,000 tons compared with 918,727 tons in the previous year.

The recent increase in plant capacity to produce elemental sulphur has been outstanding and production plans for the immediate future will make Canada one of the world's major producers. There are now 10 plants producing this all-important industrial raw material—one in British Columbia, four in Alberta, one in Saskatchewan, three in Ontario, and one in Quebec. The plants in Western Canada, where the greatest potential production is, all recover sulphur from sour natural gas. Those in Ontario recover sulphur along with other products from pyrite and pyrrhotite, and as a co-product in the refining of nickel. The plant in Quebec obtains elemental sulphur from waste gases of oil refineries and a chemical plant. In addition, sulphur in the forms of sulphuric acid and liquid sulphur dioxide is being recovered from smelter fumes and from pyrite and pyrrhotite.

The major source of Canadian elemental sulphur will be the sour natural gas of Western Canada. Some of the largest gas fields yield gas of this type, that is, gas containing a relatively high content of sulphur in the form of hydrogen sulphide. This hydrogen sulphide is toxic and corrosive and must be removed from the gas before it is fed to gas transmission lines. In this process the elemental sulphur is obtained. The content of hydrogen sulphide is as high as 37 p.c. in some of the gas fields and constitutes over 70 p.c. in one field not yet in production.

At the end of 1958, plants capable of producing 1,000 long tons of sulphur from natural gas were in operation in Western Canada, with others in course of construction. It is possible, if the present plans of gas transmission companies are carried out, that 1,000,000 tons of elemental sulphur will be produced annually from natural gas in Western Canada by 1961. However, much of this production must seek export markets since it is greatly in excess of current Canadian requirements and since transportation costs prevent it from competing with imports from the southern United States and Mexico in the main sulphur markets of Eastern Canada.

The newest source of pure elemental sulphur is that obtained as a by-product in the new process of direct electro-refining of nickel matte used by International Nickel at its Port Colborne, Ont., refinery. In view of the scale of operations at the refinery, a substantial quantity of sulphur will be available in the near future. International Nickel in co-operation with Texas Gulf Sulphur Company is also operating a pilot plant at the new iron-ore recovery plant at Copper Cliff, Ont., with the object of recovering elemental sulphur from the sulphur-rich gas.

The plants at Cutler and Port Robinson, Ont., operated by Noranda Mines Limited for the production of sulphur dioxide, elemental sulphur and sintered iron oxide from pyrite and pyrrhotite, are at present being run in such a way as to produce a maximum of sulphur dioxide and a minimum of sulphur because of the great demand for sulphuric acid from the fertilizer and uranium industries.

The new plant of Laurentide Chemicals and Sulphur Limited at Montreal is producing 100 long tons of sulphur a day from waste gases from oil refineries and a chemical plant. The sulphur is being sold mostly in a molten state to various industries in the Montreal area. Deliveries are made by insulated tank trucks.