

minent efficiency factors were given chief place, could be devised. The chief difficulties with such a scheme are:

(1) That it is an attempt to simplify data that are essentially not simple.

(2) That its basis could not coincide at all with that of any other rock classification; and, therefore,

(3) That the terms used in classification could not agree closely with those in common use.

The result would be, it seems to me, that we should have another classification to become familiar with instead of accomplishing a simplification. On the whole, there is as yet no better suggestion than that the commonly used terms for description and naming should be thoroughly mastered, and that the nature of the structural and textural basis of difference in quality should be fully understood, and that the geological and petrographic principles underlying the history of rocks should be a part of one's professional equipment.

ELECTRO-THERMIC MANUFACTURE OF STEEL.

This is a comparatively new industry, dating from about the year 1900. The advantages of heat produced electrically, for the manufacture of steel, over that produced by chemical reaction through the combustion of fuels are four in number. It is obvious that almost any temperature within reason can be obtained, and consequently slags rich in lime, and with a strong affinity for sulphur and phosphorus, can be smelted whose melting point is too high for the ordinary methods employed. It is also possible to deal with the titaniferous ores, which make the furnace charge too infusible for coke smelting. Alloys can likewise be produced which are too infusible to be formed in fuel-heated furnaces, such as ferro-titanium, ferro-tungsten, ferro-chrome, or ferro-silicon, which are richer than usual in the alloying element.

A second advantage is that an exactness and nicety in the control of temperature can be obtained, giving increased facility to the control of chemical reactions within the furnace, so that certain combinations of elements in the iron are made possible and the temperature at which the steel is finished and cast may be more exactly regulated. The metal obtained is also free from contamination by impurities contained in the fuel, the chief of which is sulphur, which is always present in the coke. Another point which has to be taken into consideration is that electric power for smelting purposes can often be obtained from some watercourse adjacent to the ores and fluxes, in situations where gas, oil, coal, or coke could be procured with difficulty.

GAS PLANTS AND MACHINERY.

The president of the Institution of Gas Engineers in England was reported recently as stating that with the exception of the method of heat purification, there has not been any striking change in either plant or machinery in the gas industry for some time past. The problem of carbonization is receiving close attention, but it is to be regretted that the committee appointed by the institution has not yet been able to arrange for the comparative tests being awaited by the industry as a whole. Of late, increasing attention has been given to questions of scrubbing and condensation in order to remove deleterious substances from crude gas in such a way as not to impoverish the finished product, and in such a way as to ensure that nothing remains that will impose an unnecessary burden on the purifiers, or interfere, or tend to interfere, with the value of gas as an illuminant and a heating agent.

WATER AND SEWAGE INSTALLATION AT ASSINIBOIA, MAN.

The water and sewer systems around Deer Lodge, in Assiniboia, the western suburb of Winnipeg, were officially opened on August 12th. If the plans of the Assiniboia council are compassed, water and sewer main connection will be carried from the Winnipeg city limits to Sturgeon Creek. The plans have been made and are being carried out with the end in view that, when the time comes to connect up with the Greater Winnipeg Water District scheme, the connection will be ready and easily completed. The new system has, moreover, been constructed so as to afford a means of protection against fire.

Under supervision of G. W. Rogers, A.M.I.C.E., the municipal engineer, the new system has been installed with most creditable speed. Work was started last November, and since that time nearly 7 miles of sewers and water mains have been laid. The work, when complete, will cost approximately \$200,000.

The water is obtained from an artesian well, 365 feet deep; and a small pumping station 52 x 30 feet in dimensions, has been erected.

The pumping plant is complete in every detail and has a capacity of 12,000 gallons an hour. It will supply a population of 2,000. All the machinery is in duplicate, so that in the event of a breakdown the water supply will not be shut off for a single instant. The electrical equipment consisting of two 25-h.p. units, together with the arrangement of switch board and all the electrical apparatus, was installed under the direction of R. Lynn, the municipal electrician. There is a 70-pound pressure at the head of the pumps. The building and solid concrete foundations upon which all the machinery and storage tanks rest were erected by the Progress Construction Co. The entire machinery plant was put in by the Refrigeration and General Engineering Co., of Winnipeg; which firm, in addition to installing the plant, put in a complete system of fire hydrants, which are distributed all over the district.

In the pumping station, probably the most important installation is that of 2 steel tanks, the combined capacity of which is 36,000 gallons. There will always be this amount of water in reserve in addition to that around the well. Outside the building there is a concrete tank, the top of which is flush with the ground. This tank is 13 feet deep, 12 feet in diameter, and has a capacity of 5,000 gallons.

The system employed at the new plant is to pump the water from the well to this outside tank with 2 air compressors. It is then pumped into the 2 steel tanks within, and from there into the mains under air pressure. In this manner the water is aerated to a certain extent. The plant is so arranged that water can be pumped directly into the mains in case of fire. The system of laying the water mains is such that in case of a leak it will only be necessary to shut off a small area until excavations are made and the repairs attended to. This sewage is discharged directly into the Assiniboine River by gravitation, the high water-mark being much lower than the residential district.

The figures contained in the report of the superintendent of Mines for the Province of Quebec show that in the course of the last fiscal year, the mines of Quebec yielded a production of 13,119,811, or nearly 2,000,000 more than in 1912. As usual, asbestos leads all mineral products, the quantities extracted reaching the value of \$3,839,504. Quebec Province alone produces 80 per cent. of the world's consumption.