

PROGRESS OF INVESTIGATION OF CLAY RESOURCES.*

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DURING the season of 1913, the writer and two other members of the staff of the Geological Survey were engaged in examining clay deposits in various parts of the Dominion. The western provinces received the most attention, as they are dependent to a much larger extent on clay products for structural materials than the east.

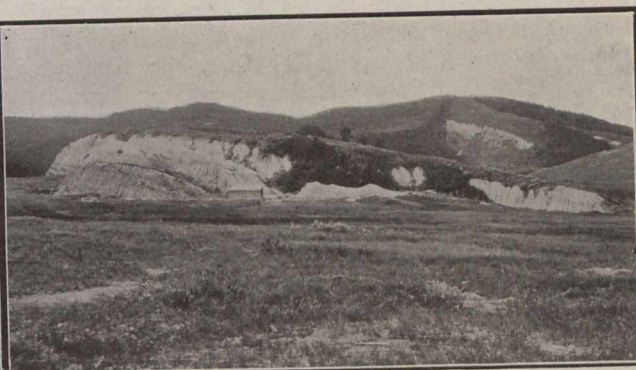
The testing of clays and shales is one of the most important parts of this investigation, and occupies considerable time in the laboratory. An outline of the results of the field and laboratory work is as follows.—

Manitoba.—An examination was made of the shale deposits which are interbedded with the dolomitic limestones at the quarries in Stony Mountain and Stonewall.

locality. These shales contained so much carbonaceous matter, as to be practically useless for the manufacture of clay wares. The carbon burns out of these shales with a bright flame, when they become heated to about 500° C., behaving in this respect like oil shales.

A plant for the manufacture of clay products is under construction at Carmen, this point being selected on account of the distributing facilities it offers for the manufactured wares. It is proposed to use the Niobrara shales from the Pembian Mountains near Leary, on the Carmen-Hartney branch of the Canadian Northern Railway. A carload of this shale was brought to Toronto during the winter and tested on a commercial scale in a sewer-pipe plant. The working and drying qualities of this shale were good, and a fairly satisfactory product with a bright salt glaze was turned out of the kiln.

Owing to the carbonaceous matter, and gypsum which this shale contains, the burning of wares made from it will be attended by some difficulty, until they are overcome by experience.



White Fire Clay Beds in Dirt Hills, Saskatchewan.



Shale and Sand-stone Beds on Eastern Edge of Porcupine Hills, Southern Alberta.

White Clay in Edmonton Formation, Near Alix, Alberta.

Although these shales are hard and gritty, they become fairly plastic when finally ground and mixed with water, and capable of being moulded in clay-working machinery. Their lime content, however, is so high that they burn to a porous chalky body at all temperatures up to Cone 3 (1,190° C.). They could not compete with the surface clays of the district, which require no grinding and burn to a dense body at lower temperatures.

Samples of dark grey shales from Mafeking, sent to the laboratory for testing, were probably taken from the Benton division of the Cretaceous, which outcrops in this

A mixture of the Niobrara and Pierre shales, both of which will occur abundantly in the Pembina mountains, will be found to give better results for sewer pipe.*

A consignment of clay samples from Sprague were tested in the laboratory. These, on testing, were found to be very similar to the surface clays at Winnipeg. They consist of an upper buff burning brick clay and a lower red burning clay. It is impossible to use the lower clay on account of its defective working qualities, but the upper clay makes an excellent common building brick.

Saskatchewan.—An examination was made of the clay deposits in the vicinity of the city of Saskatoon, and several samples were collected for testing. The results of the tests were not encouraging, as the materials present certain difficulties for successful working, and when these are overcome only the common grades of clay wares can be made from them.

Clay deposits at the town of Kamsack were investigated, the materials available at this point being buff burning surface clay overlying Niobrara shales of the Cretaceous formation.

The surface clays will make good building brick if burned sufficiently hard, but there is a tendency toward underburning and the consequent production of soft, porous wares.

The Niobrara shale in this vicinity is unworkable by wet moulded processes, owing to its excessive shrinkage and cracking in drying. This shale might be used for

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*Clay and Shale Deposits of the Western Provinces, Part II., page 93.