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REPORT ON BORING OF LIME-SAND DEPOSITS AT JERUSALEM PLAINS NEAR BRIDPORT.

The present campaign for boring the lime-sand deposits on the property of Messrs. E. & M. Mills, known as Jerusalem Plains, in the Bridport district, was undertaken after preliminary boring, carried out last December, indicated the occurrence of a reasonably large deposit of calcareous material which could be used for agricultural purposes.

The greater part of the area on which the deposit occurs is low-lying and flat with, in parts, a tendency to be swampy. There is, however, a fairly prominent ridge extending in a general north-easterly direction over a distance of approximately 30 chains. The highest point of the ridge, about 16 feet above the flat occurs near its north-eastern end. It was on this ridge that boring was concentrated to determine the quantity of material available. Some overburden has recently been removed from a section of the deposit on the north-eastern end of the ridge.

The boring carried out at the end of 1950 proved the occurrence of a deposit with an average Calcium Carbonate content of approximately 36% after the removal of overburden. The present campaign was designed to quickly determine the extent of the deposit by determining the depth of overburden from place to place and to establish the depth of the water table. It was originally intended to estimate, in the field, the percentage of Calcium Carbonate by measuring the volume of material soluble in acid. These figures were determined for the first two bores, but after discussion with Mr. Mills on the property it was ascertained that requirements would be satisfied if the depth of overburden and the position of the water table were established. In the majority of the bores, samples were tested only for effervescence with acid to establish the extent of the lime-sand deposit.

The boring has shown that material of at least four types occurs.

On the surface there is a sandy soil which extends to a depth of approximately two feet. The surface soils invariably do not yield effervescence with acid.

In some of the bores immediately under the surface sand there is a layer of material which may or may not effervesce with acid. In this band, boulders of almost pure Calcium Carbonate occur, which may be up to 18 inches thick, as in bore L13, or may occur as smaller particles. Complementary to this material in the same layer is a brown to reddish-brown material which shows no reaction to acid. It is apparent that the hard calcareous nodules result from reprecipitation of lime which has been dissolved from the surrounding material which thereby becomes impoverished of lime. It is doubtful, however, whether the average grade of this layer would be lower than the general grade of material which occurs below it and which represents the greater proportion of the deposit.

This lowest layer is composed of fine grained sand in which finely divided shell material occurs.

Below the flat area at the position of Bore No. 1 as bored last December a band of shell material approximately 2 feet in thickness occurred at depths of from 16 to 18 feet. This is 8 to 10 feet below the water table.

A total of 19 bores were put down on the ridge to prove the extent of the deposit there. It has been shown that similar material occurs on the flat country but as the water table is only a few feet below the surface no further boring was done there. None of the bores were taken much below the water table which corresponds more or less with high-tide mark and appears to be constant. The estimates for quantities of material available have been confined to that which occurs between water table and the surface.

A Bore Plan has been prepared and cross sections have been drawn showing the comparative extent of the three main layers. These have been marked as Overburden, Barren material with Calcium Carbonate nodules, and General Grade.

The bores have proved an area of 12 acres and to the depth of the water table show an average depth of 12.5 feet. On the basis of 12 feet in depth the total quantity of material to water level would be 418,000 tons.

On the basis of area as shown in the sections drawn across the ridge of the total tonnage available 5.7% or 24,000 tons is overburden; 71% or 300,000 tons are of the general grade and 22.6% or 95,000 tons are represented by the material referred to as being Barren with Calcium Carbonate nodules.

As it would appear that the grade of the latter material is not less than the average it may be assumed that some 395,000 tons of calcareous material are available for use in agriculture.

Attached to this report are copies of the bore logs for each of the bores.

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