

## I.—BORING AT ROSENFELD STATION.

This station is situated on the South-Western Branch of the Canadian Pacific Railway, about fifteen miles north of the 49th parallel and ten miles west of the Red River, in the alluvial plain of the Red River valley. The boring was conducted by Mr. W. E. Swan, under instructions from the Canadian Pacific Railway Company. Through the kindness of Mr. W. C. Van Horne and Mr. J. M. Egan, I have been enabled to obtain from Mr. Swan, the logs of this and other borings made by him in the Northwest. Samples of the strata passed through in this well had been given by Mr. Swan to Mr. Acton Burrows, of Winnipeg, who was so obliging as to transmit them to Ottawa for my examination. The section given is, therefore, not precisely in the form of Mr. Swan's log, but is based also on my own examination of the materials obtained. The boring was made by means of an ordinary percussion drill, and was carried to a depth of 1,037 feet from the surface. The strong flow of brine met with in this well (a point subsequently referred to) is the most remarkable feature in connection with it.

In the subjoined section, the formations supposed to be represented are indicated in the column to the right:—

	FEET.	
1. Black soil.....	4	
2. Fine silt or clay.....	111	
3. Sand and gravel.....	10	
4. Boulder-clay ("hard-pan.").....	12	
5. Boulders.....	6	
6. Grey shale.....	62	Maquoketa shales.
7. Limestone.....	15	
8. Red shale.....	5	
9. Grey shale.....	10	
10. Limestone.....	30	
11. Fine grey sandstone.....	40	
12. Chalky limestone.....	30	
13. Red shale.....	160	
14. Cream-coloured limestone.....	305	Galena limestone passing below into Trenton.
15. Red shale.....	75	
16. Soft sandstone.....	50	St. Peter sandstone.
17. Dark-red shale.....	50	
18. Reddish and greenish shale.....	25	Lower Magnesian limestone (?)
19. Bluish and grey shale.....	20	
20. Red shale.....	15	
21. "Granite.".....	2	Laurentian.
TOTAL.....	1,037	

The soil, forming the first member of the above section, has the usual characters of that of the region, consisting of the underlying silts mingled with vegetable matter. The silts (described in the log as "blue clay") are those of the ancient lake which, about the close of the Glacial Period, occupied Red River valley, and which has been called "Lake Agassiz" by Mr. Upham. The coarser layers are composed of fine angular and subangular grains with formless argillaceous material; the finer become a blackish-grey plastic clay. The specimens secured of the sand and gravel deposit contained no fragments over three-