low depths, but as has been found in this portion of Alberta this condition is not the prevalent one; we must assume that the most of the rainfall either runs off or evaporates.

The consideration then of the character of the subsoil must in a great measure be expected to explain the cause of the non-retention of this surface water. This is a subject that has such a wide application, owing to the great area and the lack of trained men, that a mere sketch of the general history of the formation of this subsoil can be here attempted. We can carry our mental picture of the surface feature back in time to before the cold period in which it is generally recognized that the granite boulders and much of the surface clay was brought and spread over the soft rocks that formerly formed the surface. At Lethbridge the old valley running eastward from the mountains was not so steeply cut as at present. It was many miles wide and had sloping banks. Its bed was liberally strewn with pebbles brought from the mountains and formed a broad layer. Other wide valleys, no doubt, crossed the region, but are obliterated along with this one by the material plastered over the country by the advancing ice sheet and rearranged by the waters following its melting. As the general slope is to the northeast, the water from the melting ice was impounded in front of the ice and drained away over what is now higher country. Thus imagine the ice sheet to have been at Lethbridge and its front running off to the southeast. The old valley would form the lower part of a lake which would spread until it spilled out over the lowest outlet, into this would be poured all the silt and dirt brought in by the streams from the mountains eventually leveling up the surface. The first channel that the water pouring out from this lake adopted was in front of the Milk river ridge and became the present Verdegris coulee. There was then no river here and the old valley was being filled up. Gradually the lake was lowered as Verdegris coulee was cut and the ice melted back, and a lower outlet was formed along the ice front by Etzikom coulee. We can trace the lowering of the water again to Chin coulee and again to Forty-mile. With this lowering the drainage from the mountains began to recut the valley past Lethbridge through the clays, boulders, sands and then the pebble bed which were in the old valley and finally into the rocks beneath, exposing the coal seams and shales beneath. Much of the sands and clays thus dug out were spread in the part of the valley lying to the east forming the sand plains north of Purple Spring. This digression from the subject of water supply is to suggest that the material deposited on the old rock surface may be of a varied character. The presence of a lake front to the retreating ice suggests that the clay material deposited would not be the ordinary boulder clay, but would be sifted and the surface deposits would generally be of a finer grade, a better soil maker than might otherwise be expected. But the reassortment might also be expected to mean that the surface material being finer grained would also be more impervious to water, and the underlying beds while capable of receiving this water remain dry unless it received it from the adjacent areas of coarser land. There is thus a field of study in the soils at the surface for the more porous areas to which to direct the attempt at saturating the soil beneath the apparently dry areas. There is again the question of the loss of water from the surface soil and even the underlying rocks by the very deep channels across the southern part of the country that have been cut by streams no longer in existence and by the present river channels. This is very marked here at Lethbridge. You may remember the old river valley that was mentioned that had been filled up. This has been traced by a few well borings, but is not very well defined as yet. In crossing the valley by the road you will notice that you are a long way down the hill before you pass through the yellow grey clay probably a thickness of 300 feet. At places along the valley where slides have not interfered with the display of the section, the pebble bed at its base will be seen. This pebble bed extending back under the banks and upward away from the river is no doubt a drainage channel for the under surface water of a wide belt on both sides of the river and must account to a large extent for the difficulty of obtaining shallow wells here.

Sub-surface Wells—The channelling of the surface to depths of from 150 to 200 feet by such valleys as Milk river, Verdegris, Etzikom, Chin and Forty-mile coulees has allowed both the drainage and the possible saturation of the porous rocks beneath the surface. There are fortunately beds which are capable of carrying water