

No. 5.—A specimen from 411 feet consists of grains, varying greatly in size, of clear, white quartz. Some of these grains are quite angular in shape, and many are stained on the outside with iron. With the sand grains are mixed small cubical crystals of pyrite. In a paper published in 'The American Journal of Science' for September, 1890, the writer gave the Dakota formation in this well a thickness of 55 feet, but he has since found reason to believe that a specimen of sandstone labelled 369 feet is not to be depended on, and the record has therefore been altered as above to agree with the log kept by the driller, thus reducing the thickness of the Dakota to 19 feet.

No. 6.—A specimen from 509 feet is a moderately hard, fine and even-grained, light grey limestone, through which are scattered small subangular grains of colourless quartz and grains of pyrite. A specimen marked 510-540 feet consists of similar limestone, with fragments of light and dark grey clay shale.

No. 7.—A specimen from the lower part of the band consists of a mixture of light blue-grey clay shale, particles of limestone, some few crystals of colourless quartz, and particles of opaque white gypsum from the top of the band below.

No. 8.—A specimen marked 550-565 feet is made up largely of fragments of opaque white gypsum, mixed with a few fragments of limestone, crystals and fragments of colourless quartz, and small nodular masses of pyrite.

No. 9.—A specimen marked 565-645 feet consists of a soft, light brownish-red, fine-grained shale, mixed with fragments of light grey shale and particles of limestone. In the clayey mass are also many minute and very perfect crystals, as well as irregular particles of clear transparent quartz.

No. 10.—A specimen from 718 feet consists of a light pink, hard, compact, fine-grained limestone that effervesces strongly in H.Cl., leaving a similarly coloured fine clayey precipitate. With the limestones are many fragments of a fine-grained, white sandstone, and a very few white, opaque particles of gypsum. A specimen from 740 feet is a mixture of fragments of cream-coloured limestone and reddish shale. It effervesces strongly in H.Cl., leaving a residue of dark grey and buff-coloured shale, fine grains of quartz and small particles of pyrite.

No fossils have been obtained from the palæozoic rocks drilled through in this well, and in the absence of direct stratigraphical correlation their exact age cannot at present be determined. However, their geographical position clearly shews that they are of post-silurian age, and the absence of dolomites excludes them from the middle or Winnipegosis formation of the Devonian. It is also altogether unlikely that fossils would have been so uniformly absent from the drillings if some of the lower highly fossiliferous beds of the Manitoban formation or Upper Devonian had been passed through. Many of the limestone fragments from near the bottom of the bore correspond closely with the limestone outcropping near the mouth of Mossy River, at Point Wilkins, etc., belonging to the higher portions of the Manitoban formation exposed in natural sections, and the known southwesterly dip of a few feet to the mile would account for the difference in elevation of the beds.

It is therefore probable that the palæozoic beds passed through in the Vermilion River boring represent an upward continuation of the Point Wilkins limestones, and therefore in the main overlies the highest Devonian beds seen on the shores of Swan Lake or Lake Winnipegosis.

