

1. Deposit of coarse mixed debris with gold bearing quartz, much waterworn and with a current of water running through it to lower land farther east. It was evidently the bed of a brook running over a rich vein farther west.

2. Unstratified drift of quartzite, sand, and clay.

3. Stratified drift, gravel, sand, and clay, with a little gold bearing quartz.

4. Unstratified drift of same character as 2.

5. Stratified drift becoming more sandy and finer in its upper part where it contained some clay.

6. Fine dark clay with pine and spruce cones, beech nuts, birch bark and various seeds and leaves, and remains of water plants and water bugs. The whole was crumpled into small folds.

7. Unstratified drift.

8. Stratified drift, chiefly granite gravel.

This shaft showed gold in the bottom layer. Under ordinary conditions the prospector would search to the north for the source of the gold. But in face of the unusual conditions shown in the plan it was evident that here was a problem needing investigation. Without detailing the various steps in this investigation, I will give the conclusions arrived at. Surface conditions—a high bluff of glacial drift to the south, a lower one to the north, a miry bog—the site of a former lake to the east, a slight ascent to the west. West of this pit about 250 feet was a gold bearing vein. A brook ran from the vein to the pit carrying with it fragments of gold bearing quartz and fine gold, forming bed No. 1, and undermining the bluff or hill to the south. Then came a fall of earth from the bluff forming bed No. 2. This partly stopped the brook but allowed some fine gold bearing material to flow down and form bed No. 3. Then followed another erosive

bed No. 7. Then followed a slow surface wash from the hills on both sides forming the partly stratified bed No. 8. As this shows stratification, the water to work it over must have been turned to the east because of the stopping of the western outlet.

Here is an example in which a moderate knowledge of glacial geology is of great importance. Here was gathered together debris from different sources, transported from different directions, and under different conditions. The source of the rich float in the lower bed would, under ordinary conditions, have been searched for to the north, whereas it came from the west.

#### Problems in Prospecting—No. 2.

This example is from West Caledonia, N.S. Its solution was an accident. For a long time the source of the rich float found here was supposed as usual to be to the north. Though two plans should illustrate this, a careful reading of the text will make it understood.

1. Lead, course N. by W., and S. by E.; the source of the rich float found in the neighbourhood.

2. General course of float transportation during Glacial age.

3. Deflected course of transportation in post-Glacial times.

4. Unmodified drift without gold.

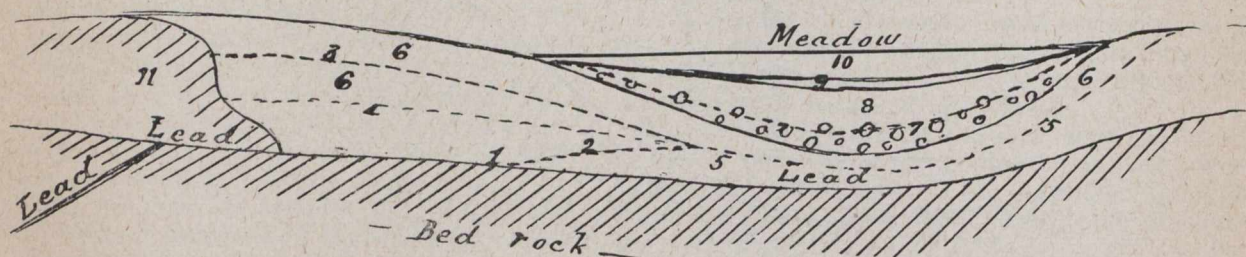
5. Unmodified drift containing gold.

6. Partly stratified drift containing gold.

7. Barren sand, gravel, and boulders from a higher level up stream.

8. Quicksand.

9. Fragments of wood, leaves, water plants, and shells.



No. 2.

stage resulting in another fall of earth—bed No. 4. This completely stopped the brook and formed a pond which afterward found an outlet toward the west. In this pond the wave wash stratified the upper portion of the last fall of earth into bed No. 5. Then succeeded a period of quiet during which a forest grew and grass, flags, and other water plants filled the pond. Water bugs crawled, cones, nuts, twigs, and leaves fell and were buried and humus accumulated. The presence of beech nuts here led to the further discovery of a former brook flowing north into the pond from a former lake one-half mile to the south. This lake is now a miry bog with a hill on its western side, the only place in the neighbourhood where beech trees can be found. The brook leading from this former lake is now filled with sand carrying gold, the source of which has not yet been discovered.

After a long and quiet period, the whole bluff to the south slid down the slanting surface of the glacier planed rock corrugating the muddy pond border. Then it suddenly gave way and buried the shore line with its vegetation under 5 feet of unstratified drift, forming

10. Peat and swamp muck.

The true explanation in this case seems to be the following. The debris from the vein was pushed up a gentle slope to the south by the general glaciation. Then during post-Glacial times the gold bearing drift was cut away near its source, by a stream flowing from the southwest. This removed a large part of the float to the northeast, jamming a gold bearing boulder into a crack in the south side of the bluff or ledge 11. As this boulder could not have been thrust in from the north, I was convinced that this portion of the gold bearing came from the south. In pursuance of this new idea, the vein searched for was soon afterward found. The expansion and transporting power of ice doubtless was accountable for a large part of the transportation to the northeast. After a time the debris formed a dam about 100 yards down stream. Behind this, gravel and sand accumulated until the brook, turned in another direction, left a pond behind. In this, peat grew and the water gradually drained away until a forest covered the peat, which finally gave way to the present meadow.