

On the south side of the Goldenville anticline, the interbedded auriferous veins are perpendicular and run straight, except on the saddle where they curve to the north-west, and the angle of dip decreases gradually. Here again, as a general rule, the richest streaks have been found where the strata and the inclosed veins begin to curve around the main anticline. One well-defined line of pay-streaks leaves the anticlinal axis at the Mayflower belt and runs S. 35° E. (*mag.*) developing the rich streaks worked on the Palmerston and the Meridian big belts to a depth of 100 feet.

The above general conclusions are sufficient to prove that the mode of occurrence of the veins depends entirely upon the structure of the folds and the lateral pressures to which they owe their origin. If, therefore, the structure of a gold district can be ascertained and mapped out, it becomes quite simple to locate the lines of pay-streaks and to trace them to great depths, as is done in Bendigo, Australia, where mining operations have been pushed down, at six different mines, to depths of over 3,000 feet, by means of perpendicular shafts on the top of anticlinal folds.

Enormous lateral pressure has induced, at the east end of the district, small cross-faults, the two largest giving a horizontal displacement of 40 and 42 feet respectively on the south side of the fold, of later origin than the auriferous veins.

The district, once a centre of much activity and from which over \$2,000,000 of gold has been extracted, has been little worked for the past 15 years, but within a year or two abandoned properties have been re-opened and worked with very satisfactory results, so it is safe to say that this district is destined in the near future to resume its position as an important gold producing centre.

At the time of our visit operations were being proceeded with renewed energy on the Coburg, the Springfield, the New Glasgow, the Stuart-Hardman and the Sutherland properties. The return from the four first named properties for the month of August was 397 ounces of gold from 1,245 tons of quartz.

SALMON RIVER GOLD DISTRICT.—A few days were spent in a survey of this district, but the plotting of the field notes is not yet completed. The surface of the district is largely covered with drift and only a few out-crops could be seen, outside the Dufferin mine, at the east end of the district, where some veins have been opened. Large plans and sections of the extensive underground workings of the Dufferin mine have been made by the company. By the courtesy of Mr. R. G. Leckie, manager of the company, these plans have been placed at the disposal of the Geological Survey and will be of great value in affording the data necessary to work out the structure of this important district.

The quartz vein worked at the Dufferin mine are situated on the apex of a very sharp anticlinal fold. At the main shaft the apex has a westerly and easterly pitch, which has caused a sliding and an uplift of the strata, developing large auriferous quartz veins on the crown of the saddle. These latter occur one under another in the same manner as some of those in Victoria, Australia, to which allusion has already been made. No work was done here last summer, but I was informed that the company contemplates the erection of a suitable plant and will sink a deep perpendicular shaft on the crown of the saddle to work the large ore-bodies converging at this point.

FIFTEEN-MILE STREAM GOLD DISTRICT.—Ten days were spent in a survey of this district and a plan on the scale of 300 feet to an inch was completed in the field. The north anticline of the Moose River mine passes through this district and is here composed of three minor anticlinal folds. The two most northerly folds are only 130 feet apart at the east end of the district, on the New Egerton property, and have a pitch to the east at an angle of 30 degrees. The northernmost is well exposed at the west end of the district, on the east shore of Sheet Harbor river, 100 feet south of the Free Claim lead, where the pitch is to the west at an angle of 18 degrees, but the middle fold could not be located here as the bed-rock does not crop out immediately south of the Free Claim mine. The east and west pitches of the north anticline meet and form a dome a short distance west of the Hudson property, where good ground is most likely to be found.

The southern anticline is well exposed at the west end of the district on area 905, block 2, 750 feet south of the Free Claim lead, also on the Sheet Harbour portage-road on area 858, block 4. Further east, it passes about 50 feet north of the Halliday lead, beyond which, it is thrown to the north, about 150 feet, by a fault, and passes north of the McCuaig lead and south of the Hudson and White leads, prospected here on the eastern pitch of the anticline. No veins, have, so far, been operated on this fold, but some very rich drift, derived no doubt from its axis, has been found 600 feet to the south of it on areas 706 and 713, block 6, and at other places, and considerable prospecting has been done through a great thickness of drift to find the auriferous veins. No doubt systematic prospecting along this anticlinal fold will bring to light rich veins.

Mining operations have, so far, been confined to the quartz veins lying along the two northern anticlines. The New Egerton Gold Mining Company has lately taken possession of the principal properties which had been worked from time to time by different companies, and they are now operating on a large scale the important belts of low-grade ore known as the Mother Seigel, and the Nonpareil, on the synclinal fold, immediately south of the middle anticline, at the eastern end of the district. The returns for the first nine months of 1897 are, 8,269 tons of quartz passed through a 40-stamp mill, giving 2,557 ounces of free gold, or an average of 6.19 dwt. per ton, and last September, 1,000 tons gave 445 ounces, or an average of 8.90 dwt. per ton.

This district is one of the most promising for new discoveries, and is likely eventually to become one of the most important mining centres in the province. But on account of its isolated position, with only one bad road of thirty miles for ingress, it has not been given all the attention it deserves.

KILLAG GOLD DISTRICT.—A few days were employed surveying this comparatively new district, a plan of which was plotted on the scale of 300 feet to an inch. The anticline passing through this district is the continuation of the Goldenville fold from the east, and of the Gold Lake fold from the west. It has a course of S. 79° E. (*mag.*), but instead of having a westerly pitch as in the two latter districts, its axis has a pitch to the east at an angle of 15°. The measures on the south side have a due east-and-west (*mag.*) course and perpendicular dip, while on the north side the measures have a general course of S. 55° E. (*mag.*) and dip to the north at an angle averaging 35°.

Only a few veins have so far been worked in this district, but very rich drift has been found for some distance along the course of the axis, indicating that more will yet be discovered. The veins are much larger and more numerous on the apex of the fold than at a distance from it, and more prospecting should be done along this line and operations carried down to greater depths on the saddle.

At the time of my visit, the H. S. McKay property was being operated on two different leads, one on the north dip and the other on the south, with good results.

Prospecting was being done on the Mott-Stuart property, on some areas where very rich quartz was found, and two leads dipping to the north have been discovered showing gold quite freely.

CARIBOU GOLD DISTRICT.—Twelve days were devoted to surveying this district, a plan of which was plotted on the scale of 500 feet to an inch. The anticlinal fold passing through this district is the continuation of the Cochran Hill and Cameron Dam anticline, which has brought up the upper measures of the lower quartzite group of the gold-bearing series on an elliptical dome, 2,900 feet broad and four miles long, surrounded and overlain by the upper slate group. This dome has its centre on areas 328 and 329, block 2, where many quartz veins have been segregated in slate belts interbedded with quartzite beds, dipping away from the centre at low angles along the axis of the fold, increasing gradually to 65° on the north dip and to 70° on the south dip. The course of the fold from the centre of the dome is N. 79° E. and S. 76° W. (*mag.*)

Besides the many interbedded veins which have been operated from time to time for some years, four important large fissure-veins, cutting the strata at small angles, have also been worked extensively with good returns. One of these cuts the quartzite and slate group and the other three cut the slate group near its base. Two of the latter are at present worked.

More attention should be paid to the large belt of flat veins lying close together on the centre of the dome, on areas 328 and 329, block 2, on the property of the Caribou Gold Mining Company; for the structure of the fold shows that they probably overlie a succession of similar veins, all of which could be worked most economically by a perpendicular shaft sunk on the apex.

MOOSE RIVER GOLD DISTRICT.—Twelve days were spent in this district and a plan on the scale of 200 feet to an inch was plotted in the field. The Fifteen-mile Stream and the Beaver Dam anticlines converge as they approach this district from the east, and are here only 450 feet apart, with two minor plications between them. The folds have a general east and west course. The most northerly, which is the more important, has a north dip increasing gradually from 35° to 80° and its axis has a pitch to the west at an angle of 10°. The measures on the south side of the south fold dip south at an angle averaging 60 degrees, and the axis has a pitch to the east at an angle of 15 degrees, and the minor intervening plications lie at an angle seldom higher than 45 degrees. The immense strain and pressure accompanying the meeting of these folds have greatly disturbed the measures and have caused many flexures and faults which complicate very much the structure of the district. The main lines of faulting have a general course varying from N. 10 degrees E. to N. 25 degrees E. (*mag.*), with displacements from a few feet up to 165 feet.

With the exception of one or two small, true, fissure veins of but little importance, cutting the strata at small angles, all the veins worked in this district are of the interbedded class. The most important are those worked on the north dip and on the crown of the northern anticline, by the Touquoy and the Moose River Gold Mining companies. Some veins have also been worked on the south anticline and on the two smaller plications lying between these two main folds.

A belt of slate, over 100 feet wide, plicated by these folds, contains a large percentage of auriferous quartz occurring in corrugated veinlets and filling fissures generally following stratification. A large quantity of this slate has been mined on the Moose River property by open quarries, and a considerable percentage of the slate as well as quartz has been crushed and is said to have given satisfactory returns. This large belt of slate could be mined at a very low cost, and if certain parts of it were sampled separately, tested and found to contain enough gold to cover expenses of mining, it would become a great source of revenue, as the belt is repeated by these plications and gives a considerable width, and can be traced for some distance east and west. Belts of slate of a similar nature that occur in other districts seem worthy of consideration.

The discovery, last summer, of a 100-ounce pocket on the Britannia lead, newly opened on the south dip of one of the middle plications, on the Touquoy property, has created more interest in the district, and, as a result, prospecting has been begun on the east and west ends of the district, where much good ground is yet undeveloped.

MOOSELAND GOLD DISTRICT.—One week was occupied in surveying and plotting this district and a plan on the scale of 200 feet to an inch is in progress. All the leads worked occur on the south leg of a very sharp fold, dipping 75 degrees on both the south and north sides, the axis of which runs from the centre of a dome east, magnetic, and N. 81 degrees W. (*mag.*), and has a pitch of 10 degrees to the east and 5 degrees to the west.

Several lines of faulting have caused important displacements at the east end of the district. The westernmost of these runs S. 35 degrees E. (*mag.*) along the edge of a flat on the west side of the Tangier River and gives a horizontal displacement of 560 feet to the north on the east side, the anticline situated 48 feet north of the Irving lead being the same as that immediately south of the Bismarck lead.

On the east side of the Tangier River, another main fault, running parallel with the first, passes through the west Otter Pond and follows its brook to the south, while northward it follows the river along Grassy Lake. The Bismarck lead anticline is shoved 1,500 feet to the north on the east side of this fault, to a ridge 150 feet north of the west Otter Pond, and 50 or 100 feet north of the Brown lead opened here. The pitch of the anticline, which is to the east on the Bismarck lead, is changed to the west on the east side of the fault where the veins will curve westward around the fold. Small faults exist no doubt between this fault and the Bismarck lead, and one was located at the east end of the workings on this lead, but a great thickness of drift east of the river prevents the determination of the others.

The location of the anticline to the east of these faults opens up an important new field for the prospector; and the block of country situated between the two main faults and lying to the south of the Bismarck lead anticline, is certainly very valuable, as it contains the continuation of the Irving and other rich leads worked years ago on the old Musgrave property.

The very large belt of four veins, giving fifteen feet of quartz in the space of 35 feet, and exposed for 1,850 feet along the apex of the anticline north of the Irving lead, contains some sulphides and it should be properly tested for gold by means of perpendicular shafts along the eastern pitch of the apex. The same may be said of the continuation of this belt on and under the Bismarck lead fold, the latter lead having been found quite rich on the eastern pitch of the apex where it reaches the thickness of fourteen feet.

LECKIE ET AL V. STUART AND HARDMAN.—A suit brought by Major R. G. Leckie and associates against George W. Stuart, Truro, for the recovery of \$10,000 paid on the purchase of a mining property in Goldenville district of Sherbrooke, N.S.,