furnace, and the moment the heat commenced to act we got extractions, which decreased all the way down until the ore was dead roasted, when the extraction went up." As roasting would only be available in the treatment of rich and heavily sulphuretted material, it behooves us to endeavor to obtain as near as possible the first condition named, and to avoid anything in the prepar-ation of the ore which advances the decomposition of metallic sulphides. The initial stages of decomposition having been set up, the rest becomes cumula-tive from the further reaction of the products of decomposition, and as each reaction requires a further supply of oxygen, there is a constant withdrawal of available oxygen required for successful treatment. Having endeavored to deal with these two milling practices from the point of view of their influence on cyanide work. It is with no desire to tres-pass within the province of the mill manager that I have brought forward these

pass within the province of the mill manager that I have brought forward these few remarks, but, if possible, to draw attention to the double function of the mill in its capacity as an amalgamating machine, and its equally important service in the "preparation of material for the use of the solvent."

MINING NOTES.

Nova Scotia.

Mr. E. R. Faribault, whose excellent surveys and maps of the gold fields of Nova Scotia are highly appreciated by the mining men of the province, contributes to the Summary Report of the Geological Survey, issued this month, a brief synopsis of his investigations last year, which will be read with interest. We quote from it the following :

The eastern fault lies west of Dolliver Mountain gold mine, passing in the vicinity of the north branch of Davidson Brook, with a displacement of 500 feet to the north on the east side, shoving the anticlinal fold from area 772 to area 869 on the east side.

The middle fault lies 600 feet west of the mouth of Isaac's Harbour River, and follows the general course of the Northwest Branch Brook to the head of the harbour, d wn which it runs, passing between Hurricane Island and the eastern shore. The anticlinal fold is cut off on the east side of this fault on area 906, block 6, and shoved to the south-east some 1,100 feet, in the vicinity of the discharge of the Branch Brook into Isaac's Harbour.

The western fault runs parallel to the other two, along the valley of the south

into Isaac's Harbour. The western fault runs parallel to the other two, along the valley of the south branch of Smelt Brook of Country Harbour, and is well seen at the Porcupine Rock, but, on account of heavy drift, the anticlinal could not be located on either side in the vicinity of the fault. The fold is, however, well exposed further west on the shore of Country Harbour, on areas 780 and 781 of block 10, giving a horizontal shove of some 500 feet. The only mine in operation in the district at the time of my visit was the Richardson gold mine, working an auriferous quartz vein that follows a belt of slate lying between two heavy beds of quartzite, curving to the eastward around the anti-clinal fold, which dips to the north at an angle of 70°, to the south at an angle of 50°, and with a pitch of 21° along the axis. The belt on the north dip has a width of 7 feet, and has been worked 150 feet on the incline; on the south the width is 8 feet, and it was worked to a depth of 200 feet, while on the apex the belt increases to a thickness of 25 feet, half of which is quartz, and has been worked on the incline to a depth of 400 feet. The slate, as well as the quartz, contains milling gold, but it also holds an important amount of auriferous sulphides, which, from analysis made by Mr. F. H. Mason, of Halifax, contain a good percentage of gold that is not free-milling, and should be saved by suitable concentrators. A great deal of exploratory work has been done in the last few years to the sides of the anticlinal axis ; notably on the Dolliver Mountain property, where some twelve veins showing gold have been opened, and also on the McMillan, the Samuel Grant, the O. J. Griffin, the H. Richard and the East Gold Brook areas, where some the drift has been found. Large belts of low-grade ore, similar to that of the Richardson vein, occur along this fold, but they will only be found on the apex of the fold, where more prospecting should be done ; and this could be accomplished most readily and at

ISAAC'S HARBOR GOLD DISTRICT.—The three faults above described as affect-ing the Upper Seal Harbor belt have been traced across this belt lying two miles further south. The middle fault and the western fault run down the harbour and pass between Hurricane Island and the eastern shore, and converge at Dung Cove, giving a horizontal throw of some 1,500 feet to the north on the east side of the har-bour. The Mulgrave belt should this be the continuation of the Hurricane Island belt, where an anticlinal and synclinal fold only 12 feet wide is developing on the western side of the harbour into the Burke mine anticline and North Star mine syn-cline, which are here 100 feet apart. This explains why the Mulgrave belt can not be traced on its natural course on the western side of the harbour, and it gives also the theoretical reason for the occurrence of an auriferous belt apparently remote from an anticlinal fold. ISAAC'S HARBOR GOLD DISTRICT.-The three faults above described as affect-

* The magnetic variation in this part of Nova Scotia is about 23° E.

The Hattie belt, now operated by the Griffin Gold Mining Company, on the south side of the Isaac's Harbour anticline, is likewise shoved by the same fault some 1,500 feet to the south on the west side of Dung Cove, at Red Head, where rich driff has been found.

The eastern fault described above appears to pass a few hundred feet west of the Skunk Den mine, apparently cutting the Mulgrave leads between areas 13 and 14, but the extent of this fault here could not be exactly made out. It may have a displacement of 500 feet, like that two miles further north.

The knowledge of the location and displacements of these faults should assist in tracing out rich veins beyond them and encourage the prospecting of new areas.

COUNTRY HARBOUR GOLD DISTRICT.—No work was being done here at the time of our visit. More evidence was gathered, however, confirming the views expressed before regarding the structure of the district. The quartz veins, so exten-sively worked here for some years with large returns, are situated along a very sharp anticlinical fold which is a part of the Coehran Hill and Forest Hill anticline swung into a north-and-south direction by the Country Harbour fault, which has caused a horizontal displacement of our one mile to the parth east on the north-and-south horizontal displacement of over one mile to the south-east on the north-east side of the fault.

FOREST HILL GOLD DISTRICT.—One week was devoted to making a plan on the scale of 500 feet to the inch of this newly discovered district, where a belt of gold-bearing rocks occur between two axes of granite, from which numerous dykes and veins are sent into the adjoining rocks which are altered into an adalusite, stauro-lite and gurnetiferous schists. The belt is plicated into an anticlinical fold which has a north-west course, gradually curving to the west and south-west, and most probably joining the Country Harbour anticline. On the McConnell property the anticline has a pitch to the east of three degrees. The Modstock, McConnell, Mason and Pheenix companies are working a group of some ten veins 1,000 feet south of the granite on the south side of this fold, which has an overturned dip to the north vary-ing from 90 to 70 degrees. The Samon river and Ophir leads, which have so far granite on the south side of this fold, which has an overturned dip to the north vary-ing from 90 to 70 degrees. The Salmon river and Ophir leads, which have so far been the most productive, are the nearest to the anticline, being respectively 100 and 500 feet from it; and judging from the present developments, it appears that the outcrops of the pay-streaks on the different leads are situated along an imaginary line crossing diagonally the course of the leads, and running north 73 degrees west (*mag.*) from the McConnell mill. I would thus suggest cross-cutting north from a shaft on the Salmon river lead in the vicinity of the O'Connell mill, where the anticline is well exposed twenty feet north of the mill, to develop leads on the line of the pay-streak which do not crop at the surface. Auriferous quartz veins have also been prospected on three different properties one mile further west, on the south side of Mile Lake, where granite spurs from the mass lying immediately to the north cut the stratified rocks and interbedded veins in all directions, creating disturbances which render prospecting very difficult. This district is the most interesting place which render prospecting very difficult. This district is the sedimentary rocks. rocks.

COCHRAN HILL GOLD DISTRICT.—A hurried survey of this district has been made and partly plotted on the scale of 300 feet to one inch. The axis of the anti-cline, not located here before, was determined at the crusher, on area 533, block 77, and traced eastward where gold-bearing drift was discovered last season, a fact which ought to encourage prospecting along its course, which is south 79 degrees east (mag.) This anticline is a very sharp fold overturned to the south, the dip on the north side being to the north at an angle increasing from 60 to 70 degrees, as we recede from the axis, while the south leg has an inverted dip to the north increasing from 75 to 85 degrees, as we approach the axis. The pitch is to the west at a very low angle. At the time of my visit a large belt of leads, called the Mitchell belt, which has been worked from time to time with more or less success, was being re-opened. This belt is 250 feet south of the anticline, 100 feet wide, and composed of several veins of low-grade ore from two to fifteen inches wide.

GOLDENVILLE GOLD DISTRICT.—One month was devoted last season to this most important district, in making a detailed survey of over 125 auriferous quartz veins which have been worked from time to time. A plan, on the scale of 200 feet to an inch, was plotted in the field, showing the size and cropping of the veins, as far as they can be traced on the surface, the extent to which they have been worked in depth, and the faults and disturbances affecting them. These veins occur on both sides of a man anticlinal fold, which has a general westerly pitch varying from o to 30 degrees, with a perpendicular dip on the south side, and a north dip of 43 degrees. In studying the structure of this anticline more closely, we find that gentle undula-tions leave the main fold in a north-westerly direction, and that the enlargements and pay-streaks of the veins are found along well-defined lines, having the same north-westerly directions and corresponding to the anticlines of these undulations, while the synclines correspond to a narrowing or disappearance of the veins and to lower grade or barren ore. Three well-defined transverse undulations have been traced on the north side of the saddle, the most easterly of which leaves the main Cobourg shaft near the anticline and runs north 65 degrees west (*mag.*) to the shafts on the Gold Hill belt, then curving slightly to the north, it runs north 57 degrees west (*mag.*) to the shafts on the Gladstone, developing enlargements and rich streaks on the veins it crosses. Important pay-streaks have been worked along this line on the Cobourg lead to a depth of 200 feet on the incline; on the Gold Hill, 75 feet ; Bung, 280 feet ; Wellington, 750 feet ; Deugald Cameron, 60 feet ; Dan McKenzie, 90 feet, and on the Wheel lead, 75 feet. The second undulation leaves the Mayflower belt on the anticline, and runs N, 50° W. (*mag.*) to and beyond the Little Hayden lead, creating enlargements and pay-streaks on the veins crossed. The most important are those worked on the Mayflower, Roothog, John R. GOLDENVILLE GOLD DISTRICT.—One month was devoted last season to this

prevented prospecting further north-west on this undulation, but there is every reason to believe that rich streaks occur there. The veins crossing the space between the two most easterly undulations have been found of no value, and prospecting done to the west of the Hayden undulation has proved that the veins pinch out and are completely wanting for a space of 700 feet, at the west of which the western undulation begins. Only a few veins have so far been opened on the western undulation, passing about the McRae vein, but good streaks may yet be discovered on some of the veins crossing this line.

crossing this line.