

Mr. Innes, the Mayor, Mr. McDougall, and other gentlemen interested in quartz mining, two promising reefs formerly prospected.

The Old Criterion Company's Reef.—This reef, which had once a high reputation in the district, runs in the flat close along the Arrow River near Arrows-town. Judging from the old surface workings, extending for about 5 chains in length, it strikes W. 35° N., and dips at 80 to 90° eastward towards the river, crossing the country—a soft mica schist—both in strike and dip. There have been rich drift workings close alongside of it. The following particulars about the reef and the operations of the old company were kindly furnished to me by Mr. H. J. Cope:—The reef was discovered in 1864 by a Victorian quartz miner, and is the one first opened in the province. It consists of a clayey mica-schist mullock, enclosing veins and bunches of quartz. Besides being worked for a good length from the surface, a shaft was sunk on it to a depth of 120 feet, from which it was worked out from 90 feet down, and up to the surface, and 70 feet in length. There was not much water coming in at the bottom of this deep shaft. Another shaft was sunk on the reef, at the south-east end of the open workings, about 40 feet deep, and it was followed from this for 80 feet in length. In the main workings it was at first taken out from one to four feet in width, but another manager subsequently broke into what has been considered the foot wall, and worked several feet of it, which paid nearly as well as what had been previously taken. A leader was found joining the reef which also contained good gold. The yields from the crushings ranged at first from $\frac{1}{2}$ to $1\frac{1}{2}$ oz. of gold per ton, average about 1 oz., but gradually fell off to $\frac{1}{2}$ oz., which would not pay at the time, and the mine was therefore given up. The gold was nowhere completely lost in the workings; but the best seemed to occur in a shoot, dipping westward in strike. The company had a small battery of five heads of stamps, with a common amalgamating table and blanket-strakes in front, the whole poorly constructed. Much difficulty was experienced in clearing the boxes on account of the mullock being of a very clayey nature, and all accounts agree that a great deal of the fine gold was lost. The management was altogether very bad, for it took about twenty men to keep the small battery going. The shares of the company were at one time at a very high premium, and the coming to grief of the mine subsequently has been the principal cause of destroying confidence in quartz mining in the district, and that prevented the latter from being properly prospected since. Considering all the different points relating to the auriferous character of the reef, the workings, management, &c., in connection, I cannot help coming to the conclusion that the reef certainly deserves another trial, and that this, if effected in an economic and systematic manner, and with the use of good crushing machinery, might likely prove a very profitable speculation.

The Cornish Reef.—This lies on the Crown Terrace, about a mile eastward of Arrows-town, and has lately been taken up by McWhirter and party. It strikes S. 40° E., and dips very nearly vertical, *i.e.* south-westward, at about 85°, showing well-defined walls with thin clay casings, and crossing the country—a fissile, nearly flat-bedded mica schist—both in strike and dip. Its thickness is nearly five feet, of which one and a half feet along one wall consist of good-looking quartz, full of pyrites, and the remainder of quartziferous mica schist mullock. The prospectors found good gold in the quartz, and opened the reef by a small shaft, since collapsed, and a small drive; but none of the stuff has been crushed. Running at nearly right angles across a steep gully, the reef could be easily opened in strike by adits, either side, attaining, at but a short distance in, a depth of at least 150 feet beneath the surface of the bounding hills: and this trial it decidedly deserves. There is a good fall for the waste down the gully, and from a race higher up on the Crown Range a sufficient supply of water might, perhaps, be secured for a small crushing machine. About 15 feet above the reef a good-looking, well-defined leader, about 1 foot thick, is exposed in the gully, which strikes E. 15° to 20° S., and dips at an angle of 80° southward—a course according to which it ought to join the reef at a short distance towards the west. To prospect this leader would also be advisable.

The Columbia Reef.—It lies about a quarter of a mile from the former reef higher up the gully, near the top of the terrace, being exposed in a narrow rift in the southern hill slope. It strikes S. 25° E., and dips close upon vertical. Thickness, from 6 to 8 feet, mostly composed of solid, rather hungry-looking quartz. It has been prospected by a shallow trench about 40 feet in length, and gold is said to have been seen in the quartz; none of the stone has, however, been crushed. This reef is not as promising-looking as the foregoing; yet, as it could be easily opened by a small adit in strike, it might not be unadvisable to give it this trial.

ALLUVIAL COMPANIES.

Arrow Flat Deep Lead Company.—This company, of which Mr. Elliot is the manager, obtained very rich prospects from what appears to be an old channel of the Arrow River, trending across the present river flat towards the old lake basin beyond Arrows-town. In trying to work the ground a large amount of water was, however, encountered, issuing from a loose shingle bed about 10 feet beneath the surface, and being fed, as examination proved, by a strong creek which joins the valley a short distance higher up. The erection of strong pumping machinery was therefore resorted to, but even this, though consisting of two 12-inch drawing lifts, driven by turbine, and working incessantly day and night, has hitherto failed to make any sensible impression upon the water in the shaft. A dry season would no doubt greatly assist the company, but as this might be hope too long deferred, I see no other way of quickly beating the water than the erection of additional or more powerful pumps. A Victorian plan, in such cases of emergency, might also deserve consideration, *viz.* to sink a good shaft in the rock near outside the water-bearing drift-bed, drive from this a rock-level underneath and in the course of the lead, and to open and work the latter by means of rises from it. The putting down of a number of bore-holes, for the purpose of ascertaining the depth and trend of the lead, would of course be a necessary preliminary.

Sons of Fortune Gold Mining Company.—This company, under the management of Mr. Miller, is at present engaged in a highly promising enterprise, *viz.* in driving an adit into an enormous land-slip, which backs up the Arrow River, considerably over 100 feet in height, at a place lying about four miles up the river from Arrows-town. Judging from the workings higher up, there is no doubt rich washdirt existing at the bottom of the valley above the landslip; but all attempts to reach it by shafts, one of which is 42 feet deep, have hitherto failed, on account of too strong a pressure of water. The adit is