

Butcher's Gully Reef.—This was 20 feet wide where opened, and a trial crushing paid 7 dwts. of gold per ton. After this it was not further tried. The gold it carries is very fine.

Ophir Reef.—This lies about half a mile from the Nugget and Cornish Reef, up the Shotover River. It is plainly exposed in a landslip, and carries fair gold. The prospectors spent £600 to £700 in trying to find it in undisturbed ground, but without success. The mode and manner of conducting the search has not, however, been the most judicious, according to most opinions.

Hercules Reef.—This is a continuation of the Nugget and Cornish Reef. Where opened, it was 5 to 6 feet thick, and a trial crushing paid 5 to 6 dwts. of gold per ton. Although better stone was known to exist, it was given up, and has not received any further trial.

Southland Reef.—This lies about one mile south of the Hercules Reef, nearly 600 feet above the Shotover River. It is a mullock reef with bunches of quartz, which are more or less rich in gold. A yield of 45 oz. was obtained from 14 tons crushed. One of the prospectors was killed during working, and when afterwards a shaft, sunk on it to a depth of 50 feet, struck much water, it was deserted, and nothing has been done on it since.

APPENDIX 10.

REEFS OF THE ROUGH RIDGE.

In visiting this district we were accompanied by Mr. James Hazlett, M.P.C., who kindly afforded me some information about the drift workings of Tinker's and Drybread, passed on the road. At the Rough Ridge we found only one enterprising man, Mr. Withers, employing labour in re-opening a reef once worked by the old Ida Valley Company, though over twenty other auriferous reefs are said to have at one time been worked in the district. The reef Mr. Withers is engaged re-opening, and about the history of which, and a number of others—the principal ones formerly worked—he kindly afforded me the subsequently given particulars, is the *Homeward Bound Reef*. The old main openings, from which exploitation has been carried on, consist of an adit 770 feet in length, driven from a gully in the strike of the reef; and of a shaft sunk from the hill slope a depth of 110 feet, passing the adit at about 50 feet from the surface. The reef is not a solid and defined one, but consists of a series of quartz leaders, of varying length and thickness, running close together in a defined line of strike, viz. 30° S., and dipping steeply towards each other. Some join also in strike, and, whilst one ceases, another generally commences sideways, or a few feet further on. This band of leaders, which is traceable for a considerable distance S.E. up the range, traverses a fine blue phyllite, which dips slightly westward, and looks much disturbed by joints and faults, which also affect the leaders. A fault of several feet in one of the strongest of the latter is, for instance, observed in the vertical shaft, where this passes the adit. It is not at all unlikely that the country becomes more settled, and some of the main leaders join and form a defined reef in depth. This seems to be indicated by a body of fine-looking quartz—4 feet thick and carrying payable gold—having been struck and left at the bottom of the shaft. Mr. Withers, who is at present engaged in taking out some payable stone from what appears to be the main leader, left by the old company under-foot of the adit, intends soon to try his chance—and it is, I think, a very good one—in depth by sinking a main shaft near the mouth of the adit. For, irrespective of the probability of finding there a strong defined reef, from what he observed about the run of the gold it seems to dip in shoots north-westward, *i.e.* from the hill towards the gully, where the adit commences. The quartz of the leader worked, which is but slightly mixed with mullock, shows a fine seamy structure, and is abundantly impregnated with iron and arsenical pyrites, whilst the richer gold-bearing stone is characterized by additional impregnated particles of zinc-blende and bournonite. The old Ida Valley Company had a fine crushing machine—the one bought by the Alta Company, Bendigo, noticed at another place—but they worked it very badly, and lost, besides gold, a large quantity of quicksilver, some say nearly a ton weight, in a short time. Mr. Withers's crushing machine consists of a battery of five heads of revolving stamps of 5½ cwt. each, fed by hand, and driven by a small steam-engine. He uses gratings with 122 and 144 holes per square inch, but generally the former. The crushed material on leaving the battery passes first through three shallow quicksilver ripples, then over a common copper-plate table, and ultimately over three blanket-strakes, about 16 feet long, and laid at an inclination of 1½ inch per foot. For the treatment of the blanket-sand are used a revolving barrel and a shaking table. As Mr. Withers knows from small experiments that the pyrites, which form a large percentage of the sand, is richly auriferous, he preserves the latter for future re-treatment. The Cluness system of appliances, which I described to him, seemed much to please him, and he may likely give it a trial.

Lloyd's Reef.—This runs at a distance of about 100 feet south-westward from, and parallel to, the Homeward Bound Reef. Besides having been worked—also by the old Ida Valley Company—by small shafts here and there along the surface, it was opened by a cross-cut from near the southern end of the adit on the above reef, and proved, where struck, to be about six feet thick. On driving on it, a fault was found to cut it off close to this point north-westward in strike, and the faulted portion was not recovered; south-eastward it continued, however, well defined, though gradually thinning to about one foot, and was followed a distance of about 300 feet, and stoped out from the level to very near the surface, the quartz paying very satisfactorily. Mr. Withers intends prospecting for this reef—the above-noted faulted portion—by a cross-cut from his contemplated new main shaft, and is not at all unlikely to discover it, judging from indications of the reef on the surface abreast of the mouth of the adit.

Great Eastern Reef.—This lies about a quarter-mile north abreast of the Homeward Bound Reef, and strikes S.E. with a dip N.E. at an angle of 85°, traversing very flat-bedded phyllite, and showing well-defined walls. It has been worked for several hundred feet in length, and 40 to 60 feet in depth, partly by an open cutting, partly by and from an adit about 200 feet long. At the mouth of the adit a shaft was sunk on it a depth of 70 feet, when a strong pressure of water prevented further sinking without pumping machinery. At the bottom of the shaft the reef is said to be left 18 inches thick, and carrying better gold than found in the main workings. In these, its thickness ranged from a few