

intended for draining the little basin, and thus affording access to the washdirt, and it might also afterwards be made use of as a tail-race. It was, at the time I saw it, about 70 feet in, and would, according to Mr. Miller's calculation, have to become about 300 feet longer. The working requires very great care, on account of the uncertain nature of the ground—large boulders, dangerous to remove, impeding the way frequently.

APPENDIX 9.

REEFS AND COMPANIES OF SKIPPER'S CREEK.

Nugget and Cornish Company's Mine.—This mine lies on the N.W. side of the Shotover River and is managed by J. F. Roskrige, who readily furnished me with all the required information. The Nugget and Cornish Reef strikes W. 43° N., and dips south-westerly at angles varying from 70° to 80° . It has well-defined walls, with clay casings, and crosses the country—a very fissile argillaceous mica schist—both in strike and dip. The present workings of the company, of which Mr. Roskrige prepared a detailed plan, are carried on from an adit, in an enormous slip, and are, on that account, of an intricate nature, and require great care in rendering them secure, as the reef varies there in thickness from 12 to over 20 feet in places. The adit is in a distance of 197 feet, of which the last 144 feet are on the line of the reef. The latter consists of quartziferous mica schist—mullock, with veins and bunches of quartz, sometimes several feet thick. Both the mullock and the quartz are very abundantly impregnated with iron and arsenical pyrites, and contain gold, but the quartz is generally the richest. The average yield has hitherto been 11 dwts. to 12 dwts. of gold per ton. The reef is traceable for a very long distance. High up the steep mountain side, N.W., a strong leader was worked in its line by another party, and paid $4\frac{1}{2}$ oz. of gold per ton. Down the steep slope towards the Shotover River, below the slipped ground, it is plainly exposed, from 8 to 10 feet thick, and from there—some 180 feet perpendicular below present workings—Mr. Roskrige is putting in an adit, which will give about 250 to 270 feet of backs to rise upon. Beyond the river, up the opposite high and steep range, it has also been opened at several places and proved auriferous. There is another reef about 200 feet distant from the above described, higher up the mountain side, which strikes W. 35° N., and dips at an angle of about 50° towards it—the line of junction of both reefs in dip—lying, according to Mr. Roskrige's calculation, perhaps close to the end of the working adit. This reef is from 10 to 12 feet thick, and has been worked down from the surface, also in the slipped ground, a depth of 100 feet, but there is still a good height of backs available above the adit. The yields from it have in the average been about 16 dwts. of gold per ton. As regards the whole quantity of stuff crushed from the mine, it amounts to 6,958 tons, which have realized $3,624\frac{1}{2}$ oz. of gold. The crushing machinery of the company, which stands close to the Shotover River, consists of three batteries, each of four heads of revolving stamps, of about 6 cwts. each, fed by hand, and driven by a turbine. As gold-saving are used amalgamated plate-boxes with three drop-ripples, similar in construction to those of the Elizabeth Company's machine, Carrick Range, but improved by the addition of splash-boards for the ripples. From these boxes, of which there are three—one for each battery—the stuff runs over only 6 blanket-strakes of 12 feet in length, and with a fall of $1\frac{1}{2}$ inch per foot. The blanket-sand is treated in the revolving barrel, and the amalgam concentrated on a strake, covered with amalgamated copper-plates. A similar, though longer strake, with a ripple at the end, serves for washing the stuff from the stamper boxes. On account of the great amount of pyrites in the stone, much quicksilver is lost through becoming floured, and Mr. Roskrige is also convinced of a considerable loss of fine gold. He intends soon to entirely rebuild the machinery, which is old and liable to frequent breaks, so much so that only about 50 tons can be crushed per week, and he took notice of my recommendation to adopt the Clunes system of appliances. In reviewing my observations on this mine, I feel convinced that, if worked on the extensive scale which the size of the reefs and facilities of the ground permit, and with adequate good crushing machinery, it would become one of the best paying ones in the province.

Southberg's Reef, Otago Company: Managed by Mr. Southberg.—This reef which is traceable for several miles in length, crosses the country both in strike and dip, striking E. and W. and dipping N. at angles varying from 35° to 60° . It has been opened from Skipper's Creek both ways by adits, but the most extensive workings have been executed on the east side. The western adit is about 200 feet in length, and the reef, where broken into by a small cross-cut near the end, is 22 feet wide, representing in fact an enormous fissure, with well-defined walls and clay casings, filled with the country rock—a fissile, quartziferous mullock, not very much altered or displaced, but richly impregnated with pyrites. Of veins and bunches of quartz, independent of the interlamination of the latter, in which the country in this district is very rich, there are but a few observable, and the mass, as such, is altogether too poor to pay for working. On the east side of the creek the reef carried rich gold (1 to 9 oz. per ton) for a considerable distance along the surface, ranging in thickness from 8 to 16 feet; but on working downwards it was found to run poor at depths increasing towards the east, and the present low adit, though a considerable distance in, has not as yet struck it of a payable character. At some of the places opened it is from 12 to 14 feet thick. There are several drives branching off this adit, which have been wrought for the purpose of prospecting a strong spur, or dropper, which dips flat away from the reef, and has produced good gold in the upper workings higher up the range. As far as this spur has been opened by the drives it has not, however, proved payable as yet, though Mr. Southberg does not despair of finding it so on further exploration. It is in places from 2 to 3 feet thick, but thins gradually to a mere string as it approaches the reef. Considering the run of the good portion of the reef worked on this side, there can be no doubt that it represents a shoot dipping at a rather flat angle eastward in strike out of the company's lease; and on this account, I fear, Mr. Southberg has no chance of finding payable ground—a new make—except in sinking from the present eastern adit. On the west side the prospects are, in my opinion, far more favourable; for the adit, if continued along the reef, has there a good chance of striking a new auriferous shoot, the existence of which is clearly indicated by good specimens and prospects having been obtained from the outcrop of the reef higher up the range. The present productive workings of the company are carried