

ground they took up had been occupied some months by different companies, who entirely failed to drain it, and gave it up as impracticable. The present works consist of the usual line of crates and piles down the middle of the stream, the portion so cut off being worked with a face of from sixty to eighty feet in width; the pumps are standing in a paddock which is permanent, and is fitted with hatches that can be screwed down when required, and the tail race flows into it through a covered culvert of stone and timber, with flood-gates affixed, by which arrangement, on the occurrence of a fresh, the whole (being buried under the debris of the worked ground) is quite uninjured. In a recent flood the whole of these works were submerged, but no damage whatever was sustained, the claim being in full working order again in two days. The shareholders are being exceedingly well paid, having divided as much as eight ounces per man per week. The Big Beach Company, which also applied for a mining lease of ten acres, are progressing rapidly with their works, and by means of their new cutting nearly a mile in length of river will be laid dry. Here the prospects of a large claim and the inducement of a continuance of profitable work have acted as a specific against the excitement of the Grey rush, as very few men have left, and even those shares that have been abandoned are again taken up by others. This is the case also in many other river claims, particularly in those where extended areas have been obtained.

*Extended Areas.*—Extended areas in the river beds have been eagerly applied for, and in most cases granted, under the acreage system, and the miners have in consequence incurred an outlay of labour and money that they would not have been justified in expending upon smaller areas. The size of the claims I have so arranged upon the Shotover and other main rivers as to give a claim of 100 feet per man in length, taking care to regulate the width so as to come within the meaning of Clause 13, Section 2, of the Regulations; and claims so laid off appear to give general satisfaction.

*Terrace Workings*—Wherever water is plentifully obtained terrace ground has proved the most profitable of any, and I am not acquainted with any ground-slucing operations that have not yielded a good return. In many parts however where water is not obtainable, or where the drift deposits are too deep to be profitably worked by sluicing, tunnelling is being carried on most energetically. At the Twelve-mile Creek, and between it and the Eight-mile, Arrow, a lead of gold has been struck on the terraces on the west of the river, upon which several extended areas have been surveyed. This lead has all the appearance of having been at one time the bed of the Arrow, although now several hundred feet above the present level of the river. The run is not continuous, but is broken by the intersection of numerous small gullies that have apparently cut their way across it. The accompanying sketch shows approximately the lay of the ground, by which it will be seen that the bed of the tributary creeks which cross it are worn away deeper than the ancient river bed which constitutes the lead. At the Cardrona terrace working has also led to the discovery of a lead running beneath a stupendous slip which appears to have been deposited by water over the original course of the Cardrona Creek. On both these leads, the existence of which was unknown a few months since, good paying ground is opened, and the runs are being traced out by tunnels and shafts to a considerable extent. The yield from the terraces of the Upper Shotover has been extremely good, and where constant supplies of water are obtainable an average wage may be estimated at £10 per man. It is as well to remark, that although some few races have been transferred, that none have been abandoned, which evidently shows that they are considered valuable mining property, and their value is in proportion to the extent of terrace ground that they may command. In working the Pleasant Creek Terrace it was found necessary to combine sluicing and tunnelling operations. The mouth of the tunnel is run out by a tramway, by which trucks are brought to the mouth of a shoot, which falls about 130 feet to the creek, down which the auriferous dirt is emptied into a race beneath. This system is adopted on account of the dip of the rock falling to the hill giving the ground the appearance of having been a complete basin, which renders the use of water impracticable.

*Quartz Workings.*—I have little new to report having reference to quartz workings, but the principal reefs are still being wrought; and taking into consideration the very primitive methods in use for abstracting the gold, the yield is something wonderful. The Scandinavian Reef is now traced about two miles towards the Shotover eastward, and also some distance westward, three claims being at work upon it. The Arrow prospectors are endeavouring to form a company of twenty, in shares of £100 each, and are giving up their claims upon the most reasonable terms considering the amount of prospecting that has been done; but I am not aware if they have yet succeeded. The stone now being raised will doubtless turn out six to eight ounces per ton at least. It is a great pity to see such valuable prospects standing idle, or nearly so, for want of machinery, and I feel confident that the development of these reefs would be the dawn of a lasting prosperity to the district. In Victoria they would not stand a single day for the necessary funds, but there are few capitalists here that care to invest money in mining speculations be they ever so good. The Arrow Reef has every advantage of position—it commands water to any extent for motive power, and being on level ground, there can be no difficulty in getting machinery to it. The working of it might be as cheaply carried on as at any of the up-country reefs in Victoria; and I trust in my next Report to be enabled to state that one complete battery at least is at work, which being accomplished there is little doubt but that this branch of mining industry will be permanently established.

*Water Races.*—A considerable portion of my time has, during the last three months, been occupied in gauging the water of the various races which, through the long continued drought, were the causes of frequent disputes. I had therefore an opportunity of observing the effect of the new gauge. I find the flow from a box having dimensions according with the new Regulations to be equal to sixty-one cubic feet per minute; and where this is applied to boulder ground and deep stripping it is not all too much, it is however in excess of what is needed for box sluicing and for shallow ground, where a supply of forty cubic feet per minute would be ample. I have given sixty-one cubic feet per minute of a flow in all gauges, both under the old and new Regulations. There have been no schemes for water races carried out of late, the most available sources having been all taken up; anything further will require capital as well as labour, and more than the individual miner can generally

See Diagram C.