

influence of large towns composed almost entirely of one sex, and all following one occupation, as of the greatest weight in forming the character of the miner, and I therefore consider that the grand principle to be always borne in mind is the establishment of several smaller towns in the place of one large one, as it strikes directly at the roots of those evils which are the greatest obstacles against permanent settlement. This, in the case of our present alluvial gold fields, could hardly now be attempted, but something, perhaps, might be done should other new ones be opened up. All alluvial fields contain a certain amount of gold, which requires a certain amount of work to be done in order to extract it, and the time it takes to exhaust the field will be inversely as the number of men employed on it. A field, therefore, that is capable of finding employment for 4,000 men for five years ought to employ 1,000 men for twenty years; and although the immediate benefit to the business men of the district would certainly be much less in the latter case than in the former, no one, I think, will doubt that the thousand men settled on the field for twenty years would be a far more lasting benefit to the country at large. In the first case, nearly all the inhabitants would leave as soon as the gold was exhausted, and a year or two more would probably see the place going back to a wilderness; while, in the latter case, most of the men, being settled for twenty years, would have married and brought up children; agricultural interests would have sprung up around, many of their sons would be following the plough, and, as mining pursuits grew less and less profitable, fathers would not leave their families, but would gradually take to farming or flax-dressing if suitable land could be procured in the neighbourhood. Now it would seem that simply enlarging the size of a man's claim fourfold would bring about this desirable result; and although I must not, of course, be understood to mean that quadrupling the size of a man's ground would make a diggings last exactly four times as long as it otherwise would have done, all will allow that it would have a decided tendency in that direction, and that the number of men on the field, and consequently the size of the town, would be less; both, in my opinion, being advantageous towards the ultimate settling of the miners. This suggestion, however, although perhaps useful for future gold fields, could hardly be adapted to our present ones, and is therefore practically of little importance, and we must look further for means to secure the settlement of the mining population.

Where, then, are we to look for an employment that will be attractive to the miner, yet of a more permanent and settled character than gold-washing; one that will still retain a dash of his darling speculation, while at the same time it will collect the men into small towns, containing, consequently, a larger proportion of women, and will thus gradually tend to induce them to marry and settle down, and in time will turn them or their sons into farmers? One occupation alone answers to all the conditions required, viz., regular vein or metal mining; and so we arrive at the conclusion that the only hope of ultimately inducing a large part of our wandering mining population to settle steadily down in the Colony is by finding them mining employment for longer times and in smaller numbers.

Can this be done? The question will be best answered by seeing in the first place whether there are any reasonable expectations of finding metalliferous lodes extensively distributed in the Colony; and then, if the result of this inquiry is satisfactory, to examine what is the best way of developing our hidden mineral wealth.

The laws that regulate the formation and distribution of metalliferous veins in the interior of the earth are so obscure, difficult, and complicated, that but little is as yet known about them. Much, however, has been accomplished in the way of collecting facts and observations; and although we may never be able to say exactly where mineral lodes will be found, or, when found, whether they will prove rich when sunk upon, yet it is certainly within the limits of human knowledge to be able, not only to point out districts in which they will almost certainly occur, but also to pronounce on the probability of their proving remunerative. Metalliferous veins are found in rocks of very different ages, and of very different composition, but there are some features that are common to all districts in which they are found, and wherever these features obtain, metals may be expected to occur also. These features or characteristics are the more or less indurated, metamorphosed, and fractured condition of the rocks, which are also generally pierced by igneous dykes; and it is only as a consequence of these characteristics that mining districts are almost always mountainous ones. Now all these phenomena are produced by one and the same cause, viz., heat, more or less intense, and more or less long continued; and it may be said that all districts that have undergone a sufficiently intense heat for a considerable period, and that have subsequently been denuded by water so as to expose their internal treasures, may be expected to contain metals.

There are two classes of rocks which we might naturally expect to have in general undergone this process of heating. First, the older ones, which must almost necessarily at some time or other have been thickly covered with younger formations, and must then have been subjected to the heat known to exist deep in the interior of the earth; and, secondly, those rocks of volcanic origin, whose very existence proves that heat was once comparatively close to the surface of the globe in the districts in which they are found; and consequently we can conveniently divide mining districts into these two classes,—

I. Those composed of the older metamorphosed rocks, such as granite, schists, slates, &c., &c.

II. Those composed of volcanic rocks often of a very recent age.

To the first class belong by far the greater number of the mining districts of Europe, North America, and Australia; and, with the exception of gold and silver, it may be said that almost all the most valuable mines are situated in them. Such are the mining districts of Cornwall, the Hartz, Lake Superior, South Australia, and Victoria. The number of mining districts belonging to the second class is much more limited, still seven of the most valuable of the metals—viz., gold, silver, mercury, copper, lead, zinc, and arsenic—are now being worked in them; and as it has a very important bearing on the chances of finding metalliferous deposits in the North Island of New Zealand, I will here briefly enumerate them.

*Italy.*—In Tuscany, copper is worked at Monte Catini, at Val Castrucci, and at Massa Maritima near Campiglia, in tertiary volcanic rocks; and near Schio, north of Vicenza, zinc, lead, and arsenic are found in a greenstone-porphry, also of tertiary age.