

gold has been dispersed, and one of these extends throughout the whole length of the South Island, along the line of junction of the metamorphic and palæozoic strata, which line nearly coincides with the crests of the mountains as far south as Otago. The chief veins hitherto worked are in the neighbourhood of the Wakatipu Lake in Otago, where they were abandoned, I believe, owing to the great expense of working and inaccessibility, and partly also owing to the discovery, at the time of their being first worked of the Westland diggings. In the eastern district of Otago, reefs have also been worked at Waipori Hindon, and lately at Cromwell, with an average yield of about one ounce to the ton. In Westland, gold-bearing reefs have been discovered at Ross, but they are not yet worked. In Nelson, the north-western district consists of an isolated range of mountains. In most of the streams in the vicinity of heavy reefs irregular gold has been obtained, and many reefs have already been discovered in this area. It presents the most favourable circumstances for the occurrence of gold reefs of any part of New Zealand. In the North Island the mines are at present confined to the Colville Peninsula, as before stated. They are entirely different in their character from any of those in the south of New Zealand, resembling the mode in which gold occurs in Central America and some parts of Peru, the gold being found in conjunction with igneous rocks of modern date as compared with any of the auriferous formations in the South. Only a small area of the district has as yet been explored, in the proper mining sense of the term; and it may be long before it is so, as a proper exploration of it cannot be effected by diggers without the assistance of capital.

16. *The Chairman.*] Can you suggest any course calculated to expedite the exploration of the resources of the field in question?—I think they require special legislation of a different kind from that which has come into use for the management of the South Island gold fields. I would be in favour of adopting the ancient form of mining law by which the right of a reef was given to the discoverer on the run of the reef for a definite length and indefinitely in depth. I am under the impression that this is the law in California at the present time. The method of defining the claims by superficial area appears to have been borrowed from Australia, where, as the reefs plunge almost vertically in most cases, it causes practically no inconvenience; but at the Thames and in similar districts, where the veins underlay at a great variety of angles, and are sometimes more horizontal than vertical, great irregularity in the value of claims arises, although the surface area be equally distributed, and the risk of investing capital is greatly increased. In fact, the present state of the law will practically put a stop to the working of the field when any considerable depth is reached in these lodes. It might pay a company to continue to follow the lode down to a great depth, but it might not pay them to compensate the neighbouring claim for working within their boundary; nor, on the other hand, would it pay the neighbouring claim to sink a shaft for themselves. The chief peculiarity of the Colville gold fields is the large percentage of silver which the gold contains; and in other countries this has been the frequent indication that the mines will eventually turn into silver mines at greater depth.

17. If they are continued at all, would it be beneficial to the promotion of mining industry to grant facilities for the renewal of expiring leases?—Ultimately it would; but in the present unexplored state of the field it would be dangerous to give undue prominence to such a scheme.

18. What reasons have you for believing that ultimately it may be desirable to grant renewal of leases?—So that the holders of leases may be induced to work the mine properly up to the expiration of their leases, and not create obstacles to its future working, either for the purpose of rapidly exhausting richer portions of the mine, or for the purpose of deterring competition in the way of obtaining a renewal.

SATURDAY, 23RD JULY, 1870.

James Hector, Esq., M.D., F.R.S., in attendance, and examination continued.

19. *The Chairman.*] Are you aware of the existence of silver, or do you think the geologic formation favourable to the existence of silver mines?—Silver has been found in Otago in the native state and in Nelson, and at the Thames, combined with lead and gold. There is, as I have before stated, a fair prospect already of silver mines being discovered at the Thames. There are many parts of New Zealand where I should expect silver to be discovered; but as to the quantity, that can only be determined by actual mining. Only yesterday the first trace of tin was discovered in black sand from the upper part of the Buller River. In that neighbourhood there is a peculiar rock which indicates the presence of tin ore, the discovery of which about six months ago led me to recommend a search for tin. The same characteristic rock exists on the West Coast of Otago. Copper has been found associated with the metamorphic rocks in Otago; at Waipori, where a four-foot sulphide of copper lode exists, but has not been properly traced. It is tolerably solid, so far it has been traced. Waipori is distant about fifty miles from the shipping port; it has not been worked, as it could not compete with gold fields. The lode is in mica schist. An attempt has been made to trace it, but after spending a good deal of money they abandoned it at that time. I believe it is now leased by a company. Copper has been found as carbonate in the same vicinity, but only in rolled fragments. The district is one where quartz reefs and irregular deposits containing cinnabar have been discovered; and on the north and south line in the same place indications of several other mineral lodes have been found. At Wakatipu Lake, another strong lode of copper pyrites has been found associated with carbonate and native copper. It was here that the native silver was found, and where several quartz reefs in the same district contain gold. On the West Coast of Otago, at Charles Sound, there is a copper-bearing lode associated with granite rock, and also at Milford Sound and several other points indications of the presence of copper mines have been observed. I consider the South-west District of Otago as probably remuneratively metalliferous. I have also seen specimens of copper ore from Stewart's Island, but cannot vouch for their being authentic. As regards the other places mentioned, I speak from personal knowledge. I have seen fragments of copper ore in the hands of the miners on the West Coast. I think there is no doubt that the copper and the chrome ore associated with serpentine in the Dun Mountain, and in the northern parts of Nelson, will be found at intervals in a line extending throughout the Island as far south as Milford Sound. Copper with serpentine is not commonly remunerative; but all the rocks hitherto examined, especially at the Dun Mountain, are either superficial or are above the water level of the country, and in consequence are