

21. MOLYBDENITE.

Molybdenite during the past year has been found in the Waihi Extended Mine. Thin irregular veins and small patches of the mineral occur in a quartz vein, 1 ft. thick, intersected in the shaft at a depth of 1,318 ft. An assay of a selected sample made at the Waihi School of Mines gave 8·7 per cent. of MoS_2 , but a bulk sample forwarded to the Mines Department does not appear to contain as much as 1 per cent. The mineral molybdenite occurs also at Tararu Creek, Thames; in the Champion Mine, Neavesville; at Richmond Hill, Parapara; at Mount Radiant; at several places in the southern part of the Paparoa Range; at Dusky Sound; and at Bravo Island, near Stewart Island. Traces also occur, according to A. M. Finlayson,* in some specimens of Otago scheelite ores. It seems very probable that the sulphide ore of all the Waihi mines contains a little molybdenite, and that this mineral has not previously been detected owing to its resemblance to other sulphides, especially sulphide of silver (argentite) and galena. If so, molybdenum will be found in the cyanide solutions used for ore-treatment, and may be detected by a process described in the *Australian Mining Standard*, vol. 51, No. 1335, 11th June, 1914, p. 491; and in the *Engineering and Mining Journal*, vol. 97, No. 7, 14th February, 1914, pp. 363–364.†

22. ANTIMONY.

During the past two years or more there has been considerable demand for antimony and its ores. Attention may therefore be drawn to the fact that antimony-ore occurs in a number of New Zealand localities, though none has been mined for a number of years. Chief among these are the Bay of Islands district, Endeavour Inlet (Marlborough), Reefton, Langdon Creek (near Brunnerton), Hindon (Otago), and Alexandra (Otago). The present London price for antimony (star metal) is £85 per ton, and 50-per-cent. antimony-ore is quoted at £17 10s. per ton (nominal quotation). Some time ago the Imperial Government offered to buy 50 to 65 per cent. antimony-ore at 10s. 6d. per unit, and to give 11s. 6d. for each unit over 65 per cent., delivery to be taken at London or Liverpool. Australian buyers will take 45-per-cent. ore, but at a lower price. The Imperial Government quotation of £26 5s. per ton for 50-per-cent. ore, and £34 2s. 6d. for 65-per-cent. ore ought to offer some attraction to New Zealand miners, notwithstanding the heavy cost of freight, insurance, &c. The antimony-market, however, has since weakened, and probably the Imperial Government is not now a buyer of the ore.

Among the chief British smelters of antimony are Cookson and Co. (Newcastle), Hallet and Son, J. J. Pratt and Son, and the St. Helens Smelting Company of Manchester. Some antimony-ore is now being treated in Australia, but details concerning the matter are not to hand. The Chapman Smelting Company, of San Francisco, which smelted antimony a number of years ago, has lately erected a new smelter designed to treat antimony-ore.

Up-to-date information concerning the treatment of antimony-ores, especially those containing gold, is not easy to obtain. A useful article on the subject will be found in the *Mining and Scientific Press* (San Francisco) of the 14th February, 1914, pp. 292–293. It is probable that smelting companies in the United States will accept 20-per-cent. ore, but the cost of shipment from New Zealand at the present time is prohibitive.

In a recent bulletin of the United States Geological Survey, Alfred H. Brooks,‡ under the heading of “Siliceous Gold-bearing Stibnite Lodes,” describes occurrences that almost exactly resemble the antimony-bearing lodes of Langdon Creek, near Brunnerton,§ and have many points in common with the auriferous lodes of the Reefton district.

23. MERCURY.

The Whangarei Cinnabar Company is endeavouring to develop promising cinnabar-deposits in the Puhipuhi district, North Auckland. The successful treatment of mercury-ores by the usual volatilization processes is far from easy, and other methods are being tried. Among these is the treatment of the crushed ore with an alkaline-sulphide solution, followed by precipitation of the mercury with zinc or aluminium. Experiments made in the Dominion Laboratory show that sodium-sulphide solution easily and quickly extracts a high percentage of the mercury from Puhipuhi cinnabar-ore. Experimental work is being continued with a view to finding a commercial process by which both the mercury can be precipitated and the sulphide solution regenerated.

Besides the Puhipuhi deposits there are several cinnabar occurrences in New Zealand that, with mercury and its compounds at their present high prices, deserve attention. Among these may be mentioned the deposits of Rahu Saddle (near Karangahake), of Mangakirikiri Stream (a branch of the Kauaeranga River, Thames district), and of Ohaeawai (Whangaroa district). Attempts to work the two last-named deposits have been made, but, owing to the poor recovery of mercury and other more or less remediable defects, were unsuccessful.

* Trans. N.Z. Inst., vol. 40, 1908, p. 116.

† Clennell, J. E.: “Molybdenum in Cyanide Solutions.”

‡ “Antimony Deposits of Alaska.” U.S. Geol. Surv. Bull. 649, 1916, pp. 10–12, &c.

§ Morgan, P. G.: “The Geology of the Greymouth Subdivision.” N.Z. Geol. Surv. Bull. No. 13, 1911, pp. 18–19, 84–86.