

The basalt-flow from the cone of Pukepoto, on the Whangarei-Kiripaka Road, may conceal an area of workable coal, but this can be determined only by boring.

CINNABAR.

Cinnabar is found in several of the sheets of siliceous sinter which are present at many points throughout the Puhipuhi district. These sheets occur above lines of crustal weakness, along which arose, in the Pliocene period, siliceous thermal waters that at times carried mercury sulphide in solution. Some of these deposits, soon after being formed, were denuded by ancient streams, the gravels of which now contain cinnabar. Others were protected from erosion by the outpouring of the basalts of the Kerikeri Series, which in their advance covered both sinter sheets and cinnabar-bearing gravels. Others, again, have suffered denudation from the time of deposition. Erosion by modern streams has exposed some of the buried deposits at various points along the edge of the upper plateau.

Such is the genesis of the ore-bodies being worked by the New Zealand Quicksilver Mines and by the Rising Sun Company, and such is the derivation of the gravels from which attempts to extract the cinnabar have been made. In addition to the partly exposed deposits just mentioned, there are several fully exposed sheets scattered over the Puhipuhi district. Of these, only one—that forming “Mount” Mitchell—is at present known to contain cinnabar. Here a considerable quantity of workable ore has been discovered, and is now being developed.

OTHER ECONOMIC DEPOSITS.

The subdivision has practically inexhaustible supplies of argillaceous limestones suitable for cement-manufacture. This rock has also a prospective value as a top-dressing for the soils derived from the Kerikeri basalts. These soils, particularly those of the scoriaceous lava, have excessive subsoil drainage which has depleted them of soluble plant-food and of clay. Deposits of argillaceous limestone are fairly evenly distributed throughout the subdivision. The purer limestones required in cement-manufacture and for the production of agricultural lime occur in quantities sufficient for all future needs, but many of the deposits are small, and distant from coal and transport facilities. That at Waro, however, is most advantageously situated, and will supply the requirements of the subdivision for a very long time.

Rocks suitable for making roads are well distributed, except in parts of Hukerenui and Purua survey districts. The geological maps will afford guidance in the choice of quarry-sites.

Common brick clays are plentiful. Clays suitable for special uses also occur, but research is required in order to determine their extent and the uses to which they can be put.

Deposits of manganese-ore occur at many points in the subdivision as pockets in areas of silicified greywacke. The principal deposits are at Tikiora Hill (near Russell), Otonga, and Parua Bay. The low price of manganese-ore precludes these deposits from having any value at present. When glazed pottery, faced brick, and glass industries are established in the Dominion the subdivision may supply small amounts of manganese-ore for use in glazes and in decolorizing operations.

Deposits of high-grade limonite occur near Waipapa, Kerikeri Survey District, at “Mount” Mitchell, Puhipuhi, and near Kamo. The quantity is too small for use in iron-production, but the ores have value for paint-manufacture and for coal-gas purification.

The various localities from which gold has been reported have been examined. The metal is present in small amounts in Russell and Taranga survey districts, but that workable veins will be found is unlikely.

Bands containing disseminated silver minerals occur in silicified greywacke at the northern border of the Puhipuhi plateau. Surface waters percolating through the upper parts of these bands have brought about a redistribution of the silver minerals at various points, and thus have formed small irregular bodies of rich ore. Attempts to work some of these richer portions were made many years ago, but were abandoned because of the erratic distribution of the ore, unsuitability of methods of treatment, and the difficulty of access. The known ore-bodies are too small to be of value under present conditions, but further prospecting may perhaps be justified.

A small deposit of high-grade diatomaceous earth at Pakaraka, and another of fine-grained silica-powder at “Mount” Mitchell, Puhipuhi, are suitable for the preparation of polishing-compounds for fine work. The silica might find additional uses in wool-scouring and paper-manufacture, particularly if dressed to a marketable form. Deposits of fine-grained silica sand occur in the Kaitara district near Whangarei.

Antimony minerals are known to occur at two points in the subdivision, but not in commercial quantities.

Glauconitic sandstone containing small amounts of potash and phosphoric acid are found in Kerikeri, Purua, and Taranga survey districts, and may be useful for soil-dressing.

10. CINNABAR IN NEW ZEALAND.

(By J. HENDERSON.)

Cinnabar, the principal ore of mercury, is widely distributed in New Zealand. In Otago it occurs in well-defined lodes traversing schist and greywacke. In the Hauraki Peninsula it is present in small quantities in several auriferous veins, and occurs also in deposits of siliceous sinter. These latter form commercial ore-bodies in North Auckland, where also are hot springs that carry mercury sulphide in solution. Alluvial cinnabar derived from known or still undiscovered primary deposits has been recorded from many localities.