

MT. STORMONT MINE, MOINA. Application No. 10347/M
40 acres in the name of
R. MAGEE

The writer made a brief visit to this mine on 2nd instant for the purpose of inspecting milling operations which were recently commenced on a bismuth bearing ore body on which some developmental operations have been carried out.

The plant consists of one 12" x 6" Jacques Roll Jaw Crusher, 1 set 15" x 8" rolls, 1 trommel 3' x 22½", 1 sectional trommel 9 ft. long with perforations 3/32", 3/16" and ¼" respectively, V settler, 1 curvilinear concentrating table, 2 double hutch plunger jigs and bucket elevator.

The crushed ore from the Roll Jaw Crusher is delivered to the 3 ft. trommel, which is provided with a screen of 3/32" perforations; the oversize is delivered to rolls, the undersize to V settler, thence to curvilinear concentrator. The pulp from rolls is passed on to No. 2 trommel, the undersize from the 1st section of trommel is delivered to the curvilinear concentrator, from 2nd section (3/16") to jig, the material from ¼" screen being returned to rolls. The plant is covered with a substantial wooden framed building.

The experimental run of the plant has proved that gravity concentration as constructed does not work efficiently so far as the separation of the ore from the gangue is concerned.

The plant has a capacity of one ton per hour and works very smoothly.

Power is derived from a 3 ft. diameter Pelton wheel under a head 113 ft. it runs at 395 R.P.M.

The ore consists of mineralized granular garnet containing bismuth sulphide, native bismuth, hydrous-carbonate of bismuth, oxide of bismuth and gold chiefly in association with the native bismuth, but also in combination with the bismuthinite.

The specific gravity of the bismuth minerals in the ore varies considerably, native bismuth being considerably higher than the other ores present. The specific gravity of each mineral is appended.

Native Bismuth	-	9.7
Bismuth Sulphide		
" (Bismuthinite)	-	6.4
" Carbonate		
" (Bismutite)	-	6.8
" Oxide		
" (Bismite)	-	4.4

The specific gravity of the garnet rock is between 3 and 4.

In proportion to the respective quantities of the various minerals present in the ore bismuthinite is the most important, that in the form of carbonate and oxide of bismuth will decrease progressively as the workings are deepened.

The ore milled up to the present time is partially oxidised and therefore cannot be regarded as the true character of ore that will eventually have to be treated.

In gravity concentration the loss of valuable mineral, if occurring in the ore in the form of carbonate and oxide of bismuth respectively, will be heavy; the difference between the specific gravity of the latter (4.4) and the gangue rock (3.5 to 4.0) is slight, consequently with ordinary appliances the separation of the minerals would present a difficult problem.

When the oxidised portions of the ore body have been moved and the consequent disappearance of the lighter bismuth ores, concentration will be simplified inasmuch as only one grade of ore - bismuthinite - and probably a small quantity of native bismuth only will need separation.

The present difficulty encountered in separating the gangue rock from the bismuth ores of the higher specific gravity is probably due to their semi-oxidized condition.

Improved sizing and classification would no doubt give a satisfactory extraction, but in view of the fact that any additional appliances of the kind installed would be needed only so long as the oxidized portions of the ore body were being worked it is doubtful if these are warranted.

Oil Flotation

After witnessing a trial run of the plant one is forced to the conclusion that the obvious method of dealing with the ore is by oil flotation, and in this connection it is recommended that a full investigation of the amenability of the ore to that process is carried out before any further expenditure is incurred by way of alterations or additions to the existing plant.

Sgs. J.B. Scott
STATE MINING ENGINEER

Mines Department,
HOBART
27/9/29