

788. 202

## R. 431

## MT COSTIGAN MINES—GRAVITY CONCENTRATION TESTS

Gravity concentration tests have been undertaken on a bulk sample supplied by the above company to determine the recovery obtainable in low grade concentrates.

The ore sample contained approximately 0.5 per cent of tin.

Stage reduction from minus 60 to minus 200 mesh was tested, and this resulted in a recovery of 66 per cent. This result very closely approximates optimum recovery by gravity concentration. The concentrate amounted to 7.3 per cent by weight, and assayed 5.2 per cent of tin.

Total tailings assayed 0.2 per cent tin.

Our knowledge of West Coast ores indicates that recoveries obtained by well designed gravity mills would range from about 40 to a maximum of about 75 per cent, and it is unlikely that recoveries in excess of 65 to 70 per cent would be experienced at Mt Bischoff in the production of low grade concentrates. Two major causes for this moderate recovery are (a) fine grained cassiterite, both natural and man-made, too fine to be concentrated by any proven method of gravity concentration, and (b) composites of cassiterite and gangue minerals of too low a tin content to be concentrated.

It has been indicated that losses of at least 30 per cent would result from pre-concentration by gravity concentration, and the current value of such loss for half and one per cent tin ore would amount to 30s. and 60s. per ton of ore respectively.

Flotation of cassiterite could be a useful alternative to gravity concentration, and some years ago we produced interesting results from Pyramid ore using sodium cetyl sulphate or oleic acid as collector. Flotation was conducted on deslimed feed, and overall recoveries amounted to 73 to 81 per cent. Loss of tin by desliming amounted to 10 per cent.