

## R.615. Treatment of alluvial tin middling

A sample described as a heavy mineral middling; derived from the treatment of alluvial tin ore from the Penny Farthing Lease, Mt Stronach, was received from the lessee, S.J. Kerrison.

The sample, which weighed about  $\frac{3}{4}$  lb, consisted mainly of a black granular material which Mr Kerrison thought consisted of ilmenite and chromite with some nickel present. He requested the separation and identification of the minerals present.

## PROCEDURE

The sample was treated on the laboratory Rapid magnetic separator. Treatment resulted in the production of a highly magnetic fraction, M/A1; a feebly magnetic fraction, M/A2 and a non-magnetic fraction, N.

These products were examined separately to determine the minerals present.

## RESULTS

Product	Wt	Per Cent					
		TiO <sub>2</sub>	Cr <sub>2</sub> O <sub>3</sub>	Ni	R/E	Sn	FeO
M/A1	81.3	50.6	2.7	0.03			40.0
M/A2	1.3				Trace		
N	17.4	0.16				64.6	

## CONCLUSIONS

The examinations have shown that:

- (1) About 80% of the middling consists of ilmenite.
- (2) Chromite is present but the amount (about 3%) is not significant.
- (3) A trace of nickel (0.03%) is present in the ilmenite-chromite fraction.
- (4) A trace of monazite is present in the feebly magnetic fraction.
- (5) Small amounts of rutile and zircon are present in the non-magnetic fraction.
- (6) The sample contains about 11% tin, which was obtained in the non-magnetic fraction as a concentrate containing 64% tin.

The only mineral of value in the sample is cassiterite. If the sample represents a significant quantity of middling, further treatment, probably by magnetic separation is warranted. The contained tin represents a value of about \$300 per ton of middling.