

	No. 1. Queensland.	No. 2. General Exhibition.	No. 3. Never Never.	No. 4. New England.	No. 5. Conrad Richardson.	No. 6. North Star.	No. 7. Alexandra.
Iron	27·00	14·30	13·40	18·60	22·60	5·40	17·20
Lead	0·70	3·60	3·00	0·50	2·00	Nil	2·10
Copper	0·80	0·20	0·30	0·80	0·90	Nil	0·20
Antimony	0·70	0·20	0·30	Traces	·50	0·10	Nil
Zinc	4·90	4·10	4·50	6·00	6·20	0·30	3·20
Arsenic	7·50	1·40	1·50	16·30	4·50	0·10	Nil
Manganese	Nil	Traces	Traces	Traces	Traces	Traces	Nil
Lime	Nil	3·10	15·70	Nil	0·80	0·70	Nil
Sulphur	29·40	14·80	13·70	15·50	25·10	2·90	20·00
Phosphorus	Nil	Traces	Traces	Nil	Nil	Traces	Nil
Carbonic acid	Nil	2·50	13·00	Nil	0·40	Traces	Nil
Siliceous insoluble matter	27·30	54·60	33·20	40·40	36·20	89·60	57·30
Gold, silver, water, oxygen, and loss	1·70	1·20	1·40	1·90	0·80	0·90	
	100·00	100·00	100·00	100·00	100·00	100·00	100·00
	Oz. dwt.	Oz. dwt.	Oz. dwt.	Oz. dwt.	Oz. dwt.	Oz. dwt.	Oz. dwt.
Gold (per ton of 20cwt. of ore)...	4 12	0 18	2 12	1 18	3 2	0 8	2 12
Silver " " " ...	7 6	4 3	2 10	2 16	8 18	0 15	1 5

It will be seen that these ores are mostly of a very refractory character, and the result of trials on the same scale as you have seen to-day is as follows, as per assay by Messrs. Johnson, Matthey, and Co.: "We have examined the samples of slags marked as under, and find the following to be the result (per ton of 20cwt. of slag):—

	Gold.		Silver.	
	Oz.	dwt. gr.	Oz.	dwt. gr.
No. 1. Queensland	0	7 0	0	4 0
No. 2. " " " "	0	6 12	0	3 0
No. 3. General Exhibition	0	3 6	0	3 0
No. 4. " " " " and Never Never	0	5 0	0	4 0
No. 5. Never " " " "	0	6 12	0	5 0
No. 6. New England	Traces		Traces	
No. 7. " " " " and General Exhibition	0	1 12	Traces	
No. 8. Conrad Richardson	0	3 6	0	3 0
No. 9. " " " " and North Star	0	3 6	0	2 0

From these figures it will be seen that there is left in the slags only a very small percentage (a few pennyweights) of the gold and silver, and in one case only traces of gold and silver were found. In order to prove the utility and commercial adaptability of the "process," the company asked Sir Henry Roscoe, President of the British Association for this year, to report upon it. The trial in his presence was on 1cwt. of a refractory ore called "New England" from the District of Ravenswood, in Queensland, and the fluxes employed weighed 34½lb., and his report is as follows: "The cost of this mixture of fluxes amounts to about 4s. per ton of ore. Before smelting a sample of the ore was carefully collected for assay. The time occupied in smelting the ore was exactly four hours, the mixture being placed in the furnace at 12.40, and the skimming finished and regulus tapped at 4.40. The slag was a good skimming one, and the weight of the regulus was 29½lb. The cost of the operation, exclusive of fluxes, can be taken to be that of the easily-ascertained cost of working a similar furnace in smelting copper ore, which is about 4s. 6d. per ton of ore. Samples (1) of the ore, (2) of the regulus, (3) of the slag, collected by me, were forwarded by me to Messrs. Johnson, Matthey, and Co. for assay. I enclose the report of these gentlemen, which is highly satisfactory. The ton of ore contains 2oz. of gold and 2oz. of silver. The ton of regulus contains 8oz. 2dwt. of gold and 7oz. 5dwt. of silver. The ton of slag contains 7dwt. of gold and 5dwt. of silver. It thus appears that in the above operation, which I understand was the first trial of this particularly refractory ore, practically the whole of the precious metals have been withdrawn easily, and at a low cost."

The following is copy of assays referred to in above report:—

"Certificate of Assay for Sir Henry E. Roscoe.—We have examined the samples of mineral marked as under, and find the following to be the result per ton of 20cwt. of ore, regulus, and slag:—

	No. 1. Ore.		No. 2. Regulus.		No. 3. Slag.	
	Oz.	dwt.	Oz.	dwt.	Oz.	dwt.
Produce of gold	2	9	8	2	0	7
Produce of silver	2	0	7	5	0	5

Further, a sample of 14½lb. weight of the very refractory Australian gold-ore, called "Never Never," with the necessary fluxes, weighing 6lb., consisting of lime, soda-cake, and fluor-spar, was sent to Dr. Wallace, of the City of Glasgow Analysts' Laboratory, in order that it might be tested on the small scale by this process, and he reported as follows: "I made two experiments, and obtained a good regulus, which separated from the slag readily. I obtained the following quantities