## FILEGOPY

OTTAWA February 3rd, 1942.

REPORT

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1155.

Gravity Concentration of Chromite Orefrom H. Bruce Fletcher, Sherbrooke, Quebec.

(Gopy No. 25.)

BUREAU OF MINES
DIVISION OF METALLIC MINERALS ORE DRESSING AND
METALLURGICAL LABORATORIES



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## Shipment:

Thirty-nine bags of chrome ore, gross weight 2,730 pounds, were received on June 10th, 1941, from H. Bruce Fletcher, Sherbrooke, Quebec. This ore criginated from Pit No. 4, Concession 12, Lot 7, Orford township, Sherbrooke district. Quebec.

The shipment was originally sent in to determine its suitability for air-table concentration. However, following the erection of a chromite concentrating mill at St. Cyr, Quebec, the shipment was tested by wet gravity methods to

(Shipment, cont'd) -

determine its response to the flow-sheet of the Chromite Limited mill at St. Cyr.

Prior to wet concentration, the sample had been dry-crushed and sized for air-table concentration. For wet concentration, the sized products were mixed and crushed to pass 14 mesh. The lot was then sampled. Analysis showed it to contain:

Chromic oxide 
$$(\text{Cr}_2\text{O}_3)$$
 - 34.17 per cent.  
Iron (Fe) - 9.78 "

Ratio, Cr:Fe = 2.39:1.

## Experimental Investigation:

The ore at minus 14 mesh was fed at the rate of 960 pounds per hour to the flow-sheet adopted for the concentration of ore from Chromite Limited (See our Investigation No. 1C51 - Concentration of Chromite from the Sterrett Property, St. Cyr, Richmond county, Quebec, dated July 15th, 1941).

The distribution to the various concentrating tables and the screen analyses of the table feeds are as follows:

Peed Rates				Lb./hr.
Mill fac	3.		-	960
Butchart	table	feed.	en .	. 500
Deister	1,8	19	019	355
Wilfley	79	6	A178	420
Pilot	11	rę.	en•	265
Slime cone overfl	es	5.4		
Middling thickener overflow				0.53
" underflow			£371	346.0

(Continued on next page)

(Experimental Investigation, contid) -

<b>电线气器器 类型孔流流气管 (1) 13 13 14 15 17 17 17 18</b>	የሚያመደው ነው የሚያመን የመጀመሪያ እንደመስ የመጠር ነው ነው ነው።	Screen Ana.			Per Cen		that besid got to the point of the bow to the Sp. Sp. or this etc. or eye, with the
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4 SO	: 5.0	12.2	5.5			16.1	೭.೦
- 20+ 28	; 15.4	32,9	19.4			25.0	5.4
- 28+ 35	: 18.3	25.0	19.9		0.1	22.0	4.6
<b>- 35</b> + 48	: 13.6	14.8	1.8.0	0.6	1.4	16.4	3.7
- 48+ 65	: 1.0.6	9,8	21.6	3,7	5.7	13.8	8.8
- 65+100	: 7,0	4.3	8.8	8,2	10,6	4.6	7.1
-100+150	: 7.8	1.5	5.3	16.4	17.5	1.5	15,4
-150+200	: 5.8)	0.1	1.1	18.6	17.1	0,4	13.1
-200	: 16.5)	0,1	0.4	52,5	47.6	0.2	39,9
Authorities (Authorities) about the although and	D D D	ምል መስለፍቷ «መስማርድንት ቀር ወደነት ማስመርድ ነ ነርድነለው ው	ins warming over the standard of	Trickler womann and Calabar	· Employed the policy of the p	Takur escribentari der undrig sambert da er f. e beregeset	TO CONTINUE THE THE WAS BETT FOUND FOR A MICH. THE THE TO
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Samples taken during the run assayed as follows:

PROQUET  ***********************************	0 0 0 0 0 0 0 0	ASSAYS Cr203, Fe,		
Benanda energy konskillen konstrukter angelen benaltan hog angelen kan kili kan aterak kan ka	*:25255 *:25255	oor cent	per cent	
Feed	27	34.17	9.78	
Putchart table feed " concentrate " tailing	000	48,84 54,42 20,56	12,74	
Deister table feed " concentrate " tailing	83 83 84 84 8	30.06 54.48 9,04	12.65	
Wilfley table feed " concentrate " tailing	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	26.38 54.67 9.08	12.94	
Pilot table feed " concentrate	00 00 00 00	35,51 53,25	12.45	
Feed to regrind	v	22.29		
Slime come overflow	2 3 0 8	14.24		
Middling thickener overflow	9 12 13	12.17		
Main tailing	0	8,35		

(Experimental Investigation, contid) -

The concentrates recovered from the four tables were dried and sampled, mixed together, and re-sampled.

Results:

Product	:Weight, :pounds	Per cent Cr203 : Fe
Butchart concentrate Deister concentrate Wilfley concentrate Pilot concentrate Middling Tailing	. 477 : 309 : 211 : 298 : 7 :1,223	55.66 11.34 55.45 11.39 55.04 12.20 53.75 12.70 32.11 9.88 8.35

The total weight of concentrate, 1,295 pounds, had the following analysis:

		Per cent
WO <sub>3</sub> Fe	with.	55.49
	กษ	11.64
sio <sub>2</sub>	643	2,30
S	4	0.02
Ratio, Cr:Fe	22	3,26:1.

A compilation of the results of the test is as follows:

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	0 .		SASS	$E \subseteq \Sigma$	; Pounds	ints curpactou
Product	ç	Weight,	3 POD	cent	$_{ m s}$ $_{ m Cr}_{ m g}$ O $_{ m S}$	; of Cr <sub>2</sub> O <sub>3</sub> ;
Halinguage Haribary Windshilding 198	0	pounds	: Cr203	TO	:contained	: per cont
ESS CONTROLLUNGS AND INCOME.	4: 	and the second second second second				
Peed	0	2,525	34.17	9.78	862,7925	100.0
Concentrate	e e	1,295	55,49	11.64	718,5955	87.3
Middling	9	7	32,11	9,88	2.2477	0.3
Tailing	9	1,223®	8,35	573	102,1205	12,4
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<sup>©</sup> Calculated.

## Conclusions:

This ore, when milled in the concentrator of Chromite Limited, St. Cyr, Quebec, will produce a high-grade concentrate with a very favorable chromium-to-iron ratio.

As the sample on which the investigation was made was obtained from the No. 4 pit, the results shown above are applicable only to ore from that working. Should chrome-bearing material from other locations be mixed with ore from the No. 4 pit, the grade and character of the resulting concentrates cannot be relied on to correspond to those shown in this report.

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