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PROVINCE OF ONTARIO

DEPARTMENT OF MINES

HON. ROBERT LAURIER, *Minister of Mines*

H. C. RICKABY, *Deputy Minister*

Bulletin No. 133

REPORT

ON THE

Mining Accidents in Ontario
in 1942

By

Chief Inspector of Mines: W. O. TOWER, Toronto
Inspectors: R. L. SMITH, Kenora; W. E. BAWDEN, Port Arthur;
D. F. COOPER, Sudbury; J. B. TAYLOR, E. S. LITTLE, Kirkland Lake;
E. B. WEIR, Timmins; D. P. DOUGLASS, Toronto

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1943



TO THE HONOURABLE ROBERT LAURIER,
Minister of Mines.

SIR,—I beg to hand you herewith the report by the Inspectors of this Department on the accidents in the mines, metallurgical works, and quarries of Ontario during the year 1942.

I have the honour to be, Sir,
Your obedient servant,

H. C. RICKABY,
Deputy Minister of Mines.

DEPARTMENT OF MINES,
Toronto, January, 1943.

MINING ACCIDENTS IN ONTARIO IN 1942

By

Chief Inspector of Mines, W. O. Tower, Toronto; Inspectors, R. L. Smith, Kenora; W. E. Bawden, Port Arthur; D. F. Cooper, Sudbury; J. B. Taylor, E. S. Little, Kirkland Lake; E. B. Weir, Timmins; D. P. Douglass, Toronto.

Accidents during 1942

During the year 1942 at the mines, metallurgical works, quarries, and clay, sand, and gravel pits regulated by the Mining Act, there were 2,217 accidents to employees reported to the Department of Mines up to January 16, 1943. Fifty fatalities arising out of 45 separate accidents were reported.

The returns represent a decrease of 77 (3.5 per cent.) in the total number of accidents reported and a decrease of 14 in the number of fatalities recorded over the preceding year. The number of accidents involving fatalities is 45, which is 17 less than the preceding year. There were 40 accidents in which one man was killed and 5 accidents in which 2 men each were killed.

The report shows a fatality rate of 1.48 persons killed per thousand persons employed, which is a decrease of 0.30 per thousand persons over the preceding year and is 0.64 per thousand lower than the average of the last 25 years.

There were 64 non-fatal accidents per thousand persons employed, which is an increase of 2 (3 per cent.) from the rate of 1941.

The percentage of non-fatal accidents followed by infection increased from 4.7 per cent. in 1941 to 4.9 per cent. in 1942.

The total employment figures for the industry show a decrease from 1941. This is due to decreased employment at gold mines and at quarries and pits. Under the authority of The War Measures Act, Chapter 206, Revised Statutes of Canada, 1927, Order-in-Council P.C. 7,032 was passed, permitting women to be employed in approved occupations on surface at certain essential operations, regulated by the Mining Act.

Fatal Accidents

A comparison of fatal accidents for the past five years is given below:—

Distribution	1938	1939	1940	1941	1942
Mines, underground.....	37	27	35	50	27
Mines, surface.....	2	3	1	2	5
Metallurgical works.....	5	3	2	6	5
Quarries.....	1	1	3	.....	5
Clay, sand, and gravel pits.....	4	4	1	3	3
Contract diamond-drilling.....	.....	.....	.....	1	.....
Total.....	49	38	42	62	45

ANALYSIS OF FATALITIES AT MINES, 1938-1942

Cause	1938	1939	1940	1941	1942
	per cent.	per cent.	per cent.	per cent.	per cent.
Fall of ground.....	17	8	34	27	43
Rock burst.....	15	19	5	6	8
Run of ore or rock.....	2	21	20	11	14
Shaft accidents.....	28	16	8	13	8
Explosives.....	26	10	3	13	.....
Miscellaneous, underground.....	10	18	27	25	13
Surface.....	2	8	3	5	14

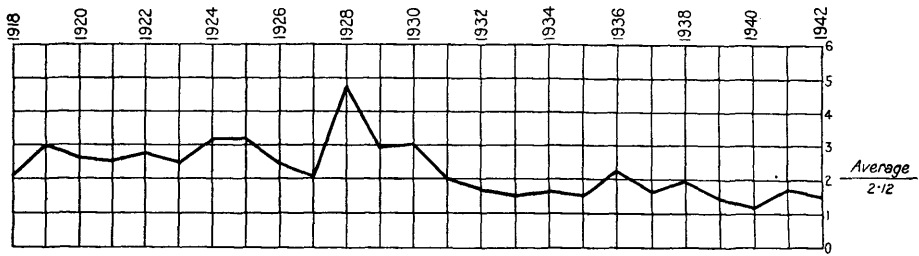


Diagram showing fatalities per thousand persons employed between the years 1918 and 1942.

By months the fatal accidents occurred as follows:—

Month	No. accidents	No. men killed
January.....	5	6
February.....	3	4
March.....	5	5
April.....	7	7
May.....	7	9
June.....	2	2
July.....	3	3
August.....	2	2
September.....	4	4
October.....	3	3
November.....	1	1
December.....	3	4
Total.....	45	50

Classifying the fatalities according to industries gives the following:—

Gold mines.....	27
Nickel mines.....	10
Metallurgical works.....	5
Quarries.....	5
Sand, clay, and gravel pits.....	3
Total.....	50

The comparative fatality rate per thousand persons employed at mines, metallurgical works, quarries, and clay, sand, and gravel pits is as follows:—

	Persons employed ¹			Number killed			Rate per thousand
	Men	Women	Total	Men	Women	Total	
Mines ²	24,550	41	24,591	37	.....	37	1.50
Metallurgical works.....	7,462	126	7,588	5	.....	5	.66
Quarries.....	988	.....	988	5	.....	5	5.06
Clay, sand, and gravel pits ³ ...	600	.....	600	3	.....	3	5.00
Total.....	33,600	167	33,767	50	.....	50	1.48

¹Average number for year.

²Includes contract diamond-drilling at mines.

³Estimated, because of incomplete returns.

The ages of the persons killed were as follows:—

17-20	21-25	26-30	31-35	36-40	41-45	46-50	Over 50	Total
5	9	9	4	14	6	1	2	50

The occupations of the persons killed at mines, metallurgical works, and clay, sand, and gravel pits are set out in the following table:—

Occupation	Men	Women	Total
Baleman.....	1	.....	1
Chute puller.....	4	.....	4
Driller.....	12	.....	12
Drill helper.....	1	.....	1
Foreman.....	3	.....	3
Labourer.....	10	.....	10
Mechanic.....	2	.....	2
Mechanical loader operator.....	3	.....	3
Shaftman.....	2	.....	2
Shift deckman.....	1	.....	1
Shoveller.....	5	.....	5
Solution man.....	1	.....	1
Timberman.....	4	.....	4
Trammer.....	1	.....	1
Total.....	50	.....	50

TABLE OF FATAL ACCIDENTS IN MINES, METALLURGICAL WORKS, QUARRIES, AND GRAVEL, SAND, AND CLAY PITS, 1918-1942

Year	Persons killed at metallurgical works and mines	Persons employed at metallurgical works and producing mines	Persons employed at non-producing mines	Total persons employed	Fatal accidents per 1,000 employed
1918.....	32	14,726	500	15,226	2.1
1919.....	39	11,926	1,000	12,926	3
1920.....	29	10,486	1,000	11,486	2.61
1921.....	24	8,436	1,000	9,436	2.54
1922.....	30	9,500	1,500	11,000	2.72
1923.....	30	10,500	1,500	12,000	2.5
1924.....	40	11,000	1,500	12,500	3.2
1925.....	42	11,500	1,500	13,000	3.23
1926.....	32	11,500	1,500	13,000	2.46
1927.....	33	13,311	2,000	15,311	2.1
1928.....	85	15,787	2,000	17,787	4.76
1929.....	55	17,145	1,849	18,994	2.89
1930.....	56	18,217	317	18,534	3.02
1931.....	37	17,820	447	18,267	2.03
1932.....	25	14,378	431	14,809	1.69
1933.....	25	15,080	804	15,884	1.57
1934.....	34	19,302	1,254	20,556	1.65
1935.....	36	21,444	1,528	22,972	1.57
1936.....	65	25,725	2,547	28,272	2.30
1937.....	52	28,938	3,220	32,158	1.62
1938.....	62	29,434	1,421	30,855	2.01
1939.....	47	32,444	897	33,341	1.41
1940.....	42	35,137	438	35,575	1.18
1941.....	64	35,317	418	35,935	1.78
1942.....	50	33,336	431	33,767	1.48

TABLE OF FATAL ACCIDENTS

No.	Date	Name of mine	Name of operator	Name of deceased
1	July 25	Aunor.....	Aunor Gold Mines, Ltd.....	William Green....
2	Feb. 26	Buffalo Ankerite.....	Buffalo Ankerite Gold Mines, Ltd..	Roy Nadon.....
3	April 28	" ".....	" " " " " " " "	Frank Falica.....
4	Aug. 4	" ".....	" " " " " " " "	Russel Clemis....
5	July 1	Chesterville.....	Chesterville Larder Lake Gold Mining Co., Ltd.	Fernand Trudeau..
6	April 1	Cline Lake.....	Cline Lake Gold Mines, Ltd.....	Geo. A. Middleton.
7	May 4	Delnite.....	Delnite Mines, Ltd.....	Wm. Woods.....
8	April 8	Hallnor.....	Hallnor Mines, Ltd.....	Josephat Major... Alec Dupré.....
9	Jan. 23	Hollinger.....	Hollinger Consol. Gold Mines, Ltd..	John M. Orel....
10	Sept. 7	Ross.....	" " " " " " " "	Angus Beaton....
11	May 25	Hoyle.....	Hoyle Gold Mines, Ltd.....	C. Tomlinson....
12	Feb. 27	Creighton.....	Internat. Nickel Co. of Canada, Ltd..	C. A. McDougall..
13	June 9	".....	" " " " " " " "	Alex Chirsky.....
14	Feb. 5	Frood.....	" " " " " " " "	James Ellis..... Emile Newman...
15	Oct. 20	Garson.....	" " " " " " " "	Simon Lacoste....
16	Nov. 18	".....	" " " " " " " "	Wm. Wallace.....
17	Mar. 13	Levack.....	" " " " " " " "	Angelo Halvorson..
18	May 30	".....	" " " " " " " "	Frank Trenzek....
19	Aug. 4	".....	" " " " " " " "	Raymond J. Fauber
20	May 29	Jason.....	Jason Mines, Ltd.....	Peter Badovinac..
21	Dec. 2	Jerome.....	Jerome Gold Mines, Ltd.....	Walter Bandza....
22	May 27	Kirkland Lake Gold..	Kirkland Lake Gold Mining Co., Ltd.	Paul Hamernyk... Steve Rubanet....
23	Oct. 31	" " " " " " " "	" " " " " " " "	Fred Melnyk..... W. G. Chartrand..
24	May 30	Lake Shore.....	Lake Shore Mines, Ltd.....	Wm. Smarz.....
25	Mar. 5	McIntyre-Porcupine..	McIntyre-Porcupine Mines, Ltd.....	Toivi Rimmi.....
26	Jan. 3	Omega.....	Omega Gold Mines, Ltd.....	Peter Furlan.....
27	April 1	Pamour.....	Pamour Porcupine Mines, Ltd.....	Steve Kozar.....
28	Mar. 26	Toburn.....	Toburn Gold Mines, Ltd.....	James Dubriel....

TABLE OF FATAL ACCIDENTS ON THE

No.	Date	Name of mine	Name of operator	Name of deceased
1	June 9	Cochenour Willans....	Cochenour Willans Gold Mines, Ltd..	D. C. Proudlock...
2	Sept. 15	Hollinger.....	Hollinger Consol. Gold Mines, Ltd..	Alcide Lehoux....
3	Mar. 13	Hoyle.....	Hoyle Gold Mines, Ltd.....	Joseph E. Baxter..
4	Dec. 24	Frood (open pit).....	Internat. Nickel Co. of Canada, Ltd..	Samuel Cuomo....
5	April 26	MacLeod-Cockshutt...	MacLeod-Cockshutt Gold Mines, Ltd.	E. Maldonado....

UNDER GROUND AT ONTARIO MINES, 1942

Age	Occupation	Allegiance	Married, single, or widower	Cause
30	Driller	British	W	Struck by falling rock.
24	Scraper helper	British	M	Buried in run of sand from fill raise.
39	Driller	Jugo-Slav	M	Struck by fall of ground.
39	Scraper operator	British	M	Struck by fall of ground.
20	Shoveller	British	S	Fell through loading pocket into shaft.
24	Trammer	British	W	Struck by drill steel falling from chute.
45	Timberman	British	S	} Struck by fall of ground.
36	Timberman	British	M	
26	Mucking-machine operator.	British	S	Crushed between slab of rock and mucking- machine.
28	Driller	British	S	Buried in run of sand from fill raise.
40	Shaft timberman	British	M	Fell in shaft.
21	Driller	British	S	Carried down in run of muck.
27	Shaftman	British	M	Struck by falling rock following rock burst.
22	Deckman	British	S	Crushed by winze collar door.
29	Stope boss	British	M	} Struck by fall of ground in drift.
26	Shoveller	British	S	
25	Driller	British	M	Struck by fall of ground in stope.
23	Chute blaster	British	M	Crushed between car and wall at ore pass.
24	Chute puller	British	S	Caught by run of muck in chute.
34	Driller	British	M	Struck by falling rock when entering raise after a blast.
24	Ore-pass tender	British	M	Buried in run of fines at crusher.
43	Driller	British	M	Crushed by fall of ground.
45	Driller	Lithuanian	S	} Struck by fall of ground in stope.
25	Driller	British	S	
35	Shoveller	British	M	Crushed between car and chute post.
39	Timberman	Polish	M	Struck by fall of ground in stope.
20	Shoveller	British	S	} Crushed by fall of ground following rock burst.
41	Shoveller	Polish	M	
40	Drill helper	Finnish	M	Fell into mill-hole.
38	Driller	Jugo-Slav	M	Struck by fall of ground.
40	Chute puller	British	M	Crushed against wall when car derailed.
38	Timberman	British	M	Struck by loose rock and fell in stope.

SURFACE AT ONTARIO MINES, 1942

Age	Occupation	Allegiance	Married or single	Cause
27	Solution and amalga- mation man.	British	M	Poisoning; accident caused swallowing of amalgam barrel solution.
37	Mill repair helper	British	M	Caught in drive belt of ball mill.
40	Chief electrician	British	M	Caught in Tex-rope belt of crusher.
20	Churn driller	British	S	Churn drill overturned and crushed him.
49	Labourer	Mexican	M	Injured when plug came off compressed-air pipe.

TABLE OF FATAL ACCIDENTS

No.	Date	Plant	Name of operator	Name of deceased
1	Jan. 6	Copper Cliff	Internat. Nickel Co. of Canada, Ltd.	E. Bortolussi
2	Jan. 14	" "	" " " " " "	Lionel Dupuis
3	April 23	" "	" " " " " "	Frank Swets
4	Dec. 28	Port Colborne	" " " " " "	Edward L. Brophy.
				John Punyi

TABLE OF FATAL ACCIDENTS

No.	Date	Name of operator	Name of deceased
1	July 28	Dominion Mines and Quarries, Ltd.	James E. Thompson
2	Sept. 15	Gypsum, Lime and Alabastine, Canada, Ltd. (quarry in North Oxford township)	Raymond Donald..
3	Sept. 24	Hagersville Quarries, Ltd.	Reginald C. Gloyd
4	April 1	Haldimand Quarries and Construction, Ltd.	Rodman McNaughton
5	May 27	Kirby Bros. Supply Co., Ltd.	E. J. Proulx

TABLE OF FATAL ACCIDENTS AT

No.	Date	Name of operator	Name of deceased
1	Oct. 19	Allan Dickson	C. M. Findlay
2	Jan. 23	Morrison McLaws	Patrick Ryan
3	Mar. 28	Roy Wattam	Gerald Cleary

Y METALLURGICAL WORKS, 1942

Age	Occupation	Allegiance	Married or Single	Cause
26	Labourer.....	Italian.....	M	} Burned by explosion of matte from con- verter. Burned when pulverized coal exploded. Crushed between two pots in Orford build- ing. Fell from flat car to floor.
23	Baleman.....	British.....	S	
26	Fitter's helper.....	British.....	S	
18	Transferman.....	British.....	S	
40	Labourer.....	British.....	M	

AT QUARRIES, 1942

Age	Occupation	Allegiance	Married or Single	Cause
55	Labourer.....	British.....	M	Struck by flying rock from sand blast. Struck on head by sand-pipe.
36	Driller.....	British.....	M	
17	Labourer.....	British.....	S	Buried in sand when feeding conveyer belt. Caught between revolving screen and trun- ion wheel.
31	Foreman.....	British.....	M	
36	Labourer.....	British.....	M	Struck by loose revolving belt.

CLAY, SAND, AND GRAVEL PITS, 1942

Age	Occupation	Allegiance	Married or Single	Cause
44	Labourer.....	British.....	M	Buried in run of sand and gravel. Struck by frozen gravel falling from face of pit. Struck by frozen gravel falling from top of pit.
60	Labourer.....	British.....	S	
34	Labourer.....	British.....	M	

Non-fatal Accidents

The causes of non-fatal accidents at mines are shown in the following table:—

Cause	Surface			Under-ground	Total
	Men	Women	Total		
Fall of persons	80		80	209	289
Crushed between two objects	28		28	165	193
Falling objects	47		47	119	166
Strain while lifting	19		19	94	113
Rock or ore from chute				100	100
Flying objects, sledging, etc.	30		30	68	98
Handling rock or ore	3		3	93	96
Drilling machines	2		2	83	85
Fall of rock or ore at face				85	85
Hand tools	30		30	40	70
Falling rock or ore, drilling, scaling, etc.				61	61
Tramming	5		5	53	58
Machinery	35		35	12	47
Nails or splinters	12		12	32	44
Running into and striking objects	9		9	31	40
Explosives				21	21
Burns	16		16	2	18
Cage, skip, or bucket	1		1	16	17
Transportation				16	16
Rock burst				8	8
Falls down shaft, winze, or stope				5	5
Poisoning from cyanide, lead, arsenic	3		3		3
Electricity	1		1	1	2
Unclassified	1		1	3	4
Total	322		322	1,317	1,639

The causes of non-fatal accidents at metallurgical works were:—

Cause	Men	Women	Total
Fall of persons	55		55
Falling objects	35		35
Crushed between two objects	32		32
Handling material	31		31
Strain while lifting	29		29
Burned by slag, matte, or scrap	25		25
Burns	25		25
Hand tools	21		21
Machinery	17	1	18
Flying objects, sledging, etc.	12		12
Running into and striking objects	11	1	12
Nails or splinters	7		7
Transportation	4	1	5
Electricity	3		3
Gas	1		1
Cranes, ladles, and hooks	1		1
Total	209	3	312

The causes of non-fatal accidents at quarries were:—

Handling material.....	30	Strain while lifting.....	3
Fall of persons.....	24	Transportation.....	3
Falling objects.....	15	Nails or splinters.....	3
Crushed between two objects.....	10	Burns.....	3
Flying objects, sledging, etc.....	8	Poison.....	1
Fall of rock.....	5	Electricity.....	1
Machinery.....	5		
Explosives.....	4	Total.....	118
Hand tools.....	3		

The causes of non-fatal accidents at clay, sand, and gravel pits were:—

Machinery.....	10	Nails or splinters.....	1
Fall of material.....	7	Handling material.....	1
Fall of persons.....	7	Hand tools.....	1
Strain while lifting.....	5	Explosives.....	1
Crushed between two objects.....	4		
Flying objects, sledging, etc.....	3	Total.....	40

The causes of non-fatal accidents in contract diamond-drilling were:—

Crushed between two objects.....	11	Falling objects.....	3
Caught in moving parts.....	10	Caught in feed screw.....	2
Nails or splinters.....	7	Burns.....	2
Hand tools.....	6	Running into or striking objects.....	2
Strain while lifting.....	5	Unclassified.....	2
Fall of persons.....	4		
Flying objects.....	4	Total.....	58

Infection

Records show that infection followed in 105 cases out of a total of 2,167 accidents.

Location	No. of accidents	Accidents followed by infection	Per cent. infection
Mines, underground.....	1,317	57	4.3
Mines, surface.....	322	12	3.7
Metallurgical works.....	312	17	5.4
Quarries.....	118	6	5.1
Clay, sand, and gravel pits.....	40	2	5
Diamond-drilling.....	58	11	19
Total.....	2,167	105	4.9

Accidents from Explosives

Cause	Non-fatal		Fatal		Total	
	No. accidents	Men injured	No. accidents	Men injured	No. accidents	Men injured
Drilled into dynamite.....	5	8			5	8
Delayed too long at blast.....	3	4			3	4
Did not take sufficient cover.....	3	4			3	4
Returned too soon to scene of blast.....	1	1			1	1
Walked into blast.....	2	2			2	2
Fumes from blasting.....	2	2			2	2
Blast through diamond-drill hole.....	1	1			1	1
Total.....	17	22			17	22

Non-fatal Accident Frequency

The following tables gives the respective non-fatal accident frequency at mines, metallurgical works, quarries, and clay, sand, and gravel pits, based on the number of accidents per thousand men employed, for the years 1932 to 1942, inclusive.

1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
98	95	93	90	83	85	70	67	60	62	64

Electric Accidents

The following table shows the fatal accidents due to the use of electricity at mines, metallurgical works, and quarries during the last ten years:—

1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	Total
.....						1	1	.....	.....	2

The following table shows the total number of non-fatal electric accidents during the last ten years:—

1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	Total
4	4	6	4	2	8	6	3	5	8	50

Classification of Non-fatal Accident Rates at Producing Mines

In the following table the producing mines employing more than 50 men are arranged in order, according to their rate of non-fatal accidents per thousand persons employed:—

0-50	{	Omega
		Magnet
		Levack (International Nickel)
		Frood open pit (Frood and Stobie, International Nickel)
		Frood mine (International Nickel)
		McIntyre-Porcupine
		Berens River
		Garson (International Nickel)
		Chesterville
		Wright-Hargreaves
		Creighton (International Nickel)
		Hollinger
		Matachewan Consolidated
		Cline Lake
		Young-Davidson (Hollinger)
		Macassa

	{	Sylvanite Kerr-Addison Lake Shore Teck-Hughes Delnite
		Average—67.4 accidents per thousand men
51-100	{	Preston East Dome Coniaurum Yama Little Long Lac Falconbridge (mine and mill) Central Patricia Helen (mine, Algoma Ore Properties) Bidgood Aunor
	{	Upper Canada Pamour Tombill and Elmos Dome MacLeod-Cockshutt Uchi Toburn Paymaster Consolidated Sturgeon River Kirkland Lake Gold Madsen Red Lake Broulan Hallnor Pickle Crow Northern Empire and Sand River Cochenour Willans Jerome
101-150	{	
	{	Moneta Buffalo Ankerite Jason McMarmac Naybob Hard Rock Hasaga Ross (Hollinger) Cobalt Products Hoyle McKenzie Red Lake Tyranite Wendigo
151-200	{	
201-250	{	De Santis Leitch
251-300		Lake Geneva

Fires

Coniaurum Mines, Limited

A small General Electric potential transformer, type E, capacity 50 watts, 2,300 to 110 volts, burned out on the 3,250-foot level hoist-station of the Coniaurum mine on February 16. The transformer was contained in a small iron box in a fireproof room. The fire was extinguished by a hoistman with a fire extinguisher. Hoisting was delayed for about two hours while a replacement was being made.

The burning of insulation in the transformer produced some smoke and a little flame.

Hasaga Gold Mines, Limited

The office and warehouse at the Hasaga mine was totally destroyed by fire of unknown origin on December 18. The warehouse stock was a total loss.

The 30- by 36-foot building was of frame construction and was located 56 feet west of the hoist-house and 80 feet northwest of the shaft-house. A fire-hydrant equipped with fire-hose is located 66 feet northeast of the building.

The fire was discovered under the floor of the building, and in 15 minutes was out of control.

No other buildings were damaged.

Hollinger Consolidated Gold Mines, Limited

A man's work smock and leather jacket lying on a timber in No. 63A W13 drift, on the 2,600-foot level of the Hollinger mine, burned on December 31, 1941. Enough smoke was caused to be noticeable in the vicinity of No. 63 vein in No. 13 crosscut north on the 2,600-foot and 2,450-foot levels.

The cause of the fire is unknown. The sampler who owned the clothes did not notice anything unusual when he laid them on the timber. He went into the stope below the 2,600-foot level, cut a 9-foot sample, and then returned to the 2,600-foot level. There was a considerable amount of smoke there, and he found that his jacket and smock were burning. He tried, without success, to put out the fire with his hands. He then went to No. 11 shaft, with a switchman, to look for a fire extinguisher. Meanwhile, a motorman blew air to clear the smoke. When the two men arrived at No. 11 shaft they called the cagetender and in their excitement gave him the impression that two men were in a stope below the 2,600-foot level and that the timbers were burning. The cagetender went to surface and gave this message to the time office. The time office called the Mine Rescue Station at Timmins to send rescue apparatus immediately.

In the meantime the motorman had blown compressed air in No. 13 crosscut north, and when the sampler and the switchman returned from No. 11 shaft they were able to go to the seat of the fire and extinguish the burning articles with their hands and feet.

The smock and leather jacket were completely consumed, and the face of the timber on which the articles had been laid was scorched for about 10 inches. No one was overcome by the smoke.

International Nickel Company of Canada, Limited

A fire occurred in No. 3 shaft rock-house extension at the Frood mine at 11.44 P.M. on February 15.

It was first noticed by R. Sudac, a crusherman, who saw flames in the vicinity of the No. 1 Symons crusher motor. He found the V-belts driving the crusher were on fire, stopped the motor, and went for help. He returned at once with another workman and a number of Pyrene extinguishers, to find F. Vaughn, the picker boss, at the scene of the fire. Vaughn had the main rock-house switch pulled, then turned water hoses on the fire, which had spread to the timbers under the crusher base. It was extinguished at 12.12 A.M.

The fire caused a considerable amount of smoke to be carried underground. Stench gas was injected in the air lines at 11.58 P.M., and the 9-bell danger was rung on the mine telephones. All men underground were checked into their respective rescue stations by 12.17 A.M. The Mine Rescue Station was notified at 12 midnight, and ten rescue men were summoned, but the fire was extinguished by the time they arrived.

The fire was not caused by the electrical wiring or equipment, which was found to be in good order afterwards. The cause has not been determined.

A minor fire occurred in the open pit section of No. 3 shaft rock-house at the Frood mine about 7.55 P.M. on March 29.

J. Gorshe, crusherman, noticed flames coming out of a hole in the main frame of the Symons crusher near the countershaft. The fire was extinguished with a fire-hose at 8.07 P.M. No damage was done.

The fire appeared to be due to the ignition of lubricating oil, which had escaped from the sealing-ring in flowing from the eccentric shaft to the socket liner of the crushing-head. It is thought that the oil may have been ignited by sparks from the rock being crushed between the mantle and the bowl liner.

A fire occurred in the steel-sharpening shop at the Garson mine at 10 P.M. on August 10, when the oil in the quenching-tank ignited as hot steel was being placed in it by L. Hickey and T. Pazink.

It was extinguished by the use of a Foamite extinguisher and a dampened tarpaulin before damage resulted.

Kirkland Lake Gold Mining Company, Limited

A fire occurred at the No. 2 winze hoist on the 4,900-foot level of the Kirkland Lake Gold mine on January 14. The 10- by 12-inch single-drum air-hoist, is operated on day shift only to service a crew of diamond-drillers working on the 5,450-foot level.

An 11.00 P.M. to 7.00 A.M. shift was employed changing guides in No. 1 winze, which extends from the 2,475-foot level to the 4,900-foot level. At 1.00 A.M. the crew noted smoke in the shaft and reported the occurrence to Chief Electrician Prangley and Mine Superintendent Clarke. Using Burrell masks, the stations from 4,150 to 4,900 feet of No. 1 winze were investigated, and in the crosscut to No. 2 winze, on the 4,900-foot level, dense smoke was encountered. The ventilation doors at No. 1 winze on the 4,900-foot level were closed and those on the 4,450-foot level were opened. All the men then came to surface as the air was becoming bad in No. 1 winze station.

John Lang, superintendent of the Mine Rescue Station, was called at 2.00 A.M. At 4.00 A.M. he made a trip to the 4,900-foot level with a crew, using McCaa apparatus. Smoke was extremely heavy; a safety lamp would not burn, and the carbon monoxide content of the air was 0.8 per cent. As no men were trapped in the area affected it was decided to seal it off and to smother the fire.

By sealing the down-cast raise on the 4,450-foot level and the doors on the 4,750-foot and 4,900-foot levels at No. 1 winze, the ventilating current of the workings of No. 2 winze is stopped. These seals were made and checked for leakage on subsequent trips. The double steel doors of the connection, on the 5,200-foot level of the Kirkland Lake mine, to the Teck-Hughes mine were sealed on the Teck-Hughes side, as there was a very slight drift of smoke and carbon monoxide through them.

The 4,900-foot level and the No. 2 winze and station were cleared of smoke on Sunday, January 17. This was done by admitting air through the 4,450-foot level down-cast raise, bratticing the down-cast raise on the 4,900-foot level west drift, and opening the doors on the up-cast circuit. A crew with McCaa apparatus, having accomplished this, went to No. 2 winze station where they located

damage caused by fire. The fire had been smothered. The ventilating current was then routed to the 5,600-foot level and thence up the No. 2 winze.

No. 2 winze station, which extends west from the shaft, is an excavation 18 feet wide, 42 feet long, and 35 feet high at the shaft and 8 feet high at the west end, where the 10- by 12-inch, single-drum, air-driven hoist is located. The back of the station is lagged with 2-inch planks supported on pairs of stringers extending from the shaft timbers over three sets. The first two sets are 8- by 10-inch caps on pipe columns. The third set, located about 4 feet from the end of the station, consists of 8- by 10-inch caps on 8- by 10-inch posts. Short stringers from this set are posted at the wall, the lagging of which covers the hoistman's platform. Plank flooring and a bench had been installed for the hoistman. All timber was B.C. fir. A locked wooden box equipped with a lighting fixture, in which was an 8-candlepower carbon bulb, was located at one end of the hoistman's platform. A few tools, some rags, and the Hoistman's Log Book were kept in the box.

The origin of the fire was apparently near the centre of the hoistman's platform. The floor, bench, and box were entirely consumed. The north post along the back wall was burnt out entirely, and the north brace post of the hoist deeply charred at top and bottom. The first and second roof-stringers on the south side were considerably burned. Much of the plank lagging of the back was destroyed, and practically all the rest charred. The fire seemed to have been smothered rather than to have burned out.

Two diamond-drillers, Smith and Atcheson, were the only two men employed in the workings of No. 2 winze. They were working on the 5,450-foot level. As their matches were wet, Atcheson came up to the hoist at 3.00 P.M. to obtain dry ones. R. Duchesne, the hoistman, had none. At 4.40 P.M. Atcheson and Smith came up and waited with Duchesne at the hoist until 5.25 P.M. During this time Smith tried to dry out several matches on a light bulb over the indicator dial and attempted to light them so that he could smoke. When he was doing so several match heads flew off. The evidence of the men is that a light was not obtained. No one else had been in the station during the day except P. Clarke, mine superintendent.

The electrical installations in the hoist-room consisted of two 110-volt circuits, the lighting circuit, and the signal system. All equipment was installed in accordance with the Mining Act. All wiring was in conduit or neoprene jacketed cable and both circuits were properly fused.

Lake Shore Mines, Limited

An incipient fire occurred in the dry-house at the Lake Shore mine at 3.20 P.M., on February 10. P. Compeau went to the dry-house to check over his mine clothes on hanger No. 827, which had been undisturbed for almost three months. He was smoking a cigarette at the time and does not remember definitely what he did with the butt.

A few minutes after he left the dry-house, A. Randall, dry-house man, smelled smoke. He noted that Compeau's clothes were smouldering and as he lowered the basket they burst into flame. C. Linworth, lamp-room man, assisted Randall in extinguishing the flames.

There were matches in a pocket of the overalls, but the fire did not originate in this pocket.

A fire occurred in the 2,000-foot level crusher-room of the Lake Shore mine at 2.40 P.M., March 31.

A piece of canvas had been installed over a motor as a shield, with an electric heater near the shield to dry out the motor. The canvas caught fire. Smoke was noticed, and the fire was completely out by 2.50 P.M.

A Burrell mask was used to enter the crusher-room. No smoke was noticed outside the main crosscut.

A small fire occurred in the lunch-room on the 800-foot level of the Lake Shore mine on the morning of June 19.

Smoke was noticed by the pumpman, E. McMurray, at 6.45 A.M. He entered the lunch-room and discovered that an electric heater had been left in operation. It had burned a hole in two 1-inch boards, and the fire had spread along the boards for a distance of 3 feet. He disconnected the heater and extinguished the fire with the fire-hose.

The heater had been left on when the night shift went off work at 3.00 A.M. All electric heaters in the mine have been removed and will not be permitted underground in future.

A small fire occurred on the 4,200-foot level of the Lake Shore mine some time between 3.00 P.M. and 7.00 P.M. on September 22.

The fire occurred in a box containing an automatic seismograph recording apparatus, which consists in part of a long paper chart. The chart was completely burned, and the box was charred in places. The shift coming on at 7.00 P.M. noticed smoke and drenched the box and contents with water.

This equipment is being changed to a metal box to prevent a continuance of this hazard.

McKenzie Red Lake Gold Mines, Limited

A small fire occurred in the steel-sharpening shop at the McKenzie Red Lake mine at 10.23 A.M., December 7.

A defective fuel-oil burner on the detachable-bit heating-furnace had been repaired by the machine shop crew, but leaked at the tail-piece coupling-nut when the furnace was lighted. The furnace tender attempted to tighten the coupling-nut, but in doing so broke the tail-piece; and the fuel oil, under a pressure of 100 pounds, took fire from the furnace, spraying the furnace and the walls of the building with burning oil. One fuel-oil shut-off valve is located behind the furnace and could not be reached on account of the burning oil. The other shut-off valve is located at the fuel-oil pressure tank, which is located some 50 feet away from the building but was not shut off in time to stop the frame building from taking fire. The automatic sprinklers went into action. The alarm bell and the mine whistle called out the mine fire brigade, which is under the direction of the chief electrician. He immediately cut off all power and light lines to the steel-shop and to the adjacent hoist and compressor building. The fire was brought under control at 10.40 A.M. The damage was confined to charred roof boards and roof beams.

Goldorel Mining Company, Limited

On August 22 the buildings housing the hoist and the Diesel-driven compressors and the mill building and contents at the Olive gold mine were completely destroyed by fire. The fire apparently started about 2 A.M. The two buildings burned simultaneously. The shaft-house, which is situated between them, was untouched by the fire.

The mill had been shut down for two days previous to August 22 for a major repair job, and no miners had been working underground after August 20. The compressors were operated periodically to supply air for the pump on the first level of the mine.

On the night of August 21, Johnson Brown, Diesel operator, and John Tolman had operated the plant and pumps and had shut them down at midnight.

About 2 A.M. on August 22, Russel McMillan, surface foreman, noticed a fire through the window of his room. He roused all the men in camp at once. The mill and hoist-room were both found to be completely on fire, and, as the source of power was cut off, nothing could be done to check the fire.

The hoist-room housed the mine hoist, which was air-driven, 2 Diesel-driven compressors, and a lathe and drill-press. There were two small fuel-oil storage-tanks in the building. The mill building contained a small jaw-crusher, ore bin, Hardinge ball mill, Denver jig, Akins classifier, and blanket tables. This unit had a capacity of some 25 tons daily. There was also a 35 h.p. Ruston Lincoln Diesel engine in the mill to supply power. The fuel oil for this unit was fed by gravity through a half-inch pipe line from one of the tanks in the hoist-room.

After the fire it was noted that the valve in the drain line from the fuel-tank in the hoist-room was open and that the valve on the line to the mill had been removed.

Sylvanite Gold Mines, Limited

A fire was made by J. Netscar, mucker, in the station of the 1,625-foot level of the Sylvanite gold mine, at noon on February 1.

Netscar, who had had five years' experience at other mines, was hired by Sylvanite Gold Mines, Limited, on January 7, 1942, as a mucker. On February 1, at about 11.50 A.M., Netscar and D. Crizan came to the station to eat lunch. Netscar made a fire of paper and powder-box boards between the rails of the east tracks opposite a horizontal steel rack on which he was sitting, about 15 feet from the shaft.

N. Bigelow and G. Snider, a stope crew, came to the station to eat lunch shortly after the fire was started. They warned Netscar of the hazard of smoke and gave him a shovel to put out the fire when they left about 12.20 P.M. The flames of the fire were from two to three feet high.

A miner, M. Marion, noticing a considerable amount of smoke in the 1,500-foot level station, telephoned C. Solie, foreman, who was eating his lunch on the 1,000-foot level. At this time B. Roy, an electrician, was holding the cage at the 1,000-foot level while he was checking the battery of a locomotive. Solie went in the cage to surface to get the cagetender, W. Beaton, who was eating his lunch. They returned to the 1,000-foot level, where Solie picked up Roy and C. Tonkin, the shift boss, and they went to the 1,500-foot level. There they found dense smoke limiting the visibility to 10 feet. They then went to the 1,625-foot level station, where they found Netscar and Crizan. Smoke could be smelled plainly, and the spot could be seen where the wood fire had burned. Charred pieces of powder boxes were scattered in a radius of 8 feet from this point, where they had been thrown when the fire was being extinguished.

Netscar and Crizan were taken to surface. Netscar admitted making the fire but claimed it was to warm him and his partner during lunch hour. Investigation revealed that the fire did not do any material damage.

A fire was discovered in the 1,250-foot level station of the main shaft of the Sylvanite gold mine at 8.00 A.M., on March 26.

When the shift was ready to go underground smoke was noticed in the shaft-house and, on investigation, a small, smouldering fire was found on a bench in the 1,250-foot station. Part of the 2- by 8-inch plank was charred, and there was some charring on the block on which the plank was resting.

The cagetender and his helper had hoisted muck from this level between 4.00 and 5.00 A.M., and a stop had been made there at 6.00 A.M. It is thought that the fire may have been caused by a cigarette butt.

Prosecutions

Rex vs. P. Denard

A charge was laid against Paul Denard, a helper, employed by Paymaster Consolidated Mines, Limited, since January 23, 1941, as follows:—

That Paul Denard did, in the 1,718 drift at Paymaster Consolidated Mines, Limited, in the township of Tisdale, on September 21, 1942, commit a careless act where explosives are stored, to wit, did smoke while sitting and leaning against an explosive storage box, contrary to the Ontario Mining Act, Section 160, subsection 53 (c).

Denard pleaded guilty before Magistrate Atkinson at South Porcupine on September 29, and a fine of \$10.00 and \$8.50 costs were imposed. The fine and costs were paid.

Rex vs. A. Hanske

A charge was laid against A. Hanske, miner, employed by Aunor Gold Mines, Limited, as follows:—

That A. Hanske on the 28th day of July, 1942, at the township of Deloro, in the district of Cochrane, while under the influence of intoxicating liquor was in the proximity of a working place on the surface of Aunor Mines, Limited, to wit: in the shaft-house of the said mine, contrary to the Mining Act of Ontario, Section 160, subsection 343.

Hanske arrived at the mine change-house in an intoxicated condition and, after being ordered by a mine foreman to go home, he went from the change-house into the shaft-house where he made a few remarks, which he emphasized by throwing his lunch pail down the cage compartment of the shaft.

Hanske settled out of court, pleading guilty to magistrate S. C. Platus in Timmins on August 11. He was fined \$25.00 and costs amounting to \$5.00

Rex vs. A. T. King

A charge was laid against A. T. King, a driller employed by the Uchi Gold Mines, Limited, as follows:—

That A. T. King of the hamlet of Uchi Lake in the district of Kenora (Patricia portion) on or about the 18th day of February, A. D. 1942, at the hamlet of Uchi Lake in the said district of Kenora (Patricia portion) did unlawfully before blasting on the 336 pillar, No. 2 shaft, Uchi Gold Mines, neglect to cause all entrances to the place where such blasting was to be done to be effectively guarded, contrary to the provisions of Section 160 (75a) of the Mining Act of Ontario.

The case has not been heard as it has been impossible to locate King since the charge was laid.

Rex vs. R. H. MacDonald

A charge was laid against R. H. MacDonald, cagetender's helper, employed by Pickle Crow Gold Mines, Limited, as follows:—

R. H. MacDonald of the hamlet of Pickle Crow in the district of Kenora (Patricia portion) on or about the 6th day of March, A.D. 1942, at the hamlet of Pickle Crow in the said district of Kenora (Patricia portion) did unlawfully travel in a cage operating in a main shaft of Pickle Crow Gold Mines, Limited, without having the doors of the said cage securely closed, contrary to the provisions of Section 160 (142a) of the Mining Act of Ontario.

The case was heard before Justice of the Peace H. M. Finlay at Pickle Crow on March 17, 1942. MacDonald pleaded guilty, and a fine of \$10.00 and \$3.25 costs were imposed. The fine and costs were paid.

Mine Rescue Stations

During the year normal activities were carried out at the three mine rescue stations at Timmins, Kirkland Lake, and Sudbury. Seventy-three fully trained rescue teams were maintained: 33 teams at Timmins, 24 teams at Kirkland Lake, and 16 teams at Sudbury.

Summary of Rope Tests, 1942

The following is a summary of the tests made in the Wire Rope Testing Laboratories of the Department of Mines during 1942:—

Tests for Ontario mines under Act.....	605
Special informative tests.....	111
Tests for wire-rope manufacturers.....	49
Tests for mines outside Ontario.....	71
Other tests.....	8
Total.....	844

Fatal Accidents

MINES

Aunor Gold Mines, Limited

William Green, widower, without children, aged 30, British, was instantly killed at 6.30 P.M., July 25, in No. 12-24 taking down back in No. 1,201 west drift of the 1,250-foot level of the Aunor gold mine. Green was hired on July 15, 1941, and for some time before the accident had been working as a mucking-machine operator.

The practice in taking down backs is to carry two breasts, the first breast being 7 feet high and the second, or top, breast 6 feet high. Drilling of the first breast and mucking with a mucking-machine is done on the night shift, and drilling of the second breast is done on the day shift from a staging. All blasting is done on afternoon shift.

The backs were being taken down from east to west and averaged 6 feet in width. The dip is 75° N.

The day shift of July 25 set up at the top, or second, breast, which was 31 feet back of the first breast, and drilled two holes. Milton Hornby, runner, and Alphonse Laframboise, helper, on the afternoon shift continued the drilling of the top breast. The staging, made of 2- by 8-inch planks, 10 feet long, on two sprags, extended to within 18 inches of the brow of the top breast and was 14 feet above the track. Hornby did some scaling of the back over the staging.

On coming on shift at 3.00 P.M., W. Green and S. Godin, his helper, went to the 1,375-foot level for the mucking-machine. They returned to the 1,250-foot level at 3.30 P.M. and commenced to muck under the east end of the staging at about 4.00 P.M. At the time of the accident the toe of the muck pile was at a point 11 feet west of the brow of the top breast, on which Hornby and Laframboise were drilling.

M. Gillis, shift boss, visited this working place shortly before mucking commenced. He was aware that Green and Godin intended mucking below the stag-

ing and below the breast which was being drilled. No scaling was done in his presence; Gillis was given to understand that Green and Hornby had scaled. No one had seen Green scaling the back west of the brow of the top breast at any time during the shift.

On returning from supper at 6.25 P.M., Hornby and Laframboise continued the drilling of the top breast; Green came in and started to fill a car. Some time later Hornby noticed a light on the track, shut off his machine and came down to find Green lying between the machine and the car partly on the left rail and partly in the ditch. He was dead. At that time Godin was switching empty cars and Laframboise was coming in after supper.

Dr. J. Hope examined Green on the 1,250-foot level, and the body was then taken to surface.

Examination of the scene of the accident showed that an irregular slab, 5 by 3 feet and varying in thickness from 2 to 6 inches, had fallen into the mucking-machine from the back. This piece, which had apparently come from a place near the hanging wall and within 7 feet of the brow of the top breast, struck Green against the side of the machine. Two smaller pieces, approximately $2\frac{1}{2}$ by $1\frac{1}{2}$ feet and $2\frac{1}{2}$ by 2 feet, were lying on the drift floor against the left wall. There was still a good deal of loose ground on the back, particularly at the brow of the top breast. There was loose ground on the hanging wall over the staging and on the breast being drilled. No indications of recent scaling were noted.

Green suffered severe head injuries, and the jugular vein was severed. Death was ascribed to shock and haemorrhage.

An inquest was held before Coroner H. L. Minthorn, M.D., in the Timmins Town Hall on August 14 at 4.00 P.M. The jury returned the following verdict:—

We, the jury, find that William Green met an accidental death at the Aunor Gold Mines on July 25, 1942. While we do not attach blame to anyone in particular, we do strongly recommend that the mining rule, which stipulates that workmen shall not be employed in a location where men are working overhead unless such workmen are adequately protected, shall be strictly enforced.

Buffalo Ankerite Gold Mines, Limited

Roy Nadon, British, aged 24, married, with one child, employed as helper, died from mechanical suffocation about 11.45 P.M. on February 26, when he was buried in a run of sand from the fill raise out of No. 1,256 stope on the 1,200-foot level of the Buffalo Ankerite mine.

The 68-foot section of No. 1,256 stope, which lies between the fill raise and No. 2 combination mill hole and manway, was being filled. A scraper hoist had been set up above the mill hole, and sand was being scraped from the bottom of the fill raise. The fill raise starts at the back of the stope, which is about 75 feet above the 1,250-foot level. It runs at right angles to the strike of the vein up to No. 1,055 drift on the 1,050-foot level, a slope distance of about 164 feet. The inclination is 50 degrees except for the last 35 feet, which is 35 degrees. No. 1,055 drift was being driven and had reached a point 160 feet west of the dump at the fill raise.

At the time the accident occurred, Anton Gyorgy, scraper operator, and Nadon, his helper, were scraping sand from the foot of the fill raise towards the mill hole to a point about 37 feet west of the raise. The sand scraper became upset, and Nadon went over to it to right it. While he was doing this a run of sand and water gushed out of the raise. Nadon ran in front of the flow along the hanging wall, but was caught and buried. Gyorgy saw Nadon disappear in a gully 3 feet deep cut by the flow of sand and water along the wall. Sand flowed over as far as the mill-hole and raised the level of the fill about 10 feet. As it was thought that Nadon was buried in the section near the mill hole, holes

were cut in the lining and the sand pulled out through it. After 120 tons had been pulled Nadon's body was uncovered at a much higher elevation than was expected. He was buried under 3 feet of sand about 4 feet west of the scraper, which had been pushed about 30 feet west of the fill raise and covered with 5 feet of sand. The body was recovered at about 6.00 A.M.

The wet condition of the sand in the raise at this time was due to a break in the water-line in No. 1,055 drift directly opposite the raise. Water from this break washed out a channel under the track and ran directly into the raise. The pipe line was probably broken by the train crew dumping cars early in the shift, when 100 tons of sand was dumped into the raise. The line was repaired about two hours after the break occurred, when workmen noticed that the sand was wetter than usual and investigated the cause.

The shift boss in charge of this stope had not been in the stope previous to the accident. He had passed by the stope and, hearing the scraper operating, had concluded that everything was all right. He intended to visit it later in the shift, after he had completed the rest of his area.

An inquest was held before Coroner Frank Evans at 2.00 P.M. on March 4 at South Porcupine. The jury's verdict was:—

We find that the deceased, Roy Nadon, came to his death accidentally at the Buffalo Ankerite Gold Mines, Limited, in the township of Deloro, about 11.45 P.M. on Friday, February 26, 1942, by being buried in wet sand and gravel. We recommend that water pipes be put in back of drift around tops of raises, where sand is dumped.

Frank Falica, Jugo-Slav, aged 39, married, with a wife and three children in Jugoslavia, employed as a miner at the Buffalo Ankerite mine, received injuries at 12.15 P.M. on April 28, which caused his death on May 7. Falica was scaling when a piece of loose rock fell, breaking the staging on which he was working in No. 1,702 west slice-and-fill stope on the 1,700-foot level and causing him to fall 15 feet to the stope floor.

No. 1,702 west stope is a small section of a large stope known as No. 1,702-03 west stope. No. 4 mill hole and manway is located at the west end of a thin pillar, which makes the division in the stope. No. 1,702 west section is from 5 to 7 feet in width. One slice had been filled in this part of the stope making the floor here 28 feet above the level track. The back of this part of the stope was 20 feet above the floor. No. 4 mill hole was about to be raised.

On the morning of April 28, A. Barabas, shift boss, sounded the back around the section over the mill hole with a scaling bar, working from a ladder. He found that some of the back was loose and instructed Falica and his helper, E. Jarvi, to scale it down. Falica and Jarvi put in two spruce sprags, 5 inches in diameter and 5½ feet in length, 15 feet above the floor. Both sprags were wedged in natural hitches, and two 11-foot planks were placed on them.

Falica had been scaling the back from the centre of the stage only a few minutes when a piece weighing about 100 pounds fell squarely on the west sprag and broke it close to the centre. The break was clean, running across the grain through sound-looking wood.

Jarvi was on the stope floor at the time, and he called other workmen in the stope. One man was sent to get a stretcher and to call the cage. Before the stretcher arrived Falica insisted on getting out of the stope by himself. He was assisted down the stope ladders and then placed on a timber truck and pushed to the No. 6 winze. Here he was met by men with the stretcher but was not put in it until he reached the winze collar at the 1,000-foot level. Here he was met by a foreman, who insisted that Falica be placed in the stretcher.

An X-ray showed six fractured ribs, but a post-mortem examination showed other injuries. The pathologist who made the autopsy gave the cause of death as "multiple injuries due to external violence such as a fall upon a hard object, producing fractures of six ribs, left side, with perforation of and haemorrhage into left pleural cavity; extensive laceration of spleen with intra-abdominal haemorrhage; crushing injury of tail of pancreas with fat necrosis of latter and partial necrosis of left adrenal gland; slight laceration of kidney, paralytic ileus of large and small intestines and terminal oedema of lungs."

An inquest was held by Coroner Frank Evans at South Porcupine at 4.00 P.M. on May 27. The jury returned the following verdict:—

We, your jury, find that deceased died in Porcupine General Hospital at 11.20 A.M., May 7, from multiple injuries received at 12.15 P.M., April 28, 1942, while working in 1,703 west slice-and-fill stope, No. 2 section of the Buffalo Ankerite mine in the township of Deloro, death being accidental.

Russel Clemis, a scraper operator, aged 39, British, married, with no children, was fatally injured at 7.45 P.M. on August 4 in No. 1,489 north stope of the Buffalo Ankerite gold mine. Death occurred at 9.45 P.M. of the same day in the Porcupine General Hospital. He had been employed underground at the Buffalo Ankerite mine since June, 1934.

No. 1,489 north stope is worked by the flat-back, cut-and-fill method; it is 220 feet long and averages 14 feet in width. The stope was silled at an average distance of 75 feet below the 1,250-foot level, and at the time of the accident the back was 54 feet below the level. A raise at the north end is used as a manway. Another raise, at the centre of the stope, is used for passing fill into the stope. All muck is scraped into two mill holes below the raise. An east-west stope with an average width of 8 feet extends east 40 feet from the east mill hole. The practice is to carry two cuts across No. 1,489 north stope before filling; the first is a light cut of 4 or 5 feet, with a second heavier cut of 9 or 10 feet.

At the time of the accident the first cut had been completed from the raise to the north end of the stope and one breast of the second cut had been taken. The first cut had been advanced 38 feet south from the raise and the first breast of the second cut drilled off.

The night shift of August 4 consisted of Russel Clemis; Peter Jelenich, scraper helper; Steve Komer, machine man; and George Parlomoch, machine helper.

Parlomoch and Komer washed down and were scaling south from the raise to the breast of the first cut, which had been blasted on day shift and on which they were going to drill. Clemis and Jelenich were getting ready to scrape from the south side.

At the time of the accident Jelenich was standing on the north side of the mill hole at the north wall. Clemis was on the west side of the scraper hoe and on the muck pile sloping to the south side of the same mill hole. He was holding on to the scraper cable and in this position was in line with the face of the drilled-off breast of the second cut. This face was about 12 feet high. The brow between the two lifts was 10 feet above the muck at Clemis' position. The stope is 25 feet wide at this point.

Komer was scaling the brow near the east wall. Parlomoch was scaling the back farther south.

A block of irregular shape, with maximum dimensions of 8 by 5 by 1½ feet, came off the breast and came to rest on the south side of the two chutes and

between them. Clemis was struck a glancing blow but retained his hold on the scraper cable.

He was moved at once by Komer, Parlomoch, and Jelenich to a place of safety on the muck about 15 feet farther south. He remained there till Dr. McKittrick arrived in the stope. He was then removed to the Porcupine General Hospital.

He suffered the following injuries: bruise in front of scalp, fractured ribs left side, fractured left humerus, fractured left tibia and fibula, abrasion of back, and possible internal injuries. Death was ascribed to shock.

An inquest was held before Coroner F. Evans in the South Porcupine Municipal Hall at 8.00 P.M., August 14. The jury returned the following verdict:—

We, the jury, find that Russel Clemis came to his death in the Porcupine General Hospital about 9.45 P.M. on August 4 as result of injuries received about 7.50 P.M., August 4, 1942, from a fall of loose in 1,489 north stope of Buffalo Ankerite mine, cause of death being accidental.

Chesterville Larder Lake Gold Mining Company, Limited

Fernand Trudeau, single, aged 20, British, was instantly killed at 10.15 A.M., July 1, at the Chesterville Larder Lake mine. He fell through the loading pocket in the 5th level station into the shaft. His body was recovered on the bulkhead 35 feet below the 9th level bulkhead, a distance of 535 feet below the 5th level.

Trudeau was hired on May 18, 1942, as a mucker and trammer. He had had previous experience as an underground diamond-driller.

The shaft has three compartments with the long axis in a north-south direction. Hoisting conveyances are two skip-cage assemblies. Two-ton Hudson-type cars are dumped directly into the skips through standard brow pockets. The chute lips are 4 feet 9 inches below the level, and the opening on the station floor is 5 feet north and south and 2 feet 9 inches east and west. A counter-weighted 5/16-inch steel door covers each chute opening except when dumping is in progress. To hold the doors open, the north door is latched at its north end and the south door at its south end. Shaft signals are located on their respective sides of the station post between the two hoisting compartments.

On July 1 only a tramping shift was working underground, under the supervision of R. Webber, trammer boss. On the 5th level the crew consisted of W. Westbrook, mucking-machine operator, and D. Lessard and F. Trudeau, trammers.

At the time of the accident a car of muck had just been dumped through the north compartment pocket into the skip. Levi Payne, caretender's helper, was standing at the north end of the open pocket-door. Just previously he had reached across the opening, holding on to the shaft gate, to signal the skip up; on the back movement he scraped his foot across the plate on which the pocket door is hinged to wipe off the muck which accumulates there and which prevents the door closing completely. John Stos, caretender, and Trudeau were pushing the unloaded car northward away from the shaft. Stos was about opposite the centre line of the pocket. He was pushing on the southwest corner of the car with his shoulder and facing away from the shaft, and Trudeau was pushing on the southeast corner. D. Lessard, who was standing at the northeast corner of an empty car immediately to the north, saw the two men pushing the car and also saw Trudeau as he was falling from view in the pocket. The skip had then been hoisted. Stos saw Trudeau when he was clear of the chute and falling in the shaft.

Trudeau's body was located in the south compartment on the bulkhead below the 9th level. Life was extinct. The body was brought to surface.

During an examination of the shaft the following articles were found: a rubber boot on the north end-plate eleven sets below the 5th level; one sock on the east wall-plate of the north compartment two sets below the 6th level; one sock on the corresponding wall-plate two sets below that; a jacket on the water ring above the 7th level, on the west wall-plate in the north compartment. The path of the fall of the body could be traced down the northeast corner of the north compartment to the 8th level; below that the path could not be traced.

Trudeau sustained the following injuries: multiple compound fractures of the right arm, both legs, and hips; complete laceration of abdominal walls and intestines; and fracture of the neck. Death was instantaneous and was ascribed to fracture of the neck and multiple injuries.

An inquest was held in the Larder Lake Municipal Hall on July 2 at 3.00 P.M. before Coroner J. McCullough, M.D. The jury returned the following verdict:—

The deceased came to his death at the Chesterville mine in the township of McGarry on Wednesday, July 1, 1942, at about 10.15 P.M., as a result of accidentally falling down the shaft from the 5th level to the 9th level bulkhead. We find no blame can be attached to the Chesterville mine or other parties concerned. We do recommend, if possible, to have the loading-pocket door latch and the bell pull cord on the same side.

Cline Lake Gold Mines, Limited

George A. Middleton, British, aged 24, widower, employed as a trammer at the Cline mine, was fatally injured about 3.25 P.M. on April 1, when hit on the head by a 5-foot drill steel at the foot of No. 2 manway to No. 5B-4 stope on the 5th level. He sustained a fractured skull, with severe damage to the brain, and died in the Chapeau hospital about 7 A.M., on April 2.

No. 2 manway, which is nearly vertical, is on the south side of No. 5B-4 drift, just west of No. 54.6 box-hole chute, and is equipped with a totally enclosed steel-chute, 4 by 8 inches inside. The lower end of the steel-chute is about 10 feet above the drift floor. Drill steel dropped down the steel-chute hits the drift floor about 6 to 15 inches south of the track. The box-hole chute is directly in front of the north end of a short crosscut giving access to a parallel drift.

Middleton and his partner, H. Cote, were pulling No. 54.6 chute on the afternoon of April 1. About 3.24 P.M., Cote left Middleton standing at the west end of a loaded car, located underneath the chute, and walked around the east side of the chute into the crosscut to return a pick to C. Warnock, who was working in the parallel drift. He met Warnock just as he entered the crosscut and was standing there with him when they saw Middleton at the foot of the manway. At that moment, a drill steel fell out of the steel-chute and hit Middleton on the head. They did not hear any warning given by the men in the stope.

The stope crew consisted of a driller, Peter Bay, and his helper, A. Lipiec, who were working on a breast about 120 feet east of the manway. As they were behind schedule about 2.45 P.M., Mike Behun was instructed to deliver the necessary powder and assist them to complete their work. When Behun arrived with the powder, Bay asked him to help them carry the dull steel over to the manway, which had been cribbed up to a height of 5 feet above the muck pile. After this was done, Behun climbed up on top of the manway, 90 feet above the level, and Bay handed him a 5-foot steel. Behun shouted down the manway and rapped on the steel-chute, without receiving a reply from below, then dropped the steel down the chute. They heard someone shouting after a second steel had been dropped and went down to investigate.

An inquest was held by Coroner J. B. Symington, M.D., at Lochalsh, on May 8. The jury returned the following verdict:—

Geo. Middleton was fatally injured by being hit on the head with a drill steel accidentally on April 1, 1942, at 3.25 p.m., at Cline Lake Gold Mines, Limited, while working on the fifth level. He died April 2, 1942, at 7 a.m., in the Lady Minto Hospital at Chapleau, Ont. Accidental death with no blame attached to anyone.

Cochenour Willans Gold Mines, Limited

Douglas Chapman Proudlock, British, married, aged 27, employed for eighteen months as a solution and amalgamation man at the Cochenour Willans gold mine, was poisoned by cyanide about 8.45 a.m. on June 9, when he swallowed part of the contents of the amalgamation barrel which were forced out by gas pressure when he removed the plug from the amalgamation barrel. He died at 9.33 a.m. about 45 minutes after the accident occurred.

The following is the procedure at the Cochenour Willans mill for amalgamation. A concentrate containing pyrite, arsenopyrite, and free gold is collected in a Denver mineral jig located between the ball mill discharge and the classifier. This concentrate is first ground for from six to eight hours in a grinding mill in the presence of a sodium cyanide solution. After the concentrates are ground, about 500 pounds are discharged into an amalgamation barrel, which is 28 inches in diameter and 30 inches long, where 15 pounds of mercury is added along with 5 pounds of sodium cyanide, 2 pounds of lime, and 2 pounds of lead acetate. It has been the practice for the past fourteen months when rusty gold is encountered to add 5 pounds of muriatic acid to the contents of the amalgamation barrel. The barrel is then revolved for about 30 minutes thus cleaning the oxidized gold so that it becomes amenable to amalgamation. At times there is a good deal of pressure built up in the amalgamation barrel owing to the presence of carbonates in the concentrates and the muriatic acid.

It was evident after investigating the scene of the accident that Proudlock had stopped the amalgamation barrel with the centre line of the drain plug 51 degrees from the vertical position. He had then loosened the plug with a wrench, laid the wrench on top of the barrel to the right of the plug, and finished removing the plug with his fingers. In this position Proudlock's face would be about 15 inches from and in line with the plug. When the plug came free, the gas pressure caused by the action of the muriatic acid in the amalgamation barrel forced part of the contents of the barrel towards his face. The shock must have made him gasp and swallow a quantity of the concentrates. Proudlock made his way to the sink at the solution desk, a distance of 95 feet, which includes a flight of stairs, where the mill foreman, A. Johnson, noticing his distressed condition, rushed to his aid. Proudlock asked for the doctor and immediately collapsed, becoming unconscious. The doctor was summoned immediately. Before he arrived a cyanide antidote, which is kept in the mill, was prepared, but owing to Proudlock's unconscious condition the antidote could not be administered. The doctor arrived in 9 minutes. Because of the tetanic effects of the cyanide a nasal tube three-sixteenths of an inch in diameter had to be used. This tube was inserted in a nostril and into the stomach, from which about 350 cubic centimetres of concentrate was drawn off. Antidote and a respiratory stimulant in the form of coramine were administered to no avail. Proudlock died at 9.33 a.m.

Since the accident a valve has been installed on the amalgamation barrel and may be connected through a coupling and a hose above the barrel to the outside of the mill building. This is to allow discharge of any gas formed in the barrel before the plug is removed.

An inquest was held by Coroner D. J. Mason, M.D., at the staff-house of

the Cochenour Willans mine on June 11 at 10.30 A.M. The coroner gave his verdict as follows:—

That Douglas Chapman Proudlock employed as solution and amalgamation man at Cochenour Willans Gold Mines, Patricia district, came to his death on the morning of Tuesday, June 9, 1942, at the hour of 9.33 A.M. by cyanide poisoning, death occurring while the deceased was performing his duties at the aforesaid Cochenour Gold Mines. From the evidence submitted it would appear that death was due to the deceased accidentally swallowing the poisonous cyanide when he removed the plug of the amalgamation barrel when said plug was not in the uppermost position of the barrel, which would allow the gas to escape without forcing part of the contents of the barrel towards his face.

Delnite Mines, Limited

Wm. Woods, British, aged 45, single, and Josephat Major, British, aged 36, married, employed at the Delnite mine as timbermen, were both instantly killed in No. 1,118-1 shrinkage stope between 11.00 A.M. and 1.45 P.M. on May 4. They were crushed by about 10 tons of loose rock, which fell from the back of the stope. The men were found by D. Waller, shift boss, about 1.45 P.M., when he visited the stope for the second time during the shift, which commenced at 8.00 A.M. Workmen on the 1,000-foot level heard the men and saw their lights at 11.00 A.M. Their lunches, ordinarily eaten at 12 noon or earlier, had not been touched, indicating that they were more than likely killed before 12 noon. Both the deceased workmen were experienced miners. Woods had worked nine years at the Lake Shore mine before being employed at the Delnite nine months previous to the accident. Major had been employed at the Hollinger mine for eight years prior to going to the Delnite in October, 1941.

No. 1,118-1 shrinkage stope, on the 1,125-foot level, was started on 180 feet of ore. The west face was carried up vertically to within 15 feet of the 1,000-foot level. The stope became shorter as it was carried up, and when the east end was mined through to the 1,000-foot level the length was reduced to 120 feet.

On April 19, when the last blasting was done in the stope, 82 feet of sill had been removed, leaving only 38 feet of sill at the west end. The sill ranged in depth from 11 feet at the east end to 15 feet at the west end.

On April 13, mining was stopped and stulls were installed to carry track over the mined-out area. At this time it was decided to leave the remaining portion of the sill, as the hanging wall was bad and it was evident that there would be much dilution of ore if the sill was removed. This was a stilled manway, the top of which was 18 feet below the pillar and covered with muck at the west face.

On May 1, Woods and another workman were sent to the stope to work. It had been decided to scale and timber the west end, raise the stilled manway, and drive a raise through the west end of the pillar to give a permanent travel-way through the stope. Woods and his partner scaled all day. On May 2, Woods and a different partner, started to timber the 57-degree hanging wall with stulls. Three stulls were put in within 11 feet of the west face. There was no work done in the stope on Sunday, May 3. On May 4, Woods, with Major as a partner, was sent to the stope to continue timbering. Captain R. Campbell and Shift Boss G. Waller visited the stope and left it about 9.30 A.M. At this time they considered the stope back sound and safe to continue timbering. No one else went into the stope again until Waller returned at 1.45 P.M.

Waller found both Major and Woods dead beneath a slab of ore, averaging about $1\frac{1}{2}$ feet in thickness, 11 feet in length, and 7 feet in width, which had fallen from the back. Major was pinned under the centre of the slab, and Woods was at the edge of the slab. The latter was easily removed, but it took about an hour and three-quarters to release Major.

There was no change in the condition of the hanging wall after the accident. The workmen had completed the installation of the fourth stull at a point 16 feet from the west face and evidently had been preparing for another stull about 6 feet farther east. Woods evidently had been scaling, as a scale bar was found across his leg; and Major was probably using a pick, as a broken one was found beneath him. The chests of both workmen were crushed, and death was due to asphyxia.

An inquest was held by Coroner H. E. Montgomery in Timmins on May 7 at 2.00 P.M. The jury's verdict was as follows:—

We, the jury, find that William Woods and Josephat Major on May 4, 1942, met with this accident from a fall of rock, to which we attach no blame to anybody; therefore we the jury bring in a verdict of accidental deaths.

Hallnor Mines, Limited

Alec Dupré, aged 26, British, single, employed as a mucking-machine operator, was crushed to death between a large slab of rock and his mucking-machine at 8.00 P.M., April 8, in No. 606 east back stope on the 600-foot level of the Hallnor mine.

Approximately 500 feet of back had been taken down in No. 606 east drift. At the time of this accident the drift sets were complete from the west end to within 12 feet of the toe of the muck pile. The average width of the stope and drift at this point was about 9 feet. The height to the back was 14 feet 6 inches. A slash had been cut on the south side of the drift to switch cars, giving the drift a maximum width of 15 feet in the vicinity of the accident. The dip of the bedding of the sedimentary slate formation at this point is about 5° N., a reverse dip. The north wall of the drift is the footwall of the vein. Timbermen had worked in this back stope on the two preceding days, when no mucking was done, and had brought the sets right to the toe of the muck pile. At 3.00 P.M. on April 8 the timbermen who had worked in No. 606 east back stope all day blasted five timber-hitch pop-holes on the south wall to make room for another set of timber. There was a large slab of loose slate on the north wall supported by a sprag. This sprag was blown out by the blast.

On the afternoon shift, commencing at 3.00 P.M., Dupré and two muckers, P. Trembley and W. Clair, were sent to muck in this back stope. The day shift timbermen told Dupré about the sprag, but Dupré did not want it replaced. The trammers cleaned up the track under the timber for about an hour, while Dupré scaled. After this Dupré ran the mucking-machine and they trammed out the loaded 1.2-ton cars. The twentieth car was being loaded when the loose slab of slate, measuring about 11½ feet long, about 10 feet high, and about 2 feet thick, slid out of the footwall down a south-dipping joint plane, about 2½ feet above the drift floor. The west end of the slab terminated at a vertical joint plane striking northeast. The east end of the slab was relatively thin and remained partially buried in the muck pile. The upper part of the slab broke off. The main piece, which weighed about 3 tons and was still in a more or less vertical position, pinned Dupré, as he stood on the working-platform of the Eimco mucking-machine, against the side of the machine. Death, caused by crushing and asphyxia, was practically instantaneous.

Dupré's release was effected at 9.20 P.M., by pushing the slab of rock back a few inches with a 12-foot machine bar, the foot of which was placed in the slash in the hanging wall.

An inquest was held before Coroner Frank Evans of South Porcupine in Porcupine at 2.00 P.M. on April 29. The jury's verdict was as follows:—

We, the jury, find that Alec Dupré came to his death at the Hallnor Gold Mines in the township of Whitney on Wednesday, April 8, at 8.15 P.M., as the result of a fall of loose rock, death being from asphyxia caused by being crushed between a mucking-machine and the loose, on the sixth level, 606 east drift. We consider death accidental.

Hollinger Consolidated Gold Mines, Limited

John Martin Orel, British subject, of Russian parentage, single, aged 28, employed as a machine runner at the Hollinger mine, was asphyxiated about 11.50 A.M., January 23, when he was buried in a run of sand from the west raise in No. 177 E and W 20 slice-and-fill stope on the 1,400-foot level.

No. 177 E and W 20 is a flat-back cut-and-fill stope. Drilling is done by stoper drill, and the broken ore is moved to the mill holes by means of a scraper attached to an electric tugger hoist. The sand fill is moved from the bottom of 50-degree, inclined fill raises, one at each end of the stope, to the desired position in the stope by means of the tugger hoist. No chute is necessary at the foot of the fill raises. At the time of the accident the back of the stope was from 52 feet to 64 feet above the 1,400-foot level. A shift crew of two men perform all the operations in the stope.

On January 23, the day-shift crew consisted of Orel and his helper, Sam Porrier. When the accident occurred, Porrier was preparing to drill on a new breast near the east fill raise. Alan McKenzie, a sampler, was cutting a sample near Porrier. Orel had been scraping sand from the pile at the foot of the west fill raise to a point in the stope about half way between the west raise and the tugger hoist, which was set up a short distance west of the east fill raise. The tail rope pulley was fastened at a point under the centre of the west fill raise. The raise had been filled with sand during the previous shift. This raise runs west at an inclination of 50 degrees for a distance of 56 feet. At 46 feet it forks back to the east at 50 degrees for a distance of 68 feet through to the 1,250-foot level. There was a pile of sand at the foot of the raise up to the back on the footwall side of the raise, blocking off the west end of the stope. The raise was empty from the brow up to the knuckle, where the sand was hung up. When M. Fournier, shift boss, visited the stope at about 11.45 A.M., he instructed Orel to blast down the sand, using two sticks of powder and a blasting stick. After Fournier left the stope Orel got the powder and returned to the raise, passing Porrier and McKenzie while doing so. A short time after Orel returned to the raise Porrier and McKenzie heard him shout. They thought that this was the warning for the blast, but when they looked towards the raise they could not see Orel's light. They knew that something was wrong and ran to the raise. They found that the sand had come down, but could see no sign of Orel. They obtained help from neighbouring working places and started to dig in the pile from both sides. The scraper was not operated because the cable would cut anything in the pile to pieces. Orel's head and shoulders were uncovered in about 45 minutes. His neck was against the cable. Dr. Garret arrived in the stope at about 12.45 A.M. and after examination pronounced Orel dead. Death was due to asphyxiation. Orel's body was recovered at about 1.40 P.M. It was facing away from the raise about 3 feet east of the centre, between the tail pulley and the scraper.

Later when the sand was scraped away the two sticks of powder and a 3-foot fuse were found. The fuse had not been cut for lighting. Near by were found several pieces of loading-stick, which totalled 69 inches in length. It is likely that Orel intended only to put the powder at the brow of the raise to shake the sand down. It is not likely that he climbed up into the raise, as it would have been difficult to do so. He was apparently placing the powder at the brow when the sand came down and buried him.

An inquest was held before Coroner H. E. Montgomery at Timmins at 2.00 P.M., January 30. The jury returned the following verdict:—

We, the jury, find that John Martin Orel came to his death on January 23, 1942, at Hollinger Consolidated Gold Mines, Timmins, Ont., by a fall of sand. We find that this was accidental, with no blame attached to anyone.

Alcide Lehoux, British, aged 37, married, employed on the mill mechanical gang as a first repair helper, received injuries in the Hollinger mill grinding-plant about 9.00 A.M., September 15, which resulted in his death in St. Mary's Hospital in Timmins approximately an hour and a half later. Lehoux had been employed at the Hollinger mill for sixteen years.

On May 11 Lehoux quit work to undergo a hernia operation. He returned to work on August 10, at which time he was placed on light-duty work, and he was instructed to do no climbing. His special work was to clean up idle machinery and paint it, or wipe it with coal oil. Although he worked alone he came under the supervision of Jos. Evarard, the repair boss.

At 7.00 A.M. on September 15, Evarard and six repairmen commenced work on the No. 3 ball mill in the grinding-plant. Their work in the mill necessitated the removal of the front head of the mill and of balls from that end of the mill. A. Wright, an electrician, was also starting some work on the 350 h.p. motor operating the ball mill, which necessitated the removal of the motor. Evarard, who was personally supervising the work, had asked Wright not to touch the motor until they had removed the balls, which they were going to run into cars by rotating the mill after removing the head and screen in that end of the mill. Wright was waiting for this work to be completed when the accident occurred. He was standing on an elevated floor in front of the mill, and from his position he saw the frame of the jockey-pulley at the rear end of the mill rise up. When he saw this he ran to the back of the mill and he was the first to see Lehoux caught under the pulley.

Hollinger mill foremen and leaders of various crews have definite rules for the protection of their men, which they must follow when working on machinery. These rules have been posted, and the workmen are familiar with them. The rules pertaining to the closing-down of machinery for repairs and starting it again are as follows:—

Before you start work or inspection about a machine or in any place where a machine may travel SHUT IT DOWN IN THE USUAL MANNER AND LOCK the place where the power to the motor is controlled.

Every man working alone, or every leader of two or more men working together, MUST USE A SAFETY LOCK. There must be as many locks hung on as there are different groups of men on the job.

No man or crew shall be allowed to work under the protection of a safety lock placed by another crew, even when given permission to do so by that crew.

MAKE SURE THAT YOUR CREW IS SAFE BEFORE TAKING OFF YOUR SAFETY LOCK.

When you have finished your work or inspection and all of your crew are in safety, take off your safety lock. The same man who put on the lock must be the one to take it off.

Should it become necessary to run a machine and a safety lock prevents its movement, the man who hung on the lock must be found and asked to place his men in safety and to take off the lock. When the man who hung on the lock cannot be found, tell your boss about it. He will assume all further responsibility.

In accordance with these rules Evarard had locked the switches controlling the No. 2 ball mill when they commenced work. These switches were located on a post at the right side of the ball mill about a foot from the southwest corner of the rear end of the mill. About nine o'clock the workmen wanted the mill rotated three-eighths of a turn. Evarard saw that his mechanics were clear and took his lock off the switches. He then watched A. Loubert, who signalled from

the front right corner of the mill, relaying a signal from another workman named Plouffe, who was watching the balls and who was out of sight of Evarard. Evarard touched the "jogging switch," an electric switch which only makes contact when held closed, and the mill moved about one foot. As he did this he heard a groan and withdrew pressure from the switch, which automatically cut out. The movement of the mill at this time was not sufficient to move the balls in the mill, and weight of the balls in the bottom brought the mill back to its original position.

Lehoux was found on top of the 30- by 25-inch jockey pulley, which rides the 30-inch belt driving the ball mill, with the whole of his left arm drawn down between the belt and pulley. This pulley and the heavy frame hinged to the floor put a pressure of 1,800 pounds on the belt. Lehoux had been caught in this position when the mill reversed the direction of the belt as it swung back. In other words, he was caught in the back lash.

The jockey pulley rides the slack side of the belt, midway between the motor and mill drive pulleys. The total length of the belt is $32\frac{1}{2}$ feet, and its width is 30 inches. The tension side of the belt runs in a horizontal position 2 feet above the floor. The jockey pulley weighs the slack side of the belt down to within one foot of the tension side. The west face of the jockey pulley and the east face of the 26-inch motor pulley are almost directly behind the centre of the mill. The space between the three pulleys and the rear end of the mill is about $2\frac{1}{2}$ feet.

When R. Richards, operating shift boss in the grinding plant, passed the No. 2 ball mill on two different occasions, he saw Lehoux. On the last of these occasions Lehoux was on the foundation of the 84-inch drive pulley of the mill. One of Evarard's men also saw him, probably a few minutes later, at which time he was on the frame of the jockey pulley. Evarard swore that he did not see him around the No. 2 mill at any time on the 15th. He did not give Lehoux any instructions on this date but related how Lehoux had gone to him a few days prior to the accident and asked him to lock a classifier on which he wanted to work. At this time Evarard fixed a staging for the man to work from and again repeated instructions to him to do no climbing.

From findings after the accident it is evident that Lehoux climbed up on the frame of the jockey pulley, the top of which is 5 or 6 feet above the floor. Standing on the frame and on the jockey pulley he had been chipping scale from a 6-inch channel iron across the mill-feed box. This had been given a coating of coal oil. His oil can was found on top of the frame of the jockey pulley. In this working position he was hidden from the view of a man walking from the front of the mill to the starting switch, and it is not surprising that he was not noticed by Evarard, who had to watch for signals from the front end of the mill.

Lehoux was removed by lifting the jockey pulley with the grinding-plant crane. This took only a few minutes. Lehoux was suffering from severe shock when removed and was unable to talk. He was unconscious when he reached St. Mary's Hospital. He was treated for shock and given preparatory treatments for blood transfusions but died from shock before this was completed. His injuries consisted of bruising of both arms, fracture of the pelvis, a severe 5-inch laceration of the perineum and probable internal abdominal injuries.

An inquest was held before Coroner H. L. Minthorn, M.D., in Timmins on September 24 at 4.00 p.m. The jury returned the following verdict:—

We, the jury, find that Alcide Lehoux came to his death from injuries received at Hollinger mill September 15, 1942, at around 9 A.M. and was removed to St. Mary's Hospital, where he died about 10.30 A.M. We, the jury, find death was accidental and no blame attached to anyone.

Angus Beaton, British, aged 40, married, with one child, employed as a timberman, was instantly killed when he fell from a ladder in the No. 1 shaft of the Ross mine, in Hislop township, at 11.50 A.M., September 7. Beaton had worked at the Ross mine since September 19, 1940, prior to which he had worked for eleven years at the Teck-Hughes mine.

The No. 1 shaft at the Ross mine was originally sunk from surface to a depth of 499 feet. The last level in this section was at 450 feet. A winze was later completed from the 450-foot level to a depth of 929 feet, with levels at 600, 750, and 900 feet. The No. 1 shaft was then raised from these levels to the 450-foot level. The last of the rock pillar between the two portions was blasted on September 4, at which time the hoisting of ore was suspended. The timber between the old and the new portions of the shaft was being installed when the accident occurred.

The No. 1 shaft consists of three main compartments. The west, or skip, compartment and the centre, or cage, compartment are both $5\frac{1}{2}$ by $8\frac{1}{2}$ feet inside the 10- by 10-inch shaft timber and the 8- by 10-inch dividers. The east compartment is, for the time being, subdivided into a muck compartment, 4 feet 8 inches by 4 feet, and a manway compartment, 4 by 4 feet.

At the time of the accident, there were 15 sets of timber above the 600-foot level station. On the last of these sets there was a bulkhead over the west and centre compartments and a cribbed mill hole and manway 12 feet high over the east compartment through the broken muck. On September 6, the third, fourth, and fifth sets below the 450-foot level were installed. On September 7, Beaton, Raoul Gadoury, Wm. Yrjola, and Chas. Cousineau were removing cribbing and mucking into the mill hole. Immediately prior to eating their lunch the men had been removing cribbing and had taken all the covering off both the mill hole and the manway. These were left open when the men went to the surface for lunch.

The men started to return to the shaft about 11.50 A.M. Gadoury was the first one to go down the manway from the 450-foot level. He was followed by Beaton. Yrjola had just entered the manway, and Cousineau was on the 450-foot station, when Beaton fell. The travel-way consisted of two ladders with landings on the second and fourth sets below the 450-foot level. There was no landing in the manway compartment of the fifth, or lowest, set. The centre compartment was covered with 3-inch planks, and on this flooring the shaft crew had piled other planks, several ladders, working-gear, and timber. A 10- by 10-inch shaft post, 5 feet 3 inches long, was lying next to the east compartment. Lying tight against it was a ladder, rung side up. A ladder for travelling had been placed against the north wall-plate, standing at 60 degrees with the bottom resting on the 10- by 10-inch post and the west leg of the ladder on the plank under the loose ladder beside the post. The rungs of this loose ladder would prevent the upright ladder from slipping to the south.

As Gadoury reached the landing in the fourth set and was about to pass down to the fifth set, he remarked that the ladder did not look very safe. Beaton told him that it was all right as it was nailed there. Gadoury went down the ladder and after reaching the temporary landing in the centre compartment of the fifth set he walked along the north wall-plate and stepped on a ladder which was tied to the west end-plate of this set. This ladder rested on the muck, which sloped from a point 2 feet west of the top of the mill hole to a point 12 feet below the fifth set at an average inclination of about 45 degrees. At the west end of the shaft the muck was from 3 to 5 feet below the fifth set of timber. Gadoury was on the ladder on this muck when he heard something falling and,

turning around, saw the ladder in the centre compartment falling into the east compartment. When he looked down he saw the flash of Beaton's lamp as the latter fell into the mill hole. The muck compartment was open to the chute at the 600-foot level. Beaton fell approximately 113 feet before striking the bottom of the chute. The ladder lodged at the top of the mill hole.

Examination of the ladder after the accident showed that it had not been nailed. It probably felt rigid as the men climbed up on their way to lunch. The inside of the legs would bind to some extent on the outside edge of the 10- by 10-inch post and the side of the other ladder they straddled. The east leg of the ladder apparently slid over the edge of the 10- by 10-inch post and allowed the ladder to roll sideways, throwing Beaton into the east compartment. Beaton weighed 228 pounds. Gadoury, who had preceded him down the ladder, was a very light man.

Beaton's injuries included depressed fractures of the vault, temporal, and occipital regions of the skull, which caused his death.

An inquest was held by Coroner W. J. Grummett, of Ansonville, at the Ross mine on September 10. His verdict was as follows:—

The deceased, a miner, 40 years of age, was employed at the Ross Mines, Limited, in the township of Hislop (Holtvre, Ont.) on the 7th day of September, A.D. 1942. He was employed together with Raoul Gadoury, Chas. Cousineau, and Wm. Yrjola in mucking down some loose rock in a shaft and was working between the 450- and 600-foot level. The loose rock was being mucked down a chute situated in the northeast corner of the shaft and this chute extended to the 600-foot level. In order to get to the place where the men were working they proceeded down the shaft to the 450-foot level and then went down ladders approximately 35 feet to the top of the loose rock in the shaft. On the 7th of September the deceased and the three parties hereinbefore mentioned worked during the forenoon, came up for lunch, and were again returning to their work when the accident occurred. Gadoury was the first to go down the three ladders and was four or five feet above the loose rock when he heard a noise and in turning around was just in time to see his partner plunge down the open chute in the northeast corner of the shaft. An examination of the scene of the accident showed that to get to the top of the rock the men proceeded down two 16-foot ladders on to successive platforms and then by a short ladder about 7 feet long, which was resting on a staging, on top of which was piled some loose lumber and a square piece of timber. The two 16-foot ladders were securely braced and nailed, but it was apparent that the short ladder had not been similarly attached. Presumably unattached, the short ladder gave way under the weight of the deceased, who was much heavier than the other men. His foot apparently slipped off the square timber and in falling plunged the deceased into the chute, the ladder remaining across the top of the chute.

Messrs. Gadoury, Cousineau, and Yrjola gave evidence as to working with the deceased, and Gadoury also gave evidence as to what he saw of the accident. The other two men had not yet returned to work and were somewhere on their way down the shaft.

J. J. Caty, the resident manager, R. W. Caylor, superintendent, and R. R. Rickey, mine captain, also gave evidence as to the nature of the work performed and a description of the shaft, as well as instructions given regarding the observance of safety rules in work of this nature.

The deceased man after falling into the open chute or mill hole, fell a distance of approximately 117 feet to the 600-foot level.

The evidence was taken down by a stenographer and can be transcribed if necessary.

Throughout the taking of the evidence I was impressed with the readiness of each witness to state that it was the duty of each one of them to see that proper precautions were taken in securing the safety of the workmen. All of the witnesses claimed they believed the short ladder properly secured and no one had noticed anything wrong until the accident occurred. It was not apparent that any one specific mine regulation had been disobeyed, and after hearing the evidence I concluded that the deceased came to his death as the result of an accident on the 7th day of September, A.D. 1942, at about 11.50 A.M. and that no blame could be attached to anyone.

Hoyle Gold Mines, Limited

Joseph Edward Baxter, British, aged 40, married, with two children, employed as chief electrician at the Hoyle mine, was killed instantly at 3.00 P.M. on March 13, when he was caught in the Tex-rope belt driving the No. 1 short head Symons cone crusher.

The crusher is driven by a 125 h.p. Westinghouse Type H.S. induction motor having a speed of 725 r.p.m. It has oil bearings. The top of the motor

foundation is 40 inches above the floor with the centre of the 24-inch diameter motor pulley, 64 inches above the floor. The clearance between the pulley and the motor frame is 7 inches. The centre of the 36-inch diameter crusher drive pulley is 9 feet above the floor. The two pulleys are at a distance of 6 feet, centre to centre, and are connected by a Tex-rope drive consisting of eight "V" rubber belts, size D-240, making a total width of 1 foot. There was a dust hood over the motor extending to within 2 inches of the belt. Owing to the height of the belt above the floor it was not necessary to guard the belt for ordinary operations.

On the morning of March 13, E. Keon, electrician, found that the bearings in this motor were heating excessively.

About 8.00 A.M., Baxter, Keon, and H. Mills, a mechanic, started to work on the motor. The motor was shut down and the dust guard was removed. The bearings were taken out and scraped, and new felts were installed. This work was completed and crushing was resumed about 12.30 P.M. The dust hood covering the motor was not replaced at this time.

Just prior to the accident Baxter was checking the temperature of the bearings again by placing his hand on them. The crusher was running. He stood up on the base of the motor to give himself a better chance to reach the portion of the bearing within the motor casing. He was standing very close to the drive belt, with his left arm around a 3- by 8-inch wooden brace extending diagonally over the motor base from a post at the corner of the motor base to the second floor joists. Baxter said the motor was too hot and that they would have to take it apart again. He told his men to shut the plant down. Mills went to the second floor to tell the workmen there to stop the feed to the crusher. While rock was still being crushed Baxter was caught between the belt and the pulley and was drawn around the pulley. Keon and Joe McGahern, crusher-house foreman, were within 6 feet of the motor. Both men saw Baxter standing upright on the motor base a few seconds before the accident occurred, but neither saw what happened. The motor switch was not pulled until after the accident.

Baxter was killed instantly, his head, arms, and upper part of his torso being thrown in one direction and the rest of his body, the opposite way.

An inquest was held in Porcupine at 3.00 P.M., March 19, before Coroner Frank Evans, of South Porcupine. The jury's verdict was:—

We, the jury, empanelled to enquire into the death of Joseph Edward Baxter, aged 40, Timmins, find that death was caused by being accidentally caught in a belt in the crusher-house of the Hoyle Gold Mines about 3.00 P.M., March 13, 1942, while inspecting a motor bearing.

Clifford Tomlinson, British, single, aged 21, employed at the Hoyle mine as a machine runner, was drawn down with a subsidence of muck in No. D stope on the 400-foot level, about 8.45 A.M., May 25, and died from suffocation. His body was recovered at 3.05 P.M.

No. D stope is at the present time in process of development. It will eventually take in a block of ore about 45 feet in width and 300 feet in length, bounded at the west end by a vertical fault and at the east end by a nearly vertical diabase dike. Three branch raises from the ore pass were driven up to the 400-foot level. Grizzlies had been placed on each of these raises at the 400-foot level. The west grizzly is 50 feet from the fault. From this grizzly a raise was driven at 35 degrees up to the fault. The raise was then turned parallel to the fault and driven up to the 200-foot level at 45 degrees. There were three

knuckles in this raise. A raise had also been completed to the 200-foot level through the centre of the block of ore and the east raise was up to a sublevel, which connected all three raises at an elevation of 83 feet above the 400-foot level.

Silling-out had been commenced from the west raise, where slashing had been completed across the ore body and eastward from the fault for 31 feet on the south and 40 feet on the north, or hanging-wall, side. The floor of the silled-out area sloped toward the raise, forming a funnel to feed the 15 feet of raise left west of the grizzly. The machines working in the sill area were reached by going up the raises driven around the pillar, which was left to protect the grizzly. At the time of the accident it was necessary to go up a 45-degree raise for 23 feet to the east, then upward 45 degrees for the same distance to the west, then downward at 45 degrees for the same distance to the west. Two machines set up in this sill area just north of the pillar raise got air and water through pipe lines in the grizzly pillar raises.

While the silling-out was proceeding a slot 5 feet in width was opened by shrinkage methods across the ore body, following the fault and the west raise. The muck was pulled down through the sill area and through the west grizzly. On May 25, the slot had been mined to a height of 132 feet above the 400-foot level, or about 20 feet below the 200-foot level.

At 7.00 A.M. on May 25, four stoper-drillmen went to the slot from the 200-foot level. They found that 22 holes of those blasted by the last shift required reblasting. They had these holes partly loaded when J. Sparrow, shift boss, entered the stope at 7.30 A.M. The blasting operation was completed and the men were waiting at the shaft station for the smoke to clear, when C. Penny, mine superintendent, arrived.

Penny went to the stope alone and pulled the air- and water-hose from the foot of the raise, at the hanging-wall end of the slot, over to the footwall where the reblast had been and arranged the water-hose so that the water and air would mix together. He left the stope and waited five or ten minutes with the workmen; then they all entered the stope and commenced to wash it down. They had only been there a few minutes when the muck subsided over the 20 feet adjacent to the hanging wall. C. Kovish was at the footwall face. C. Penny was approximately 10 feet north of him. Basic was about the same distance north of Penny. Kosutish was approximately 15 feet from the hanging wall, walking away from it southward. He had just met Tomlinson, who was walking toward the raise at the hanging wall. Kosutish kept on top of the moving muck, but Tomlinson was buried under about 4 feet of muck, only a few feet from the hanging wall where the greatest subsidence took place. The broken ore dropped 18 feet along the hanging wall. Tomlinson's light could be seen shining under the hanging wall. There was a small opening under an overhanging section of the hanging wall, and, by working in this opening, the rescuers uncovered Tomlinson's head in ten or fifteen minutes. There was no evidence of life when he was reached. Two long ladders which went down with Tomlinson in the muck made his recovery more difficult. To make recovery operations safe, it was necessary to hold the muck south of Tomlinson with timber. The body was removed at 3.05 P.M.

The subsidence of muck in the slot was caused by a run of about 50 tons of ore in the sill area in the 45-foot section between the top of the sill area at the bottom of the slot down to the grizzly pillar. The grizzly through which the ore passes was pulled last on the night shift of May 21, after which the movement of the muck in the stope and the muck line in the sill area were checked. Both were found satisfactory. On the night of Saturday, May 23, A. Cotto and J.

Spack drilled in the sill. At the end of the shift there was no change in the condition of the broken rock. On Monday morning, May 25, when they returned they found that an 8- or 9-foot loop of their hose had been pulled down into the raise from the grizzly and that the muck level adjacent to the grizzly pillar had dropped somewhat. The men attempted to recover the hose by barring muck through the grizzly. About $1\frac{1}{2}$ or 2 tons had been barred through when J. Sparrow, the shift boss, who had left the slot by the 200-foot level and visited other working places, arrived at the grizzly. Sparrow stopped the barring of the rock at once and then went over the pillar and was rolling some large pieces into the raise to stop any further run of muck to the grizzly when the run in the sill area took place, carrying Tomlinson with it.

The fact that Cotto and Spack found their hose partly buried in the grizzly raise indicates that some muck ran through the grizzly between shifts. Evidently this run and the small amount barred through by the machine men made the muck pile in the sill so steep that it sloughed enough to cause the subsidence in the slot.

A post-mortem examination was performed by Dr. Blaisdell, who found that death had been caused by asphyxia and pressure.

An inquest was held before Coroner Frank Evans in Porcupine at 11.00 A.M., May 31. The jury returned the following verdict:—

We find that Clifford Tomlinson came to his death at 8.45 A.M. on May 25, 1942, on the 425-foot level "D" stope of the Hoyle Gold Mines, Limited, in the township of Whitney, the cause of death being suffocation by being buried in muck, death being accidental.

International Nickel Company of Canada, Limited

Clarence A. McDougall, British, aged 27, married, employed as a shaftman at the Creighton mine, was killed about 8.09 P.M., on February 27, by falling rock in No. 6 shaft following a rock burst in the shaft wall.

This is a vertical, internal shaft, which is being sunk from the 52nd level, with the collar about 3,825 feet below surface. There are three main compartments, two of which are to be subdivided after sinking is completed. Balanced sinking skips are operated in the middle of the south and centre compartments. The B.C. fir sets are 16 feet by 21 feet 8 inches outside and are installed at 7-foot centres. The wall plates, dividers, and centre posts are 10- by 10-inch timbers, and the end plates and corner posts are 10- by 12-inch timbers. A blasting bulkhead of 10- by 10-inch timbers is maintained on the fourth set from the bottom. The sets are kept as close to the face as possible.

The square-up of a shaft round was blasted by the afternoon-shift crew at 5.03 P.M. on February 27, which advanced the face to a depth of 170 feet below the collar. The last set, No. 22, was about 7 feet above the resultant muck pile. The crew inspected and scaled the shaft, replaced a broken divider, and started to muck. At 8.09 P.M., a rock burst occurred in the north wall of the shaft as they were loading the centre-compartment skip. Five 3-ton skiploads had been previously hoisted. A piece of rock, weighing about 600 pounds, was thrown out into the shaft from between sets Nos. 21 and 22 and landed on Clarence McDougall as he was moving out of the northwest corner with a shovel of muck. He was one of fifteen men on the shaft bottom at the time.

McDougall was dead on arrival at the shaft collar. He had sustained a complete crushing of the chest and a fractured right arm. Another shaftman, F. Pynkoski, sustained severe contusions of the back from flying fragments of rock.

An examination of the shaft revealed that the rock burst had been confined to a trap dike, which had been intersected by the northwest corner of the shaft.

This dike had been first intersected about 45 feet below the collar and had continued downwards with the shaft, which was otherwise in norite. It was found to be shattered from the top of the muck pile to a point just below set No. 20, a height of about 20 feet, where it was exposed on the north wall for a width of from 5 to 8 feet from the northwest corner. The blasting bulkhead on set No. 19 was not disturbed, but some of the planks in a 2-inch staging on set No. 21 were knocked out and fell on the muck pile. The end plate of the latter set was badly cracked, and that of set No. 22 was bent in towards the shaft. A 6- by 8-inch timber adjoining the corner post between sets Nos. 21 and 22 was broken. Only a few small pieces of rock were thrown out into the shaft, apart from the large piece which hit McDougall.

An inquest was held by Coroner H. M. Torrington, M.D., at Creighton on March 13. His verdict was as follows:—

Clarence McDougall came to his death February 27, 1942, in No. 6 shaft, Creighton mine, by having his chest crushed and other injuries, the result of a rock burst in the end wall of the shaft releasing rock, which fell on deceased causing his death. Accidental death.

Alex Chirsky, British, aged 22, single, employed as a deckman at the Creighton mine, was fatally injured about 8.15 A.M. on June 9 when crushed between No. 1 sinking-door and the footwall timber at the collar of No. 65 winze on the 52nd level.

The 3-compartment, 65½-degree winze, which is being sunk from the 52nd level, had reached an inclined depth of 417 feet at the time of the accident. Balanced sinking-skips are operated in the south (No. 1) and centre (No. 2) compartments on 4-foot gauge tracks of 60-pound rails. The deck is on the west side and covers part of the collar, leaving 5- by 5½-foot openings for the skips. These openings are closed by horizontal sinking-doors, actuated by compressed-air cylinders, which slide out on rollers from underneath the deck. They are operated by throttle-type control valves, which were both located on the south side of the southwest station post. When long rails are loaded in a skip to be sent down the winze, a 5- by 8-inch guide timber, about 4½ feet long and equipped with flanges to engage the skip track, is clamped on the upper end of the rails to keep them in place.

On June 9, the day-shift crew found that four 30-foot rails were required for the skip tracks. No. 2 skip was brought above the collar, and both sinking-doors closed. A. Cretzman, W. Trottier, W. Dudych, and A. Chirsky loaded two rails into the skip under the supervision of the winze foreman, J. Treasure. Dudych got into the skip, and No. 2 door was opened. Cretzman rang the skip down slowly and remained at the bell-pull to stop it when the upper end of the rails would be about 7 feet above the collar, so that the guide timber could be attached. Guard rails were in position in front of both skip compartments. At that time, Treasure and Trottier were standing near No. 2 compartment, while Chirsky was standing beside the guide timber, located on the deck about 5 feet from No. 1 compartment. Treasure then walked towards the control valves to close No. 2 door, so that it would be safe for Trottier and Chirsky to cross the winze and attach the guide timber. He passed in front of Chirsky and had reached the valves when Cretzman stopped the skip. Treasure, in error, operated No. 1 door valve just as Chirsky ducked under the guard rail, with the guide timber under his right arm, and started to walk across No. 1 door. This door was about half open by the time Treasure succeeded in reversing the movement, in an effort to prevent Chirsky from falling down the winze. Chirsky was pinned between the closing door and the footwall timber, with the guide timber diagon-

ally across his chest. His head, one arm, and legs, were above the door, also one end of the guide timber. Treasure and Trottier each held him by a leg, while Cretzman went to the valve to open the door sufficiently to release him. Cretzman, in his excitement, opened the door with a rush, and the other men were unable to hold Chirsky, who fell down the winze to the 17th set below the collar.

Chirsky sustained a fractured skull and a crushed chest, and was dead on arrival at surface. A post-mortem examination revealed that fractured ribs, believed caused by the crushing action of the door, had punctured his right lung and heart wall. Death was attributed to internal haemorrhage from the punctured lung.

An inquest was held by Coroner G. A. Henry, M.D., at Creighton on June 17. His verdict was as follows:—

Deceased, Alex Chirsky, died of injuries sustained in Creighton mine on June 9, 1942. The chief injuries consisted of fracture of ribs with perforations of lung and of heart wall, also fracture of skull. These injuries were sustained through the faulty operation of the door of No. 1 compartment of 65 winze, 52 level, whereby deceased was thrown off the door and was immediately after pinned between the door and the footwall. The deceased was himself in part to blame in that he was in error in being on the door of No. 1 compartment ahead of time.

James Ellis, British, aged 29, married, employed as a stope boss, and Emile Newman, British, aged 26, single, employed as a shoveller, were instantly killed by a fall of ground in No. 2 exploration drift south on the 3,300-foot level at the Froot mine about 4.45 A.M. on February 5.

This is a 5- by 7-foot heading in the rhyolite hanging wall, which had been driven westward from No. 1 exploration drift for a distance of 140 feet and, at the time of the accident, was being turned southward to parallel the latter. A round had been blasted in the face about 8.30 P.M. on February 4, following which the back had been scaled to remove some small pieces of loose rock.

The crew in this heading, on the midnight to 8 A.M. shift on February 5, consisted of two shovellers, E. Newman and H. Abraham. They were under the supervision of Stope Boss J. Ellis and Shift Boss R. Brydges. About half of the rock from the blast had been cleaned up by lunch-time, when Ellis reported to Brydges by telephone that everything was in good shape. Shortly before 4.45 A.M., Ellis made his third visit to this heading and found the crew scaling the back over the remainder of the muck pile. He took a scaling bar from Newman and started to test the back, while Abraham went back for an empty car. Abraham and E. Cartwright, the motorman, were switching a car out of No. 1 exploration drift when they heard a fall of ground in the heading. They found Ellis and Newman buried under a 3-ton slab of rock, which had fallen from the back above the toe of the muck pile. This slab was about 5 feet wide, 6 feet long, and 1½ feet thick. It was bounded by slip-planes.

Both men were dead when released. Ellis had sustained a fractured skull and severe crushing of the chest. Newman had sustained fractures of the skull and spine.

An inquest was held by Coroner H. M. Torrington, M.D., at Froot on February 20. His verdict was as follows:—

James Ellis came to his death on February 5, 1942, at Froot Mine, Ont., No. 2 exploration drift south on 3,300 level, from a fractured skull, crushed right chest, and multiple body injuries received when a rock fell from back of drift, falling on and killing James Ellis and Emile Newman. Accidental death.

Samuel Cuomo, British, aged 20, single, employed as a churn driller at the Frood open pit, was killed about 7.40 A.M. on December 24, when he was crushed under No. 17 churn drill, which overturned while being moved to a new location.

The Bucyrus-Armstrong churn drill, which is electrically driven, weighs about 25 tons, including tools. It is mounted on self-propelled caterpillar treads with a span of about 11 feet, which can travel over irregularities in ground elevation up to 14 inches without affecting the position of the drill. The top of the mast is about $44\frac{1}{2}$ feet above the deck, which is about $3\frac{1}{2}$ feet above the ground.

The afternoon shift on December 23 was instructed to move No. 1 churn drill, which needed repairs, from an uncompleted hole on the west bank of the open pit and to replace it with No. 17 churn drill, then located on higher ground about 150 feet to the south. No. 1 drill had been moved about 100 feet to the south when the propelling drive broke down, blocking the movement of No. 17 drill, which had to travel over the same route. The following shift, starting work at 1 A.M. on December 24, repaired the drive on No. 1 drill and then moved it out of the way. The movement of No. 17 drill was started at 6.30 A.M. under the supervision of the churn-drill boss, D. Reynolds, with Samuel Cuomo at the controls on the drill.

After moving the drill about 50 feet down-grade, it became necessary to lay timber ahead of the west caterpillar tread to offset the side slope of the ground. Stringers of 8- by 10-inch B.C. fir were laid in a single line with ends lapping; and 10- by 10-inch jackpine timbers, $5\frac{1}{2}$ feet long, were placed cross-wise, with the west ends resting on the stringers at intervals of 2 to 3 feet. The cross-timbers were fastened to the stringers with timber dogs. The drill had been moved about 35 feet on this timber by 7.40 A.M. and was about 3 feet from the north end, when the timber apparently slipped. The drill slid sideways to the west, then fell over on its side.

Cuomo was pinned underneath the mast, and was dead when Dr. A. H. Duncan arrived at the scene of the accident about 8.15 A.M. Death was attributed to traumatic asphyxia from severe crushing of the chest. Recovery operations were not concluded until 10.25 A.M., as it was necessary to secure the drill with cables before it could be jacked up.

An inquest was held by Coroner G. A. Henry, M.D., at Frood on January 8, 1943. His verdict was as follows:—

Samuel Cuomo came to his death from crushing injuries of the thorax sustained at the open pit at Frood on December 24, 1942. These injuries were sustained when a churn drill tipped over, pinning him beneath it. The cause of the accident could not be determined from the evidence submitted. No blame apparently attaches to any one.

Simon Lacoste, British, aged 25, married, employed as a driller at the Garson mine, was fatally injured about 10.15 P.M. on October 20 by a fall of ground in No. 8.0 stope on the 14th level.

This square-set cut-and-fill stope is six sets wide and extends from footwall to hanging wall. The sets are at $5\frac{1}{2}$ -foot centres and are 7 feet high. At the time of the accident, the 3rd cut was being mined southward toward the hanging wall.

The afternoon-shift crew in this stope on October 20 consisted of four men and a stope boss, C. Dakin. They found that the off-going shift had blasted the entire breast in advance of the 7th row of sets, and that the muck was piled up to the back. They mucked out ahead of the first four sets from the west pillar and found insufficient room to stand another row of sets, owing to poor

breakage in front of the first three sets. They drilled a number of short holes to correct this, and blasted them about 9 P.M., when they had lunch. Afterwards, S. Lacoste started to scale, while Dakin and M. Pashko prepared to stand the four sets, working from west to east. Shortly before 10 P.M., the shift boss, L. Hellman, entered the stope for the third time. He found the first two sets in place and the floor laid for the third set. Lacoste was scaling immediately east of the location for the fourth set and standing on the muck pile. Hellman sounded the back where he was working, and told him to stop work in that vicinity until booms had been put out, as it sounded drummy. Lacoste did not agree with Hellman. After the latter left the stope, he continued scaling for a short time, then reported to Dakin that the back was sound. Dakin then instructed him to lay floor planks for the fourth set. Lacoste had laid one plank, and was presumably standing on it, when a 2-ton piece of ore fell from that portion of the back which Hellman had warned him was drummy. It slid down the muck pile into the set over which Lacoste had laid the plank and came to rest at the toe of the muck pile on the mucking-floor. Lacoste was found lying on the muck pile just above the large piece that had fallen. The plank he had laid was broken into several pieces. He had sustained a multiple fracture of the pelvis, with probable internal injuries, and was suffering from extreme shock. He died in the First Aid room on surface, about 11.25 P.M., with Dr. J. L. Kirk in attendance.

An inquest was held by Coroner G. A. Henry, M.D., at Garson on November 3. His verdict was as follows:—

Simon Lacoste died on October 20, 1942, from injuries sustained in 8.0 stope, 14 level, Garson mine, when struck by falling ore. From the evidence it seems that no blame attaches to any one other than himself. Accidental death.

William Wallace, British, aged 23, married, employed as a chute blaster at the Garson mine, was fatally injured about 11.50 A.M. on November 18 when crushed between an empty Granby car and the concrete wall of No. 2 main ore-pass, on the 1,000-foot level. He died in the Copper Cliff hospital at 10.58 A.M. on November 20.

No. 2 main ore-pass extends from the 2,000-foot level to the 400-foot level and is equipped with control chutes and grizzlies at the various levels. It is located on the west side of No. 2 shaft crosscut on the 1,000-foot level, with the control chute at the south end of the grizzly. The concrete wall of the ore-pass forms the west side of the crosscut for a distance of 12 feet, starting at a point about 9½ feet south of the grizzly. It is 4 feet from the centre of the 2-foot gauge track, allowing a clearance of 21 inches for Granby cars in a normal upright position. The cars are dumped by means of a ramp on the east side of the track opposite the grizzly. Loaded trains are pushed northwards to the south end of the ore pass, and stopped to permit the switchman to remove the red tail-light from the leading car and open the gates across the track at both ends of the grizzly. The switchman then stands behind the ramp as the cars are pushed over it and dumped. He usually remains there until the cars have been pulled back over the ramp to see that they resume a normal position on leaving it. The train is then stopped to permit him to close the gates, replace the tail-light, and get in front of the locomotive before the train moves southward.

Shortly before 10.50 A.M. on November 18, a train of seven cars was pushed over the ramp and dumped. The train crew consisted of V. Molinsky, motorman, and R. Laframboise, switchman. The latter had placed the tail-light on the ground just south of the concrete wall, where the side of the crosscut was about 4½ feet from the centre of the track. William Wallace, who had been acting as

level boss since November 8, arrived at the ore pass as the last car was dumped and stood beside the tail-light. He told Laframboise to go ahead of the train and he would attend to the tail-light and gates. Laframboise left his position behind the ramp and walked ahead of the train as the cars were pulled back over the ramp. Wallace shouted after about five cars had passed him. The train was stopped, and the crew went back to investigate.

Wallace was found lying on the ground between the end car and the concrete wall, 17 feet from the grizzly, with his head towards it. The tail-light was lying several feet in front of his head, together with his hat and gloves. All the cars were then in a normal upright position, with the end car about 14 feet south of the grizzly. Wallace was removed to surface, where he stated that he had been standing beside the ore-pass chute when he saw a car door was open and jumped, but did not jump fast enough. He had sustained fractures of the left clavicle and scapula, haemorrhage of the left lung, and traumatic pneumothorax. He died in the Copper Cliff Hospital at 10.58 A.M. on November 20.

It is believed that the door of the sixth car failed to close as it came off the ramp, possibly owing to a piece of muck becoming lodged under the arms of the door, and that it was dislodged when the train stopped. When a car door is wide open, it is 4 feet 2 inches above the ground and there is a clearance of 10½ inches between it and the concrete wall.

An inquest was held by Coroner H. M. Torrington, M.D., at Garson on November 25. His verdict was as follows:—

Wm. Wallace came to his death at the Copper Cliff Hospital on November 20, 1942, the result of having his left chest crushed between an open door of a Granby dump car and the cement wall of the ore-pass chute on 1,000-foot level at Garson mine, Inco, on November 18, 1942. The door of the dump car, for some unknown reason, had not closed after leaving the ramp and before striking deceased. Such injuries caused damage to lung, which caused death on November 20. Cause of death—pneumothorax and collapse of lung. Accidental death.

Angelo Halvorson, British, aged 24, single, employed as a chute puller at the Levack mine, was killed about 2.10 P.M., on March 13, when caught by a run of muck at No. 8.41 chute on the 9th level.

This is one of eight box-hole chutes which are operated from a gangway in No. 8.1 crosscut south. Each is equipped with a stop log about 1¾ feet above the 35-degree chute bottom and an 85-pound rail at the mouth of the chute to control the flow of muck. The stop log and rail are chained to the chute.

G. Descoteaux, chute blaster, and his partner, Halvorson, were pulling chutes in No. 8.1 crosscut south on the day shift of March 13. The muck in No. 8.41 chute was hung up when they came on shift. They pulled No. 8.37 chute until about 11.15 A.M., when Shift Boss R. Williams successfully blasted down the muck in No. 8.41 chute, after which they started to pull the latter. After they had pulled about 30 cars, the muck became hung up about 14 feet above the chute throat. They returned to No. 8.37 chute and pulled it until about 2 P.M., when the muck became hung up there. Descoteaux told Halvorson that they would place a blasting-pole charge in No. 8.41 chute and prepared a charge of 6 sticks of powder and a 5-foot fuse. He left it with Halvorson, who was then standing about 3 feet from the chute, and walked about 75 feet down the gangway to obtain a blasting pole. He heard a run of muck while he was picking up the pole. On returning to the chute he found Halvorson lying face downwards in the front of the chute, with his left arm pinned under a 3-ton chunk of muck. This chunk was resting on the stop log, which had been driven upwards about 1½ feet from its normal position. Halvorson had his buttocks against the chute rail, with his left leg hanging down between the rail and the lip of the chute, and

his right leg doubled under his body. The powder charge was found lying under his chest.

He was dead when seen by the mine doctor before his arm was released from underneath the chunk. He had sustained fractures of three left ribs, and a punctured left lung. Death was attributed to asphyxia and shock.

It is believed that he must have been sitting on the stop log with his feet on the chute bottom, or standing on the chute bottom inside the stop log, when the run of muck occurred.

An inquest was held by Coroner P. E. Laflamme, M.D., at Levack on April 29. His verdict was as follows:—

Angelo Halvorson, age 24, employed as a chute puller at the Levack mine of the International Nickel Company, was killed about 2.10 P.M. on March 13, 1942 at No. 8.41 chute on the 9th level. From evidence given, Halvorson had been left at the chute by his partner, George Descoteaux, while the latter went away to obtain a blasting pole to use in blasting down the hung-up muck. The muck came down suddenly, and Descoteaux returned to find Halvorson pinned face downwards in the chute by a large chunk. Death was due to asphyxia and shock. Accidental death with no blame attached to anyone.

Frank Trenzek, British, aged 34, married, employed as a driller at the Levack mine, was instantly killed by falling rock in No. 6.2 rib raise on the 9th level about 9.10 P.M. on May 30.

This raise was started from the west side of the gangway in No. 6.2 crosscut south, located on the centre line of No. 6.2 shrinkage stope, with the objective of reaching the centre line of the 12-foot rib pillar on the west side of the stope without breaking through the sill floor, about 30 feet above the level. However, it broke through the sill floor at the edge of the pillar after several inclined rounds had been taken out. The stope had been mined to 30 feet below the 7th level and was empty except for cones of muck between the box-holes. A timber bulkhead, supported on steel pins, was then placed across the raise about 6 feet below the sill floor, and a horizontal round westwards was taken out immediately below it.

On May 30, Trenzek and his partner, W. Maradyn, completed the drilling of 13 slash holes in the walls and floor of the horizontal section of the raise, to make room for a diamond-drill. About 7.30 P.M., Trenzek obtained a powder order from his shift boss, R. Armstrong, who instructed him not to go into the raise after blasting until it had been inspected by the mine captain or himself. Similar instructions had been given to Trenzek in regard to previous blasting in this raise. The holes were blasted shortly after 8 P.M., following which Trenzek and Maradyn had lunch, then returned to the foot of the raise to find that the bulkhead had been knocked out by the blast. Trenzek climbed up the raise without waiting for the mine captain or shift boss to make an inspection. He was standing underneath the opening into the stope when four or five pieces of rock, the largest weighing about 100 pounds, fell from the stope and killed him instantly. He sustained fractures of the skull, left jaw, left ribs, and left ankle. It could not be determined where the fall of rock had originated.

An inquest was held by Coroner H. M. Torrington, M.D., at Levack on June 10. His verdict was as follows:—

Frank Trenzek came to his death on May 30, 1942, at Levack Mine, Ont., from a fractured skull and other bodily injuries received when he returned to 6.2 rib raise in 6.2 crosscut, 9th level, Levack mine, against orders following a blast. When Trenzek returned to site of blast, rock came down through an opening from which a bulkhead had been displaced by the blast, striking him on the head. Accidental death.

Raymond J. Faubert, British, aged 24, married, employed as an ore-pass tender at the Levack mine, died from suffocation about 3.20 A.M. on August 4, when he was buried in a run of wet fines at the 16th level crusher.

No. 2 main ore pass extends from the 16th level to the 11th level and is equipped with control chutes and air-operated gates at the various levels. At the 16th level, the ore is fed from the control chute into a 35-degree, steel-bottomed feed chute, about $4\frac{1}{4}$ feet wide and 30 feet long, leading to a 6-foot diameter feed roll ahead of the 42- by 30-inch jaw crusher. A hammer gate, with seven 1,750-pound hammers, is suspended above the feed roll. The ore is crushed to 6 inches in size and discharged into an ore pocket, from which it is drawn into the No. 2 shaft skips. This ore pass was shut down on August 2 for repairs to the control chutes at the 13th and 15th levels. Bulkheads were installed above these chutes, and the grizzlies on all levels were covered over. This work was still in progress at the time of the accident.

On August 4, Reginald Belanger, crusherman, started the crusher shortly after midnight to run through some ore remaining in the pass between the 15th and 16th levels. When he opened the 16th level control gate a large quantity of wet fines, which had accumulated on the footwall of the pass during the period of operation, came down with the ore and spilled out on the level. He closed the control gate when no more ore came out of the pass and stopped the crusher when the feed chute had been emptied. Belanger and his helper, R. J. Faubert, then spent about $1\frac{1}{2}$ hours in shovelling the spilled fines into the feed chute. They returned to the crusher afterwards to find that it was plugged with fines, which had run over the stationary feed roll from the feed chute, though nearly all of the shovelled fines still remained in the latter. Belanger decided that they would have to shovel the fines out of the crusher. They had nearly completed the job by 3.20 A.M., at which time Faubert was in the crusher, when they heard the fines in the feed chute start to move. Faubert got up from between the crusher jaws and was about to climb over the splash plate, assisted by Belanger, when about 6 tons of fines surged over the feed roll and knocked him back into the crusher, where he was completely buried.

Recovery operations were started immediately, and concluded at 4.40 A.M. Doctor W. H. Bennett reached the scene at 3.50 A.M., at which time Faubert was uncovered down to his hips, and found that he was dead.

An inquest was held by Coroner G. A. Henry, M.D., at Levack on September 16. His verdict was as follows:—

Raymond Faubert came to his death on August 4, 1942, when caught in a slide of fines in the sixteen level crusher, Levack mine. From the evidence it appears there was some negligence on the part of the men working there in not seeing that the feed chute was empty before starting to clean out the crusher.

Jason Mines, Limited

Peter Badovinac, aged 43, naturalized British subject, born in Yugoslavia, with wife and two children living in Yugoslavia, employed as a driller at the Jason mine, was instantly killed in No. 722 stope on the 7th level, No. 2 shaft, about 9.30 P.M. on May 29, when he was crushed under a falling slab of rock.

In No. 722 stope, which is mined as an open stope, a triangular pillar 11 feet high had been left. The base of the pillar, which is 5 feet wide, is 38 feet above the base of the rail on the 7th level. The back of the stope is about $2\frac{1}{2}$ feet above this completed pillar. At this section of the stope the vein is 5 feet wide and dips at 70 degrees. Ten feet south of the completed pillar a second pillar about 5 feet wide was being left. The base of the second pillar is 40 feet above the base of the rail on the 7th level. The vein north and south was being

stoped toward this pillar. Two slices, or about 12 feet, had been stoped above the base of the pillar on the north side and one slice on the south side.

On the afternoon shift of May 29, which was from 7 P.M. to 3 A.M., Badovinac, a driller, went into the stope from the 7th level to his working place, which was between the two pillars. He had drilled 6 holes on the previous afternoon shift immediately above the completed pillar. On the same shift Pete Boricevic, driller, came from the 6th level to his working place, which was on the south side of the uncompleted pillar. When Boricevic was ready to drill Badovinac came and borrowed a sprag that Boricevic was not using. Boricevic asked him if he needed help to bring his steel from the 7th level. Badovinac replied that he had not finished scaling and that when he was ready he would let him know. Just before Boricevic started to drill he heard Badovinac scaling. After he had drilled for about ten minutes Cecil Drake, shift boss, arrived and asked Boricevic where Badovinac was. They could not hear Badovinac working, and Boricevic said that he had probably gone for steel. Drake went below the uncompleted pillar and looking upward saw Badovinac lying jack-knifed over a stoper. The stoper was in a horizontal position, the leg on the footwall and the head on a ridge on the hanging wall. Badovinac's body was crushed among a large slab of rock, the footwall, and the stoper. Drake sent Boricevic for help while he went to surface for the doctor. Dr. J. H. McDonald arrived at the scene of the accident about 10.00 P.M. and pronounced Badovinac dead.

On examining the scene of the accident it was found that Badovinac had washed down the back, placed his stoper in the above-mentioned position, and laid a plank on top of the head of the stoper to the footwall north of the stoper. A sprag measuring 10 feet in length was lying on the leg of the stoper and along the footwall. Badovinac had not been scaling at the time, as his scaling-bar was found about 5 feet north and about 5 feet above where he had been standing. Badovinac was possibly preparing to cut a sprag to put in place of the stoper that he was using as a sprag. Before it fell, the bottom of the loose piece was supported on the ridge that the head of the stoper was resting on, and after the piece fell it was supported by the ridge, the stoper, and the footwall. The slab measured 7 by 5 by $1\frac{1}{2}$ feet and weighed about 4 tons. It was quite evident, from the amount of loose rock around Badovinac's working place, that he had not finished scaling.

Badovinac's injuries consisted of contusions of the face and a laceration below the right eye, laceration of the subclavian artery or vein, contusions of the right forearm and right thigh with probable fracture, contusions of the whole of the right side of the body with fractures of the pelvis and lumbar vertebrae and multiple fractures of the ribs on the right. The cause of death was multiple fractures and serious internal injury.

An inquest was held by Coroner Harold Morison, M.D., at the Jason mine on June 2 at 10.30 A.M. The coroner gave his verdict as follows:—

I do upon oath say that Peter Badovinac came to his death at the Jason mine, in the district of Kenora, on May 29 at about 9.30 P.M., by accident. Loose rock falling from the hanging wall of the 722 stope at No. 2 shaft falling on deceased crushing and causing multiple fractures and serious internal injury. I would absolve the mine management from any blame in connection with this accident.

Jerome Gold Mines, Limited

Walter Bandza, Lithuanian, aged 45, single, and Paul Hamernyk, born in Canada of Ukrainian parents, aged 25, single, both employed as drillers at the Jerome mine, were instantly killed about 9.30 P.M., on December 2, by a fall of ground in No. 3-28-2 shrinkage stope, on the 350-foot level.

The stope is about 175 feet long from east to west. At the time of the accident the east and west breasts were about 100 feet apart, with the back of the new cut about 45 feet below the 200-foot level. The east end of this cut narrowed abruptly from an average width of 35 feet to 20 feet at the east breast. The stope was being mined on the 7 P.M. to 3 A.M. shift only. The east breast was blasted at 3 A.M. on November 29, then work was transferred to the west breast until 7 P.M. on December 2.

The regular crew, consisting of two drillers, W. Bandza and P. Hamernyk, and two helpers, M. Michaluk and A. Cyr, entered the stope at 7 P.M. on December 2, with instructions to set up their machines and drill the east breast. The shift boss, L. Culhane, visited the stope about 7.45 P.M., and found the drillers scaling in the vicinity of the east breast, while the helpers were sorting drill steel, which they had lowered from the 200-foot level. Culhane sounded the back and located a drummy area in the centre of the stope, about 10 feet from the east breast. He instructed Bandza, the stope leader, to try to get it down with gads, and if this proved impossible, to drill some holes in it with a stoper and blast it down before setting up their machines. Culhane then left the stope. The drillers tried to take down the drummy area with scaling bars without success. Hamernyk then drilled five short holes in it, and Bandza blasted them about 9 P.M. The crew returned to the stope about 9.25 P.M. to find that the blast had opened up only a crack on the north side of the drummy area. Bandza started prying in this crack with a scaling bar, then asked Hamernyk to help him with another bar. Michaluk and Cyr remained near by to watch them. After Bandza and Hamernyk had worked for about five minutes, the drummy area suddenly fell in a single piece, weighing about 13 tons, bringing down with it two smaller pieces, each weighing about one ton, and many fragments from the supposedly sound back over their heads.

Bandza and Hamernyk were standing about five feet apart, and were separately hit and instantly killed by the two smaller pieces.

An inquest was held by Coroner P. E. Laflamme, M.D., at Sudbury on December 15. His verdict was as follows:—

Walter Bandza, age 45, and Paul Hamernyk, age 25, both employed as drillers at Jerome Gold Mines, Limited, were instantly killed by falling rock in No. 3-28-2 stope, on the 350-foot level, about 9.30 P.M. on December 2, 1942. From evidence given, they tried to take down a large piece of loose rock from the back with scaling bars without success, then drilled five short holes in it and blasted. The blast loosened it but did not bring it down. They again used scaling bars, and this time a 13-ton piece fell suddenly, bringing with it two smaller pieces, each weighing about a ton. One of the smaller pieces hit Bandza, and the other hit Hamernyk. Both men received compound comminuted fractures of the skull and severe internal injuries, and died instantly. Accidental death with no blame attached to anyone.

Kirkland Lake Gold Mining Company, Limited

Steve Rubanet, naturalized British subject of Rumanian birth, aged 35, married, with one child, employed as shoveller and trammer, was injured about 5.15 P.M. on May 27 by being crushed between a chute post and a car of ore which he was pulling. He died in a few minutes, before he could be removed to surface.

Rubanet and Jas. Metherall were helping Tom Bahun, a scraperman, pull muck from the east end of No. 37-5F stope and tram it out to No. 1 winze. Metherall was working his first shift underground. Rubanet was working his sixth shift at the Kirkland Lake Gold mine but had previously worked 18 months underground at the Frood mine. Three cars, each holding about 2,200 pounds of ore, were being used. The procedure was to fill the three cars and then for each man to tram one car out to the winze, 1,100 feet distant from their stope.

No. 37-5F stope is on a vein from 4 to 5 feet wide, which dips about 35 degrees to the south. As a fault in this area threatened to make the hangingwall heavy, drift sets were placed at $4\frac{1}{2}$ -foot centres at right angles to the drift. Opposite each set square timber posts were carried up through the stope. Chutes were placed in most of the drift sets. Chute posts are 8- by 10-inch B.C. fir, with the 10-inch face parallel to the drift. On the 8-inch faces, 3-inch dressed fir planks are spiked to carry the bottom of the chute. This reduces the opening between posts to approximately 40 inches. The lip of the chute is 4 feet above the 18-inch gauge track. Square box-cars, holding about 2,200 pounds of ore, are used in this area. The stope is approached from the east. At the time of the accident the first five chutes in the first five drift sets were empty, no ore having been broken above this point after installing the chutes. There was no chute between the sixth and seventh drift sets. In the next three sets there were three chutes with muck in them. Chutes were in every set beyond this point for some distance, but there was very little muck in them. This part of the stope was timbered nearly to the face, approximately 40 feet up the incline.

Bahun and his helpers were pulling the 7th chute. Bahun was on the south side of the drift raking the muck out of the flat chute into the cars. Metherrall was west of the group of three cars, and Rubanet was to the east of them.

At 5.15 P.M. the first of the three cars was filled and Rubanet pulled it away from the chute. Bahun proceeded to fill the next car, expecting Rubanet to return for it in a few minutes. When Rubanet did not come Bahun called to him, but got no answer. He then started to look for Rubanet and saw his light at the side of the car which he had been taking away. The car was then in front of the fourth chute from the east end, $16\frac{1}{2}$ feet east of the seventh chute, the east end of the car being about 8 inches from the east post of the chute. The clearance between the cars and this chute post is $2\frac{1}{2}$ inches. Rubanet was lying under the chute with his head toward the west post of the chute. He was unconscious and bleeding from the right ear.

Signs are posted through the mine that workmen must push cars. To do this, Rubanet would have had to climb over the car before starting to move it. Evidently Rubanet, after pulling the car far enough to give it sufficient momentum, stepped under the fourth chute to let the car pass him. The clearance here between the car and the wall was only 14 to 18 inches. Either Rubanet did not get into the opening, or, if he did, the car must have pushed him forward against the east post, where his head was crushed. Then the rebound of the car allowed him to fall back to the west. The track is level at this point for a few feet, although the average grade east of the seventh chute is 0.66 per cent. (down grade). There was room for Rubanet to step into the opening on the north side between the 6th and 7th sets, and also room to let the car pass him if he had stepped to the south side at either of two points between the 7th and 4th chutes.

Because of curves in this part of the track, however, he probably could not give the car enough momentum to pass him. Had he pulled the car 15 feet farther he would have been in the open drift beyond all the timber.

Death was caused by crushing of the right side of the skull.

An inquest was held before Coroner R. W. McBain, M.D., at Kirkland Lake on June 4 at 2.00 P.M. The jury returned the following verdict:—

We, the jury impanelled to inquire into the death of Steve Rubanet, an employee of Kirkland Lake Gold mine, find that from evidence submitted that the said Steve Rubanet came to his death May 27, 1942, at 5.15 P.M. on the 3,725 level of the said mine. Death was due to a fractured skull as a result of being crushed between ore car and chute post. We find that death was accidental with no blame attributed to anyone. We recommend closer supervision of inexperienced employees.

Fred Melnyk, Polish, aged 39, married, with three children, employed as a timberman in No. 44-51 stope on the 4,450-foot level of the Kirkland Lake Gold mine, received fatal injuries about 10.30 p.m., on October 31, when he was crushed by part of a large fall of ground from the wall and back of the stope.

No. 44-51 stope is several hundred feet in length; the width ranges from $3\frac{1}{2}$ to 14 feet. The north wall is the footwall. It is lamprophyre and dips at about 8° N. The stope is timbered with stringer sets of 8- by 10-inch B.C. fir, with squeeze blocks at one or both ends of the caps. The average distance between the sets is $4\frac{1}{2}$ feet. There are five manways in the stope. On each side of these manways there are ore chutes. Regular set spacing is not used, as manways and ore chutes are finally filled with waste sorted from the ore and waste broken for filling. The muckers work behind the machinemen, who drill the back off with stoper drills, standing on the broken muck. Timbermen follow the muckers, putting in sets and making new shovelling-floors 4 or 5 feet below the drilled-off back.

At the time of the accident Lloyd Bates was mucking at the foot of the muck pile 14 feet west of the No. 4 manway, where the stope was 14 feet wide. At the No. 4 manway the width was $9\frac{1}{2}$ feet. Bates was mucking in the centre of the pile to uncover an ore chute ahead of waste-pockets below him. Joe Duchene and Geo. McCann were drilling at points 36 and 50 feet west of the No. 4 manway. Melnyk was standing on the plank flooring over the No. 4 manway receiving stope timber, which was being hoisted into the stope through the ore chute on the east side of the manway by his partner N. Mihailuk, who was on the level 49 feet below. Melnyk was in the act of removing the hoisting cable from an 8- by 10-inch post 5 feet long, when a portion of the face and stope back, extending from the manway to a point 17 feet west, fell and knocked him down. The timber came to rest diagonally across his chest and abdomen, with a wedge-shaped piece of rock, 4 feet in length and weighing about 150 pounds, resting on the timber. This piece of rock had broken from the small end of a larger piece, $13\frac{1}{2}$ feet in length, and weighing approximately 7 tons. Another piece that fell was $10\frac{1}{2}$ feet long and weighed about 4 tons. The entire fall of ground weighed about 13 tons. Melnyk was freed at once, but died a few minutes later before being removed from the stope.

Inspection of the walls following the accident showed that the loose rock had fallen from an area 17 feet long by 8 feet wide, starting 5 to 6 feet above the floor and extending to the back of the stope. The thickness of the loose rock varied from a thin edge up to $2\frac{1}{2}$ feet. This part of the wall had been weakened by overbreaking into the wall on the second last slice. It was further weakened by a joint plane at the west end and by a slickenside in the wall. Timbering had not advanced far enough from east to west to support the wall here. Melnyk and Mihailuk were hoisting long timber for this part of the stope and intended to complete the timbering in the narrow part of the stope up to a point 15 feet east of the manway. McCann had tested the ground early in the shift and found that it sounded good and showed no evidence of opening. Tom Elliott, shift boss, and Dave Ackles, mucker boss, had also inspected the stope the evening of the accident. They had examined the wall in this vicinity, and it appeared to be good.

Melnik's death was caused by a blow on his chest which ruptured some internal organ, evidenced by frothy blood which issued from his mouth after the injury. His left hip and a bone in the left hand were fractured, and his right thumb nail was torn off.

An inquest was held before Coroner R. W. McBain, M.D., in Kirkland Lake, at 7.30 P.M., November 4. The jury returned the following verdict:—

We, the jury impanelled to enquire into the death of Fred Melnyk, who met his death at 10.30 P.M. approximately, the night of October 31, 1942, in the 44-51 stope at Kirkland Lake Gold mine, do find that Fred Melnyk met accidental death by a fall of rock from north wall, which crushed him against timber he was holding, causing internal injuries resulting in death. It is suggested that timbermen place timber sets closer to the loose muck pile.

Lake Shore Mines, Limited

Wilfred G. Chartrand and William Smarz, employed as shovellers, were instantly killed by a rock burst in No. 4,001 W section 8 stope of the Lake Shore mine at 9.56 P.M., May 30.

Chartrand, British, single, aged 20, was hired on May 29, 1942. He had been previously employed at the White-Guyatt mine and the Ross mine.

Smarz, Polish, married, with three children, aged 41, was hired on May 28, 1942. He had been employed intermittently in Canadian mines since 1927.

On the 4,075-foot level the north vein splits into two branches at a point 890 feet west of the main crosscut. The branches come together 330 feet farther west. No stoping has been done on the north branch between the 4,075- and the 3,950-foot levels. The block of ground affected by the burst was the remnant between No. 4,001 W section 7 and No. 4,001 W section 8 stope. This block is 170 feet long on the 3,950-foot level and 110 feet long on the 4,075-foot level. A rock burst, which occurred in July, 1941, affecting principally this remnant and that between the 4,200- and the 4,075-foot levels, closed Nos. 4,001 W drift, 4,001 W section 7 stope, and 4,001 W section 8 stope. No. 4,001 W drift and the manway down No. 4,001 W section 8 stope were reopened and two cuts mined and timbered in the remnant between No. 4,001 section 7 and No. 4,001 section 8 stopes. This was mainly rock-burst recovery work in completely shattered ground. An 8-foot concrete plug was poured over the width of the vein, averaging about three sets, for the whole length, leaving open only chutes and manways. A third cut was commenced from the west end of the block, alternately mining four sets ahead over the width of the vein and filling the second cut with concrete over a corresponding length. On completion of this 16-foot depth of concrete plug it was planned to open up and complete the stope and to mine 8-set blocks from level to level working westward, until the remnant was mined out. The normal stoping method is square-set rill with sand filling.

Mining of the third cut had been completed for a distance of 10 sets from the west end, which is one set east of No. 3 chute. In this section the ore had offset about one set to the north on the third cut and the stope had narrowed one set. Between the caps of the second and third cuts there was an overhang of approximately 9 feet in a height of 10 feet. Ten-foot posts were used in the third cut at this point to bring all the caps of the third cut to grade. Concrete in the second cut was poured to a grade of 6 feet below the caps of the third cut.

C. Rox, driller, and V. O. Young, helper, on the night shift of May 30, set up to drill a couple of pop-holes in order to stand a set on the third cut. This set is one set east and one set north of the chute on the mucking-floor. Smarz and Chartrand were on the mucking-floor, shovelling into the chute from the west and south sides. After timbering and removing the muck, the next operation was to extend the concrete plug to the set east of the chute.

Rox and Young had just finished drilling when the burst occurred. Young was completely buried under rock, while Rox escaped unhurt. Smarz and Chartrand were buried in rock and timber and instantly killed.

Rescue operations were commenced at once. Young was extricated at 11.35

P.M. He had suffered multiple contusions and lacerations of face, head, and body. Both Chartrand and Smarz were found in the set south of the chute with Smarz' head partly over the chute grizzly.

Smarz' body was recovered at 2.30 A.M., May 31, and Chartrand's body at 4.50 P.M., May 31.

Examination of the scene of the accident showed that the burst affected the south wall of the stope principally, the hanging wall bursting and spalling off along the length of the remnant. About 50 tons of rock was shaken off the walls of the south branch of No. 3,901 W drift, and the south wall of the north branch was shattered. The chute and manway of No. 4.001 W section 8 stope was blocked at a point 60 feet below the 3,950-foot level. There was no damage to the concrete plug or to the timber in No. 4001 W drift. The concrete undoubtedly prevented the collapse of the section of No. 4,001 W drift below No. 4,001 W section 8 stope.

Smarz suffered a compound fracture of the skull, and his face was swollen and congested. Chartrand's injuries consisted of a fracture of the skull and dislocation of cervical vertebrae.

An inquest was held on June 4 at 4.00 P.M. in the Kirkland Lake Municipal Hall before Coroner R. W. McBain, M.D. The jury returned the following verdict:—

We, the jury impanelled to enquire into the death of William Smarz and Wilfred Chartrand, both employees of Lake Shore Mines, find from the evidence submitted that said employees came to their deaths on May 30, 1942, at 9.56 P.M., in 4,001 W section 8 stope; death being a result of a rock burst causing injuries to the head of William Smarz and head and neck of W. Chartrand. We find that their deaths were accidental with no blame attached to anyone.

McIntyre-Porcupine Mines, Limited

Toivi Rimmi, Finnish, aged 40, married, with two children, employed as a machine helper at the McIntyre-Porcupine mine, was fatally injured about 8.10 A.M., March 5, at the No. 3 mill hole of No. 1,229-1 stope on the 1,250-foot level. Rimmi died of his injuries a few minutes after the accident before he was removed from the stope. His death was caused by multiple fractures of the skull.

No. 1,229-1 stope has been mined by slice-and-fill methods to a height of from 55 to 62 feet above the 1,250-foot level. At 3 P.M. on March 4, the day shift blasted a breast 13 feet wide with 12 holes. This formed a new breast at 22 feet from the west face. No. 3 mill hole and manway was between this new breast and the face, the manway being adjacent to the face. The centre of the mill hole was $8\frac{1}{2}$ feet from the west face, or $13\frac{1}{2}$ feet from the new breast formed. Before blasting, the crew covered the top of the mill hole with mill-hole cribbing.

The night shift scaled the breast and set up a machine on the broken rock $27\frac{1}{2}$ feet east of face or 19 feet east of the centre of the mill hole. The night shift drilled three holes.

On March 5, Rimmi and his partner, E. O'Connor, went on shift at 7 A.M. From the place where the machine was set up, they could see that some of the covering was off the mill hole. While O'Connor was tightening the bar before starting to drill, Rimmi went down to see if any timber had fallen into the mill hole. From the vicinity of the mill hole he told O'Connor that two pieces had fallen in. Shortly after this O'Connor looked again toward the mill hole just in time to see Rimmi's feet and the lower part of his legs as he was disappearing head first into the mill hole.

Rimmi fell six or seven feet. There were several large slabs of rock in the mill hole. One of these slabs was standing on edge and leaning against one of the two pieces of cribbing in the mill hole. This slab was spattered with blood;

Rimmi had evidently struck his forehead on it. He suffered a depressed fracture of the lower left frontal lobe of the skull and multiple fractures over the vault of the skull extending back to the crown. The femur bones in both legs were broken. O'Connor did not hear a fall of rock at the time of the accident, but the doctor's evidence was that Rimmi could not have suffered all these fractures simply by falling into the mill hole. Evidently rock did fall into the mill hole along with him and was responsible for some of his injuries.

An inquest was held before Coroner Frank Evans in Schumacher at 2.00 p.m., March 18. The jury's verdict was:—

Verdict of jury that the said Toivi Rimmi came to his death on Thursday March 5, 1942, about 8.10 a.m. at the McIntyre-Porcupine Mines, in the township of Tisdale, at 1229-1 stope, 1,250-foot level of the No. 11 shaft by falling down the mill hole approximately six feet. Death being accidental with no blame attached to anyone.

MacLeod-Cockshutt Gold Mines, Limited

Emilio Maldonado, Mexican, aged 49, married, employed as a labourer on surface at the MacLeod-Cockshutt mine, was fatally injured when struck in the abdomen by compressed air or a pipe containing compressed air on April 26, 1942, about 1.45 p.m. He died in the Little Long Lac Hospital at 7.45 p.m. on the same day. A. Anderson and F. Felonchuk were injured at the same time.

The hoist-room at No. 2 shaft houses two compressors: No. 1 compressor in the south end and No. 2 compressor in the north end of the building. The compressors deliver air directly to two separate air receivers. No. 1 air receiver, which is 16 feet long and 5 feet in diameter, is located at the north end of the building on the east side. No. 2 air receiver, which is 14 feet long and 5 feet in diameter, had previously been located on the south end of the building on the east side, but was moved to the southeast corner of the building to make room for alterations of the hoist-room. Both air receivers are equipped with a $\frac{3}{4}$ -inch drain valve and three 3-inch safety valves set to blow off at 105 pounds. No. 1 air receiver was inspected on July 7, 1941, and No. 2 air receiver was inspected on September 10, 1941. A 6-inch victaulic pipe, weight 10.5 pounds per foot, connecting No. 1 air receiver to the main line, is laid in a wooden pipe box, 3 by 3 feet, the top of which is level with the ground elevation. This pipe line runs 31 feet from No. 1 air receiver east and then 82 feet north to connect into a 6-by 6- by 8-inch T. The 8-inch end of the T is fastened to the main line that delivers compressed air to the surface and underground workings. Previous to moving No. 2 air receiver a 6-inch line, laid in a 3- by 3-foot pipe box, was connected to the T and run directly west to the air receiver.

On Sunday, April 26, the pipe fitters were working on the pipe line connecting the T to the new location of No. 2 air receiver. A 6-inch flanged elbow had been connected to the T, then to a short nipple to bring the pipe line above the ground elevation. Fastened to the nipple was a 6-inch victaulic elbow. The pipe line then ran 14 feet 10 inches north to another victaulic elbow, and connected to this elbow was a length of pipe 7 feet 8 inches, which ran west. A 6-inch victaulic plug was held on the end of this pipe by means of a victaulic coupling. This pipe line from No. 1 air receiver to the main line and to the plug were under pressure, as air was being used underground to operate the air lifts at the ore pockets. When the pipe line from No. 2 air receiver, which was not under pressure, was ready to be connected to the end of the pipe that held the plug, R. Meany, pipe-fitter boss, sent orders to F. Watters, compressor man, to shut down No. 1 air compressor. After the compressor was shut down Watters left the hoist-room and stood beside Meany, who was standing about 20 feet north of the pipe that held the plug. Emilio Maldonado, labourer, was

standing in the pipe box, which previously had contained the pipe line to the old position of No. 2 air receiver, removing planks. F. Felonchuk, labourer, was carrying out of the way the planks that were removed by Maldonado. After the compressor was shut down A. Anderson, pipe fitter, opened the $\frac{3}{4}$ -inch drain valve to bleed the compressed air from the No. 1 receiver and the pipe line. Leaving the drain valve opened, Anderson returned immediately and sat astride the pipe, facing the plug. He was in the act of loosening the coupling which retained the plug to speed up the bleeding of the air when the plug came free. The compressed air escaping from the 6-inch pipe caused the pipe line to rotate from the victaulic elbow which was connected to the nipple. The escaping air raised so much dust that none of those present were able to see what was happening. When the compressed air had all escaped the 14-foot 10-inch pipe was pointing east, which was 90 degrees from its original position. It was still connected to the elbow, which was also connected to the nipple. The 7-foot 8-inch pipe had twisted out of its retaining coupling and was found 80 feet south-east of its original position. One end of this pipe had struck a cement foundation with sufficient force to chip about an eighth of a cubic foot of concrete from the foundation. From the position of this piece of pipe it was quite evident that the 14-foot 10-inch pipe had swung through at least 45 degrees. No one saw what struck Maldonado, but from his injuries it was apparent that the fatal blow struck his abdomen. There were no external marks on his abdomen, but an autopsy revealed multiple lacerations of the bowel and lacerations of the large blood vessels supplying the bowel and stomach. The only normal organs in his abdomen were his kidneys. It could not be determined whether Maldonado was struck by the pipe or the compressed air. Anderson stated that at no time while he was loosening the coupling that held the plug did he hear air escaping nor had he loosened the coupling sufficiently for the plug to be released. The lower half of the coupling that retained the plug was broken in half. There were abrasions on the inside of Anderson's left leg immediately above the ankle and a simple fracture of the left medial malleolus. The abrasions looked as if they could have been caused by the coupling as it broke and released the plug. Since Anderson was sitting astride the pipe and the pipe swung to his right, the abrasions on his left leg could not have been caused by it. Anderson stated that it was quite a usual procedure to bleed a victaulic pipe line by loosening a coupling, being guided by the sound of the escaping air.

The cause of Maldonado's death was severe shock and haemorrhage.

An inquest was held before Coroner Chas. Powell, M.D., at Geraldton at 2 P.M. on April 28. The jury returned the following verdict:—

Emilio Maldonado died in the Little Long Lac Hospital, district of Thunder Bay, April 26, 1942, as a result of injuries received when he was struck by compressed air or a pipe containing compressed air, while working at the MacLeod-Cockshutt gold mine. This jury recommend that no work be done on a pressure line till the pressure has been released.

Omega Gold Mines, Limited

Peter Furlan, aged 38, Jugo-Slav, drill runner, married, with no children, was fatally injured while scaling in No. 401 E stope of the Omega mine at 11.35 A.M. on January 3. He died in Kirkland Lake District Hospital at 5.30 P.M. the same day.

No. 401 E is a filled rill stope, rilling east and west from No. 401E raise. At the time of the accident, breaking had been completed on the third cut and six breasts had been developed on each side of the rills. The distance between the top breasts was 20 feet and between the bottom breasts, 110 feet. The stope back at the fill raise was 55 feet above the drift timber; the width of the west

face was 20 feet, and the width of the east face 24 feet. The dip of the stope is variable, averaging 65° S. The 5th and 6th breasts on the west side had broken to a rusty north-south slip, which dipped steeply west. Entrance to the stope is usually effected through a timbered manway at the centre of the stope or through chutes east and west, respectively, of the toe of the muck on each rill. On January 3 the centre manway was bulkheaded and covered with muck.

The log of the stope for the night shift of January 2 reported that scaling had been done on the back and east breast and that more scaling was required on the west breast.

The stope crew consisted of J. Novak, E. Lefevre, and P. Furlan. Novak and Lefevre were to rescale the north wall and east breast, and then set up to drill the north side of the east breast. Furlan was to scale the west rill from the top breast down and to bar down the muck pile if necessary.

Mine Captain A. B. Evans visited the stope at 9.45 A.M. He noted a block of ground in the angle of the west face and south wall and a horizontal crack, about shoulder high, extending from the west face across the block toward the south wall. He instructed Furlan to scale from the north wall toward this block and to take down the lower part, which was loose. Shift Boss R. Pineau, on his visit to the stope at about 10.15 A.M., tested this piece. It sounded drummy near the west face and solid at the south wall.

Immediately prior to the accident Novak and Lefevre observed Furlan scaling this piece, standing on the muck pile in front of it. Several minutes later there was a crash and they saw that Furlan had disappeared. They found him at the south and east side of a large block of rock about 25 feet down the muck pile. The brim of Furlan's hat was caught by the lower margin of the rock, and his trousers leg at the right knee was slightly caught under the rock. He was conscious.

Furlan was moved to a safer location down the muck pile, and notification of the accident was given. Mine Captain Evans arrived in the stope at 11.45 A.M. with the stretcher. Dr. Elliot and the First Aid Man, F. Legget, arrived ten minutes later. Furlan was taken immediately to the first-aid room on surface, and was removed to the Kirkland Lake District Hospital by ambulance about half an hour later.

Examination of the scene of the accident showed that the break of the west breast had followed a rusty slip to within 4 feet of the south wall and thence along a curved slip southeast to the south wall. There was no well-defined slip on the south wall at this point. The lower part of the block had broken off to a roughly horizontal surface at shoulder height and well in front of the position in which Furlan was last seen. The dimensions of the block were, roughly, 4½ feet in length, 2 by 2 feet at the lower end, and 4 by 3 feet at the upper end.

The centre chute had been blasted down during the morning, and the side of the cone of subsidence had been barred down by Novak. The muck surface between the east and west muck slopes on which Furlan, Novak, and Lefevre were working was reasonably level. In extent it was about 16 feet east and west and 22 feet between the walls. The muck is slightly more slippery than average. A safety belt was hanging in the stope for use in certain work on the slope of the rills, but usual practice would not require its use for the scaling on which Furlan was engaged.

Furlan received the following injuries: laceration of scalp and face, fracture of seven ribs, fractures of transverse processes of five vertebrae, fractured pelvis, fracture of right femur, dislocation of left hip, and ruptured bowel. Cause of death was given as shock and loss of blood.

An inquest was held before Coroner H. F. Richardson, M.D., in Larder Lake Town Hall on Thursday, January 8, at 8.30 p.m. The jury returned the following verdict:—

We, the jury, find that Peter Furlan came to his death by a fall of loose rock at 11.20 A.M., January 3, 1942, at Omega Gold Mines, Limited, at Larder Lake, Ont. Death occurred at Kirkland Lake District Hospital at 5.20 p.m. We find that death was accidental. We recommend that a safety belt be used when an employee is scaling loose rock on the brow of a sloping muck pile.

Pamour Porcupine Mines, Limited

Stjepan (Steve) Kozar, aged 40, naturalized British subject, born in Jugoslavia, married, with wife and two children in Jugoslavia, employed as a chute blaster at Pamour mine, was injured about 9.15 A.M., April 1, in No. 622 east drift on the 600-foot level, and died approximately one hour later in the Porcupine General Hospital at South Porcupine.

No. 622 east drift is driven along the footwall of the Pamour east ore zone. It is 8 feet wide. Box-hole chutes are spaced at 25-foot centres on the south side of the drift and are numbered from west to east. The lips of the chutes are vertically above the south rail of the 24-inch gauge track. This track is slightly nearer the south wall than the north wall of the drift. Diamond-drill stations (one crosscut round into the north wall) are spaced at frequent intervals along the drift. There were such stations between Nos. 58 E and 59 E, 60 E and 61 E, and 64 E and 65 E chutes. The cars used are 3-ton capacity; the maximum width is 4 feet, the height above rail is 4 feet, and the overall length is 8 feet. Five-ton battery locomotives are used for tramping.

Prior to the accident Kozar and H. Maki, chute puller, had loaded a train of cars from No. 62 E chute. While this train was being trammed to the tippie, Maki, on instructions from Kozar, got a new 3- by 10-inch by 10-foot chute plank to replace a broken one in No. 61 E chute, from which they intended to load the next train of ten cars. Maki started to put the new plank in the chute above the broken plank. Kozar told him to wait until the cars arrived. He took the plank out of Maki's hand and leaned it against the west end of the chute at an angle of about 55 degrees. The upper end was placed over the chute rail holding the stop log, with the lower end on the floor of the drift beside the track.

As the train of ten empty cars was being pushed up to No. 61 E chute, Maki stood in the diamond-drill station 10 feet west of the chute; Kozar was standing opposite the chute by the north wall. The clearance between the wall and a car at this point was from 1 foot 9 inches to 2 feet 6 inches. The switchman, John Freund, who rode in on the leading car of the train, stepped off the train as it passed No. 60 E chute and stopped at the corner of the diamond-drill station between Nos. 60 E and 61 E chutes. This car did not clear the chute plank leaning against No. 61 E chute. The 2 rear wheels were thrown off the track to the north and Kozar was caught by the derailed car and rolled along the wall. The front end of the car struck the north wall 7 feet east of the centre of No. 61 E chute and then scraped the wall for 3 feet before coming to rest. The speed of the train when it struck the plank was 2 or 3 miles per hour. T. Bolton, motorman, had just cut off the power before the plank was struck. He clearly saw the end of the car lifted as the plank slid along the ground and over the stop-log rail. Freund also saw the car lifted. He shouted and jumped back at the same time.

Kozar was left free, standing by the west end of the car, which struck him. He was taken out on the motor to the shaft station, then to the first-aid room, where he was treated for shock by the mine doctor, after which he was taken to the hospital. He was unconscious when first seen by the doctor. On his arrival

at hospital he showed facial paralysis, suggesting concussion of the skull. Preparations for X-raying his skull were under way when he died, approximately ten minutes after his arrival at the hospital.

A post-mortem examination was made by Dr. Blaisdell, pathologist, who found that death was due to an extensive ragged laceration of the liver, practically severing one lobe, and loss of about three quarts of blood by haemorrhage into the abdominal cavity. In the doctor's opinion no medical or surgical treatment could have prevented Kozar's death at any time after the accident.

An inquest was held before Coroner Frank Evans, of South Porcupine, at Porcupine at 2 P.M. on April 8. The jury's verdict was as follows:—

We, the undersigned jury, agreed that Steve Kozar came to his death at the Porcupine General Hospital in the township of Tisdale at 10.15 A.M. on April 1, 1942, as a result of an accident, which occurred in the 622 E drift of the 600-foot level of the Pamour Porcupine Mines, Limited, in the township of Whitney, at 9.15 A.M. on April 1, 1942, by being crushed by a car being derailed by hitting a plank, which the deceased himself placed too close to the track.

Toburn Gold Mines, Limited

James Dubriel, timberman, was instantly killed at 12.50 A.M. on March 26 in No. 574 stope of the Toburn mine, when he was struck by loose rock and fell 195 feet to the muck on the floor of the stope.

Dubriel, aged 38, British, married, with 8 children, had been employed as a timberman at the Toburn mine since February 9, 1942.

No. 574 stope is a shrinkage stope, which was mined from the 542-foot level of the main shaft to the 400-foot level of "A" shaft, a slope distance of about 230 feet. A sill ranging in width from 3 feet to 15 feet was left below the A-400-foot level. The dip varies from 65 degrees at the A-400-foot level to 80 degrees above the 542-foot level, the average dip being about 70 degrees. Broken ore was drawn from the stope during 1940 and 1941. At the time of the accident the stope was empty to the east of the original raise to the 400-foot level, but to the west some broken ore remained, hung up as nearly vertical columns on some pillars that had been left in the stope about 130 feet above the 542-foot level.

At 10 P.M. on March 24, J. Dubriel and his helper, G. Moras, accompanied M. McCarthy, shift boss, to the entrance to No. 574 stope on the 400-foot level, "A" shaft. McCarthy told them to get ladders and ropes and commence to clean down the hung-up rock, first putting a staging and supporting or scaling the hanging wall as they worked down. On that shift they hung two ladders down the footwall and put in three sprags at a distance of 20 feet below the level. On these sprags two 2- by 8-inch planks, 12 feet long, were placed for a staging. The west end of the staging was within a few feet of the slope of the hung-up rock, which extended 7 feet above the stage up the slope to the west and about 18 feet down the slope to the east, where it fell off vertically.

At about 10 P.M. on March 25, McCarthy inspected the stope and, from the staging, he noticed a slab of loose rock on the hanging wall over the top and west side of the muck pile. A short time later, on the 542-foot level, he instructed Dubriel and Moras to go back into No. 574 stope and continue cleaning down the broken rock and to put in stulls where necessary. He told them about the loose rock in the hanging wall and emphasized the necessity of supporting it before working under it.

Dubriel and Moras entered the stope at 11.30 P.M. and started to work. At 1.50 A.M. Dubriel was standing on the staging beside the ladder and told Moras to go up to the level to get the measuring stick. When Moras left the staging, Dubriel was standing immediately west of the ladder and had a safety rope in his hand but did not have it fastened to him.

Moras was just climbing into the drift when he heard loose rock falling and saw that Dubriel, the staging, and the west sprag had all disappeared.

Dubriel's body was recovered from the top of the muck 12 feet above the 574-foot stope floor at 2.30 A.M.

He had suffered the following injuries: top of head torn off, chest crushed, right collar bone broken, left arm broken, pelvis broken, multiple contusions and lacerations; he was partially disembowelled. Death was instantaneous.

Examination of the stope showed that a slab, apparently the loose one the shift boss had seen, had fallen off the hanging wall over the muck pile. Some of the loose rock fell on the west slope of the muck; most of it fell on the east slope where Dubriel and Moras were working. Marks of the falling rock could be seen on the west side of the ladder. This would be directly in line with Dubriel's last known position. The thickness of the slab, which broke up into many pieces, ranged from 15 inches to probably 2 or 3 inches. About $2\frac{1}{2}$ tons fell. The hanging wall had not been scaled or sounded by either Dubriel or Moras. The safety rope used had been tied near the middle to a stull in the drift above. One end had been used as a safety rope by Moras and Dubriel alternately. The other end, long enough to reach the staging, had been used to lower timber; at the time of the accident it was available for use as a safety line, but was lying in the drift.

An inquest was held by Coroner R. W. McBain, M.D., in the Township Hall, on April 1 at 7.30 P.M. The jury returned the following verdict:—

We, the jury empanelled to enquire into the death of James Dubriel, find that he came to his death at 12.50 A.M., March 26, 1942, at the Toburn mine in the 574 stope by accidental death caused by a fall of 200 feet as a result of being knocked off a staging by the falling of loose rock. This jury recommends that each man should be supplied with a rope or safety belt while working in dangerous places.

METALLURGICAL WORKS

International Nickel Company of Canada, Limited

Ermenio Bortolussi, Italian, aged 26, married, employed as a labourer, and Lionel Dupuis, British, aged 23, single, employed as a baleman, were fatally burned about 3.50 P.M. on January 6 in the Copper Cliff smelter, when about 38 tons of molten matte was explosively ejected from No. 16 converter. Bortolussi died in the Copper Cliff hospital on February 14, and Dupuis died in the Toronto General hospital on April 17. Death was attributed in both cases to septicaemia secondary to multiple burns.

No. 16 converter is one of six 13- by 35-foot Pierce-Smith converters in the copper-converter building. The main aisle runs east and west, with converters Nos. 14 to 19 in line along the south side, and two copper reverberatory furnaces, Nos. 7 and 8, adjoining the north side. The north side is open at the reverberatory floor, which is 12 feet above the aisle floor. The entrance to a lavatory on the reverberatory floor faces the west end of No. 16 converter. This lavatory is near a stairway from the aisle floor, and adjoins the south end of the copper reverberatory office.

About 3.20 P.M. on January 6, J. Powlesland, a skimmer, turned No. 16 converter off the tuyères after blowing for about 50 minutes and signalled for a ladle of furnace matte to complete the charge in this converter. The charge had been started about 24 hours previously and was high in copper content by that time. Powlesland had to wait while a ladle of matte was delivered to No. 15 converter, following which No. 6 crane, operated by D. Halonen, with L. Dupuis as baleman, arrived with a ladle of matte from No. 7 furnace. About 3.50 P.M., Halonen had started to pour the matte into the converter when an explosion

occurred inside the converter, followed shortly by a second explosion. About three-quarters of the 50-ton charge was thrown violently out of the converter by the two explosions. It landed on both the aisle and reverberatory floors, covering an area of about 3,500 square feet with molten matte, which extended beyond the lavatory on the reverberatory floor.

Halonen moved the ladle away from the converter when the first explosion occurred. As some of the matte landed in the crane cab, he set the crane in motion towards the east end of the building and ran up the ladder to the crane bridge, where he was overcome by fumes. The crane stopped at the end of the building after it had knocked out part of the tile wall.

L. Dupuis, V. Walberg, and G. Allen, were standing on the aisle floor, near the foot of the stairway, when the first explosion took place. Allen was waiting to go on shift at 4 p.m. They ran westward through the shower of matte. Dupuis was fatally burned. Walberg and Allen were mildly burned.

When the first explosion occurred, E. Bortolussi, A. Lehtonen, and E. Bortolotti, were standing outside the lavatory entrance and F. Mazzei and G. Scully were inside the lavatory. All except Scully were waiting to go on shift at 4 p.m. The three men standing outside ran into the lavatory, leaving the door open. The matte set fire to the door frame, and some of it landed on the wet lavatory floor, where it exploded. The five men rushed out of the lavatory, and ran northwards through the molten matte lying on the floor. Bortolussi left the lavatory just as the second explosion threw out another shower of matte and was fatally burned. Lehtonen was severely burned. Mazzei and Bortolotti were moderately burned. Scully was mildly burned.

It is believed that the explosions were caused by the sudden liberation of sulphur dioxide by the chemical reaction between the sulphides in the furnace matte and the oxides in the converter charge. It is usual for some sparking or foaming to take place from this reaction, but in the past there has never been any explosive ejection of the charge. All of the matte used in this charge had been tapped from No. 7 furnace. No flux had been added to the charge after the converter had been turned off the tuyères. It is not unusual for a delay exceeding thirty minutes to occur in the delivery of matte to a converter.

An inquest was held by Coroner G. A. Henry, M.D., at Copper Cliff on February 24, and adjourned until May 6. His verdict was as follows:—

Ermenio Bortolussi died on February 14, 1942, and Lionel Dupuis died on April 17, 1942, from septicaemia induced by multiple burns suffered in an explosion in the smelter at Copper Cliff on January 6, 1942. The cause of the explosion cannot be determined from the evidence. Accidental deaths.

Frank Swets, British, aged 26, single, employed as a fitter's helper at the Copper Cliff smelter, was burned to death in the coal plant about 3.55 p.m. on January 14.

This plant produces pulverized coal for firing the reverberatory and holding furnaces. After crushing, the coal is dried in rotary dryers and pulverized in roller mills. Cyclone collectors remove the pulverized coal from the mills and deliver it to closed storage tanks, from which it is alternately drawn to one of two shooting tanks, which are on scales. It is then aerated with compressed air and blown through pipe lines to one of the storage tanks at the various furnaces. This operation is handled from a control room in the plant basement. The cone-bottomed shooting tanks, about 12½ feet high and 7 feet in diameter, are located in the basement beside the control room. There is an 8- by 22-foot opening, surrounded by a railing, in the main floor above the tanks. The discharge pipes

at the top of the tanks are connected to the end of the transport pipes, located about $7\frac{1}{2}$ feet above the main floor, by flexible 6-inch hoses about 10 feet long, to permit movement of the tanks on the scales. These hoses are clamped to flanged fittings, which are bolted to flanges on the discharge and transport pipes.

About 3.45 p.m. on January 14, R. McCuaig, dryerman on the main floor, noticed a bulge in the flexible hose connected to "B" shooting tank. He summoned R. Moxam, coal plant fitter, from the dryer furnace room at the other end of the building and showed it to him. Moxam returned to the furnace room, where he had left two other fitters, G. Orasi and M. Cranley, and two helpers, K. Woolven and F. Swets. He told them that the hose would have to be changed and went back to the tank with Orasi and Woolven, where he again made the same statement. Cranley and Swets arrived a few minutes later as Moxam was leaving. The men assumed that Moxam had already tagged the controls and that work was to be started immediately. Orasi and Cranley started to remove the flange bolts at the upper end of the hose, while Swets and Woolven started to remove those at the lower end. The last bolt was being removed from the upper end when Orasi heard the tank being aerated and shouted to the others to get out. He ran to the speaking tube, called the control room, and asked that the operation of "B" tank be stopped. While he was doing this, a cloud of coal dust began spreading through the plant from the disconnected hose. The dust ignited with explosive force a few seconds later.

When Moxam left the tank he went to the control room and reported the condition of the hose to the day-shift coal-plant foreman, J. White, who was then filling "A" shooting tank with a charge of coal. He told White that he was going to the warehouse for a new hose and that it was all right to use "B" tank until he returned. White shot "A" tank, then started to fill "B" tank with a 6-ton charge of coal. The afternoon-shift foreman, A. Johnson, entered the control room, and White told him about his conversation with Moxam. After White started to shoot "B" tank, there was a call on the speaking tube connecting the control room with the main floor. Johnson answered the call, then told White that someone said to stop shooting "B" tank. White replied that it was too late to do so. An explosion then occurred which blew half the roof off the coal plant, set fire to most of the coal in the plant, and destroyed the wires leading to many of the electric motors. The cause of the ignition of the coal dust could not be definitely established.

All of the men in the plant, except Swets, got out of the building safely. Cranley had received severe burns, and some of the others had received minor burns. Swets had last been seen climbing over the railing at the shooting tanks. His charred body was found about 20 feet from there when the building could be entered shortly after 5 p.m.

An inquest was opened by Coroner P. E. Laflamme, M.D., at Copper Cliff on February 13 and adjourned until August 5, when it was resumed at Copper Cliff. His verdict was as follows:—

Frank Swets, aged 26, employed as a fitter's helper at the Copper Cliff smelter of the International Nickel Company, was burned to death in the coal pulverizing plant about 3.55 p.m. on January 14, 1942. From evidence given, Swets and three other men had started to remove a partly defective hose connecting "B" shooting tank to the transport pipe line, when a charge of pulverized coal was forced out of the tank with compressed air by the coal-plant foreman, who did not know that the hose was being removed at that time. The coal was blown out of the disconnected hose in a cloud of dust, which spread through the building. It was ignited in some manner and exploded, blowing half the roof off the building and setting fire to most of the coal in the plant. The building could not be entered until after 5 p.m., when the body of Swets was found about 20 feet from the tank. The accident was due to the failure of R. Moxam, leading fitter, to give precise orders to his gang as to when the job was to be started, before leaving them to obtain a new hose. They assumed that Moxam had made arrangements for them to start work immediately.

Edward L. Brophy, British, aged 18, single, employed as a transferman in the Orford building at the Copper Cliff smelter, was fatally injured about 9.10 A.M. on April 23, when crushed between a pot being lifted by a crane and another pot on the floor of "C" aisle, while acting as baleman for the crane. He sustained ruptures of the liver and spleen, with retroperitoneal haemorrhage, and died in the Copper Cliff hospital at 8.50 P.M., the same day.

"C" aisle is one of four parallel aisles in the Orford building. It is served by two 25-ton bridge cranes, with a span of 24 feet. A cable-drawn transfer car is located at the north end to move pots from one aisle to another. The northern section of "C" aisle is used as a cooling-floor for 66-cubic-foot pots of first-treatment matte from the cupola furnaces in "D" aisle. After cooling for 32 to 48 hours the pots are returned to "D" aisle for stripping. The transferman acts as baleman for No. 2 crane in "C" aisle when the pots are being moved.

There were about twenty pots in "C" aisle on the morning of April 23, located in a close double row along the west side, with the bale lugs parallel to the aisle. Shortly before 9 A.M., the cranes started to move them to the transfer car en route to the stripping floor in "D" aisle. No. 2 crane was being operated by an apprentice craneman, L. K. Webb, under the supervision of the regular craneman, E. Panke. The transferman, E. Brophy, was acting as baleman. About 9.10 A.M., Brophy attempted to place the crane bale over the north lug of the fifth pot to be moved by his crane. This pot was then at the south end of the outside row and was too close to the adjoining pot in the same row to allow this to be done. Webb then turned the crane controls over to Panke, who hoisted the pot about a foot by the south lug alone, causing it to rotate. He lowered it to the floor as soon as the north lug was in the open. Brophy placed the bale over this lug, then checked the position of the bale on the other lug, and signalled Panke to hoist. As the pot left the floor, Brophy stepped between it and the corresponding pot in the inside row, which were about $2\frac{1}{2}$ feet apart. He was crushed between them when the pot being hoisted started to swing. Panke made an unsuccessful attempt to stop the movement of the pot before it reached Brophy.

An inquest was held by Coroner H. M. Torrington, M.D., at Copper Cliff on May 7. His verdict was as follows:—

Edward L. Brophy came to his death in the hospital at Copper Cliff, Ont. (International Nickel Company) on April 23, 1942, from shock and haemorrhage from ruptured liver and spleen, the result of being squeezed between two ore pots on "C" aisle in the Orford plant, INCO, when one pot was being raised—the pot swinging sufficiently to catch Brophy between the pots. Accidental death.

John Punyi, aged 40, British, married, with three children, employed as a process labourer at the nickel refinery of the International Nickel Company of Canada, Limited, Port Colborne, was injured when he fell off a flat car 17 inches high about 2.45 P.M., December 28. He died the following day about 7.30 P.M.

Copper sulphide is transferred from the leaching tanks to No. 2 building in steel buckets. Each bucket is placed on a flat car 6 feet 6 inches by 3 feet 3 inches and 17 inches high. The train of flat cars and buckets is hauled over 24-inch gauge tracks by a small locomotive. Two parallel tracks run north and south in No. 2 building, with centre lines 6 feet apart. The floor is of concrete, with the tracks embedded in the concrete. The buckets of sulphide are picked up by overhead cranes and dumped on the stock-piles directly over steam drying-coils. When the sulphide has been dried for approximately six days, it is transferred to the sintering plant.

Punyi had been employed since 1936 dumping the buckets of sulphide on the stock-pile. On December 4, 1942, he went home with a haemorrhage from the nose and was off 10 days. He came back December 15 and was put at light work, sweeping up, until December 19, when he again went home with another haemorrhage from the nose. He returned to work on December 28. He was placed on light work, levelling the sulphides in the buckets to facilitate dumping.

About 2.45 P.M. Harold Beck, sub-foreman, came into the building. He saw Punyi standing on the flat car levelling the sulphide on the bucket. Punyi appeared to throw up his hands, his body stiffened, and he fell on his right side to the floor. The shovel he had been using fell on the opposite side of the car. Beck was at his side in a matter of seconds. The nearest crane was 30 feet away at the time. Julius Root, crane operator, was also watching Punyi at the time he fell, as was Wm. Romanyszyn, who was on top of the sulphide pile. Punyi's feet did not leave the flat car. He hit his head on the rail of the adjoining track, receiving a scalp wound one inch long on the right side. He was carried to the first-aid room on a stretcher and regained consciousness. Dr. W. W. Moffat examined him and found no external marks about the chest. Punyi was taken to the doctor's office and had his head wound dressed. He did not complain of any other injuries. Dr. Moffat visited Punyi at his home that night and found him sitting up downstairs. Punyi complained about his chest. It was tender when pressure was applied. Punyi died about 7.30 P.M. the following night.

An autopsy showed the following injuries: fractures of the 6th, 7th, 8th, and 9th ribs on the right side in the mid-axillary line, with extensive bruising of the tissues in these areas; haemorrhage from the intervertebral artery passing along the margin of the fractured rib. The cause of death was haemorrhage (3,000 cubic centimetres) into the right pleural cavity, as a result of fracture of the ribs, with laceration of intercostal vessels.

An inquest was held in the Town Hall at Port Colborne before Coroner E. A. McKenzie, M.D., at 3 P.M. on January 6, 1943. The jury's verdict was as follows:—

John Punyi died in Port Colborne on December 29, 1942, from injuries accidentally received at International Nickel Company on December 28, 1942.

QUARRIES

Dominion Mines and Quarries, Limited

James E. Thompson, British (North American Indian), aged 55, married, employed as a labourer at the Killarney quartzite quarry, was fatally injured about 4.30 P.M. on July 28, when hit on the head by flying rock from a sand-blast. He died in the Espanola Hospital about midnight of the same day.

The quartzite broken in the quarry is loaded by steam shovels into 6-ton side-dump cars, which are delivered by gasoline locomotives to the bottom of a 45-degree incline leading to the north end of the crushing-plant. The upper end of the incline is carried on a trestle and is 30 feet above the ground at the plant. The cars are hoisted separately up this incline and dumped directly into a 42-by 40-inch jaw-crusher, 5 feet below track level. The dumping location is in the open, with a plank wall on the south side of the crusher to a height of about 3½ feet above the track. A good deal of sand-blasting is done at the crusher, and occasionally in the cars, to break up large chunks which will not go through the crusher. These blasts, usually consisting of one stick of 60 per cent. Polar dynamite and an electric blasting cap, are set off by a battery from inside a shelter on the north side of the trestle. A compressed-air whistle is used to notify workmen in the vicinity to take cover before a blast is set off.

About 4.30 P.M. on July 28, J. Thompson and I. Recollet were unloading lumber from a hoistway truck at the top of an incline leading from the boat dock to the south door of the boiler-house, located southeast of the primary crusher. They were about 20 feet from the door, together with the boiler fireman, A. Roque, when they heard the blasting whistle. Roque entered the boiler-house, Recollet took cover against the south wall of the building, and Thompson returned to the truck, which was about 4 feet from the building. When the blast went off, a piece of rock, weighing about 7 pounds, was thrown over the roof of the boiler-house and hit Thompson on the head. He was about 90 feet from the primary crusher and standing about 40 feet below the trestle track at the crusher.

The crusherman, A. Mendoshkin, did not know of the accident until some time later and could not recall if at the time of the accident he had sand-blasted a chunk in the crusher or one in a car. It is thought likely that the rock which hit Thompson came from a chunk blasted in a car, as otherwise the plank wall on the south side of the crusher would probably have diverted it. It is most unusual for flying rock to reach the south side of the boiler-house.

An inquest was opened by Coroner R. N. Simpson, M.D., at the quarry on August 1 and was adjourned until August 7, when it was resumed. The coroner's verdict was as follows:—

James Thompson came to his death at Espanola Hospital on July 28, 1942, from a fractured skull and lacerated brain, resulting from being struck on the head by a flying piece of rock while employed at the Killarney plant of the Dominion Mines and Quarries. There was no evidence of any lack of safety precautions on the part of the company or any of its employees. To avoid similar accidents in future I would suggest screening the platform where the cars are dumped into the crusher, and I would recommend that cards, with the necessary rules for safety, be printed and posted near all places of danger.

Gypsum, Lime and Alabastine, Canada, Limited

Raymond Donald, aged 36, British, married, with three children, employed as a driller, was killed about 5.50 P.M. on September 15 at the quarry in North Oxford township, Oxford county, operated by Gypsum, Lime and Alabastine, Canada, Limited. He was struck by a sand pipe, which forced his head down on to the "starter pipe" or "splash pan" of a well drill-hole. He had been employed since July 21 on a Cyclone well-drill, and was an experienced operator.

The drill which Donald was operating when the accident occurred was driven by a 10 h.p., 550-volt motor. A 5-inch bit was used to drill the hole, and a starter pipe of 3/16-inch iron, 8 inches in diameter and 3 feet long, was used to guide the bit while drilling. The sand-pipe which was used to clean the hole was 13 feet long, 3½ inches in diameter, and weighed approximately 200 pounds when empty and 300 pounds when full of sludge and water. The sand pipe was raised and lowered by a 3/8-inch cable, which ran to the sand-pipe drum through a single block fastened on the ladder of the mast 22 feet above the frame of the drill. The drum was driven by a friction drive mounted on the main shaft of the drill. It was controlled by a hand lever, which can be placed in three positions: the first was for winding up the cable, the second was the neutral or lowering position, and the third was the braking position. The drill was set up facing north. The lever controlling the sand pipe was located on the east side of the machine.

About 3.30 P.M. on the day of the accident, Donald started to drill a hole and had completed it to a depth of approximately 14 feet at the end of the shift. He had started to clean out the hole with the sand pipe when, in some manner, he was struck by the pipe and injured.

Eli Josh had been operating a similar type of drill about 150 feet northwest of Donald's machine and had made some minor adjustments to his drill. When he started to go home, he looked for Donald. He saw him in a sitting position facing his machine with his head and neck over the starter pipe and the sand-pipe lying across his neck. The bottom of the sand-pipe was resting on the ground to the west side of the machine. The sand-pipe cable had run off the drum. Josh laid Donald on the ground and went for help.

J. M. Rogers, M.D., was called and pronounced Donald dead. His injuries consisted of a ruptured jugular vein, compound comminuted fracture of the lower jaw, two broken vertebrae in the neck, and severed facial nerve. The cause of death was haemorrhage from the jugular vein.

The weather was unsettled on the afternoon of the accident, with some showers, making the ground wet and slippery around the drills. Donald had been shoving the sand-pipe to the west to allow it to drain on the ground and had apparently been struck by the pipe. He may have slipped on the wet ground before being struck. He fell across the starter pipe. The control lever in the neutral or lowering position would allow the sand pipe to fall across his head and neck.

An inquest was held in the Council Chamber at Ingersoll before Coroner H. G. Furlong, M.D., on September 21. The jury's verdict was as follows:—

We, the undersigned jury, agree that Raymond Donald, an employee of the Gypsum, Lime and Alabastine, Canada, Limited, met his death on September 14 about 5.50 p.m. at the Gypsum, Lime and Alabastine, Canada, Limited, on lot 18, North Oxford township, operating a Cyclone drill for said company, and death being caused by a haemorrhage due to the jugular vein being severed. According to the evidence given we conclude that his death was accidental and that no blame could be attached to the said company.

Hagersville Quarries, Limited

Reginald C. Gloyd, aged 17, British, single, employed as a labourer, was suffocated by sand about 5.45 p.m., September 24, at the property of Hagersville Quarries, Limited, lots 12, 13, and 14, concession XIII, Walpole township, Haldimand county.

Gloyd was an employee of the Dufferin Paving and Crushed Stone Company, Limited, but was on loan to Hagersville Quarries, Limited. He had been lent previously from August 31 to September 17, had gone back to the Dufferin Company for a week, and had come back to Hagersville Quarries, Limited, at noon on the day of the accident.

A tunnel, about 6 by 6½ feet and 200 feet long, running east and west, was constructed to house a conveyer. Five 12- by 12-inch openings were placed at regular intervals in the roof of the tunnel. Sand and crushed stone were fed through these openings to the conveyer. The conveyer carried the materials to the asphalt plant. Trucks dumped the materials over the openings. The road way was built up approximately 10 feet over the tunnel.

On the day of the accident, sand containing about 5 per cent. of ¾-inch crushed stone was being dumped into the opening at the west end of the tunnel. The sand had formed a crater with a diameter of about 12 feet at the top and a depth of approximately 10 feet. A shovel with an extended handle 9 feet 6 inches long was provided to work the sand down. A man was employed in the tunnel to work the gates over the conveyer and directly under each opening. This was to maintain a steady flow of materials on to the conveyer belt. Gloyd was employed to feed the sand down from surface.

Mike Dyne, a truck driver, dumped his load about 5.30 p.m. and saw Gloyd. Alvin Ryder, another truck driver, started to dump his load about 5.45 p.m. and

thought he heard a yell. He climbed out of his truck and went around to the back of it. He could not see Gloyd but saw a short-handled shovel in the sand. He went to the office for help. About the same time James Johnson, operating the gates in the tunnel, noticed a foot in the opening over the gates. He ran for help. J. S. Beck, quarry superintendent, and Lloyd Irving, plant foreman, arrived at the scene about the same time. Gloyd was removed from the sand about 6.15 P.M. Dr. Frost, who arrived as Gloyd was being taken out, pronounced him dead.

On the day of the accident Gloyd had been instructed by both the quarry superintendent and plant foreman to use the long-handled shovel.

An inquest was held before Coroner J. J. McManus, M.D., in the Town Hall at Hagersville at 2 P.M. on September 30. The jury returned the following verdict:—

Reginald C. Gloyd came to his death about 5.45 P.M. on the 24th day of September, 1942, at the property of Hagersville Quarries, Limited, in the township of Walpole, in the county of Haldimand, as a result of inhaling sand and stone which covered him. We recommend that men working at the pit where the accident happened be definitely warned of the danger of going into the pit or using a short-handled shovel and that no man be allowed to go into this pit unless there is a second man present and that a notice to this effect be maintained near this pit and similar pits as well as the men being definitely warned.

Haldimand Quarries and Construction, Limited

Rodman McNaughton, aged 31, British (Scotch and Indian parentage), married, with two children, employed as foreman in the crushing and screening plant at the property of Haldimand Quarries and Construction, Limited, lot 28, concession 1E, R.P.R., and 1W, R.P.R., Oneida township, Haldimand county, was killed about 3.45 P.M. on April 1. He was caught between the receiving end of a revolving screen and the trunion wheel supporting it.

The crushing-plant consists of a primary gyratory crusher and an elevator to a scalping screen, two secondary gyratory crushers set for $\frac{1}{2}$ -inch stone, and two revolving sizing-screens.

The two sizing-screens are located on the top floor of the crushing-plant approximately 64 feet above ground level. They are driven by a line shaft and revolve at 15 r.p.m. Each screen is 64 inches in diameter and has 6-inch angle irons set at 90 degrees on the circumference. The angle irons run along the entire length of the screens, a distance of 20 feet. The screens are supported on two trunion wheels, 30 inches in diameter, at the receiving end, and material is fed into them by means of a wooden chute.

The plant started to operate on April 1. McNaughton's work was to keep the plant in operation and make adjustments and repairs when necessary. He had been employed in the quarry since August, 1940. In July, 1941, he was put in charge of the plant and worked in that capacity until the plant closed down on December 16, 1941.

McNaughton was last seen about 3.15 P.M. on the afternoon of the accident. C. F. Anderson, superintendent, came out of the quarry about 3.30 P.M. to give McNaughton some instructions. He looked through the plant for him, going up to the top floor. He saw the guard rail in place and did not go past it to the receiving end of the screens.

Thinking that McNaughton might have gone into the rock bin and been covered, Anderson shut down the plant at 4.10 P.M. and had the bin emptied, and sent for Dr. J. E. McCracken, of Hagersville. Anderson started through the plant again and, lifting the hinged guard rail, walked along the last screen to the receiving end, where he found McNaughton in a sitting position, jammed

between the end casting and trunion wheel. Dr. McCracken pronounced McNaughton dead.

Standing orders required that all greasing was to be done at the noon hour or when the machinery was shut down. The grease gun was found on a platform at least 10 feet away from the trunion end of the screen.

The deceased apparently climbed over the guard rails and may have tried to feel the inside bearing of the trunion wheel and had his clothing caught by the 6-inch angle iron on the revolving screen. He was wearing pants, shirt, and sweater, a two-piece suit of overalls, and a combination suit of overalls over them. He wore a pair of gauntlet gloves.

McNaughton's injuries consisted of crushed ribs, dislocated right shoulder socket, dislocated neck, and fractured vertebrae.

An inquest was held on April 8 at 2.00 P.M. in the Town Hall at Hagersville before Coroner J. J. McManus. The jury's verdict was as follows:—

We find that Rodman McNaughton came to his death on the 1st day of April, 1942, at the township of Oneida, by coming in contact with machinery at the plant of the Haldimand Quarries and Construction, Limited, by which company he had been employed. We find that no blame can be attached to any person.

Kirby Brothers Supply Company, Limited

Emmanuel Joseph Proulx, aged 36, British, married, with two children, employed as a labourer, was struck on the right side of the head by a rapidly revolving belt at the quarry of Kirby Brothers Supply Company, Limited, about 8.00 A.M. on May 27.

On the morning of May 27, Proulx and Albert Levecque finished a minor repair job on a 2-cylinder Gardner-Denver air compressor, driven by a 25 h.p., 550-volt, 1,700 r.p.m. induction motor. The pulley on the motor has an 8-inch diameter and an 8-inch face. The 4-ply belt is 6 inches wide.

About 8 A.M. Proulx started the motor, but the belt came off. It was replaced, and belt dressing was applied. The motor was started again, and the belt was again thrown off. Proulx shut off the power but instead of waiting for the rotor of the motor to stop revolving, he attempted to use the belt as a brake on the motor pulley. The belt caught, flew around, and struck Proulx heavily on the side of the head, knocking him down.

Levecque called for help. Proulx was placed in Levecque's car and rushed to the Ottawa General Hospital, but was dead on arrival.

An inquest was held on June 9 at 8.30 P.M. in the Court House in the city of Ottawa, before Coroner C. E. Shapiro, M.D. The jury's verdict was as follows:—

We, the jury empanelled to inquire into the death of Emmanuel Proulx, find that he was found to be dead when he was examined after being admitted to the Ottawa General Hospital at 8.25 A.M., May 27, 1942. The cause of death was severe shock and haemorrhage of the brain as a result of being struck on the right side of the head, face, and neck by a rapidly revolving belt while at work at Kirby Brothers quarry, and we find that death was accidental. In the interest of safety we suggest that suitable measures be taken to safeguard against accidents of this type.

PITS

Allan Dickson's Gravel Pit

Clifford McBride Findlay, aged 44, British, married, with four children, was buried in a sand and gravel pit about 10 A.M., October 19, on the farm of Allan Dickson, lot 18, concession VI, Fitzroy township, Carleton county.

The pit, which has been worked for the last fifteen or twenty years, is now about 500 feet long by 60 feet wide. It is about 14 feet deep on the east

side with the sand lying at an angle of about 45 degrees. On the west side it is about 20 feet deep. The faces are nearly vertical. It was evidently the practice to excavate the sand at the foot of the bank and allow the top to drop. Material was being taken from the west side when the accident occurred.

About 9 A.M., Hiram Findlay, with two trucks and drivers, and his brother, Clifford Findlay, and David Sadler, began to load gravel from the west face of the pit. The loading was completed and the trucks were driven away about 10 A.M. While they were gone Clifford Findlay and David Sadler started to bring down gravel for the next loads. Findlay used a long-handled shovel, and Sadler used a pick-axe. They had worked a few minutes when an unusually large slide of sand and gravel occurred, knocking Sadler down and burying Findlay. Sadler dug himself out and tried unsuccessfully to locate Findlay. He then went for help.

Dr. Wm. Richie Dowd was called and arrived at the pit about 10.30 A.M. just as Findlay was being dug out. Resuscitation was carried out for one hour before the doctor pronounced Findlay dead.

An inquest was held in the Orange Hall at Kinburn before Coroner C. D. Wallace, M.D., at 8 P.M. on October 30. The verdict was as follows:—

We, the undersigned jury, have found that on October 19, 1942, the late Clifford McBride Findlay came to his death on the farm of Allan Dickson, being lot 18, concession 6, township of Fitzroy, by suffocation caused by a sand or gravel slide in a gravel pit on the said farm, which was accidental.

Morrison McLaws' Gravel Pit

Patrick Ryan, aged 60, British, single, labourer, was struck by a block of frozen gravel that fell from the face of the McLaws gravel pit, on lot 3, concession IV, Yarmouth township, Elgin county, on January 23, about 11.30 A.M.

Ryan was employed by the Township of Yarmouth. He was helping Robert Ryckman, a truck driver, to load gravel. They had hauled out two loads on the morning of January 23. When they returned for the third load, two large blocks of frozen gravel had fallen. They moved one piece out of the way, using a chain attached to the truck, then loaded the truck. They were both standing back of the truck planning to move the other piece that was lying there. Ryckman heard a thud. He jumped to one side and ran up alongside the truck. He heard Ryan call out and, on going back, found him lying between two pieces of frozen gravel. A piece approximately 43 by 36 inches, weighing about 1,000 pounds, had fallen from the top of the pit and struck Ryan, jamming him against the piece they had planned to move out. Ryckman picked Ryan up and carried him out of the pit, then went for help. When he came back a few minutes later, Ryan was dead.

The face of the pit was 18 feet high. The gravel is free running, but frost had penetrated from 2 to 3 feet from the surface. The day was quite mild, and gravel was running down the face, leaving a layer of frozen gravel on top in an overhanging condition.

An inquest was held on January 30 at 7.30 P.M. in the Court House at St. Thomas before Coroner D. L. Ewin, M.D. The jury's verdict was as follows:—

We, the jury, find that Patrick Ryan came to his death at about 11.30 A.M. on the 23rd day of January, 1942, in the gravel pit on the McLaws farm, township of Yarmouth. We find death was accidentally caused by being crushed, and shock.

Roy Wattam's Gravel Pit

Gerald Cleary, aged 34, British, married, labourer, was struck by a chunk of frozen gravel that fell from the face of Roy Wattam's gravel pit, on lot 10, concession III, Melancthon township, Dufferin county, on March 28 about 11.30 A.M.

Cleary was one of a crew employed by the Ontario Department of Highways to load trucks. The crew was in charge of E. M. Oldfield, road superintendent. The east face of the pit was being worked toward the north. The bank at this point was 25 to 30 feet high, and the top portion, of 4 or 5 feet, was vertical. The lower portion consisting of loose gravel, sloped at an angle of approximately 45 to 50 degrees out to a distance of about 30 feet to the bottom of the pit, where the men were loading the trucks.

The evening prior to the accident Superintendent Oldfield had sent the crew to the top of the pit and had them bar down all overhanging material. The frost had penetrated from 2 to 3 feet into the top soil. On the morning of the accident five loads had been taken out. Although the weather was mild, no material had worked loose. While they were putting on the sixth load a chunk of frozen material, weighing approximately 500 pounds, fell from the top of the pit without warning. It rolled down the slope, hitting Cleary, who was directly behind the truck and 5 or 6 feet up the slope of the bank. He was knocked down and crushed against the truck.

Dr. E. G. Johnston of Shelburne was called and had Cleary moved to Roy Wattam's house on an improvised stretcher. His injuries consisted of a fractured right arm, crushed chest, and punctured lung. An ambulance was called, and Cleary died shortly after being put into it.

An inquest was held on April 9 at 8.00 P.M. in the Town Hall at Shelburne before Coroner W. J. McLean, M.D. The jury's verdict was as follows:—

We, the coroner's jury selected to enquire into the death of Gerald Cleary, find that the said Gerald Cleary came to his death accidentally on the morning of March 28, 1942, at approximately 11.30 A.M. from injuries suffered in the gravel pit of one Roy Wattam, lot 10, concession III, Melancthon township. The direct cause of death was by severe crushing, shock, and internal injuries caused by sliding frozen material. We further find all usual precautions were observed on the part of the patrol man in charge and no blame can be attributed to any person or persons. We recommend that a rigid inspection of the top of the pit be made at intervals during all days when men are at work.

