PROVINCE OF ONTARIO

DEPARTMENT OF MINES

HON. JAMES A. MALONEY, *Minister of Mines* H. C. RICKABY, *Deputy Minister*

Bulletin 157

OF THE

ONTARIO DEPARTMENT OF MINES

Report for 1958

ON

By the Staff of

THE MINES INSPECTION BRANCH

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To the Honourable James A. Maloney,
Minister of Mines.

Sir: I beg to hand you herewith the report by the Engineers of this Department on employment and accidents in the mines; metallurgical works; quarries; clay, shale, sand, and gravel pits; and contract diamond-drilling in Ontario during the year 1958.

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

H. C. Rickaby,
Deputy Minister of Mines.

Department of Mines,
Toronto, 1959.

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By The Staff of the Mines Inspection Branch

STATISTICAL REVIEW

Introduction

During 1958, at the mines, metallurgical works, quarries, clay, shale, sand, and gravel pits, and contract diamond-drilling regulated by *The Mining Act* of Ontario, there were 3,905 accidents reported to the Ontario Department of Mines up to January 20, 1959—44 fatalities and 3,861 non-fatal accidents.

The returns represent an increase in the frequency of fatal accidents as compared with the previous year.

The report shows a fatality rate of 0.39 per million man-hours, an increase of 0.04 from the preceding year and 0.11 lower than the average for the last 25 years. There were 34 non-fatal accidents per million man-hours, a decrease of 2 under 1957 but an increase of 3 over the average for the last 25 years.

The total employment figures show an increase of 2.4 percent from 56,758 in 1957 to 58,124 in 1958.

CASSIFICATION OF OPERATIONS

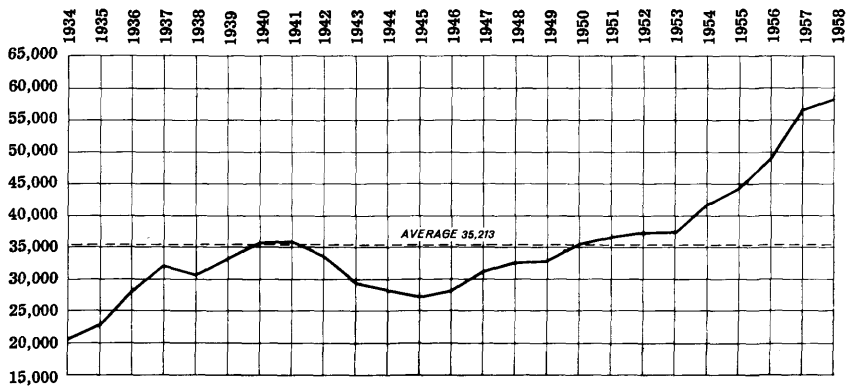
Classification	Men Employed
Group 1. Underground at mines	22,063
Group 2. On surface at mines	15,937
Group 3. Metallurgical works	13,777
Group 4. Quarries	2,277
Group 5. Clay, shale, sand, and gravel pits	3,574
Group 6. Contract diamond-drilling	496
Group 7. Operations in the mining industry for which employment figures are not available.	
Total	58,124

EMPLOYMENT UNDERGROUND AND ON SURFACE AT MINES
(GROUPS 1 and 2)

Year	Underground (Group 1)		Surface (Group 2)		Total
	Number	Percent	Number	Percent	
1948	13,663	63	7,851	37	21,514
1949	13,968	64	7,918	36	21,886
1950	14,591	64	8,372	36	22,963
1951	15,000	63	8,626	37	23,626
1952	15,201	65	8,283	35	23,484
1953	14,415	63	8,401	37	22,816
1954	16,246	65	8,910	35	25,156
1955	16,114	62	9,907	38	26,021
1956	17,636	61	11,418	39	29,054
1957	20,733	59	14,676	41	35,409
1958	22,063	58	15,937	42	38,000
Average	16,330	62	10,027	38	26,357

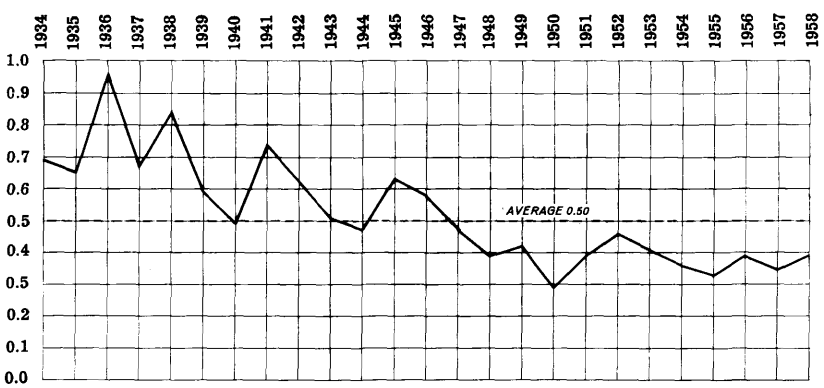
Employment and Accident Statistics (Groups 1–6) Shown Graphically

1—EMPLOYMENT



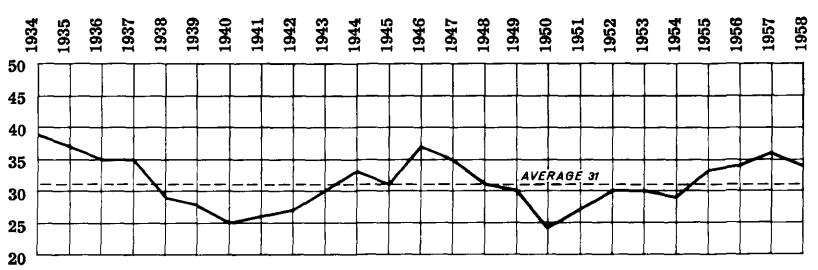
Total number of persons employed in mining operations.

2—FATAL ACCIDENTS



Number of fatalities per million man-hours in mining operations.

3—NON-FATAL ACCIDENTS



Number of non-fatalities per million man-hours in mining operations.

Summary of Employment and Fatal and Non-Fatal Accidents

The following table is a summary of the number employed, and the number injured per million man-hours at mining operations for the past 25 years.

EMPLOYMENT AND ACCIDENTS TO EMPLOYEES AT MINES
(GROUPS 1–6)

Year	Number Employed	Persons Injured			Number of Million Man-Hours			Rate per Million Man-Hours	
		Fatally	Non-Fatally	Total	Producing Operations	Non-Producing Operations	Total	Fatally	Non-Fatally
1934....	20,556	34	1,913	1,947	46.325	3.010	49.335	0.69	39
1935....	22,972	36	2,048	2,084	51.466	3.667	55.133	0.65	37
1936....	28,272	65	2,359	2,424	61.740	6.113	67.853	0.96	35
1937....	32,158	52	2,721	2,773	69.451	7.728	77.179	0.67	35
1938....	30,855	62	2,147	2,209	70.642	3.410	74.052	0.84	29
1939....	33,341	47	2,246	2,293	77.866	2.153	80.019	0.59	28
1940....	35,575	42	2,128	2,170	84.329	1.051	85.380	0.49	25
1941....	35,935	64	2,240	2,304	84.761	1.483	86.244	0.74	26
1942....	33,767	50	2,167	2,217	80.006	1.034	81.040	0.62	27
1943....	29,477	36	2,101	2,137	69.799	0.946	70.745	0.51	30
1944....	28,476	32	2,238	2,270	67.277	1.066	68.343	0.47	33
1945....	27,052	41	2,026	2,067	61.534	3.391	64.925	0.63	31
1946....	28,149	39	2,483	2,522	61.099	6.458	67.557	0.58	37
1947....	31,101	35	2,608	2,643	71.916	2.726	74.642	0.47	35
1948....	32,707	31	2,429	2,460	75.770	2.726	78.496	0.39	31
1949....	32,913	33	2,341	2,374	78.206	0.785	78.991	0.42	30
1950....	35,554	25	2,070	2,095	84.175	1.154	85.329	0.29	24
1951....	36,729	34	2,387	2,421	86.827	1.322	88.149	0.39	27
1952....	37,261	41	2,697	2,738	88.222	1.205	89.427	0.46	30
1953....	37,401	37	2,654	2,691	88.274	1.488	89.762	0.41	30
1954....	41,784	33	2,668	2,701	88.450	2.282	90.732	0.36	29
1955....	44,366	32	3,202	3,234	91.903	4.118	96.021	0.33	33
1956....	49,035	41	3,555	3,596	98.834	6.610	105.444	0.39	34
1957....	56,758	42	4,254	4,296	113.405	6.210	119.615	0.35	36
1958....	58,124	44	3,861	3,905	111.575	0.881	112.456	0.39	34
Total	880,318	1,028	63,543	64,571	1,963.852	73.017	2,036.869	.....	.....
Average	35,213	41	2,542	2,583	78.554	2.921	81.475	0.50	31

Fatal Accidents

FATALITY RATE PER MILLION MAN-HOURS (GROUPS 1–6), 1958

Distribution	Group	Million Man-Hours	Number Killed	Rate per Million Man-Hours
Mines, underground	1	42.698	37	0.87
Mines, surface	2	31.740	4	0.13
Metallurgical works	3	22.309	1	0.05
Quarries	4	5.693	2	0.36
Clay, shale, sand, and gravel pits	5	8.935	0	0.00
Contract diamond-drilling	6	1.081	0	0.00
Total		112.456	44	0.39

A COMPARISON OF FATAL ACCIDENTS AND FATALITIES (GROUPS 1–6)

Distribution	Group	1954		1955		1956		1957		1958	
		Accidents	Killed	Accidents	Killed	Accidents	Killed	Accidents	Killed	Accidents	Killed
Mines, underground	1	22	22	22	22	21	23	26	27	35	37
Mines, surface	2	3	3	2	2	3	3	5	5	4	4
Metallurgical works	3	3	3	2	2	2	3	2	6	1	1
Quarries	4	1	1	2	2	3	3	2	2	2	2
Clay, shale, sand, and gravel pits	5	2	2	1	1	3	3	2	2	0	0
Contract diamond-drilling	6	1	2	1	3	5	6	0	0	0	0
Total		32	33	30	32	37	41	37	42	42	44

FATALITIES ACCORDING TO INDUSTRIES (GROUPS 1–6)

	1954	1955	1956	1957	1958
Asbestos mines	0	0	0	1	0
Copper, nickel, and zinc mines	5	6	10	8	7
Gold mines	12	12	9	12	7
Iron mines	5	3	1	2	1
Nepheline mines	1	0	0	0	0
Salt mines	0	0	0	1	0
Silver-cobalt mines	3	2	0	0	0
Uranium mines	1	4	6	8	26
Metallurgical works	3	2	3	6	1
Quarries	1	2	3	2	2
Clay, shale, sand, and gravel pits	2	1	3	2	0
Contract diamond-drilling	0	0	6	0	0
Total	33	32	41	42	44

FATALITIES AT MINES (GROUPS 1–6)[1]

UNDERGROUND (GROUP 1)

Cause	Class of Accident	1954	1955	1956	1957	1958	
		percent	percent	percent	percent	number	percent
Fall of ground	A	28	18	40	48	20	54
Explosives	B	9	0	4	4	2	5
Run of ore, rock, etc.	C	9	9	4	19	0	0
Shaft accidents	D	18	41	22	11	6	17
Fall down stope, raise, etc.	E	18	18	22	0	3	8
Haulage	F	9	9	4	7	3	8
Rock burst	G	0	0	0	0	1	3
Unclassified	H	9	5	4	11	2	5
Total		100	100	100	100	37	100

ON SURFACE (GROUPS 2–6)

Cause	Class of Accident	1954	1955	1956	1957	1958	
		percent	percent	percent	percent	number	percent
Falling objects	A	18	10	11	7	0	0
Explosives	B	0	10	6	0	0	0
Run of materials	C	37	0	0	13	0	0
Machinery	D	0	10	11	27	2	29
Fall of persons	E	9	0	11	7	1	14
Transportation and haulage	F	18	40	44	0	1	14
Chemicals and burns	G	9	10	11	33	0	0
Unclassified	H	9	20	6	13	3	43
Total		100	100	100	100	7	100

[1]This table is similar to that of previous years except that surface accidents at mines, Groups 2–6, are classified separately. Prior to 1954, Group 1 accidents were classified and Groups 2–6 were included as "Unclassified." Open-pit mining operations such as Frood-Stobie, American Nepheline, Bethlehem Iron Mines, Steep Rock, etc. (as distinct from rock quarries) have been and are included in Group 1.

SUMMARY OF FATA

UNDERGROUND

No.	Date of Accident	Name of Operator	Name of Mine	Name of Deceased
1	May 8	Algom Uranium Mines Ltd.	Quirke	Herbert Golembeck
2	June 24	Algom Uranium Mines Ltd.	Quirke	Clifford Savoie
3	Mar. 15	Can-Met Explorations Ltd.	Can-Met	Clifford Paquette
4	Aug. 13	Can-Met Explorations Ltd.	Can-Met	W. G. Wilson
5	Oct. 21	Can-Met Explorations Ltd.	Can-Met	Bernard Faux
6	May 19	Canadian Dyno Mines Ltd.	Canadian Dyno	Risvaldo Scinia
7	Oct. 9	Canadian Dyno Mines Ltd.	Canadian Dyno	Glenwood Demerchant
8	Feb. 25	Consolidated Denison Mines Ltd.	Consolidated Denison	Henry Legacy
9	Apr. 3	Consolidated Denison Mines Ltd.	Consolidated Denison	Archie MacDonnell
10	May 12	Consolidated Denison Mines Ltd.	Consolidated Denison	M. S. Scheler
11	Nov. 7	Consolidated Denison Mines Ltd.	Consolidated Denison	G. C. Bourdages Laurent Gagnon
12	Jan. 28	Dome Mines Ltd.	Dome	Arvo Maki
13	Mar. 13	Dome Mines Ltd.	Dome	Alphonse Villemure
14	Jan. 31	Falconbridge Nickel Mines Ltd.	Hardy	R. T. Semple
15	Oct. 14	Falconbridge Nickel Mines Ltd.	McKim	P. R. Ranger
16	Dec. 2	Falconbridge Nickel Mines Ltd.	Falconbridge	E. W. Raycroft
17	Dec. 22	Geco Mines Ltd.	Geco	L. J. Bussiere
18	Oct. 25	Greyhawk Uranium Mines Ltd.	Greyhawk	Rosaire Lamirande
19	June 5	International Nickel Co. of Canada Ltd.	Garson	Ernest Jones
20	July 8	International Nickel Co. of Canada Ltd.	Fecunis	Michael Wojtiuk
21	Oct. 8	Kerr-Addison Gold Mines Ltd.	Kerr-Addison	G. L. Beland
22	Aug. 24	MacIsaac Mining and Tunnelling Co. Ltd.	Northspan-Panel	A. C. Purdy
23	July 10	Madsen Red Lake Gold Mines Ltd.	Madsen	Frank Marazia
24	Sept. 27	Milliken Lake Uranium Mines Ltd.	Milliken	Kurt Tschorn
25	Jan. 15	Northspan Uranium Mines Ltd.	Lacnor	Edgar Zorn
26	Apr. 4	Northspan Uranium Mines Ltd.	Panel	Edward Nadalin
27	Apr. 8	Northspan Uranium Mines Ltd.	Lacnor	Frank Damiani
28	May 17	Northspan Uranium Mines Ltd.	Lacnor	Michael Shelly
29	Nov. 26	Northspan Uranium Mines Ltd.	Spanish-American	George Obst
30	Dec. 5	Northspan Uranium Mines Ltd.	Panel	Theodore Oulette
31	Feb. 13	Preston East Dome Mines Ltd.	Preston	Nick Mazepa
32	Apr. 27	Stanleigh Uranium Mining Corp. Ltd.	Stanleigh	A. J. Remedios
33	Jan. 26	Stanrock Uranium Mines Ltd.	Stanrock	Joseph Casporowiez Paul Lackhoff
34	Sept. 11	Sylvanite Gold Mines Ltd.	Sylvanite	Nicholas Rendes
35	June 17	Willroy Mines Ltd.	Willroy	Leo Theroux

ON SURFACE

No.	Date of Accident	Name of Operator	Name of Mine	Name of Deceased
36	Sept. 25	Algom Uranium Mines Ltd.	Nordic	Ronald Fredin
37	June 7	Construction Aggregates Corp.	Steep Rock	R. T. McLeod
38	June 24	Hollinger Consolidated Gold Mines Ltd.	Hollinger	Alex Belec
39	Nov. 6	Northspan Uranium Mines Ltd.	Buckles	James Sloan

ACCIDENTS (GROUPS 1–7), 1958

MINES (GROUP 1)

Age	Occupation	Nationality	Married (M) Single (S) Widower (W)	Class of Accident	Cause
37	Miner	German	M	A	Fall of ground.
27	Slusherman	Canadian	S	A	Fall of ground.
42	Shift boss	Canadian	M	A	Fall of ground.
32	Slusherman	Canadian	S	A	Fall of ground.
30	Truck driver	Canadian	S	F	Crushed by haulage vehicle.
26	Miner	Italian	S	A	Fall of ground.
28	Cagetender	Canadian	M	D	Fell down shaft.
38	Miner	Canadian	M	H	Struck by scraper cable.
43	Hoist mechanic	Canadian	M	D	Fell down shaft from surface.
31	Mine captain	Canadian	M	A	Fall of ground.
26	Miner	Canadian	M	A	Fall of ground.
36	Miner	Canadian	M	A	Fall of ground.
54	Timberman	Canadian	M	F	Struck by train.
52	Motorman	Canadian	M	B	Delayed too long at blast.
42	Shift boss	Canadian	M	E	Fell down raise.
33	Miner	Canadian	M	E	Fell down stope.
33	Stope boss	Canadian	M	A	Fall of ground.
46	Raiseman	Canadian	M	E	Fell down chute.
36	Miner	Canadian	M	A	Fall of ground.
46	Driller	Canadian	M	G	Rock burst.
35	Driller	Ukranian	M	A	Fall of ground.
36	Mucking-machine operator	Canadian	M	A	Fall of ground.
46	Shaftman	Canadian	M	D	Struck by shaft counterweight.
23	Driller	Italian	S	A	Fall of ground.
29	Miner	German	S	A	Fall of ground.
35	Miner	Canadian	M	A	Fall of ground.
26	Shuttle-car operator	Canadian	M	F	Crushed between wall and shuttle-car.
21	Miner	Italian	S	A	Fall of ground.
27	Mucking-machine operator	German	M	H	Crushed between wall and mucking machine.
29	Mucking-machine operator	German	S	A	Fall of ground.
35	Machineman	Canadian	M	A	Fall of ground.
49	Miner	Canadian	M	A	Fall of ground.
28	Mechanic	British	M	D	Fell down shaft from surface.
39	Mechanic's helper	German	M	D	Fell down shaft from surface.
25	Mechanic	Canadian	M	D	Fell down shaft from surface.
30	Mucker	Hungarian	S	A	Fall of ground.
34	Driftman	Canadian	M	B	Drilled into missed hole.

MINES (GROUP 2)

Age	Occupation	Nationality	Married (M) Single (S) Widower (W)	Class of Accident	Cause
17	Crusherman's helper	Canadian	S	D	Caught in conveyor belt.
32	Leverman	Canadian	M	H	Drowned, fell from pontoon line.
69	Carpenter	Canadian	M	E	Fell off roof of power shovel.
47	Leading mechanic	Canadian	M	F	Crushed under truck.

SUMMARY OF FATAL ACCIDENTS

METALLURGICAL

No.	Date of Accident	Name of Operator	Name of Plant	Name of Deceased
40	Jan. 21	Steel Co. of Canada Ltd.	Stelco	N. B. Long

QUARRIES

No.	Date of Accident	Name of Operator	Location	Name of Deceased
41	Aug. 26	Nelson Crushed Stone Ltd.	Mount Nemo Quarry	Floyd Masters
42	July 17	Northshore Construction Co. Ltd.	Highway No. 1, Manitoba	Bert Johnson

CLAY, SHALE, SAND, AND

None

CONTRACT DIAMOND-

None

ACCIDENTS FOR WHICH EMPLOYMENT

No.	Date of	Name of Operator	Location	Name of Deceased
43	Sept. 26	Alvard Mathe	Falconbridge	Roma Mathe
44	Aug. 28	Dominion Bridge Co. Ltd.	Milton quarry	William Snow
45	Jan. 23	Foundation Co. of Canada Ltd.	Steep Rock mine	T. J. Makela
46	June 14	Hill-Clark-Francis Ltd.	Algom-Quirke mine	Joao Correia
47	Jan. 11	Universal Plumbing and Heating	Northspan-Panel mill	Richard Goudey
48	Jan. 28	Universal Plumbing and Heating	Northspan-Panel mill	William Gillies James Kelly

(GROUPS 1–7), 1958—*Continued*

WORKS (GROUP 3)

Age	Occupation	Nationality	Married (M) Single (S) Widower (W)	Class of Accident	Cause
48	Stove tender.....	Canadian....	M	H	Carbon monoxide poisoning.

(GROUP 4)

Age	Occupation	Nationality	Married (M) Single (S) Widower (W)	Class of Accident	Cause
29	Bulldozer operator.....	Canadian....	M	D	Crushed under bulldozer.
49	Quarry superintendent.	Canadian....	M	H	Highway traffic accident.

GRAVEL PITS (GROUP 5)

None

DRILLING (GROUP 6)

None

FIGURES ARE UNOBTAINABLE (GROUP 7)

Age	Occupation	Nationality	Married (M) Single (S) Widower (W)	Cause
19	Truck driver.....	Canadian....	S	Crushed by truck.
27	Ironworker.....	Canadian....	M	Electrocuted.
56	Leading carpenter.....	Canadian....	S	Run over by truck.
32	Labourer.....	Portuguese..	M	Fell from roof.
25	Pipefitter.....	Canadian....	M	Fell to concrete floor.
57	Welder.....	Canadian....	M	Electrocuted.
33	Foreman.....	Canadian....	M	Electrocuted.

FATALITIES BY MONTHS (GROUPS 1–6), 1958

	Accidents	Men Killed
January	5	6
February	2	2
March	2	2
April	4	4
May	4	4
June	5	5
July	3	3
August	3	3
September	3	3
October	5	5
November	3	4
December	3	3
Total	42	44

Non-Fatal Accidents

Mines (Groups 1 and 2)

There were 74.438 million man-hours at mines in Ontario in 1958. During the year there were 3,034 injuries, giving a non-fatal accident rate of 41 per million man-hours.

NON-FATAL ACCIDENTS AT MINES, 1958

Cause	Underground (Group 1)	On Surface (Group 2)	Total
Fall of person	278	106	384
Strain while lifting	246	64	310
Fall of rock or ore, drilling, scaling, etc.	250	.....	250
Strain while moving	156	52	208
Drilling machine	184	2	186
Fall of loose rock or ore	159	1	160
Falling object	101	38	139
Handling material other than rock or ore	88	35	123
Flying object, drilling, sledging, etc.	90	22	112
Handling or tramming mine cars	101	2	103
Running into or striking object	79	23	102
Hand tool	73	28	101
Roll of broken rock or ore	96	1	97
Mechanical transportation	76	13	89
Crushed between two objects	63	22	85
Rock or ore at chute	81	.....	81
Machinery, general	13	59	72
Mechanical loader	71	.....	71
Tugger hoist, scraper, etc.	69	1	70
Nail or splinter	56	5	61
Handling rock or ore	56	2	58
Burns	9	47	56
Explosives	34	1	35
Cage, skip, or bucket in shaft	34	.....	34
Rock burst	10	.....	10
Noxious gas	9	.....	9
Fall down winze, shaft, or stope	8	.....	8
Dermatitis	2	6	8
Electricity	2	2	4
Unclassified	3	5	8
Total	2,497	537	3,034

Metallurgical Works (Group 3)

There were 22.309 million man-hours at metallurgical works in Ontario in 1958. During the year there were 408 injuries, giving a non-fatal accident rate of 18 per million man-hours.

NON-FATAL ACCIDENTS AT METALLURGICAL WORKS, 1958

Cause		Cause	
Strain while lifting or moving	107	Handling material	16
Fall of person	60	Crushed between two objects	13
Running into or striking object	33	Machinery	13
Burns by slag or metal	31	Transportation	7
Falling object	25	Noxious gas	3
Burns	22	Flying object, sledging, etc.	1
Hoisting equipment, hooks, slings, blocks	22	Nail or splinter	1
Hand tool	19	Unclassified	2
Dermatitis, chemical burns, etc.	17		
Loading, unloading, or handling cars	16	Total	408

Quarries (Group 4)

There were 5.693 million man-hours at quarries in Ontario in 1958. During the year there were 145 injuries, giving a non-fatal accident rate of 25 per million man-hours.

NON-FATAL ACCIDENTS AT QUARRIES, 1958

Cause		Cause	
Strain while lifting or moving	21	Crushed between two objects	6
Fall of person	19	Running into or striking object	5
Machinery	17	Drilling machines	4
Fall of material during handling	13	Burns	3
Hand tool	13	Fall of material from face	2
Flying objects, sledging, etc.	11	Dermatitis	2
Falling object	11	Unclassified	1
Transportation	10		
Handling material	7	Total	145

Clay, Shale, Sand, and Gravel Pits (Group 5)

There were 8.935 million man-hours at clay, shale, sand, and gravel pits in Ontario in 1958. During the year there were 150 injuries, giving a non-fatal accident rate of 17 per million man-hours.

NON-FATAL ACCIDENTS AT CLAY, SHALE, SAND, AND GRAVEL PITS, 1958

Cause		Cause	
Strain while lifting or moving	24	Burns	6
Machinery	22	Crushed between two objects	6
Fall of person	19	Fall of material from bank	5
Transportation	11	Flying object	4
Hand tool	11	Nail or splinter	4
Handling material	10	Unclassified	1
Running into or striking object	9		
Falling object	9	Total	150
Fall of material during handling	9		

Contract Diamond-Drilling (Group 6)

There were 1.081 million man-hours in contract diamond-drilling in Ontario in 1958. During the year there were 124 injuries, giving a non-fatal accident rate of 115 per million man-hours.

NON-FATAL ACCIDENTS IN DIAMOND DRILLING, 1958

Cause		Cause	
Handling drill rods	23	Crushed between two objects	5
Strain while lifting or moving	17	Burns	4
Fall of person	15	Handling material	4
Wire, nail, or splinter	13	Running into or striking object	4
Hand tool	12	Transportation	3
Machinery	8	Flying object, sledging, etc.	2
Falling object	8		
Caught in moving parts	6	Total	124

Infection (Groups 1–6)

Infection followed in 94 cases out of a total of 3,861 accidents in 1958.

ACCIDENTS FOLLOWED BY INFECTION, 1958

Location	Group	Number of Accidents	Accidents Followed by Infection	Percentage Infection
Mines, underground	1	2,497	58	2.3
Mines, surface	2	537	14	2.6
Metallurgical works	3	408	5	1.2
Quarries	4	145	2	1.4
Clay, shale, sand, and gravel pits	5	150	4	2.7
Contract diamond-drilling	6	124	11	8.9
Total		3,861	94	2.4

Electrical Accidents (Groups 1–6)

	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	Total
Fatal	1	0	1	1	1	1	0	0	0	0	5
Non-fatal	4	2	8	2	9	5	3	8	7	4	52
Total	5	2	9	3	10	6	3	8	7	4	57

Explosives

CAUSES OF ACCIDENTS FROM EXPLOSIVES, 1958

Cause	Number of Accidents	Persons Injured		
		Non-Fatally	Fatally	Total
Explosion of detonator or powder while handling	2	2	.....	2
Explosion while loading hole	3	4	.....	4
Delayed too long at scene of blast	7	7	1	8
Did not take sufficient cover	4	5	.....	5
Injury due to blast concussion	3	3	.....	3
Returned too soon to scene of blast	2	2	.....	2
Improper guarding of blast	2	2	.....	2
Detonation due to run or handling of muck	2	3	.....	3
Drilled into missed hole	4	4	1	5
Explosion while removing powder from hole	2	3	.....	3
Total	31	35	2	37

stopped so that Poulin could continue across the stope over the slushing cable. Golembeck did not answer him and signalled instead to Trivieri to stop. At this moment a noise was heard, and a slab of rock 10 by 7 feet by ½ foot, weighing about three tons, spalled off and fell on Golembeck, missing Poulin by 5 feet.

Poulin, Trivieri, and Smitz levered up the slab and removed Golembeck who was in a bent position. More noise was heard, but no more rock fell. The first-aid man arrived at 3.20 P.M. and removed Golembeck to surface by stretcher. Dr. J. L. Ruse arrived shortly after, and Golembeck was treated for shock. Arrangements were being made to fly him to a Toronto hospital when he collapsed Attempts to revive him failed, and he was pronounced dead at 4.45 P.M.

An inquest was held before Coroner M. J. Farrell, M.D., in Elliot Lake on May 22. The jury returned the following verdict:

> Death was caused by injuries due to a fall of rock, and the accident was due to the neglect of Mr. Golembeck to check his own passageway to and from his working area at 4.45 P.M., 8th of May, 1958.

On the day following the accident immediate steps were taken to establish safer approaches to working stopes. The approach to each working stope is to have its own connection made to the upper haulage drift. Barricades are being put up between adjacent stopes to prevent travel through the former ore drift. Timber travelways and roped off travelways were made as a temporary expedient for some stopes.

The width of the stope areas had been reduced from the original 150 feet to the present 65 feet. No. 562 stope was a transitional width of 110 feet. The boundary stope-pillars were 10 feet or more wide. Intermediate pillars were left in place where necessary. Future plans are to experiment with the use of timber packs as additional support to the back.

Algom Uranium Mines Limited

No. 2

Clifford Savoie, Canadian, aged 27, single, was fatally injured at about 8.45 P.M., on June 24, in No. 667 stope of the Quirke mine when he was struck down by a slab of rock that fell from the hanging wall. He had been employed by Algom Uranium Mines Limited for a year, and previous to that he had had one year underground at the Gaspe copper mine.

Essential development in this stope had just been completed with the driving of parallel raises up from the mill-hole to the 500-foot level. The orebody in this stope is about 9 feet thick of conglomerate with a dip of 25°–30°S. Slashing had been started on the west wall of the west raise. Two crews of two men each were engaged in mining this stope on opposite shifts. The drilling crew drilled and blasted the slashes, and the slushing crew scaled the blasts on the following shift and slushed the broken muck to the mill-hole.

The day-shift crew had drilled and blasted three 6-hole slashes in the west wall of the west raise. The night shift (7.00 P.M.–3.00 A.M.) reported to their shift boss, D. MacDonald, at the wicket in the headframe; he instructed Savoie and Broderick to scale the back well. It was while carrying out these instructions that the accident occurred. The men entered the stope from the 500-foot level. Broderick went down the west raise and started scaling in the area of the top slash. Savoie went down the east raise around the mill-hole and started scaling at the bottom of the west raise in the area of two lower slashes. Savoie found one large piece of loose, about 5 by 6 feet across and about 1 foot at the thickest part. He called Broderick and the two men together, and they worked for about 20–30 minutes prying and gadding. They brought down the slab, and before they could continue sounding for more loose, two adjacent slabs fell down on them.

The time was about 8.45 P.M. Broderick was just brushed by the edge of one slab, but Savoie was pinned under the slab. The slab that hit both men was about 4 by 5 feet and 1 foot thick in the centre, tapering to fine edges.

Broderick shouted for help, and two diamond-drillers who were test-holing in the east raise came to his aid. Word was sent to surface about the accident. The rescuers released Savoie from under the slab by clearing away some of the muck underneath the slab and brought him to the first-aid room on surface. At 9.45 P.M., Dr. Fairchild pronounced the man dead.

The top hole of the first row of the slash nearest to the scene of the accident had been drilled with too heavy a burden, and the bottom of the hole was above the existing hanging wall. Consequently, when the holes were blasted the rock was shattered and not blasted out cleanly. In this rock, such blasting produced large, but thin, loose slabs on the hanging wall. At least 4 feet of bootleg hole remained. The second row of holes had blown out.

The post-mortem revealed massive rupture to the liver and the right chest.

An inquest was held before Coroner M. J. Farrell, M.D., at Elliot Lake on August 28. The jury returned the following verdict:

Clifford Savoie, the deceased person, came to his death at 9.45 p.m. on the 24th day of June, 1958 at the Algom Quirke Mine and that death was caused by a fall of rock for which no one was at fault.

Can-Met Explorations Limited

No. 3

Clifford Paquette, Canadian, aged 42, married, with one child, was fatally injured by a fall of ground on March 15, at 1.45 P.M. in the No. 4W subhaulage on the 2,100-foot level of the Can-Met Explorations Limited mine.

Paquette had been hired by Can-Met Explorations on March 6, 1958, as a shift boss. His experience was listed as 18½ years underground, with a large part of it in a supervisory capacity.

No. 4W subhaulage lies up dip to the north, a distance of about 600 feet from the connection between Nos. 1 and 2 shafts. The heading is being driven 15 feet wide by 12 feet high along the strike of the ore and has been widened to 25 feet by slashing the north wall. The roof is rockbolted where support is required. The slashing, which increases the roof span, is not kept a set distance from the face advance.

Two shifts per day are worked here, one day and one afternoon shift. At 11 P.M., March 14, a slash near the face was blasted. Loose, hanging on rockbolts near the south wall about 75 feet from the face, was also blasted.

The crew on day shift under Paquette, recently hired as shift boss, were composed of Henry Guay, slusherman, and Americo Dominques, helper. At the beginning of the shift they washed down the muck and scaled. They were visited at about 10.00 A.M. by Joe Preboy, assistant mine superintendent, and Jack Toivanen, mine superintendent. At this time scraping was in progress with a mobile ramp and shuttlecar haulage. Preboy advised Paquette that the shuttlecar would not be available for haulage after lunch. He said he would send in a man with a burning torch to cut down the bolts from which chunks of loose were still hanging as a result of the blast on the previous shift. New rockbolts were then to be installed.

Vaino Kuja arrived after lunch with oxygen-acetylene burning equipment. Using the cutting torch on a long loading stick, seven rockbolts were cut off between the roof and the loose rock they supported. Paquette had the scraping stopped while this was being done and took over from Kuja in cutting a couple of the bolts. He then had Guay and Dominques help Kuja remove his equipment to the north main intake for pick-up by truck.

Kuja, Guay, and Dominques were engaged in this work and did not see Paquette struck down by the loose. They think he was testing the roof with a scaling bar when a fall of 35–40 tons of rock came down on him. On investigation they could only see one arm showing and immediately went to notify authorities and get help. Paquette died instantly. His head, torso, and limbs were all crushed. Some difficulty was encountered removing the large chunks from the body in order to release it. Dr. A. O'Brien pronounced the man dead.

The ground that fell had been supported by two rockbolts. They still remained anchored in the back with more than 5 feet of the 6-foot bolt protruding. The ¾-inch nuts with plate washers had been stripped from the lower end by the excessive weight on them.

The loose ground revealed a horizontal joint, intersected by a near vertical fault. Ground on the north side of the fault remained in place with rockbolt support.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on April 1, at 7.30 P.M. The jury returned the following verdict:

> That Clifford Paquette, the deceased came to his death at 1.45 P.M. on March 15th, 1958, at Can-Met Explorations Limited and that death was caused by a rock fall which we feel was accidental. We feel that more care be taken when additional work is being done in a previously worked area.

Can-Met Explorations Limited

No. 4

William Gordon Wilson, Canadian, aged 32, single, was instantly killed by a fall of ground at Can-Met Explorations Limited on August 13, at 4.15 A.M. Wilson had been working five months underground at Can-Met, and his previous experience was listed as slusherman, five months underground, at International Nickel Company of Canada Limited's Creighton mine.

The scene of the accident was the intersection of No. 6 east haulage, driven 15 feet high by 25 feet wide, with No. 6-1 east stope. This haulageway had been advanced to the east one, 10 foot round past the intersection. No. 6-1 east stope, a 25 foot room, had been advanced north about 40 feet up dip from the haulageway. It was the continuation of No. 5-1 east stope in No. 6 east panel area. No. 6 east panel is located about 1,300 feet north of No. 2 shaft.

Wilson had been assigned to operate a mobile ramp in this area. At the beginning of the 12.00 P.M.–8.00 A.M. shift the ramp was located in No. 6 east intake. Wilson, with his helper, Edward Chartrand, moved the ramp from No. 6 east intake to No. 6 east haulage. A round of muck had been blasted in No. 6-1 east stope by the previous shift (4.00–12.00 P.M.) on August 12. As this muck pile covered No. 6-1 east stope floor, from the face to the entry, the position of the ramp for mucking was in No. 6 east haulage.

Two rockbolting crews were at work scaling and bolting the freshly exposed back of No. 6-1 east stope while preparations were being made for muck removal. The rockbolters, F. Trussert, F. Fortin, N. Desjardin, and T. Ingram, completed the bolting on the east side while the ramp was being moved into place. They also had drilled eye-bolts for scraper blocks. Wilson and Chartrand proceeded to muck from the east front corner of the pile, while bolting continued on the west side towards the face. Five loads were removed with a shuttlecar driven by Calvin Williston.

At about 4.00 A.M. the bolting was completed, and the bolting crews moved into No. 6 east haulage to eat lunch. They were located about 30 feet west of the ramp. The mucking crew had eaten lunch while waiting for the rockbolters to finish.

instead of turning smoothly to the west into No. 3 east main, Faux brought the truck to a stop just short of the south wall of No. 3 east main. He then backed the truck up, turned west, stopped momentarily where the ramp starts, and then drove on with the right-hand wheels on the ramp. Faux started to shout, and Laurenz jumped or was thrown off the truck.

Due to the increasing divergence of the ramp and the floor of the throughway the truck was turned over and came to rest on its right side against the wall of No. 3 east main. Faux was rolled over by the truck and received crushing injuries to his abdomen.

Faux was carried in a walking position for about 40 feet before he was laid in a stretcher and transported to surface. He was given oxygen and artificial respiration by a first-aid man who accompanied him in an ambulance to the Elliot Lake medical centre. He died en route and was pronounced dead on arrival by Dr. Cassar at 2.35 P.M. Post-mortem examination revealed that death was due to massive abdominal hemorrhage due to almost complete rupture of the posterior part of the right lobe of the liver.

An inquest was held before Coroner, M. Farrell, M.D., at Elliot Lake on November 19 and 25, 1958. The jury returned the following verdict:

That Bernard Faux the deceased person came to his death at 2:35 P.M. on the 21st day of October, 1958 at Can-Met, Elliot Lake, Ontario and that the death was caused by internal haemorrhage caused by his being pinned beneath a Unimog. We believe death was accidental, with evidence indicating the possibility of mechanical failure of his vehicle.

Recommendations: That more complete records of vehicle repairs be kept and that closer scrutiny be made by mine management as to the condition of their underground vehicles.

A timber now marks the beginning of the ramp. There was no evidence of defect in the truck prior to the accident.

Canadian Dyno Mines Limited

No. 6

Risvaldo Scinia, Italian, aged 26, single, with no dependents, employed as a stope miner, was fatally injured by a fall of rock in No. 2-B3 stope at 10.30 P.M. on May 19 at Canadian Dyno Mines Limited's mine. He died as a result of a severely crushed chest.

Scinia was hired at this mine on April 11, 1958, as an experienced miner. He had worked a total of three years and eight months at four other mines in Ontario and Quebec.

No. 2-B3 stope, being mined by the shrinkage method, is about 80 feet long and 7 feet wide. This stope is serviced from the 2nd level by a stulled manway at the south end and a raise from the middle of the stope through to the 1st level. The formation, consisting of pegmatite dikes with wallrocks of altered sediments, strikes about N.20°E. and in this section dips 65°E. The broken rock in this stope is drawn through four drawpoints or boxholes. The muck pile, at this time, was within 6 feet of the back at the north end, and 10 feet at the south. The back of the stope, at an elevation of 40 feet from the 2nd level, was relatively flat with a 10-foot breast at the south end within 15 feet of the end of the stope. No. 4 boxhole was developed at the south end of the stope to pick up the rake of the ore in that direction.

On night shift (8.00 P.M.–4.00 A.M.) of May 19, Risvaldo Scinia and his brother, Livio Scinia, were instructed by Shift Boss J. L. Grenier to follow up on the breast south, which the previous shift (day shift) had redrilled and reblasted. The third miner in this stope, A. Greier, a machine runner, was instructed to finish drilling the finger-raise round in the south end of the stope to break into No. 4 boxhole. This round was started by the day shift, and they blasted the cut

and helpers. The day shift also blasted a small three-hole slash on the west (footwall) side, north of the raise.

Shift Boss Grenier first entered the stope that evening shortly after 9.00 P.M. and found the crew still scaling the blasts made by the day shift. He checked the main portion of the stope with Risvaldo, and also the south end with Greier. He re-instructed his men and continued on his beat. The crew finished scaling, then staged up and started to drill. Risvaldo and his helper, Livio, had drilled two 8-foot holes and were collaring a third when a section of ground, about 20 feet long, 6 feet wide, and 2 feet thick, weighing about 20 tons, sloughed off the east hanging wall. In falling across the stope it caught and pinned Risvaldo against the west wall, covering him except for his head and shoulders. This rock, which extended from the back of the stope to within a foot of the breast face, broke into two pieces when it came to rest on the muck pile. The smaller piece lay on top of the larger. Livio, who was in front of the drilling machine, helping to start the hole, was knocked down and injured by this falling rock. Greier, who had also started to drill, stopped his machine and went to help. Since it was impossible to do anything for Risvaldo by himself, he helped Livio, who had a broken right foot, to a sitting position near the manway at the south end of the stope; then he went for help. Grenier still on the 2nd level was soon back at the scene to direct rescue operations. Eight other men helped, and they pried and slid the smaller piece of rock off to one side. They found they were not able to move the larger piece and ordered a 20-ton jack. The accident happened about 10.30 P.M. and when Risvaldo Scinia was finally released and brought to surface at 11.30 P.M. he was examined by Dr. V. A. Lehinant and pronounced dead. Grenier claimed that, when he first saw Risvaldo after the accident, he could feel no pulse. He also stated that Risvaldo was motionless and did not speak.

An inquest was held before Coroner O. W. Anderson, M.D., in a meeting room at Canadian Dyno Mines Limited on June 26. The jury returned the following verdict:

That Risvaldo Scinia's death was accidental in The Canadian Dyno Mine on May 19th, 1958. Death was due to a crushed chest caused by a rock fall.

It was evident from the evidence submitted at the hearing that none of the crew, or their shift boss, saw or detected by sounding that this part of the wall was insecure. The part of the wall that sloughed was exposed by the breast that was blasted by the previous shift. There were no slips or faults where it had broken away from the wall. There were, however, several open vugs, that contributed to its weakness. One large vug, which the loose broke to at the face, extended beyond the face and up into the back. There were also three smaller vugs from which this rock peeled off. Several witnesses stated they had not experienced any rock falls of any consequence in this stope prior to the accident; it had not been considered necessary to add any additional support such as timber or rockbolts. These open vugs had not been encountered before in this particular stope.

Canadian Dyno Mines Limited

No. 7

Glenwood Demerchant, Canadian, aged 28, married, with two children, employed as a cagetender, was killed instantly by a fall from a cage on October 9, 1958, at 5.42 A.M. at Canadian Dyno Mines Limited. Injuries were extensive, including disembowelment and skull fractures.

Demerchant was hired at this mine on April 4, 1958, as a helper. On July 26 he was reclassified as a cagetender's helper, and on September 5 as a cagetender. He had worked one year and seven months in three different mines in Timmins just prior to moving to the Bancroft area.

The long axis of this three-compartment shaft lies about east-west with No. 1 manway compartment on the west side, then No. 2 (skip over cage) and No. 3 (skip only). The deck and stations are all on the south side of the shaft. The shaft, having a total depth of 992 feet, has six levels at 150-foot intervals with a loading-pocket midway between the 5th and 6th levels and a spillage pocket at the 6th or 930-foot level.

The combination (skip over cage) has a load limit of 8,000 pounds or thirteen men. The cage has solid sides and is equipped with ⅜-inch chains and grab hooks on each side for securing material; it has doors at the south and north ends, which are divided so that one half slides alongside the other half, and then the complete door is hinged to fold inside the cage. These doors clear the bottom of the cage by not more than a ½ inch and extend to within 9 inches of the hood, having an over-all height of about 6 feet 9 inches. The doors are equipped with latches to secure them open or closed. The cage is also equipped with standard ½- by 3-inch steel bars on the outside of the doors.

The mine is worked by two mining shifts (8.00 A.M.–4.00 P.M. and 8.00 P.M.–4.00 A.M.), with three hoisting shifts each day. Demerchant, his helper, Dennis Hellewell, and a hoistman, Arthur Bovair, were working the 12.00 P.M.–8.00 A.M. hoisting shift on this particular day. After hoisting the mining shift at 4.00 A.M. the hoisting crew continued servicing the mine and hoisting muck. Shortly after 5.00 A.M. Demerchant left the cage on the 5th level to get a machine and leg, which he was told to take to the 3rd level. Hellewell, in the meantime, went to the pocket to continue hoisting muck. Later he encountered some trouble with the loading mechanism and returned to the 5th level and reported to his partner. Between them they placed in the cage two muck sample boxes in about the centre of the cage, the machine, and leg, and Y-hoses (all connected). The machine head was placed on the floor of the cage with the vertical leg resting against the west side. They both returned to the pocket so that Demerchant could find what the trouble was in the loading mechanism. They re-entered the cage; Hellewell stood in the northeast corner, and Demerchant, facing south, signalled to the 4th level. The bar was down, but as was proved later, the door was left open and latched. When the cage reached a point about 50 feet above the 5th level, both the machine and the cagetender were thrown out of the cage. Demerchant fell 202 feet down the shaft into the spillage pocket.

The accident occurred between sets Nos. 98 and 97 at a point where two rounds, or 15 feet, were excavated opposite the manway compartment for a dump for future sinking. Opposite Nos. 2 and 3 compartments the rock cleared the shaft timbers by about 3 feet. From the marks on the timber and the cage it was evident the leg of the machine first fouled No. 98 south wall plate. It was then rotated about the bar, swinging the head of the machine into the shaft. The head of the machine struck the next wall plate, No. 97, and came to rest hanging from the Y-hose. The leg had broken at the hinge in the saddle and was hanging outside the timber with the machine on the inside. There was a gouge on both No. 98 and No. 97 sets, the bar was bent, and there was a patch of hair found on No. 97 wall plate.

The cage continued until it reached the 4th level. Hellewell, after notifying the hoistman by telephone, walked down the manway and from the shaft he saw his partner in the spill pocket.

The hoistman immediately phoned the gate house attendant who in turn phoned the safety engineer, doctor, ambulance, and the security officer. The provincial police, Dr. O. W. Anderson, coroner in Bancroft, and the Department of Mines were also notified.

The body was recovered from the spill pocket by a crew of four men led by D. C. McDonald, mine superintendent. It was brought to surface at 8.00 A.M. and examined by Dr. Anderson in the headframe before being removed to the Hatten funeral home in Bancroft.

An inquest was held before Dr. O. W. Anderson, M.D., in a meeting room at Canadian Dyno Mines Limited at 2.00 P.M. on October 22, 1958. The jury returned the following verdict:

That Glenwood Demerchant met death on October 9, 1958 by accident in shaft at Canadian Dyno Mines Limited. Death was caused by massive injuries.

Consolidated Denison Mines Limited

No. 8

Henry Legacy, Canadian, aged 38 years, married, with four children, was fatally injured by a scraper cable that came loose with a sheave block and anchor at the intersection of No. 603-X entry and No. 607-A entry on the 1,600-foot level in the No. 1 shaft area of the Consolidated Denison mine at 9.40 A.M., February 25.

Legacy had been hired by Consolidated Denison Mines Limited on December 2, 1957, and his experience was listed as 3½ years underground.

No. 603-X entry is a heading driven at an angle to the strike and dip to give a low downhill grade to the west. The intersection with No. 607-A entry is about 1,350 feet west of No. 1 shaft. Going west, No. 607-A entry will have a low uphill grade and will also be at an angle to both the dip and strike of the conglomerate bed. These entries are driven 25 feet wide and about 12 feet high, the thickness of the ore. Rockbolts 6 and 8 feet in length and ¾ inch in diameter, are used for roof support. Development rock is scraped to a mobile loading ramp where it is transferred to a shuttlecar for haulage to the ore-pass dump. The scraper distance for No. 603-X entry is about 400 feet. Work was in progress to add a second 50-horsepower, two-drum, electric slusher-hoist to stage-scrape the muck from further advance. These hoists are equipped with a ¾-inch steel cable for the pull rope, and a ⅝-inch steel cable for the tail rope; both cables connect to the scraper. Movement of the scraper at the muck pile is controlled by electric signalling to the slusherman. A push-button signal, in the hands of the leader, is connected by electric cable to a signal light and buzzer mounted at the slusher hoist.

The night-shift crew on February 24, the day preceding the accident, carried on with the work, started on day shift, of taking down loose held up by rockbolts at the intersection of the two entries. This required drilling and blasting down the loose, then strapping and bolting the newly exposed roof. A number of rockbolts, hung from the back with 3–4 feet of the lower end exposed. From some the nut and plate had been stripped by the blasting. A large area of the floor was covered with coarse muck.

The day-shift crew under the direction of G. McNeely, development foreman, were: P. Charron, leader; H. Legacy, F. Bolduc, H. Huywan, miners; and S. Niedswiedz, slusherman. At the start of the shift the working place was wet down and scaled. Legacy and Bolduc then set up and drilled four eye-bolt holes in the west face of No. 607-A entry. At the same time Charron and Niedswiedz rigged up the blocks and cables to move the scraper back. They considered this a temporary set-up to move the scraper into position for a more permanent set-up that would clear a space in No. 607-A entry for installing the second slusher hoist. The tail-rope block was anchored by means of a cable-sling eye-bolt in one of the holes just drilled by Legacy and Bolduc. The section of the tail rope between the tail block and the slusher hoist was deflected through a guide block located on the

south side of the wide area where the entries intersect. This block was hung on one of the protruding rockbolts that had been exposed by blasting down the loose.

Niedswiedz then walked up the slope to a position where he could see his signal light on the hoist and waited a few minutes to see if Charron would test the signals. This was not done, so he proceeded to the hoist. At this time Legacy and Bolduc were stowing the drilling gear at the north corner of the entry intersection. McNeely, in the meantime, had arrived at the working place and was examining the face of room No. 607-X-23, which is immediately east of the entry intersection, for which the first slash had been taken.

Charron now signalled for the scraper to be moved back. Niedswiedz received the two-bell signal with double light flash and set the hoist in motion to pull back the scraper. The scraper was allowed to go back too far and ended up against the tail block at No. 607-A face. This caused excessive pull on the guide block and rockbolt. The rockbolt pulled out and allowed the tail rope to whip across the drive, carrying the rockbolt and block with it. Charron, Bolduc, and Legacy were all struck down by the flying cable. McNeely scrambled across the muck to grab the push-button signal and gave a long signal followed by a series of short flashes. These were heard and seen by the slusherman. Charron and Bolduc received only minor abrasions, but the cable had partly severed Legacy's neck. The jugular vein, left carotid artery, and windpipe were severed, and the jaw and skull were fractured. Death could be considered as instantaneous according to Dr. Louis Cassar, who pronounced the man dead.

Confirmation of the fact that both sound and light signals were functioning was made by Huywan. He had been sent, at the start of the shift, to help bring a second scraper from the underground repair shop. Huywan had arrived with it and was working near the slusher hoist to clear a passage by the ramp so the second hoist and scraper could be moved. He heard and saw the signals working at that time.

The following were pointed out as measures to prevent recurrence of this type of accident:

1) Men shall be thoroughly trained against the dangerous practice of standing in the V, or bight, of a working cable.

2. The use of rockbolts, unless designed for this purpose, shall not be permitted for suspension of sheave blocks.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on March 11, at 7.30 P.M. The jury returned the following verdict:

That Henry Legacy, the deceased, came to his death at 9.40 o'clock in the forenoon, on the 25th day of February, 1958 at Consolidated Denison Mine and that the death was caused by accident with no blame directly attached to any person. The jury recommends that before remotely controlled slushing operations are commenced operator and signalman be assured by inspection that all men are cleared of the working area.

Consolidated Denison Mines Limited

No. 9

Archie MacDonnell, Canadian, aged 43, married, with four children, was instantly killed about 12.25 P.M. on April 3 at Consolidated Denison Mines Limited when he was knocked down the counterweight compartment at No. 2 shaft by a descending counterweight.

MacDonnell had been an employee of Consolidated Denison Mines for about 21 months as hoistman and hoist mechanic. Prior to his employment by Consolidated Denison, he had had 18 years experience as a hoistman.

the cage until he received a one-bell signal and stopped the cage. When MacDonnell entered the counterweight compartment, the counterweight was above him. The descending counterweight struck MacDonnell, severing one leg above the knee, and knocking him down the counterweight compartment. He fell about 300 feet down the compartment where his body became jammed. He suffered severe head injuries and was killed instantly.

When MacDonnell was hit by the counterweight, he screamed. This scream was heard by Thibodeau and Bernard. Thibodeau ran to the manway, and when he didn't see MacDonnell, ran to the cage signals and gave a one-bell signal, which was the signal Murphy received when he stopped the cage. The cage stopped in such a position that the counterweight was about 10 feet below surface. Bernard heard the yell, and not seeing MacDonnell, he went to the phone and reported that an accident had happened. He also phoned the skip hoistman not to move the skip as MacDonnell had gone down the shaft.

After the arrival of Hub Maxwell, mine superintendent, Bert Hoare, plant superintendent, and Norm Gillick, master mechanic, Bernard went down the manway and brought up MacDonnell's leg. He then followed down the manway to where MacDonnell's body was located in the counterweight compartment. They returned to surface and made arrangements to bring up the body. The body was brought to surface in No. 1 skip.

To prevent a repetition of this type of accident, the mine has installed padlocks on all service doors at the collar of No. 2 shaft, and only authorized persons have keys. Also, a pull-cord counterweight signal to the cage hoistman has been installed in the manway compartment beside the door between the manway and counterweight compartments.

Hoist mechanics are to work in pairs, with one man at the signal cord of the hoist concerned, and the other in plain view of the man at the signal cord. It will be requested that an electrical interlock be installed on the door between the counterweight and manway compartments, in such a manner as to render the cage hoist inoperative when the door is opened.

An autopsy was performed by Dr. S. Pentland, who stated that death was instantaneous with one leg severed 2 inches above the knee and severe damage to the skull.

An inquest was held before Coroner M. J. Farrell, M.D., at Elliot Lake on April 29, at 7.30 P.M. The jury returned the following verdict:

> That A. MacDonnell, the deceased came to his death at approximately 12.25 P.M. o'clock in the afternoon, on the 3rd day of April, 1958 at Consolidated Denison Mines Limited and that death was accidental with no blame attached to anyone.

Consolidated Denison Mines Limited

No. 10

Milton Sydney Scheler, Canadian, aged 31, married with two children, was instantly killed by a fall of ground in No. 601-AE underpass conveyor drift of Consolidated Denison mine at 11.20 P.M. on May 12.

Scheler graduated as a mining engineer in 1949, and his employment record shows that he had been engaged in mining since that time. He was hired by Consolidated Denison Mines Limited on June 4, 1956, and was employed as a mine captain at the time of the accident.

No. 601-AE underpass is the extension of No. 601-AE conveyor drive on the 2,520-foot level in the No. 1 shaft area of the Denison mine. This conveyorway was driven 20 feet high by 30 feet wide using the Denison practice of upper pilot

An inquest was held before Coroner M. J. Farrell, M.D., in the mine rescue station, Elliot Lake, at 7.30 P.M. on June 17. The jury returned the following verdict:

That Milton Sydney Scheler, the deceased, came to his death at approximately 11.15 p.m. o'clock in the afternoon, on the 12th day of May 1958 at Consolidated Denison Mine and death was accidental with no blame attached to any individual.

Recommendations of jury:

1) Timber be used in conjunction with rock bolting operations. (Posts and headblocks).
2) Rock bolting should be brought closer to the face than present practice.
3) Spare supervision to be available to provide adequate coverage for all beats.
4) In areas, where bad ground conditions are known to exist, that greater safety precautions be taken.

Consolidated Denison Mines Limited

No. 11

Gerard C. Bourdages, Canadian, aged 26, married, with two children, and Laurent Gagnon, Canadian, aged 36, married, were instantly killed by a fall of ground in No. 8520 conveyorway drive of the Consolidated Denison mine at about 10.50 A.M., on November 7, 1958. Bourdages had been employed since July 18, 1957, as a miner with previous experience listed as one year mechanic and two years driller. Gagnon had been employed since November 23, 1957, as a miner with previous experience listed as four years underground.

No. 8520 conveyorway, in the No. 1 shaft area, is being driven 21 feet wide by 11 feet high up-grade and diagonally to the strike and dip of the orebody. Drilling is with jackleg machines, and mucking is with scraper hoist mounted on a semi-permanent ramp and discharging to a shuttle-car. The heading is worked with three-man crews on a two-shift basis. The drill crew, in addition to drilling some 60 holes in the face, install roof bolts and straps to within a few feet of the face. Five channel-type straps each secured by three rock-bolts, 6 feet long, are spaced across the width of the drift.

An 8-foot round, drilled on the previous day, misfired and was re-blasted on the night shift. The drilling crew of Paul Poirier, leader, with Bourdages and Gagnon, was informed of this by their shift boss, Guy Arsenault, when checking in for work on day shift, November 7th. Arsenault told them to wash and scale and then to clear enough muck to install the rockbolts and straps.

The men proceeded as instructed by their shift boss and had the working place washed and scaled except for one large piece of loose. They were unsuccessful in bringing this loose down with all three scaling together. When Arsenault arrived at about 8.45 A.M. they were attempting to bring it down by driving two steel gads. Arsenault checked the extent of the loose, helped with the gads without success, and then told them it would have to be popped to bring it down. He told them to stand clear when drilling with jackleg and to also reblast a missed hole in the face when blasting down the loose.

Poirier removed the gads and then drilled a flat 4-foot pop in the loose and also drilled a hole for the eye-bolt scraper block attachment at the face. The men hooked up for slushing, and Poirier told them they could slush while he was away for powder and fuse, but warned them to stay clear of the loose when slushing. The loose was in the north half of the 21-foot-wide drift, and they were to slush along the south wall.

Both Bourdages and Gagnon were back at the ramp with the hoist operating, when Grant Bainbridge, a section geologist, arrived about 10.30 A.M. Bainbridge waited for them to finish scraping enough for a shuttle load; then they stopped the scraper hoist and nodded to him that it was safe to proceed. They did not warn him of the loose ground near the face. However, they followed him in and stopped

some distance back to turn on the water and wet the dry muck exposed by slushing.

Bainbridge proceeded to mark up the footwall and in doing so he had to work under the loose but did not notice it. He then started to mark the hanging wall of the ore and had stepped back to size it up when the loose fell. He was about 6 feet from the face and just over the south side of the centre of the drift. There was no warning snap, and the sudden fall 3 feet away startled him. He jumped to the protection of the channelled back and then saw that the two miners had been struck down by the loose. He realized that help would be needed and hurried out. He met Poirier about half way to the scraper hoist. Poirier had seen the two lights disappear when the loose dropped. When advised that his partners were under a large piece of loose, Poirier hurried to where he knew the shift boss was located. Arsenault sent him to get a Unimog service truck and to alert the cagetender, first-aid, and a doctor.

Arsenault took half a dozen men to the scene. They had to dig muck from under the loose to remove the bodies. It measured 9 feet long by 7 feet wide with an average thickness of 2 feet and would weigh about 9 tons. Three intersecting joint planes contributed to the ground loosening.

Dr. Cassar examined the bodies on surface and concluded that death had been instantaneous. The autopsies revealed that Bourdages suffered a completely torn right auricle, severed aorta, fractured pelvis, and ruptured liver, and Gagnon suffered a ruptured left auricle, amputated right arm, amputated right leg, and fractured left femur.

A joint inquest on the deaths of Bourdages and Gagnon was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on November 27, 1958. The jury returned the following verdict:

> That Laurent Gagnon and Gerard Bourdages the deceased persons came to their deaths at 10.50 A.M. in the prenoon on the 7th day of November, 1958, at Consolidated Denison Mines and that the death was caused by a fall of ground with no blame attached to anyone. The jury recommends that ground support be carried closer to working face.

Dome Mines Limited

No. 12

Arvo Maki, Canadian, aged 54, married, with no dependents, was instantly killed at about 9.15 A.M. on January 28 when struck by a train of loaded cars in No. 2903 drift, 29th level of the Dome mine. This drift extends in an east-west direction and was driven from east to west.

John Maki and two partners, Veli Karjanmaa, and Arvo Maki, all timbermen, had been instructed to proceed west into No. 2903 drift and assist Basil Libby, electrician, and James Hall, electrician's helper, to demount an electric fan from the 12-inch steel ventilation pipe hanging along the south wall of the drift.

About 40 feet west of this fan No. 2903 drift divides into 2903-No. 5 crosscut, being driven north, and 2903-No. 6 crosscut, being driven south.

Edward Mitchell, level boss, and Fred McCharles, mucking machine operator, were engaged in loading a round of muck from 2903-No. 6 crosscut. The haulage equipment in use consisted of a 5-ton Greenbat, trolley locomotive, a 3-ton battery locomotive, and eight 85-cubic-foot, Granby-type cars. The procedure was for the trolley locomotive to bring eight empty cars west in No. 2903 drift to the intersection of 2903-No. 5 and 2903-No. 6 crosscuts. The battery locomotive then picked up a train of four cars and pushed them into 2903-No. 6 crosscut where the end car was loaded with ore. Mitchell operated the motor, and McCharles the mucking machine. When the end car was loaded, it was

pulled out of the crosscut to the intersection, switched into 2903-No. 5 crosscut, and the three remaining empty cars returned to the mucking machine. The trolley locomotive and the other four cars were left in No. 2903 drift sufficiently far enough east of the switch to permit switching the loaded cars.

Prior to the accident McCharles and Mitchell had loaded four of the Granby cars and switched them into 2903-No. 5 crosscut. Libby and Hall had disconnected the electrical wiring to the fan. While this operation was being done, McCharles walked east in No. 2903 drift past the fan to the train of four empty cars parked with the trolley locomotive and moved the train west past the fan and the two men and into 2903-No. 6 crosscut. He left the four empty cars there, backed the trolley out into the drift again, and Mitchell switched the battery locomotive from the train of loaded cars in 2903-No. 5 crosscut to the train of empty ones in 2903-No. 6 crosscut. McCharles then ran the trolley into 2903-No. 5 crosscut and with Mitchell's help coupled it to the loaded cars.

During these switching operations Mitchell claims that he called the three timbermen to come away from the fan and told them to stand in the clear at the intersection until the loaded train left to be dumped. Libby states that he and Hall finished disconnecting the electrical supply wires to the fan and called the timbermen from the intersection area to disconnect the suspension wires holding the fan and lower it down to the floor of the drift. Apparently this was after Mitchell had called the timbermen away from the fan and before the switching of the two locomotives was completed. Libby claims that he did not know that the timbermen had been warned away from the fan area.

Libby and Hall stepped back against the opposite wall of the drift and watched the three timberme proceed to take the fan down.

John Maki cut the wires holding the east end of the fan unit, and Arvo Maki and Karjanmaa lowered the end to about waist height and held it there. The west end of the unit was still in place, and John Maki proceeded to cut the wires holding it in the ventilation pipe. Arvo Maki and Karjanmaa were standing side by side (Maki to the west of Karjanmaa) facing south, with the track behind them. The fan in their arms was between them and the south wall of the drift.

After coupling the four loaded cars to the controller end of the trolley locomotive, McCharles stepped out of the locomotive, and Mitchell got into it and started east in No. 2903 drift pulling the loaded cars to the dump. He saw Arvo Maki and Karjanmaa standing beside the track but did not see that they were holding the fan. The locomotive passed the men with clearance and Mitchell increased speed. The first or second car hit Maki knocking him against Karjanmaa. The latter caught the side of a car as he fell and clung to it. He was dragged but not injured. The fan fell; one end of it became caught on the ramp wheel of the third car, and the other end pinned Maki against the drift wall.

The drift, from the point where the trolley started up to well past the fan, was straight, and the air was clear. Mitchell knew that men were working on the fan. The five men at the fan knew of the tramming operations in process at the intersection. It is perhaps significant that the two electricians do not clearly remember the trolley locomotive and four empty cars passing them going west, when McCharles moved the train from the parked position east of the fan into 2903-No. 6 crosscut. They agree that it must have done so, but they were not paying sufficient attention to the tramming operations, and McCharles apparently did not make a point of warning them to make sure that they knew he was going to pass them.

John Maki and the two electricians saw the motor start and come towards them. Maki shouted at the two men holding the fan and jumped clear. The two

electricians thought the locomotive would stop at the fan, so that they could load the fan on to it to be transported to No. 6 shaft station.

When the motor did not stop, and Karjanmaa and Arvo Maki were knocked down, the two electricians and John Maki shouted to Mitchell to stop. He did so but only after Arvo Maki had been dragged about 55 feet against the south wall of the drift by the fan caught on the car. Maki's injuries indicate that he must have died instantly from a crushed and severely lacerated skull.

No. 2903 drift was driven 10 feet wide and 9 feet high. The centre line of the 24-inch gauge track is about on the centre line of the drift. The following measurements were all taken from the centre line of track towards the south (the side of the track on which the accident occurred). They are maximum distances for the widths of the haulage equipment and a maximum and a minimum distance to the south drift wall. The two clearances given are the maximum and minimum distance from the haulage equipment to the drift wall for about 10 feet on both sides of the spot where the two men were supporting the fan.

Distance from Centre Line of Track to:			Clearance to South Wall of Drift			
			Maximum (waist height)		Minimum (floor level)	
	feet	inches	feet	inches	feet	inches
Side of locomotive	1	9¾	3	¼	2	4¾
Side of car box	2	4	2	6	1	10½
Outside of ramp wheel	2	5½	2	4½	1	9
South wall of drift	.....	.....	4	10	4	4½

All clearances were adequate had the two men not been holding the fan between them and the wall. Mitchell claims that he was ringing the warning bell on the locomotive and that the locomotive headlight was lit (it cannot be turned off when the trolley pole is in contact with the trolley line). None of the other men in the vicinity remember hearing the bell, but none of them could definitely state that it was not ringing.

An inquest was held before Coroner J. B. McClinton, M.D., in the South Porcupine Town Hall on February 20, at 4.00 P.M. The jury returned the following verdict:

> This jury finds that A. Maki came to his death accidentally at 9:00 a.m. on the 28th January 1958 on the 29 Level at the Dome Mines with no blame attached [sic].
> We recommend that more precautions be taken on such occasions.

Dome Mines Limited

No. 13

Alphonse Villemure, Canadian, aged 52, married, with one dependent, received fatal injuries on March 13, at 2.15 P.M., in No. 1430 cut-off drift, 14th level of the Dome mine when two holes in a drift round he was helping to reblast detonated while the round was being lit. Villemure died on Sunday morning, March 16, en route by air to Toronto.

Villemure and his partner Leo Melanson, loader operator, were engaged in mucking out a partly broken round in No. 1430 cut-off drift. This drift is being driven on a 50-foot radius curve from No. 1402 drift, on the 14th level. The face had been advanced about 70 feet from the intersection with No. 1402 drift at the time of the accident.

Shift Boss I. C. Richardson visited the men at 11.00 A.M., inspected the face of the drift for missed holes, and instructed the crew to clean out the broken muck and then load and reblast the round. The two men could not effectively

guard all approaches to the blast, so Richardson later instructed Trammer Boss William Pearce to go to No. 1430 cut-off drift and take a sufficient number of men from the level with him to do the guarding properly. Pearce did this and took Dennis Parkinson, chute puller, and his partner with him. Parkinson's partner did not enter No. 1430 cut-off drift and was not a witness to any of the events that followed.

Pearce took charge of the loading of the round, Villemure and Parkinson helping him. The men loaded 26 holes ranging in length from 10 feet around the outside of the round to about 4 feet in the cut. Clay tamping was available but was not used in this reblast.

The practice at Dome mine is for all drift headings to use 10- or 12-foot tape fuse with igniter-cord connectors, depending on the length of round. Pearce did not follow this practice and loaded the round with ordinary 12-foot tape fuse used in stope blasting. He trimmed the fuse to give the holes the proper firing sequence and then started to light the fuse himself. Villemure was standing beside and slightly behind Pearce. Parkinson was standing behind Villemure. Pearce was using a 1½-minute hot-wire lighter. Parkinson was holding two spare lighters; these were not lit.

Pearce lit one lighter and commenced spitting the fuse. Parkinson states that when this lighter had burned about three-quarters of its length, Pearce asked him for a second one. Pearce lit the second lighter from the first and continued spitting. At one point Pearce asked Parkinson for a knife. Parkinson handed him one. Pearce used it and handed it back. Parkinson did not see what Pearce did with it but assumed that he recut a fuse.

The second hot-wire lighter was almost finished when one of the holes detonated. Parkinson was knocked down but was not injured. He got up, caught hold of Villemure and started to drag him away from the face. A second hole detonated, and Parkinson fell again. When he got up, Pearce ran into him, and he fell again. He could not find Villemure in the smoke and dust so he retreated out of the drift with Pearce. The two men met Melanson at the intersection of No. 1402 drift, and the three started walking to the shaft. They had reached the intersection of No. 1430 crosscut, 250 feet away, before the remaining shots fired. Neither Pearce nor Parkinson knew how many of the 26 loaded holes were lit.

After all the holes that had been lit had fired, Villemure was found sitting upright between the rails of the track. He had received severe injuries to his face, throat, and chest.

Villemure was treated in the Porcupine General Hospital. It was decided to send him to Toronto by a chartered plane on Sunday, March 16. He died en route.

On Friday morning, March 14, the muck broken by the blast in which Villemure was injured, was mucked out. Present during the operation were: F. Newman, mine superintendent; W. Moyle, assistant mine superintendent; C. Shields, mine captain; I. Richardson, shift boss; L. Melanson, loader operator; D. Parkinson, car loader; and R. F. Lockhart, engineer of mines.

The broken muck was carefully examined for pieces of fuse as it was removed. Several pieces, both burned and unburned, of various lengths were found. Most significant were two pieces of unburned fuse, with the white paint mark on one end and a clean knife cut at the other; they measured 85½ and 83 inches long.

All the fuse used in the round were reported by Parkinson and Melanson to be 12 feet long. These two cut ends would indicate that two of the fuses were cut to 4 feet 10½ inches and 5 feet 1 inch, respectively.

The fuse used in all the mines in this district burns at the rate of 1 foot per 40 seconds. These two fuses would have a burning time of approximately 3 minutes and 20 seconds. The hot-wire lighters used to light the round have a

to the 625-foot level. Doctor Jolkotzy arrived at the level shortly afterwards and pronounced the man dead.

From an investigation it was found that 16 feet of raise timber at the bottom of the raise, consisting of five stulls at 4-foot centres, lining plank and braces, had been knocked out by the gravel. The timber had been picked out from the gravel during the slushing operation. Two offset ladders were left at the top of the raise, and two planks had been dislodged from the second landing. The stull and its two braces, which supported the second landing and the second ladder, had been knocked out. A filler plank, which had been nailed on top of the stull, was still in place attached to the lining plank. The landing plank, which supported the lower end of the second ladder, rested on the filler plank and a rock ledge. This landing plank was still in place after the accident with two nails protruding, which had been toe-nailed to the lower ends of the ladder. The ladder would have sloped at about 60 degrees and was attached at the top end to a brace by 8-inch nails.

It appears that Semple was aware of the damage to the raise timbering but decided to have a closer look. He neglected to put on a safety belt, which he had ordered to be brought to the raise, and also misjudged the reliability of the second ladder.

An inquest was held by Coroner J. A. Pidutti, M.D., C.M., at Onaping Community Centre on February 19, at 3.00 P.M. The Coroner gave his verdict as follows:

From the evidence heard in this inquest it has been revealed that Robert Semple died of spinal cord compression from a fractured cervical spine and intrathoracic hemorrhage resulting from a fall down a mine raise at Hardy Mine at Onaping, Ontario on January 13, 1958.

In my opinion, his death was due to his failure to exercise necessary precaution—i.e. lack of safety belt. He was undoubtedly aware of possible danger when he forewarned his crew to use safety equipment but failed to use it himself.

Recommendations:

1) When a manway has been out of use and closed for some time it would be advisable for a safety man to check for decayed timber, any weakness in the structure and to ensure firm ladder footings before any work is undertaken in that area.

2) Make safety belts easily accessible to encourage their use.

Falconbridge Nickel Mines Limited

No. 15

Patrick J. Ranger, Canadian, aged 33, miner, married, with one dependent, was fatally injured in the McKim mine when he fell from No. 1502-9-12A subdrift into No. 1602-9-12 stope a distance of 165 feet on October 14, 1958, at 10.15 A.M. He had been employed by Falconbridge Nickel Mines Limited for 6 years and had worked as muckerman and driller.

No. 1602-9-12 stope is mined by sublevel stoping, and because the average dip is 50 degrees, slushing is required. A slot raise had been driven through on the west end of the sublevels, and blast-holing had commenced. At the top of the stope, blast-holing had advanced 15 feet in No. 1502-9-12A subdrift, making an opening in the floor immediately to the west of No. 3 boxhole.

At about 8.30 A.M., October 14, the shift boss, Fred Grumbley, instructed R. Bosse, stope leader, on the installation of anchor bolts and anchor cable for the tail-rope slushing pulleys and a cable handline in No. 1502-9-12A subdrift. Grumbley ordered Bosse to install the available anchor bolts and stated that the rest of the equipment had been ordered to be sent down from surface.

Bosse showed Grumbley the dislodged bulkhead up in No. 3 boxhole, and Grumbley replied that this bulkhead would have to be straightened eventually. The captain, A. Kirby, visiting the stope at 9.45 A.M., confirmed the shift boss's

instructions and explained the cross-lacing of cables on eye-bolts in the mouths of the boxholes that would have to be done eventually. Kirby left the subdrift at 10.00 A.M.

Bosse and Ranger installed the available anchor bolts. He then decided to repair the dislodged bulkhead in No. 3 boxhole, and to drill the eye-bolt holes required around the boxhole mouths as there was a stoper available in A subdrift. Walking to No. 3 boxhole, Bosse passed over a plank, which was wedged across the subdrift 11 feet ahead of the opening in the floor and put there to guard against a person inadvertently walking into the hole. Ranger remained at the plank guard. The bulkhead timbers had been laid originally across the mouth *of the boxhole from footwall to hanging wall, supported at their ends by sprags.* Bosse stood on the footwall sprag in No. 3 boxhole, lifted one 7-inch by 7-foot timber, laid one end of it on the footwall sprag and lowered the upper end towards the hanging-wall sprag. Ranger had arrived and helped Bosse; and he then stood on the west side of the boxhole about 4 feet from the opening. The upper end of the timber came short of the sprag whereupon Bosse lost control of the timber and dropped it. Ranger moved out of the way of the falling timber and fell into the opening. He rolled down the footwall and muckpile of No. 1602-9-12 stope a distance of 165 feet. The time of the accident was about 10.15 A.M.

Bosse climbed down the service raise to A subdrift of No. 1602-9-12 stope where he found Ranger in a huddled position in one of the boxholes. He summoned men from the haulage level below and sent word for the doctor and ambulance.

The men took Ranger by basket stretcher to surface. After immediate first-aid treatment he was taken to St. Joseph's Hospital in Sudbury where he died of skull injuries at 9.35 P.M., October 14.

An inquest was held by Coroner G. Demarais, M.D., at Sudbury on November 5, 1958. The coroner gave his verdict as follows:

> Patrick Ranger, age 33 years, address 77 Regent Street South, Sudbury, Ontario miner for Falconbridge Nickel Mine at McKim Mine, Shaft 2, Sub-drift West 1502-9-12A, died of fractured skull October 14, 1958, when he slipped from slot raise into stope No. 1602-9-12 approximate distance 165 feet.
>
> From the evidence of all witnesses, I found his death accidental without any blame attached to any employee or employer.

Falconbridge Nickel Mines Limited

No. 16

Eldon Willis Raycroft, aged 33, Canadian, married, with four dependents, a stope boss, was fatally injured by a fall of rock in No. 3802-76-80 stope of the Falconbridge mine at 8.30 A.M., on December 2, 1958. He was pronounced dead at 9.45 A.M., the same day. Raycroft had been employed underground at Falconbridge Nickel Mines Limited for 5 years. He had 7 years previous mining experience.

No. 3802-76-80 cut-and-fill stope is almost vertical, about 18 feet wide and 210 feet long. Hi-strength rockbolts, 8 feet by ¾ inch, are used extensively to strengthen the back and walls and hold in place slabs of rock that will loosen later. All loose rock that can be scaled is brought down after each blast; rockbolting is immediately started and completed before drilling the next breast.

The second breast had been blasted east of the 6- by 10-foot vertical raise on the night shift on December 1. Raycroft and Jean Cleroux on the day shift of December 2, were instructed to scale and install rockbolts before advancing the breast. They thought that scaling was almost completed by 8.30 A.M. except for a thin shell of rock in the back corner of the stope. Both men put their scaling bars on the thin shell and pried. A slab 13 by 4 feet, and 1½ feet thick, above the thin shell they were scaling, unexpectedly fell down. Cleroux got clear of the

Gray carried Bussiere away from the raise and placed him on a pile of planks. At this time Bussiere was still breathing, and Gray stated that he could feel a pulse. While he was feeling the pulse Bussiere's breathing and pulse appeared to stop and Gray called the shift first-aid man, Andre Nicol, who was unable to find any sign of life. Bussiere's body was taken to surface in a stretcher and examined by the company doctor, who pronounced him dead.

An autopsy was performed by Dr. A. E. Allin, provincial pathologist, who said that death was due to multiple injuries including a broken neck, crushed spine, and fractured skull. Dr. Allin stated that he found no sign of organic disease, and that death must have been almost instantaneous.

An examination of the scene of the accident indicated that Bussiere had been standing on a flat plank platform, which covered the top of the manway compartment and was 109 feet above the chute. He had been stripping the set of timber immediately above the platform and had already dropped the lining planks and posts down the chute. His tools included a scaling bar, wrecking bar, 12-pound sledge-hammer, and axe. These were found on the platform, with the exception of the scaling bar, which had fallen down the chute. It was presumed he had been prying on the stull when it gave way, and he fell into the chute.

The top of the raise was tightly covered with planks at the 1,050-foot level, and there was a bulkhead over the manway, 33 feet above the platform where Bussiere was standing.

An inquest into the death of Bussiere was held in the Ontario Provincial Police building at Schreiber at 10.45 A.M. on January 3, 1959. The verdict of the jury was as follows:

> We, the Jury, find that Lucien Joseph Bussiere came to his death about 3:00 P.M. in the afternoon of December 22, 1958 at Geco Mines, Manitouwadge and that death was caused by fractured skull and broken neck. The deceased was employed in the mine stripping timber and in some unexplained manner fell some 100 feet. In the opinion of the jury safety belts should be provided and worn in this type of work.

The coroner was B. C. Hardiman, M.D. Crown Attorney P. V. Ibbetson was also present at the inquest.

Greyhawk Uranium Mines Limited

No. 18

Rosaire Lamirande, Canadian, aged 36, married, with seven children, employed as a miner, was killed instantly by a fall of rock on October 25, 1958, at about 9.15 A.M. in No. 302A stope at Greyhawk Uranium Mines Limited. Death was due to a fractured skull and severe brain injury.

Lamirande was hired at this mine on July 3, 1958, as a helper and on July 22, 1958, was promoted to a stope miner. He had 6 years previous mining experience in other mines in Ontario.

The ore in this section of the mine strikes N.40°W. and dips at about 45 degrees. The formation consists of pegmatite dikes with the country rock meta-gabbro in the hanging wall, and paragneiss in the footwall.

Due to the flat dip, No. 302A stope was mined open with intermittent pillars left to support the back. The muck was slushed to mucking-machine drawpoints for loading into cars. The main part of this stope was completed, leaving a 15-foot crown pillar. At the northwest end a 50-foot, presumably waste, pillar had been left. Later some ore was found in this pillar from a 60-foot exploration subdrift, 22 feet below the 2nd level, and driven from the original stope raise at this end. To handle this ore, a boxhole was driven from the original stope back, to this

sublevel. One lift of uppers was drilled off in the subdrift, and it was intended to leave the 15-foot crown from there to the level. Then to get the ore below the subdrift, the boxhole was belled out to about 45 degrees. Uppers from the subdrift were being blasted as the coning progressed. After about half the uppers were blasted and the belling was completed to about a 30-foot length, the hanging wall was thoroughly rockbolted from the back, down about 12 feet.

On the night shift of October 24, 1958, the balance of the uppers were blasted, with a cone slash on each side of the boxhole. Lamirande and his partner, Ivan Lapointe, were instructed on surface by their shift boss, Kenneth Legge, to first scale the subdrift uppers and then the two slashes below. The crew were scaling when Legge first entered the stope at about 9.00 A.M. When checking this stope, Legge detected some loose on the hanging wall just below the subdrift floor in the centre of the belled section. He directed their attention to a crack along the west side of this loose and instructed his crew to scale this loose after barring more muck that was hung up on the footwall.

There were two scaling bars, 4 feet and 8 feet, in the stope. According to Lapointe, Lamirande first tried to scale the loose from the west side using the 4-foot bar, then he moved to a position just above where he considered the upper limits of this loose were and tried again with the 4-foot bar. Lamirande then asked Lapointe, who was standing a little to one side and higher up, to try it, using the 8-foot bar. Lapointe brought this loose down, with another smaller piece driectly above it, which peeled off immediately following the larger one. This over-all loose rock bound by two clean slips had the shape of a three-sided pyramid, with the point on the up-dip side, measuring 7 feet 6 inches at the base, 8 feet 6 inches high and varied in thickness from 6 inches to 2 feet 6 inches. About 4 feet 6 inches up from the bottom there was a cross fracture roughly parallel to the base. This bottom frustum of the pyramid, with a volume of about 28 cubic feet, weighed more than 2 tons. The upper section was calculated to contain about 5 cubic feet or 850 pounds. When sounding the back, the crew either missed this loose portion, or it is possible that the upper section was tight and then became loose by the action of the piece that was scaled below.

Lamirande was struck directly by this falling rock, slid about 15 feet down the footwall, and came to rest with his bare head wedged between two rocks. Lapointe released his partner from this position and then summoned help. Legge, who was in an adjoining stope, heard the fall of rock and the shouts for help. With another miner he was soon back in this stope to render assistance. R. A. Freberg, manager, Andrew Mahalek, underground superintendent, and W. Tryon, first-aid attendant, assisted in bringing the body to surface. Freberg thought Lamirande might have had a weak pulse when he first examined him. When Tryon arrived with the stretcher he could feel no pulse.

The body, when it arrived on surface at about 11.00 A.M., was examined by Dr. V. A. Lehinant and the coroner, Dr. O. W. Anderson. Lamirande was pronounced dead. Dr. Anderson and two Ontario Provincial Police constables from the Bancroft detachment inspected the scene of the accident.

An inquest was held on November 12, 1958, at 7.00 P.M. before Coroner O. W. Anderson, M.D., in the District Provincial Police offices at Bancroft. The following verdict was returned by the jury:

That Rosaire Lamirande, the deceased person, came to his death at 9:15 A.M. in the forenoon on October 25, 1958 at Greyhawk Uranium Mine and that death was caused by a severe brain injury due to a fractured skull caused by a fall of rock striking him on the head. The jury submits as part of its finding that death was accidental and that all reasonable precautions consistent with good mining practices had been observed and that no blame can be attached to any person or persons involved, including the deceased.

International Nickel Company of Canada Limited

No. 19

Ernest Jones, Canadian, aged 46, married, with three dependents, died at the Copper Cliff hospital at 10.40 P.M., June 6, as the result of injuries received in a rock burst at 2.00 A.M., June 5. He had been employed by International Nickel Company of Canada Limited as a driller since 1937.

The No. 2 main crosscut on the 3,600-foot level was driven in a southeasterly direction from No. 2 shaft as an 8- by 9-foot opening until it had passed through the orebody, a distance of about 1,700 feet. Beyond this point it was considered only as a preliminary crosscut, and the size was reduced to 6 by 7 feet. A diabase dike was encountered about 140 feet south of the beginning of the preliminary crosscut. The dike, which is about 100 feet wide, strikes roughly east-west and dips about 85°N. Through this area, roof bolting of the walls and back was carried on as the heading advanced. While still in the dike, east and west exploration drifts were commenced from this crosscut. Within a few rounds, the east heading was out of the dike, but the west drift continued in diabase.

On May 23 at 10.30 A.M., a minor rock burst occurred along the east wall of the crosscut about 60 feet north of the intersection of the exploration drifts. No one was injured, but about 4 tons of rock was displaced. The area was scaled and rockbolted again.

Crosscuts had been extended beyond the orebody and into the diabase dike on the 3,000- and 4,000-foot levels with no ground difficulties encountered. There was no stoping in the mine below the 2,800-foot level. Further examination of the 3,600-foot level on May 28 by B. King, mine superintendent, indicated some ground disturbance in the diabase. Consequently, as a precautionary measure, King ordered the dike area to be timbered. This was commenced on May 30.

"Arched battered-post sets" were installed at 6-foot 6-inch centres. The posts, which are 8-inch flatted timbers, were set close to the walls at the bottom and angled in slightly (10 degrees) at the top. Across the tops of the posts an 8-inch cap was placed tightly from wall to wall. Two-inch plank spreaders were nailed beneath the cap and between the posts. Blocking was placed above the cap to the back, leaving room for two 12-inch ventilation pipes and air and water lines. Five-inch blocking was also placed along the walls behind the posts.

By the end of the 4.00 P.M.–12.00 P.M. shift of June 4, seven sets had been installed, starting at the north side of the dike. At the beginning of the 12.00 P.M.–8.00 A.M. shift, June 5, T. Ballantine, shift boss, informed Jones, A. Gagnon, motorman, and M. Wasylenki, switchman, that the previous shift crew had blasted a small slash to make room for the next set of timber. They were to clean up the muck and continue timbering. Ballantine visited the working place at 12.30 A.M., and instructed them to boom out beyond the last set, scale, muck out the slash muck, and stand a set of timber.

At about 2.00 A.M., Jones was bringing a mucking machine in through the timber, Wasylenki was walking about 15 feet behind the mucking machine, and Gagnon was pushing two Hudson cars with the locomotive. As Jones reached the fourth set, the burst occurred in the lower east wall. The east post was broken and displaced inward, knocking Jones against the mucking machine, which was also thrown off the track against the post on the west side.

After the rock burst, Gagnon and Wasylenki, who were unhurt, removed Jones from beside the mucking machine and took him to surface. Dr. J. L. Kirk attended him in the first-aid office before he was removed to Copper Cliff hospital. He was under the care of Dr. B. F. Hazelwood until his death at 10.40 P.M., June 6. The cause of death was irreversible shock due to multiple injuries. It

was found that he had suffered a ruptured lower bowel, right rectus muscle, and right iliac muscle, with a dislocated pelvis, and a blood clot in the right iliac artery.

Investigation following the rock burst showed that 10 feet of track on the east side had heaved 2 inches. One 8-inch post had broken, and the east post of the third set had been displaced 14 inches inward. One piece of 5-inch blocking, between the fourth and fifth set, was broken, and the bucket of the mucking machine had apparently cut the 2-inch spreader beneath the cap of the fourth set. This second rock burst occurred in almost the same location as the one on May 23.

An inquest was held in Garson by Dr. J. A. Pidutti, coroner, on June 19. His verdict was as follows:

> It is my opinion that Ernest Jones who died at Copper Cliff Hospital, Copper Cliff, Ont. on June 6th, died as a result of injuries received in a rockburst on the 3,600 level at Garson Mine on June 5th.
>
> From this accident, he sustained a ruptured bowel, retroperitoneal haemorrhage and a separation of his pelvis on the right side. The cause of death was Fat Embolism and irreversible shock from the above injuries. There is no evidence of neglect or carelessness in this incident. On the contrary more than necessary precautions and safety measures had been taken to prevent such an accident.

International Nickel Company of Canada Limited

No. 20

Michael Wojtiuk, Ukranian, aged 35, married, with one child, was instantly killed by a fall of ground in No. 101 crosscut on the 3,000-foot level of the Fecunis mine of Falconbridge Nickel Mines Limited at 5.40 A.M., on July 8. He had been employed by International Nickel Company of Canada Limited since February, 1951, and for the past three years had been a roof-bolt driller.

No. 101 crosscut is in the Falconbridge Nickel Mines' block of ground of the Fecunis mine, being mined according to an agreement with the International Nickel company through its Levack mine. It is one of several long, parallel crosscuts driven transversely across the orebody in a northeasterly direction from No. 30.02 drift. The crosscut was driven in ore 11 by 11 feet in order that timbered gangway sets could be installed. A section of waste, about 240 feet long, was left untimbered, and the drift was cut to 8 by 9 feet.

On the 12.00 P.M.–8.00 A.M. shift of July 8, Wojtiuk and his partner, M. McKinney, were instructed by their shift boss, P. Miller, to scale and rockbolt the back of No. 101 crosscut beyond the timbered area. A flat car, 8 feet long with 2-foot wing sections on each side, hinged so that the platform extended almost to each wall, was towed in by a battery locomotive. The platform is about 2 feet above track elevation.

At 3.00 A.M., when Miller visited the working place, Wojtiuk and McKinney had installed about 10 rockbolts. Miller and Wojtiuk checked the back through the untimbered portion of the drift. By 5.00 A.M. the two men had advanced about 24 feet from the timber and installed nineteen 4-foot by 1-inch, wedge-type rockbolts in a 3-2 pattern.

A "drummy" piece of loose was encountered, which the two men believed to be about 2½ by 2½ feet. They worked for about ½ hour trying to scale it down with scaling bars without success. A gad was then hammered in, which opened up a crack about ½ inch wide. A second gad was inserted by McKinney while Wojtiuk tapped it in with a 6-pound hammer. When it was secure, McKinney stepped back while Wojtiuk struck the gad a hard blow. Apparently the piece had loosened sufficiently so that there was very little resistance to the gad. Wojtiuk followed through with the swing of the hammer and was struck on the back of the head and on the back as the loose fell. He was forced down to the platform in a

bent-over position by the weight of the rock. The piece was much larger than had been expected, being about 8 by 4½ feet by 18 inches at its thickest point and weighing about 1½ tons.

McKinney, who was unhurt, was unable to get Wojtiuk out from under the piece of rock. He was assisted by several men working on the level to lift the chunk while Wojtiuk was removed. Wojtiuk was taken to the first-aid room on surface where he was pronounced dead by Dr. D. A. Selby. His injuries consisted of a broken neck, two fractures of the back, a compound fracture of the right leg, and crushing injuries to the chest. The cause of death was given as a broken neck.

An inspection of the back of the drift following the accident revealed a horizontal, smooth calcite slip in the diorite rock about 6 inches above the arch in the crosscut. This would not be evident with the loose in place, but was undoubtedly a source of weakness.

An inquest was held at Levack by Dr. G. Desmarais, coroner, on July 16. His verdict was as follows:

> Michael Wojtiuk, age 35, address 17 Main St., Levack, miner of INCO, Levack Mine, died instantly of crushing injuries of thorax and abdomen on July 8th, 5:40 a.m. 1958, in shaft 3, level 3000, 101 cross cut by a fall of loose rocks approximate size 8 ft. x 4½ ft.
>
> From the evidence of all witnesses, I found his death accidental with no blame attached to any employee or employer.

Kerr-Addison Gold Mines Limited

No. 21

Germain Beland, Canadian, aged 36, married, with seven children, was killed on October 8 by a fall of rock from the back of No. 1916-49 scram drift, located above the 1,900-foot level at Kerr-Addison Gold Mines Limited.

Beland had had 6 years mining experience; he was hired at Kerr-Addison on August 15, 1958, as a mucking-machine operator.

No. 1916-49 stope was being prepared for mining. A service raise was driven at the east end, and a scram drift driven west for about 110 feet. A ventilation raise had been completed at the west end to the 1,750-foot level, and four draw-points established in the back of the scram drift. A 48-inch scraper had been used during the development work to slush ore into the transfer raise located just west of the service raise.

On the morning of the accident, Beland, accompanied by two mechanics, A. Bond and R. Lapierre, were instructed to go to No. 1916-49 scram drift and dismantle and remove the 48-inch scraper. They were to replace it with a larger 66-inch scraper. The scrapers were to be exchanged from the 1,900-foot level and the scram drift. No. 1916-49 scram drift is located 90 feet above the 1,900-foot level and is serviced from the level by a 5- by 7-foot manway raise inclined at 50 degrees.

L. Hogan, Beland's partner, had gone to the 1,600-foot level. He was given instructions there by his shift boss, V. Pedersen, to go to No. 1916-49 scram drift and assist Beland and the mechanics. Hogan arrived at No. 1916-49 scram drift about 10.30 A.M.

Before lunch time the hoist was rigged, and the 48-inch scraper was dismantled. Barricade timber in front of the slusher hoist was removed so the scrapers could be moved to and from the manway raise.

Immediately after lunch the two mechanics on the 1,900-foot level, with Beland and Hogan in the scram drift, lowered the 48-inch scraper to the 1,900-foot level. The mechanics were moving part of the 48-inch scraper on the 1,900-foot level using the cable and hoist, when the loose fell in the scram drift.

Hogan was standing on the north side of the slusher hoist in the scram drift and was thrown clear as the rock fell. Beland was standing in front of the slusher

hoist to the west, and the loose fell knocking him to the floor of the scram drift. Hogan was unable to move the large piece of loose and obtained help from the level above. He then went to the shaft station.

Dr. G. Hagerman was notified and proceeded underground where he examined the body. Cause of death was given as asphyxiation due to a fractured windpipe. Death was probably instantaneous.

Three very pronounced slips were exposed in the back after the fall of ground. These slips would have been difficult to detect prior to the fall owing to their position along one wall and over the back of the scram drift. Before starting to work, Hogan stated that both he and Beland had sounded the back and checked for loose and considered the working place to be safe. The eye-bolts supporting the sheave used in hoisting the scrapers were located in the back of the scram drift, and the loose broke away from these bolts to the west and away from the slusher hoist. The loose was 11 feet long and weighed about 8 tons. It is possible that vibrations from the eye-bolts could have caused the loose to fall.

An inquest was held before Coroner, J. F. Edis, M.D., at 7.30 P.M. on October 15, 1958, in the municipal hall at Virginiatown. The jury returned the following verdict:

> On the afternoon of October 8, 1958, in the 1916-49 scram drift of the Kerr-Addison Gold Mines, Limited, Virginiatown, Mr. G. Beland was killed by a fall of rock by reason of a blow to the head by same, causing a throat and neck injury thereby suffocating. No crushing was apparent. There is no evidence of negligence on the part of anyone concerned.

MacIsaac Mining and Tunnelling Company Limited

No. 22

Ansel Charles Purdy, Canadian, aged 46, married, with five children, was instantly killed when struck by a descending counterweight in No. 1 shaft of the Panel mine of Northspan Uranium Mines Limited at 11.50 A.M., on August 24. Purdy had about 15 years of mining and shaft experience. He had been employed by MacIsaac Mining and Tunnelling Company Limited, shaft contractor on the Panel deepening contract, since November, 1957.

No. 1 shaft at the Panel mine is a 6-compartment opening, measuring 17 feet 8 inches by 13 feet 2½ inches outside the timbers. Nos. 1 and 2 skip compartments occupy the west side of the shaft. The large mancage is in No. 3 compartment across the centre of the shaft. The east end of the shaft is taken up by the three smaller compartments, namely: No. 4 counterweight compartment, 3 by 3 feet in size; No. 5 manway compartment, 3 by 4 feet 6 inches in size; and No. 6 pipe-and-cable compartment, 3 by 3 feet 6 inches in size. The manway is located between the counterweight and pipe compartments.

During the period October, 1957–August, 1958, this shaft was deepened from 1,104 feet to 1,676 feet below the surface collar, a distance of 572 feet. This deepening was done under contract by MacIsaac Mining and Tunnelling Company Limited.

During the last week of July, the sinking bulkhead under the cage and counterweight was removed. Longer ropes were installed on the cage and counterweight drum hoist on August 3, and travel commenced in the shaft extension by means of the cage in balance with the counterweight. The lining around the manway compartment, separating it from the cage, counterweight, and pipe compartments, had not yet been installed.

On August 24, W. H. Davis, the shaft leader, was late for work, and the contractor's day-shift crew was placed by Joseph MacIsaac, shaft captain, in the new part of the shaft, as follows: three men building forms at the back of the new loading-pocket station on the 1,580-foot level; four men setting up a slusher hoist

at the 1,530-foot level station; and three men cleaning down the manway in the new part of the shaft.

The last crew, consisting of Ansel Purdy, Angus McDonald, and Alex. MacIsaac, started just below the upper loading-pocket on the 1,005-foot level. They were cleaning off the landings and the shaft sets around the manway compartment in preparation for the installation of lining planks.

The crew in the manway had cleaned down this part of the shaft for a distance of about 500 feet by 11.50 A.M., the time of the accident. They were at a landing on set No. 217, located 14 feet above the 1,530-foot level, and had come this distance by way of the ladders, cleaning down as they went. McDonald was on the ladder leading down from the landing. He was facing the cage compartment, with his body half through the opening in the landing, and was cleaning the divider between the cage and manway compartments. MacIsaac was descending the ladder, which rested on the landing at set No. 217, and saw the accident. Purdy was on the landing cleaning off the accumulated muck. According to Alex. MacIsaac, he leaned over too far into the counterweight compartment and was struck by the counterweight descending on the guides. Purdy's body fell into the counterweight compartment, and in doing so his foot struck McDonald on the back. The body fell 147 feet to set No. 238 where it was found on the manway landing. The body was brought to surface in a basket stretcher and Coroner M. J. Farrell, M.D., who had been summoned, pronounced Purdy dead of a fractured skull.

The autopsy, performed by Dr. E. S. Pentland, disclosed a severe crushing of the chest cavity with rupture of the heart, in addition to the skull fracture.

When placing the men at this work in the manway, Joseph MacIsaac warned each of them, individually, to take care not to be in a position to be struck by the moving cage or counterweight. The travelling counterweight was observed by these men perhaps a dozen times during the morning; the cage went by them about half a dozen times.

The cagetender, George Perrin, and the hoistman, Joseph Meuilleur, had not been advised to discontinue hoisting operations while men were in the manway without the protection of lining. No arrangement was made between the supervisory personnel of the MacIsaac company and the Panel mine to have the cage and counterweight movements under the direction of the men performing this work.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on September 17, 1958. The following verdict was returned by the jury:

Ansel Charles Purdy, the deceased person, came to his death at 11.50 o'clock in the forenoon on the 24th day of August, 1958 in the No. 1 shaft of Panel Mine and that death was accidental.

Recommendations:

That all Mining Regulations be closely adhered to by both Company and Contractors in all mining operations and that adequate inspections are made of shaft sinking operations to ensure Mining Regulations are practised according to the Code.

Madsen Red Lake Gold Mines Limited

No. 23

Frank Marazia, Italian, aged 23, single, with no dependents, was instantly killed by a fall of rock at about 1.30 P.M., on July 10, while working in No. 12-8 stope at Madsen Red Lake Gold Mines Limited.

Marazia had over 2 years mining experience and had worked in this particular stope from its beginning.

No. 12-8 stope is a horizontal cut-and-fill stope, using classified mill tailings as backfill. The stope strikes about east-west and has a dip of about 70°S. The

length is 240 feet. At the time of the accident the back of the stope had been worked to an elevation of 80 feet above the 12th level. The width ranges from 10 to 25 feet. There are three combinations of mill-hole and manway servicing the stope from the 12th level, and a service raise through to the 11th level.

The ore in No. 12-8 stope consists of a silicified tuff with a porphyry contact along the hanging wall. There are numerous slips running in different directions, which often connect, causing blocky ground. This condition results in dangerous loose, which is difficult to detect by sounding.

Previous to the day of the accident, the stope had been back-filled to within 8 feet of the back. The stope crew were carrying a breast about 8 feet high west from the service raise. This breast had been advanced 15 feet by the night shift of July 9.

On the night of July 9 the stope crew had slushed about 150 tons of ore from the stope and had partly drilled off the breast, but did not blast.

On the day shift (8.00 A.M.–4.00 P.M.) of July 10, Mike Bartosik, stope leader, Mike Speck, stope helper, and Marazia, machine runner, commenced the shift by slushing out some ore, which was ahead and under the breast that had been partly drilled off the night before. While slushing, they uncovered a large piece of ore, which was too large to go through the mill-hole. Sufficient ore had been removed to permit blasting of the breast above. It was decided to finish drilling the breast, block-hole the large piece of ore, and blast both at the end of the shift.

The stope at this section had narrowed down to 6 feet, and although several slip planes were noticed cutting across the stope, the ground seemed solid and, according to Bartosik, they had thoroughly scaled the area. Shift Boss Tony Brelinsky, who had previously examined the stope, did not see any dangerous conditions.

At about 12.00 noon, they had completed drilling the breast, and after lunch they began to load up. Bartosik had completed loading nine holes and had to go up to the 11th level for more powder. Speck and Marazia took the jackleg machine under the breast to block-hole the large piece of muck that had been uncovered while slushing earlier in the shift.

Marazia commenced drilling and had drilled about 2 inches, when Speck, who was standing to one side, noticed some small pieces of rock dropping from the hanging wall. He shouted to Marazia to watch out. At the same time a piece of loose, 76 inches long by 56 inches wide and 26 inches thick in the centre, tapering off at each side, dropped from the back. Marazia was knocked forward with his head crushed between the loose and the rock he had been drilling. Speck was grazed by the loose and knocked down, but was not injured.

Speck immediately climbed over the fallen rock, shut off the machine, and attempted to release Marazia. Being unable to lift the loose, he called for help. Tony Berlinsky, shift boss, was just entering the stope from the 11th level and arrived, within a minute of the accident, followed by Bartosik.

Recovery operations were commenced immediately. It was found necessary to use a jack to release Marazia from the loose, which was estimated to weigh about 3 tons. Dr. Hay of Madsen arrived at 2.17 P.M. and pronounced Marazia dead from multiple skull fractures.

On examination of the scene of the accident, it was found that a series of slips had intersected just above the back of the stope causing the loose. It is doubtful if it could have been detected by sounding. The miners involved maintained that they had tested the back, and there was no indication of loose.

An inquest was held in the Red Lake police building at 7.30 P.M., July 23, before Magistrate J. V. Fregeau and Crown Attorney T. A. O'Flaherty. The jury returned the following verdict:

Frank Marazia came to his death at approximately 1:30 in the afternoon on the 10th day of July, 1958 at Madsen Mine and that death was caused by severe skull injuries inflicted by a fallen rock of approximately three tons, which fell on his head and body. After examining eye witness and other people near the scene of the accident, also skilled mining men, I find that deceased came to his death as above stated, and I also find that no person or persons were in any way responsible directly or indirectly in this death.

Milliken Lake Uranium Mines Limited

No. 24

Kurt Tschorn, German, aged 29, single, was instantly killed by a fall of ground in No. 2920-296-B stope of Milliken Lake Uranium Mines Limited about 9.40 A.M. on September 27, 1958.

Tschorn had been employed by Milliken Lake Uranium Mines Limited since April 28, 1958, as a stope miner. His experience was listed as 2 years underground in Ontario mines.

No. 2920-296-B stope is situated about 300 feet from No. 2920 station of No. 1 shaft. Entry to the lower end of this stope, 20 feet above No. 2920-97-NE drift, is by way of a standard vertical ladderway. The stope may also be entered at the top via No. 81 return airway. The dip of the ore bed in this stope area is 10°–15°, and the thickness being mined averages about 8 feet.

This area is being mined by standard stoping procedure, which consists of two men drilling benches on a down-dip pattern and a third man slushing and rockbolting. Rockbolting is carried out on each shift following the blasting of the area. The pattern used for rockbolting is on a standard of approximately 4-foot squares regardless of how good the ground appears. If extra bolts are deemed necessary, they are placed in addition to the 4-foot pattern. The standard lengths for the $\frac{5}{8}$-inch-diameter rockbolts are 6 feet and 8 feet.

On Friday, September 26, during the 8.00 A.M.–4.00 P.M. shift preceding the accident, Tschorn and his partner had installed five rockbolts and had taken out a down-dip bench, with 15 holes, on the west stope wall.

The crew following (7.00 P.M.–3.00 A.M. shift) drilled and blasted an area on this same wall but further down-dip. These holes were drilled up-dip to prevent damage by fly rock to the slusher located at the bottom of the stope. This blast consisted of twenty-eight 10-foot holes.

On the morning of September 27 (8.00 A.M.–4.00 P.M. shift) Tschorn, the stope leader, was told by his shift boss, Oliver Pajala, to set up and drill down-dip on the bench where he had blasted on the previous day shift. Due to absenteeism he was given a partner, Nyck Fedorowycz, who was to do the rockbolting.

At about 8.00 A.M., Tschorn and Fedorowycz entered the stope by way of the manway at the lower end. They proceeded to examine, wash, and scale the area blasted by the previous night-shift crew. After they had scaled in this area until about 8.30 A.M., Tschorn, as leader, instructed Fedorowycz to set up and proceed with rockbolting an area of the stope back near the east wall at the top of the stope. This area required additional rockbolts to bring it up to standard. Tschorn said that he would drill on the face recently blasted by the night shift rather than the one designated by his shift boss. Fedorowycz suggested that this area should be rockbolted first, but Tschorn told him it was safe enough and could be bolted later when the bolting in the top east area was completed. Fedorowycz proceeded to carry out his leader's instructions.

Fedorowycz collected his gear together but found that he needed more rockbolts and plates. He came down the stope and told Tschorn he was going to

the station for these supplies. The time was then about 9.00 A.M., and Tschorn was setting up to start drilling. At about 9.30 A.M., when Fedorowycz returned to the stope with rockbolts and plates, Tschorn had started drilling.

Fedorowycz then found that the dolly used for tightening rockbolts by stoper machine was broken. He came down and stopped Tschorn, who was still drilling, to ask him if there was another dolly in the stope. Tschorn said that another dolly would have to be obtained from the station.

Fedorowycz returned with the new dolly at about 9.45 A.M. but did not see Tschorn as he, Fedorowycz, proceeded up the stope along the east wall. He presumed that the shift boss might have come in and taken Tschorn away for other work. Fedorowycz then went back down the stope to the mill-hole by the same route and from there called to the men in the adjoining stope No. 2920-296-A. He asked if they had seen the shift boss. When they replied in the negative, he asked if they had seen Tschorn. They again replied in the negative. Fedorowycz then went back up to his machine and continued working.

He had drilled four rockbolt holes by 10.20 A.M., when the geologist, Dale Hendrick, entered the stope by the airway at the top. Fedorowycz accompanied Hendrick down the west side of the stope to the active mining area. Hendrick was to mark up the line for drilling back-holes and Fedorowycz wanted to get any information that he could pass on to Tschorn. As they approached the area being drilled, Tschorn could be seen doubled over in a sitting posture and almost covered by a large slab of rock measuring 4 by 4 feet by 5 inches thick. His headlamp was broken, and his body was covered sufficiently by the slab of rock to be concealed, except from the direction of approach when discovered.

Tschorn's body was located 4–5 feet away from his jackleg machine, and on the right-hand side. A scaling bar was clutched in his hands. Another piece of loose, 4 by 3 feet by 4 inches, had fallen on the hoses on the left-hand side of the machine. The throttle valve of the machine was in the "off" position. The two pieces of loose had fallen from the back on the south side of a strong fault, which traverses the area on a 45-degree strike.

Pajala, the shift boss, arrived at the stope a moment after the discovery of the accident. He could find no sign of life in Tschorn and went to the station immediately to advise the safety department by telephone. The underground superintendent, Mervyn Lawton, who was in the area, went straight to the scene, where he found Tschorn as noted above.

Dr. J. P. Moody examined the victim underground at the scene of the accident and pronounced him dead from skull and neck injuries. The post-mortem report revealed that nearly all the facial bones and two ribs were also broken, and that death resulted from brain injury.

The inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on October 8, 1958. The following verdict was returned by the jury:

> Kurt Tschorn, the deceased person, came to his death at 9.40 o'clock in the forenoon on the 27th day of September, 1958, at Milliken Lake Uranium Mines, and that death was caused by fall of rock, and that the accident was due to not following instructions given by the foreman.

Northspan Uranium Mines Limited

No. 25

Edgar Zorn, Canadian, aged 35, married, with seven children, was fatally injured when struck by a fall of rock in the No. 6-1E upper roadway of the Lacnor mine of Northspan Uranium Mines Limited, at 11.15 A.M. on January 15.

Edgar Zorn had been employed underground as a miner since November 15, 1957. His previous experience underground was listed as 3 years at the Britannia mine and 1 year at the Algom Nordic mine.

No. 6-1E upper roadway is being driven 12 feet high by 16 feet wide, with trackless equipment, along the strike of the conglomerate ore bed. This working level is about 1,000 feet up-dip from the 2,550-foot station of No. 2 shaft. The back of this heading has been rockbolted where it appears that support is necessary to prevent the development of further loose after the initial scaling. At the point where loose fell to cause the accident, there is a 9-inch dike crossing the drift at an angle of about 60 degrees. A joint plane intersects this dike at about right-angles. A 7- by 7-foot piece of ground, between this joint plane and the north wall, west from the dike, is the part that fell. The loose broke into three large chunks with an average thickness of 18 inches. It is estimated that the largest piece would weigh over 2 tons.

On the previous day, January 14, (8.00 A.M.–4.00 P.M. shift) a machine crew had drilled a slash on the south wall at the face of this No. 6-1E drift. The slash holes were not blasted until 7.30 A.M. on January 15, when the 12.00A.M.–8.00 A.M. crew were coming off shift. John Annas, shift boss, instructed Mike Slezko and Erwin Hochgesang, scalers, to wash and scale the working place ahead of the mucking crew. It was necessary for William Fowler, mucking machine operator, with Wolfgang Vogel, Chaseside driver, and Edgar Zorn, Torkar driver, to clear muck from under a slot raise on the way in to No. 6-1E face. Annas found the work proceeding as he had outlined when he visited the working place at 9.10 A.M. He returned at about 10.00 A.M. and found that the scalers had finished, and that mucking was in progress in the slash. Annas stated that a crew was ready to rockbolt this section of the drift when the broken muck was removed and before any further slashing was done. Annas checked with Slezko and Hochgesang, and they told him the back was scaled tight, but that a section of ground, which fell later, needed rockbolting. They had pried a tight crack with two scaling bars and been unable to get it down. Annas told them the rockbolting crew were to come in after lunch, when the mucking would be completed. He sent them to scale No. 6-1E upper roadway. At about the same time, Edward Niemi, mine captain, had inspected the ground and asked Fowler if he had checked for loose before mucking. Fowler assured him that he had sounded the back, and it was solid.

At 11.20 A.M. the last of the slash muck was being loaded on the Torkar by Fowler. Vogel was at the face and to the left front end of the mucking machine helping to crowd scattered pieces into the mucking-machine bucket. Zorn was to the left side and behind the mucking machine. He was guiding the air hose of this machine to keep it from under the treads when the loose suddenly fell on him. Vogel stated that there was no warning sound of ground movement before the rock fall. The mucking machine, however, was operating at the time. When one of the large chunks was rolled from Zorn's body it was seen that he had been killed instantly. Dr. G. Lewitzki, who was on the property, reached the scene within a few minutes and pronounced Zorn dead. Zorn had received a gaping wound in the right side of the neck and the main artery was severed; he also suffered crushed vertebrae, and damaged spinal cord, as well as broken arms and multiple chest injuries.

A program of watching carefully for changes of ground or formation in advancing headings and immediately rockbolting them has been instituted.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on February 3. The jury returned the following verdict:

That Edgar Zorn, the deceased, came to his death at 11.15 o'clock in the morning, on the 15th day of January, 1958, at Lake Nordic Mine and that death was caused by a fall of rock by airblast.

Northspan Uranium Mines Limited

No. 26

Edward Nadalin, Canadian, aged 26, married, with three children, was fatally injured when crushed by a shuttle-car against the rock wall of No. 4-31 crosscut of the Panel Mine of Northspan Uranium Mines Limited at 2.10 A.M. on April 4. He died at 9.55 A.M. on April 9, at St. Joseph's Hospital, Sudbury.

Nadalin, with no previous underground experience, was hired August 8, 1957 by the Panel mine. At the time of the accident, he had had a month's experience as a shuttle-car driver.

No. 4 haulage at the Panel mine is being driven with trackless mining equipment. On the 12.00 P.M.–8.00 A.M. shift of April 4, a round of muck was being removed by means of two shuttle-cars driven by Edward Nadalin and Hugh MacLean. The passing point for shuttle operation was No. 4-31 crosscut, a few hundred feet back of No. 4 haulage face. This crosscut is 12 feet high by 14 feet wide, and shuttle-cars are 9 feet wide. The back end of this crosscut is equipped with a chute for loading stope muck. When muck is available from here, the shuttle-cars occasionally pull a load. A third man, A. R. MacDonald, was stationed at this point to clean up any spill and also to clean up along the roadway of No. 4 haulage.

At about 2.00 A.M., Nadalin had parked his shuttle-car in No. 4-31 crosscut while waiting for the other shuttle-car to pass with a load. During this wait, MacDonald asked Nadalin to show him how to operate a shuttle-car. Nadalin agreed. He got off the car and stood at the side near the front, with MacDonald taking the operator's position on the car. There was about 2 feet of space between the shuttle-car and the east wall of the crosscut, where Nadalin was standing.

As Nadalin was showing MacDonald the positions for shifting gears, MacDonald inadvertently depressed the accelerator pedal with the engine operating and the brakes not set. The shuttle-car jumped forward and pinned Nadalin against the wall. MacDonald ran for help and met MacLean just pulling away from No. 4 haulage with a load. They hurried back to Nadalin, and while MacDonald held him, MacLean backed the shuttle-car to release him. He was removed to surface in a basket stretcher.

On advice by telephone from the company doctor in Elliot Lake, the injured man was taken immediately by ambulance to St. Joseph's Hospital in Blind River. An operation was performed by Dr. Ross McCendie; but on April 7, the patient was rushed to St. Joseph's Hospital, Sudbury, for emergency treatment by Drs. M. Mador and J. D. McInnes. This proved unsuccessful, and Nadalin died at 9.55 A.M. on April 9.

A post-mortem was performed by Dr. A. J. Lee, pathologist. In a report to Coroner Gilles Desmarais, M.D., death was attributed to ruptured bladder, ruptured urethra, fractured pelvis, and concussion.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on May 6. The jury returned the following verdict:

That Edward Nadalin, the deceased, came to his death at 9.55 o'clock in the forenoon on the 9th day of April, 1958, at Sudbury, St. Joseph's Hospital and that death was accidental.

Northspan Uranium Mines Limited

No. 27

Frank Damiani, Italian, aged 21, single, was instantly killed by a fall of ground in No. 8-1-C6 stope of Lacnor Mine at 7.15 P.M. on April 8. Damiani was hired by this mine on February 5, 1958, and his previous experience was listed as 3½ years underground.

No. 8-1-C6 stope is a standard open stope in which the ore, dipping at about 12 degrees is being mined between No. 8-1-W level and No. 6-1-W level. The average thickness of the bed here is 10 feet, and the stope width is 40 feet. The roof is supported by rockbolts, and the stope has two entries, one at the bottom from the 8th level and one at the top from the 6th level. The ore is broken by jackleg operation and removed down dip by scraping. The ground in this stope had given previous signs of loosening by occasional snapping and cracking, but rockbolting had prevented any large loose from developing.

The stope crew on the preceding shift had placed 15 rockbolts in the roof near the top of the stope. They had also started to drill a slash on the east wall in this area and had scraped about 100 tons of ore from the stope. No blasting was done at the end of this shift.

The afternoon stope crew of W. Wlasenko, slusherman, Damiani, and N. Karlovich Jr., drillers, were instructed by Henry Morel, shift boss, to continue the drilling and scraping. They entered the stope from the lower end and set up blocks for Wlasenko to continue scraping the lower half of the stope. The two drillers then proceeded to scale near the drilling area. After scaling, they repaired a couple of hoses before starting to drill. Morel on his way by the top of the stope, at about 5.15 P.M., looked in to see that the men were following instructions but did not go down into the stope and talk to the men. He returned in about an hour with W. Mars, whom he moved from another working place to help the drillers. At this time, Morel checked the section rockbolted by the preceding shift and also the back over the drill crew. This ground, about 8 feet wide, between the last row of bolts and the slash face, was found to be solid and tight. It was decided to complete the slash drilling and blast at the end of the shift.

Removal of muck by the scraper revealed a missed hole in the lower end of the slash face. This hole was re-blasted during lunch hour.

At 7.15 P.M., while the men were drilling, a loud crack was followed by a fall of ground 15 feet long by 8 feet wide by 8 to 10 inches thick. All three men of the drill crew were knocked down by this loose. Wlasenko at the slusher hoist heard the loud crack and saw sparks from the loose hitting the machine and steel at the drill face. He called to the Barford driver in the drift below and ran up to the accident scene. Mars was sitting up but was pinned by loose and had received head lacerations. They released him and moved him down near the slusher hoist. At the same time they called for help from two other miners working in the next stope.

N. Karlovich Jr. was now moved out of danger. He was lying at the down-dip end of the loose and was suffering from shock and a sore back. The most seriously injured victim, Damiani, was pinned by a chunk near the centre of the rock fall. The four men were able to remove this slab of rock but found Damiani was dead. This was confirmed by Dr. J. T. Moody when the three men were brought to surface in basket stretchers. An autopsy revealed that Damiani had received a fractured skull, a broken spine, and fractured left leg and arm. The two injured men were treated by Dr. Moody and then sent by ambulance to St. Joseph's Hospital, Blind River.

An inquest was held in the mine rescue station, Elliot Lake, before Coroner M. J. Farrell, M.D., at 7.30 P.M. on May 13. The jury returned the following verdict:

That Frank Damiani, the deceased, came to his death at Lake Nordic Mine at 7.15 o'clock in the afternoon, on the 8th day of April 1958 and that death was caused by rock fall with no blame attached to anyone. However, a strong recommendation is forwarded that all working faces be rock bolted regardless of any individual or group opinion as to safety of the rock.

Northspan Uranium Mines Limited

No. 28

Michael Shelly, German, aged 27, married, received crushing injuries to chest and abdomen when pinned in the drift by a mucking machine on May 17, at about 11.00 A.M. The injuries caused his death in a very short time. The machine, a No. 630 tread-mounted, Eimco, tractor excavator, was being operated on the 2,475-foot level of Northspan Uranium Mines Limited's Lake Nordic property.

No. 6-1-W upper roadway is being driven 12 feet high by 16 feet wide, with trackless equipment, along the strike of the conglomerate ore bed.This heading is located approximately 1,500 feet west of the 2,475-foot station of No. 2 shaft, and connection to this shaft station is by way of two inclines, Nos. 8-1-8 and 7-1-8.

The three-man crew of Shelly, loader operator, Teddy Tukara, Torkar operator, and Donald Williams, scaler and cleaner, was instructed by Henry Morel, shift boss, on their duties to be carried out during the 8.00 A.M.–4.00 P.M. shift on May 17. Morel instructed them to finish loading the muck remaining in No. 6-1-W lower roadway and then to move to No. 6-1-W upper roadway where there was a freshly blasted round of muck to be removed. He visited them at 8.30 A.M. while the work in the lower roadway was in progress. His next appearance here was when called to the scene of the accident in the upper roadway.

On completion of muck removal from No. 6-1-W lower roadway the No. 630 loader was transported to No. 6-1-W upper working place by means of a low-bed trailer. Shelly started to clean the scattered muck at the foot of the pile of broken rock, while Tukara brought up the Torkar. Williams, a university student, was working his third shift underground. He was being trained by Shelly to scale and help around the mucking machine. Williams was advised by Shelly to stand clear, even though the bull hose to the machine required a tender to prevent it being run over in the long passes when gathering the scattered muck.

Shelly was having trouble keeping the hose out of the way. Tukara, who had worked with Shelly for a number of months, saw this when he arrived with the Torkar. He parked it about 75 feet behind the loader and was on his way to assist Shelly when he saw the accident happen.

Shelly was at the rear corner of the machine on the operator's side when the machine, which was moving back, headed towards the south wall. In trying to reach the controls to stop the machine from hitting the wall Shelly was pinned by it to the wall. His chest was being crushed by the air connection to the machine. He was able to cry out and ask Tukara to move the machine. Tukara rushed to do this immediately, while Williams supported the victim as the machine was moved ahead to release him. Shelly was quickly removed to the surface in a basket stretcher. According to Dr. M. J. Farrell, Shelly died of a ruptured liver and shock. This was confirmed by the post-mortem report.

Two hazards, peculiar to this No. 630 machine, were determined during the investigation immediately following the accident:

1) The safety air cut-off valve handle was secured by blasting wire in the "open" position.

2) Safety self-centering controls were not operating properly when the machine was powered by compressed air. This permitted the machine to move forward or backward with the operator out of position and his hands off the control levers.

At the request of the Department of Mines' engineer, this control mechanism was removed to surface for examination by the plant department. The following report was made by Mr. A. W. Smith, senior mechanical foreman:

The track control valves were removed from the machine and taken to the surface machine-shop to test them for automatic return to neutral.

To simulate the operation of the valve on the machine in question, the valve was not opened for inspection, but connected to compressed air in its original condition.

It was found that if either one of the valve handles were moved to operating positions in the normal way, and released, they would return to neutral. If, however, the handles were slowly moved to the first quarter of their operating arc, then released, they would not return to neutral. With the air turned off the valves would spring back to neutral very freely, whether the handle was operated fast or slow, in full arc or quarter arc.

The valves were then examined to determine the cause of failure to return to neutral. External condition was good. Internal condition was normal. Lubrication was good.

The Eimco corporation was also contacted, and the following reasons for failure of the safety self-centering controls were suggested:

1) Valve stem not lubricated properly.
2) Dirt in air causing valve to stick possibly because screen removed.
3) Worn parts—linkage binding.
4) Spring broken or inoperative due to compacted muck.

It was determined that the reason the safety cut-off valve was wired in the open position was because the valve tended to close while the machine operated. This would result from vibration of a worn valve assembly.

An inquest was held before Coroner M. J. Farrell, M.D., on June 26 at 7.30 P.M. in the mine rescue station at Elliot Lake. The jury returned the following verdict:

The jury say that Michael Shelly, the deceased person came to his death at 11 a.m. on the 17th day of May, 1958, at Lake Nordic Mine. Death was due to being crushed between the mucking machine and the wall of the drift. Death was caused by neglect of the operator by leaving the machine without closing the safety valve.

Northspan Uranium Mines Limited

No. 29

George Obst, German, aged 29, single, was killed by a fall of ground at the Spanish-American mine of Northspan Uranium Mines Limited at about 2.50 P.M. on November 26.

Obst, a mucking-machine operator, was hired by Spanish-American on October 29, 1958. He was listed as having 7 years' experience underground in Ontario mines.

The Spanish-American mine is being developed and mined with track equipment for haulage. Loading crosscuts are driven in under the flatly dipping ore bed from the 9- by 9-foot development haulage drives. At the entry for a new stope, No. 1C-19, a 10-foot round had been drilled 10 feet high and 12 feet wide and blasted on the night shift of November 25, 1958. This stope section is located on the 3,100-foot level, about 1,500 feet west of No. 2 shaft.

Obst and his partner, Jean Trudel, the motorman, were told by their shift boss, Roland Charette, to muck the recently blasted No. 1C-19 loading crosscut round. They were given a precautionary warning to wash and scale thoroughly.

Charette made this place the first stop on his rounds and stayed with the men, helping them scale, for more than an hour. He made sure it was safe for a diamond-drill crew of Aurele Bisson and Bob Henderson to proceed to their diamond-drill set-up, about 100 feet ahead of the entry to No. 1C-19 stope. It was necessary to string hoses along the back of the haulage for diamond-drill operation. Before leaving, Charette advised the mucking crew that more scaling was required and also to block-hole some large chunks they had scaled down. He instructed the samplers to stay out until the place was thoroughly scaled. He returned within an hour and found the crew still scaling as instructed.

Scaling and block-holing were carried on until lunch time, when the large chunks were blasted. After lunch Obst and Trudel started mucking and were visited again by Charette at about 1.30 P.M. Charette received assurance from Obst that the back was scaled to solid on this occasion. A fourth visit was made by Charette at about 2.30 P.M. to give Trudel an assay slip for muck sampling.

Obst was loading the fourteenth 3-ton car at about 2.45 P.M., when a large chunk dropped from the back. It knocked him from the platform of the mucking machine against the slope of the muck pile in the crosscut round but did not pin him down. The loose was about 7 by 3 feet by 1 foot thick and would weigh nearly 2 tons.

Trudel at the time was hand-mucking spill into the car being loaded. He was on the opposite side of the train of cars with his head down and did not see the fall of ground. He immediately called to the diamond-drillers. Henderson hurried out for the shift boss, while Trudel and Bisson placed Obst on the battery haulage motor. Accompanied by Charette, he was taken to No. 2 shaft and brought to surface in a basket stretcher. Obst apparently died on the way to the station, and this was confirmed by Dr. Steve Golesic who arrived shortly.

Superficial examination by Dr. Golesic revealed chin and base of skull lacerations with a possible broken neck. Post-mortem results showed that death resulted from a rupture of the right side of the heart and the right lung, with fractured ribs.

Two intersecting slip planes along with the bedding plane contributed to the ground loosening. Small strain bursts were noted in this recently blasted area for some time after the accident, with the development of more loose ground. There were five $\frac{5}{8}$- by 6-inch rockbolts in the back of the No. 1C ore drift. Three were still effective, but two had loosened and had been removed during the scaling. These latter two bolts were closest to the blast and to the fall of ground.

An inquest was held before Coroner M. J. Farrell, M.D., at the Plaza Court Room on December 1, 1958. The jury returned the following verdict:

That George Obst, the deceased person, came to his death at 3.00 o'clock in the afternoon on the 26th day of November, 1958, at Spanish American Mine and that death was caused by accident with no blame attached.

It is recommended that, where areas of stress are created by starting of an auxilliary heading, particular attention should be given to the support of the back in the original opening. We further recommend that, as soon as broken muck is removed to a point where there is room to work, the back should be tested and supported either by rock bolts or in some other manner.

This jury also wishes to express that they feel that jurors should be appointed immediately after any fatality and be permitted to inspect the scene.

Northspan Uranium Mines Limited

No. 30

Theodore Oulette, Canadian, aged 35, married, with two dependents, was instantly killed by a fall of ground in No. 6-27 stope raise at Northspan Uranium Mines Limited's Panel mine at about 9.20 P.M. on December 5.

Oulette was hired by the Panel mine as a machineman on May 13, 1958. His previous experience was listed as 7 years underground in Canadian mines.

No. 6-27 stope raise is a standard 6-foot-high by 8-foot-wide preliminary stope opening being driven from the 6th to the 5th level of the Panel mine. The 6th level is about 1,900 feet below surface, and the face of No. 6-27 raise was about 80 feet up the 10-degree ore dip from the 6th level on December 5, 1958.

On this date, the day-shift crew had slushed out, then drilled and blasted a 10-foot round. The afternoon-shift crew of Oulette and A. Roy were advised of this when being checked through by P. Richert, their shift boss. Oulette and Roy found the working place too gassy to work because the preceding crew had failed to leave air blowing. They blew air for nearly two hours, and it was 6.00 P.M. before they were able to get in to wash and scale. The scaling was not thorough, and the eye-bolts were placed for slushing from on top of the muck pile. Further scaling was not done until after the round had been mucked out. The crew felt they had scaled sufficiently for the place to be safe to set up and drill.

The shift boss, Richert, visited the working place at about 7.00 P.M. The crew were scraping at this time. The scraping was halted while the shifter and crew went to the face.

After lunch, at about 9.20 P.M., 16 holes had been drilled on a round at the face. Roy was drilling on the right side standing close to the east wall, and Oulette was drilling on the cut near the centre line of the raise when two pieces of loose fell on them. A piece weighing less than 100 pounds struck Roy a glancing blow and knocked him against the wall. The other piece, measuring 4 by 6 feet by 9 inches and weighing about 1½ tons, pinned Oulette to the ground, with his jackleg machine under him, killing him instantly.

The body was brought to surface in a basket stretcher and instantaneous death was confirmed by Dr. M. J. Farrell. A post-mortem revealed that all the ribs on the right side were fractured, with massive bleeding in the chest cavity. Abdominal injuries consisted of herniation of stomach and large bowel, and ruptured spleen. Immediate death was attributed to traumatic asphyxia aggravated by the massive hemorrhage.

An inquest was held before Coroner M. J. Farrell, M.D., on December 15, 1958, with the jury returning the following verdict:

That Theodore Oulette, the deceased person, came to his death at 9.20 o'clock in the afternoon on the 5th day of December, 1958 at Panel Mine, and that death was caused by accidental means with no blame attached to anyone. Rock fall caused by two intersecting slips.

Preston East Dome Mines Limited

No. 31

Nick Mazepa, Canadian, aged 49, married, with no dependents, employed as a stope miner, was fatally injured by a fall of rock in No. 1968 cut-and-fill stope, 19th level of the Preston East Dome mine at about 10:00 A.M. on February 13. He died from fractures of the cervical vertebra and a crushed left chest while being carried from the stope in a basket stretcher.

Mazepa had been employed as a miner for 6 years at Hollinger, 16 years at Buffalo Ankerite, and for the last 5 years at Preston East Dome Mine.

No. 1968 stope is a flat-back cut-and-fill stope. It is about 250 feet long and varies in width from 58 feet at the east end to 7 feet at the west end. The width at the scene of the accident was 23 feet. The long axis of the stope is almost due east-west. The stope back, from which the loose fell, is 80 feet above the base of the rail on the 19th level and 90 feet below the base of the rail on the 18th level. The ore is in quartz veins in sheared greenstone. A tongue of porphyry appears in the east end of the stope.

Mazepa, and his partner, Boris Tschop, blasted a breast 9 feet high and 23 feet wide, drilled with 10-foot steel, when going off shift at 3.15 P.M. on February 12. The men on the following night shift scaled the blasted area and installed three ¾-inch diameter by 8 feet long rockbolts in the newly opened ground.

On the morning of the accident Mazepa and Tschop were instructed to check the area for loose, complete the rockbolting, and start to drill the next breast.

Shift Boss R. Keller arrived in the stope at about 9.15 A.M. and checked the stope back with the crew. Mine captain R. Cockerline arrived a few minutes later and also sounded the back. Cockerline detected a small loose on the back near the breast and had the miners gad it down. Keller left the stope, and Cockerline remained to satisfy himself that the back was sound and to confirm Keller's instructions regarding rockbolting. Then he also left the stope.

The two miners then started to build a low staging from which to drill the back to install the rockbolts. Tschop stated that while they were doing this he

heard the rock in the stope back snap twice. He ran to the footwall and yelled a warning to Mazepa. Mazepa did not heed the warning and stood still watching the back of the stope over his head. The back gave a much louder crack and a large piece of loose, later estimated to weigh 8 tons, fell directly on Mazepa. Tschop ran out of the stope and down to the level for help. He met Keller and Cockerline on the 19th level close to the stope manway. Keller returned to the stope, and Cockerline went to the shaft for help. Mazepa was alive and conscious and spoke to Keller. The loose broke into three pieces when it fell and Keller was able to move one piece from Mazepa's legs. Help arrived quickly, and Mazepa was released.

Dr. D. Johnston met the men carrying Mazepa at the top of No. 1968 stope raise on the 18th Level. He examined the injured man and pronounced him dead.

An inquest was held before Coroner J. B. McClinton, M.D., on March 6, at 4.00 P.M. in the South Porcupine Town Hall. The jury returned the following verdict:

> We the jury find that Mr. Nick Mazepa came to his death on the 13th February 1958 at approx. 10.30 a.m. in 1968 Stope at Preston East Dome Mine by the fall of loose rock which had been inspected by the shift boss and Mine Captain previous to the accident. We find this man's death accidental with no blame attached to anyone.

Stanleigh Uranium Mining Corporation Limited

No. 32

Anthony J. Remedios, British, aged 28, married, with one child, was instantly killed about 7.30 P.M., on April 27, when he fell down No. 2 shaft at Stanleigh Uranium Mining Corporation Limited.

Remedios had been employed as a mechanic by Stanleigh Uranium Mining Corporation since March 19, 1958. Before his employment by Stanleigh, he had had 14 months mining experience since arriving in Canada.

No. 2 shaft at this mine is a two-compartment shaft, with a 6- by 13-foot cage compartment with four guides and its long dimension running north-south, and a 6- by 6-foot manway compartment south of the cage compartment. A pipe counterweight compartment is contained in the manway compartment. At the collar, the cage compartment is lined with steel plate to a height of 7 feet. Entrance to the cage compartment is gained through a gate at the north end. North of the cage compartment, in the shaft-house, is a crane on rails running north-south with rails running to the shaft. This crane is used for loading equipment either in or under the cage for transportation down the shaft. Provision for hanging equipment under the cage consisted of two 1-inch steel plate brackets, 1½ inches apart, welded to two 10-inch channels under the cage with a 1½-inch steel bolt passing through the brackets. The bolt had a large head on one end, and to hold the bolt in position, a 3/16-inch split cotter-pin went through the other end of the bolt. The bolt was installed with its axis horizontal, in a north-south direction with the large head at the north end. Over the bolt was a 1½-inch clevis. Both bolt and clevis were left in position when not in use.

Prior to April 27, Gordon Ekins, master mechanic, had instructed Hector Guilmet, leader rigger, to take a stripped-down No. 955 Traxcavator tractor down to the 3,600-foot level. The stripped tractor weighed about 7–8 tons and was hanging from the crane in the shaft house, with the front end down. Ekins left the time and details of the move to Guilmet, who had moved heavy equipment down the shaft before and was considered competent for the job.

On April 27, at about 6.00 P.M., Guilmet obtained the cage to transport the tractor underground. Guilmet's normal crew consisted of himself, Robert Chausse,

rigger, and Ferdinand Charrette, mechanic. For this job Sylvester Aultman, mechanic's helper, and Remedios, mechanic, were assisting; giving signals to the cage hoistman was Donald MacDonald, deckman, who was the only one authorized to give signals. The cage was raised above the deck, and a staging of 3-inch planks was installed over the cage compartment, completely covering it except where the guides would not allow this. Work progressed satisfactorily until the tractor was hung under the cage in the shaft, but it was not hanging properly. The tractor was suspended under the cage by means of a long choker of 1-inch steel cable with loops, formed and fastened by five cable clips for each loop. The loops were looped over the sprocket-axle housings on the tractor, and the single thickness of cable passed through the clevis under the cage. To get the tractor in the shaft, the north-east guide was swung back out of the way. (All guides at the collar are hinged.) To help correct the hang of the tractor, Guilmet decided to lower it on to a 10- by 10-inch timber across the shaft and move the choker loop on one of the axle housings.

Guilmet and Remedios installed one 10- by 10-inch timber over the 3-inch planking across the short dimension of the shaft between the two sets of guides. The tractor was then lowered on to the 10- by 10-inch timber until there was enough slack in the choker to enable Chausse and Charrette to move the loop on to one of the axle housings. The tractor was then raised off the 10- by 10-inch timber, and although it was hanging better, it still did not hang vertically. It was necessary to have the tractor hang vertically before installing a pipe crosshead to guide the tractor down the shaft on the guides. At this time the tractor was hanging with front end down and both front idlers towards the west side of the shaft, with the body of the tractor angling to the west.

To correct the hang of the tractor, Guilmet decided to install a 3-ton chain-block between the clevis under the cage and the bucket operating mechanism pins about half-way down on the tractor. The chain-block was intended to take some load and to pull the tractor into a vertical position. The 3-ton chain-block and two chokers were obtained for this job. The cage was then lowered until the tractor rested on the 10- by 10-inch timber, and the choker over the axle housings became slack. The tractor was resting against the guides, and Guilmet considered it safe in this position. One short choker was looped double through the clevis under the cage by Aultman and Remedios, and both its loops were connected to the top of the chain-block. A long ¾-inch choker was looped over the above-mentioned pins on the tractor and was passed up to Aultman and Remedios by means of a 2- by 4-inch timber by Lemick. Aultman and Remedios then connected the long choker from the tractor pins to the bottom of the chain-fall. By means of several short upward movements of the cage and slackening off of the chain-block, slack in the main 1-inch choker was being removed. At this time there were three men in the framework above the deck, Aultman, Remedios, and Chausse. Aultman and Remedios were on the east side of the shaft, and Aultman was operating the chain-block. Chausse was on the steel on the west side of the shaft; Guilmet, directing operations, and MacDonald were on the deck at the north end of the shaft. Lemick was inside the steel sheeting on the east side of the shaft, on the deck. Charrette had gone for a drink. There remained about 2 feet of slack to take out of the main choker, when it became too awkward for Aultman to operate the chain-block. Remedios then stepped off the framework on to the tractor and took over the operation of the chain-block from Aultman. While Remedios loosened the chain-block, Guilmet ordered the cage up again. MacDonald rang 1 bell, but before the cage could move, the tractor tipped to the north, checked momentarily, kicked out the 10- by 10-inch timber, and then crashed through the 3-inch planking, going down the shaft with the main choker,

chain-block, and clevis. Remedios grabbed for the chain-block when the tractor tipped, but went down the shaft with the chain-block. Immediately after the 1-bell signal, before the cage could move, the hoistman, Michael Sober, heard a jumble of signals, so the cage was not moved in response to the 1-bell signal.

After ascertaining that Remedios had gone down the shaft, MacDonald ordered the men out of the shaft area and closed the gate.

Graham Walkey, mine superintendent, Jim Andrews, mine captain, and others were immediately notified of the accident. They left their homes and went to the mine where Walkey took charge of all operations. He directed Andrews to take some men and go down the manway to make an investigation after obtaining a portable telephone. Upon Andrews' return to surface, he reported that he had gone down to the 1,200-foot level, where the tractor was jammed in a precarious position.

In the shaft, considerable damage was done from surface to the 1,200-foot level. Damage in the cage compartment consisted of 94 dividers, 36 wall plates, 10 end plates, 54 guides, and numerous posts. In the manway, there were 4 landings and 7 ladders knocked out, but none of the services in the manway were damaged.

Pieces of flesh and bone were found at different locations in the shaft, indicating that Remedios had died instantly. Due to the position of the tractor, it was considered unsafe to go below the 1,200-foot level, so that was as far as Andrews went.

On investigation after the accident, it was found that the north bracket, welded to the channel under the cage, was bent towards the north, and that the cotter-pin in the 1½-inch bolt had sheared, allowing the bolt to be pulled through the south bracket until there was about 1½ inches of space between the end of the bolt and the south bracket. Also the north channel under the cage was found to have bowed slightly to the north. The clevis was missing, evidently having slipped off the bolt and gone down the shaft.

Checking on the design of the brackets and pin, it was found that the bracket welds had an ultimate strength of 490 tons total for both brackets. Each bracket had an ultimate strength of 162 tons in tension through its smallest cross-section. Also each bracket had an ultimate strength of 112 tons for double shear of the section beneath the pin-hole. The 1½-inch pin had an ultimate strength of 80 tons in double shear. The 3/16-inch cotter-pin in the 1½-inch steel pin had an ultimate strength of 4,437 pounds in double shear.

Later a more complete inspection of the shaft was made, and it was felt safe to enter this shaft below the tractor. The remainder of the body was recovered and released to the undertaker.

The mine has changed the design of their brackets underneath the cage in order to prevent the occurrence of other accidents of this type. Now there are three sets of brackets under the cage, complete with bolts with a large head and locked nut. Each set of brackets is capable of carrying the rated load to be lowered. The main brackets now are in a north-south direction with their bolt east-west. Also a steel-reinforced door has been installed at the collar. Procedure is that two chokers must be attached to the equipment to be lowered, each capable of carrying the full load, and each fastened to a different bracket. Also the collar doors must be lowered in position when readying equipment for transportation underground.

Dr. R. Smith of Elliot Lake examined the remains and stated death was instantaneous due to multiple injuries.

An inquest was held before Coroner M. J. Farrell, M.D., at Elliot Lake on May 15, at 7.30 P.M. The jury returned the following verdict:

That Anthony J. Remedios, the deceased came to his death at approximately 7.30 P.M. o'clock in the afternoon, on the 27th day of April, 1958 at Stanleigh Uranium Mining Corporation and death was caused by a fall down a shaft and death was accidental with no blame attached.

Recommendation: A standard attachment to cage for all future lowering beneath cage. Also an adequate bulkhead over the shaft while working over it.

Stanrock Uranium Mines Limited

No. 33

Paul Lackhoff, Canadian, aged 25, married, with no children, employed as a mechanic 2nd class, and Joseph Casporowiez, German, aged 39, married, with one child, employed as a mechanic's helper, received fatal injuries at about 12.50 P.M. January 26, when they fell down No. 2 shaft at Stanrock Uranium Mines Limited, which is located in the Quirke Lake sector of the Elliot Lake mining camp.

No. 2 shaft at Stanrock Uranium Mines is the service shaft and is 2,952 feet deep. A large steel cage, weighing 17,500 pounds with a capacity of 48 men, travels in No. 1 compartment. No. 2 compartment contains the manway and counterbalance or cage counterweight, weighing 24,350 pounds. Rising above the collar of the shaft is a 110-foot reinforced-concrete circular headframe at the top of which are housed two 12-foot diameter, bicycle-type sheave wheels. Over these pass the 1¾-inch diameter hoisting ropes that connect the cage and counterweight to the drums of the hoist.

The hoist is a new, recently installed, Canadian Ingersoll-Rand double-drum, hoist identified by serial No. 1786B. The cylindrical drums are 144 inches in diameter and 84 inches wide. The drum, to which the cage is attached, is keyed to the drum shaft. The other drum is fitted with a toothed clutch-ring into which the teeth on a 4-arm, sliding, positive-type clutch mesh to drive the drum. The clutch is operated by means of air pressures in a clutch engine, which is a piston in a cylinder connected to the clutch-operating mechanism. By admitting air to either side of the piston, the clutch may be moved in or out. The design is such that the clutch and brakes cannot be disengaged at the same time.

Brakes are fitted to each drum and are of the post, parallel-motion type. The system of brake operation is known as "pressure applied," meaning that the brakes are applied or released by means of air pressure. To accomplish this, each drum is fitted with a brake engine, a piston in a cylinder attached to the brake-operating mechanism. The introduction of air into the cylinder of the brake engine at controlled pressures applies or releases the brakes as required. The admittance and exhaust of air from the brake engines is controlled by a series of solenoid or electrically-operated valves located on the air lines under the hoist in the basement of the hoist-house. Weights, suspended on air in cylinders below the hoist, drop to hold the brakes on when there is no air pressure; and air must be applied to lift these weights before the brakes can be released. Air for operation of the hoist is supplied by the mine air compressors or by a small auxiliary compressor, which cuts in automatically to supply air to the hoist should the mine air compressors be inoperative for any reason.

The operation of the brakes and clutch, and any subsequent movements of the hoist, are controlled by the hoistman, whose operating levers and controls are situated on the hoist console. The console is located behind the hoist on the main floor, so that the hoistman faces the hoist at all times when operating.

The hoist is powered by a 1,250-horsepower motor (d.c., 500 rpm.). A switch on the hoist console is used to energize the electrical safety circuits of the hoist. The power supply to the hoist-motor generator set is fed through the main circuit-

breaker located in the hoist-house. A disconnection at either of these switches prevents power being applied to the hoist.

The company had been advised by the Ontario Hydro-Electric Commission about January 18 that power would be cut off in the whole mining area on Sunday, January 26, from 12.00 A.M. to 5.00 P.M. The Stanrock manager, F. R. Jones, advised his staff of this. G. O'Halloran, plant superintendent, realized that the stand-by power available at Stanrock was insufficient to operate the hoist during the shut-down, and therefore the mine would have to cease operations during this period. He planned to use this time to accomplish work on the cage and hoist that could not normally be done while the mine was operating. This work consisted of welding steel plate on top of the cage for the purpose of carrying timber, installing a steel car for handling rock in the cage, and grinding some teeth on the hoist clutch that were out of alignment causing the clutch to stick. O'Halloran made arrangements with his mechanical staff to carry out the work on the cage, and with W. Burnside of Canadian Ingersoll-Rand to do the work on the hoist clutch. Burnside was at the property to erect a hoist at No. 1 shaft and to effect repairs and initial adjustments to the No. 2 shaft hoist during its run-in period. O'Halloran also arranged for a portable gasoline-driven compressor to be supplied in the hoist-house for the purpose of grinding the clutch teeth. The hoistman was to have the clutch disengaged as well, before the power shut down, so that the work could be carried out.

During the morning of Sunday, January 26, normal work proceeded in the mine. On the final cage trip of the morning, the cagetender, R. Duguay, brought all the men and three tanks, two of which he had filled with water from the shaft sump, to surface. He arrived at surface about 11.45 A.M., discharged the men from the cage, and signalled for the cage to be raised 1–2 feet above the level to facilitate emptying the water from the tanks. Duguay, Lackhoff, and G. Lee, a mechanic, then proceeded to empty the water tanks by draining them with hoses. Before this was finished the power was cut off at 11.55 A.M. Duguay attempted to signal the hoistman to lower the cage to the level but with no power was unable to do so, and the cage remained at 1–2 feet above the level. Duguay then left for lunch, leaving Lackhoff and Lee to remove the water tanks from the cage and prepare for the work planned for the afternoon.

Shortly after 12.00 A.M., O'Halloran entered the hoist-house. He checked that the main breaker-switch was pulled and tagged out. He ensured that the switch on the hoist console was locked out and tagged. The hoistman was told to keep the key for this switch in his pocket and to note in the hoistman's log book that the hoist was not to be moved. This was done, and a note was written to the succeeding hoistman to the same effect. O'Halloran states he considered the hoist completely immobilized. He noted that the clutch had not been disengaged and that the portable compressor had not arrived at the hoist-house at that time.

O'Halloran then went into the shaft-house to check with Lackhoff regarding the cage work. He told Lackhoff that the hoist was immobilized and to go ahead with the work as planned. O'Halloran then departed, leaving Lackhoff, Lee, and some other mechanics, in the shaft house.

Between 12.15 and 12.20 P.M., the stand-by power was inadvertently turned on in No. 2 shaft area for about 3 minutes. This provided lights and would enable Lackhoff to give a 5-bell release signal to the hoistman. Lackhoff was the only one, excluding the cagetender who had already gone to lunch, allowed to touch the signal system. Lackhoff was actually the foreman in charge of the work around the shaft, having been employed in this capacity during the shaft-sinking by the shaft contractor. He was familiar with hoists, signals, hoisting procedure,

and shaft equipment. He was considered careful and reliable, and undoubtedly the last thing he would do before leaving the shaft-house, would be to give the hoistman the 5-bell release signal. Lee, who preceded Lackhoff from the shaft-house, heard the signal but did not actually see who gave it.

Lackhoff and Lee then entered the hoist-house where they discussed with Burnside, Fournel, the hoistman, and several others, the fact that the clutch had not been disengaged and the difficulties of grinding the clutch teeth that this presented.

Lackhoff, Lee, and the rest of the mechanics then all went to lunch. The stand-by power had, in the meantime, been cut off. Lackhoff and his crew returned from lunch in 15 minutes, when there was still no power for lights or signals. They proceeded directly to the shaft-house and commenced work on the cage. This was at about 12.35 P.M. The stand-by power came on at 12.45 P.M. and remained on steadily until Hydro power was turned on about 7.00 P.M.

Burnside had arrived in the hoist-house shortly after 12.00 P.M. He talked with the hoistman and some other employees until the 5-bell signal was received by the hoistman who returned the signal. Burnside considered that this was his cue to commence work on the hoist. He planned to use air from the portable compressor to disengage the clutch. By introducing air into the clutch-brake system of the hoist, and manipulating the electrically-operated valves by hand, it would be possible to move either in this manner, even though the power was off. Fournel, the hoistman, held a light for Burnside while he worked on the valves.

Lee, on returning from lunch, proceeded directly to the hoist-house where he was to assist Burnside. The portable compressor had arrived in the basement of the hoist-house, and Lee connected it to the receiver supplying air to the hoist and started it. Burnside sent him for some 3/16-inch welding-rods for manipulating the valves.

On his way for the rods, Lee passed through the shaft-house, where he noted that the men were working on the cage. In fact he spoke with Lackhoff at that time in passing and was requested by Lackhoff for assistance with the cage work. He said that he would as soon as he finished the job for Burnside.

While this was going on in the hoist-house, Lackhoff and his men had returned from lunch about 12.35 P.M. Paul Chiasson, P. Riley, and D. Wheeler climbed on top of the cage and commenced welding the steel plate in place. Lackhoff, Casporowiez, R. Mueller, and M. B. Adams proceeded to move the ore car on to the cage. Because the cage was about 2 feet above the level, a timber ramp was erected in order to slide the car, weighing about 4,700 pounds, into the cage. The front of the car had been moved about 2 feet into the cage, with Adams at the front using a hand-operated winch or "come-along" to pull the car; Lackhoff and Casporowiez were inside the car keeping it clear of the sides of the cage, and Mueller was at the other end keeping the rear of the car straight as it proceeded up the ramp into the cage.

In the hoist-house, the portable compressor was operating. Fournel had found some 3/16-inch welding rod, and Burnside began to operate the valves. He introduced air to the clutch engine, but it would not move. He decided that it might disengage if the hoist were in a different position. Air was then introduced into the brake system and the brake valves manipulated. This was done by inserting the 3/16-inch welding rods into the holes on top of the valves and pushing down the solenoids. The brake cylinders were thus filled with air, the weights were lifted, and the brakes released.

The counterweight, being at the shaft bottom suspended on 2,800 feet of 1 3/4-inch diameter hoisting-rope weighing 5.77 pounds per foot, overbalanced the

cage, which was spotted just above the collar. Thus the counterweight moved downward towards the shaft bottom, and the cage upward towards the sheave wheels. The total upward movement of the cage was 12–13 feet before Fournel, the hoistman, shouted to Burnside to stop moving the hoist. Fournel says he received a 1-bell signal to stop as the hoist was moving. Lee returned to the hoist-house with the welding rods just as the hoist moved and shouted that there were men on the cage.

As the cage moved upwards, the muck car was swung into the shaft under the cage and became detached from the "come-along" or winch. The two men, Lackhoff and Casporowiez, were dumped out of the car down the shaft and fell to the bottom. The muck car fell 50 feet and lodged in the shaft timbers. Adams, the "come-along" operator, was thrown off the front of the car on to the cage floor and was unhurt. Mueller, at the rear of the car, stepped back as the cage moved up and was also unhurt. Chiasson, Riley, and Wheeler welding on top of the cage, felt the cage moving up, dropped the welding equipment as the cables to the welder became taut, and climbed down from the cage through the shaft timbers as soon as the cage stopped. They were unhurt. A crew was sent down the manway to investigate. The car was soon found, and as the crew proceeded down the shaft, parts of the two men were found.

The car was removed from the shaft timbers, and men, under the supervision of the mine superintendent, cleaned the timbers all the way down the shaft. The shaft sump was pumped and cleaned out, and the remains of the men were turned over to the district coroner.

An inquest was held at Elliot Lake on March 25 before Coroner M. J. Farrell with Crown Attorney H. Robertson in attendance. The jury, consisting of J. Hendry, M. Handan, N. Gilleck, R. Smith, and G. Ferris, all experienced in hoisting and mechanical equipment, returned the following verdict:

> Paul Lackhoff and Joseph Casporowiez came to their death at 12.45 P.M. on the 26th day of January 1958 at Stanrock mine and that death was caused by falling down a shaft caused by the neglect of an authorized person to notify the hoistman by either 3 bells or in person that work was being done on the cage.

The inference of the verdict is that having given a 5-bell release signal to the hoistman when leaving the shaft-house the foreman should have notified the hoistman by signal or verbally that he and his men were resuming work on the cage when they returned from lunch.

Sylvanite Gold Mines Limited

No. 34

Nicholas Rendes, Hungarian, aged 30, single, employed as mucker was instantly killed on September 11, at about 9.15 A.M. at Sylvanite Gold Mines Limited, when a piece of loose, measuring 8 by 10 feet by 10 inches thick and weighing over 2 tons, rolled down a muck pile, struck and broke the staging he was standing on, and crushed him. He had been employed by Sylvanite Gold Mines Limited as a mucker since April 17, 1958. He had had no previous mining experience.

No. 2605E "take-down back" is a small open stope that was developed by driving a 4- by 11-foot raise up 19 feet from the back of No. 2605E drift at an angle of 75 degrees from the horizontal. The raise dipped to the southeast. This drift is 45 feet long, 6 feet wide, and 8 feet high, and was driven in a north-east direction at about right-angles to No. 2607S crosscut. The centre line of the raise is 33 feet from the centre line of No. 2607S crosscut, and the long axis (11 feet) is in line with No. 2605E drift. The back of No. 2605E drift between the raise and No. 2607S crosscut was drilled off with a stoper and broken into the

raise. A second and third cut were similarly drilled and blasted, so that a three-breast rill was established from No. 2607S crosscut up to the back of the raise. The pile of broken muck sloped up from the west end of the stope at drift level to a height of 17 feet at the east end of the raise.

The afternoon shift on September 10 blasted uppers in the second and third lifts before going off shift. Rendes and his partner, Joseph Harhaj, timberman, were sent to the stope to scale it and install any necessary timber to support the walls preparatory to the removal of some of the broken ore by mucking machine. Garhard Most, loader operator, and Vilmos Vecsey, motorman's helper, were also sent to the stope to load and tram the ore.

Mine Captain Max Leavens visited the stope at 8.15 A.M. He saw the large loose that later fell and killed Rendes. It was on the hanging wall of the original raise on a level with the top breast of the rill. It could not be safely scaled down from directly below or from the sloping muck pile west of it. It was not accessible from above or from the east. Leavens instructed the men to erect a staging on two sprags under the top breast, to scale a smaller loose west of the large one from this staging, and then to extend the staging eastwards on a third sprag in order to scale the large loose.

Rendes and Harhaj cut and placed the two sprags and placed a short piece of plank across them. Rendes climbed a ladder up to the staging, and Harhaj turned back to No. 2607S crosscut to get more timber. Vecsey and Most were cleaning up the toe of the muck pile by hand and breaking large chunks with a hammer when the large loose fell, landed on edge on the sloping muck pile, and rolled down the narrow stope. The two sprags had been placed 7–8 feet vertically above the muck, but the cartwheeling loose struck them and broke one. Rendes fell and the loose rolled on to him.

Harhaj stated that after he and Rendes had placed the two sprags, he instructed Rendes to place planks across them to form a staging. Harhaj retreated west into No. 2607S crosscut to get more timber.

Most and Vecsey saw Rendes climb on the staging with a scaling bar in his hand. Vecsey saw him scale down a small piece of loose and then start to scale the large one that later killed him. Vecsey saw the large piece fall and saw it roll and strike the staging, but at that point he turned and ran west into No. 2607S crosscut to get clear of the rolling loose. He did not see Rendes fall or see the piece crush him. Vecsey, Most, and Harhaj went immediately to Rendes' assistance. They pried up the loose and released him. He showed no signs of life, and apparently death had been almost instantaneous.

An inquest was held before Coroner Peter J. Neelands, Jr., M.D., in the Township of Teck municipal building, Kirkland Lake, at 7.30 P.M., September 17, 1958. The jury returned the following verdict:

We the jury have agreed that the cause of this fatal accident was accidental. Taking place at Sylvanite Gold Mines Limited on the 11th day of September 1958.

Willroy Mines Limited

No. 35

Leo Theroux, Canadian, aged 34, married, with two dependent children, employed as a driftman, was instantly killed when he drilled into and detonated explosives in a bootleg hole from the previous round in No. 22 east drift on the 2nd level of the Willroy mine at about 9.10 A.M., on June 17.

Theroux was a member of a three-man drift crew. The other two members were Simon Duguay, driftleader, and Daniel Duguay, miner. Simon Duguay was on holidays on June 17, when Leo Theroux and Daniel Duguay were told to drill and blast a round in No. 22 east drift, with Theroux acting as leader.

At 9.35 A.M., Bruno Brochu, shift boss, entered the heading and found Daniel Duguay lying across the track about 300 feet from the face. Duguay's right hand was missing and he had received facial injuries. Brochu sent G. McMullen and M. Topolinsky to look for Theroux and then took Duguay to surface. He was treated by the company doctor and then taken to the Marathon hospital and later flown to the Port Arthur general hospital.

McMullen and Topolinsky found Theroux lying on the floor of the drift with his legs lying on the jumbo platform, which was about 10 feet back from the face. The top of Theroux's head had been blown off, causing instant death.

The three jackleg machines had been connected up and one machine was lying on each side of the drift near the face. The third machine was still running and had been thrown back on the platform.

Examination of the face showed that the only drilling done consisted of collaring five holes of a seven-hole burn cut. The crew normally drills four 1¾-inch holes and three 1¼-inch holes. The four 1¾-inch holes and the 1¼-inch hole had been collared. Bootlegs from the previous round varied from 10 inches to 4 feet 6 inches in depth. Examination of the bootlegs indicated that no attempt had been made to clean them out. The face had been washed down prior to drilling, and it was possible to identify the detonated bootleg by the fresh dust and powder burns around it.

Questioning of Daniel Duguay in the Port Arthur general hospital on June 25 disclosed that Theroux was running the jackleg machine and attempting to collar one of the 1¼-inch cut-holes just before the accident. Duguay was standing on the left-hand side and holding the steel with his right hand. The bootlegs from the old cut were a minimum of 10 inches from the place where the new cut was being drilled and had broken about 8 inches ahead of it. As Theroux attempted to collar the sixth cut-hole, the steel slipped and ran into the old bootleg, detonating the powder in it. The jackleg was thrown back on the platform, and Theroux's body was thrown beside it. A bent 4-foot, 1¼-inch chisel-bit starter was found on the floor of the drift.

Daniel Duguay thought that had his brother Simon been present he would have cleaned and examined the bootlegs. Simon himself on examining the face on June 18 said that he would have reblasted the bootlegs before drilling.

An inquest was held at the Willroy mine on July 11, at 3.00 P.M., with Coroner F. F. P. Thompson, M.D., presiding. The verdict of the jury was as follows:

> We, the jury, find that Leo Theroux met his death at Willroy Mine, June 17th at 9.20 A.M. Death was due to injuries received when drill steel slipped into a bootleg hole and detonated unexploded powder remaining in the hole.
>
> Death was accidental with no blame attached.

On Surface at Mines (Group 2)

Algom Uranium Mines Limited

No. 36

Ronald Fredin, Canadian, aged 17, single, was instantly killed when caught in No. 4 conveyor belt in the crusher house of the Nordic mine of Algom Uranium Mines Limited, at 6.40 A.M. on September 25.

Fredin had been employed for about 6 months prior to the accident. He had worked in the crusher house for about a month.

No. 4 belt in the crusher house is 42 inches wide and 165 feet long. It carries the ore from the gyratory crushers along the south wall of the conveyor gallery to the southeast corner of the building, where it is transferred to a short transfer belt (No. 5), carried north, and transferred to No. 6 belt, which carries the ore west to the vibrating screens. No. 4 belt operates at a speed of 325 feet per minute.

At the head end of No. 4 belt, adjacent to the head pulley, there is a snub pulley, and about 4 feet from the snub pulley is the first of a three-pulley assembly for belt tensioning. The positions of the first and third pulleys of this assembly are fixed, whereas the centre or second pulley is weighted and operates on vertical guides. The first and third pulleys are 2 feet in diameter, and the weighted second pulley is 30 inches in diameter. All three are cast iron and 44 inches wide. The floor under the belt-tensioning pulley assembly and the head pulley of No. 4 belt is 4 feet, 6 inches lower than the adjacent floor under the next portion of the belt. The movable centre pulley operates with its axis about 5 feet from the floor. The clearance between the floor and the third pulley is 7 feet 7 inches. The belt passes over the bottom of the second pulley and rises vertically to pass over the top of the third pulley.

On shift in the crusher house at the time of the accident were five men: Pat Donahue, operator; Dean Ralph, operator's helper; Daryl Potvin, labourer; Frances Hoffarth, labourer; and Fredin. About 6.00 A.M. Donahue had instructed Fredin to clean up under the coarse-ore bin, which Fredin proceeded to do. About 6.20 A.M., Howard King, junior mill shifter, visited the crusher house and found all in order. However, he did not see Fredin and on enquiring learned that he was cleaning up under the ore bin. King then returned to the mill shift boss's office. About 6.40 A.M. Donahue glanced down from his operator's platform and noticed No. 4 belt had stopped and was twisted. At this time Ralph was cleaning up under No. 1 belt, and Potvin was removing scrap from No. 1 belt. Hoffarth was cleaning up around the point where No. 2 belt transferred the ore to No.3 belt. No one in the crusher house had a good view of the head end of No. 4 belt. Donahue ran down to the basement and examined the tail end of No. 4 belt. Things appeared to be in order there, and he proceeded up No. 4 belt towards the head end. When near the head end, he saw a man's legs hanging from the third pulley in the belt-tensioning pulley assembly, with the body over the pulley and under the belt. Donahue then ran back to his operator's platform and phoned the mill shift boss's office. Frank Quesnel, senior shift boss, answered, and Donahue informed him of the accident. Quesnel instructed Donahue to notify first-aid, which he then did. Donahue then shut down the plant and started back to the head end of No. 4 belt. Quesnel informed King of the accident, and both went to the crusher house. Donahue, King, and the first-aid man arrived at the accident scene about the same time. They were joined very shortly after by Quesnel, Ralph, Potvin, and Hoffarth. Potvin and Hoffarth stood by while the others cut the belt and lowered the body to the ground. Dr. Ruse arrived and pronounced Fredin dead. Investigation revealed that a hand scraper tool had passed over the pulley with Fredin. The handle had been bent to the shape of the pulley, and when Fredin was found, his hand was still on the handle of the scraper.

A number of signs reading "Danger—Stop Belts to Clean Pulleys" were posted in the crusher house. King stated that frequently all men on his shift in the crusher house were warned not to work on conveyor belts when they were moving. Donahue stated that Fredin's work was to clean up the spill from around the belts, and that he did not give any instruction to Fredin to clean the pulleys on No. 4 belt. His last instruction to Fredin had been to clean up under the ore bin.

The mine plans to install vertical screens on both sides of the belt-tensioning pulley assembly to within about 2½ feet of the floor. This will prevent anyone cleaning the pulleys unless, contrary to instructions, he climbs under the screen while the belt is in motion, but will allow scraping away of the spill.

An autopsy, performed by Dr. E. S. Pentland of Sault Ste. Marie, revealed that the cause of death was traumatic asphyxia from pressure on the neck.

An inquest was held before Coroner M. J. Farrell, M.D., at Elliot Lake, on October 9, 1958, at 7.30 P.M. The jury returned the following verdict:

That Ronald Fredin, the deceased person, came to his death at 6:40 o'clock in the forenoon on the 25th day of September 1958, at Algom-Nordic Mine and that the death was caused by accidental death.

Recommendation: Check similar set ups at all mines in area and have same installed with necessary guard screens.

Construction Aggregates Corporation

No. 37

Robert Thomas McLeod, Canadian, aged 32, married, with five children, was drowned at 11.50 P.M., June 7, when he fell from a plank into about 25 feet of water at the south end of the middle arm of Steeprock Lake.

McLeod had been employed by Construction Aggregates Corporation since 1953 and had worked up to the position of leverman. On the date of the accident McLeod was in charge of the afternoon shift, who were engaged in preparing the dredge *Steep Rock* for layup.

Construction Aggregates Corporation are operating three dredges, removing the overburden from the G orebody. At present, all actual removal of mud has been stopped, and the only dredge working is the *Marmion*, which is pumping water in order to lower the level of the water in the lake above the G orebody. The dredges, *La Seine* and *Steep Rock*, are anchored close to shore, and only maintenance work is in progress.

The *Marmion* is anchored about 500 feet from shore. The discharge pipe to shore is floated on steel pontoons. The catwalk used by the crew, consisting of 2- by 12-inch planks with a railing, is constructed along the top of the pipe. Lights are strung up every 10 feet along the walk.

The dredge *Steep Rock* was anchored 200 feet from shore and about 50 feet from the main catwalk. As the dredge was not in use and was to be moved in a couple of days, no permanent walkway had been constructed over to the main catwalk. The crew walked over the top of the pontoons, and from the last pontoon to the catwalk used a 2- by 12-inch plank about 10 feet long. This plank was about 4 feet above the water.

On the night of the accident the graveyard shift (12.00 A.M.–8.00 A.M.) had relieved the afternoon shift (4.00 P.M.–12.00 P.M.), and McLeod and his crew were going ashore. As they crossed the plank, Kenneth McIntyre, dredge operator, who was ahead of McLeod heard a splash and on turning around saw McLeod disappearing below the surface of the water. McIntyre, who was wearing a life-preserver, jumped into the water and attempted to grab McLeod but missed him. McLeod went down for the second time and did not come up.

McIntyre climbed on to the nearest pontoon and called for help. John Loewen and Nick Kostaschuk, who had heard the splash, arrived almost immediately, obtained two skiffs, and commenced dragging. The body was recovered in about 20 minutes, and artificial respiration was commenced. Dr. Kristjansen arrived in ten minutes and supervised the artificial respiration, which was carried on for about one hour and fifteen minutes when it was decided that McLeod was dead.

There were no marks on the body to show that McLeod had been hurt by striking the plank or one of the pontoons. He made no sound when he fell from the plank or while he was in the water. It is not known for sure if he was able to swim.

Construction Aggregates Corporation has a company regulation that all men working on the dredging operations are required to wear a life-preserver at all

times. Each man has his own preserver. At the time of the drowning McLeod was not wearing his life-preserver, and at the time of the investigation no one was able to find it.

After investigating the accident on June 7, Constable C. G. Robertson of the Ontario Provincial Police suspected that McLeod had been drinking and requested Dr. Kristjansen to take a blood sample and have it analysed for alcoholic content. Dr. A. E. Allin, Provincial Pathologist of Fort William, found that the blood contained 2.2 parts per thousand of ethyl alcohol.

At the inquest, Crown Attorney McLennan's questioning of witnesses K. McIntyre and C. Shannon brought out the following evidence.

Shannon stated that at about 8.00 P.M. he and McLeod decided to drive in the service truck to the residence of W. Lindsay, project superintendent for Construction Aggregates Corporation on the Steep Rock project, and ask him how much longer the job was going to last. Dredging operations had been stopped, and the men were expecting to be laid off shortly.

Lindsay's residence was on the Steep Rock property, about 2–3 miles from the dredge location. On arriving at Lindsay's home the men found that there was no one home. They then walked into the basement of the house and removed a case of beer, which they took back with them to the dredge.

Shannon admitted to having drunk 5–6 bottles of beer and McIntyre 2–4 bottles. McLeod probably drank about 9 bottles of beer prior to the accident. Medical advice is that it would have required this many bottles to raise the alcoholic content of his blood to 2.2 parts per thousand.

On the advice of the crown attorney it was decided not to charge Shannon and McIntyre under Section 162, rule 425, of the *Mining Act* since the Crown had no evidence other than the voluntary statements made at the inquest. This could not be used in a prosecution as McIntyre and Shannon could not be required to enter the witness box.

An inquest was held in the Atikokan police court on June 27, at 3.00 P.M., with Magistrate F. C. Cornell acting as coroner and Crown Attorney A. D. McLennan in attendance. The verdict of the jury was as follows:

We, the jury find that Robert Thomas McLeod came to his death June 7th, 1958 at 11.50 pm at Steep Rock Lake. Cause of death was drowning.

Hollinger Consolidated Gold Mines Limited

No. 38

Alex Belec, Canadian, aged 69, married, employed as a carpenter at Hollinger Consolidated Gold Mines Limited since 1925, was almost instantly killed when he fell 15 feet from the roof of an electric shovel at the Hollinger gravel-loading plant at 7.35 A.M. on June 24. He landed on his head and sustained a fractured neck. Death was almost instantaneous.

The No. 2, model 50B, Bucyrus-Erie, electric drag-line shovel had been brought from the pit into the shop-yard for a general overhaul. The hoisting gear and some of the electrically-driven power plant had been dismantled. Belec and his partner, Joseph Gagnon, carpenter, were inspecting and repairing the wooden cab that completely encloses the power plant and operating controls. The cab has a double-pitched roof with the ridge running in line with the shovel boom. The roof is constructed of shiplap sheeting fastened to an angle-iron frame. It is sheeted with ⅛-inch steel plate over the wood on the top side and with galvanized metal sheeting on the inside. The pitch of the two halves of the roof is 3 inches in 1 foot, or about 15 degrees.

There are three hatches in the roof through which various sections of the hoisting machinery can be lifted by a crane without dismantling the cab. The hatches are covered with bolted panels of similar construction to the fixed roof.

Belec and Gagnon had removed one of these covering panels and turned it upside down beside the hatch opening in order to remove the screws fastening the galvanized sheeting. The object was to examine the condition of the wooden sheeting under the metal.

Gagnon was kneeling beside the panel replacing screws, when Belec stepped on it to commence replacing the screws on the opposite side. The panel slid down the slope of the roof with Belec on it. The panel landed on the planks of a substantial steel staging that had been erected from the ground along the side of the cab. Belec continued over the staging and landed with his head on the ground. He received immediate attention but died almost instantly.

Three mechanics were working in the immediate vicinity, one inside the cab and the other two on the roof at the chain-blocks hanging from the gantry erected over the shovel. These men did not see the accident occur and only became aware of it after Gagnon had climbed down to assist Belec. Belec died as Gagnon reached him.

An inquest was held before Coroner H. E. Montgomery in the Timmins municipal building at 4.00 P.M. on June 30. The jury returned the following verdict:

> At 7.35 a.m. on June 24th, 1958 at the Hollinger Consolidated Gold Mines Limited Gravel Pit property in Tisdale Township while repairing a 50-B Gravel Shovel, Mr. Alexis Belec came to his death accidentally when he stepped on a steel hatch cover which apparently because of his weight and certain momentum of his body slid off the shovel roof throwing Mr. Belec to the ground 14 feet or so below.
>
> It would appear that ordinary precautions were taken by the workmen including Mr. Belec who were doing the repair work and we feel that no blame attached to anyone.

Northspan Uranium Mines Limited

No. 39

James Sloan, Canadian, aged 47, married, with four children, was fatally injured when crushed under a Chaseside truck, which fell on its side from a low-bed float. The accident happened at 8.20 A.M. on November 6, 1958 when the truck was being loaded in the Buckles mine yard (Spanish American No. 3 shaft).

Sloan had been employed as leading mechanic at the Buckles mine since June 26, 1956. His previous experience was listed as 13½ years as mechanic in the forest products industry.

Work ceased underground at the Buckles mine during October, 1958. By the end of the month, equipment had been removed, the openings to surface were sealed off with reinforced concrete slabs, and the workings were allowed to flood.

Part of the equipment brought to surface during the period of shut-down were five Chaseside Dumptor trucks. These trucks were completely dismantled underground so they could be hoisted piecemeal to surface. On surface they were reassembled sufficiently to be mobile, but they were not put into self-powered running order.

On the day previous to the accident, November 5, arrangements were made to start moving the equipment from Buckles mine yard to Spanish American mine yard. A low-bed float, with driver Stan Keating, was hired from Forbes Construction. The loading crew, under the direction of Bill Henry, plant superintendent from the Spanish American mine, loaded and dispatched, without trouble, two Chasesides on one load. James Sloan was the lead man on this operation. A D-2 caterpillar-tread tractor, equipped with a bulldozer blade, was used to push the vehicles up a timber ramp and on to the low-bed float. The vehicles in

each case were chained to the front end of the tractor, since they have neither engine power nor brakes. The vehicles were loaded dump-box to dump-box.

In loading the first vehicle, with the engine and the steering end ahead, James Sloan rode in the operator's position to steer the vehicle into position. The second vehicle, loaded with the dump-box end ahead was lifted at the steering end by means of a chain around the bulldozer blade. This truck did not require a driver as the steering-wheels were off the ground, and it was being steered by means of the tractor.

The next day, November 6, the same driver, Stan Keating, was on hand with the float at 8.00 A.M. James Sloan and his son, Peter Sloan, were also present with Kieth Wiggins and Bob Mack, rigging helpers, and Larry Steele and John Barreira, labourers. This crew proceeded to make up another load of two Chaseside Dumptors. They proceeded in the same manner as the previous day. The timber ramp, however, had to be rebuilt, and then the first Chaseside was pushed from about 30 feet away to mount this ramp on to the low-bed float.

James Sloan was in the driver's seat of the Chaseside with his back to the direction of movement. His son, Peter, was pushing with the D-2 tractor chained to the Chaseside. As the Chaseside mounted the ramp, the blade of the tractor fouled the Chaseside drive-wheels. To correct this situation, the Chaseside was held by blocking under the drive-wheels; the chain was detached, and the D-2 was backed up to allow a timber to be placed in front of the treads. When the D-2 again moved forward, this timber raised the front end so that the blade again contacted the Chaseside frame clear of the drive-wheels. Unfortunately, the hold-back chain was not replaced.

As the Chaseside was pushed ahead over the tandem wheels of the low-bed float, the tires of which projected 2¾ inches above the float, Mack noted that the alignment was true; he was standing on the low-bed float near the front goose-neck hitch. James Sloan, standing up in the driver's open cab, looked back occasionally to receive this assurance from Mack.

The drive-wheels of the Chaseside had just passed over the second set of tandem tires of the float, and the Chaseside was rolling forward, when Mack saw that it was veering to the left side of the float. He yelled to Sloan and at the same time jumped from the float. Wiggins and Keating were standing on a rise in the ground level at the rear and to the left of the ramp. They had the best view of what happened. As the Chaseside headed off the float, they saw Sloan try desperately to straighten it up with the steering wheel. When it did not respond, he tried to jump clear but seemed to get a leg entangled as he was getting out of the left side. One wheel on the steering end by this time had dropped over the side of the low-bed float, which is 33 inches above the ground. The whole unit then toppled over to the ground on its side, with Sloan crushed underneath. Sloan was pinned to the ground by the lower part of the truck cab and the chain-drive housing. The Chaseside, weighing 8,200 pounds, had to be righted by means of the D-2 tractor in order to release Sloan.

Dr. Golesic had been summoned and arrived within a few minutes. He found that Sloan had died almost immediately. The post-mortem revealed a fractured sternum and spine, and complete rupture of the liver.

An inquest was held on November 25, 1958, before Coroner M. J. Farrell, M.D., with the following jury verdict:

That James Sloan, the deceased person, came to his death at 9:00 o'clock, in the forenoon, on the 6th day of November 1958, at Buckles Mine, and that death was caused by accidental death.

Metallurgical Works (Group 3)

Steel Company of Canada Limited

No. 40

Norval B. Long, Canadian, aged 48, married, with two dependents, died as the result of carbon monoxide poisoning in the blast furnace division of Steel Company of Canada Limited, at about 12.50 P.M., January 21. He had been employed by Steel Company since September 12, 1941 and had been on his present job of stove tender since October 5, 1952. He was reported to be a reliable, safe, conscientious workman.

Steel Company of Canada normally operates four blast furnaces, A, B, C, and D, having a daily production of about 350, 750, 1,000, and 1,400 tons of pig iron respectively. The iron ore, coke, and stone is fed in mechanically in definite amounts at the furnace top. The blowing engines supply air, a portion of which is heated in the stoves and blown into the lower portion of the furnace through the tuyères at about 1,300° F. and 20 pounds per square inch pressure. The blast furnace gases, produced on combustion of the coke in the furnace, contain about 24 percent carbon monoxide, 16 percent carbon dioxide, with the remaining 60 percent chiefly nitrogen. The blast furnace gas, after being cleaned, is used as a source of heat throughout the plant, mainly for the boilers and furnace stoves. The slag and pig iron collect in the bottom or hearth of the furnace. These are drawn off periodically, part of the slag being used for road building, cinder block, etc., while the iron is used chiefly in the steel industry.

Each furnace is equipped with three stoves, which are metal-covered cylinders about 100 feet high and 20 feet in diameter. On the burner side there is a combustion chamber from the base to the top of the stove, the remaining area is largely checkered brickwork capable of holding the heat. Under normal operating conditions one stove is on blast supplying the heated air for the furnace, the remaining two are being heated, or one may have reached the required temperature and be checked off. A stove on blast is removed from service after two hours and placed on heat again. The temperature of the stove at the top will be approximately 2,000° F. at the start and around 1,300° F. after the 2-hour period.

When on blast, a portion of the air from the blowing engine enters at the bottom of the stove, passes up through the heated brickwork, and is forced down the combustion chamber, being drawn off at a point below the burner to the furnace. As the stove cools down, more air is heated automatically to give air at a constant temperature of about 1,300° F. to the furnace. When on heat the cover is removed from the combustion chamber, and the burner positioned in the chamber. The burner supplies clean blast-furnace gas and air, which ignites in the combustion chamber and passes down through the brickwork to the bottom where it enters the stack. When the stove reaches the required temperature, the burner is removed, the cover replaced over the combustion chamber, the damper to the stack closed, then the stove is ready to go on blast when required.

The job of the stove tender is an important one in the blast furnace operation. He is responsible chiefly for the operation and maintenance of the stoves and burners at all times, with special attention required during the casting of the furnace.

On the day of the accident, Long had No. 3 stove on blast and Nos. 1 and 2 on heat. He was seen in the stove tenders' room at about 12.45 P.M. eating his lunch. The stove tenders' room is equipped with recording devices, which give temperatures on all three stoves. The next time he was seen was at about 1.05 P.M. lying on the steel walkway in front of No. 2 stove. The electric-control-panel door, which is near the burner, was open. There were no witnesses to the accident,

but it is reasonable to assume that he was making some adjustment to the burner, when there was a blow-back, and he was overcome by the gas. The burners on both No. 1 and No. 2 stoves were burning, but No. 2 was puffing badly. There was little wind, the air was humid, and the situation was made worse by steam in this area. Long was given first-aid and medical attention at once but failed to recover.

A new type of improved burner for all three stoves is on hand and will be installed during the relining of the furnace in the near future. In the meantime, an automatic carbon monoxide indicator has been located in the area.

A complete investigation of the fatality was conducted by the company. The following recommendations were made and will be carried out at the earliest date possible:

1) Replace the present burner with a type that has proven safer and more efficient.
2) Relocate the air-mixer fan some 30 feet from the burner.
3) Relocate the control station to a gas-free area.
4) Valves to be shut off when a stove changeover is made.
5) Maintenance and repairman to wear Scott air packs.
6) Carbon monoxide detectors with alarms to be installed, and portable detector provided.
7) The blast furnace department to be a restricted area, and entry permitted only by a specific procedure.

An inquest was held on January 30, at 4.30 P.M. in the central police station, Hamilton, Coroner A. J. Webb, M.D., presiding. The jury's verdict was as follows:

Norval Long the deceased person came to his death at approximately 1.15 o'clock in the afternoon on the 21st day of January, 1958 at Hamilton and that death was caused by carbon monoxide.

We strongly recommend that in future two men should enter the furnace room with gas masks, one for the operation, and the other for a safety check.

Quarries (Group 4)

Nelson Crushed Stone Limited

No. 41

Floyd Masters, Canadian, aged 29, married, with no dependents, was killed when crushed under the tracks of a type D8, Caterpillar bulldozer at approximately 12 noon on August 26. He was employed by the King Paving company and had worked part time at Nelson Crushed Stone Limited since July 31, 1952. On July 11, 1957, he was transferred permanently to Nelson Crushed Stone Limited. Masters had considerable experience on the operation of earth-moving equipment such as Le Tourneaus, graders, bulldozers, etc., and was considered to be a competent bulldozer operator. He was reported to have been in good health.

Nelson Crushed Stone Limited operates a quarry and an extensive crushing plant of 10,000-tons-per-day capacity at Mount Nemo, northeast of Hamilton. The primary crusher is located on the quarry floor. The material from the primary crusher is conveyed to a surge pile at ground elevation. Material from the surge pile is conveyed to the plant as required for further crushing and screening. The various sizes of crushed stone are discharged by conveyors about 40 feet above ground level to their respective stockpiles, which number seven in all. The material in the stockpiles is normally drawn off through chutes located in concrete tunnels underneath the stockpiles and conveyed to the truck-loading bins. Steam lines are installed under the stockpiles to eliminate the danger resulting from winter freezing. If the production of certain sizes exceeds the

demand, the stockpile cones up to the height of the conveyor, and blocks its discharge. When this condition occurs it is necessary to push out and level off the stockpile with a bulldozer. Large stockpiles of the various crushed sizes are required to maintain supplies during the winter shut-down. The D8, diesel-powered, caterpillar bulldozer, operated by Masters to push out the crushed stone from the conveyor discharge, weighed about 28 tons. It was equipped with a heavy blade 13 feet 6 inches wide and about 4 feet high. The distance from the blade to the front of the tracks is about 8 feet; from the blade to the operator's seat is about 16 feet. The blade could be raised about 3 feet. The over-all length of the tracks is about 12 feet.

On the morning of August 26, Masters was instructed to push back the 5/8-inch crusher-run stockpile as part of his normal duties. About 8.30 A.M. he drove the bulldozer up the ramp made of the crushed material, on the north side, and commenced pushing the material back in a northerly and easterly direction. The ramp, which was originally about 12 feet in vertical height, was blocked off by about another 12 feet of the material that he had pushed out. He was visited by the stockpile foreman, Harold Liddycoat, around 11.00 A.M., and it was agreed that he should make a similar ramp on the south side, where the surface stockpile was to be increased.

There were no witnesses to explain how the accident occurred. From the investigation it can only be assumed that Masters commenced building the ramp on the south side of the stockpile. He made one push in second gear forward and came to a stop too close to the steeply-inclined section of the stockpile. It would appear that he misjudged his distance and underestimated the steepness of the slope, which was inclined at about 40 degrees to a vertical height of 12 feet above ground level. He was only able to elevate the blade about 2 feet, when the machine slid down the steep incline. The blade struck the hard ground and dug a trench 12 inches deep by 18 inches wide along the length of the blade. The impact threw him from the operator's seat, and he landed in the space behind the blade and ahead of the tracks on the operator's side. The bulldozer moved forward about 16 feet coming to a stop on level ground. Masters may have been rendered unconscious by the fall and pushed or dragged into the trench dug by the blade, the centre of the tracks coming to rest on his body.

Shortly after 12.00 A.M. Orville Peer, upper-bin man, noticed the machine in its final position. About 12.45 P.M., George Gilbertson, surface foreman, went to check with Masters on his previous instructions and found him under the tracks with his hips and legs protruding. Dr. S. Reininger, the ambulance, and other help were immediately summoned by Gilbertson. Jacks were used to elevate the left side of the bulldozer, and the body was removed. By this time, Dr. Reininger had arrived and pronounced Masters dead. Dr. R. T. Dingle, coroner, was summoned and inspected the scene of the accident with Inspector Kenneth D. Scott of the Burlington Police.

An autopsy was performed on the deceased by Dr. Haager, St. Joseph's Hospital, Hamilton, with the injuries reported as follows; numerous fractures *of the skull, crushed chest, all ribs fractured, and fractured right arm.*

The cause of death was multiple severe injuries to the head and chest.

An inquest was held at the Burlington police offices, *Burlington, at 8.00 P.M.,* September 30, with Coroner R. T. Dingle, M.D., and Crown Attorney P. McWilliams in charge. The jury's verdict was as follows:

We, the jury, find that Floyd Masters came to his death at about 11.45 A.M., August 26, 1958, at the plant of Nelson Crushed Stone, Mount Nemo, Burlington, Ontario. Cause of death as presented in medical evidence, head and chest injuries, by means of loss of control of bulldozer machine which deceased was operating, due we believe to misjudgement on his part.

We deem it worthy of consideration that safety harness equipment for operators be provided.

North Shore Construction Company Limited

No. 42

Bert Johnson, Canadian, aged 49, married, with one dependent, was fatally injured on July 17 in a car accident. Johnson was employed by the North Shore Construction Company Limited as quarry superintendent at White, 40 miles west of Redditt, Ontario.

An employee was injured at the quarry on July 17, and Johnson, quarry superintendent, drove him home. Johnson was fatally injured when his car was involved in a highway traffic accident at about 1,000 feet east of the East Braintree, Manitoba, corner on highway No. 1 while returning to the quarry.

Accidents for which Employment Figures are Unobtainable (Group 7)

Falconbridge Nickel Mines Limited

No. 43

Roma Mathe, Canadian, aged 19, single, employed as a truck driver by his father, Alvard Mathe, was fatally injured on September 26, at about 12.40 P.M. when he was crushed between a truck and the door frame of the mill at Falconbridge Nickel Mines Limited.

Falconbridge Nickel Mines Limited gave a contract to Ralph Crawford to transport concentrates from the Fecunis mill to the Falconbridge mill at Falconbridge for a period of ten days. Crawford obtained the services of a number of owners of trucks to transport the concentrate for a given price per ton. He acted as an agent for these truckers as he has no trucks of his own. The loading and unloading of the trucks was the responsibility of the mill personnel of the Falconbridge company, and the driving of the vehicles was the responsibility of the owners and drivers.

The unloading of a truck was done over a grizzly on the floor level of the Falconbridge mill, 30 feet inside the west door by three millmen, E. Cascanette, S. Callery, and V. R. Mantha, who used water hoses to wash the concentrate out of the truck box. During the backing, the driver had to make a right-hand turn around a steel column of the building. Most of the trucks backed in without signals, but when it was necessary, the mill sub-foreman, E. Kirwan, gave the signals.

On the morning of September 26, Roma Mathe, brought the loaded truck, owned by his father, Alvard Mathe, to the west door of the Falconbridge mill. As he had to wait for several trucks ahead of him to unload, he left the truck and got into the cab of the truck owned by Arsene Gagnon and driven by Roger Pilon. When Pilon's turn came, Mathe remained in the truck while Pilon backed his truck into the mill.

Pilon missed his turn at the steel column and was signalled to pull forward by Kirwan. When he stopped on his forward movement, Roma Mathe left the truck and came over to stand by the grizzly beside Callery. On the second try at backing, the truck hit the column again. On the second movement forward the truck came to a position with the forward right-hand corner of the box about two feet from the door frame.

Roma Mathe left his position near Callery and went forward to the right-hand door of Pilon's truck. Unfortunately, Pilon was unaware that Mathe was apparently attempting to help him because he was looking in his left-hand mirror. Cascanette saw Mathe at the truck door and realized the hazard, that Mathe might be caught between the truck and the box at the instant the truck

moved forward again; he yelled "Whoa!" Pilon did not hear the warning, drove forward, and caught and twisted Mathe into a space of seven inches between the truck and the door frame.

Cascanette yelled to Kirwan to back the truck up and then ran to Mathe. Callery, who had heard Cascanette's "Whoa," saw Mathe caught by the truck, and ran to the left side of the truck and told Pilon, the driver, to back up. Callery then ran around the truck to assist Cascanette, who had caught Mathe as he was released. Kirwan and Mantha, the third millman, were unaware of Mathe's actions until the accident occurred.

Mathe was taken by the Falconbridge ambulance to St. Joseph's Hospital in Sudbury, where emergency operations were performed in attempts to save his life. He died the following morning at 5.45 A.M., September 27, of multiple injuries.

An inquest was held in the Sudbury court house on October 16, at 2.30 P.M., before Coroner S. C. Webster, M.D. His verdict was as follows:

Mr. Roma Mathe, died September 27, 1958 due to the following injuries: (1) Bilateral Hemothorax, (2) Ruptured right upper lobe of lung, (3) Fractures to right ribs No. 1, 2, 3, 4, 6. Left rib No. 6, results of a crushing injury at Falconbridge Nickel Mines, between a heavily loaded Mercury truck and a doorway upright.

Inquest October 16, 1958, Conditions leading to injury purely accidental. No blame attached to anyone.

Dominion Bridge Company Limited

No. 44

William Snow, Canadian, aged 27, married, with two children, was electrocuted while touching a mobile crane, which contacted a live transmission line in the Milton quarry at 9.01 A.M. on August 28. He was employed as an ironworker by Dominion Bridge Company Limited, which was working under contract for Milton Quarrys Limited.

On the day of the accident a 25-ton mobile crane was being used to place some "A" frames. The crane was fitted with a 50-foot boom and a 10-foot jib. In order to place the steel in position it was necessary to pass under a Hydro transmission line, which supplied power at 26.8 kilovolts to the quarry's substation.

Shortly after the start of the day shift, the crane was being driven by Malcolm MacFarlane, who was leaning from his cab watching the wheels to keep a check on the progress of the machine. The first intimation he had of the nearness of the transmission line was a warning horn sounded by the crane operator. He immediately applied the brakes and stopped the crane. He saw a flash but did not see the boom make contact with the line. The crane operator, John Ross Newman, was watching the load when he thought of the line and looked out from his cab to see that they were too close to the line. He immediately blew the horn to warn the driver and operated a lever to lower the boom. At the same instant he saw a flash at Snow's feet. Chesley Marshall, assistant foreman, and Snow were following the crane, Snow with his right hand touching the chassis. Marshall stepped to the side to check the proximity of the transmission line when a flash occurred. The force of the shock knocked him some distance. He came back to the machine and saw Snow lying on the ground behind the rear wheels. Marshall was about to pull Snow away from the wheels, when a second flash occurred, and he was knocked over again. Marshall then called Kenneth Fillier, a Dominion Bridge employee, to help him. They pulled Snow away and commenced artificial respiration immediately. The hospital was called, and an ambulance was sent out from Milton. Artificial respiration was continued until, at about 9.20 A.M., the firemen arrived with a resuscitator.

Dr. Leslie arrived at about 9.30 A.M. and gave two injections of cardiac stimulant. Resuscitation was continued until Snow was pronounced dead at 10.15 A.M.

An inquest was held in the Milton court house before Coroner C. K. Stevenson, M.D., at 8.00 P.M. on September 23. The jury returned the following verdict:

We the jury say that William Snow came to his death at 9.01 o'clock in the forenoon on the 28th day of August, 1958, at twp. of Nassagaweya and that the death was caused by electrocution.

The jury also made the following remarks:

We your jury consider that the driver and crane man were careless in not confirming that the passage in front of them was clear for the equipment to pass safely and the foreman on the job is subject to criticism for not realizing that the Company equipment was operating in a dangerous manner in the vicinity of high voltage wires.

It is suggested that a ruling be enforced that a ground man should proceed in front of the equipment to warn the operator as necessary of any obstacles or pending danger.

Foundation Company of Canada Limited

No. 45

Taavelli Johannes Makela, Canadian, aged 56, single, employed as a carpenter leader by Foundation Company of Canada Limited, was fatally injured at 9.05 A.M., January 23, when knocked down and run over by a 3-ton Chevrolet dump truck, which was backing up a ramp near the Steep Rock Iron Mines' No. A-2 shaft. He died about 9.45 A.M. on the same day as he was being taken into the operating room at the Atikokan hospital. Injuries included a broken femur, ruptured pelvis, and internal injuries.

Foundation Company of Canada Limited are agents for Steep Rock Iron Mines Limited in the erection of a service building at the collar of No. A-2 shaft. Makela had been employed by them since March 27, 1957, as a carpenter leader on the service-building project. On the morning of January 23, Makela had been building a stone boat in the yard on the northeast side of the service building.

The 3-ton dump truck was driven by Lennard Persson, an employee of C. Pogue, shaft contractor at No. A-2 shaft, and was used to haul waste from the sinking operation to a nearby waste dump. The procedure was: on returning from the waste dump, the truck is driven into a Y at the bottom of the ramp, and then it is backed up the ramp to an opening in the southeast side of the service building. The waste is dumped from the buckets to the dump doors and directly into the truck.

Lennard Persson returned from the waste dump shortly after 9.00 A.M. and drove into the Y at the foot of the ramp. As he was backing up the ramp, he heard a cry and stopped the truck. He found Makela lying on his face, diagonally across the road under the left side of the truck, with his head under the truck midway between the front and back wheels.

An ambulance was called and started to take Makela to the Atikokan hospital at 9.20 A.M. Dr. A. B. Adey met the ambulance on the company property and accompanied him to the hospital.

Russell Hamilton and Manley Doyle were in the area and witnessed the accident. They stated that Makela appeared to be walking up the outside of the ramp towards the service building. Just before the truck reached him, he cut across to the inside of the ramp. The box of the truck hit him, knocking him down, and the double tires on the left rear wheel passed over him. They were of the opinion that Makela did not see the truck.

Persson, the truck driver, said that he did not see Makela as he drove into the Y or as he was backing up the ramp. Makela had been taking some measurements on the stone boat just before the accident, and it is thought that he was

walking to the service building to get some material he required. It was not necessary for him to walk up the ramp to reach the service building, although he would need to cross it at some point.

An inquest was held in the Atikokan municipal building at 8.00 P.M. on February 7. Magistrate F. C. Cornell acted as coroner and crown attorney with A. D. McLennan in attendance. The verdict of the jury was as follows:

We, the jury, find that Taavelli Johannes Makela, the deceased person, came to his death at 9.45 a.m., January 23, 1958 in the vicinity of the A-2 shaft. Death was caused accidentally by being struck by a truck backing up the ramp at the location of the accident.

Hill-Clark-Francis Limited

No. 46

Joao Correia, Portuguese, aged 32, married, with two children, was killed about 1.40 P.M. on June 14 when he fell from the roof of the Pachuca tank building at the Quirke mine of Algom Uranium Mines Limited.

Correia was employed as a labourer by Hill-Clark-Francis Limited, general contractors. He had had 10 months' experience with Hill-Clark-Francis as a labourer and had been in Canada about 26 months.

At the Quirke mine there is being constructed a Pachuca tank installation south of the mill building. This consists of four rows of tanks running in a north-south direction with three tanks in each row, making a total of twelve tanks. The tank contract was let to Toronto Iron Works, who completed the installation. Each tank is of metal, mounted vertically on concrete foundations. The top portion of each tank is a cylinder, 22 feet 6 inches internal diameter and 31 feet high, with the top of the tank 54 feet above ground level. Below the cylindrical portion of each tank is a truncated cone portion with the small diameter nearly 6 feet above the ground. The small end was open as yet and was 3 feet 3 inches in diameter. Hill-Clark-Francis were engaged in constructing the building around and above the Pachuca tanks. When completed, this building will be 104 feet long, 80 feet wide, and 70 feet high. The long dimension runs in an east-west direction. All columns and framing are of wood and completed or very nearly so. The roof will consist of two ½-inch tongue-and-groove planks, each 5½ inches wide. At the time of the accident, the roof was partly planked over, with the north side planked tight for a width of about 13 feet. Also the west side of the roof was planked tight and nailed over a surface from the north edge to about 55 feet south of the north edge and from the west edge to about 45 feet east of the west edge. There were several bundles of roof planking stored on the southeast corner of the roof, and also some planking had been laid, but not nailed, starting at the east edge and extending west about 28 feet, and starting about 26 feet south of the north edge and extending south for about 18 feet.

About 12.20 P.M., Correia and Jeremias Desousa, another Portuguese labourer, were asked to go to the roof and lay planking, which they proceeded to do. On the roof at the time, four carpenters and one labourer were working at planking on the section along the north edge of the roof, nailing it down. The four carpenters were Joseph Baldinos, Bill Siebenaar, Eimo Pajala, and Goran Fredrickson. The labourer was Kauko Puro. Work carried on until Desousa and Correia had laid some loose planks, joining up the nailed planking on the west side of the roof with the unnailed planking on the east side. This new section of loose planking varied in width from four boards to one board. The length of the roof planking was 14–16 feet. After laying a plank, Desousa proceeded west to the nailed planking, while Correia started to the southeast corner of the roof to obtain another plank. At the junction of the plank bridge with the eastern section of loose planking, Correia fell off the roof with two of the roof planks. When Desousa reached

the nailed planking he turned in time to see Correia falling but did not see him start his fall. Desousa also saw one board fall inside the tank and one outside. Correia fell, hitting the east side of a tank and passing down inside the tank, through the conical portion and out of the 3-foot 3-inch opening at the bottom to the ground. The tank through which Correia fell was the second from the north end of the second row from the east side of the building. Baldinos and Puro also saw the victim fall, but none of those who saw him fall were able to say what caused him to fall. Baldinos also saw a roof plank raise on end but was unable to say if anything fell in the tank with the victim. Puro did not notice any planks move or appear out of place afterwards. When Correia fell, there was no one on the roof closer than about 30 feet. Siebenaar and Pajala heard the victim falling in the tank but did not see the accident. Fredrickson did not see or hear the accident. Working on the tank directly east of the accident tank were Fred Strevel and Gerald Wright, both employees of Sarnia Inspection. Strevel was on a ladder 17 feet from the top of the tank on the northeast part of the tank, and Wright was standing on a throat joining the tops of the two northernmost tanks in the easternmost row. Strevel heard a noise inside the tank he was on, and after climbing to the top of the tank, saw three planks inside it. There had been no planks inside this tank before the accident. Wright, facing east, heard and saw the planks fall into the tank Strevel was working on.

Henry Turcotte, job superintendent for Hill-Clark-Francis, who was about 75 feet east of the building at the time of the accident, heard the victim falling into the tank. He investigated and immediately notified the mine first-aid. The mine first-aid notified the safety office in the mill, because they were closer to the scene of the accident, and sent the mine ambulance to the accident. Hume Crowe, surface safety engineer for the Quirke mine, left the mill safety office with others, taking a basket stretcher and went to the accident scene. The victim was placed in the stretcher and carried to the ambulance, which had arrived. The ambulance was on the scene about five minutes after the accident. The victim was transported to mine first-aid, where he died about 1.55 P.M. Crowe phoned the Elliot Lake clinic from the mill superintendent's office after placing the victim in the ambulance.

Dr. J. L. Ruse of Elliot Lake arrived at the mine first-aid station at 2.40 P.M. and pronounced the victim dead. Dr. Ruse stated Correia died quickly as a result of severe head injuries.

J. G. Haining, area superintendent for Hill-Clark-Francis, learning about the accident about 2.00 P.M., proceeded to the project side. On being questioned, Haining stated he knew of no rules or safety procedures being broken; Turcotte and Penttei Saastamoinen, foreman for Hill-Clark-Francis, said the same thing. Saastamoinen had just arrived on the job when the accident happened. He heard the noise of Correia falling in the tank but did not see the accident. Both Turcotte and Saastamoinen considered Correia to be a capable worker and qualified to work as a climber. Rules concerning drink on the job were very strict, and a man would be fired immediately if found with drink. The weather on the day of the accident was clear with slight gusts of wind. The wind was not considered dangerous by those working on the roof. Correia had had lunch with Desousa and made no mention of feeling ill or weak during lunch or while working on the roof after lunch. Correia had been wearing work-boots with a composition sole, which would eliminate slipping as much as possible. Crowe, after phoning the Elliot Lake clinic, returned to the scene of the accident and made an examination. No boards of planks were found under the accident tank or the tank immediately east of it. On June 15, Crowe examined inside the tank Strevel had been working on and found marks that could have been made by falling planks.

Turcotte was instructed to make certain all men working above ground wore boots with anti-skid soles, such as rubber or composition.

An autopsy was performed by Dr. E. S. Pentland, Provincial Pathologist, of Sault Ste. Marie, who found a fractured left femur and fractured skull. Cause of death was brain damage, tear, and concussion.

An inquest was held before Coroner M. J. Farrell, M.D., at Elliot Lake on July 15, at 7.30 P.M. The jury returned the following verdict:

That Joao Correia, the deceased came to his death at approximately 1.40 p.m. o'clock in the afternoon, on the 14th day of June 1958 at Quirke Mine at Algom Uranium Mines Limited and death was accidental with no blame attached to anyone.

Universal Plumbing and Heating Company Limited

No. 47

Richard Goudey, Canadian, aged 25, married, was seriously injured when struck by a chain-block and fell about 18 feet to a concrete floor in the Panel mine mill, on January 11, at 9.15 P.M. He died in Sudbury Memorial Hospital on January 13, at 2.55 A.M. Goudey was an experienced plumber and pipe fitter. He had been employed by Universal Plumbing and Heating Company since June 1957.

The Universal Company were subcontractors on the pipe and plumbing work during the construction of the Panel mill for Northspan Uranium Mines Limited. The machinery installation and services were well advanced at the time. Permanent lighting fixtures were in use, and the illumination at the scene of the accident was bright.

Goudey, Mike Janusz, C. Marcotte, and R. Ritchie were working together at the time of the accident. These men had been instructed by R. Schonfeldt, Universal foreman, to install an 18-foot length of rubber discharge hose of 14-inch diameter. The hose is equipped with flanged ends for coupling, and this length would weigh about 600 pounds.

To make the installation it was necessary to hoist one end of this hose a distance of about 20 feet from an inclined ramp floor to connect it to the discharge hose already in place. A 1-ton capacity chain-fall was used for this purpose, and it was rigged to hang from a clamp attached to an I-beam above. This beam supports a second ramp above and is on a 10-degree incline. In addition to tightening the clamp by means of a bolt, a wooden wedge was driven to prevent the clamp from sliding along the sloping beam. Goudey used a pair of pliers to tighten the clamp bolt and also to drive the wedge.

Marcotte was on the ramp below to attach the lift chain and guide the hose as it was raised. Janusz was standing on a retaining wall 9 feet above the ramp. Goudey was standing on a 15-inch steel I-beam, running horizontally, 6 feet above the retaining wall. He was in position to operate the chain-fall and standing about 18 inches away on the down-slope side of the suspended block. Ritchie stationed himself to receive the end of the hose and make the connection.

They had started to hoist the hose, and when the hose had been raised a few feet off the floor, Marcotte and Janusz decided that Janusz would be more help down below. Janusz slid down the chain-falls to make his descent, which was faster than he expected because of his slippery leather gloves. He hit the rubber hose with a jar that caused it to whip. This action loosened the grip of the beam clamp above, and it slid rapidly down the smoothly painted beam a distance of 6–7 feet. The chain-block, with hose still suspended from it, struck Goudey on the side of his head, knocking him off the beam and into the sump pit on the other

side of the retaining wall. He fell a distance of 18 feet to the concrete floor and probably received further head injuries.

Goudey, unconscious and bleeding from the right ear and mouth, was given first-aid and rushed to St. Joseph's Hospital in Blind River. Dr. J. Pigeon diagnosed the injury as internal cranial pressure and directed the patient to Dr. W. R. Lawler in Sudbury. Dr. Lawler operated immediately after the patient's arrival at the Sudbury Memorial Hospital, but Goudey died at 2.55 A.M. on January 13. A post-mortem performed by Dr. S. S. Raphael, pathologist, showed that Goudey had died as a result of an extradural hemorrhage (left). Other factors contributing to the death were fractured skull, brain hemorrhage, and bleeding in left plural.

An inquest was held before Coroner M. J. Farrell, M.D., at the mine rescue station, Elliot Lake, on February 3. The jury returned the following verdict:

That Richard Goudey, the deceased, came to his death at 2.55 o'clock in the forenoon on the 13th day of January, 1958, at Sudbury and that the death was caused by a fall due to a bolt in a beam clamp not tightened properly, no blame attached.

Universal Plumbing and Heating Company Limited

No. 48

William Gillies, Canadian, aged 57, married, and James Kelly, Canadian, aged 33, married, died of cardiac arrest due to electric shock at about 3.15 P.M. on January 28, while moving an electric welding machine in the mill in clarifying area No. 7H at Northspan Uranium Mines Limited's Panel mine. Kelly, a foreman, and W. Gillies, a welder, were in the employ of Universal Plumbing and Heating Company Limited.

The welding machine was supplied by Lincoln Electric Company of Canada Limited. It consisted of a 550-volt, a.c. motor and a 40-volt, 300-ampere, d.c. generator. The machine was comparatively new.

Kelly, Paul Bucher, and Chris Rolle had started, on the morning of January 28, to install brackets to be used to hoist 8-inch pipe to their saddles for the east 90-foot thickener tank.

Just previous to the accident they were taking the welding line to the area in which they were to weld a bracket. When it was in place Kelly discovered that it was too short, and the three men went back to the mill. Bucher and Kelly added another length to the welding line, and then Bucher and Rolle went to pick up some tools.

Leo Woods, a welder in the employ of Eastern Electric, had been working in a control room in the corner of the area and, when he walked through the door into the clarifying area, saw Gillies lying on the floor in front of the machine and Kelly slumped over it. He immediately called Fred Mathias, foreman for Eastern Electric. Mathias had Phil McBride, an Eastern Electric electrician, disconnect the source of power from the machine and then removed the fuses from the switch. Dr. F. Galesic and Arthur Ross, the Panel first-aid man, were working in the first-aid room at the time and were immediately called to the scene of the accident.

Artificial respiration, oxygen, and adrenalin were administered by Dr. Golesci aided by Arthur Ross. When the treatment proved to be ineffective, the men were pronounced dead.

Subsequent investigation proved amost conclusively that a 550-volt lead had contacted the body of the machine. Because the equipment-grounding conductor had been removed sometime previously by persons unknown, the men received the full force of the 550-volt potential from the body of the welding machine.

An inquest was held before Coroner M. J. Farrell in Elliot Lake on February 18 at 7.30 P.M. The jury returned the following verdict:

That the deceased persons came to their deaths at approximately 3.30 P.M. o'clock on the afternoon on the 28th day of January 1958 at Panel Mine and that death was caused by accidental electrocution—no blame attached.

The jury made the following recommendations:

1) Primary switch should be shut off before moving machine.
2) Machine should be properly grounded.
3) Machine should not be used in wet surroundings.

FIRES

Northspan Uranium Mines Limited

No. 362

An electrical fire occurred on the 2,550-foot level fan panel at the Lake Nordic mine of Northspan Uranium Mines Limited on January 8 at 4.30 A.M.

A short in the main fan trip-out caused burning of some electrical wiring inside the contact-breaker cabinet.

The 2,300-volt contact breaker was in new condition and had only been installed three months. The 18-gauge tin roof over the cabinet was incorrectly placed, and water was finding its way down the side of the cabinet and into the contact breaker. This water was sufficient to cause a short-circuit at the contactor.

The roof has been correctly placed, and heaters are to be placed inside the cabinet. The damaged contactor has been replaced by a new unit. The equipment was tested and returned to service at 3.00 P.M. on January 8.

Dome Mines Limited

No. 363

A fire occurred in the surface power-house of Dome Mines Limited at 6.30 A.M. on January 22, when the motor on No. 2 compressor was completely burned, both rotor and stator. The fire was confined to the motor itself and was extinguished with CO_2 and pyrene extinguishers.

The short-circuiting bars of the rotor of the motor were closed when power to the stator was applied by closing the oil switch. This caused a high current surge, which froze the breaker in on two phases of the 3-phase circuit. Before the breaker could be freed, the insulation of the rotor caught fire. The operator attempted to extinguish the flames with the extinguisher at hand, but realized help was needed, and sounded the fire whistle. The flames were extinguished in about 10 minutes, but red-hot embers remained. The motor end-shields were removed, and the fire was completely out by 7.00 A.M. The fire-out signal was sounded at 7.15 A.M.

The motor was a 450-horsepower, wound-rotor induction motor (550-volt, 3-phase, 25-cycle, 250-rpm.) directly connected to a 2,500-cubic-foot-per-minute mine compressor.

Steps are being taken to prevent a recurrence—a signal lamp showing that the short-circuiting switch is off, and possibly electrical interlocks on the various pieces of equipment will be installed.

Steep Rock Iron Mines Limited

No. 364

A fire started in one of the underground pump starters on the 1,100-foot level substation, No. B1 shaft, at Steep Rock Iron Mines Limited on January 25 at 10.00 A.M.

The 600-horsepower pump is supplied with a limit-ampere controller (C. G. E C.R.7008-D4Lx).

This type of starter is a two-step starter with two contactors, one of which is a starting contactor, the other a running contactor.

The starting contactor has a reactor coil in the circuit to absorb the heavy inrush of current in starting.

A timing relay designates the time required to energize the running contactor, which was set at 6–7 seconds.

It is not definite, as yet, whether the starting contactors froze in, or the timing did not function properly, but the current continued to flow through the reactor coil, which overheated and took fire when the insulation cooked, shorted between phases, and kicked off the main pump-breaker in surface substation G on instantaneous trip.

Fire was confined within the starter itself, and there was no damage outside the starter box.

Hollinger Consolidated Gold Mines Limited

No. 365

A fire occurred at 4.10 A.M. on February 1 at Hollinger Consolidated Gold Mines Limited, in a canvas-covered frame on the repair floor in the crushing plant at No. 26 shaft.

This frame is constructed mostly of 2- by 4-inch wood and covered with layers of canvas.

The frame is used to house a steel rolls shell, which was being heated by means of asbestos-covered cable wound around the shell. No part of the frame or canvas was in contact with the shell.

The temperature of the shell when taken at 3.30 A.M. was 202° F. at the top and 176° F. at the bottom. These were taken from the north side of the frame. Fire broke out at the south side.

Five vapourizing-liquid extinguishers were used to put out the fire.

The Timmins fire department was called, but the fire was under control by the time the firemen arrived.

Bicroft Uranium Mines Limited

No. 366

On the graveyard shift (12.01 A.M.–8.00 A.M.) at Bicroft Uranium Mines Limited on February 7, two employees, H. Craft, and T. M. Middleton, employed as skiptenders, reported to their shift boss, A. Chisholm, that they could smell smoke on the 6th level. This is a new level in the early stages of development and not yet connected with the main mine-ventilation system. On investigation, the shift boss found that two employees, George Eickler and Ernest Mayo, had lit a fire in the electrical substation off the main station on the 6th level. They were using wooden spacers as fuel and were using the fire to keep warm. They were discharged immediately.

Macassa Mines Limited

No. 367

At about 12.30 P.M. on February 25 at Macassa Mines Limited the belts on No. 3725 pump burned. Pyrene extinguisher was used on the flames, and two men were affected by the fumes.

No. 3725 pump is a Smart Turner Triplex (3¾- by 6-in.) driven by a 6-belt V-drive from a 20-horsepower electric motor, and pumping against a 750-foot head. On the morning of February 25, D. Larocque, pumpman, and a mechanic,

A. Shortt, changed the valves in the pump. They started the pump at about 10.00 A.M., and it ran till 11.00 A.M. when it was automatically stopped by the level of the water in the sump lowering and activating a float switch. They stayed at the pump all this time and found that it was in good running order, then came up for lunch. When the level of the water in No. 3725 sump rose at about 12.30 P.M. No. 3725 pump automatically started.

At about 12.30 P.M., W. Haskins, shift boss on No. 3375 station, smelled smoke and walked down to No. 3375 loading-pocket. The cagetender, F. Litwin, and his helper, L. Bunney, were skipping muck to the 3,000-foot level. All three took the cage and went to the 3,725-foot level station. The V-belts on the pump were burning, with flames about 2 feet high. Visibility at the station was about 8 feet. A one-quart Pyrene extinguisher was used to put out the flames, and about half the contents were used. The pump had stopped, but the motor was still running. All the belts had burned and broken. After putting Pyrene on the fire, the smoke at the station thickened.

Haskins and Bunney developed sore chests and found difficulty in breathing. Bunney was taken to the doctor for a check.

The Pyrene extinguisher has been refilled and replaced.

The belts on the pump were tight enough to drive it with worn valves, but when new valves were put in, they were not tight enough and started to slip. With the heat from friction they soon started to burn. The tension of the new belts will be checked carefully.

Dominion Rock Salt Limited

No. 368

A fire occurred at the shaft-sinking operations of Dominion Rock Salt Limited at 7.00 P.M. on March 14. The contractor for this sinking job is Cementation Company (Canada) Limited.

An acetylene-bottle rubber hose caught fire when burning gear was in use on a scaffold. The bottles were still in the hoppit (bucket) at a depth of 140 feet. An alarm was given from the shaft, and the hoppit was sent to surface. The fire was controlled by spraying the contents of two fire extinguishers on to the bottles still in the hoppit.

It was established that the hose connection to the valves was loose, and obviously acetylene was escaping.

Mechanics have been warned to check this at all times before use.

International Nickel Company of Canada Limited

No. 369

A small electrical fire in the power cable servicing No. 2 shaft signals at the Murray Mine of International Nickel Company of Canada Limited occurred at 1.05 P.M. on March 18. It was the result of a short-circuit in the 23-conductor cable 18 inches below the main signal connection-box in the 1,050-foot level station. The cable is steel armoured and lead cased.

An employee, J. Neva, noticed some smoke, sparking, and a small flame. He applied an extinguisher to the spot, climbed to the 900-foot level, and reported to surface by phone. The Nofuz breakers on surface were found opened, thus the power had been shut off shortly after the short occurred. A new section of cable had to be spliced into place.

The cable was installed about 16 years ago; it failed under a clip in a very damp location. The Nofuz breaker was set at 25 amperes.

Kerr-Addison Gold Mines Limited

No. 370

A 550-volt, 9-conductor, neoprene-covered portable cable shorted and burned about 2 feet of the cable at 10.00 A.M. on March 20 in No. 1914-55 stope manway of Kerr-Addison Gold Mines Limited.

The power is delivered at 550-volts through a 9-conductor neoprene-covered cable from the 1,900-foot level to a 25-horsepower electric slusher. Two men, L. Rillo and I. Ban, had started the slusher and moved the scraper back from the mill-hole about 50 feet, but when Rillo tried to stop the slusher to change the tail block it would not shut off. The slusher stopped shortly afterwards, and Rillo started down the manway and ran into dense smoke. The smouldering fire was put out with pyrene extinguishers. Rillo was brought to surface and treated for slight gassing. Some 2 feet of the 9-conductor neoprene cable was burnt.

A section of the cable had been spliced and vulcanized and neoprene jacketed. The cable was looped and hanging on splice. The short occurred at the splice. The cable is not to be looped at a splice in future.

Wright-Hargreaves Mines Limited

No. 371

A fire was discovered on the 3,000-foot level of Wright-Hargreaves Mines Limited by Mine Captain H. Gauld at 9.00 P.M. on March 20. The location of the fire was No. 3001 East/3000 Drift on the north vein, 96 feet east of the shaft crosscut.

The fire was reported immediately to the cagetender and night first-aid attendant. The latter reported to the mine superintendent, safety inspector, and general manager. Meanwhile, Gauld arranged for assembling fire-extinguishers, hose, pipe, wrenches, and further assistance. He himself fought the fire with water carried in a garbage can from No. 4 station, and after making three such trips, the fire was extinguished by the time further equipment and assistance had arrived at the scene.

The fire was confined to a rotted sill-stull nearly surrounded by fill, and about 16 inches of the stull on the south half of the drift was burned. The cause of the fire is believed to have been a burning cigarette butt carelessly thrown away. Two men were working in a stope beyond the scene of the fire, and the drift in which the fire occurred is the travelway to this stope.

The mine superintendent and safety inspector arrived at the scene at 9.17 P.M. after the fire had been extinguished; they remained there for some time to satisfy themselves that no further danger existed and instructed Gauld to make periodic checks of the area during the remainder of the 7.00 P.M.–3.00 A.M. shift.

The prompt and effective action of Gauld prevented what might easily have been a serious fire in this old, heavily timbered section of the drift.

Consolidated Denison Mines Limited

No. 372

A fire started at Consolidated Denison Mines Limited in the No. 2 shaft fan building at 11.00 A.M. on April 25, and the fumes from the fire entered the mine through the ventilation intake system.

Three workmen employed as mechanics were engaged in fitting a coupling to the ventilation-fan shaft. In order to facilitate the fitting they lit a small fire of scraps of wood and diesel oil over which they heated the coupling to expand it. The fire was located inside the fan building, about 30 feet from the ventilation adit. Fumes from the fire were drawn into the adit, down No. 2 shaft and were detected by M. de Bastiani, assistant mine manager, as he was ascending to

surface in No. 2 shaft cage. De Bastiani went immediately to the 1,300-foot level, where he made an inspection of the pumping station. Finding all in order there he returned to surface and directed a shaft inspection to be made to determine the source of the smoke and extinguish the fire. He also ordered the skip hoist stopped and made provision for stopping the ventilating fan before being told by a member of the mechanical department where the fire was located and that it was put out.

A subsequent investigation by the safety department revealed that the workmen involved did not realize the seriousness of their actions.

To insure that a recurrence will not take place, a memo is being sent to the supervisors of the workmen concerned, with reference to the danger that could result from such actions, as well as reference to *The Mining Act*, Section 162, rule 8.

Lake Shore Mines Limited

No. 373

A fire occurred in No. 6 shaft of Lake Shore Mines Limited at the 4,575-foot level on June 12 at 3.00 P.M., the end of the day shift.

A small area of smouldering wood was found behind a steel shaft-set. The shaft is concrete lined, steel-setted with wood-jacket sets.

On reaching surface at the end of the day shift, the shift boss, Arnold Cooper, reported having smelled smoke between the 4,700- and 4,500-foot levels of No. 6 shaft. Immediate investigation disclosed an area of smouldering wood, 18 inches by 3 by 2 inches deep, in a piece of timber located between the steel shaft-set and the concrete lining of the shaft. The smouldering wood was immediately extinguished.

The probability is that someone threw a lighted cigarette into the shaft from the 4,500-foot level.

Falconbridge Nickel Mines Limited

No. 374

A fire occurred at Falconbridge Nickel Mines Limited in the smelter, at the back of No. 3 converter on June 25 at 8.20 P.M., and the meter room was completely destroyed.

Meters for Nos. 1–4 converters were located in a plywood room 16 feet long, 8 feet high, and 8 feet wide, with a glass front. The door was kept locked.

The fire was noticed at 8.20 P.M. at the right-hand end of the building near the ceiling.

The fire rapidly got under way, assisted by the compressed-air feeds to the instruments, which took some time to locate and turn off. Also the back sheeting to the main building at this point was metal sheeting, covered with bitumastic paper to prevent corrosion, which also caught fire. The main flue for the converters also ran behind the sheeting so that everything was hot and dry.

The fire was put out by the works fire brigade by 9.30 P.M. No cause was found, but a short-circuit in the wiring was suspected.

Falconbridge Nickel Mines Limited

No. 375

A fire occurred at the Hardy concentrator of Falconbridge Nickel Mines Limited on June 6 at about 9.00 P.M. in the crushing section of the concentrator from an unknown cause.

There were two men, W. Chapman and L. Wilson, working in this section of the plant on the 4.00 P.M.–12.00 P.M. shift under the supervision of the mill

shaft boss, A. Downham. The crushing section normally operates on the 8.00 A.M.–4.00 P.M. shift only and is shut down on the 4.00 P.M.–12.00 P.M. shift for maintenance and repair work, with two men in attendance. On the day in question, these two men shut the plant down at 5.30 P.M., ate their lunch, and then started their regular inspection and repair work. Just before 9.00 P.M., they were working on the top floor (screening section) and using an oxy-acetylene torch above No. 2 rod-deck screen, when Wilson noticed heavy black smoke coming up through the coarse-ore bin. Both men rushed to the stairway beside the elevator and went to the bottom floor of the plant. They noticed a small fire and a great deal of heavy black smoke coming from the discharge chute of No. 7 conveyor (magnetic separator). Chapman went to the mill to call the fire department; on the way he met a mill operator, Joe Benard, and asked him to phone the fire signal. In the meantime, the second man, Wilson, was attempting to put the fire out with fire extinguishers; thirteen fire extinguishers were emptied. Chapman returned, obtained a water-hose, and attempted to put out the fire. It took him some time to get the hose to the fire area, and by this time he found he had very low water pressure. The reason for the low water pressure will be explained later. In the meantime, the fire was spreading rapidly and burning rubber conveyor belts, rubber chute-lining, and wooden walkways, directly above the fire area. Between 9.10 P.M. and 9.15 P.M. the fire-reels, with W. Rhude in charge, arrived at the scene, and the fire was quickly extinguished by about 9.30 P.M.

A few minutes after 9.00 P.M. the shift foreman, Downham, was returning to the plant after an inspection trip to the tailings area. He started up No. 5 conveyorway, which leads to the floor on which Chapman and Wilson were working. Half-way up the conveyorway he was stopped by heavy smoke. He immediately retraced his steps and entered the bottom floor of the crushing plant. On seeing the seriousness of the fire, Downham immediately went to the electrical control-room and threw the main switch, putting the crushing plant in darkness and cutting electrical power from the machinery in the crushing plant section. At this time, Downham had no idea of the source of the fire; it may have been electrical, and by cutting off the power he eliminated danger of electrocution to the fire-fighters. This act also stopped a water pump that supplies high-pressure water at 70–80 pounds per square inch to the plant. Water was still available, but at a reduced pressure of 25–30 pounds per square inch, the ordinary line pressure. In the opinion of the fire chief, Mr. Rhude, this act was necessary and commendable.

At this time the cause of the fire is still unknown; although there were men using a torch in the same building, it is impossible to conceive how slag or sparks from their work could start a fire in the area in which it apparently started.

McIntyre Porcupine Mines Limited

No. 376

A fire was started at McIntyre Porcupine Mines Limited on July 28 at 10.40 A.M. when discarded bags from No. 2 sly-dust collector on the roof of the mill building caught fire.

Four men, Guillemette, Obersteller, Dillon, and Spencer were together in the upper section removing old dust bags from No. 2 sly-dust collector and throwing them on to the mill roof below for later disposal. The work started at 9.20 A.M., and at 10.40 A.M. smoke was smelt, and Obersteller was sent out to check. He noticed flames coming from the bottom of the pile of old dust bags. Guillemette was left on guard, and the rest went down to the main floor to get fire-extinguishers. Back at the fire, the flames were doused with the contents of the extinguishers, but to no avail. Meanwhile the workmen in the yard below

In the early morning of August 31, a starting compensator in the motor-generator circuit of No. 4 service hoist was severely damaged. Repairs to the compensator will involve complete rewinding of the coils, and the total cost of repairs will be about $2,000.

The 15-kilovolt-ampere motor-generator set is operated continuously, except for a weekly inspection shutdown, to drive No. 4 hoist and for power-factor correction during periods when the hoist is not in use. The hoist had been shut down at about 3.30 P.M. on August 30, and the damage to the compensator was discovered the following day between 8.30 and 9.00 A.M. by the day-shift compressorman when he entered the hoist-room to see why the motor-generator set was not running.

While No. 4 hoist was shut down, all traffic into and out of the mine was through No. 3 shaft.

International Nickel Company of Canada Limited

No. 381

A fire started at the Creighton mine of International Nickel Company of Canada Limited in No. 1800 rectifier room in No. 6200 drift at the 68-foot level on August 14 at about 7.00 P.M. due to a selenium rectifier failure.

The trolley locomotives are supplied with 240 volts (d.c.) from two selenium rectifiers on this level. Investigation indicates that one (a.c.) magnetic starter failed due to a faulty operating coil, thus preventing one-half of the rectifier from delivering power and reducing the output voltage to 120 volts. The first rectifier operating at the full 240 volts caused the remaining stacks in No. 2 unit to fail because of over-voltage in the reverse direction and subsequent breakdown and burning of the complete No. 2 rectifying section. An 8-foot length of neoprene-covered (d.c.) cable was also destroyed.

The alarm was sent to surface about 7.20 P.M. by a motor crew who had first noted some sparking as they passed the station earlier. On their way back, smoke had become quite noticeable, and word was sent to surface.

Senior supervision was alerted and proceeded to control the situation. Due to the location and conditions in general, no regular alarms were given, but the mine rescue truck was called for, and mine rescue men assembled.

In the meantime the power had been cut off in the area and then restored to auxiliary fans, which forced fresh air to the face of No. 6200 drift through a 24-inch ventilation pipe.

Atmospheric conditions soon bettered, and the underground superintendent, R. Brown, was able to determine that the fire was out. He was also able to contact four men at the face over 4,000 feet from the fire site. They were unaware of the fire and had experienced no trouble. The all-clear notice came to surface at 9.30 P.M.

Two mine rescue crews were assembled underground and had established a base there.

Falconbridge Nickel Mines Limited

No. 382

A fire started at Falconbridge Nickel Mines Limited in the concentrator pelletizing plant at 5.20 P.M., June 7, due to spontaneous combustion of sulphide dust and damaged the south wall of the building and the walls and the roof of the bucket elevator. The fire was extinguished, despite high winds, by the surface fire brigade.

The walls are constructed of steel frame with 2-inch plank sheeting, which is installed vertically and is covered on the outside with rock-face tar sheeting.

Hollinger Consolidated Gold Mines Limited

No. 383

An electrical fire started at Hollinger Consolidated Gold Mines Limited at about 11.45 A.M., September 23. A fault occurred in the three-conductor (No. 4 gauge V.C.L.C. galvanized-steel-wire, armoured) power cable feeding from the 3,950-foot level down No. 25 shaft to the 5,150-foot level.

The fault occurred about 40 feet above the 4,550-foot level and burned clear the three conductors in the cable, blowing a hole through the lead sheath and several strands of the steel-wire armour. A temporary splice was made, and power was turned on at 5.15 P.M. the same day. This temporary splice was replaced with a conventional cable-splice during the week-end of September 27.

The cable in which the fault occurred was a continuous length from the 3,950- to the 5,000-foot level. It is fused on the 3,800-foot level with CLM 75-ampere, No. C278530, links for 5,000-volt fuse cutouts. These fuses have blown twice during the last few months. The most recent blowout prior to the failure was on September 21. On Tuesday morning, September 23, an electrician was sent to the 3,800-foot level to clean the fuse holders to prevent any heating that might be causing fuses to fail. When this job was completed, and the isolating switch was reclosed, the fuses blew. The 2,300-volt circuit-breaker on surface protecting this cable also opened on the fault. New fuses were installed, and they held in with power available on the 3,950-foot level, but not available on the 5,150-foot level. Visual inspection of the manway of the shaft where the cable is located was made, and the point of damage was located. This point was about 5 inches below where the cable was secured to the shaft timber with a U-clamp.

This cable had been in service for about 23 years. The steel-wire armour showed little corrosion. The lead sheath removed to make the splice showed no visible signs of ageing or checking.

Hollinger Consolidated Gold Mines Limited

No. 384

A fire was discovered at Hollinger Consolidated Gold Mines Limited at about 8.00 A.M. on October 7, when a motor crew consisting of F. Kristan, motorman, and A. Hawthorn, switchman, were travelling on No. 3.2 crosscut N on the 200-foot level. There was a flash of fire from the trolley box. On investigation, it was found that a 2-inch airline going over the top of the trolley box had come in contact with the top of an insulator. When the insulator burned off, the fire went out.

Part of the trolley box was charred, causing some smoke.

McIntyre Porcupine Mines Limited

No. 385

On September 19 at 9.00 P.M. a small fire occurred in a lunch room at 4378 No. 6 drift on the 4,325-foot level of McIntyre Porcupine Mines Limited. This is an approved lunch room with no timber in the area other than the treated lunch bench. Smoke was first noticed by the 4478 No. 1 stope crew and investigated by the stope leader, F. Thompson. Thompson found a piece of cloth burning on the drift floor at the lunch place. He smothered the burning cloth with sand and returned to his stope. Thompson and his partner, J. Breletic, do not smoke but they assume the fire was caused by a live cigarette being thrown on the cloth. It was not necessary to use the stench-gas alarm.

Silver-Miller Mines Limited

No. 386

A fire occurred at the Right-of-Way No. 2 shaft hoist-room of Silver-Miller Mines Limited at about 6.30 P.M. Thursday, October 16.

R. Gervais, a miner employed by Silver-Miller Mines Limited, was on his way to work, accompanied by two others, when he noticed smoke in the vicinity of the hoist-room. Upon investigating he found that a door leading into the storage-room section of the hoist-room on the west side of the building was on fire. Gervais and his two companions pulled down the door and extinguished the fire. The Cobalt fire department was notified, and within minutes a pumper and crew were on the scene. Another fire was found near the foundations at the north end of the building. Both fires were quickly extinguished with little damage.

No one was injured, and there was no damage to equipment. There were no personnel on the property at the time.

Provincial police were notified and examined the scene of the fire.

At present there is no explanation as to the cause of the fire.

Algoma Ore Properties Limited

No. 387

A fire broke out at about 5.00 P.M., October 11, at Algoma Ore Properties Limited's Sir James mine. No. 2 conveyor gallery is about 375 feet long, starting at ground elevation from a transfer tower, inclined at about 15 degrees for half its length, and thereafter horizontally over the stockpile area. Crushed rock from an underground conveyor is delivered through a steel chute to the lower end of the conveyor, close to one wall of the transfer tower.

During the day shift, October 11, alterations to this transfer chute were made by cutting with an oxy-acetylene torch and by arc-welding. On several occasions, while this work was in process, fines clinging to the side of the chute broke away and fell to the belt. Because these interfered with the work, the belt was moved forward several feet. Since four of the men concerned verify that the immediate area of the chute was effectively clean and checked at the end of the shift, and since the nature of the fire also indicated this, it is thought that molten metal fell to the belt, was covered by fines dropping from the side of the chute, and moved away from the immediate working area as the belt was moved forward. Detection of such a glowing fire, shielded by the fines, and on the upcast side of the normal ventilation current, would not have been possible except by inspection. Prevented from immediately igniting the rubber by the fines covering it, the molten metal would have burned through the rubber to the canvas, which would maintain the fire even after the cooling of the molten metal. Such a fire could have continued undetected for several hours before finally melting the rubber beyond any covering fines and then bursting into flame.

The last welding and burning was reported as completed about 3.30 P.M. The workmen left the area about 4.00 P.M. No other work was going on, and no other persons entered this area until smoke was detected at the far end of the conveyor gallery by the shift boss at 5.15 P.M. The shift boss found the conveyor belt burning at the foot of the conveyorway, immediately below the transfer chute. He obtained assistance and applied water, extinguishing the fire in the immediate area, but due to the intensity of the fire was able to make progress only for about 20 feet up the inclined gantry.

The heat of the burning conveyor belt warped the structural steel and the horizontal gallery collapsed, breaking the belt and drawing the unburned portion up into the burning gallery where it was completely destroyed.

Except for the first 20–30 feet of the inclined portion the destruction was complete. The sheeting could not be extinguished although the fire brigade was on the site by about 5.50 P.M.

The transfer tower was not affected by fire, but some steel and concrete was stressed when the conveyor gallery collapsed. The exhaust fan ventilating the crusher chamber underground was not operating. When the immediate area was cleared of smoke, the fan was started, and after a reasonable period an inspection was made with the use of protective masks. The underground area was clear.

Stanrock Uranium Mines Limited

No. 388

A fire occurred at Stanrock Uranium Mines Limited at 8.00 P.M. on October 28, shortly after a Torkar (shuttle-car) had been lowered to the bottom and taken out of the shaft.

The fire is thought to have been caused by sparks or slag from a cutting-torch used to trim the end off a metal runner, which was welded to the Torkar to guide it down the shaft.

The shaftman and riggers smelled the smoke when ascending in the cage and immediately gave the alarm and turned on the sprinklers and a fire hose. The fire was put out in a matter of minutes.

The underground fans were shut off, and the crews proceeded to the refuse station near No. 2 shaft.

The shaft was inspected, and the all-clear given to start the fans and go back to work. The sprinkler system was kept on for the next 12 hours.

The damage was slight but emphasizes the extreme caution and care that must be exercised in burning or welding in or around shaft collars.

The following regulations have been instituted on burning or welding in and around shafts:

1) In addition to the twice-weekly wetting down of the shafts, the sprinklers will be turned on for two hours immediately prior to a welding or burning job in or around the shafts.

2) All burning or welding in and around the shafts will be done under the close supervision of the shop foreman or leader.

3) An asbestos tarpaulin or apron will be procured and used to catch any slag or sparks from burning torches or welders.

4) A man will be posted in the manway, a set or two below the collar, to keep watch during a burning or welding job in or around the shaft.

Hollinger Consolidated Gold Mines Limited

No. 389

A fire occurred at Hollinger Consolidated Gold Mines Limited in the crusher station on the 2,900-foot level on November 10, at 1.15 P.M., when hot metal from a cutting-torch landed on a piece of oily waste and ignited it.

An attempt was made to smother the flame, but a piece of burning waste fell on some excess oil on the safety toggle.

A foamite extinguisher was then used, and the fire was extinguished.

No damage was caused.

Pamour Porcupine Mines Limited

No. 390

An electrical fire started at Pamour Porcupine Mines Limited at about 1.30 A.M., November 13, on No. 2 motor, a 4½-ton battery locomotive, when the wiring connecting the controller and the grids caught fire. Motorman John Safin,

manway, in the vicinity of the 8th and 9th floors above the 2,950-foot level, on the morning of December 28.

J. Noel, a fireguard, noticed a strong smell of wood smoke coming from the main north drift, north of No. 6 shaft crosscut, on the 2,800-foot level at 8.55 A.M. He reported the fire to the operating shaft boss on surface at No. 3 shaft. The general foreman was notified and inspected the area at 9.00 A.M.

The mine supervision were contacted at once, and they were underground with Chemox apparatus, Scott Air Paks, and a carbon monoxide detector by 10.00 A.M. They located the smoke as issuing to the 2,800-foot level from No. 40.10 manway, on the 2,950-foot level. Hoses were brought to the top of the manway, and the manway was wetted down.

The mine rescue station was notified at 10.45 A.M., and eight mine rescue personnel were called out, arriving at the mine between 11.45 A.M. and 12.35 P.M. A team of four men equipped with McCaa apparatus were taken underground at 1.15 P.M. The remaining four mine rescue men were held in readiness at surface.

At 2.00 P.M. all smouldering timbers were extinguished. Investigation showed the damage resulting was: 8th floor, two panels of lagging burned, staging burned, one post partly burned; 9th floor, ladder burned, staging burned, footwall cap and two panels of gob fence burned, south footwall post burned.

The services of the mine rescue station superintendent and truck were completed by 7.00 P.M. Fireguards were maintained in the fire area until it was certain that a recurrence was unlikely.

Work was continued to cool off the adjacent filled stopes. Daily carbon monoxide and temperature readings were taken in No. 40.10 manway. It is of interest to note that the fireguard on the previous shift (12.00 P.M.–8.00 A.M.) reported no smoke or noticeable odour emitting from No. 40.5 crosscut.

PROSECUTIONS

Regina *vs.* Johan Lang

Three charges were laid against Johan Lang, miner at the Lacnor mine of Northspan Uranium Mines Limited, as follows:

That Johan Lang, on or about June 8th, 1958, did contravene Section 162, subsection 77(*a*), (*b*), and (*c*) of *The Mining Act* of Ontario which states:

Procedure before drilling.

(77) (*a*) Before drilling is commenced in any working place, the exposed face shall be washed with water and carefully examined for misfires and cut-off holes, giving special attention to old bottoms.

Bootleg holes.

(*b*) No drilling shall be done within six inches of any hole that has been charged and blasted or any remnant of such hole.

(*c*) No drilling shall be done within five feet of any hole containing explosives.

This man was blinded as a result of an explosion from drilling into a missed hole. The case was remanded, with that of Prochazka, his partner, until July 25, 1958, when the latter was convicted. The Lang summons had not been served, and the case was further remanded to August 11, 1958. At this court sitting, the summons was presented showing that it had been returned by the Ontario Provincial Police in Sudbury along with a memorandum, stating, that on medical advice the summons had still not been served, and that Lang had been moved to Toronto for further treatment.

Magistrate M. M. Limbert suggested that Lang had already suffered a severe penalty. The charges were therefore withdrawn.

Regina *vs.* L. L'Abbee

A charge was laid against L. L'Abbee, miner at Campbell Red Lake Mines Limited, as follows:

That Lauria L'Abbee on or about the 28th day of October, 1958, did contravene Section 162, subsection 77(*b*) of *The Mining Act* of Ontario which states:
(*b*) No drilling shall be done within six inches of any hole that has been charged and blasted or any remnant of such hole.

L'Abbee pleaded guilty before Magistrate J. V. Fregeau at Red Lake on November 13, 1958. He was fined $100.00 and $13.40 costs. The fine and costs were paid.

Regina *vs.* Oldrich Prochazka

Three charges were laid against Oldrich Prochazka, miner at the Lacnor mine of Northspan Uranium Mines Limited, as follows:

That Oldrich Prochazka, on or about June 8th, 1958, did contravene Section 162, subsection 77(*a*), (*b*), and (*c*) of *The Mining Act* of Ontario which states:

Procedure before drilling.

(77) (*a*) Before drilling is commenced in any working place, the exposed face shall be washed with water and carefully examined for misfires and cut-off holes, giving special attention to old bottoms.

Bootleg holes.

(*b*) No drilling shall be done within six inches of any hole that has been charged and blasted or any remnant of such hole.
(*c*) No drilling shall be done within five feet of any hole containing explosives.

Prochazka pleaded not guilty to each charge, but was found guilty by Magistrate H. D. Peterson and fined $25.00 and costs on each count.

Regina *vs.* Dominic Belland

A charge was laid against D. Belland, an employee of Falconbridge Nickel Mines Limited, at Falconbridge, as follows:

That Dominic Belland, in the Township of Falconbridge, in the District of Sudbury, on or about the 13th day of February, 1958, while under the influence of liquor, on Falconbridge Mine Property, was in the proximity of surface operations near where machinery was in motion, contrary to Section 162, subsection 425 of *The Mining Act* of Ontario.

Belland pleaded guilty before Magistrate P. J. McAndrews at Sudbury on February 21st. He was found guilty, and a fine of $10.00 and costs ($6.00) was imposed. The fine and costs were paid.

Regina *vs.* Orval Schurter and William R. Gregoire

Similar charges were laid against Orval Schurter and William R. Gregoire, at the request of the management of Stanrock Uranium Mines Limited, as follows:

That Orval Schurter and William R. Gregoire at the Improvement District of Elliot Lake, in the District of Algoma, on or about the 25th day of November A.D. 1958, being underground mechanics at Stanrock Mine, did, unlawfully, carry intoxicating liquor and consume same on the 2,900-foot level of No. 2 shaft area, contrary to Section 162, subsection 425 of *The Mining Act* of Ontario.

The summons, dated November 26th, was not served in time for the date of arraignment on November 28th. Schurter and Gregoire had been discharged by Stanrock Uranium Mines and had left the area.

Regina *vs.* Joseph MacIsaac

A charge was laid against Joseph MacIsaac as follows:

That Joseph MacIsaac at the Improvement District of Elliot Lake, in the District of Algoma, on or about the 24th day of August A.D. 1958, being shaft captain for MacIsaac Mining and Tunnelling Company Limited, mining contractors, did unlawfully cause a contravention of

Section 162, subsection 109(*b*) of *The Mining Act* of Ontario by placing Ansel Purdy, Angus McDonald and A. J. MacIsaac at work in the manway compartment of No. 1 shaft of Northspan Uranium Mines Limited, Panel Mine, without adequate protection from moving hoisting conveyances and that such wrongful act was contrary to Section 161, subsection 4(*b*) of the said Act.

MacIsaac pleaded guilty before Magistrate M. M. Limbert and, on a plea by the defence lawyer for leniency, a fine was imposed of $25.00 and costs of $16.50 for a total of $41.50 or ten days in jail. The fine was paid.

Regina *vs.* Zenon Piekarski

A charge was laid against Zenon Piekarski, a miner, employed at Bicroft Uranium Mines Limited, Bancroft, as follows:

Zenon Piekarski at the Township of Cardiff in the County of Haliburton on the 16th day of October, 1958 did unlawfully at Bicroft Uranium Mines Limited drill within six inches of a hole that had been charged and blasted contrary to the provisions of Section 162, subsection (77) (*b*) of *The Mining Act*, R.S.O., 1950, as amended by *Statutes of Ontario, 1957*, Chapter 71.

The case came before Magistrate R. I. Moore, Q.C., in the Lindsay Court House on November 7, 1958. Piekarski pleaded not guilty, and the case was remanded to November 14, 1958.

Magistrate Moore, on November 14, 1958, found Piekarski guilty as charged and imposed a fine of $25.00 and $20.50 costs or 14 days in jail. The fine was paid.

Regina *vs.* Maurice Garmyn

A charge was laid against Maurice Garmyn, miner at Can-Met Explorations Limited, as follows:

That Maurice Garmyn, at the Improvement District of Elliot Lake, in the District of Algoma, on or about the 17th day of September A.D., 1958 did unlawfully, in the 4-West Haulage Drift of Can-Met Explorations Mine, take part in the drilling of two holes, which were started in the remnant of holes, approximately twelve inches deep, that had been previously charged and blasted, contrary to Subsection 77(*b*) of Section 162 of *The Mining Act* of Ontario. Also that one of the holes in question was drilled approximately twelve inches from a hole containing explosives, contrary to subsection 77(*c*), Section 162 of *The Mining Act* of Ontario.

Garmyn pleaded guilty before Magistrate M. M. Limbert and was fined $10 and costs of $13.50 for a total of $23.50.

Regina *vs.* Ernie Morden

A charge was laid against Ernie Morden, miner at Can-Met Explorations Limited, as follows:

That Ernie Morden, at the Improvement District of Elliot Lake, in the District of Algoma, on or about the 17th day of September A.D., 1958 did unlawfully, in the 4-West Haulage Drift of Can-Met Explorations Mine, take part in the drilling of two holes, which were started in the remnant of holes, approximately twelve inches deep, that had been previously charged and blasted, contrary to Subsection 77(*b*) of Section 162 of *The Mining Act* of Ontario. Also that one of the holes in question was drilled approximately twelve inches from a hole containing explosives, contrary to Subsection 77(*c*), Section 162 of *The Mining Act* of Ontario.

Morden pleaded guilty before Magistrate M. M. Limbert and was fined $10 and costs of $13.50 for a total of $23.50.

Regina *vs.* Orel Tremblay

Two charges were laid against Orel Tremblay, pit foreman, employed at Larco Construction Company Limited, who are mining rock at the Multi-Minerals property near Nemegos, as follows:

That Orel Tremblay on or about August 7th, 1958, did unlawfully at the property of Multi-Minerals have a truck at the pit which was carrying explosives and also machine drills and other gear which act contravenes Rule 67(*e*) Section 162 of Part VIII of *The Mining Act* of Ontario.

That Orel Tremblay on or about August 7th, 1958, did unlawfully at the property of Multi-

Minerals have a truck at the pit which was carrying a half case of dynamite and within the case was a paper carton of detonators which contravenes Rule 65(*i*) Section 162 of Part VIII of *The Mining Act* of Ontario.

Tremblay pleaded guilty to both charges before Magistrate P. J. McAndrews at Chapleau on August 26, 1958. He was fined $50.00 on each charge and $5.00 court costs. The fines and costs totalling $105.00 were paid.

Regina *vs.* Reni Pepin

A charge was laid against Reni Pepin, miner employed at the Lacnor mine of Northspan Uranium Mines Limited, as follows:

That Reni Pepin on June 19th, 1958 at Lacnor Mine, before blasting did unlawfully fail to cause all entrances or approaches to be guarded as required by Section 162, subsection 79(*a*) of *The Mining Act* of Ontario.

Pepin pleaded not guilty but was found guilty by Magistrate M. M. Limbert and was fined $25.00 and costs of $33.30, for a total of $58.30, which was paid.

Regina *vs.* Douglas G. W. Rowe and Paul Carloss

Joint charges were laid against Douglas G. W. Rowe, manager, and Paul Carloss, general mine superintendent, at the Lacnor mine of Northspan Uranium Mines Limited, amended at the time of trial, as follows:

That Douglas Rowe, being Manager, and Paul Carloss, being General Mine Superintendent, at the Lacnor Mine of Northspan Uranium Mines Limited did jointly and unlawfully allow men to remain underground at Lacnor Mine for more than eight hours in any consecutive twenty-four hours during certain days of the month of June, 1958, contrary to Section 155, subsection 2 of *The Mining Act* of Ontario.

Both men pleaded not guilty, and the case was dismissed by Magistrate M. M. Limbert on the grounds that there was not sufficient evidence to show that the accused were fully aware of what was being done underground.

Regina *vs.* Cecil William Summers

A charge was laid against Cecil William Summers, shift boss at the Lacnor mine of Northspan Uranium Mines Limited, as follows:

That C. W. Summers, on or about the 29th day of June, 1958, did contravene Section 162, subsection 91 of *The Mining Act* of Ontario which states:
(91) Any charge that has missed fire shall not be withdrawn but shall be blasted at a proper time and without undue delay.

Summers pleaded not guilty, and the case was dismissed by Magistrate M. M. Limbert on the grounds that subsection 91 only deals with misfire holes, and that there is a difference between a misfire and a cut-off hole that is not clearly defined by *The Mining Act* of Ontario.

The Chief Engineer of Mines regrets that this interpretation was made by the court. Over the years, in Ontario mines, it has been considered that any hole in a face or breast containing powder, after the same has been charged and blasted, is a "misfire," and powder shall not be withdrawn from the same.

Regina *vs.* George Saxton

A charge was laid against George Saxton, miner at the Lacnor mine of Northspan Mines Limited, as follows:

That G. Saxton, on or about the 28th day of June, 1958 did contravene Section 162, subsection 77(*c*) of *The Mining Act* of Ontario which states:
(77) (*c*) No drilling shall be done within five feet of any hole containing explosives.

Saxton pleaded not guilty but was found guilty by Magistrate M. M. Limbert and fined $10.00 plus $12.50 costs or two days in jail. The fine was paid.

Regina *vs.* G. Foy

A charge was laid against G. Foy, miner at the Lacnor mine of Northspan Uranium Mines Limited, as follows:

That G. Foy, on or about the 28th day of June, 1958, did contravene Section 162, subsection 77(*c*) of *The Mining Act* of Ontario which states:
(77) (*c*) No drilling shall be done within five feet of any hole containing explosives.

Foy pleaded not guilty but was found guilty by Magistrate M. M. Limbert and fined $10.00 plus $12.50 costs or two days in jail. The fine was paid.

Regina *vs.* S. Grundau

A charge was laid against S. Grundau, miner at the Quirke mine of Algom Uranium Mines Limited, as follows:

That S. Grundau, on or about June 26th, 1958 did contravene Section 162, subsection 91 of *The Mining Act* of Ontario which states:

Missed hole to be blasted.

(91) Any charge that has missed fire shall not be withdrawn but shall be blasted at a proper time and without undue delay.

Grundau pleaded not guilty but was found guilty by Magistrate H. D. Peterson and fined $25.00 and costs.

Regina *vs.* Joseph Moisan

A charge was laid against Joseph Moisan, miner employed at Hollinger Consolidated Gold Mines Limited, Timmins, as follows:

On or about April 25th, 1958, Joseph Moisan did unlawfully use three fuse cut shorter than three feet, contrary to Section 162, Rule 81 of *The Mining Act* of Ontario.

Ernest Demers, Moisan's partner, was very seriously injured in the blast that followed.

The case came before Magistrate W. S. Gardner in the Timmins Court House on May 14, 1958. Moisan pleaded not guilty, and the case was remanded successively to May 28, June 4, June 18, July 2, and July 30, 1958. On the last date Demers was able to appear in court as a witness, and the case was heard.

Magistrate Gardner found Moisan guilty as charged and imposed a fine of $50.00 and $16.00 costs or 20 days in jail. The fine was paid.

Regina *vs.* Larco Construction Company Limited

Charges were laid against Larco Construction Company Limited as follows:

That Larco Construction Company Limited in the Township of Dryden in the District of Sudbury on or about the eleventh day of June 1958 did operate machinery, namely a crusher, in a gravel pit without casings, contrary to Section 162, Rule 173, Part VIII of *The Mining Act* of Ontario.

That Larco Construction Company Limited, in the Township of Dryden in the District of Sudbury on or about the eleventh day of June 1958 did fail to post up Abstracts of the rules, contrary to Section 162, Rule 426, Part VIII of *The Mining Act* of Ontario.

The company pleaded guilty before Magistrate P. J. McAndrew at Sudbury on July 25. A fine of $15.00 and costs was imposed for each charge.

Regina *vs.* Roy J. Chamberlain

A charge was laid against Roy J. Chamberlain, employed by Falconbridge Nickel Mines Limited, as follows:

Roy J. Chamberlain in the Township of Falconbridge, in the District of Sudbury, on or about the 17th day of April A.D. 1958, while under the influence of liquor on Falconbridge Mine

property, was in the proximity of surface operations near where machinery was in motion, contrary to Section 162, Subsection 425, of *The Mining Act* of Ontario.

Chamberlain pleaded guilty before Magistrate W. F. Woodliffe at Sudbury on April 25. A fine of $10.00 and costs was imposed. The fine was paid.

Regina *vs.* Sam Canzio and Joseph Sauvé

A joint charge was laid against Sam Canzio and Joseph Sauvé, miners, employed at Dome Mines Limited, South Porcupine.

On January 2, 1958, Sauvé and Canzio neglected to properly guard a blast contrary to Section 162, subsection 79(*a*) of *The Mining Act* of Ontario. Their negligence resulted in injuries to a third miner who inadvertently walked into the vicinity of the detonating charges.

The case was heard before Magistrate W. S. Gardner in the South Porcupine court house on January 15. Both men pleaded guilty and were each fined $30.00 and costs of $8.00 or 15 days in jail. The fines were paid.

Regina *vs.* Louis Dumas

A charge was laid against Louis Dumas, cagetender at Consolidated Denison Mines Limited, as follows:

That Louis Dumas did unlawfully consume liquor at work and operate a cage at Consolidated Denison Mine in an intoxicated condition on or about the 18th day of April, 1958, contrary to Subsection 425, Section 162 of *The Mining Act* of Ontario.

Dumas pleaded guilty before Magistrate M. M. Limbert and was fined $50.00 and costs or one month in jail. The fine was paid.

MINE RESCUE STATIONS

General

Mine rescue stations, each with a resident Mine Rescue Station Superintendent in charge, are maintained by the Department of Mines in seven of the major mining areas of the province, at Sudbury, Timmins, Kirkland Lake, Elliot Lake, Geraldton, Red Lake, and Cobalt. The Inspector of Mine Rescue Training, stationed at Toronto, is responsible for co-ordinating training and standardizing equipment used in mine rescue work throughout the province.

The Elliot Lake mine rescue station, though opened for business in 1957, was fully completed and landscaped in 1958, and has become one of the most active in the province. The rapid turnover of trainees necessitates frequent basic-training classes in order to try to maintain a full complement of teams.

Fifteen substations are located throughout Ontario, at which sufficient breathing apparatus and equipment is stored to enable local crews to begin operations while waiting for apparatus to be brought in from main stations. The substation at Coldstream was closed and the equipment removed to Geraldton and Elliot Lake, when the mine closed during the year.

Following is a table showing the location of all mine rescue stations, substations, the number of trainees, and the quantity of apparatus maintained:

EQUIPMENT AND STAFFS OF MINE RESCUE STATIONS

Rescue Stations and Substations	Superintendent	Pieces of Apparatus[1]	Trainees				
			Active	Trained Supervisors	Apparatus Men[2]	Reserve[3]	Total
Sudbury	H. G. Moorhouse.. P. E. Tikkanen....	38	160	50	.....	25	235
Levack	.....	12	.....	.....	.....	.....	.....
Falconbridge	.....	12	.....	.....	.....	.....	.....
Kirkland Lake	G. E. Wilson.....	19	70	37	35	.....	142
Kerr-Addison	.....	6	.....	.....	.....	.....	.....
Timmins	A. K. Graham....	18	90	30	18	14	152
Dome	.....	6	.....	.....	.....	.....	.....
Hallnor	.....	6	.....	.....	.....	.....	.....
Elliot Lake	R. Eveson.....	24	135	14	.....	.....	149
Helen Mine	.....	12	.....	.....	.....	.....	.....
Pronto	.....	6	.....	.....	.....	.....	.....
Renabie	.....	6	.....	.....	.....	.....	.....
Geraldton	J. W. Armstrong..	14	65	14	.....	.....	79
Steep Rock	.....	14	.....	.....	.....	.....	.....
Geco	.....	14	.....	.....	.....	.....	.....
Leitch	.....	6	.....	.....	.....	.....	.....
Red Lake	C. S. Culbert.....	20	45	7	.....	.....	52
McKenzie Is.	.....	6	.....	.....	.....	.....	.....
Pickle Crow	.....	14	.....	.....	.....	.....	.....
Cobalt	A. Wilson.....	13	35	.....	.....	.....	35
Gowganda	.....	6	.....	.....	.....	.....	.....
Bancroft	.....	14	25	2	.....	.....	27
Total	.....	286	625	154	53	39	871

[1]Includes McCaa oxygen breathing apparatus, Scott Air Paks, and Chemox apparatus.
[2]Specialists—hoistmen, mechanics, electricians, etc., trained only in wearing apparatus.
[3]Those who have completed training courses, and are used to fill in for absentees at classes, available also for emergencies.

Mine Rescue Competitions 1950–1958

Mine rescue competitions, first organized in Ontario in 1950, were held in September of that year in connection with the Northern Ontario Exhibition at Schumacher. Seven teams representing the mines in the Porcupine district were entered in this first event. From this small and purely local beginning, mine rescue competitions have grown to include teams from all the mining areas of the province.

In 1951 entries were invited from the Kirkland Lake and Sudbury districts, necessitating a preliminary contest in each area to choose a winning team to travel to Timmins where the final competition was held in September, again as a part of the Northern Ontario Exhibition. The district winners and final champions are listed in the chart following.

Competitions were held in 1952 and 1953 in the same manner as those in 1951 and were enlarged to include a team from Geraldton. The 1953 competition was won by a team from Falconbridge, and an invitation was extended by Falconbridge Nickel Mines Limited to hold the 1954 final competition at Falconbridge. This offer was accepted, and 1954 marked the start of holding competitions indoors in arenas or curling rinks, and the weather thus became of little concern.

Early in 1955 a suggestion was made that, instead of bringing as many as possibly seven 6-man teams from all parts of the province to a central point, a

WINNERS OF MINE RESCUE COMPETITIONS

Year	Porcupine District	Kirkland Lake District	Sudbury District	Thunder Bay District	Cobalt-Gowganda District	Red Lake District	Elliot Lake District	Bancroft District	Provincial Champions
1950	[redacted] Pamour								
1951	Hallnor	Lake Shore	Falconbridge No. 5						Hallnor
1952	Hollinger	Kerr-Addison	Falconbridge No. 5	MacLeod-Cockshutt					Hollinger
1953	Aunor	Lake Shore	Falconbridge No. 5	MacLeod-Cockshutt	La Rose				Falconbridge No. 5
1954	Hollinger	Lake Shore	Falconbridge No. 5	MacLeod-Cockshutt	La Rose	Cochenour Willans			MacLeod-Cockshutt
1955	Hallnor	Kerr-Addison	Falconbridge No. 5	Steep Rock	La Rose	Cochenour Willans			Kerr-Addison
1956	Dome	Lake Shore	Falconbridge East	Steep Rock	Brady Lake	Campbell			Falconbridge East
1957	McIntyre	Macassa	Falconbridge No. 5	Steep Rock	Silver-Miller	Madsen			Steep Rock
1958	Broulan Reef	Lake Shore	Falconbridge East	Steep Rock	Castle and Siscoe	Campbell	Pronto	Bicroft	Steep Rock

team of three judges, consisting of the Inspector Mine Rescue Training, the Assistant Chief Engineer of Mines, and a District Engineer of Mines, should travel to each of the mining areas to present an identical problem, orals, etc., to the winning team in each district, including Red Lake. This suggestion was adopted in 1955; the area has been further enlarged to include the Elliot Lake and Bancroft areas.

In 1956 it was decided that since competitions would no longer be held in conjunction with the Northern Ontario Exhibition, they should be moved ahead from September to June. The competitions now serve as a climax to a year's intensive training, and the team members and station superintendents are better prepared for it at that time rather than following the summer-holiday period.

A further change was made in the district competition procedure in 1957, wherein a briefing officer, supplied by each mine whose team is competing, is used to present the problem as would be the case in an actual rescue operation. This system has worked very successfully and will be incorporated into the provincial competitions beginning in 1960.

The Mine Safety Appliances Company has, since 1950, presented a trophy to the team winning the provincial competition. It is a fine trophy, with a large base of mahogany, surmounted by a particularly good specimen of polished sodalite. In addition to the trophy, the company presents cash prizes to all members of the first-, second-, and third-place winners.

The table on page 95 is a summary of the district and provincial winners since the beginning of mine rescue competitions.

The number of trainees who have passed the required examinations during the year, and who were granted their certificates and approval seals are shown in the following table:

Rescue Station	Basic Certificate	Standard Seal	Advanced Seal	Supervisory Seal
Sudbury	18	26	4	.....
Timmins	47	45	4	.....
Elliot Lake[1]	144	92	18	.....
Kirkland Lake	32	27	3	.....
Geraldton[2]	14	22	1	11
Red Lake[3]	31	6	.....	.....
Cobalt	6	8	.....	.....
Bancroft	33	.....	.....	.....
Total	325	226	30	11

[1]Elliot Lake figures include Helen and Renabie substations.
[2]Geraldton figures include Steep Rock, Geco and Leitch substations.
[3]Red Lake figures include Pickle Lake substation.

A new course of instruction called "Management Course in Mine Rescue' was begun in 1958 in order to discuss with senior mine management their particular responsibilities in the event of a mine fire or major disaster.

It has been presented and especially well received in four of the mining areas of the province, and arrangements have been made to present it in the remaining areas during 1959.

A total of 139 mine managers and senior staff, including mine superintendents and department heads, participated in the management course during 1958.

ONTARIO GOVERNMENT CABLE-TESTING LABORATORIES

SUMMARY OF ROPE TESTS, 1958

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Tests for Ontario mines	60	49	46	62	66	60	62	34	68	55	60	56	678
Special informative tests	.....	7	.....	13	17	1	20	5	23	.....	23	41	150
Tests for wire-rope manufacturers	48	23	27	38	33	38	37	33	24	40	23	26	390
Tests for mines outside Ontario	58	43	32	49	68	54	55	54	32	50	59	54	608
Tests for industries other than mining	.....	1	1	1	2	5	4	.....	4	1	1	.....	20
Other tests	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	166	123	106	163	186	158	178	126	151	146	166	177	1,846