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PROVINCE OF ONTARIO

DEPARTMENT OF MINES

HON. PHILIP T. KELLY, *Minister of Mines* — H. C. RICKABY, *Deputy Minister*

Bulletin 146

OF THE

ONTARIO DEPARTMENT OF MINES

Report for 1952

ON

By the Staff of

THE MINES INSPECTION BRANCH

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1953

To the Honourable Phillip T. Kelly,
Minister of Mines.

Sir,—I beg to hand you herewith the report by the Inspectors of this Department on the accidents in the mines, metallurgical works, and quarries of Ontario during the year 1952.

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

H. C. Rickaby,
Deputy Minister of Mines.

Department of Mines,
Toronto, 1953.

The Mines Inspection Branch, Ontario Department of Mines

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[1]Part of year.

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Mining Accidents

By
The Staff of the Mines Inspection Branch

STATISTICAL REVIEW

Introduction

During the year 1952, at the mines, metallurgical works, quarries, and clay, sand, and gravel pits regulated by the Mining Act there were 2,738 accidents to employees reported to the Department of Mines up to January 21, 1953. Forty-one fatalities from 36 separate accidents and 2,697 non-fatal accidents were recorded.

The returns represent an increase of 310, or 13 percent,[1] in the total number of non-fatal accidents reported and an increase of 7 in the number of fatal accidents over that of the previous year. There were 32 accidents in which 1 man was killed, 3 accidents in which 2 men were killed, and 1 accident in which 3 men were killed.

The report shows a fatality rate of 1.1 persons killed per 1,000 employed, which is an increase of 0.17 per 1,000 over the preceding year but is 0.44 per 1,000 lower than the average for the last 25 years. There were 72 non-fatal accidents per 1,000 persons employed, an increase of 7, or 10.8 percent, over the rate of 1951, but 7 or 8.8 percent lower than the average for the last 25 years. The percentage of non-fatal accidents followed by infection decreased from 4.5 in 1951 to 3.4 in 1952.

The total employment figures show an increase of 532, or 1.4 percent, from 36,729 in 1951 to 37,261 in 1952; employment underground and on surface at mines showed a decrease, from 21,316 to 21,081.

EMPLOYMENT UNDERGROUND AND ON SURFACE AT MINES, 1942-52[2]

Year	Surface		Underground		Total
	Number	Percent	Number	Percent	
1942	8,205	34	15,679	66	23,884
1943	7,148	37	12,396	63	19,544
1944	6,914	38	11,184	62	18,098
1945	6,687	39	10,535	61	17,222
1946	7,442	39	11,503	61	18,945
1947	8,111	39	12,653	61	20,764
1948	7,851	37	13,663	63	21,514
1949	7,918	36	13,968	64	21,886
1950	8,372	36	14,591	64	22,963
1951	8,626	37	15,000	63	23,626
1952	8,283	35	15,201	65	23,484
Average	7,778	37	13,307	63	21,085

[1]According to a check by the Ontario Mining Association, there was an increase in the count of 159 non-fatal compensation accidents in Class V in the year 1952 over the year 1951. This was because of a change in the Compensation Act allowing compensation for a five-day lay-off period in 1952, instead of a seven-day period as in 1951.

[2]These figures do not include contract diamond-drilling.

Summary of Fatal and Non-Fatal Accidents

The following table is a summary for the past 25 years of the number of persons injured per 1,000 employed at mining operations:

ACCIDENTS TO EMPLOYEES IN MINES, METALLURGICAL WORKS, QUARRIES, AND CLAY, SAND, AND GRAVEL PITS, 1928–52

Year	Persons injured			Persons employed at all operations[1]			Persons injured per 1,000 employed	
	Fatally	Non-fatally	Total	Producing operations	Non-producing operations	Total	Fatally	Non-fatally
1928	85	2,516	2,601	15,787	2,000	17,787	4.76	142
1929	55	2,389	2,444	17,145	1,849	18,994	2.89	126
1930	56	2,167	2,223	18,217	317	18,534	3.02	117
1931	37	1,813	1,850	17,820	447	18,267	2.03	99
1932	25	1,452	1,477	14,378	431	14,809	1.69	98
1933	25	1,514	1,539	15,080	804	15,884	1.57	95
1934	34	1,913	1,947	19,302	1,254	20,556	1.65	93
1935	36	2,048	2,084	21,444	1,528	22,972	1.57	89
1936	65	2,359	2,424	25,725	2,547	28,272	2.30	83
1937	52	2,721	2,773	28,938	3,220	32,158	1.62	85
1938	62	2,147	2,209	29,434	1,421	30,855	2.01	70
1939	47	2,246	2,293	32,444	897	33,341	1.41	67
1940	42	2,128	2,170	35,137	438	35,575	1.18	60
1941	64	2,240	2,304	35,317	618	35,935	1.78	62
1942	50	2,167	2,217	33,336	431	33,767	1.48	64
1943	36	2,101	2,137	29,083	394	29,477	1.22	71
1944	32	2,238	2,270	28,032	444	28,476	1.12	79
1945	41	2,026	2,067	25,639	1,413	27,052	1.52	75
1946	39	2,483	2,522	25,458	2,691	28,149	1.38	88
1947	35	2,608	2,643	29,965	1,136	31,101	1.13	84
1948	31	2,429	2,460	31,571	1,136	32,707	.95	74
1949	33	2,341	2,374	32,586	327	32,913	1.00	71
1950	25	2,070	2,095	35,073	481	35,554	.70	58
1951	34	2,387	2,421	36,178	551	36,729	.93	65
1952[2]	41	2,697	2,738	36,759	502	37,261	1.10	72
Average	43	2,208	2,251	26,794	1,091	27,885	1.54	79

[1]Three hundred 8-hour shifts = 1 man's yearly employment.

[2]Number reported up to January 21, 1953.

Fatal Accidents

A COMPARISON OF FATAL ACCIDENTS BY YEARS, 1948–52

Distribution	1948	1949	1950[1]	1951	1952
Mines, underground	21	26	16	21	29
Mines, surface	1	2	1	3	3
Metallurgical works	3	2	4	4	1
Quarries	2	0	2	2	1
Clay, sand, and gravel pits	1	0	1	1	1
Contract diamond-drilling	1	0	0	0	1
Total	29	30	24	31	36

[1]The 1950 figures are corrected to include an accident that occurred during 1950 resulting in the death of one man in 1951.

FATALITIES ACCORDING TO INDUSTRIES

Gold mines	20
Copper, nickel, and zinc mines	13
Iron mines	3
Silver-cobalt mines	1
Mica mines	1
Nickel-copper smelters	1
Quarries	1
Clay, sand, and gravel pits	1
Total	41

CAUSES OF FATALITIES AT MINES, 1948–52

Cause	1948	1949	1950[1]	1951	1952
	percent	percent	percent	percent	percent
Fall of ground	38	45	48	44	32
Explosives	0	7	0	7	13
On surface	4	7	4	11	13
Rock burst	0	0	0	0	11
Run of ore or rock	8	7	0	11	8
Shaft accidents	21	0	20	4	5
Falls down stope or raise	4	17	28	15	5
Haulage	8	3	0	4	5
Unclassified	17	14	0	4	8

[1]The 1950 percentages are corrected to include an accident that occurred during 1950 resulting in the death of one man in 1951.

FATALITIES BY MONTHS

Month	Number of accidents	Number of men killed
January	3	3
February	2	2
March	3	3
April	2	2
May	8	10
June	4	5
July	4	5
August	3	3
September	2	2
October	1	1
November	1	1
December	3	4
Total	36	41

FATALITY RATE PER 1,000 FOR MINES, METALLURGICAL WORKS, QUARRIES, AND CLAY, SAND, AND GRAVEL PITS

	Men employed[1]	Number killed	Rate per thousand
Mines[2]	24,335	38	1.56
Metallurgical works	9,824	1	.10
Quarries	1,377	1	.73
Clay, sand, and gravel pits	1,725	1	.58
Total	37,261	41	1.10

[1]Average number for year.
[2]Includes contract diamond-drilling at mines.

SUMMARY OF FATAL ACCIDENTS UNDER

No.	Date	Name of mine	Name of operator	Name of deceased
1	Feb. 7	Helen	Algoma Ore Properties, Ltd.	Eli Commanda
2	Aug. 20	Broulan	Broulan Reef Mines, Ltd.	Claude Smith
3	Mar. 15	Brunne Mica property	Brunne, Albert H.	Albert H. Brunne
4	Jan. 21	Delnite	Delnite Mines, Ltd.	Ovila Groleau
5	Feb. 9	"	" " "	Ernest Druzovec
6	Dec. 30	Dome	Dome Mines, Ltd.	Agastino Laratta
7	Mar. 6	Hardy	Falconbridge Nickel Mines, Ltd. (Pogue and Vendetti, contractors)	Allan Kennedy
8	June 24	Falconbridge	Falconbridge Nickel Mines Ltd.	Edouard Larabie
9	Aug. 5	"	" " "	Gaetan Lalonde
10	Dec. 16	"	" " "	George E. Black William T. Watkins
11	Sept. 24	Hallnor	Hallnor Mines, Ltd.	Matt Rubic
12	Sept. 10	Hollinger	Hollinger Consol. Gold Mines, Ltd.	Doniel Bastien
13	May 14	Frood-Stobie	International Nickel Co. of Can., Ltd.	Godfrey Shelswell
14	May 28	" "	" " " " " "	Philip Paquette
15	Mar. 7	Garson	" " " " " "	Nikolay Yewsuk
16	May 1	Levack	" " " " " "	Benjamin Eley
17	Apr. 16	Kerr-Addison	Kerr-Addison Gold Mines, Ltd.	John Piekos
18	Jan. 21	Lake Shore	Lake Shore Mines, Ltd.	Norman Leverre
19	Apr. 10	" "	" " " "	Robert Pitcaithley
20	May 31	" "	" " " "	Leo Kensy Antonio Poloni Aiekso Soopalu
21	May 15	Matachewan	Matachewan Consol. Mines, Ltd.	Franz Ludwig
22	Jan. 3	McIntyre	McIntyre Porcupine Mines, Ltd.	George Maltais
23	June 12	"	" " " "	John Gotch Joseph O'Connor
24	May 15	Nipissing O'Brien	Nipissing O'Brien Mines, Ltd.	Peter Tuckey
25	July 7	Errington	Ontario Pyrites Company, Ltd. (Temiskaming Construction, Ltd. contractors)	Arnold Smith
26	Aug. 13	Paymaster	Paymaster Consol. Mines, Ltd.	Wasyl Babiak
27	July 14	Preston East Dome	Preston East Dome Mines, Ltd.	Michael J. Sutherland
28	May 11	Steep Rock	Steep Rock Iron Mines, Ltd.	Ralph B. Atkinson
29	June 7	Sylvanite	Sylvanite Gold Mines, Ltd.	Giovanni Berlingeri

SUMMARY OF FATAL ACCIDENTS ON THE

No.	Date	Name of mine	Name of operator	Name of deceased
1	Dec. 13	Milnet	Milnet Mines, Ltd.	Edwin Johnson
2	Oct. 16	MacLeod-Cockshutt	MacLeod-Cockshutt Gold Mines, Ltd.	Ivan Kuchan
3	July 7	Smith and Travers	Smith and Travers Company, Ltd.	Conrad Trottier Lucien Ross
4	Nov. 11	Steep Rock	Steep Rock Iron Mines, Ltd.	Joseph Lis

GROUND AT MINES, 1952

Age	Occupation	Nationality	Married (M), single (S), or widower (W)	Cause
19	Scraper operator	Canadian	S	Killed in accidental explosion.
40	Miner	Canadian	M	Struck by fall of ground in drift.
64	Mining mica	Canadian	W	Struck by fall of ground.
32	Miner's helper	Canadian	M	Caught by run of fill.
26	Miners' helper	Yugoslavian	S	Struck by fall of ground.
32	Driller's helper	Italian	M	Drilled into missed hole.
28	Shaftman	Canadian	S	Fell 100 feet down shaft.
26	Slusherman	Canadian	S	Struck by fall of ground.
22	Driller	Canadian	S	Buried by run of sand in stope.
56	Timberman	Canadian	M	Fell down ore-pass.
37	Timberman's helper	Canadian	M	Fell down ore-pass.
51	Driller	Canadian	S	Struck by fall of ground.
28	Driller	Canadian	M	Struck by fall of ground.
36	Cagetender	Canadian	M	Drowned in cage lowered into water at bottom of No. 3 shaft.
30	Trammer boss	Canadian	M	Crushed between car and crosscut wall.
27	Stope boss	Polish	M	Struck by fall of ground while scaling.
26	Assistant topman	Canadian	M	Died following lift of beam.
49	Timberman	Polish	M	Buried in run of fill.
23	Driller	Canadian	M	Killed by stope blast, returned too soon.
45	Drill runner	Irish	M	Struck by fall of ground from rock burst.
41	Shift boss	Canadian	M	Struck by fall of ground from rock burst.
35	Loader	Italian	M	Struck by fall of ground from rock burst.
43	Driller's helper	Estonian	M	Struck by fall of ground from rock burst.
20	Grizzlyman	German	S	Killed in accidental explosion.
42	Miner	Canadian	M	Struck by fall of ground.
53	Miner	Czecho-slovakian	M	Struck by fall of ground while scaling.
58	Shift boss	Canadian	M	Struck by fall of ground while scaling.
32	Driller's helper	English	M	Killed by accidental explosion.
35	Miner	Canadian	S	Asphyxiated in raise.
33	Driller	Polish	M	Struck by fall of ground in drift.
34	Shift boss	Canadian	M	Struck by falling chute gate.
57	Truck dumpman	English	M	Run over by truck.
45	Slusherman	Italian	M	Struck by fall of ground.

SURFACE AT MINES, 1952

Age	Occupation	Nationality	Married (M), single (S), or widower (W)	Cause
42	Mechanic	Canadian	S	Struck by chute gate he was repairing.
53	Blacksmith	Yugoslavian	M	Death due to absorbing or swallowing cyanide.
20	Diamond-driller	Canadian	S	Drowned crossing Whitson lake while on duty.
18	Diamond-driller's helper	Canadian	S	Drowned crossing Whitson lake while on duty.
57	Track leader	Polish	M	Run over by yard switching locomotive

SUMMARY OF FATAL ACCIDENTS

No.	Date	Plant	Name of operator	Name of deceased
1	May 7	Falconbridge smelter	Falconbridge Nickel Mines, Ltd.	Gerald Hooson

SUMMARY OF FATAL ACCIDENTS

No.	Date	Plant	Name of operator	Name of deceased
1	June 14	Dundas	Canada Crushed and Cut Stone, Ltd.	Alphonsus Coughlin

SUMMARY OF FATAL ACCIDENTS AT

No.	Date	Plant	Name of operator	Name of deceased
1	July 16	Brantford	Telephone City Supply Company	Stephen Szladics

AT METALLURGICAL WORKS, 1952

Age	Occupation	Nationality	Married (M), single (S), or widower (W)	Cause
52	Converter skimmer	Canadian.....	M	Burned by molten slag spilled from ladle, died May 24.

AT QUARRIES, 1952

Age	Occupation	Nationality	Married (M), single (S), or widower (W)	Cause
40	Truck driver.....	Canadian.....	M	Electrical power failure, loaded shovel bucket fell on cab of truck.

CLAY, SAND, AND GRAVEL PITS, 1952

Age	Occupation	Nationality	Married (M), single (S), or widower (W)	Cause
54	Labourer.....	Hungarian.....	M	Crushed between conveyer belt and crane.

FATALITIES BY AGE GROUPS

17–20	21–25	26–30	31–35	36–40	41–45	46–50	Over 50	Total
4	2	7	7	4	6	1	10	41

Non-fatal Accidents

Mines

There were 23,484 persons employed at mines in Ontario in 1952. During the year, 1,941 were injured, giving a non-fatal accident rate of 83 per 1,000.

CAUSES OF NON-FATAL ACCIDENTS AT MINES

Cause	Surface	Underground	Total
Fall of persons	70	192	262
Strain while lifting	23	128	151
Falling objects	36	109	145
Crushed between two objects	25	111	136
Strain while moving	28	103	131
Flying objects, drilling, sledging, etc	24	101	125
Fall of rock or ore, drilling scaling, etc	1	112	113
Rock or ore at chute	2	111	113
Fall of loose rock or ore	1	103	104
Drilling machines	1	76	77
Handling or tramming mine cars	.....	76	76
Roll of broken rock or ore	3	62	65
Hand tools	32	33	65
Mechanical transportation	2	54	56
Running into or striking objects	8	39	47
Nails or splinters	10	37	47
Mechanical loaders	1	34	35
Machinery, general	20	7	27
Handling rock or ore	.....	26	26
Tugger hoists, scrapers, etc	.....	22	22
Handling materials other than rock or ore	5	17	22
Cage, skip, or bucket in shaft	.....	20	20
Falls down shaft, winze, or stope	.....	18	18
Burns	11	3	14
Dermatitis	5	8	13
Rock bursts	.....	12	12
Unclassified	1	8	9
Explosives	.....	6	6
Electricity	1	1	2
Caught by run of rock or fill	1	.....	1
Natural gas explosion	.....	1	1
Total	311	1,630	1,941

Metallurgical Works

There were 9,824 persons employed at metallurgical works in Ontario in 1952. During the year, 371 were injured, giving a non-fatal accident rate of 38 per 1,000.

CAUSES OF NON-FATAL ACCIDENTS AT METALLURGICAL WORKS

Strain while lifting or moving	63	Hoisting equipment-hooks, slings, blocks, etc	11
Fall of persons	45	Dermatitis, chemical burns, etc	9
Falling objects	42	Machinery	5
Burns	39	Electricity	4
Burns by slag or metal	29	Noxious gases	3
Flying objects, sledging, etc	28	Transportation	3
Crushed between objects	26	Unclassified	2
Hand tools	18	Nails or splinters	1
Handling materials	16	Explosives	1
Loading, unloading, and handling cars	14		
Running into or striking objects	12	Total	371

Quarries

There were 1,377 persons employed at quarries in Ontario in 1952. During the year, 79 were injured, giving a non-fatal accident rate of 57 per 1,000.

CAUSES OF NON-FATAL ACCIDENTS AT QUARRIES

Strain while lifting or moving	16	Burns	3
Fall of persons	10	Transportation	3
Machinery	9	Crushed between two objects	2
Falling objects	8	Fall of material from face	2
Fall of material during handling	7	Running into or striking objects	2
Flying objects, sledging, etc.	7	Dermatitis	1
Handling materials	4	Nails or splinters	1
Hand tools	4		
		Total	79

Clay, Sand, and Gravel Pits

There were 1,725 persons employed at clay, sand, and gravel pits in Ontario during 1952. During the year, 118 were injured, giving a non-fatal accident rate of 68 per 1,000.

CAUSES OF NON-FATAL ACCIDENTS AT CLAY, SAND, AND GRAVEL PITS

Machinery	26	Handling materials	5
Fall of persons	19	Burns	3
Strain while lifting or moving	17	Fall of material during handling	3
Flying objects, sledging, etc.	14	Nails or splinters	3
Falling objects	7	Transportation	3
Crushed between two objects	6		
Hand tools	6	Total	118
Fall of material from bank	6		

Contract Diamond-Drilling

There were 851 persons employed in contract diamond-drilling in Ontario in 1952. During the year, 188 were injured, giving a non-fatal accident rate of 221 per 1,000.

CAUSES OF NON-FATAL ACCIDENTS IN DIAMOND-DRILLING

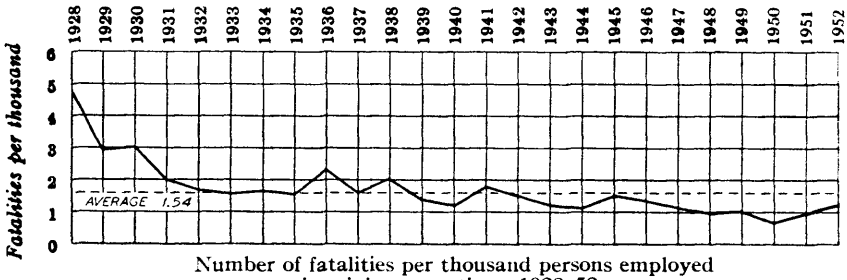
Handling drill rods	31	Burns	8
Strain, while lifting or moving	30	Handling materials	8
Hand tools	24	Flying objects, sledging, etc.	7
Fall of persons	21	Running into or striking objects	6
Wire, nails, or splinters	15	Transportation	3
Caught in moving parts	13	Fall of loose rock or ore	1
Crushed between two objects	12		
Falling objects	9	Total	188

Infection

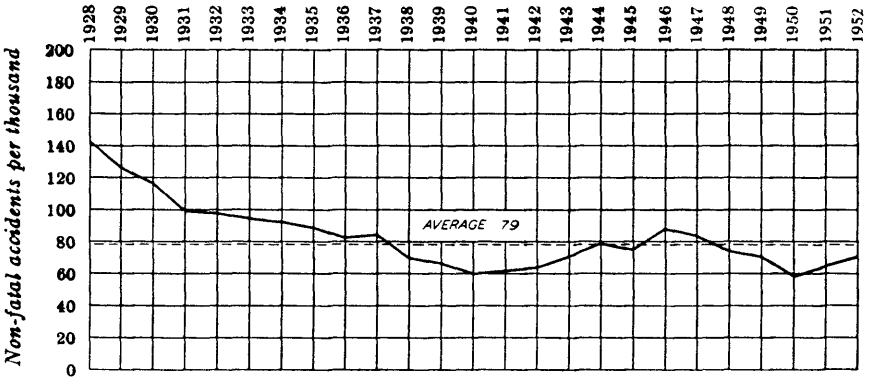
Records show that infection followed in 91 cases out of a total of 2,697 accidents.

ANALYSIS OF ACCIDENTS FOLLOWED BY INFECTION

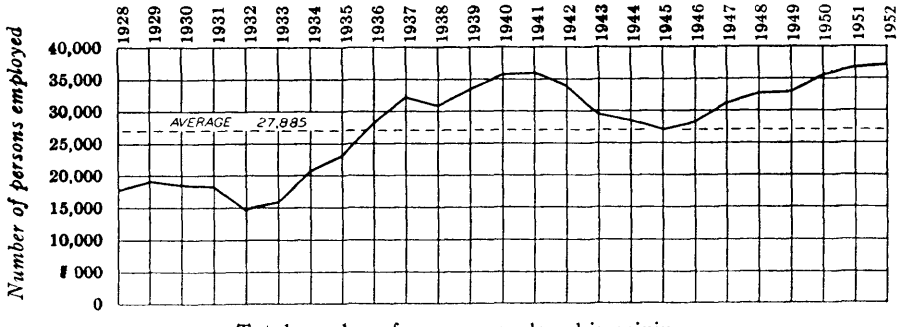
Location	Number of accidents	Accidents followed by infection	Percent infection
Mines, underground	1,630	41	2.5
Metallurgical works	371	19	5.1
Diamond-drilling	188	13	7.0
Mines, surface	311	11	3.5
Quarries	79	4	5.0
Clay, sand, and gravel pits	118	3	2.5
Total	2,697	91	3.4



Number of fatalities per thousand persons employed in mining operations, 1928–52.



Number of non-fatal accidents per thousand persons employed in mining operations, 1928–1952.



Total number of persons employed in mining operations, 1928–1952.

Electrical Accidents

ACCIDENTS DUE TO THE USE OF ELECTRICITY AT MINES, METALLURGICAL WORKS, QUARRIES, AND CLAY, SAND, AND GRAVEL PITS, 1943–52

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	Total
Fatal	.....	1	1	.....	.....	1	1	.....	1	1	6
Non-fatal	5	2	1	7	2	2	4	2	8	2	35
Total	5	3	2	7	2	3	5	2	9	3	41

Explosives

CAUSES OF ACCIDENTS FROM EXPLOSIVES

Cause	Number of accidents	Persons injured		
		Non-fatally	Fatally	Total
Returned too soon to scene of blast	3	3	1	4
Killed in accidental explosion	3	1	3	4
Did not take sufficient cover	3	3	.....	3
Drilled into missed hole	2	1	1	2
Delayed too long at scene of blast	1	1	.....	1
Removed powder from bootleg hole	1	1	.....	1
Fall resulting from blast concussion	1	1	.....	1
Total	14	11	5	16

DETAILS OF FATAL ACCIDENTS

Underground at Mines

Algoma Ore Properties, Limited

No. 1

Eli Commanda, Canadian, aged 19, single, employed as a scraper operator, was fatally injured at 10.10 P.M. on February 7, by a premature explosion in 1–42½ scraper-drift, M block 1 of the Helen mine of Algoma Ore Properties, Limited. He died at 1.35 P.M., February 8. Commanda had been employed at the Helen mine since December, 1950, and as a scraper operator since June, 1951.

Block 1 of the Helen ore body is approximately 700 feet long and 250 feet wide with east-west strike and dips 70 degrees south. This block is mined from the first level through to the old pit bottom by the caving method. The service drift is in, and parallel to, the hanging wall, and nine parallel scraper-drifts or crosscuts driven from the service drift cut they at ore bod right angles. The scraper-drifts are 80 feet apart, and draw points extend from the scraper-drifts to the under cut, about 30 feet above the level. The draw points are staggered and are 40 feet apart on the same side of the scraper-drift. The scraper-hoists are at the south end of the scraper-drifts.

Scraper-drift crews consist of a scraper operator and a chute blaster. New men work with a scraper-drift crew until they are experienced enough to operate a scraper. Scraper operators are promoted to chute blasters when qualified to handle powder.

Eli Commanda, scraper operator, and his brother Frank Commanda, chute blaster, were working as a crew in 1–42½ scraper-drift on the 3.30–11.30 P.M. shift on February 7. Nos. 2 and 3 draw points were hung up and, at 9.45 P.M. the brothers blasted in No. 2 draw point. After waiting for the smoke and dust to clear the brothers re-entered the scraper-drift from the service drift. Eli carried

a case of 12 sticks of 4- by 8-inch, 75 percent, Forcite powder; Frank carried three fuses. When they looked over the muck pile at No. 2 draw point, Frank decided that five sand blasts were required and returned to get two more fuses. Eli remained standing with the powder between Nos. 2 and 3 draw points. At this time No. 3 draw point was still hung up. When Frank re-entered No. 1–42½ scraper-drift two to three minutes later, he heard Eli call to him and noticed that the drift was dustier than before. He found Eli lying in front of No. 2 draw point on his left side against the west wall with his head to the south, his knees doubled up, and facing the wall. One piece of rock, 4 by 6 by 10 inches, was lying on his legs. No. 3 draw point was no longer hung up.

Eli Commanda was carried to the south end of the slusher drift, placed in a stretcher, and taken to surface. He was admitted to the hospital at 10.20 P.M., and treated by Dr. J. Fenn. He died at 1.35 P.M., February 8. An autopsy was performed and the following injuries noted: damaged lungs and ruptured bowels, bleeding from the nose, ear, and rectum and numerous small punctures of the skin. The cause of death was internal injuries.

After the accident all five of the fuses were recovered intact, and nine of the 12 sticks of powder were found in the broken case. One of the large rocks lying halfway between Nos. 2 and 3 draw points had been shattered.

Two men, Froy and Harten, were working in one of the adjoining scraper-drifts, No. 1–42. They set two blasts in No. 1–42 at about 10.00 P.M. One blast was a concussion blast in No. 1 draw point of a stick of 4- by 8-inch powder, and the other was a two-stick sand blast in No. 2 draw point. Harten went to No. 1–42½ scraper drift and warned the Commanda brothers just as Frank was leaving to get the extra fuses. Froy warned the crew in No. 141 scraper drift of the blast. They then guarded the entrance to No. 142 and heard two shots go off almost simultaneously and a third shot later.

The injuries received by Eli Commanda were typical concussion injuries. It is likely that he started to prepare a blast of two or three sticks on the large rock between Nos. 2 and 3 draw points, and that this charge was detonated in some unknown way. At some time after Frank Commanda left him, No. 3 draw point came down. It is possible that one of the rocks falling down No. 3 box-hole could have hit the charge and exploded it.

An inquest was held in the schoolhouse in Jamestown at 9.00 P.M. on February 12 with Coroner J. E. Gimby presiding and Crown Attorney Ian Munroe in attendance. The verdict of the jury was as follows:

We the jury find that Eli Commanda died on February 8, 1952, as a result of a dynamite explosion in No. 142½ scraper-drift in the Helen mine. Cause of the explosion is unknown with no blame attached to anyone. We, the jury, recommend:

1) That adjacent scraper-drifts be evacuated when blasting is being done.

2) That charges be prepared before entering the scraper-drifts in order that the time spent handling powder in the scraper-drifts will be reduced.

3) That some underground official determine that all chute blasters are fully qualified to handle dynamite.

Broulan Reef Mines, Limited

No. 2

Claude Smith, Canadian, aged 40, married, with three dependent children, employed as a miner at Broulan Reef Mines, Limited, was fatally injured at 9.20 A.M., August 20, when he was crushed by the fall of approximately two tons of rock from the back of No. 110 drift on the 1,120-foot level. He died about 11.00 A.M., the same morning, in the Porcupine General Hospital.

The face of No. 110 drift was in a strong fault zone in andesite. The drift was traversing the fault zone at an acute angle. There were several mud seams

in the zone. One pronounced seam with gouge extended from the right side of the 8-foot face to a point 31 feet back of the face, where it passed into the left or north wall of the drift. This seam dipped 51 degrees north. Another vertical seam extended from the centre of the face back to the first-mentioned seam. It was a section of the back, which extended 18 feet back from the face, along the north side of the above two seams, that fell. On the north and the top, the fallen ground, in situ, was bounded by a rolling mud seam, which dipped 15 degrees north at the face, 45 degrees in the middle, and 20 degrees at the west end. The resulting fall of rock was a half-lenticular piece, thin and pointed on each end, 5 feet wide in the centre, and with a maximum thickness of 30 inches in the centre.

Smith and his partner, Waino Friman, both experienced drift runners, reached the face of No. 110 drift about 8.05 A.M. According to Friman, they commenced work by washing down the face, examining the bootlegs, and sounding the back for loose ground; the back was flat, and they did not detect any loose. Then they started to drill with two air-leg drift machines. Friman and Smith had each completed four holes when they stopped the machines to let H. Chevrier, a sampler, cut a sample across the face. Chevrier completed the sampling and was talking to the two men about their long rounds when the fall of ground occurred. Friman and Chevrier happened to be close enough to the right wall to escape unhurt. Smith was standing in the centre of the drift about 10 feet behind the face, and he went down under the fall of ground.

Although it was the intention of the mine management to timber this drift throughout the fault zone, the timbering, which had been started, was approximately 60 feet behind the face. The mucking-machine operator and the shift boss from the previous shift both stated at the inquest that they were not aware of any loose ground in the back of the drift.

Smith suffered a fractured thigh, fractured right arm, fractured jaw, fractured ribs, and crushed and ruptured lungs. The crushing injuries to his chest were stated to be the cause of his death.

An inquest was held before Coroner H. E. Montgomery in the Whitney Township hall on August 27. The jury returned the following verdict:

> We, the undersigned jurors, have agreed that Claude Smith, who died in the Porcupine General Hospital, due to injuries received in No. 110 drift at the Broulan Reef Mines on August 20, 1952, at 9.20 A.M., came to his death by accident. No blame is attached to anyone. We recommend that the drift be kept timbered closer to the face.

Brunne Mica Property

No. 3

Albert H. Brunne, Canadian, aged 64, a widower with four adult children, was fatally injured by a fall of rock from the hanging wall of an open cut at his mica property in McConkey township at about 3.45 P.M. on March 15. He died shortly afterwards while being taken to the Red Cross outpost at Port Loring.

Brunne had leased lot 21, concession V, McConkey township, in February, 1952. He commenced the mining of mica from a pegmatite dike on the north shore of Caribou lake about March 1. The dike is 5–8 feet wide, and dips west 75–80 degrees. A shallow open cut had been made at the south end some years ago, and Brunne extended it northward with the aid of several employees, using a gasoline compressor and a jackhammer. Neither Brunne nor his employees were experienced miners.

On March 15, Brunne was assisted by James Fleming, Herbert Brooks, Alfred Kirton, and George Brooks. Three 4-foot holes were drilled in the second

bench, and were blasted about 8.30 A.M. A second similar round of holes was then drilled, while the mica was being recovered and the waste rock shovelled towards the south end of the open cut. It was blasted about 1 P.M., and the work repeated.

About 3.30 P.M., Brunne loaded the third round of holes with six sticks of powder and electric caps. Kirton then ran the blasting wires southward to an automobile battery, while the others went northward to take shelter. The round was blasted about 3.40 P.M., and Brunne returned to the scene a few minutes later. He was bending over to examine some mica released by the blast when a large slab of rock fell out of the hanging wall and struck him.

Brunne was unconscious when released and died on the truck carrying him across Caribou lake. He had sustained a fractured scapula and multiple fractures of the left ribs. His death was attributed to a punctured pericardium.

The slab of rock that fell on Brunne was about 3 feet wide, 1½ feet thick, and 6–8 feet high. It fell from a point about 6 feet south of the second bench and broke into three pieces. A piece weighing about 1,000 pounds was moved to release Brunne. The walls of the open cut had not been sounded or scaled for at least three days prior to the accident.

An inquest was held before Coroner R. H. Dillane, M.D., at Powassan on March 27. The verdict of the jury was as follows:

> We, the jury, find that Albert Henry Brunne came to his death accidentally at approximately 4 P.M. on the 15th day of March, 1952, at the township of McConkey, district of Parry Sound, as a result of injuries received by falling rock at a mine in the said township. We recommend that such work should not be done unless supervised by someone with experience.

Delnite Mines, Limited

No. 4

Ovila Groleau, Canadian, aged 32, married, employed as a miner's helper was asphyxiated about 8.30 P.M. on January 21, when he was buried in a run of fill in 2536E No. 4 stope on the 2,375-foot level of the Delnite mine. Kazimir Iskrowicz, aged 23, Polish, employed as a miner was seriously injured in the same accident.

On the 2,375-foot level, 2336E No. 3 stope had been mined up from the level and filled. Below this, a raise had been driven up from 2536E No. 4 stope following a faulted-off section of ore 35 feet in length on the level. The ore in the drift-floor sill at the top of the raise was being mined by underhand stoping into the raise.

Previous to January 21, eight down holes had been blasted from the 2,375-foot level, which broke to the back of the inclined raise. This raise came up under 2336E No. 3 stope, midway between two manways that were 43 feet apart, with nine stull timbers between them. The stulls were supported on posts at the north or hanging-wall end. The other end was bevelled and rested on the footwall. The blasting previous to January 21, and the top of the raise, opened up a length of 18 feet of the drift floor. The east end of this open section was midway between the second and third stulls, west of the east manway in the stope above. To support the hanging-wall end of the stulls above the level when the next blast should be made, a 16-foot round jackpine timber, 12–14 inches in diameter, was laid on two stulls, which were put in the opened area below the level, with the other end on the solid rock extending to the east. The stull supporting the west side of the east manway in 2336 stope and the next two stulls to the west were then posted under the hanging-wall end from this stringer. The fourth stull west of the manway was posted from another stull, which was put in just

below the track level. At the end of the day shift six more holes drilled down from the level were blasted with 42 sticks of powder.

When Iskrowicz and Groleau went to this working place at approximately 7.00 P.M., they were accompanied by two men going to work in 2336E No. 3 stope and by two chute pullers who were going to pull muck from the same stope. The chute they were to pull was only 25 feet west of the raise out of 2536E No. 4 stope. These six men examined the results of the day-shift blasting of the floor sill. They noted that the floor stringer was broken near the centre. The east half of the broken timber was partially on the muck with the one end supported on the solid floor. All the posts which had been put in to support the hanging-wall end of the stulls had been knocked out leaving the hanging-wall end of three stulls without support. Iskrowicz said that they would not work until their shift boss arrived. He and Groleau then sat down. The two men going to the stope above proceeded to their working place, and the chute pullers started their work. At approximately 8.15 P.M., L. Bruneau, one of the chute pullers, noticed both men near their working place with a water hose and a scaling bar. About 15 minutes later Bruneau heard a call from Groleau and on turning around he saw the timber and backfill come down and completely bury both men.

Groleau was not heard or seen again until his body was recovered approximately 27½ hours later. He died from mechanical asphyxia. Iskrowicz was trapped in the fill along the south wall, just above the footwall of the raise. He clung to a fourth stull which had been put in below the track level. His head was about at the track level with his body extending down the raise. Although Iskrowicz was completely covered, there was no excessive pressure on his chest, and he was always able to talk until he was released about 6.00 A.M. the following day, about 9½ hours after the accident.

The chute pullers summoned help as rapidly as possible after the accident. The shaft-sinking crew and many more were assembled to help with the rescue work. Spilling was necessary to prevent the fill in the stope above from sloughing as digging proceeded. The rescue work was made more arduous by numerous pieces of timber which rested on Iskrowicz's back and right leg and which had to be cut away with chisels and hack saws. Iskrowicz was attended first by Dr. G. S. MacKechnie and, later in the night, by Dr. G. Lamontagne, who relieved Dr. MacKechnie shortly after midnight. Iskrowicz was given morphine and plasma throughout the night.

When the collapse of the timber occurred, approximately 150 tons of fill in the stope above moved downward. This spilled into the stope below through the raise. The top of the caved fill was about 17 feet above the 2,375-foot-level track when the rescue work commenced. All this fill and approximately 25 percent more, which later caved, was removed, and the drift retimbered to make a safe condition for men to dig down in search of Groleau. The second, third, and fourth stulls west of the east manway of 2336 No. 3 stope were found to be out, as were the two stulls that had carried the west end of the floor stringer and the floor stull from which the fourth stull had been posted. Groleau was removed from the muck about 5 feet below the level and about 8 feet east of the point from which his partner was removed.

An inquest was held before Coroner H. E. Montgomery, in the Town Hall at Timmins, on August 22. The jury returned the following verdict:

We the jury find that Ovila Groleau came to his death on January 21, 1952, by reason of a blast which tore out timber supporting rock fill in the Delnite mine 2336 stope. We attach no blame to the company because of this blast. Accidental death.

No. 5

Ernest Druzovec, Yugoslavian, aged 26, single, employed as a helper at the Delnite mine since August 27, 1951, died in St. Mary's Hospital, Timmins, February 9, from injuries received about 8.10 A.M. the same day, when he was crushed under a fall of approximately 1⅓ tons of rock which he was trying to scale down in 2634 back stope.

Druzovec and his partner, D. Kukainis, went underground about 7.35 A.M. and proceeded to their working place, which they reached a few minutes before 8.00 A.M. The previous shift had blasted seven breast holes in a 3-foot vein dipping about 45 degrees to the north. This breast was the seventh breast on the first slice above the drift back. The resulting back was about 11 feet above the drift floor, or 6 feet above the broken muck. A tight fault, striking at right angles to the vein and dipping 55 degrees west, was visible on the stope wall at the position of last-stope breast, about 8½ feet back from the present breast. In addition to this round, the previous shift had drilled and blasted some nine or ten pop holes in the back behind the breast, but these had no bearing on the accident.

Kukainis and Druzovec both commenced to scale. Their bars were sharp and 5½ feet long. At the top of the second last breast, on the hanging wall just ahead of the fault, they found a heavy piece of loose ground. They were working on this when they heard some one at their drill gear in the crosscut at the west end of their stope. Kukainis walked back about 55 feet and, when still on the muck pile a few feet from the crosscut, saw that it was the pipefitters who had come in to install a double header on the end of their air line. He turned back directly, and when he was about half-way back to his partner, he heard a fall of ground. Proceeding on, he found his partner, face downward, his left leg stretched forward under his body, under a slab of rock about 4 by 4 feet with an average thickness of one foot and a maximum thickness of about 20 inches.

This was the piece of loose that the men had been working on. Druzovec had his scaling bar in his hand and was facing up the muck pile. As he was at the top of the muck pile when Kukainis left him, it would appear that he had passed down under the loose, perhaps loosened it further from the lower side, or merely saw that it was about to fall, and then, because of the danger of it rolling toward him when it fell, he was trying to get back to the top of the muck pile when he was caught.

Kukainis called the pipefitters. The three men were unable to lift the piece. While two men eased the weight of it off Druzovec, one man ran about 500 feet and called two raisemen to give assistance. Druzovec was released in about five minutes. He was unconscious; his face and pelvis were crushed, and he suffered internal injuries. He died about 6.00 P.M., ten hours after the accident.

An inquest was held before Coroner J. C. McClinton, M.D., in the Timmins Municipal Hall, on February 18, 1952. The jury returned the following verdict:

While scaling on the 2625 level at the Delnite mine on the morning of February 9, between 8.15 A.M. and 8.30 A.M., a loose rock weighing between 2 and 2½ tons fell from the back, pinning Ernest Druzovec to the muck pile, resulting in multiple injuries and shock, causing death the same day at 7.00 P.M. in hospital. We find that death was accidental with no blame attached to anyone.

Dome Mines, Limited

No. 6

Agastino Laratta, Italian, aged 32, married, employed at the Dome mine as a driller's helper, was killed instantly by an explosion caused by drilling into misfired explosives, in 1535 No. 3 sill-drift at the Dome mine, about 8.45 A.M., December 30. Noel Richer, Canadian, aged 33, employed as a driller, was

injured at the same time. Laratta came to Canada in 1951 and had been employed at the Dome mine since August 11, 1951. Richer came from the McIntyre mine to the Dome mine and had been there since September 29, 1951.

Richer and Laratta had been employed since December 20 in advancing 1535 No. 3 sill-drift 16 feet above the 15th level, starting from a box-hole. The work was carried on, on a two-shift-daily basis. A. Wren, driller, and A. H. Quibell or A. P. Wilson, helpers, worked on the opposite shift.

Slashes were first drilled and blasted in starting the drift and, by December 24, at the end of the day shift, one drift round, both east and west from the box-hole, had been drilled and blasted. On this day shift Wren and Wilson had completed the first full round on the west face and blasted it. At the same time they reblasted a misfire and six other bootlegs on the left half of the east face. Following this, there was no more work over the Christmas holiday until the night shift of December 26, when Richer and Laratta returned and cleaned out both faces and reblasted five holes in the west face and one again in the east face. On December 27, the day shift, Wren and Wilson, cleaned out the two faces and set up on the west face; on the night shift Richer and Laratta drilled on this face. On Monday, December 29, having changed shifts again, Richer and Laratta completed the west round and set up on the east round and drilled the centre, back, and the left-back holes. On the night shift Wren and Wilson drilled again. They left two holes, the right knee hole and the right lifter for the following shift to drill.

These drift rounds were approximately 5 by 7 feet in cross-section. A burn cut consisting of nine holes was used, and the rest of the round consisted of from 18 to 20 holes. Both of the blasted rounds had intersected diamond-drill holes, and part of the failure of the rounds to break well was attributed to "blow-outs" caused by the firing of some holes through a diamond-drill hole. In the first round to the east, the right knee hole had intersected a diamond-drill hole when 20 inches from the bottom. It was in this 20 inches that the misfired explosives were encountered. The diamond-drill hole passed diagonally upward, from right to left, through the area of the cut of the first round and into the left wall about 16 inches below the back. The failure of the knee hole to break to the bottom of the hole left a protrusion along the right wall extending back to the diamond-drill hole. Wren and Wilson saw the lower part of the diamond-drill hole but did not find the bootleg of the right knee hole. Richer stated that he found it and had inserted a loading stick in it and that he did not think there were any explosives left in it.

Richer proceeded to collar the slash knee hole, on the side of the protrusion on the right wall, with the DA-35 Rand leyner drill in use, pulled right against the bar. The latter was less than a foot and a half off the line of the misfired hole. When the hole collared, he moved the machine out, in line with the second round, and believes that he had only drilled an inch or two when the explosion occurred. Approximately 100 pounds of muck were broken by this blast. Laratta, who was near the face, was thrown against the left wall and killed instantly.

After the accident five broken pieces of drill steel were found; when put together they showed that the original steel was 3 feet, 11 inches, long. There was also enough of the old knee hole left along the wall to show that this steel had run into the old bootleg at an acute angle and had reached a point 7 inches from the bottom of the bootleg when the explosion occurred. At that moment the back end of the leyner would be almost exactly 8 feet back of the face. Richer, who was standing on the left side of the machine, had the bar almost squarely between him and the point of drilling. He suffered injuries to his left

leg, face, and right hand. He did not suffer any broken bones, and his eyes were not seriously injured.

When loading holes, it was the practice, of both runners, who worked in this drift to place the detonator in the second cartridge from the bottom of the hole. Seventy-five percent Digel powder was used, thus the primer cartridge was probably drilled into. Clay spacers are provided at this mine, and no wooden spacers are available. An unexplained detail was the finding of the Liddicott detachable bit on the broken shank plugged with wood. This could indicate that this bootleg had been noted and wood inserted in it to test if any powder remained.

An inquest was held before Coroner J. B. McClinton, M.D., on January 28, 1953, in Tisdale Municipal Hall at South Porcupine. The jury returned the following verdict:

We, your jury, find that Agastino Laratta came to his death at approximately 8.45 A.M., on December 30, 1952, by an accidental explosion on No. 1535, No. 3, sill drift of the Dome Mines, Limited, and we find no blame attached to any party or persons.

Falconbridge Nickel Mines, Limited

(Pogue and Vendetti, Contractors)

No. 7

Allan Kennedy, Canadian, aged 28, single, employed as a shaftman by Pogue and Vendetti, shaft contractors, was fatally injured at the Hardy mine of Falconbridge Nickel Mines, Limited, when he fell approximately 100 feet in No. 1 shaft, about 11.30 A.M. on March 6. He had been employed since January 16, and had worked in shafts for eight years.

A three-compartment, vertical shaft was being sunk from surface to a depth of about 1,350 feet. It consisted of two hoisting compartments, each 5 feet, 3 inches, by 5 feet, 6 inches, and a manway compartment. The latter is 5 feet, 6 inches, square and is at the south end of the shaft. A 6-inch pump-discharge line is being installed in the southwest corner. The shaft sets are at 6-foot centres, and have 10-by 10-inch wall plates. A bucket and crosshead is operated in the centre compartment. The station for the 1,125-foot level had been cut on the west side of the shaft, and the west side of the first set below had been lined with planks.

Mucking was in progress at a depth of 1,231 feet with a Riddell clam-shell loader when the night-shift crew suspended work at 8 A.M. on March 6. They left an empty bucket on the muck pile, 34 feet below the bottom set.

The following day-shift crew consisted of a shaft captain, K. Van Buskirk, a shaft leader, L. Young, and three shaftmen, A. Kennedy, N. Tiegan, and A. Schultz. They were to extend the 6-inch pipeline from a depth of 1,078 feet to about 40 feet below the 1,125-foot level. The pipeline was about 8 feet above the level at 11.15 A.M., when Young took the bucket to surface to obtain a third length of pipe. Tiegan remained on the first set above the level, and the others went down to the station.

About 11.30 A.M., Young brought down a 23-foot length of pipe underneath the bucket and stopped the bucket opposite Tiegan to give him a victualic coupling. Kennedy then left Van Buskirk and Schultz on the station, and started to climb down the hanging rods of the centre compartment to reach his assigned position at the lower end of the pipe. Young saw him reach the wall plate of the first set below the level, where he stood for a second or two facing westward with both hands on the hanging rods. He then released his hands, fell backwards into

the shaft without uttering a sound, and landed in the empty bucket on the muck pile.

Kennedy was dead when reached shortly afterwards. He had sustained a fractured skull and cerebral haemorrhage.

An inquest was held by Coroner G. Desmarais, M.D., at Sudbury on March 26. His verdict was as follows:

Allan J. Kennedy, aged 28, came to his death at the Hardy mine in Levack Township on March 6, 1952, from a fractured skull and cerebral injuries received when he fell about 100 feet in No. 1 shaft while installing a pipeline during sinking operations. He had climbed down the hanging rods from the 1,125-foot level to the wall plate of the next shaft set, 6 feet below, when he apparently lost his balance and fell backwards into the shaft.

Accidental death with no blame attached to anyone.

No. 8

Edouard Larabie, Canadian, aged 26, single, employed as a slusherman at the Falconbridge mine, was instantly killed by a fall of ground in No. 2402-26-30 stope, on the 2,450-foot level, about 9.45 P.M. on June 24. He had been employed since August, 1951.

The stope was being mined by horizontal cut-and-fill methods, and is 405 feet long. It had been silled out over timber to a height of about 8 feet, and an 8-foot breast had been mined from the east end of the stope to the west side of No. 25 raise, 112 feet from the west end of the stope. The breast, which was 21 feet wide at that point, had been drilled off and left unblasted pending the removal of the broken ore and the advancement of the sand backfill. No. 8 chute to the level was about 10 feet west of the breast. No difficulty had been experienced with the back of the stope, except for about 88 feet at the west end, where a number of timber cribs had been installed for support. A slusher hoist was set up on the sill floor about 48 feet east of the breast.

On June 24, Shift Boss J. Bardswich entered the stope shortly after 9 P.M. He found the stope boss, I. Babin, and a slusherman, E. Larabie, installing an eye-bolt in the back, for the slusher sheave, about 53 feet west of the breast. Bardswich then had Babin sound the back and breast with a bar. No indication of loose ground was found. Only a few scraperfuls of broken ore remained around No. 8 chute.

About 9.40 P.M., Babin and Larabie finished attaching the slusher sheave to the eye-bolt and started to walk eastward. On reaching No. 8 chute, Babin noticed that it was nearly full and told Larabie to call down to the tramming crew. Immediately afterwards, a heavy fall of ground occurred from the back, under the breast, covering Larabie.

Babin summoned assistance, and recovery work was started as soon as possible. Larabie was found by entering No. 8 chute. He was in a jack-knife position on the sill floor at the west edge of the chute underneath a large slab of ore. Dr. G. R. Jones arrived at the scene about 10.45 P.M. and determined that Larabie had been killed instantly. Recovery work was completed at 12.15 A.M. on June 25.

The fall of ground extended westward from the breast for a distance of about 20 feet, across almost the full width of the stope. The total weight was estimated at 45 tons. The slab on top of Larabie weighed about five tons.

An inquest was held by Coroner H. C. Nash, M.D., at Falconbridge on July 9. His verdict was as follows:

Edouard Larabie, aged 26, came to his death at the Falconbridge mine of the Falconbridge Nickel Mines, Limited, on June 24, 1952, from multiple crushing injuries received when a heavy fall of rock occurred without warning from the back of No. 2402-26-30 stope on the 2,450-foot level.

Accidental death with no blame attached to anyone.

No. 9

Gaetan Lalonde, Canadian, aged 22, single, employed as a driller at the Falconbridge mine, died from suffocation when buried by sand fill in No. 1701-12-15 stope, on the 1,750-foot level, between 8.15 and 8.45 P.M. on August 5. He had been employed since April, 1951.

The stope is about 310 feet long and from 7 to 14 feet wide. It was mined by horizontal cut-and-fill methods until it was from 25 to 40 feet below the 1,575-foot level. Square-set, cut-and-fill methods were then used to mine the western section through to the level. The remnant of ground in the central and eastern sections was too low in value to warrant mining, so it was decided to fill these sections of the stope, including the chutes and manways, with as much sand as could be scraped into place before erecting timber cribs to support the back. The latter is 25 feet below the level and about 7 feet wide at the edge of the square-sets.

The vertical line of square-sets adjoining the remnant of ground was slabbed off to form a sand pass from the level above, and a slusher hoist was set up in the stope, about 100 feet away, to scrape the sand eastward. Access to the stope from above was provided by No. 12 raise, about 45 feet east of the slusher hoist.

No. 7 manway, about 15 feet east of the sand pass, was filled on July 31 and August 1. It is approximately 4 by 5 feet inside the timber and extends almost vertically from the timber sets in the main drift on the 1,750-foot level to the stope floor, a distance of about 130 feet. Prior to filling, the manway was stripped of platforms and ladders with the exception of the platform at the stope floor, and a bulkhead was placed on the timber sets in the drift below. Sand was scraped into the manway through the 2- by 2-foot, ladder-opening in the platform.

On August 5, P. Campeau and G. Lalonde went into the stope about 7.15 P.M. to continue the sand-filling operation. At that time, the sand pile sloped eastward from the brow of the remnant for about 65 feet at an angle of 15–20 degrees to the horizontal. It covered the top of No. 7 manway to a depth of several feet. The scraper was on the sand pile about 6 feet farther east.

They went westward past the slusher hoist to a chute near the toe of the sand pile and covered it with planks. Some time was also spent in moving timbers from the path of the scraper. Lalonde then went up the sand pile towards the brow and discovered that the slusher sheave, normally attached there, was missing. On returning, he told Campeau that he would try to get one from No. 1701-1-11 stope, which could be reached from No. 1 manway at the east end of their stope. Campeau then went up to the level to turn on the compressed air for the slusher hoist, while Lalonde proceeded eastward towards No. 1 manway.

Campeau returned to the slusher hoist about fifteen minutes later. Lalonde was not in sight, and Campeau assumed that he had not returned to the stope. After waiting for about 30 minutes, Campeau began to search for him on the level and in nearby stopes. No one had seen him in No. 1701-1-11 stope or elsewhere, so Campeau reported to his shift boss, F. Godfrey, that Lalonde was missing.

Godfrey reached the stope shortly after 9.00 P.M., he suspected that Lalonde might be buried in the sand. The slusher sheave had not been replaced, and the cables between the scraper and sheave attachment were covered with wet sand. After digging several exploratory holes with a shovel, he tried unsuccessfully to pull up the cables by hand. He then managed to move the scraper several feet eastward with the slusher hoist. This action caused a hole to develop in the sand over No. 7 manway in which Lalonde's feet were visible.

With the assistance of others, Godfrey uncovered Lalonde by about 9.30 P.M. and commenced artificial respiration. Dr. F. S. Legris arrived at the scene about 10.40 P.M., and pronounced him dead from suffocation.

Lalonde was found lying on his back at the east side of the manway under 12 to 18 inches of sand. His legs, from the knees downward, were hanging in the hole over the manway. The slusher cables extended across it near his feet. In the manway, the sand was 8 feet below the platform.

A large pile of sand was discovered in the main drift on the 1,750-foot level underneath the manway. Water running down the manway had apparently washed it through an opening in the bulkhead leaving the remainder in a hung-up condition.

The hung-up sand apparently subsided when Lalonde stepped on it, causing him to land in a sitting position on the edge of the opening, then fall backwards. A flow of wet sand from the sand pass, it is thought, then bridged the opening with the support of the slusher cables, and covered him.

An inquest was held by Coroner H. C. Nash, M.D., at Falconbridge on August 13. His verdict was as follows:

Gaetan Lalonde came to his death from suffocation at the Falconbridge mine of Falconbridge Nickel Mines, Limited, when he was buried by sand fill in No. 1701-12-15 stope, on the 1,750 foot level of the mine.

Accidental death with no blame attached to anyone.

No. 10

George E. Black, Canadian, aged 56, married, with seven children, employed as a repair timberman, and William T. Watkins, Canadian, aged 37, married, with three children, employed as a repair timberman's helper, were killed at the Falconbridge mine about 3.05 P.M. on December 16, when they fell about 140 feet in No. 5 ore-pass following the collapse of a temporary staging at the ore-pass chute on the 1,575-foot level. Black had been employed since January, 1930, and Watkins since October, 1952.

No. 5 ore-pass system consists of a series of raises driven from level to level at inclinations of 65 degrees or more. The flow or ore from one pass to the next is controlled at each level by a chute equipped with a chain gate. This gate consists of a number of heavy chains suspended from a steel H-beam across the top of the chute. The chains are connected near their lower ends to a transverse bridle bar, which is raised or lowered by an air cylinder and cable. Each chain weighs about 400 pounds and is about 11 feet long.

The ore-pass station is at the north side of No. 1504 drift on the 1,575-foot level. The control chute is at the east end of the station and discharges westward into the pass below. An operating platform is installed at an elevation of about 8½ feet above the drift track. This platform extends from the west end of the station to within 7 feet of the chain gate across the chute. The chute is about 9 feet wide.

Six of the chains on the north side of the gate had become detached from the H-beam. Five of them had remained hanging from the bridle bar, and the sixth had gone down the pass.

On December 15, Black and his helper, E. Mackenzie, fished up the chains hanging from the bridle bar. This work was done without a staging.

On December 16, Black and Mackenzie were assisted by another repair timberman, J. O'Connor, and his helper, W. Watkins. Under Black's direction, two pieces of 16-foot-round jackpine lagging were obtained, and laid across the opening between the platform and the chute, about 3 feet apart. They were about 4 inches in diameter at the top, and 8 inches at the butt. The butts were

seated on fine muck covering the 35-degree chute bottom behind the gate, with a bearing of about 1 foot. The tops were seated on coarse muck lying on the west side of the platform, with a bearing of about 2 feet, thus making a span of about 13 feet. A staging was then made by laying 2-inch elm planks across the lagging. The planks were not nailed down. Shortly afterwards, D. Gregg arrived with an oxy-acetylene outfit to do whatever burning was necessary in connection with the job.

By 3.05 P.M., four chains had been repaired and hung from a new bracket bolted to the H-beam. At that time, the fifth chain was lying diagonally across the staging, where Gregg had just burned a link and then returned to the platform. Mackenzie was sitting on the north lagging over the platform, and O'Connor was leaving the platform to operate a tugger-hoist set up in the drift to lift the chains. Black was in the centre of the staging using the torch on the chain, with Watkins standing nearby.

Suddenly, the north lagging broke near the centre of the opening and went down the pass with the staging planks and the chain. Black and Watkins fell about 140 feet and landed on the muck in the pass. They were dead when reached, having sustained multiple skull fractures with cerebral damage.

Two safety belts, with 1-inch manilla ropes attached, had been taken to the job by Black. The ropes had been fastened to a post adjoining the south end of the staging. One of the belts was not in use when the staging collapsed. Watkins was wearing the other, with about 10 feet of rope let out from the post. The rope broke about 3 feet from his belt when he fell.

The rope that broke was examined visually after the accident and appeared to be in fair condition. Its history is unknown. Test pieces were then cut from the long section that had not been let out. One piece failed under a static load of 575 pounds. Another failed when a weight of 155 pounds was attached and dropped against 3 feet of slack. Very little elongation occurred before failure in both cases. Test pieces cut from similar rope in stock lifted a static load of 7,700 pounds without failure and withstood a weight of 270 pounds dropped against 5 feet of slack. Considerable elongation was noted, accompanied by a marked reduction in diameter.

Pieces of lagging, similar to those that supported the staging, were set up with a span of 13 feet and subjected to tests. One failed under a static load of 2,800 pounds applied in the centre of the span. Two others each failed under static loads of 2,900 pounds. The total load supported jointly by the two pieces of lagging at the scene of the accident did not apparently exceed 1,200 pounds.

It was found that Shift Boss W. Roworth and Mine Captain P. McCrodan each visited the job three times on December 16. Neither of them questioned the use of jackpine lagging for support of the staging, nor the method of installation. Both gave instructions for safety belts to be used by men on the staging. Roworth told Mackenzie to nail down the planks, but the latter was afterwards told by Black not to bother.

An inquest was held by Coroner H. C. Nash, M.D., at Falconbridge on January 7, 1953. The coroner's verdict was as follows:

George E. Black and William T. Watkins came to their deaths at the Falconbridge mine of Falconbridge Nickel Mines, Limited, on December 16, 1952, from multiple injuries received when the timber supporting one end of their staging over No. 5 ore pass at the 1,575-foot level broke suddenly, causing them to fall about 140 feet down the ore pass. This timber was apparently defective.

Black was not wearing the safety belt that he had taken there. The rope attached to another safety belt worn by Watkins broke when he fell. Subsequent tests showed it was rotten although outwardly in fair condition.

I recommend closer supervision of such mining equipment.

Accidental deaths.

Hallnor Mines, Limited

No. 11

Matt Rubic, aged 51, single, Canadian, born in Yugoslavia, employed as a driller at the Hallnor mine, died from crushing injuries received at 8.30 A.M. September 24, in 601A stope, when he was caught under a fall of ground. Rubic was an experienced miner. He had worked at the Hallnor mine since June, 1943.

The 601A stope is a slice-and-fill stope on the 6th or 1,112-foot level. The entrance used on this date was a vertical-raise manway from the 5th level, situated about 575 feet west of the mine shaft. The stope was only worked on one shift by Rubic and his partner, William Cartonick, who had worked with him for over two years. The stope back was 30 to 38 feet below the 5th level. The breast being advanced from east to west was 90 feet west of the raise entrance and 25 feet west of No. 10 mill-hole and manway, where there were air and water connections. Rubic and Cartonick had blasted this breast at the end of the previous shift.

On September 24, Rubic and Cartonick left surface about 7.55 A.M. On reaching their stope they proceeded to the breast. As they advanced, they noted that the back had loosened up since the last shift. They washed and scaled the breast. Shift Boss Hilbert Carson left surface at 8.15 A.M. and proceeded directly to 601A stope. He found the stope crew at the breast. The crew told him about the loose ground in the back, and they proceeded back with him to look at it. As they were going back, Carson was leading and Cartonick followed next, sounding the back with a scaling bar as he proceeded. Carson and Cartonick hugged the south or hanging-wall side of the stope, which was about 9 feet wide. Rubic walked in the centre, some 3 to 4 feet behind Cartonick. Half-way between the breast and the raise, a piece 14 feet long fell from the centre of the back. Rubic was directly under it and he fell on the fresh sand back fill under the south edge of the slab; Cartonick was brushed by it.

The calculated weight of the piece that fell was 1.8 tons. It had a maximum width of 4 feet, 8 inches, and a maximum depth of 2 feet. In cross-section it was crescent-shaped. The back was arched before it fell and still more so afterwards. The ore here was in altered slates. The piece fell away from under a definite slip on the south wall and from fracture planes in the north wall. The west end pinched out against these lines of weakness in the back. The heavier east end showed a fresh break. There was one light 9-foot stull, from foot to hanging wall, under the piece which fell. It was knocked out, but as it fell under the fallen ground it minimized the crushing effect of the rock on Rubic.

Rubic's visible injuries consisted of a broken leg and a broken or dislocated elbow. No autopsy was performed. Rubic died from the crushing effect of the weight resting on his shoulders and chest. He was released by sand being removed from under his body after additional men were summoned to the stope. His release was effected ten to fifteen minutes after the accident.

An inquest was held before Coroner J. D. McClinton, M.D., in the Whitney Township Hall at 4.00 P.M., October 2. The jury returned the following verdict:

We the jury find that Matt Rubic came to his death by a fall of rock on September 24th, at approximately 8.30 A.M., in 601A stope at Hallnor Mines. Accidental death with no blame attached.

Accident unavoidable.

Hollinger Consolidated Gold Mines, Limited

No. 12

Doniel Bastien, Canadian, aged 28, married, with two dependent children, employed as a stope runner, was killed instantly by a fall of ground in 55AE15

slice-and-fill stope, on the 3,950-foot level of the Hollinger mine about 9.30 P.M., September 10. He had worked at the Hollinger at three different times, the last dating from June, 1948.

Stope 55AE15 on the 3,950-foot level is approximately 300 feet in length, on a vein dipping 60 degrees south. Mining of the second slice above the timber was proceeding from east to west in the central section of the stope, directly over a combination mill-hole and manway. The ground in the stope was basalt, which had the tendency to "work" under pressure. The slice, which at this point was 9 to 10 feet deep, was broken in two stages with inclined, 5-foot hammer-drill holes. Because of the nature of the ground and the amount that had to be opened to raise the mill-hole and manway, extra precautions had been taken. Eight slash holes were taken out of the back directly over the mill-hole and manway; this was mucked out. The mill-hole and manway were then raised 5 feet, and the fill was brought up to the same elevation and extended to a barricade 5 to 12 feet west of the mill-hole cribbing. East of the millhole, the mucking floor was laid on a 20-foot slope extending upward 5 feet to the top of the fill. On September 8, 24 holes in the lower half of the slice were blasted on this new fill. The afternoon shift scaled, mucked, drilled, and blasted 14 more holes. The day shift, on September 9, scaled, mucked, and blasted a few pops in large pieces. The night shift drilled and blasted 14 holes in the upper half of the slice. On September 10, the day shift scaled for three hours, drilled 20, 5-foot holes, and blasted these at the end of the shift.

The night shift on September 10, consisting of Bastien and James Smiley, were advised of this, and they were instructed to scale thoroughly. They went on shift at 3.00 P.M. They were scaling when Shift Boss H. Graham inspected the stope from 5.45 to 6.20 P.M. He had the walls and back sounded. The back was good and although the hanging wall was "drummy", he considered it safe. He instructed the crew to check it frequently throughout the balance of the shift.

This part of the stope had a true width of 7 feet at the back and about 11 feet at the floor level. The apparent overbreak at the stope floor level in the hanging wall was due, in part, to the fact that the level drift was partly in the hanging wall and, in part, to the consequent sloughing and scaling of the wall. The hanging wall, immediately south of all the blasting done since the millhole was raised, was all supported by cribs, which were buried just below the floor level. The nearest timber sets behind the breast were 30 feet behind the mill-hole. Between the timber and the mill-hole there were two Foran bolt sets in the stope back. The last one was 20 feet east of the mill-hole.

About 9.20 P.M., Smiley was cleaning muck from under the hanging wall 6 to 8 feet east of the mill-hole when Bastien, at the slusher hoist ahead of the breast, called to him to come down as there would soon be some blasting nearby. Smiley replied that he would go down in a few minutes and continued to work. Then Bastien came up under the breast and stopped 5 feet behind Smiley. He had a scaling bar but, as far as Smiley knew, did not use it. Smiley heard a crash and turned around, to find Bastien down 4 feet behind him, near a 4- to 5-ton piece of waste rock, 13 feet long, which had fallen from the wall, roughly 4 to 8 feet above the mill-hole. It appeared as though the sharp east end of this rock bore Bastien to the floor, crushed two vertebrae and two ribs, fractured his sternum, and gashed a 9-inch wound in his right side extending into his right lung. The point then broke off leaving Bastien free of the main mass of rock. His death was apparently instantaneous.

Investigation following the accident showed that the men had tried to scale the piece that fell with scaling bars. Failing to move it in this manner, they

assumed it was safe to work under it. They had scaling gads and a hammer, but they did not use these. There was also timber in the stope which could have been used if they considered it necessary.

The cause of death was given as a severe crushing or squeezing.

An inquest was held before Coroner J. B. McClinton, M.D., in the Timmins Municipal Hall on September 17. The Jury returned the following verdict:

We, the jury, inquiring into the death of Doniel Bastien, find that he was killed by a fall of rock in 55AE15 stope, 3950 level, in the Hollinger mine, on September 10th, at about 9.30 P.M.; we find that death was accidental with no blame attached to anyone.

International Nickel Company of Canada, Limited

No. 13

Godfrey Shelswell, Canadian, aged 36, married, with three children, employed as a cagetender at the Frood-Stobie mine, was drowned in No. 3 shaft about 1.45 A.M. on May 14, when No. 3 cage was lowered into water. He had been employed since February, 1935, and had worked as a cagetender for about five years.

No. 3 shaft is a vertical 16- by 28-foot opening with two large cage compartments, two skip compartments, a service cage compartment, and a manway compartment. The latter is at the south end of the shaft, with No. 1 skip compartment on the west side, and the service cage compartment on the north side. No. 2 skip compartment is on the west side of the service cage compartment; No. 3 cage compartment adjoins the No. 2 skip and service cage compartments on the north side. No. 4 cage compartment is at the north end of the shaft. The shaft sets of framed timber are at 7-foot centres.

A waste-loading station, an ore-loading station, and a spillage station are located on the west side of the shaft at distances of about 88, 168, and 237 feet, respectively, below the 2,800-foot level. The shaft opening below the spillage station is used as a sump, from which water is normally lifted by a pump in the spillage station to a main pumping station on the 2,800-foot level. A permanent bulkhead is installed under the cage compartments about 4 feet below the spillage station.

Single-deck cages, weighing about 7½ tons, are operated in Nos. 3 and 4 compartments by a Nordberg D. C. hoist with 12-foot drums. The hoist is equipped with Lilly controllers and travelling nut limits. Overwind and underwind cams are installed on the Lilly controllers to cut off the power to the hoist and actuate the brakes if the cages go below the normal limits of travel with men. A by-pass switch on the hoistman's platform is used to keep power on the hoist when the hoistman is properly authorized to move the cages beyond these limits. Final overwind and underwind switches are installed in connection with the travelling nut limits.

From April 20 to May 2, a series of discharge-line failures and equipment breakdowns occurred in connection with the main pumping stations on the 1,200- and 2,800-foot levels. This caused an accumulation of drainage water to flood No. 3 shaft to within 50 feet of the 2,800-foot level. A Cameron pump was set up in the manway compartment and moved, when necessary, by a shaft crew on night shift. The water was down to about 50 feet below the ore-loading station by May 12, when further difficulties in connection with the main pumping station on the 2,800-foot level caused it to rise to within 22 feet of the ore loading station by May 14.

The electrical signal system in the shaft was short-circuited by the water and was disconnected immediately below the 2,800-foot level. However, a pull

line on the east side of No. 3 compartment extended from the electrical signal system at this level down to the ore-loading station.

During the period of maximum flooding, the underwind cams on the Lilly controllers were set to cut off the power to the hoist and actuate the brakes if the cages went below the 2,800-foot level. They were reset on May 6, and again on May 12, to permit the cages to reach the waste-loading station, and then the ore-loading station, as the water went down. The final underwind switches were still set to cut off the power to the hoist if the cages went below the spillage station.

About 1.15 A.M. on May 14, G. Shelswell took F. Luopa, shaft leader, and two shaftmen down to the ore loading station on No. 3 cage to attend to the Cameron pump, which was set up in the manway compartment one set below this station. He followed instructions to take the cage down to the waste-loading station with the regular station signal, and then to take it down to the ore-loading station with a "lower-slowly" signal. On reaching their destination, he stopped the cage with a 1-bell signal, and followed the shaft crew around to the manway compartment. They noted that the water was about three sets below the station, and Shelswell remarked to Luopa that it was safe to bring the cage to that station. Luopa agreed with him. Shelswell then took the cage up to the 2,800-foot level, where he picked up Alex Shaw, the cagetender of No. 4 cage, to assist him in moving equipment between levels. On arriving at the 2,800-foot level about 1.43 A.M., Shelswell told Shaw that they should see if the shaft crew needed anything, and then gave a "lower-slowly" signal. He stood on the east side of the cage near the signal pull-line, and did not close the cage door on that side. Shaw was several feet from him.

The cage stopped at the ore loading pocket without a 1-bell signal from Shelswell, who then gave another "lower-slowly" signal. In response, the hoistman by-passed the underwind device and resumed lowering slowly. The cage entered the water about 1.45 A.M., and Shelswell reached for the signal pull-line, but it did not extend to that location. He and Shaw then shouted for the shaft crew to stop the cage.

The shaft crew were lowering the suction pipe attached to the Cameron pump when they heard the shouts. Luopa climbed up to the ore loading station, and saw Shaw clinging to the hoisting rope above the submerged cage. He signalled the hoistman to reverse the downward movement of the cage, and it was brought out of the water about 1.48 A.M., after reaching a depth of 33 feet below the surface of the water. Shaw apparently had been washed up through a hatch in the cage roof and managed to hold on to the hoisting rope until Luopa came to his assistance. Shelswell was missing, and his body was recovered from the permanent bulkhead about 4.10 A.M.

The hoistman, K. Withers, had been told on arrival at work, by the operating shaft boss, that the water was about three sets below the ore loading pocket, and that a pump there was to be changed when a cage was available. The previous hoistman drew his attention to a special notice in the hoistman's log book that the large cages were not to be below the waste-loading station. He then told Withers that he had been advised that this instruction meant that the cages could not go below the waste loading station on a regular station signal, but could go below on a "lower-slowly" signal if a cagetender or shaftman was in charge. However, nothing was said about going through the underwind setting just below the ore-loading station.

It is believed that Shelswell thought that he was at the waste loading pocket when he gave the "lower-slowly" signal for the second time. He had been

told several days previously that there was no means of signalling below the ore-loading station, and had replied that he had no intention of going below there. Nothing could be done to assist the shaft crew from below this station, as there is no further entry from the cage compartments to the manway compartment until the spillage station is reached.

An inquest was held by Coroner G. Desmarais, M.D., at Frood on May 28. His verdict was as follows:

Godfrey Shelswell, aged 36, was accidentally drowned in No. 3 shaft at the Frood-Stobie mine of the International Nickel Company of Canada, Limited, on May 14, 1952, when for some unknown reason he signalled the hoistman to lower his cage below the 2,800-foot ore-loading station, while knowing that the shaft was flooded to within 22 feet of this station and that the signal system below this station was inoperative.

The hoistman, Kenneth Withers, contributed to his death by by-passing the underwind safety device on the hoist and lowering the cage below the station without proper authority.

No. 14

Philip Paquette, Canadian, aged 30, married, with two children, employed as a trammer boss at the Frood-Stobie mine, International Nickel Company of Canada, Limited, was killed on the 1,000-foot level about 11.40 A.M. on May 28, when crushed between a train of cars and a concrete wall in No. 16 crosscut. He had been employed since October, 1947.

No. 1 south drift runs westward from No. 3 main crosscut to No. 16 crosscut, then turns southwestward. No. 16 crosscut runs westward for a short distance from the intersection, then turns northwestward. Both headings are nominally 10 feet wide and contain a single 36-inch track. The track into No. 16 crosscut has a ditch on the south side and a travelway on the north side.

Twenty-ton trolley locomotives and 260-cubic-foot cars are used on this level. The cars have a width of 7 feet, and a height of 7 feet, 1 inch, above the base of the rail. A clearance of about 8 inches is provided between the cars and there is a concrete wall on the south side of No. 16 crosscut at the intersection with No. 1 south drift. There is a drinking fountain at the corner.

Shortly before 11.40 A.M. on May 28, Paquette was talking to his foreman, V. Ritzel, while standing on the travelway leading into No. 16 crosscut. A train of 16 empty cars was pushed westward in No. 1 south drift towards them. It was to be switched into No. 16 crosscut to enable a loaded train, which was waiting in No. 1 south drift near the intersection, to proceed eastward to the tipple. A switchman, J. Dumonsky, preceded the empty train on foot, and warned them of its approach. They then crossed the track leading into the crosscut, and stood talking in the clear part of the intersection near the corner. Paquette was about 3 feet from the empty cars as they entered the crosscut. After about four cars had passed them, Ritzel started to walk southwestward expecting Paquette to follow him down No. 1 south drift. He looked back a few moments later, and did not see him, although the cars were still entering the crosscut.

Ritzel returned to the corner, and looked along the south side of the crosscut. He saw Paquette being rolled in an erect position between the moving cars and the concrete wall. He then shouted to the motorman of the loaded train, P. Fletcher, who signalled to the other motorman, M. MacDonald, to stop his train.

Paquette was slumped in the ditch beside the 8th car when reached. He was then about 4½ feet from the corner, and showed no signs of life. His death was attributed to a crushed chest.

Rubbing marks were found on the sides of the 6th and 7th cars to enter the cross-cut. Parts of his electric cap lamp were in the ditch within a foot of the corner. The crew of the loaded train did not observe his actions after Ritzel walked away. Nothing was found to indicate how or why he got into a position to be crushed by the empty train.

An inquest was held by Coroner R. M. Mitchell, M.D., at Frood on July 8. His verdict was as follows:

That Philip Paquette came to his death on the 1,000-foot level of the Frood-Stobie mine of the International Nickel Company of Canada, Limited, on May 28, 1952, when he was crushed between a moving ore train and the wall of No. 16 crosscut.

That although there was no definite evidence that the drinking fountain at the intersection caused him to be caught by the train, yet it may have contributed to the accident; and therefore it is recommended that a more suitable location be found for it and others in similar locations.

The evidence showed accidental death with no blame attached to anyone.

No. 15

Nikolay Yewsuk, Polish, aged 27, married, employed as a stope boss at the Garson mine of the International Nickel Company of Canada, Limited, was fatally injured by a fall of ground while scaling in No. 31 stope on the 1,600-foot level about 2 P.M. on March 7. His employment dated from August, 1948.

The stope is being mined longitudinally by horizontal cut-and-fill methods. It is about 160 feet long, and from 9 to 20 feet wide. The hanging wall is on the north side and has a normal inclination of about 80 degrees. Ten-foot cuts are mined eastward and westward from a fill raise near the middle of the stope. Square-sets had been installed in the west half of the 8th cut to support a local weakness in the hanging wall. The east half of the stope had not shown any need for support. At the time of the accident, the 9th cut had been mined eastward for a distance of about 75 feet from the fill raise. The breast had been blasted at the end of the afternoon shift on March 6, and the muck pile extended westward for about 50 feet.

On March 7, the day-shift crew consisted of a stope boss, N. Yewsuk, a slusherman, E. King, and a fillman, T. Valstar. Yewsuk was scaling about 9.00 A.M. when the shift boss, W. J. Ferguson, entered the stope. Ferguson examined the back, from the fill raise to the breast, with Yewsuk. There were indications of loose rock on the hanging-wall side, but nothing to indicate anything of very large size.

About 2.00 P.M., King was repairing the scraper blade at the toe of the muck pile, Valstar was dumping fill at the west end of the stope, and Yewsuck was scaling about 15 feet from the breast. King heard Yewsuk hammering a gad and then heard the crash of a heavy fall of ground. He called to Yewsuk afterwards but did not receive a reply. On investigation, he discovered that Yewsuk was apparently under the fall of ground and summoned assistance.

Yewsuk was located under the east end of a piece of rock, which was about 10½ feet long, 6 feet wide, and 9 to 13 inches thick. He was dead when released about 2.20 P.M. His injuries included a severe crushing of the chest, with punctured and collapsed lungs, fractures of two lumbar vertabrae, and a comminuted fracture of the left femur.

The fall of ground had a total weight of about 7½ tons, including the piece of rock that covered Yewsuk and a smaller piece farther west. An inspection of the back revealed a depression extending from a slickensided hanging wall to a slip plane near the centre of the stope. It was about 16 feet long and 6 feet wide. A scaling hammer was found beside Yewsuk. It is believed that he was driving a gad westward into the back, while standing on the muck pile about 7 feet

below, when he suddenly brought down the fall of ground and fell forward under it.

An inquest was held by Coroner P. E. Laflamme, M.D., at Garson on March 25. His verdict was as follows:

Nikolay Yewsuk, aged 27, came to his death at the Garson mine of the International Nickel Company of Canada, Limited, on March 7, 1952, from injuries received when crushed by a large slab of rock which he scaled from the back of No. 31 stope on the 1,600-foot level of the mine. He apparently lost his balance and fell under the slab when it suddenly parted from the back.

Accidental death with no blame attached to anyone.

No. 16

Benjamin Eley, Canadian, aged 26, married, with one child, employed as an assistant topman at the Levack mine of the International Nickel Company of Canada, Limited, collapsed in the main fill drift on the 15th level about 12.50 A.M. on May 1. He revived, walked about 30 feet with assistance, and again collapsed. No signs of life were evident following his second collapse at about 12.55 A.M. He had been employed since November, 1948.

No. 2 shaft is being deepened by means of a bucket in the airway compartment and a sinking hoist on the 13th level. The sinking deck is at the 15th level. Supplies for the shaft extension are taken down on the cages to the 15th level where they are stored in the main fill drift until needed.

Eley had been employed underground as an assistant topman since March 10. His duties included dumping the bucket when the sinking crew were mucking and assisting the topman on the 15th level at other times.

On May 1, Shift Boss P. Miller observed three timber trucks loaded with supplies for the shaft extension in the main fill drift on the 15th level. About 12.30 A.M., he instructed Eley to help two shovellers, C. Francis and D. Nikitovic, to unload these trucks. They commenced with a truck carrying six "elephant trunks" for handling concrete, three steel beams, and a small quantity of ½-inch reinforcing rods. The "elephant trunks" were unloaded first. The three men then started to unload the steel beams, which were 9 feet, 10 inches, long. Each beam weighed approximately 329 pounds. Francis and Nikitovic lifted one end of the first beam and carried it around at right angles to the truck. Eley then lifted the other end, and the three men carried the beam about 3 feet away from the truck, where they placed it on the floor. The second beam was handled in a similar manner, following which Eley straightened up, then collapsed. He revived and was assisted to the truck, where he sat down. After vomiting, he walked about 30 feet with a man on each side assisting him, then collapsed again and showed no signs of life.

Eley was removed to surface on a stretcher, arriving there at 1.06 A.M. Dr. A. W. Chisholm arrived at 1.15 A.M., and examined him. No signs of life were evident, but artificial resuscitation was practiced on him for an hour without success.

It was found that Eley and Topman E. Lampi alone had lifted the three beams from the floor of the 15th level station onto the timber truck the previous night to move them into the main fill drift.

An autopsy was made by Dr. M. J. Lynch, who found ruptures of the subclavian and innominate arteries that had apparently occurred immediately before death. He was unable to find any abnormalities in the arteries, but thought there must have been some defect of tissue that he was unable to demonstrate. Nothing abnormal was found in the brain.

An inquest was held by Coroner H. C. Nash at Levack on May 14. His verdict was as follows:

Benjamin Eley of Levack died at the Levack mine of the International Nickel Company of Canada, Limited, on May 1, 1952, following the lifting of one end of a 300-pound steel beam, of the simultaneous rupture of both subclavian and innominate arteries. Pathological reports demonstrate no previous disease of arteries. The immediate cause of death was physical exertion.

Kerr-Addison Gold Mines, Limited

No. 17

John Piekos, Polish, aged 49, married, with one son, was killed at approximately 9.30 A.M. on April 16, when he was buried by a flow of wet fill caused by the collapsing of the timbered partition in No. 1414-54 stull raise. Piekos, a timberman, was an experienced man who had been employed by Kerr-Addison since May 13, 1941.

No. 1414-54 raise is a 75 degrees, 6- by 10-foot, stulled raise with chute and manway compartments. The raise had been driven through a pillar to service 1614-53N stope to the west and 1614-55N stope to the east. Stope-entry drifts were driven east and west from the raise at 24-foot intervals. The stope-entry drifts on the east or chute side of the raise had been bulkheaded. The chute lining had been replaced and repaired recently, and a 28-inch control chute and a slide had been constructed at the bottom to convert this raise into a waste pass to fill 1614-53N stope.

The control chute bottom was approximately 16 feet above the 1,450-foot level. It fed into a slide, 2½ by 3 feet, inside measurement, constructed of 3- by 6-inch planks, 22 feet long; this slide, in turn, fed into 1614-53N stope. The fill used was waste rock, crushed to 6 inches, and pit sand. It was drawn from a stope on the 1,300-foot level, trammed by a motor crew, and dumped on the grizzly at the top of the chute compartment.

The night-shift boss of April 15 left a report stating that the control chute was blocked by sprags, and that an axe, a saw, and oil clothes would be required to remove the timber. On the morning of the 16th, John Piekos was instructed by his shift boss, W. D. Roulston, to take his oil clothes and tools and go down No. 1414-54 raise to remove the obstruction. Instructions were also given to the motor crew not to dump backfill into No. 1414-54 raise until Piekos authorized them to do so. As the job was simple and required only one man, Piekos told his partner, F. Grabowski, to continue with the job they had been doing the previous day. Grabowski also told the motor crew not to dump fill in No. 1414-54 raise until Piekos gave them clearance.

Piekos descended No. 1414-54 raise at about 9.00 A.M. At 9.30 A.M. two other timbermen, J. Larmond and J. Wilcox, who were working in the crosscut on the 1,450-foot level, within 50 feet of the bottom of the raise, heard a run of muck at the raise but did not consider it unusual. At 10.00 A.M. the motorman, A. Vincent, observing that the fill had dropped in the fill compartment, descended the raise and noticed the fill had spread right across the raise into the manway compartment. This was 96 feet below the 1,300-foot level. Vincent reported this condition to Grabowski who proceeded to the station looking for Piekos. On his return, he found the shift boss, W. D. Roulston, at the top of No. 1414-54 raise. Roulston went down the raise and found that the timber had collapsed. He then proceeded to the 1,450-foot level by way of the station and examined the bottom of the raise. J. Larmond reported he had not seen Piekos.

At 11.15 A.M. Roulston summoned aid, suspecting that Piekos was trapped in the fill. At 12.00 noon, Dr. Hagerman, of Virginiatown, arrived underground at which time he could not determine the extent of the injuries as the body was

not yet completely exposed. At 2.30 P.M. Piekos was recovered from the landing at the control chute and was pronounced dead by Dr. Hagerman.

An inquest was held at the township hall, Virginiatown, on May 7 before Coroner H. F. Richardson, M.D. The jury brought in the following verdict:

We the jury find John Piekos came to his death at the control chute in 1414-54 raise at the Kerr-Addison Gold Mines, Limited, sometime between the hours of 9.00 A.M. and 11.00 A.M. on April 16th, 1952, by accidental means. Death was caused by suffocation after being buried in a fall of rock and sand.

Lake Shore Mines, Limited

No. 18

Norman Leverre, Canadian, aged 23, married, with no children, was killed by a blast in 6201-E-61 stope at the Lake Shore mine on January 21 at approximately 8.35 A.M. Leverre had been employed at the Lake Shore mine since May 17, 1950, and for the past three months had been a drill runner in 6201-E-61 stope. He sustained a multiple fracture of the skull with loss of brain tissue. Death was instantaneous.

6201-E-61 stope is a cut-and-fill, untimbered rill stope extending from the 6,200-foot level to the 6,075-foot level. The stope is about 5 feet, 6 inches, wide, and about 85 feet in length at the 6,200-foot level. At the bottom of the rill there is a chute and manway. The rill floor, laid on sand fill, extends upward at 45 degrees to the manway and fill pass at the west end of the stope, intersecting it at a height of 70 feet above the 6,200-foot level. The manway and fill pass at the top of the rill extend 45 feet vertically to the 6,075-foot level.

On the night shift of January 19, Leverre and his partner, William Lacharity, had blasted a breast of seven, 12-foot holes at a point 50 feet up the rill. The same crew returned to work on day shift, Monday, January 21. They found three bootlegs and two unbroken collars to be reblasted. The latter two were about 6 feet long with 12 to 16 inches of burden. They were the back holes of the breast and had broken out at the bottom in such a manner that the breast had broken to the back on the bottom part of the round.

Lacharity went to the 6,200-foot level and got five, 10-foot fuses and 18 sticks of powder. Each of the five holes was loaded with three or four sticks of powder. The two collar holes were loaded from the bottom ends in such a way that the fuses were directly opposite those in the bootlegs at the new face of the breast. Leverre trimmed and lit the fuse with a hot-wire lighter, lighting the three bootlegs first and the collar holes last. Lacharity did not recollect how much was trimmed from the first fuse, and it was impossible to locate the trimmed ends after the blast to find out.

After lighting, Lacharity went down the rill to guard at the 6,200-foot level and Leverre was last seen on his way up towards the 6,025-foot level to guard there. The time of lighting was approximately 8.30 A.M.

On reaching the 6,200-foot level, Lacharity asked M. Shubat, motorman, to guard the west side of the manway while he guarded the east. After an interval estimated to be about 4 minutes from the time of lighting, three shots went off in quick succession. This was followed by a delay estimated by Lacharity and Shubat to be about 4 minutes or more, then a fourth shot exploded; the fifth was not heard.

Lacharity waited fifteen minutes or more, expecting to hear his partner call him back into the stope. As it is not regarded a safe practice to return up the rill under the breast until it has been checked from above, Lacharity decided to go up to the 6,025-foot level by way of No. 5 manway and re-enter the stope from the top. This he did, returning to the scene of the blast without encountering

Leverre. He then went directly down to the 6,200-foot level to see if Leverre had passed through ahead of him. Shubat was met again on the 6,200-foot level, and both returned to the scene of the blast. They were puzzled by the disappearance of Leverre but not unduly alarmed. It was decided to pull some of the muck from the stope. Six, 1½-ton cars were withdrawn. At approximately 10.30 A.M. Shift Boss Joe Gibson and Mine Captain Lou Foran were met on the 6,200-foot level by Shubat who informed them of the disappearance of Leverre. Both supervisors went into the stope to investigate. Foran organized a search on the 6,075-foot level and Gibson brought in six men to dig down into the muck. At approximately 11.45 A.M. Leverre's body was found directly under the reblasted collar holes. He had been covered by a foot or so of broken muck.

Investigation showed that the three bootleg reblasts and one of the reblasted collar holes had exploded. The other collar hole reblast had not exploded, and there were 3½ feet of unburned fuse remaining in the hole indicating that the burning end of the fuse had been cut off by one or other of the first four shots.

Although Lacharity was unable to say how much Leverre had trimmed from the fuse, it is obvious that there must have been more than 3½ feet difference between the shot that cut the fuse off and the damaged fuse itself. This coupled with a probable error in the estimation of elapsed time by Lacharity and Shubat could account for the apparent long delay between the third and fourth shots.

Leverre apparently made the same error in judgment or had forgotten the difference in trim of the fuse and returned to the scene of the blast after the third shot. From the position of his body it appears that he was directly below the fourth hole and within 3 or 4 feet of it when it exploded. He may have thought that there were two missed holes.

Whether or not Leverre considered there were missed holes, he violated Mining Act regulations by returning too soon to the scene of his blast, which would require a twenty-minute waiting period for the 10-foot fuse used.

Five fuses measuring 9 feet, 11 inches, of the same bundle from which Lacharity had taken his five fuses were tested for burning speed on the 6,200-foot level. Burning time ranged from 5 minutes and 37 seconds to 5 minutes and 46 seconds with an average burning speed of 34.4 seconds per foot.

Lacharity and Shubat were tested by the Mine Inspector as to their ability to estimate elapsed time while underground. Lacharity estimated a one minute interval to be two minutes. Shubat estimated a two minute interval to be four and a half minutes.

An inquest was held before Coroner J. F. Edis, M.D. in the Council Chambers in Kirkland Lake on January 23. The jury returned the following verdict:

That Norman Leverre met accidental death on January 21, 1952, at 8.35 A.M. (approximately) in 6201-E-61 stope at the Lake Shore mine in Kirkland Lake, Ontario, while reblasting drill holes in the stope.

No. 19

Robert Pitcaithley, Irish, aged 45, married, with two children, was killed on April 10 at 8.10 P.M. when crushed by a fall of rock resulting from a rock burst in the main crosscut of the 5,700-foot level of the Lake Shore mine. Death resulted from taumatic asphyxia and was almost instantaneous. Pitcaithley was a drill runner and had been employed at the Lake Shore mine since 1934.

Pitcaithley and his partner, J. Saunoris, were making preparations to drill some hitches at the main ore pass under the direction of Shift Boss Harvey Simms. A motor crew consisting of S. Simms and R. Senbergs happened to be

at the ore pass at the same time when a rock burst occurred in the immediate vicinity. A severe bump was felt, and a small amount of rock fell from the back. The five workmen immediately left the vicinity and headed towards No. 6 shaft station. The first bump was followed, in less than 30 seconds, by a violent burst that brought down the back and supporting timber on both sides of the ore pass. Pitcaithley was not quite clear of the fall of ground as he retreated towards No. 6 shaft and was buried under the edge of a pile of rock estimated to be of 50 tons. S. Simms, the motorman, had his foot caught by a falling piece of timber and was immediately released by his father Harvey Simms. He was not injured.

Pitcaithley's absence was not noted until the four survivors reached the shaft station. After a brief interval of time, Shift Boss Simms returned to the scene of the burst. It was realized that Pitcaithley was buried in the muck, and immediate steps were taken to recover him. The body was recovered at 10.30 P.M. by a crew working under the direction of Underground Superintendent W. Selnes. Dr. G. M. Cameron, who was present, pronounced the victim dead.

An inquest was held before Coroner J. F. Edis, M.D. at the Council Chambers in Kirkland Lake on April 16. The jury brought in the following verdict:

> That Robert Pitcaithley came to his death due to the cause of a rock disturbance which caused the death of Robert Pitcaithley. We the jury find from evidence submitted by the attending doctor and witnesses that death was accidental.

No. 20

Leo Kensy, Canadian, aged 41, married, with one child, Antonio Poloni, Italian, aged 35, married, with one child, and Aiekso Soopalu, Estonian, aged 43, married, with no dependent children, were killed by a fall of rock caused by a rock burst in the main crosscut of the 5,450-foot level of the Lake Shore mine at 8.30 P.M. on May 31. Two other men, Roderque Charron and Raney Houle, sustained minor injuries in the same rock burst.

Kensy was a shift boss and had been employed at Lake Shore since 1930. Poloni was employed as a loader in a motor crew and had worked at Lake Shore since his arrival from Italy in November, 1949. Soopalu was a drill helper and had been employed at Lake Shore since September, 1950, when he arrived from Estonia.

On the 7.00 P.M.—3.00 A.M. shift of May 31—June 1, two crews consisting of R. Houle, motorman, with A. Poloni, loader; and R. Charron, drill runner, with A. Soopalu, proceeded to the 5,450-foot level to carry out loading and tramming operations. Houle and Poloni were the regular motor crew. Charron and his partner had been doing various jobs on the level prior to the day of the accident and had been instructed to operate a second tram on that shift. When the men arrived at the 5,450-foot level, they started out, taking the two motors from the charging-station located near No. 6 shaft. They found that several pieces of loose had fallen from the back and walls of the crosscut and obstructed the travel of the motors. They noticed also that the ground was "working" a little and a few pieces still falling. A message was sent to the level above to Shift Boss Leo Kensy for instructions. Kensy was not near the telephone and did not get the message but had, in the meantime, climbed down to the 5,450-foot level through the stopes and entered the crosscut from the ore-body end. Kensy instructed Charron and Houle to scale and Poloni and Soopalu to clear the track of fallen rock; he proceeded to scale himself. About ten minutes after Kensy's arrival a rock burst occurred along the walls and back of the crosscut extending along

100 feet of the track between the main ore dump and the ore body. About 200 tons of rock fell. Charron and Houle were standing by a timber ventilation-door frame, which provided some protection. Kensy was a few feet south of the door on the ore-body side. Poloni and Soopalu were north of the door frame towards the ore pass. The fall of rock resulting from the burst buried the three victims. Houle and Charron escaped as soon as they were able and ran to No. 6 shaft, passing over the pile of muck that buried Poloni and Soopalu. Help was summoned and recovery operations began immediately under the direction of Mine Captain Harvey Simms. Underground Superintendent Walter Selnes, arrived shortly after to assume charge of the work. Poloni's body was recovered at 7.40 A.M. on June 1, after 11 hours of digging with a mucking machine, Soopalu's at 8.45 A.M. and Kensy's at 10.00 A.M. Dr. C. S. Harris was in attendance.

Kensy and Soopalu sustained fractured skulls and probably died instantly. Poloni's death was caused by traumatic asphyxiation and probably occurred within a few minutes of the accident.

No. 6 main crosscut on the 5,450-foot level is driven south from No. 6 shaft to the ore body, a total length of 600 feet. No. 4 shaft is about 240 feet south of No. 6 and about 40 feet west of the crosscut. A waste-pass system on the east side of the crosscut is connected to the crosscut with a dumping opening located 140 feet south of the shaft. The main ore-pass system lies on the west side of the crosscut, approximately 350 feet south of No. 6 shaft, with a connecting by-pass located on the west side of the track. The ore body extends in an east-west direction at the south end of the crosscut, approximately 560 feet from No. 6 shaft, and is not mined out at the shaft section above or below the 5,450-foot level. The general dip of the Lake Shore ore is towards the south above the 5,000-foot level, the north wall forming the footwall. Below the 5,000-foot horizon the dip reverses slightly and below the 5,450-foot level the north wall becomes the hanging wall. The ore-pass system had been driven in a zig-zag pattern parallel to the plane and 20 feet distant from the main crosscuts it served. The driving size was originally 6 by 6 feet, but sloughing and caving, particularly around the junction of the by-pass and main pass below the 5,450-foot level, had opened a cavity about 25 feet wide and 50 or 60 feet long. To counteract this caving, concrete pillars had been installed in the pass below the 5,450-foot level. This work involved the placing of 10,000 cubic feet of concrete and took several months to complete. Although rock bursts are not uncommon at Lake Shore mine, the development of bursting in the footwall area is unusual. After a sharp rock burst on April 10, 1952, which resulted in one fatality and affected the main crosscuts on the 5,700 and 5,575-foot levels, immediate steps were taken to re-enforce the timbering in the crosscuts from the 5,575- to 5,825-foot levels. Because of the concreting previously done on the 5,450-foot level, it was considered to be comparatively secure. Since the accident on May 31, the ore-pass system from the 5,325- to the 5,825-foot levels has been filled with waste and abandoned for further use. It is to be supplanted by an internal ore-pass system now being driven.

An inquest was held before Coroner J. F. Edis, M.D., on June 18, 1952, in the Kirkland Lake Council Chambers. In addition to evidence given by eye-witnesses of the accident, Professor R. G. K. Morrison, Chairman of the Mining Engineering Department of McGill University and a world-recognized authority on rock bursting in mines, gave a detailed explanation of this phenomena to the inquest. Mr. Walter Selnes, underground superintendent of Lake Shore mine, submitted a summary of the history of rock bursting at Lake Shore since it

first became evident twenty years ago and described the measures undertaken by the company to combat its effects. The coroner's jury returned the following verdict:

We find that A. Poloni died of suffocation, A. Soopalu died of a fractured skull, and L. Kensy died of a fractured skull caused by a rock burst on the 5,450-foot level of Lake Shore mine on the date of May 31, 1952. We, the jury, find the verdict accidental.

Matachewan Consolidated Mines, Limited

No. 21

Franz Ludwig, German, aged 20, died at 4.15 P.M., May 15, as a result of injuries sustained while blasting in No. 3 blasting chamber of 1117 grizzly. Ludwig was a new Canadian from Germany who had been employed by Matachewan Consolidated Mines, Limited, since February 25, 1952. For the first two months he had been employed as a helper but since May 1 had been classed as a grizzlyman.

1117 grizzly has two blasting chambers through which the broken ore from 1117 stope, 1117 pillar, and 1116 stope is passed. The blasting chambers are approximately 40 feet apart and are connected by a short sublevel drift. The manway raise from the level, 30 feet below, enters the sublevel drift approximately half-way between the blasting chambers.

On the day of the accident, Ludwig, who was working in No. 3 blasting chamber, had blasted 7 block holes. Victor Sventoraitis, another grizzlyman working in the adjacent No. 2 blasting chamber, blasted 10 block holes at the same time. After lighting the two men went down to the level, and waited for about 15 minutes after the blast for the smoke to clear. Ludwig remarked at the time to his partner that there was a missed hole. After working on the grizzlies for about 15 minutes clearing away broken ore, Sventoraitis prepared a pole blast for No. 2 chamber while Ludwig prepared to re-blast the missed hole. Sventoraitis went to No. 3 chamber and noted a coiled fuse about 5 feet long and two pieces of fuse about 3 or 4 inches long sticking out of the missed hole. He returned to his own chamber, shouted to Ludwig to light, and lit his own fuse. On turning the corner into the connecting sublevel, he saw Ludwig bent over, apparently in the act of lighting his fuse. At the same instant an explosion occurred.

As Sventoraitis could not see for the smoke and dust from the blast, he called to Ludwig but, not receiving any reply, he returned to No. 2 chamber and cut the fuse on his pole blast. He then proceeded to No. 3 chamber where he found Ludwig, badly hurt, lying on the muck in the opposite wing raise from where the blast occurred.

Sventoraitis went down to the level and got the help of Shift Boss R. Mills, and the motorman, X. Latellier. Ludwig was removed to surface where he was examined by Dr. F. F. Fitch of Matachewan. The accident occurred at 2.25 P.M., and the victim died at 4.16 P.M. in the mine hospital.

From the evidence it is probable that one of the two short fuses was inadvertently lit while Ludwig was attempting to light the 5-foot fuse.

An inquest was held in the Staff House at Matachewan Consolidated Mines on June 7, 1952, before Coroner A. C. Farlinger, M.D. The coroner's jury brought in the following verdict:

We find that Franz Ludwig died at 4.16 P.M., May 15, 1952, as a result of an explosion in grizzly 1117 No. 3, Matachewan Consolidated Mines at Matachewan at 2.30 P.M. on May 15, 1952. Cause of the explosion is not known. The fatality would seem to be accidental with no blame attached to anyone.

McIntyre Porcupine Mines, Limited

No. 22

George Maltais, Canadian, aged 42, married, with three dependent children, was killed in 2132 No. 5 stope of the McIntyre mine about 8.45 A.M. on January 3, by a fall of ground. Maltais was employed as a miner. He had worked at the McIntyre 22 years and 4 months.

2132 No. 5 stope had been mined to sill elevation. Mining operations at the time were preparatory to mining the sill by the square-set rill method. A breast had been carried east and west from the No. 1 raise. The two breasts were 43 feet apart. There was a fill barricade under the west breast, and another one 12 feet behind the east breast. The area between these had been filled from the raise midway between the two barricades. The top of the fill was 25 feet below the 2,000-foot level.

The area was to be timbered with square sets. In the centre of this area there had been a settlement of a pyramidal block of waste from the south wall of the stope. Instructions had been issued to blast the top off this waste to make room for square sets. Five short holes had been blasted in this waste and in the wall by the end of the previous shift. The instructions to Maltais and his partner, Frank Pesdirz, were to go into the stope to scale and clean out the waste to make the stope ready for the square sets.

Maltais and his partner, Frank Pesdirz, entered the working area from the west. Maltais scaled the back and wall from the west barricade to the raise and then worked around the north side of the raise and the lip of the raise on the east side. Pesdirz then took over and scaled toward the south wall where the pops had been blasted. The stope was about 10 feet wide in this area. Maltais was standing between the raise and the north wall when about 3½ tons of quartz fell from the back directly on him. This quartz fell out of the area between the raise and the north wall, which was sericitic rock. The piece had an extreme length of 8½ feet; its width averaged about 4 feet; its thickness, quite uniform, was about 15 inches.

Pesdirz could do nothing for Maltais by himself; he went directly to a nearby stope just below the 2,000-foot level and secured help. One man went to the shaft for a stretcher and to call a doctor. Dr. Dobson arrived in time to examine Maltais in the stope, after he was released about 9.40 A.M. The cause of his death was given as traumatic asphyxia due to crushing of the chest. His neck was also believed to be injured, and the femur bones in both legs were broken. His death followed within a very few minutes of the accident.

An inquest was held before Coroner H. E. Montgomery in the Fire Hall at Schumacher, on January 10. The jury returned the following verdict:

> We the jury find, through evidence submitted, that deceased, George Maltais, came to his death in 2132 No. 5 stope on the 2,100-foot level at the McIntyre mine on January 3. Accidental death through a fall of loose, with no blame attached.

No. 23

John Gotch, Canadian, aged 53, a stopeman, born in Czechoslovakia, and employed at McIntyre since 1927, was killed instantly by a fall of ground in 726-10 stope, about 9.45 A.M. June 12. Joseph O'Connor, Canadian, aged 58, employed as a shift boss, was also killed at the same time. He had been employed at the McIntyre mine since 1924.

The accident occurred in the west end of 726 No. 10 slice-and-fill stope where a 70-foot length of sill west of the No. 1 raise was being mined. At the

end of the night shift from 7.00 P.M., June 11, to 3.00 A.M., June 12, five holes remaining in a breast were blasted. This completed the advance of a slice from the west end of the stope to within 10 feet of the No. 1 raise, leaving the back 12 to 13 feet lower than 620-2 drift above. The vein being mined dipped approximately 50 degrees north, and, along the dip of the vein, the 620-2 drift was about 20 feet distant from the stope. This drift had been driven eastward from No. 5 shaft. About midway between the 620-2 drift and the stope back, there was another old drift driven on the vein westward from the No. 6 shaft. There was approximately 6 feet of ground between this drift floor and the stope back.

When O'Connor entered the stope, there was obviously a lot of loose to be scaled. Gotch was washing the stope back and the muck pile with the water hose. He was about 25 feet behind the breast. According to Gotch's helper, Golob Krznaric, O'Connor and Gotch were discussing the manner in which the loose ground should be handled when 4 to 5 tons fell from the north side of a fault, dipping 75 degrees south and cutting diagonally across the stope at approximately 30 degrees to the strike of the vein. The fallen ground extended along 9½ feet of the fault face and extended across to the hanging wall of the stope. At the floor level, the stope width in this area was about 13½ feet. The back width was about 7½ feet. A large percentage of the fallen ground was quartz. Gotch was crushed under a piece weighing about 1½ tons. O'Connor was removed from a point about 6 feet behind Gotch. He was south and west of most of the fallen ground, but one piece of quartz weighing about ⅓ ton was resting on his arm and shoulder. Krznaric, who was standing a few feet behind both men, escaped without injury at that time but was struck in the back by smaller pieces falling later, as he tried to assist O'Connor. He suffered a bruised back and was X-rayed for more serious injuries.

Krznaric summoned help. Dr. D. W. Templeton arrived in the stope in time to remove O'Connor. He stated at the inquest that O'Connor died a few minutes after being taken to St. Mary's hospital in Timmins and before being removed from the basket stretcher.

The causes of the deaths of both men were much the same. Both suffered crushed chests and fractured ribs, legs, and spines.

The inquest was held before Coroner H. E. Montgomery in the Schumacher Fire Hall, at 4.00 P.M., June 25. The jury returned the following verdict:

We the jury, called to look into the deaths of Joseph O'Connor and John Gotch, killed by a fall of rock at the McIntyre Porcupine Mines, at 726-10 stope on the 12th day of June, 1952, find that the deceased came to their deaths accidentally through the fall of rock from the back of their stope and that no one can be blamed.

Nipissing O'Brien Mines, Limited

No. 24

Peter Tuckey, British, aged 32, married, with one child, was instantly killed when an unexpected explosion occurred at the face of a crosscut where he was working on the 165-foot level of the Nipissing O'Brien mine at approximately 3.45 P.M. on May 15. James Jones, his partner, sustained injuries to his back and shoulders when struck by flying fragments of rock from the same blast. Jones' injuries were not serious.

Tuckey, who had recently arrived from England, had been employed by the Cross Lake Lease in December, 1951, and continued there when the property changed hands to Nipissing O'Brien Mines, Limited, in February, 1952. James Jones, his partner, had also worked for Cross Lake Lease in the same mine and had had several years mining experience.

Jones and Tuckey had been driving 2-222 crosscut, the face of which was approximately 180 feet south of the O'Brien No. 2 shaft. During the early part of the day shift on May 15, the two men had drilled off a 28-hole round. The round was drilled about 5 feet deep in a conventional manner with a six-hole triangular burn cut, three holes of which were loaded and primed. Eight sticks of powder were used in the three cut holes and six sticks each in the remaining holes of the square up. According to Jones, only one fuse was used in each hole except one of the lifters, which was double primed because it was under water.

Seven-foot fuses, stained red on the uncapped end, were used throughout. After the accident, fifteen of the trimmed ends were recovered, the longest of which was 19 inches. This would indicate that at least 5 feet, 5 inches, of fuse remained in that particular hole. If there was a longer trim made, it was not found in the muck. A test of the fuse that was used had an average burning speed of 37.6 seconds per foot. Jones stated that he used only one spitter, which was still burning when the explosion occurred. This type of hot-wire spitter had an average burning speed of 1 minute and 40 seconds according to several tests made after the accident.

According to Jones, he lit his hot-wire lighter with a cigarette lighter and proceeded to pit the fuse, starting at the cut. Tuckey was standing behind him during the lighting operation but not taking part. Jones was stooping forward lighting the last lifter in the lower right hand corner of the face when one of the holes exploded. Jones was struck on the shoulder and back with flying particles of rock. The same blast apparently killed Tuckey who stood behind. Jones was dazed but not rendered unconscious and was able to retreat about 70 feet around a corner to safety. Tuckey's body was found 30 feet from the face after the round had gone. He was not covered with the muck from the blast and from his position appeared to have been forcibly thrown back.

L. Cassidy and R. Moore, two other miners, had been working on the same level in another heading located about 200 feet away from 2-222 crosscut. Moore had gone to the shaft station, and Cassidy was passing the intersection of the drift leading to 2-222 crosscut when a shot went off, which blew out his carbide lamp. He knew where the blasting was taking place and was not unduly concerned. He did, however, note the absence of Jones and Tuckey from their usual guarding position. Cassidy stated that the shot that blew his lamp out was the first he heard and the remaining shots in the round followed in the usual time interval without any undue delay between the first and remaining shots. When he arrived at the station and noted the absence of Jones and Tuckey he became alarmed and started in towards the place where they were working. He had to pause and relight his lamp from time to time and was unable to see because of smoke. He heard Jones call for help and instructed Moore to ring 9 bells for help from surface. He then returned to where Jones was standing and helped him out to the station.

Dr. H. A. Dunning who had been summoned went underground with Shift Boss Labelle and Manager F. Austin. After smoke was blown to clear the heading, they went into 2-222 crosscut and found Tuckey lying on the track about 30 feet from the face. Part of his head had been blown away. He was pronounced dead. Tuckey suffered multiple fractures of the skull with brain damage which caused death. In addition, there were unspecified fractures in other bones of his body.

The cause of the unexpected explosion remains obscure. If all the holes exploded in regular sequence as Cassidy stated, it does not seem reasonable that any one was premature unless all were. Also if all holes had the primer at

the bottom as Jones stated, there would have to be at least 4 feet, 6 inches, of fuse to the collar of the hole, which would have required about 2¾ minutes to burn. The maximum time for one spitter to burn out would be about 1¾ minutes. A probable explanation would be that there had been a premature blast, caused by a short fuse or lighting too soon, which Cassidy had not heard and which had exploded a couple of minutes before the blast that first blew out his lamp. Jones in his dazed condition could not estimate the time intervals. There is the possibility that Jones or Tuckey inadvertently lit one of the fuses with a carbide lamp before starting with the hot wire lighter and both were unaware of it.

An inquest was held in the Cobalt Community Hall in Cobalt, on May 27, before Coroner W. C. Arnold, M.D. The coroner's jury brought in the following verdict.

On the 15th day of May, 1952, at the Nipissing O'Brien mine, Coleman township, Ontario, Peter Tuckey came to his death accidentally while working in 2-222 crosscut on the 165-foot level of the No. 2 shaft, O'Brien property, with no blame attached to anyone.

The jury does recommend that 8-foot fuses be used in all drifting and crosscutting and that always have two spitters burning during lighting operations for blasting a round at the face.

It should be noted in the above accident that Mr. Leonard Cassidy showed great fortitude and courage when he advanced towards the vicinity of 2-222 crosscut to aid Jones who was disabled, while shots were still exploding.

Ontario Pyrites Company, Limited

(Temiskaming Construction, Limited, contractors)

No. 25

Arnold Smith, Canadian, aged 35, single, employed as a miner by Temiskaming Construction, Limited, at the Errington mine of Ontario Pyrites Company, Limited, was fatally asphyxiated by a deficiency of oxygen in No. 512A stope, on the 500-foot level, about 4.55 P.M., July 7. He had been employed since May 27.

The Errington mine had been flooded since 1932 when Treadwell Yukon Company, Limited, suspended operations there. Early in 1952, the present owners engaged Temiskaming Construction, Limited, to construct buildings, install a mining plant, and dewater No. 1 shaft. This shaft is 619 feet deep and is connected to No. 2 shaft, 3,600 feet to the east, on the 300- and 500-foot levels. Shrinkage stopes were mined from these levels, and several raises were driven through to the 300-foot level. The tracks and pipelines were removed from underground before the mine was shut down.

No. 512A stope consists of an untimbered heading, about 25 feet long, 8 feet wide, and 10 feet high. It is about 20 feet above the back of the main drift on the 500-foot level and extends westward from the top of a 45-degree raise on the north side of the drift. This untimbered raise is 575 feet from No. 1 shaft. It has two 16-foot ladders laid end to end on the footwall.

Dewatering commenced late in April. By July 7, the 500-foot level was free of water from No. 1 shaft to a point in the main drift about 1,500 feet east of the raise into No. 512A stope. A reversal of grade at this point had kept the water in the west end of the level from draining towards No. 1 shaft. It was planned to remove some of this water by deepening the ditch.

A natural current of fresh air came down No. 2 shaft to the 300-foot level, where part of it flowed directly to No. 1 shaft, and the balance came down the raises to the dewatered portion of the main drift on the 500-foot level before flowing into No. 1 shaft and upcasting. The underground workmen had been warned to stay in the drifts and crosscuts connecting the shafts.

About 4.30 P.M. on July 7, P. Dhinel, D. McDonald, and A. Smith were sent down to the 500-foot level by the mine foreman, H. Byberg, to deepen the ditch in the main drift. They went out to the high point in the drift then returned to the vicinity of the raise into No. 512A stope and waited for the cagetender, A. Rheaume, to arrive with some equipment. The latter had just reached them, when Smith announced that he was going up the raise to look around. Dhinel and Rheaume told him that it would be dangerous to do so, but Smith disregarded the warning and went up the ladders into the stope. It was then about 4.55 P.M., and he collapsed a few moments later when out of sight.

McDonald heard him fall, and started up the ladders. He found it difficult to breathe on approaching the top of the second ladder, and returned to the level. Dhinel then went up the ladders, and succeeded in reaching Smith, who was about 10 feet away. He pulled him to within a few feet of the raise, and collapsed beside him. Rheaume and McDonald then went to surface, and J. C. Kirkland the general superintendent of Ontario Pyrites Company, Limited, was notified.

Kirkland gave instructions to have oxygen cylinders and hose from welding equipment sent down as soon as possible and proceeded to the 500-foot level with Byberg and others. They made an unsuccessful attempt to catch hold of Smith and Dhinel from below with a pike pole before an oxygen cylinder and hose were received. A rope was then tied to McDonald, and the oxygen turned on. He held the hose near his face, went up the ladders, and brought Smith down within reach. R. Hughes then took the oxygen hose, and recovered Dhinel, the latter regained consciousness as soon as he reached the level.

Smith was taken to surface immediately, arriving there about 5.25 P.M. Artificial respiration was then started and continued until 7.35 P.M. when Dr. S. F. Legris declared him to be dead. No indication of carbon monoxide poisoning was found on testing his blood.

Air tests were made afterwards with equipment from the Sudbury Mine Rescue Station. A dangerous deficiency of oxygen was found on reaching a point in the raise about 4 feet below the stope floor. This was just above the high water mark on the walls. Tests for carbon monoxide and methane were negative.

The air in the stope had apparently been trapped there since 1932, and depleted of oxygen by the water. There may also have been some oxidation of the wall rocks.

An inquest was held by Coroner H. C. Nash, M.D., at Sudbury on July 16. His verdict was as follows:

Arnold Smith died July 7, 1952, at Ontario Pyrites mine of anoxemia. He did, against instructions, enter a stope which through disuse did not contain enough oxygen to sustain life. No blame attached to anyone.

Paymaster Consolidated Mines, Limited

No. 26

Wasyl Babiak, Polish, aged 33, a machine runner at the Paymaster mine, was killed in 2527A shrinkage stope on the 2,575-foot level, about 5.45 P.M., August 13, when he was crushed by a fall of waste rock released by the barring down of muck into a crater created by chute pulling. Babiak, a recent immigrant to Canada, had been employed at the Paymaster mine since November 6, 1951. He was promoted to machine runner April 1, 1952.

No. 2527 shrinkage stope, 252 feet in length, started with 14 chutes, numbered consecutively from east to west, on the 2,575-foot level. When it was up

about 60 feet above the track, 100 feet of stope at the east end was dropped. At this elevation the vein flattened to approximately a 30-degree dip. At this point four pillars were left in the area pulled by chutes No. 5 to No. 12. These pillars were actually one pillar with three draw-point raises through it. These draw points could be reached from the manway in the east end of the stope by walking along the flat footwall. The top of this pillar was 90 to 106 feet above the level. Above the pillars, the stope straightened up to about a 60 degree dip.

On July 31 the stope back was approximately 175 feet above the level. On this date, chute pulling commenced from No. 10 chute, and the muck above the pillars did not move. A catwalk was then put in just above the muck level, from 4 to 7 feet below the stope back. The stope was washed at this time and thoroughly scaled. No additional work was done in the stope. The stope crews did their own chute pulling. From July 31 to August 12, when the hang-up of muck was brought down, 209 tons of muck were pulled from No. 10 chute, and 240 tons were pulled from No. 11 chute. When the muck moved at the top of the stope, a chimney was created, 10 to 12 feet long and stope width, which in this section was about 5 feet.

No work was done in the stope on the day shift of August 13. At the beginning of the night shift, 4.00 P.M., Babiak and his partner, Josef Kitka, were given a new ¾-inch, 100-foot hemp rope; they were instructed to use it and to break down the muck into the chimney. At 4.45 P.M., when Shift Boss Roy Wilson visited the stope, the men were doing this. Babiak was wearing the safety harness and had the rope around a sprag near the back of the stope, about 15 feet west of the chimney. He also had the free end of the rope to adjust his scope of movement. Wilson had Babiak sound the hanging wall. According to his evidence, there was no indication that it was loose at the time. Wilson gave instructions at this time that the man not barring down muck was to hold the loose end of the rope and adjust it from the catwalk. The men later changed positions and changed again, a second time, about four minutes before the accident. About 5.45 P.M., without any warning, a piece of waste, triangular in cross-section, 60 feet long, up to 4 feet thick at the top, and up to 14 feet deep, broke away from the hanging wall and slid partly down the sloping muck pile severing the rope that held Babiak and burying him under several large chunks of waste. About 100 tons of waste fell. The last piece moved to release Babiak was about 16 feet long by 5–7 feet wide and averaged about 2 feet in thickness. Kitka does not know how he escaped. He climbed a raise manway in the west end of the stope to the 2,325-foot level and summoned help for the release of Babiak. A length of 25 feet at the west end of the fallen ground broke away about a foot above the catwalk where he was stationed, and this part of the catwalk went down with the waste rock. With the exception of the east end of the fallen rock, which extended nearly across the chimney, the lower, thin edge of the piece was mostly below the muck level. Kitka suffered a bruised right thigh and side and suffered considerably from shock. He returned to work on August 19.

Some 35 stulls and 5 V sets of timber were put in the stope before digging in search of Babiak was commenced. The waste rock was then passed up and piled behind the timber as the free end of the rope, which was dropped by Kitka, was followed down. Babiak was removed from the stope at 1.30 P.M. on August 14.

The cause of Babiak's death was given as a basal fracture of the skull. He was badly crushed and suffered numerous fractures.

An inquest was held before Coroner H. E. Montgomery in the Tisdale Municipal Building on August 20. The jury returned the following verdict:

We the jury find that the death of Wasyl Babiak on August 13th at the Paymaster mine was accidental with no blame attached to anyone.

Preston East Dome Mines, Limited

No. 27

Michael J. Sutherland, Canadian, aged 34, married, with three children, employed as a shift boss at the Preston East Dome Mine, was fatally injured about 10.35 A.M. on July 14, when struck by an arc chute gate while travelling through a chute from No. 1887A stope to No. 1880 scram drift, above the 18th level.

The stope is being opened over timber in the inclined scram drift, and has a single chute. The chute is equipped with an arc chute gate, made from ½-inch steel plate, which weighs 178 pounds. The broken ore on the stope floor is scraped into the chute and falls to the floor of the scram drift when the gate is open. It is then scraped about 130 feet down the incline to a box-hole leading to the 18th level, about 22 feet below. An inclined manway, 50 feet long, extends from the stope floor to the 17th level.

The chute was completed on April 30, and broken ore was first scraped into it on May 5th. On the latter date, the chute gate was fastened in the open position by means of an 8-inch spike driven into the chute side to a depth of 2½ inches. The spike was at the lower edge of the gate, and held it about 2½ feet vertically above the chute bottom. The gate remained open until the accident occurred.

On the morning of July 14, Mine Captain R. Cockerline and Shift Boss M. J. Sutherland were inspecting this area of the mine. They came out of No. 1760 stope onto the 17th level about 10.30 A.M. and proceeded about 60 feet to the top of the manway into No. 1887A stope. Cockerline then went on to No. 1778 stope, about 80 feet away, while Sutherland went down the manway.

Cockerline inspected No. 1778 stope, which was just above the level, and returned to the manway within a short time. He then went down the manway into No. 1887A stope, which was being worked on night shift only. On reaching the stope floor, he found Sutherland lying in the chute with the gate on his chest. He went down to the scram drift through a hole in the floor timber, released Sutherland by lifting the gate, and summoned assistance.

Sutherland spoke after he was placed on a stretcher but died before reaching the shaft station. An autopsy revealed that he had sustained a fractured sternum, and that the fractured bone had pierced large blood vessels, causing his death from internal haemorrhage.

It was found that the spike holding the gate open had bent over sufficiently to release the gate at the moment when Sutherland was underneath it.

An inquest was held before Coroner H. E. Montgomery in the Municipal Hall at South Porcupine on July 18. The jury returned the following verdict:

We, gentlemen of the jury, find that this man Joe Sutherland came to his death on July 14, 1952, at approximately 10.30 A.M. at Preston East Dome Mines, in 1887 stope on 1800 level. The cause of the death was accidental. No blame attached to anyone.

We recommend that this type of chute be more securely fastened or closed when not in use.

Steep Rock Iron Mines, Limited

No. 28

Ralph Bowe Atkinson, English, aged 57, married, was killed instantly at about 8.30 P.M. on May 11, when run over by the right front wheel of a 20-ton

Euclid truck at No. 6 waste dump at Steep Rock Iron Mines. Atkinson had been employed by Steep Rock for several years and had worked as a dumpman for the past two years.

As a dumpman, Atkinson's duties were to spot the trucks as they approached the waste dump and to show the drivers where to dump the loads. On the afternoon shift of May 11, Atkinson was working as dumpman at No. 6 waste dump. As truck No. 69, driven by Frank Newbold, approached the dump area it made a complete right turn and prepared to back up to the edge of the dump. Atkinson stood on the left hand side of the truck and signalled the driver to stop at a safe distance from the edge of the dump. The driver raised the box of his truck and then eased the truck forward to clear the load.

In the meantime, Euclid truck No. 59, driven by S. Demowski, approached the dump, made a right turn and stopped on the right side of truck No. 69. As his truck came to a stop Demowski saw Atkinson fall to the ground in front of Newbold's moving truck. He waved at Newbold and Newbold stopped his truck. Atkinson had fallen, face down, and the right front wheel of the truck had passed between his legs and over his body and head. The accident occurred shortly before 8.30 P.M. and visibility was good at that time.

Dr. Adey was called and examined the body at the scene of the accident. He stated that death had been instantaneous and due to crushing injuries to the body and head.

It would appear that Atkinson, after signalling Newbold where to dump his load, walked around to the front of the truck, unseen by Newbold who was engaged in the dumping manoeuvre. When the truck box was tilted to its full dump position Newbold drove forward the length of the truck, 25 feet, 10 inches, which is the accepted practice. Normally the dumpman remains on the left hand side of the truck until it drives away. Newbold, sitting in the cab, could not see a man standing directly in front of the truck because of the height of the engine hood.

An inquest was held at the Atikokan Provincial Government building at 9.00 P.M. on May 12 by Coroner W. G. Boyle, M.D., with Crown Attorney N. S. Croome in attendance.

The coroner's verdict was as follows:

That Ralph Bowe Atkinson came to his death on May 11, 1952, at about 8.30 P.M. at No. 6 Waste Dump at Steep Rock Iron Mines, from crushing injuries to body and head, caused by being run over by the right front wheel of Euclid truck No. 69, driven by F. Newbold.

From evidence, no blame can be attached to driver of truck or any other workmen or officials of the mine, and death was accidental.

Sylvanite Gold Mines, Limited

No. 29

Giovanni Berlingeri, Italian, aged 45, married, with two dependent children, was killed on June 7, at 10.40 A.M., by a fall of rock in 1204W stope on the 1,250-foot level of the sylvanite mine. Berlingeri had been employed at the Sylvanite mine since October 15, 1948, on his arrival in this country from Italy. He had been employed in various underground jobs during his four years at Sylvanite and, at the time of his death, was working as a slusherman in 1204W stope with his partner E. Celli.

1204W stope had been mined out approximately 3½ feet wide to the upper and lower limits of the ore, about 90 feet vertically above the 1,250-foot level at a 35-degree angle. The west end of the ore body raked upward at a flat angle. Most of the broken ore had been removed by shovelling and scraping with a slusher, and at the time of the accident only a few feet of broken muck remained

along the bottom of the stope. Timbering operations were carried out intermittently, heavy stulls being placed as required, 12 to 15 feet apart. The hanging-wall rock of the stope was reasonably strong, and scaling of loose was carried out by the slushing crew from time to time when the removal of broken muck exposed loose pieces. Timbering by posts was kept to within a few feet of the muck line.

Berlingeri noted a piece of loose over the slusher travelway near the west end of the stope. He proceeded to scale it with a 5½-foot scaling bar. According to his partner, E. Celli, he tried to scale it from one side, and being unable to get a good leverage, attempted to walk under or around it to try it from the opposite side, when a mass of rock weighing about 2 tons, fell on him, crushing him against the footwall. He called for help to Celli who was standing a few feet away. Celli removed the broken rock from his body and immediately went for help to the level below. Dr. S. C. Harris was summoned and went immediately to the scene of the accident. When he arrived at 11.00 A.M. he pronounced Berlingeri dead.

Berlingeri sustained a crushed chest with internal injuries that caused his death in addition to a fractured right clavicle and left leg. Death followed within twenty minutes of the injuries.

An inquest was held before Coroner J. F. Edis, M.D., on June 11 in the Kirkland Lake Municipal Chambers. The jury brought in the following verdict:

We the jury find that Mr. G. Berlingeri met accidental death by scaling loose in No. 1204 stope at the Sylvanite mine on June 7, 1952.

On Surface at Mines

Milnet Mines, Limited

No. 1

Edwin Johnson, Canadian, aged 42, single, employed as a mechanic at the Milnet mine, was fatally injured about 3.45 P.M. on December 13, when hit on the head by an undercut arc gate at the surface crushed-ore bin. He died in the mine warehouse about an hour later. His employment dated from December 9.

Development ore is hoisted to surface, crushed, and conveyed to a 600-ton bin from which it is drawn into trucks for transportation to the reduction plant of Falconbridge Nickel Mines, Limited.

The bin is carried on posts at a height of about 12 feet above the ground. A loading aisle, about 11½ feet wide, extends from east to west underneath the bin. There are two chutes at 13½-foot centres on each side of the aisle. The chutes are equipped with undercut arc gates, which are actuated by 6-inch air cylinders. The cylinder piston-rods have a 3-foot stroke and, when fully retracted, bring the gates to within 4 inches of the timbered walls of the aisle. The lower edge of the gates are then about 10 feet above the ground. The control valve for the southwest chute is on the south wall of the aisle, about 5 feet above the ground and 7 feet east of the chute. Shipments of ore commenced on December 12.

On December 13, considerable difficulty was experienced owing to the freezing of fines at the lower edge of the gates. This prevented the gates from closing properly and caused a large amount of spillage to accumulate in the aisle. It was then decided to burn off a piece of angle iron from the lower edge of the gates to provide drainage.

E. Johnson commenced the job about 3.30 P.M., starting with the southwest gate. He used a timber brace from the south wall to the roof of the aisle as a working location and completed the work on this gate about 15 minutes later. He then told R. Baker, who had backed a truck under the chute, to operate the

gate. Baker went to the control valve, while Johnson remained on the timber brace. Baker opened the gate part way, closed it, and then opened it fully. In some manner, Johnson got in the way. The gate hit him on the side of the head and jammed him against the wall.

He was removed to the mine warehouse and given artificial respiration with oxygen but died shortly after the arrival of Dr. D. A. McGowan from Capreol. His death was attributed to fractured cervical vertabrae.

An inquest was held by Coroner P. E. Laflamme, M.D., at Sudbury on January 14. His verdict was as follows:

Edwin Johnson, aged 42, came to his death at the property of Milnet Mines, Limited, on December 13, 1952, as the result of injuries received when hit by an air-operated gate on a loading chute under the surface crushed-ore bin about an hour previously.

From evidence given, he had used a torch to burn off part of an angle iron on the back of the gate and had his head in the way when the gate was opened at his request.

Accidental death with no blame attached to anyone.

MacLeod-Cockshutt Gold Mines, Limited

No. 2

Ivan Kuchan, Yugoslavian, aged 53, married, employed at the MacLeod-Cockshutt mine as a blacksmith, died of cyanide poisoning in the MacLeod-Cockshutt blacksmith shop about 1.35 P.M., October 16. Kuchan was preparing to "case-harden" a valve wrench when he accidentally inhaled the cyanide fumes and dust. Kuchan had been employed continuously as a blacksmith, at MacLeod, since August 26, 1938.

"Case-hardening" or "carburizing" is the process of making the outer shell of the tool hard enough to resist wear while the inner core remains soft enough to resist shock. The method used at the MacLeod-Cockshutt mine consisted of submerging the tool in a bath of melted sodium cyanide. The sodium cyanide was kept in a pot made from a 12-inch length of 8-inch-diameter steel pipe. A rounded bottom was welded on one end of the pipe and a lid fitted over the other end. The solidified sodium cyanide filled the pot to about 5 inches from the top. The same pot and the charge of sodium cyanide had been used repeatedly over a period of several years, and the same process had been used at MacLeod since 1936.

At approximately 1.20 P.M. Kuchan placed the covered pot on the forge and commenced to melt the sodium cyanide. About eight minutes later he noticed the flames from the coke in the forge turn from yellow to orange. Kuchan thought that there might be a leak in the pot and decided to remove it from the fire. He told Clements, who was also working in the blacksmith shop, to shut off the air valve leading to the forge. He removed the lid from the pot and then tried to lift the pot from the forge with the tongs. As he tilted the pot, the hard crust on top of the cyanide broke and Kuchan was peppered with particles of cyanide. His shirt and trousers were set on fire, and other particles struck his face and right ear. The accident occurred about 1.35 P.M.

Dr. D. A. McBurney was called, and blankets were brought from the first-aid room. Kuchan was suffering from burns but was able to walk across the blacksmith shop. Clements helped Kuchan remove his burning shirt. About five minutes after the accident Kuchan staggered and collapsed. He was covered with blankets, but when Dr. McBurney arrived at about 1.45 P.M. Kuchan was dead. Dr. McBurney found first- and second-degree burns on both hands, his right arm, shoulder, front and right side of his face and flash burns on his chest.

Dr. A. E. Allin, provincial pathologist, performed an autopsy on Kuchan and found that death was due to cyanide poisoning. He was of the opinion that fumes or particles of cyanide had entered Kuchan's mouth and nostrils and caused his death. The cyanide particles that caused the burns might also have had some effect. Dr. Allin stated that Kuchan was in excellent physical condition, and that his heart was sound.

J. Hendry, mechanical superintendent at MacLeod-Cockshutt, had used this method of tempering steel over a period of more than 40 years and knew of no previous similar accidents. Normally the pot is not moved from its position on the forge from the time heating starts until the process is completed, and the sodium cyanide has again cooled and hardened. A lid covers the pot to prevent splattering, and the hood and exhaust pipe over the forge would take care of possible fumes. Sodium cyanide melts at 562° C.; Mr. Hendry estimated that the fire in the forge was between 1,200° C. and 1,800° C. At the time of the accident most of the cyanide had melted, but a hard crust remained on top. This crust was fractured by the tilting of the pot, and pressure caused by the heating of the cyanide forced the particles through the crack. Mr. Hendry estimated that it would take 15 minutes to completely melt the cyanide.

An inquest was held at 2.00 P.M., October 20, before Coroner C. Powell, M.D., in the Legion Hall at Geraldton. The verdict of the jury was as follows:

> We the Jury find that Ivan Kuchan came to his death on October 16 at approximately 1.30 P.M. at MacLeod-Cockshutt Gold Mines, Limited, due to cyanide poisoning caused by cyanide being taken into the system in some manner following an explosion of molten cyanide.

Smith and Travers Company, Limited

No. 3

Conrad Trottier, Canadian, aged 20, single, employed as a diamond-driller by Smith and Travers Company, Limited, and Lucien Ross, Canadian, aged 18, single, employed as a diamond-drill helper by the same company, were drowned in Whitson lake, Blezard township, about 4.30 P.M. on July 7.

Smith and Travers Company, Limited, had recently moved a diamond-drill from the vicinity of Val Caron, on the west side of Whitson lake, to a site on the east side. The company did not set up a camp at the new site but supplied a rowboat to transport the crew across the lake, a distance of about a mile. The workmen were paid from the time they left Val Caron until they returned. Whitson lake is a public waterway.

On July 7, the crew at the new site consisted of five workmen and a foreman, A. Mallette. The workmen were C. Trottier, M. Trottier, M. Brisson, F. Larocque, and L. Ross. Shortly before 4.30 P.M., the entire crew entered the boat and started across the lake. The boat was low in the water, and a strong wind was blowing. They had only gone about 300 feet when the waves upset the boat.

Brisson managed to pull Mallette and Larocque over to the boat, and the three of them held on until it drifted to the east shore. The others attempted to swim to shore, but C. Trottier and L. Ross sank before reaching there. M. Trottier arrived safely, and walked around the lake to summon assistance. The Provincial Police detachment in Sudbury was notified shortly before 6 P.M., and dragging operations were commenced as soon as possible.

The body of L. Ross was recovered on the following day, but that of C. Trottier was not found until July 11.

Coroner P. E. Laflamme, M.D., decided that an inquest was unnecessary. In his statutory declaration he gave the cause of death as accidental drowning.

Steep Rock Iron Mines, Limited

No. 4

Joseph Lis, Polish, aged 57, married, employed as a track leader in the railway ore-loading yards, of the Steep Rock mines, was instantly killed when run over by a Canadian National Railway's switching locomotive at 10.35 A.M., on November 11. He was first employed at Steep Rock on January 20, 1945, and had worked on the crushing and loading of ore, during the shipping season, since that time.

The railway spur, extending six miles north from Atikokan to the loading yards, is owned and operated by the Canadian National Railway. Train crews, consisting of an engineer, fireman, head switchman, and two assistant switchmen, bring in trains of empty 60-ton bottom-dump ore cars and spot them above the loading points. Steep Rock employees then load the cars and move them to the south end of the yard where they are sampled and made up into trains. There is a 1.5–1.8-percent grade from the north to the south end of the yards, and Steep Rock employees can control the movement of the cars by operating the handbrakes.

The north end of the yard is double-tracked for the last 1,000 feet. Freeborn, high-sulphur ore, is crushed in Holland crushers and carried in Euclid trucks to the overhead loading ramp, near the north end of the yard, where it is dumped directly into the ore cars. Steep Rock employees working in the Freeborn loading area include a loader, a track leader, and three track helpers. The loader signals the trackmen to move the cars by blowing a whistle, and the trackmen operate the handbrakes to control the movements of the two cars that are being loaded. When loading is completed, the cars are spotted at a point about 150 feet south of the loading ramp. The track leader then takes over and moves the loaded cars, four at a time, to the south end of the yard.

On the morning of November 11, B. Coughlin, locomotive engineer, in charge of a Mikado No. 3291, type 282, switching locomotive and tender, brought 80 empty ore cars from Atikokan to the loading yard. He left 52 cars at the south end of the yard and pushed the other 28 to the Freeborn loading area. Sixteen of the cars were spotted on the east track, north of the ramp. Coughlin then pulled the remaining 12 cars 500 feet to a switch and returned on the west track. The 12 cars were spotted on the west track above a cross-over switch and about 100 feet north of the ramp.

The switchmen uncoupled the locomotive and signalled to the engineer that he was free to back up. As the locomotive moved south, the three switchmen were standing on the north end of the locomotive. A. Cenerini, track helper, was standing between the east and west tracks just north of the ramp. As the locomotive was passing him, he saw Joseph Lis walking south between the rails of the west track, about 120 feet south of the ramp, with his head down and hands clasped behind his back. Cenerini signalled to the engineer by waving his arms and shouting, but the engineer misunderstood his signals. He shouted to Lis twice and pointed in his direction but by this time Lis was out of sight. After the locomotive passed, Cenerini crossed to the west side of the west track and saw that Lis was being dragged by the locomotive.

When the north end of the locomotive was about 160 feet south of the ramp, the head switchman saw Lis's body lying across the west rail of the track. He stepped off the locomotive and signalled the engineer to stop. The locomotive wheels had crossed over Lis's abdomen, cutting him in two. Scuff marks were found on the centre of the track which indicated that Lis had been dragged 45 feet. Blood and parts of clothing were found on the locomotive wheels.

The engineer's vision was obscured by the locomotive tender, and he was unable to see Lis walking down the track. C.N.R. safety rules forbid the switchmen to ride the front of the locomotive when going ahead or the back of the tender when backing up. From where they were standing at the front or north end of the locomotive, the switchmen were unable to see the track south of the tender at the time they signalled the engineer to back up. The train crew stated that the locomotive bell was ringing from the time the locomotive started to back up until the time it stopped. None of the Steep Rock employees remembered hearing the bell, but all thought that it could have been ringing. The correct signal for stopping the locomotive is the "wash-out" signal, which consists of moving the hands in a semi-circular movement below the waist. In his excitement Cenerini forgot the signal.

At the time of the accident, Lis was waiting at about where the cars are spotted after being loaded. After four cars had been loaded, he would have moved them to the south end of the yard. He had seen the locomotive pass him going north and knew that it would be returning.

An inquest was held at the Ontario Provincial Police station at Atikokan at 9.30 P.M., November 12, by Coroner W. G. Boyle, M.D., with Crown Attorney A. D. McLennan in attendance. The Coroner's verdict was as follows:

Joseph Lis came to his death November 11th, 1952, at about 10.30 A.M. on C.N.R. Tracks near Freeborn loading ramp Steep Rock Iron Mines Limited by being crushed by Engine No. 3291 which was driven by William Coughlin.

Death was caused by multiple crushing injuries to body and, from evidence taken, was entirely accidental.

It would seem that more attention should be given to operations of this kind.

Metallurgical Works

Falconbridge Nickel Mines, Limited

No. 1

Gerald Hooson, Canadian, aged 52, married, with three children, employed as a converter skimmer, was fatally burned at the Falconbridge smelter about 3.15 P.M. on May 7 when splashed by a small quantity of molten slag that spilled from a ladle being moved by a crane. He died in St. Joseph's Hospital at Sudbury on May 24. His employment dated from November, 1929.

Three Pierce-Smith converters are located in line near the west side of the converter aisle in the smelter. Two bridge cranes, with a span of 40 feet, are operated on a single track above the aisle. They are each equipped with a main hoist and an auxiliary hoist, mounted on a trolley on top of the crane bridge. The auxiliary hoist is on the east side of the trolley and is used with a tail chain to tip the ladle raised by the main hoist. The crane controls are located in a cab slung underneath the east end of the crane bridge. The bottom of the cab is about 37 feet above the aisle floor. The ladles hold about 10 tons of slag.

The skimming platform at No. 2 converter is about 12 feet above the aisle floor, and within 14 feet of the east wall. The converter controls are on this platform, at the south end of the 13- by 24-foot converter, about two feet from the railing. In the normal carrying position, the top of a ladle is about 13 feet above the platform elevation and about one foot east of it. After filling a ladle, the skimmer normally turns the converter up until it is just clear of the tuyeres, then leaves the platform until the craneman has taken the ladle away.

Shortly after 3.00 P.M. on May 7, No. 1 crane took a ladle of slag from No. 2 converter, and No. 2 crane placed an empty ladle in front of it. The skimmer, G. Hooson, filled the second ladle with slag, and left the platform. The crane-

man, E. Prieur, saw him leave the platform and moved in to pick up the ladle. His baleman put on the bales and attached the tail chain. Prieur then started to raise the ladle with the main hoist, move it eastward with the trolley, and, at the same time, raise the tail chain with the auxiliary hoist. When the ladle had been raised above the platform elevation, he put the crane in motion southward. About that time, Hooson returned to the controls without being seen by Prieur, and started the converter turning upwards. When it reached the tuyeres, the usual emission of sparks and gas temporarily obscured Prieur's vision. He apparently raised the tail chain too far, thus tipping the ladle slightly. He had the hoists stopped, but was still moving the ladle eastward with the trolley, while the crane travelled southward, when a small amount of slag spilled out of the ladle. It hit the railing and platform near Hooson and splashed on him.

Hooson ran towards the back of the converter with his clothing on fire. He was intercepted by A. Dore and L. Lachance, who sustained burns to their hands while attempting to remove his clothing. Other persons turned water on him, and extinguished the fire. He was then removed to St. Joseph's Hospital at Sudbury, where he died on May 24.

An inquest was held by Coroner H. C. Nash, M.D., at Falconbridge on June 11. His verdict was as follows:

Gerald Hooson, aged 52, came to his death on May 24, 1952, at St. Joseph's Hospital, Sudbury, from toxaemia induced by severe multiple burns received on May 7, 1952, at the smelter of Falconbridge Nickel Mines, Limited, when splashed with molten slag while operating the controls of No. 2 converter. For some unknown reason, he returned to the controls after filling a ladle with slag before the crane had moved the ladle past that location and was splashed by a small quantity of slag which spilled from it.

Accidental death with no blame attached to anyone.

Quarries

Canada Crushed and Cut Stone, Limited

No. 1

Alphonsus Coughlin, Canadian, aged 40, married, with one child, was killed about 7.00 A.M. on June 14 at the Dundas Quarry of the Canada Crushed and Cut Stone, Limited, when a loaded four-cubic-yard bucket of an electric shovel dropped on the cab of the truck he was driving.

Coughlin was one of a number of truck drivers hauling limestone rock from the shovel to a primary crushing plant located in the quarry. From there it is transported by electric trains to the main plant located some distance away.

The shovel is a Bucyrus Erie, type 120B. The D.C. power plant is driven by a 225-hp. synchronous motor at 2,200 volts, 60 cycles. The motor is directly connected to three D.C. generators. The generators in turn are electrically connected to three D.C. motors. They consist of a 175-hp. hoist motor, a 43-hp. swing motor and a 40-hp. crowd motor. The control system is a Ward Leonard. The generators have shunt fields and differential compound series fields, which oppose the shunt field. They also have separately-excited shunt fields. The motor fields are also separately excited. The separately-excited fields are supplied by a 10-kw. exciter driven by a 15-hp., 220-volt motor. This motor is protected by heater-overload relays. The synchronous motor is fed through an oil-circuit breaker having overload and under-voltage protection.

The shovel was loading a new Mack, diesel truck. It has a 149-inch wheel base and hauls a 17-ton, Easton Phoenix trailer with a 142-inch wheel base. A horizontal distance of 6 feet separates the back of the cab and the front of the trailer box. A metal rock guard, set at a 33-degree angle and 15 inches high, is

mounted on the front of the trailer box. The guard is 2 feet, 2 inches, higher than the top of the cab.

The shovel operator and his controls are situated at the front of the shovel cab. The control lever for the hoisting motor is on the operator's right hand. The crowding-motor control lever is on his left, where there is also an arrangement to dump the bucket. The swing-motor control consists of two foot-operated pedals to swing the bucket to the right or left. The shovel is also equipped with an emergency switch to cut off the power from all controls when the shovel is not operating. There is a mechanically, foot-operated brake pedal just behind the right-swing foot pedal. This is normally used to hold the bucket off the ground while travelling.

A power-demand overload would not be expected when swinging or dumping, since there is practically no load on the motors during these operations.

De Marchi, an operator with about 30 years experience, had dropped one bucket of rock into the trailer and had loaded the second bucket. He moved the bucket to the left by pressing the left swing pedal. The pressure was released and the shovel allowed to coast to the left. Before dumping, slight pressure was applied to the right swing pedal to brake the swing of the bucket. The trailer is filled with from three to four bucketfuls, so that the second bucket was low over the trailer when approaching the front end from the rear. The operator when coasting in a swing would not be aware of the power failure until the bucket started to drop. His first move would be to apply more power to his hoisting motor. The failure of the excitation generator cut off all control over the shovel so that the swinging motion continued. The bucket dropped, just scratching the front end of the trailer and bending the rock guard, then landed on top of the cab before the emergency brake could be applied. There was no record of a power failure at the main power station. The overload on the excitation motor had to be reset before the bucket could be raised from the cab of the truck.

The cause of death was a fracture at the base of the skull and lacerations to the top left side of the head.

An inquest was held at 3.30 P.M. on June 18 at Greensville Hall before Coroner B. F. Guyatt, M.D. The jury's verdict was as follows:

We find that on the 14th of June, 1952, that Alphonsus Coughlin came to his death at the quarry of Canada Crushed and Cut Stone, Limited, at Dundas when a power failure occurred and death was purely accidental.

We suggest that the new rule, as heard in the evidence, of making the driver leave the cab of his truck, be rigidly enforced.

Clay, Sand, and Gravel Pits

Telephone City Supply Company

No. 1

Stephen Szladics, Hungarian, aged 54, married, with a grown-up family, employed as a labourer in the gravel pit of the Telephone City Supply Company at Brantford, was instantly killed about 8.20 P.M., on July 16, when crushed between a moving conveyer belt and the frame of a vibrating feeder above it. He had been employed for two weeks.

The gravel from the pit face is dumped into a movable hopper, equipped with a Jeffrey vibrating feeder, located above a 30-inch conveyer belt. The belt is 250 yards long, and is driven at a speed of 252 feet a minute by a 20-hp., 550-volt motor. It discharges on to a cross belt, 60 yards long, which carries the gravel to the primary jaw-crusher at the plant. The hopper is 8 feet above

the track on which it is moved. The sides are sloped to give an opening, about 2 feet long and 1½ feet wide, which is equipped with a gate to control the rate of flow to the belt. The feeder is set behind the opening, with the vibrator frame about 4 inches above the belt at the centre and 2 inches above it at the edges. The upper side of the belt is supported on three-piece rollers spaced at intervals of 5 feet; it was 20 inches above the ground at the time of the accident.

A shovel operator and two labourers are normally employed in the pit. The labourers break rock on a grizzly over the hopper, or keep the main belt clear.

On the evening of July 16, the hopper was located about 170 yards from the discharge end of the main belt, leaving an unloaded section of about 80 yards behind it. At about 8.20 P.M., Szladics was working behind the hopper, on the opposite side of the belt to the shovel operator. A few moments later, the shovel operator saw him on the belt under the vibrator frame and signalled to the control operator, who stopped the plant.

Szladics sustained a fractured skull, crushed chest, punctured lungs, and a haemorrhage of the brain. Death was instantaneous. It is not known if he tripped beside the belt and fell on it or lost his footing while attempting to cross it. The employees had been warned not to cross the moving belt.

An inquest was held before Coroner A. S. Dunton, M.D., at Paris on July 31. The verdict of the jury was as follows:

> We, the jury empanelled to enquire into the death of Stephen Szladics, late of the City of Brantford, find that the deceased came to his death at the gravel pit of the Telephone City Supply Company on the 16th day of July, 1952, as a result of an accident wherein the deceased was drawn under a gravel hopper by becoming entangled on a rubber conveyor belt running under the gravel hopper and the resulting injuries suffered by the deceased caused his death.
>
> We further find that no blame can be attached to any party in connection with the death of Stephen Szladics.
>
> We recommend that the guard now installed and attached to the vibrator of the gravel hopper conform to the shape of the conveyer belt when loaded.

FIRES

Dome Mines, Limited

No. 235

A fire occurred about 2.45 A.M. on January 4 in the timber-framing shed, which is located on surface near the No. 3 shaft of the Dome mine. The fire was caused by a woollen mitt falling into the fan blades, causing an overload on the fan motor. The starting winding burned out, setting some books on fire.

Smoke was noticed by the No. 3-shaft deckman, while he was pushing a mine truck into the framing shed. He found that a wooden platform under a Sheldon steam heater was smouldering; he used a 1½-quart fire-extinguisher on the fire and then turned in the alarm. The fire was then completely doused with a 1½-inch fire-hose.

A woollen mitt and some requisition books were found on the wooden platform. The books were charred. It appears that the mitt may have fallen into the fan blades and caused an overload on the fan motor. The motor-starting winding burned out, igniting the requisition books.

International Nickel Company of Canada, Limited

No. 236

A fire occurred at 11.15 P.M. on January 6 at the Creighton Mine No. 3 shaft about 5 feet below the collar. The fire was due to a short-circuit in the 2,200-volt, 25-cycle, power cable. The damage consisted of the burning of the

2,200-volt cable at the point mentioned and scorching of some planks in the manway compartment of the shaft. The fire was extinguished at 11.45 P.M.

At 11.15 P.M. on January 6, a switchboard operator, R. Brooks, in the No. 3-shaft compressor room, noticed that an oil circuit-breaker had "blown out," throwing oil on the floor and starting a small oil fire. This fire was immediately extinguished, and a call was sent to Assistant Chief Electrician A. A. McAllister. Brooks was then notified by the topman of No. 3 shaft that the power was off, and that there was a smell of smoke in the area of the No. 3-shaft collar. The fire was located at 11.20 P.M. in the manway compartment of No. 3 shaft about 5 feet below the collar. The power was shut off at 11.23 P.M. on the instructions of McAllister. The fire whistle was then sounded, and the stench gas was introduced into the compressed-air lines.

Soda-acid and pump-tank extinguishers were first used on the fire about 11.25 P.M. Fire-hose was then used on the area from 11.30 until 11.45 P.M. when the fire was completely extinguished.

The 25-cycle power cable had been installed in No. 3 shaft in 1916 and as a consequence of this incident it was proposed to remove it.

Starratt Olsen Gold Mine

No. 237

A fire occurred under the floor of the Starratt Olsen hoist-room about 10.55 P.M. on January 18. The cause of the fire was the over-heating of the hoist-electrical grids, which are located in the basement of the hoist-room.

At 10.55 P.M., a hoistman, A. Hagar, when coming on shift, noticed smoke pouring through the sides of the basement door of the hoist-room. The fire alarm was immediately sounded, and the stench-warning gas was introduced into the underground air lines. The underground crew was instructed by telephone to come to surface by way of the secondary exit. The main power switch was then opened, and the fire was extinguished by 11.15 P.M.

An examination of the fire site disclosed that the hoist electrical grids had become overheated, and this had set fire to the floor planking immediately above the grids. The damage was slight: two electrical leads had to be replaced, the flooring of the hoist-room was charred, and there was some water damage.

No one was affected by the fire, and the mine was in full operation at 8.00 A.M. January 19. Some insulating material was installed immediately above the grids.

International Nickel Company of Canada, Limited

No. 238

A small electrical fire occurred underground in the Levack mine on February 20 about 6.10 A.M.

The fire started in battery No. 14 of Motor No. 110, while it was on charge in the 1,600-foot-level charging-station. The wooden partition between two rows of cells had started to burn. The fire was discovered at 6.10 A.M. and was extinguished immediately with a carbon-dioxide extinguisher. It would seem that the fire was caused by a ground, occurring between the battery and metal plate, owing to a build-up of fine ore and moisture at this point.

Lake Shore Mines, Limited

No. 239

On April 26, about 7.15 P.M., G. W. Oliver, the mill shift boss, noticed one of the compressors running hot. The compressor was shut down immediately, and a call was sent to the Fire Department.

There was considerable evidence of heat around the exhaust pipes of the compressor, and when the plugs on one of the exhaust pipes was opened, a small fire was noticed burning in the concrete exhaust trench that runs underneath the floor for about 20 feet to the steel exhaust chimney. The firemen extinguished the flames in a few minutes with foamite.

On Monday the 28th, the compressor was examined and one of the springs in the exhaust ports was found to be broken. This was repaired, and the compressor put again in operation. No damage was done by the fire.

Wright-Hargreaves Mines, Limited

No. 240

A small electrical fire occurred in an underground locomotive on May 5 about 10.30 A.M.

The No. 19 locomotive was being used to move cars into position to draw chutes under 4302-51 stope at the Wright-Hargreaves mine. This is approximately 500 feet from the No. 5 winze station on the 4,350-foot level. The motorman noticed black smoke issuing from underneath the locomotive. By the time an extinguisher was obtained, flames were rising on both sides of the locomotive. The fire was quickly put out with the extinguisher.

The damaged locomotive was removed to surface at 11.10 P.M., and it is believed that the fire was due to the controller being used in the first position for too long a period; this caused the over-heating of the resistance grids and set fire to the insulation on four connecting wires leading to the motor proper.

The stench warning was not used.

Coldstream Copper Mines, Limited

No. 241

Fire destroyed the mine service building at Coldstream Copper mine at 2.00 A.M. on May 19. This building contained a workshop, change-room, and offices. The building was totally destroyed, and only part of the records recovered from the office.

The fire originated in a temporary stove used to heat the change-room. The shaft crew came to surface and one of the shaftmen discovered the fire on entering the room shortly after 2.00 A.M. The deckman and two trammers had not noticed the fire previously since there were no windows on the shaft side of the building.

Fire-extinguishers were used, but the fire had gained too much headway, and the men were unable to save the building. The available water supply was directed to the hoist-room to keep it from burning.

Emergency fire-fighting equipment was available in all buildings. A water line to be connected to a pump at No. 2 shaft had been installed but was not yet in operation. A jacket heater was to have been installed to replace the temporary stove.

Hollinger Consolidated Gold Mines, Limited

No. 242

At approximately 11.00 A.M. on June 11, smoke was seen issuing from the skip-hoist control-room on the 2,450-foot level by W. Stephens, an electrician, at the Hollinger mine.

Stephens came to surface and notified B. Rutherford, electrical foreman, by telephone from No. 19 shaft hoist-room. Stephens then opened the circuit-breaker in the surface substation at No. 19 shaft, cutting off the power to the hoist on the 2,450-foot level.

Rutherford notified No. 11 shaft, first-aid room at approximately 11.15 A.M. and a six-man rescue team equipped with McCaa oxygen apparatus, which had just returned from a training mission, were immediately dispatched to the 2,450-foot level by way of No. 19 shaft, accompanied by Stephens and Rutherford. Upon their arrival on the 2,450-foot level, they proceeded towards the skip-hoist control-room; the smoke was very noticeable and strong.

It was found that a short-circuit had occurred between turns of the winding in a 5KVA, 500–2,200-volt control transformer. One fuse on the primary side of the control transformer had blown. This transformer is of a dry type having class A insulation. It did not show any signs of being over-heated. The outside coat of paint showed no signs of blistering.

The skip-hoist control-room is about 50 feet from the hoist platform. It is a class A room with ventilation openings controlled by thermal links.

The smoke was caused by the smouldering of insulation on the windings. Stench gas was not introduced into the mine area.

The skip-hoist was not in operation, and no men were affected.

The rescue team returned to surface at 12.35 P.M.

Teck Hughes Gold Mines, Limited

No. 243

A fire occurred at 9.30 P.M. on July 4 when the hoist motor at the Teck Hughes mine failed owing to some of the stator-coil connections short-circuiting. There was visible damage to eight coils, and the end loops and connections were burned. The short-circuit tripped out the underground-feeder breaker and also the south-shaft-feeder breaker in the Hydro-Electric Power Commission substation on the property.

The motor insulation adjacent to the failure burned and was extinguished by the hoistman, using a 15-pound, carbon-dioxide extinguisher. There was considerable smoke in the hoist-room. There was no report of smoke having been noticed in the mine other than in the hoist-room.

During repairs it was found advisable to replace twenty-three stator coils and re-wedge all the remaining coils. Repairs were completed and the hoist was in operation again by noon on the 6th of July.

Upper Canada Mines, Limited

No. 244

At approximately 10.50 A.M., July 21, a fire occurred in the roof of the boiler-house at No. 2 shaft of Upper Canada mines.

At 10.50 A.M. on July 21, H. Bowers, the surface foreman, noticed the paint peeling from the smoke stack and assumed it was burning out. Inside the boiler-house, the roof was starting to burn around the stack.

Water was sprayed on the roof through two lengths of 1½-inch forestry hose from the fire-house and also from the inside by a water hose kept connected to the water-pipe inside the building.

Stench gas was released into the mine at 10.53 A.M. At 10.55 A.M. the fire was extinguished. The underground men who had reported to the level-stations were returned to work.

McIntyre Porcupine Mines, Limited

No. 245

At approximately 9.45 P.M. on August 16, the windings of the 75-hp., 2,200-volt, 1,500-r.p.m. motor, driving the 3,750-foot-level fan, broke down.

Subsequent examination showed that the temperature-protective device, taped to the windings, had worn through the insulation, causing a short-circuit in two of the motor coils. This is a class B, insulated motor, and there was no indication of fire.

Simultaneously on the 1,875-foot level of No. 11 shaft, the motor windings of the 60-hp., 500-r.p.m., 2,200-volt motor, driving a 5- by 10-inch Aldrich pump, burned out causing considerable smoke. The cage-tender, wearing a self rescuer, extinguished the fire without any difficulty, and a general alarm was not necessary. This motor is of the class-A, insulated type and will have to be completely rewound.

It is believed that the breakdown of the pump-motor winding was a direct result of the previous grounding of the fan-motor winding. This is only a surmise as the two simultaneous failures may have been pure coincidence.

Leitch Gold Mines, Limited

No. 246

At 6.00 P.M. on August 18, a fire occurred in the 125-horse power motor on the mine pump in the 9th-level pump station at the Leitch mine. The motor burned out apparently because of the accumulation of salt from the mine air in the rotor gap. The motor became overheated, and a fire started but was quickly extinguished. No damage was done to any other equipment or enclosure.

International Nickel Company of Canada, Limited

No. 247

A small electrical fire occurred in a battery-charging station on the 13th level of the Levack mine at 3.00 P.M. on August 2.

E. Alkinson discovered smoke issuing from a battery when he went to the 13th level charging-station to take it off charge. He disconnected the battery from the charging power-source. When the battery hood was lifted, flames shot up. Alkinson put out the flames with a carbon-tetrachloride extinguisher.

The fire appeared to have originated in the rubber-covered, single-conductor cable that connected the negative pole of the polarized receptacle, mounted on the battery box, and the negative terminal of the battery. Approximately 2 feet of this cable showed signs of fire. Arc burns were evident at one point on the battery box. It is thought that the cable grounded at this point, and a short-circuit was set up in conjunction with another ground, or grounds, in the cells or connected circuits, thereby causing the fire.

Canadian Gypsum Company, Limited

No. 248

At 7.30 A.M. October 22, a small fire occurred in the quarry garage of the Canadian Gypsum Company, Limited.

The fire was caused when an oil-drip pan, left under the spare locomotive, was ignited by a piece of hot metal from cutting torches that were being used by a mechanic working about 10 feet from a Whitcomb gasoline locomotive. As the mechanic was alone and working with his back towards the locomotive, he did not notice the fire until it had blazed up under the locomotive, which of course had grease covering its chains and bearings. The mechanic seized the oil-drip pan and threw it out through the door. A second mechanic, the foreman, and a truck driver tied a rope to the motor and pulled it out of the garage by hand to 75 feet away from the garage. The single 20B Ansul, powder extin-

guisher in the quarry garage was not sufficient to put out the fire; but it was quickly extinguished by the combined efforts of company employees, using fire-extinguishers, and the Guelph Fire Department, which had been called in and arrived within a few minutes of the outbreak.

No employees were burned or injured and no apparent damage was done to the locomotive.

Hollinger Consolidated Gold Mines, Limited

No. 249

A small smouldering fire occurred underground at the Hollinger mine on the 100-foot level at approximately 10.20 A.M., October 31. The fire was in an employee's smock in the 20 E and W 9.4 stope.

Shift Boss T. Anderson noticed a very strong odour of smoke, other than that caused by blasting, as he entered 9.4 crosscut on the 100-foot level. He followed this strong odour of smoke and arrived at 20 E and W 9.4 C and F stope, where a service crew consisting of F. Pecanic, serviceman, and O. Lapalme, helper, were engaged in placing air and water lines in the manways of the stope. Anderson discovered a workman's smock smouldering in an empty chute and extinguished the fire.

F. Pecanic, serviceman, had thrown his smock on the drift floor when he commenced work that morning and, during the course of the morning, had thrown away a burning cigarette butt, which landed on his smock. A little later he asked his partner O. Lapalme if he smelt something burning and, on receiving a negative reply, looked around the drift bottom and found his smock, which was smouldering. Pecanic stamped out the smouldering smock and, thinking it was completely extinguished, put it in an empty chute of 20 E and W 9.4 stope. Apparently the smouldering fire in the smock had not been completely extinguished, and the downcast draft from the stope raise caused the smock to smoulder once again, unknown to the service crew.

About a quarter of the smock had been consumed by fire.

All personnel working in the vicinity were told by T. Anderson that there was no mine fire, and that everything was under control. The shift boss also notified the Accident Prevention Unit immediately by telephone to the effect that the smouldering fire had been extinguished and that the smoke was dissipating rapidly. Stench gas was not introduced into the mine.

Madsen Red Lake Gold Mines, Limited

No. 250

At approximately 11 P.M. on November 12, Simon Huzio, employed by Foresberg and Company, contractor at Madsen Red Lake Gold Mines, Limited, kindled a small fire in the 12th-level station.

During the lunch period Huzio used powder box chips to start a fire in the metal cover of a metal clay container outside the lunch room on the 12th level. The lunch room is a rock excavation approximately 7 by 9 feet, sealed off with concrete and having a steel door.

The act was witnessed by Huzio's helper, Federiw, and a sampler, H. Tesch. No damage was done by the fire, which apparently burned out in the metal cover. The evidence was discovered by F. Olafson, of Forsberg and Company when making his round on November 13 and was reported by him the same day. Huzio was immediately dismissed.

Hollinger Consolidated Gold Mines, Limited

No. 251

An electrical fire, which occurred at 2.50 P.M. on November 17, was caused by a short-circuit in an electric slusher-hoist cable in 55 E 15 NH slice-and-fill stope on the 3,500-foot level.

The electric cable used on this hoist is fire resistant. It is a two-conductor, No. 2, rubber-insulated, neoprene-jacketed, trailing cable having a rated capacity of 600 volts. It is normally operated at 275 volts. The hoist was not in operation at the time of the short-circuit.

The stope crew were occupied in the drilling of a raise round, and while the runner was walking past the hoist, he noticed a flame shoot directly out from the cable, 6 feet behind the hoist. The stope helper immediately went to the level above and pulled the switch. He saw that the fuse had been blown. The runner, thinking that a fire might start in the cable, used a Fyrfyter extinguisher, standard equipment with electric hoists, on the cable where the short-circuit had occurred.

An inspection of the cable revealed a cut in the neoprene jacket and insulation, caused in all probability by a piece of rock; the wires inside the insulation were bruised by this rock. The only damage done was to the insulation where the short-circuit took place.

A company rule requires that the disconnecting switch, which disconnects the trailing cable from the source of power, be pulled when the hoist is not in use. Steps are being taken to see that this rule is more-rigidly enforced. Slusher operators have also been instructed to report all cuts in trailing cables to the electrical department immediately.

PROSECUTIONS

Regina *vs.* Marion Borysiewicz
Regina *vs.* Hans Dietrich Buckmeier

A charge was laid jointly against Marion Borysiewicz and Hans Dietrich Buckmeier, stope runners at the Paymaster mine, as follows:

That Marion Borysiewicz and Hans Dietrich Buckmeier did fail to guard an approach leading to the scene of a blast in No. 2 chute of 2503C1 stope on the 2575 level of Paymaster Consolidated Mines Limited about 9.45 A.M., August 28, 1952, contrary to Section 162, subsection 75(a) of the Mining Act of Ontario.

Both workmen pleaded guilty before Magistrate S. Gardner in South Porcupine, on September 9. A fine of $10.00 and costs was imposed on each man. The fines and costs, amounting to $14.00 each, were paid.

Regina *vs.* Romeo Bouchard

A charge was laid against Romeo Bouchard, a driller, employed by the Preston East Dome Mines, Limited, as follows:

That Romeo Bouchard, on October 15th, 1952, in 866 subdrift at Preston East Dome Mines, in the township of Tisdale, did unlawfully drill within six inches of the remnants of holes which had been blasted, contrary to Section 162, subsection 73(b) of the Ontario Mining Act.

The case was heard before Magistrate S. Gardner in South Porcupine on November 4.

Although the charge was proven to the satisfaction of the Crown, Magistrate Gardner dismissed the case saying that he would give Bouchard the benefit of the doubt. The Magistrate considered that there had been too much delay in securing the engineer's information that had been presented. The engineer

secured measurements of the face on October 21, at which time photographs were also taken. The latter did not show the face plainly and the Crown did not present them.

Regina *vs.* Armond Brosseau

A charge was laid against Armand Brosseau, a switchman at the Levack mine of the International Nickel Company of Canada, Limited, as follows:

That Armand Brosseau at the Town of Levack on the 17th day of July, 1952, did unlawfully enter upon the property of the International Nickel Company of Canada, Limited; to wit, the Levack Mine, while under the influence of liquor, contrary to subsection 411 of Section 162, Part VIII, of the Mining Act of Ontario.

Brosseau pleaded guilty before Magistrate W. J. Golden at Sudbury on July 17. A fine of $10.00 and costs, or 10 days in jail, were imposed. The fine and costs, amounting to $20.50, were paid.

Regina *vs.* Hector Carriere

A charge was laid against Hector Carriere, a hoistman at the Murray mine of the International Nickel Company of Canada, Limited, as follows:

That Hector Carriere at the Township of McKim on the 3rd day of June, 1952, did unlawfully enter upon the property of the International Nickel Company of Canada, Limited; to wit, the Murray Mine, while under the influence of liquor, contrary to subsection 411 of Section 162, Part VIII of the Mining Act of Ontario.

Carriere pleaded guilty before Magistrate W. F. Woodliffe at Sudbury on June 11. A fine of $10.00 and costs of $6.00 were imposed and paid.

Regina *vs.* Delmar Dorey

A charge was laid against Delmar Dorey, a process labourer at the Copper Cliff smelter of the International Nickel Company of Canada, Limited, as follows:

That Delmar Dorey at the Town of Copper Cliff on the 23rd day of December, 1952, did unlawfully enter upon the property of the International Nickel Company of Canada, Limited; to wit, the Copper Cliff Smelter, while under the influence of liquor, contrary to subsection 411 of Section 162, Part VIII of the Mining Act of Ontario.

Dorey pleaded guilty before Magistrate W. F. Woodliffe at Sudbury on December 24. A fine of $20.00 and costs, or 10 days in jail were imposed. The fine and costs, amounting to $26.00, were paid.

Regina *vs.* Edward Erlich

A charge was laid against Edward Erlich, employee of Steep Rock Iron Mines, Limited, as follows:

That on January 10, 1952, at 3.30 P.M., he was under the influence of intoxicating liquor while working at Steep Rock Iron Mines, contrary to Section 162 subsection 411, of the Mining Act of Ontario.

Court was held in the Ontario Provincial Police Station at Atikokan before Magistrate F. Cornell on January 23. Erlich was found guilty and fined $10.00 and costs.

Regina *vs.* Hubert McKibbon

A charge was laid against Hubert McKibbon, a pillar leader at the Frood mine of the International Nickel Company of Canada, Limited, as follows:

That Hubert McKibbon at the town of Frood Mine on the 28th day of February, 1952, did unlawfully enter upon the property of the International Nickel Company of Canada, Limited, to wit, the Frood Mine, while under the influence of liquor, contrary to subsection 411 of Section 162, Part VIII of the Mining Act of Ontario.

McKibbon pleaded guilty before Magistrate W. J. Golden at Sudbury on March 14. A fine of $10.00 and costs, amounting to $16.00, were imposed.

Regina *vs.* Juozos Stankevicius

A charge was laid against Juozos Stankevicius, a spare skimmer at the Coniston smelter of the International Nickel Company of Canada, Limited, as follows:

That Juozos Stankevicius at the Town of Coniston on the 26th day of December, 1952, did unlawfully have in his possession a quantity of liquor on the mining property of the International Nickel Company; to wit, the Coniston Smelter, contrary to subsection 411 of Section 162, Part VIII of the Mining Act of Ontario.

Stankevicius pleaded guilty before Magistrate W. J. Golden at Sudbury on December 26. A fine of $25.00 and costs, or 20 days in jail, were imposed. The fine and costs, amounting to $31.00, were paid.

Regina *vs.* John Thompson

A charge was laid against John Thompson, a slusherman employed at the Creighton mine of the International Nickel Company of Canada, Limited, as follows:

That John Thompson at the Village of Creighton Mine on the 28th day of October, 1952, did unlawfully enter upon the property of the International Nickel Company, Limited; to wit, the Creighton Mine, No. 5 shaft, while under the influence of Liquor, contrary to subsection 411 of Section 162, Part VIII of the Mining Act of Ontario.

Thompson pleaded guilty before Magistrate W. F. Woodliffe at Sudbury on October 29. A fine of $10.00 and costs, or 10 days in jail, were imposed. The fine and costs, amounting to $16.00, were paid.

Regina *vs.* A. Weston

A charge was laid against A. Weston, driller at the New Dickenson Mines, Limited, as follows:

That A. Weston of the Improvement District of Balmertown in the District of Kenora, on or about the 18th day of March, 1952, at the Mine of New Dickenson Mine Company, Limited, in the District of Kenora, did unlawfully drill within 6 inches of an old remnant of a hole previously drilled and blasted in the 6-5555 south crosscut of the New Dickenson Mine Company, Limited, Mine at the Improvement District of Balmertown in the District of Kenora, contrary to Section 162, subsection 73, Paragraph (b), of the Mining Act, R.S.O., Chapter 236, 1950.

The case was heard on March 27, before Magistrate J. A. Cox in the Red Lake Provincial Building. Weston pleaded guilty. A fine of $25.00 and costs of $7.50 were imposed.

MINE RESCUE STATIONS

During the year the training of teams in mine rescue and recovery operations was carried out in basic, standard, advanced, and supervisory classes.

Teams of trained personnel available for emergencies, maintained by the mines, are as follows:

Station	Superintendent	Active	Reserve men	Supervisory staff	Apparatus men[1]	Total
Porcupine	A. K. Graham	34	.....	20	18	72
Kirkland Lake	G. E. Wilson	19	.....	45	33	97
Cobalt	R. Eveson	10	.....	.....	.....	10
Sudbury	G. G. McPhail H. G. Moorhouse	30	.....	78	5	113
Geraldton	John Lang	3	.....	8	18	29
Steep Rock		.....	.....	9	.....	9
Helen		2	.....	6	15	23
Renabie		2	.....	3	10	15
Red Lake	C. S. Culbert	9	.....	16	4	29
Pickle Lake		2	.....	.....	.....	2
Total	.....	111	.....	185	103	399

[1]Hoistmen, cagetenders, electricians, mechanics, and other specialists.

The number of men who passed the necessary examinations and who were granted their Basic Certificates or Approval Seals are as follows:

Station	Basic certificate	Standard seal	Advanced seal	Supervisory seal	Total
Porcupine	65	51	8	.....	124
Kirkland Lake	40	25	.....	.....	65
Cobalt	[1]52	.....	.....	.....	52
Sudbury	32	41	.....	34	107
Geraldton	48	.....	.....	.....	48
Red Lake	31	.....	.....	.....	31
Total	268	117	8	34	427

[1]Modified.

A station was equipped and opened in the Cobalt area. The station superintendent is R. Eveson, Box 21, Cobalt. This station covers the mines in the Cobalt, Gowganda, and South Lorraine areas.

A station in charge of J. Lang, Geraldton, was equipped at the Steep Rock Iron Mines, Limited, at Atikokan.

ONTARIO GOVERNMENT CABLE-TESTING LABORATORIES

The following table is a summary of the work accomplished during the year. The end column shows the comparative work in the previous year, 1951.

SUMMARY OF ROPE TESTS, 1952

Classification	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total 1952	Total 1951
Tests for Ontario mines	71	44	56	39	48	52	53	49	45	43	42	28	570	560
Special informative tests	19	32	38	.....	33	28	25	.....	56	20	13	.....	264	383
Tests for wire-rope manufacturers	29	30	21	25	26	29	25	21	29	25	21	35	316	303
Tests for mines outside Ontario	28	29	26	44	37	37	29	28	36	34	34	70	432	386
Tests for industries other than mining	.....	3	10	.....	2	2	8	3	.....	.....	4	1	33	8
Other tests	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	147	138	151	108	146	148	140	101	166	122	114	134	1,615	1,640