INCO TRIANGLE

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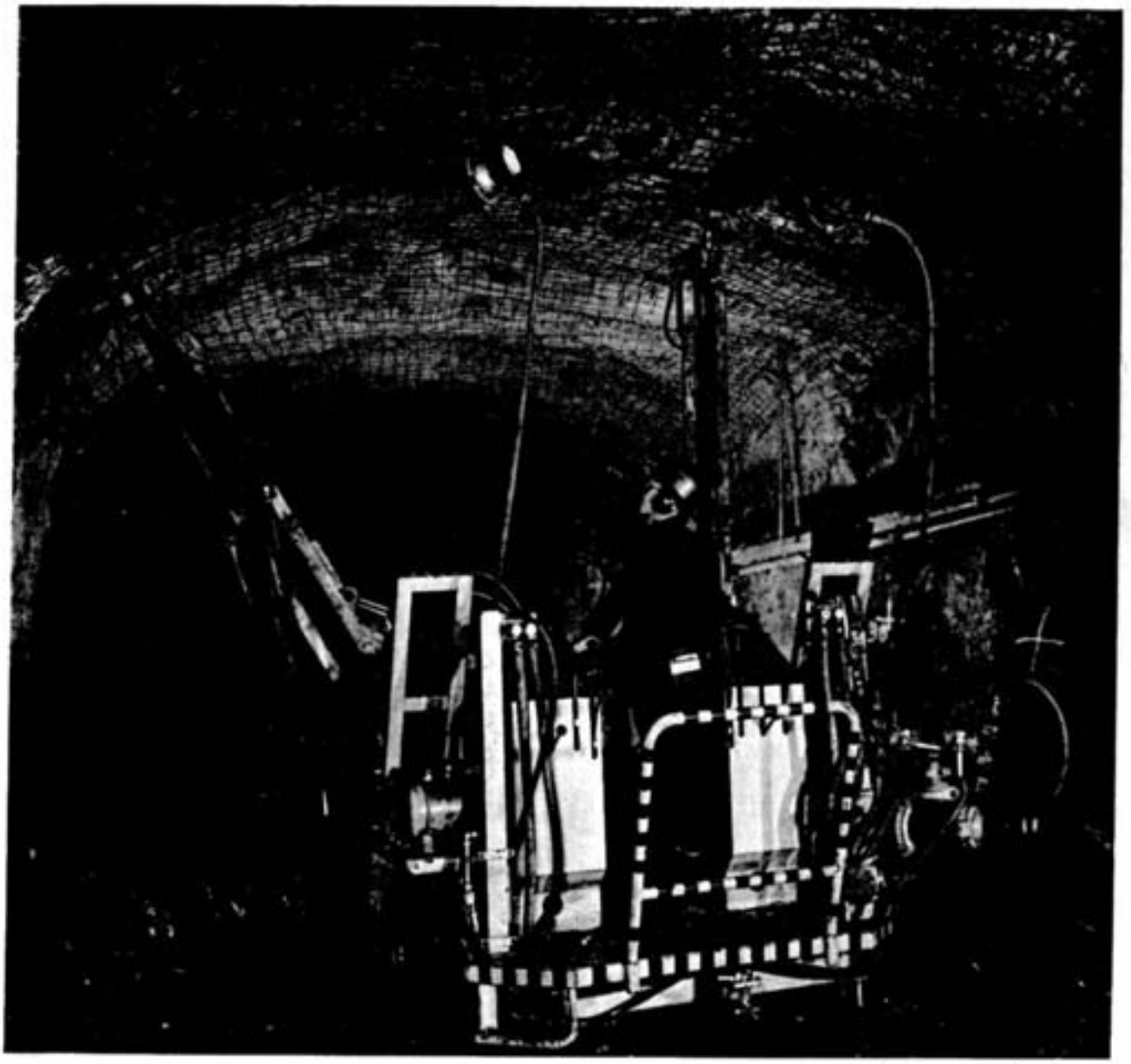

Drilling for a Sublevel Caving Blast

(Story on Page 9)

Donated By
Gary Hall (INCO Employee)
May 1982
Sudbury District
Branch O.G.S.

INCO TRIANGLE

Published for all employees of The International Nickel Company of Canada Limited

D. M. Dunbar, Editor
D. J. Wing, Assistant Editor

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Magazine Promotes Safety of Family

As part of its Off-the-Job safety program for 1969 the Company has obtained subscriptions to "Family Safety", a National Safety Council publication, for all its employees in the Ontario Division. This interesting and readable magazine contains articles on safety in and around the home, and is edited to be of interest to all members of the family. The Winter issue was mailed to the homes of all Inco people on January 24, accompanied by a message from division general manager J. A Pigott in which he

expressed his concern for the safety of all members of the Inco family, away from as well as on the job.

Among the timely articles contained in the Winter issue are those dealing with safe handling of babies, techniques for ice rescue, winter driving hazards, power tool pointers and many others.

"Far too many of our people and their loved ones are suffering injury and death through accidents in the home, on the highway and in the countryside," said superintendent of safety C. F. Hews. "We feel the addition of 'Family Safety' to our Off-the-Job safety program will be effective in helping to reduce this toll of accidents. There is no doubt that its beneficial effect will also be felt on our On-the-Job injury experience."

Because of its exceptional ductility, commercially pure nickel can be drawn into fine wire less than one-thousandth of an inch in diameter. A pound of such wire will stretch 80 miles.

Strong Showing In NOCA Bonspiel

Rinks from the Copper Cliff and Coniston curling clubs, part of a strong 30-team contingent from the Sudbury area, were prominent among the winners in the NOCA's 82nd annual bonspiel at Sault Ste. Marie.

Art Romanick's Copper Cliff rink won the Doran's trophy and were runners-up for the grand aggregate. Curling with Art in this fearsome foursome were Moe Palmaro, Chick McDonald, and Super Bertuzzi.

In the Falconbridge event Copper Cliff's Ken Silver (skip), Art Silver, Bob Miller and D'Arcy Meehan took the top prize, while Alf Blair (skip), M. Sharko, L. Huddart and R. Coulter finished third.

Another Copper Cliff entry of Joe Sauve (skip), Teddy Leclair, Maurice Curlook the NOCA secretary, and Bob Urquhart won the Algoma Steel event.

Don Dumontelle of Coniston skipped his crew of Ed Traill, Leo Boyer and Jerry Cleaver to victory in the Cochrane event, in which third and fourth spots were taken by the Copper Cliff rinks of Steve Kuzmaski (skip), Jesse Morrison, Vern Tupling and Bill McCormick, and Doug Gathercole (skip), L. Martel, R. Shore and W. Muraska.

The Coniston entry of J. Fitzgerald (skip), G. Halverson, R. Spotswood and G. Caverson picked off third money in the Players event, in which fourth spot went to G. MacKinnon (skip), R. Hewitt, K. Scott and H. Graham of Copper Cliff.

Frank Mei of Copper Cliff, skipping R. Tate, L. Doucette and L. Thompson, came home with first prize in the KVP event, and another Copper Cliff rink of Ron Gauthier (skip), H. Graham, V. Villeneuve and A. Desloges, picked up fourth prize in the Inco event.

The Inco event and grand aggregate winner, Bert Chisnell of the new Sudbury Idylwylde club, subsequently skipped his team to victory in the Sudbury district playdowns of the Canadian curling championship. Another Idylwylde skip, Bob Ash, won the other playoff berth.

John McCreedy Elected Assistant Vice-President

John McCreedy was elected assistant vice-president of The International Nickel Company of Canada, Limited it was announced at Toronto January 22 by Henry S. Wingate, chairman and chief officer of the Company.

J. McCreedy

Mr. McCreedy has been division general manager (Manitoba) since May 1967. He joined International Nickel in 1949 at Copper Cliff as a mine efficiency engineer and subsequently held positions of increasing responsibility in the Company's mines in the Sudbury District.

He was appointed manager of mines in January 1964 and was transferred to Thompson, Manitoba in 1967 following his appointment as division general manager (Manitoba).

Born in Winnipeg, in 1917, Mr. McCreedy received his bachelor of science degree in mining engineering from the University of Toronto in 1949.

Creighton branch manager Al Brown presents the Toronto-Dominion trophy and miniatures to the victorious rink: skip Ralph Brown, Lyle McGinn, Gil Davies, Wayne Poulson.

Creighton-Lively Had Fine 'Spiel

Reviving an old habit, Ralph Brown turned up as the victorious skip in the annual Creighton-Lively curling bonspiel staged jointly by Creighton employees and the Lively Athletic Association.

There were 20 rinks of enthusiastic broom-wielders in this year's edition of the popular event at the Copper Cliff club, with the calibre of the kibitzing as usual running neck and neck with the ability of the curling.

Bob Boudignon was chairman of the 'spiel, assisted by Alex Fex and Gary Foy, with Ralph Brown as drawmaster.

Scoring was on the points system, with six teams sharing the loot: 1, Ralph Brown (skip), Lyle McGinn, Gil Davies, Wayne Poulson; 2, Walter Chornenky (skip), Don Phillips, Orville Cull, Bob Wallace; 3, Bob Seawright (skip), Moe Leblanc, Walter Marcolini, Gene Dankewich; 4, Ed Knezacek (skip), Bob Boudignon, Maurice Coulter, Bill Horrick; 5, George Stephens (skip), Lacey Cull, Albert Cassell, Red MacDonald; 6, Rudy Roman (skip), Nick Treflak, Jim Brady, Peter Hlen.

After scoring a 7-end against Russ McKessock, Walter Tuttle gently applies the crying towel to his tearful victim.

Solid Support

For maximum stability, giant telescopes are supported on mounts made of a special iron-nickel alloy which neither contracts nor expands with changes in temperature.

John Page of New York, newly elected assistant to the chairman, is shown on the right at a recent conference at Copper Cliff with (from left) D. A. Fraser, assistant general manager (administration), Shane MacKay of Toronto, director of public affairs, and R. C. Hamer, supervisor of public affairs.

John H. Page Elected Assistant to Chairman

John H. Page has been elected assistant to the chairman of The International Nickel Company of Canada, Limited, Henry S. Wingate, chairman, announced January 24. Mr. Page, who joined International Nickel in 1965, is a vice-president of its United States subsidiary, The Interntional Nickel Company, Inc.

For four years prior to joining International Nickel, Mr. Page was executive vice-president of the Free Europe Committee, Inc. From 1946 to 1961 he held various management and public relations positions in the Bell Telephone organization, resigning in 1961 as vice-president of the Pacific Northwest Bell Telephone Company.

He is a director of the International Development Foundation; a member of the Council on Foreign Relations; a vice-president of The American Research Hospital in Poland, Inc.; and a director of the Huntington Hospital, Huntington, Long Island.

Mr. Page graduated from Harvard University in 1942. He is married to the former Susan Simonds and resides in Huntington.

Inco Family Album

Edward Pinelli is the man responsible for our smiling Port Colborne family this month. He has been a stationary engineer for five years at the nickel refinery, where he started in 1951 in the leaching, calcining and sintering department. He and his wife Maria are the proud parents of four happy youngsters, Jim, 15, Garry, 10, Laurie, 8, and Ricky, 7. Ed enjoys hunting, fishing, and bowling. He built his own fine home on Walnut Street.

When not busy at his job as a raise driller at Murray mine, Clarence Weist devotes a large chunk of his spare time as chairman of the Murray mine athletic association and as a peewee hockey coach at Copper Cliff. Born and raised within sight of the smelter, Clarence started working there in 1954, and was a guide when he switched to mining at Murray in 1959. His wife Isabelle is a Massey girl, and their family of three are Bobby, 6, Pam, 10, and Eddie, 8.

The broad smiles in this family portrait belong to Thompson T3 shaft stope leader Mike Thomas, his wife Marie, and their three young livewires, Valerie, 3, Eric, 5, and Andrew, 6. Both native Manitobans and members of the Indian Cree tribe, Mike came from Easterville, near Grand Rapids, and Marie from Sherridan, north of Flin Flon. Mike left a life of hunting and trapping to join Inco's Manitoba division in 1965, but still loves to get out on the trail of a deer or moose.

Copper Cliff is home to the large and happy family of Noreen and Ron Gauthier. A Company employee since 1948, Ron worked as a sampler with the metallurgical department before his move to the safety department as a first aid man in 1951, and is stationed at No. 2 change house. In the back row are John, 14, Patrick, 12, Susan, 10, Kevin, 11, and Grant, 9; seated are Andrea, 18 months, Stephanie, 3, Margan, 5, and Dalton, 7. Mother hails from Capreol and is an ardent antique collector. Daddy is a sharp curler.

It was in 1948 that Gerry Marin left his home town of Cornwall, Ontario, and tobacco farming, to join Inco at Creighton No. 5 shaft where he works as a stope boss on the 2100 level. Gerry's wife Peggy comes from Azilda, and the family live on Ridgemount Avenue in Sudbury. Standing beside his dad is Danny, 13, already almost as tall as his dad, and seated are Stephen, 10, Brenda, 11, Giselle, 14, Edith, 5, Karen, 8, and Jeffrey, 7.

Representing Stobie in this month's album is the young family of mining technologist Herb Kuz and his wife Shirley. An Incoite since 1964, Herb started with the Company at Frood, and was a level boss when he transferred to the Stobie engineering department. Their charming youngsters are James, 3, and Derryl, 10 months. Their fine new home is a stone's throw from Sudbury's Robinson Lake, where the family enjoys swimming and ice skating. As well as a busy mother, Shirley doubles as a full time nurse at Sudbury Memorial Hospital.

Hot action at Sudbury Arena as Stobie 8's Roger Wilson zooms past defenceman Gil Tremblay to score on Levack goalie Bernie Fillion.

Gerry Baronette bursts through Maurice Ayotte and Henry Blais to nab the rebound of his hard drive on Levack's Fillion.

Stobie 7 coach Harry Thurlow, who admits he seldom sleeps the night before a game, roars encouragement to his team from players' box.

Four-Team Inter-Mine Loop "Turns on" Shift Speedsters

"We're not ready for the Russians yet, but we're having a lot of fun," said the Frood defenceman as he flopped down on the bench. His team had just absorbed an 8-2 licking from Stobie 7 shaft, but that didn't seem to be hurting too much. The fun was the important part.

A fast-paced four-team intermine hockey league, which hopefully will expand next year to include all Inco mines in the Sudbury area, is whipping up a lot of interest and enthusiasm at Frood, the two Stobie shafts, and Levack. Lots of friendly rivalry and flashes of excellent hockey mark every game.

With financial help from the mine athletic associations and the men on their shifts, plus proceeds from the odd exhibition game, the teams are making the money grade okay. Playing international rules, with no body contact, they're getting the enjoyment without the wear and tear.

Coaches Do the Suffering

It may all be good rousing sport for the players, but for the coaches it's something else. Between games they smile, but in the heat of battle, with the honor of their shifts at stake, they go through all the agonies of their NHL counterparts, and will probably wind up the season with ulcers growing on their ulcers.

Frood goalie Dan Hebert.

Unsung heroes of the league are the referees, "Red" Dabous, Pete Bodson, Bernie Beaudry, and Len Bona.

(Continued on Page 12)

Three Frood team stalwarts Len Lamore, Roger Chretien, Howie Neeley.

Stobie 7's hard-working manager-statistician, John Wilson.

In the Frood team's cheering section are Ken Lavalley's wife Jean, and Len Lamore's wife Gaile and his mother, Mrs. Edna Lamore.

Here's a hardy quartet from Stobie 7: Harold Oram, Paul Cross, Johnny Johnson and Mike Jordan.

Between games the coaches are all smiles: Stobie 8's Bill Lampert, Levack's assistant playing coach Tom Todd, Stobie 7's Harry Thurlow, and Frood's playing coach Tom Hywarren.

Ontario Division Safety Championship Trophies Are Presented for 1968

Murray and Levack Share Mines Award

For the first time in the history of the annual safety trophy competitions for Inco operations in the Ontario division, two mines were tied for first place in the Mines Section.

Levack and Murray finished in a dead heat and will share the handsome big wood-sculpture trophy for the year, each to have it on display for six months.

Murray has won previously since the trophy was established in 1962, but for Levack it was first time in the top spot, although this mine has rolled up some outstanding performances in the million-safe-shifts category.

"Both Levack and Murray staged tremendous improvements over their showings of the previous year, moving to the top from fifth and sixth places in the 1967 standings," safety superintendent C. F. Hews noted in announcing the results.

Final standing in the competition is based on three factors, frequency of all injuries, frequency of lost-time injuries, and injury severity.

Creighton came second for 1968, Frood-Stobie third, Garson fourth, and Crean Hill fifth.

Copper Cliff Maintenance Tops

Copper Cliff maintenance won the all-round safety championship of the Reduction Section for 1968, continuing the supremacy established in the preceding years by the mechanical and electrical departments before they were brought together under a single administration.

MINES TROPHY PRESENTATION: Murray mine safety engineer A. Petryshynx, superintendent N. R. Creet, G. R. Green, Levack mine assistant superintendent G. Bertrim, safety engineer Hugh Ferguson, and general superintendent of mines M. E. Young.

When statistics were finally tabulated for the year's overall performance, it was separation and FBR in second place, transportation in third, and converters fourth. Copper Cliff, Creighton, Levack and Frood-Stobie mills came fifth, reverbs sixth, and Coniston smelter seventh.

Presentation of the trophies to the superintendents of the victorious operations took place at a luncheon at the Copper Cliff Club. G. R. Green, assistant general manager (mining) presented the Mines Section trophy to Murray superintendent N. R. Creet, and to Levack assistant superintendent G. Bertrim in the absence of superintendent D. Lennie. The Reduction Section trophy was presented to maintenance superintendent F. O. Burchell by J. B. McConnell, manager of reduction plants.

REDUCTION TROPHY PRESENTATION: Maintenance superintendent F. O. Burchell, J. B. McConnell, G. O. Machum, assistant general manager (processing), and G. F. Byers, reduction plants safety supervisor.

Young Canada

Celebrating Minor Hockey Week in Canada, little leagues all across the country staged exhibitions in which the young fry proudly strutted their stuff for admiring parents and friends.

With all age groups from Squirts to Midgets participating, the programs gave spectators solid evidence of the value of supervized sport.

The loyal volunteer coaches who work with the boys, season after season, basked in the reflected glory of their young proteges.

At Stanley Stadium in Copper Cliff the two teams of Squirts shown on the right, Canadiens coached by Harold Tunney and Bruins coached by Pete Zvonkovich, staged a rousing curtain-raiser to a full night of minor hockey. These pint-sized performers, just emerging from the falling-down stage but full of the old college try, were alone worth the price of admission. Yacker Flynn, the CCAA minor hockey chairman, was in charge of the excellent program.

A fine show was also put on at Levack, an all-day affair which saw Squirts, Atoms, Peewees and Bantams from West Ferris (North Bay), and Midgets from Sudbury, battle it out with teams from Levack's big minor hockey league, of which Jim Conners is chairman. Levack figure skating club also put on an enjoyable exhibition.

Retired on Inco Pension

JACK PARRY

A late starter with Inco, Jack Parry was past 40 when he became crushing plant foreman at the Frood open pit in 1944. Now the spry old timer has retired on service pension after nearly 25 years with the Company. Born in Wigan, Lancashire, England, Jack

Mr. and Mrs. Parry

was a lad of three when his family came over to Canada in 1907 to settle in Quebec. Copper mining at Noranda filled his pre-Inco years. He left the Frood pit to become machine shop foreman at No. 3 shaft, transferred to the Creighton machine shop in 1956, and was foreman there until retirement. His marriage to Winnifred Balkie took place in Rouyn in 1934, and their family of three are all represented at Inco: Jack is an electrician at Creighton, Pat is married to John Malysh, assistant to the superintendent at Coniston smelter, and Jacqueline is the wife of Stobie maintenance foreman Fred Johns. Five grandchildren complete the family.

ANDY SOGANIC

A fine figure of a man is Andy Soganic. He doesn't look his 64 years, and he doesn't feel them. "Most of the time I feel 25 years younger," his voice boomed from his barrel chest. "Just sometimes my legs get a little tired." Retired on special early service pension, Andy was a stope leader at Frood for nearly 36 years. An Austrian by birth, he left for Canada in 1927, shortly after his marriage to Anne Valko. He started at Frood in 1929, broke his service in 1935 to visit his wife and family in Austria and returned to the Company the same year. His wife joined him here in 1937 and they now have two daughters and three grandchildren. Daughter Mary is the wife of Copper Cliff maintenance foreman Howard Thomson. "Tell them at Frood that Andy sends them all a big Hi!" was his parting message.

A. Soganic

HNAT YAGNYCH

Hnat Yagnych first saw service with the Mond Nickel Company at Levack in 1925, left there in 1931 to farm 50 acres at Larchwood, and commenced what was to be 26 years with Inco at Levack in 1942. He was a track boss when he retired on service pension. He married a Creighton girl, Mary Gorval,

Mr. and Mrs. Yagnych

in 1925, and they have brought up a family of three. Son Rudy is a motorman at Levack mine. A proud total of 12 grandchildren complete the family. Still owner of the 50 Larchwood acres, Hnat will stay busy raising beef cattle and tending a kitchen garden.

JOE PYLKO

A powderman at Frood for the last five of his 33 years with Inco at Frood, Joe Pylko is now as free as the breese and plans to travel far and wide in his new role as a Company special early service pensioner. He came to Canada from Poland in 1927, and settled in Montreal until he started his life as a miner here in 1935. His marriage to Brunice Bodnek took place in 1930, and they brought up a family of three. Mrs. Pylko died in 1966. Between travels, Joe will be busy visiting his seven grandchildren.

J. Pylko

THOMAS E. GRAHAM

A familiar figure in the Company's offices at Toronto for over 20 years, Tom Graham has stepped into retirement and will henceforth devote his cheerful personality to more relaxing pursuits such as fishing and motor travel.

Born in Canton, Ohio, in 1899, Tom came to Canada with his

Mr. and Mrs. Graham

parents in 1909. He served with the Canadian army in both world wars, in the signal corps in the first and in the pay corps in the second.

Joining Inco at Toronto in April of 1948, he became supervisor of the mail room and messengers, and was also responsible for all customs clearances.

His marriage to Edna Jackson of Toronto took place in 1921. They have one daughter and two grandchildren.

KEITH YOUNG

Water has played a prominent role in the life of retired Copper Cliff mill flotation boss Keith Young, now on service pension after 32 years with Inco. Born in Collingwood, on the shores of Lake Huron, Keith sailed in the Great Lakes freighters before he joined the Company in 1936, and during his years at the mill experienced most of the water-handling jobs

Mr. and Mrs. Young

there. Clara Rice became his wife in 1930 and they have a family of two, with five grandchildren. An ardent amateur prospector, Keith is considering a move to Manitoulin Island where he can double as a rock hound and easy-going fisherman.

PAUL REBACK

"I'm not used to this life of daylight," said Murray mine service pensioner Paul Reback. "I feel a bit like a gopher does in the spring." A skip tender at the mine for the past eight years, Paul joined Inco at Creighton in 1942,

Mr. and Mrs. Reback

moved to Murray in 1945. Born in Poland, he came to Canada in 1928, and settled for western railroading before becoming a miner. His marriage to Anne Chiahotny took place in Sudbury in 1942. Their daughter Joyce is the wife of Copper Cliff geological department draftsman Jack Varier. One grandson completes the family.

BARNEY CAVERSON

Barney Caverson's experience in the nickel industry dates back to 1918 when, as a youngster of 12, he started work in the Creighton

Mr. and Mrs. Caverson

mine rock house for the Canadian Copper Company. That was four years after his father moved his family from Italy and settled in Coniston. Now on special early pension after 35 years with Inco, Barney's service started at Coniston in 1933; he transferred to the copper refinery in 1944, and was a blacksmith there until retirement. Coniston was the scene of his marriage to Mary Caberlin in 1926, and they have five of a family with 14 grandchildren. Son Ray is a special projects assitant at Copper Cliff. Barney hasn't travelled much, but now plans to do so. "And I'm going to see Canada first," he said.

ALFRED CHRISTOFFERSEN

As a young man of 22, Alfred Christoffersen left his home in Denmark in 1925, "to spend a year or two in Canada." But he liked the place, and now, after 27 years with Inco, the Copper Cliff converter skimmer has rtired on service pension. His marriage to Irene

Mr. and Mrs. Christoffersen

Doran took place in Winnipeg in 1942, and they have brought up a family of three. "It's too late now to go back," said Alfred. "I wouldn't know anybody any more." He and his wife are relaxing in their comfortable Gatchell home and planning their garden for the coming spring.

MIKE DOSKOCZ

Mike Doskocz has raised homing pigeons in Coniston for as long as he's worked for Inco, and that's 35 years. Now that he's retired on service pension, he'll be able to give his full attention to his 50 feathered friends. Mike came to Canada from the Ukraine in 1923, and started with the Company first in 1929. He broke his service in 1930, was married in Winnipeg to Mary Wociechowski in 1931, and returned to the Company at Coniston in 1933. He has been a blacksmith at Garson since 1940. He and his wife have a family of one daughter and one grandson.

M. Doskocz

GINO FURLANI

Well known to the many patients who have passed through the Copper Cliff hospital since he started there as an orderly in 1931, cheerful little Gino Furlani has retired on service pension after nearly 40 years with Inco.

Mr. and Mrs. Furlani

Gino made the trip from his home town of Fano, Italy, to Canada in

1927, and before his move to the hospital spent three years with the Copper Cliff transportation department. He and his wife, Josephine Desanti when they were married in 1934, have a family of four, with 10 grandchildren. Only five foot four in his stockinged feet, Gino packs a lot of power as many a patient will confirm. "With my background, my wife tells me I'll make a pretty good assistant housekeeper," he said with his customary good-natured smile.

GEORGE HEARN

From motorman at Stobie to full time rancher at Worthington is the change that George Hearn's retirement on disability pension has brought about. His 27 years with Inco started at Frood, and he moved over to Stobie six years ago. Two Worthington natives were united when George exchanged

Mr. and Mrs. Hearn

marriage vows with Myrtle Dockrell in 1939. Of their family of four, daughter Pat is the wife of Creighton driller John Mackevicius, and identical twin sons Gerry and Dick are Crean Hill miners, and diesel loaderman and trammer boss respectively. George's 75-acre spread currently supports five head of registered Hereford cattle, and he plans to enlarge his herd to 30.

ARNI JACOBSON

With a yen for the great outdoors, both summer and winter, and with many relatives to visit in the Sudbury area, early service pensioner Arni Jacobson figures he'll have little trouble staying active in retirement. A native of Copper Cliff, he worked on the copper refinery construction before he joined the Company at Frood open pit in 1935 as a haulage truck driver. In later years he was a driver at the Clarabelle open pit, and for the last year of his service was a maintenance mechanic at the Frood-Stobie mill. A Worthington girl, Sara Penttinen, became Arni's bride in 1938.

A. Jacobson

GEORGE WALLI

George Walli's name has been transferred from the Company's employee files to the pensioner files. "But there are still Wallis at Inco," said George proudly, "and four of them are my sons." A converter blaster for all of his 32 years at Copper Cliff, George has retired on special early service pension. He and his wife, Tyyne Vahamaki when they were married in 1927, have a family of six. Vilho is a tripperman at the Creighton mill, Arvo is a garage mechanic at Levack, George Jr. is a process chemist at Levack, and Einar works at the Company's J.

Mr. and Mrs. Walli

Roy Gordon research laboratory near Toronto. A grand total of 14 grandchildren rounds out the family.

LEN BOLTON

Still full of vim and vigor, Len Bolton has retired on special early service pension after 35 years with Inco as an electrician at Frood, and now plans to develop his 76-acre property on Lake Nipissing. Born in Wigan, Lancashire, England, he made his move to Canada in 1929, and started with the Company in 1931. His marriage to Rose Jolley of Hanmer took place in 1937. Mrs. Bolton died in 1965. Their family of three is matched by a similar number of grandchildren. Son Ken is a motorman at Creighton.

L. Bolton

FRED STEPANCHUK

With time on his hands after 33 years with Inco at Frood, special early service pensioner Fred Stepanchuk is considering a visit to brothers and sisters in the Ukraine whom he hasn't seen since he left there for Canada in 1928. Fred has been a motorman for the last 18 years. His bride of 1938 was Anne Kozak, and their marriage was blessed with two daughters. Natalie lives in Toronto, Olga died in California last year.

Mr. and Mrs. Stepanchuk

ALBERT FONTAIN

Albert Fontain has woked at Frood for all of his 26 Inco years, and he spent the last 23 of them as a toplander. A disability pensioner, Albert was born and

Mr. and Mrs. Fontain

brought up in Blind River, and in 1933 was married to Grace Paquette, a Chelmsford girl. One of their family of three, Rene is a pumpman at the Creighton mill. Five grandchildren round out the family. A camp on Cache Lake will provide summer relaxation for the Fontains.

BILL SHACK

Bill Shack's retirement on early service pension, after 37 years with Inco at Copper Cliff, has ended a long partnership with the smelter cranes. It started in 1930, eight years after he left his native Ukraine, when he joined the Company as a baleman in the converter building. He moved up to

Mr. and Mrs. Shack

the crane cab in 1942, and was a craneman in the casting and cooling building during the latter part of his service. Lena Tataryn and Bill were married in Sudbury in 1932, and have a family of two. Favorite entertainment of the Shacks is watching famous hockey son Eddie on televised NHL games. "When he played with Toronto we often travelled down to the games," said Bill. "Boston's just a little too far."

JIM MOTTRAM

A Frood miner since he came to Inco in 1933, Jim Mottram has operated the ore car tipple on 2800 level for the last 15 years. He has retired on special early service pension after more than 35 years with the Company. Born in Lewisham, in the county of London, England, Jim was two when his family left there to settle in Quebec and 15 when they moved west to farm in Saskatchewan. His 1930 marriage to Vera Johns took place in Sudbury, and they have a family of three with three grandchildren. Mrs. Mottram has been confined to a wheel chair since 1950.

J. Mottram

ANTTI RIUTTA

Antti Riutta worked for the Mond Nickel Company at Levack before he was hired at Creighton

Mr. and Mrs. Riutta

in 1933. Now, with 35 Company years behind him, he has retired on early service pension. He was a skip tender for the past 11 years. Born in Toholampi, Finland, he left for Canada in 1928, two months after his marriage to Hanna Kotvisto. She joined him in Sudbury in 1929 and they have a family of three. Daughter Ellen is the wife of iron ore plant machinist Ed Lahti. They have five grandchildren, two in Sudbury and three in Sault Ste. Marie.

BUD HALL

Bud Hall is quite content with his two new occupations. "Summers I'll be a self-employed putterer at my Vermilion Lake camp, and winters will be spent as a full-time TV fan watching all the

Mr. and Mrs. Hall

hockey and football games." Bud has retired on service pension after 37 years with Inco as a carpenter at Frood. Annabelle Guse became his bride in 1929 and their family of two are Bud Jr., an operating shaft boss at Frood, and Marilyn who is the wife of Copper Cliff combustion technician Don Harry. Seven grandchildren complete the happy family group.

GEORGE MITCHELL

George Mitchell's service with the Company would have been 40 years instead of 28 if he hadn't broken his string in 1937. A Frood switch conductor for the last 10 years, George has retired on disability pension. Born in Uddington, Lanarkshire, Scotland, he crossed the Atlantic in 1925, farmed for a while in Manitoba, and joined Inco for the first time at Frood in 1928. He returned to Frood in 1939. He married Mrs. Matilda Dania, who had one son, in 1936, and since then a grandchild has been added to the family. George and his wife enjoy the Sudbury area and will continue as residents of New Sudbury.

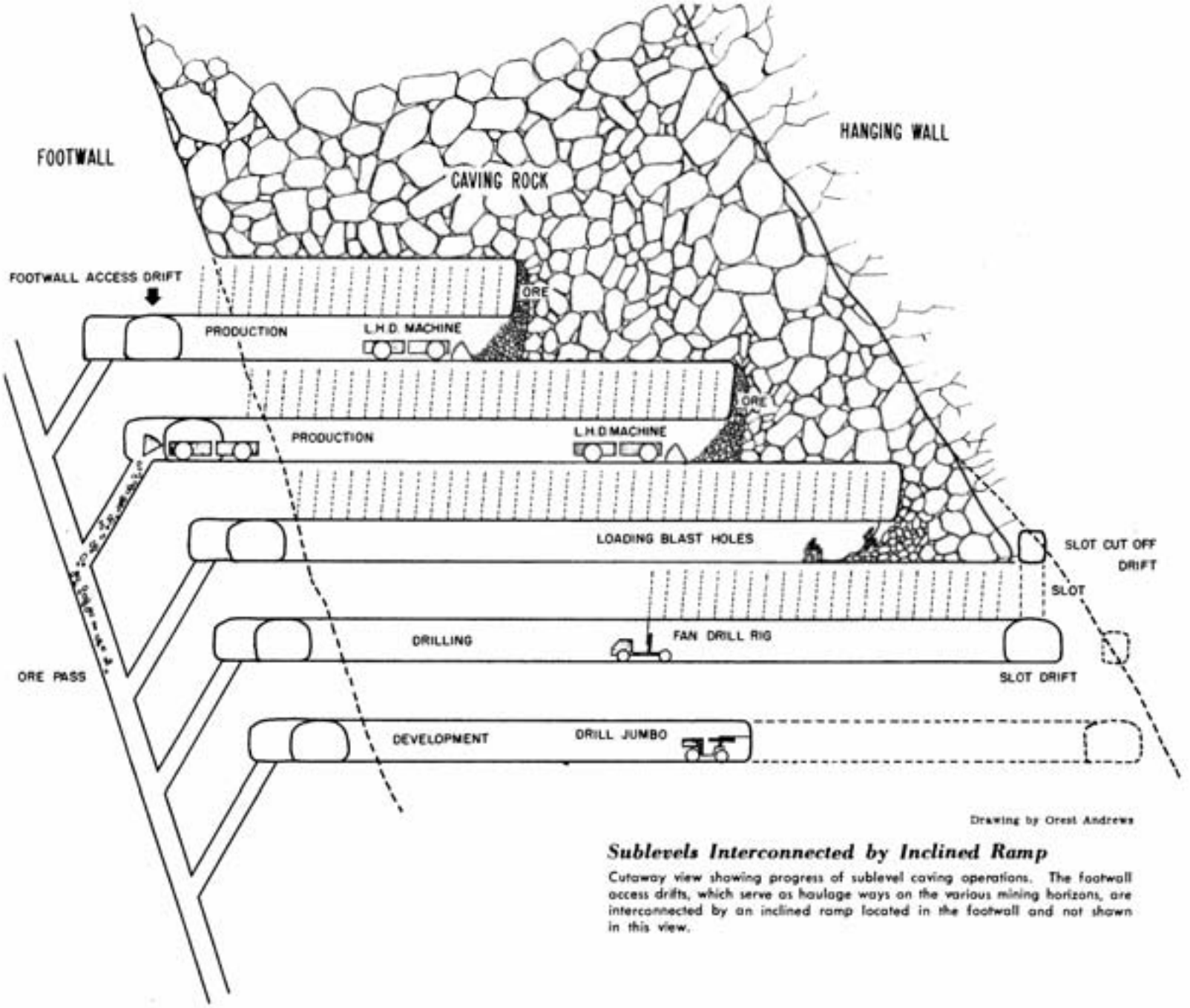
G. Mitchell

GUERRINO LUGLI

With a proud total of nearly 40 years with Inco at Copper Cliff, Guerrino Lugli has downed his

Mr. and Mrs. Lugli

carpenter's tools to retire on service pension. He left Pesoro, Italy, for Canada in 1926, and joined the transportation department in 1928. His move to the mechanical department came in 1940, and since then most of his skills with the plane and saw have been applied to Copper Cliff housing. His bride of 1930, Mary Frattini, died in 1955 after presenting him with a family of four. His second marriage to Prderi Ornella took place in 1960.



Drawing by Orest Andrews

Sublevels Interconnected by Inclined Ramp

Cutaway view showing progress of sublevel caving operations. The footwall access drifts, which serve as haulage ways on the various mining horizons, are interconnected by an inclined ramp located in the footwall and not shown in this view.

Studying General Layout

Careful planning is vital to the success of any mining method. Shown studying the general layout of the sublevel caving program at Stobie are: seated, assistant mine superintendent Milt Jawsey, underground superintendent Ted Flanagan, mine engineer Gerry Smith; standing, area engineer Merv Dickhout, divisional foreman Guy Hunter, layout engineer Claudio Barsotti, and assistant mine geologist Don Stephenson.

SUBLEVEL CAVING COMING ON STRONG

A new major method of mining at International Nickel, sublevel caving, is now firmly established at Stobie mine, demonstrating marked advantages in efficiency and safety in the recovery of a large lower-grade orebody.

It's the most extensive use yet made of "trackless" mining at Inco. In the mine just below 1,000 level at Stobie, where the initial sublevel caving program is in full swing, practically everything is on rubber-tired wheels — huge load-haul-dump machines that remove the ore in 6-ton bites, highly mechanized 3-boom drill jumbos, 2-machine fan drill rigs for uphole drilling, secondary drill rigs for roof bolting, and busy service vehicles. Operating with complete mobility in big wide crosscuts and haulage ways, this concentration of specialized equipment presents an exciting modern mining scene.

Orderly, Clean-Cut Technique

Not as spectacular as the equipment involved, but even more interesting from the miner's point of view, is the orderly clean-cut new mining technique being introduced.

Sublevel caving can be described briefly as a method of mining an orebody from a system of sublevels, in a series of vertical slices, and removing the broken ore with the assistance of controlled caving of the hangingwall rock.

A bulk mining method, it is used in a large lower-grade orebody where a more selective fill method is not required. It is used only where induced caving of the hangingwall does not disturb the overall operation of the mine. Because it allows a higher degree of control of the hangingwall caving, it will eventually replace the conventional blasthole open stoping and pillar recovery at Stobie mine, and will be used exclusively in the new Little Stobie mine, scheduled to come into production later this year. It will also be applied in sections of the Murray and Frood mines which lend themselves to this type of operation.

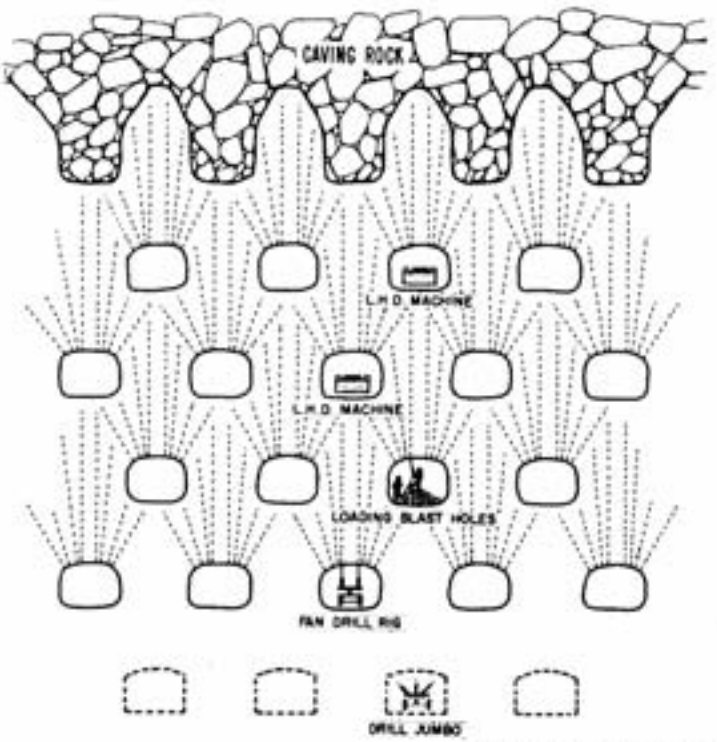
Maximum Protection

The compact nature of this bulk mining technique, and its close control of the caving feature, combine to provide maximum protection for the miner, who at all times has the advantage of strong overhead cover. The mechanized equipment he is using also contributes to his safety in enabling him to work at a distance from potential danger.

A good working environment is assured by the mine's powerful ventilation system, which sends fresh air coursing freely through the big haulage ways and crosscuts at the rate of 900,000 cubic feet per minute. Inco's strict procedures covering the underground operation of diesel-driven equipment eliminate objectionable fumes. All diesel units are fitted with the most advanced type of oxy-catalytic scrubbers, and a rigid schedule of atmospheric tests is maintained, providing protection far exceeding government regulations.

Preparatory development for sublevel caving consists of driving a switchback ramp in the footwall, to connect the mining horizons for

(Continued on Page 11)



Drawing by Orest Andrews

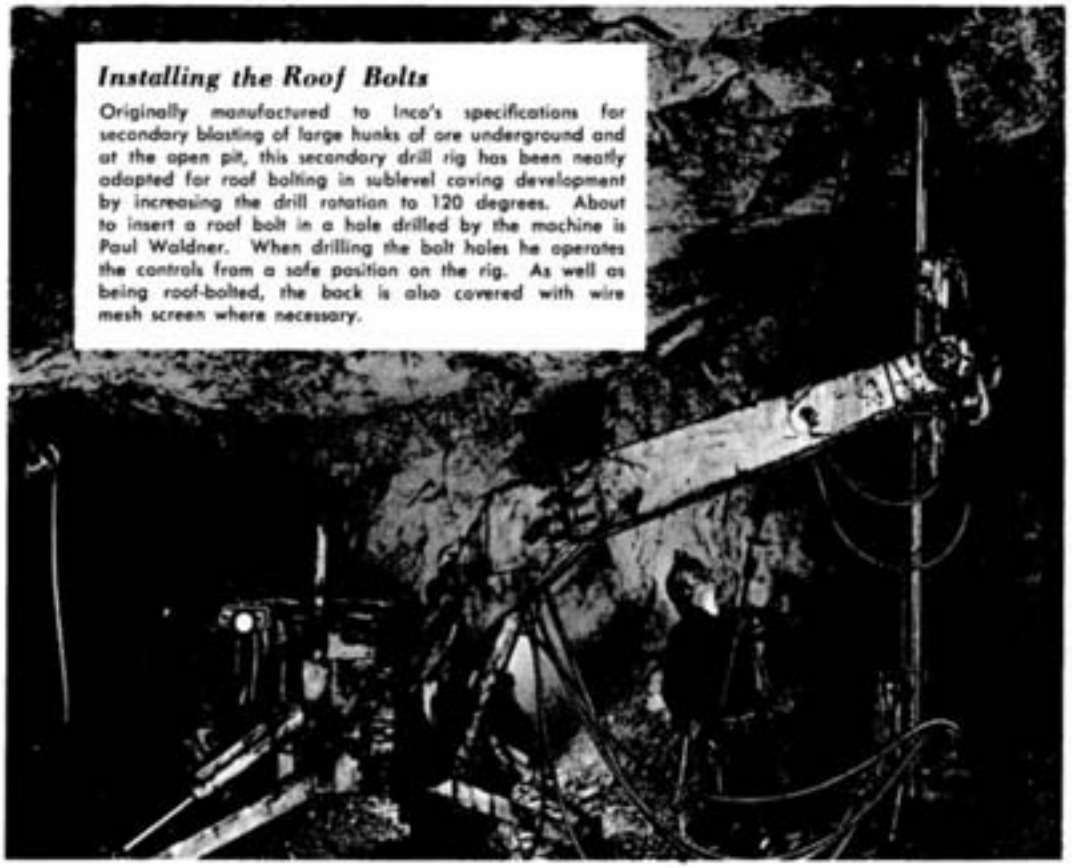
Sectional View of Crosscut System

A sectional view of sublevel caving showing the location of the crosscuts and the drilling pattern of upholes used to blast the ore.

Driving a Crosscut

Driving one of the sublevel crosscuts, which extend the full width of the orebody, this 3-boom drill jumbo makes short work of a 10-foot round. Under the direction of the shift boss the face is premarked for the guidance of the driller. The drills are positioned hydraulically and operated by compressed air from the central console. The jumbo is driven by an air-cooled diesel engine equipped with an oxy-catalytic exhaust scrubber. The driller shown at the console, wearing approved hearing protection, is Mario Tombari.

Sublevel Caving Inco's Biggest Use Yet of Trackless Mining



Installing the Roof Bolts

Originally manufactured to Inco's specifications for secondary blasting of large hunks of ore underground and at the open pit, this secondary drill rig has been neatly adapted for roof bolting in sublevel caving development by increasing the drill rotation to 120 degrees. About to insert a roof bolt in a hole drilled by the machine is Paul Waldner. When drilling the bolt holes he operates the controls from a safe position on the rig. As well as being roof-bolted, the back is also covered with wire mesh screen where necessary.

THE FRONT COVER

Drilling Blastholes

This is the type of fan drill rig used in sublevel caving to drill off 5-foot slices of ore in mining the extraction crosscuts. Starting at an angle of 55 degrees in the shoulder of the crosscut, 10 holes are drilled in a fan-shaped pattern overhead, varying in length to 40 feet at the apex, and spaced so that the toes are 5 feet apart. The pattern is inclined at 85 degrees toward the hangingwall. Rubber-tired and air-operated, the rig has a dial on its console to guide the driller in setting the incline of the two drills. When drilling, the rig is stabilized by four hydraulic jacks. Shown at the console is longhole driller Arnold Service.

Loading for Blast

Preparing to blast a 5-foot slice of ore drilled off overhead in a crosscut, a crew is charging the "fan" of upholes with anfo (ammonium nitrate-fuel oil) blasting agent. Operated by compressed air, the loading device blows the anfo through the hose and up into the holes. Polyethylene film is spread to catch and remove spillage of anfo from the loading operation to prevent possible accumulation of ammonia fumes. In this loading crew are, left to right, Bob Hart, Gene Bedard, and Jean Cyr.

Willing Workhorse

A load-haul-dump machine, eager big workhorse of "trackless" mining, has loaded its 5-yard bucket with broken ore after a blast in a sublevel caving crosscut, and is taking off for the ore pass. Despite its length (27 feet) and weight (17 tons) it manoeuvers with amazing speed and dexterity at the console commands of its operator, Olaf Nylund. The crosscut is 16 feet wide, and the machine alternates from one side to the other in mucking out the blast.

SUBLEVEL CAVING COMING ON STRONG

(Continued from Page 9)

easy interchange of mobile equipment. The ramp, 14 feet wide by 12 feet high, is driven at a fairly steep incline of 20%. An ore pass, is also driven in the footwall to funnel the ore down to the main haulage level below, where it is trammed to the crushing station.

Establish Crosscut Systems

From the ramp, horizontal sublevels are developed in the orebody at 30-foot intervals, each with access to the ramp and connections with the ore pass. Each sublevel consists of an access drift which serves as a haulage way along the footwall contact, connecting up a system of crosscuts spaced 20 feet apart and driven the full width of the orebody, which may vary up to 300 feet. The crosscuts are 16 feet wide and 12 feet high, and are roof-bolted for protection, with wire mesh screen also installed wherever necessary. The crosscuts are offset on alternate levels to maintain good ground conditions and provide the best possible control of ore removal.

Since all the sublevel development work is in the orebody, the sublevel caving method has the unique advantage of being "in business" right from the drop of the hat. It is the only type of mining in which all development work is actually ore production. As the crosscuts are drilled off by the 3-boom jumbos in 10-foot rounds and blasted, the load-haul-dump machines move smartly in to scoop up the muck and transport it to the ore pass.

Blastholes in "Fan" Pattern

When sufficient development has been completed on the top sublevel, fan drill rigs are moved into the crosscuts and the ore overhead is drilled off in vertical slices 5 feet thick. The holes are drilled in a fan-shaped pattern, inclined toward the hangingwall at 85 degrees for better brow control, and vary in length up to 40 feet.

When drilling is sufficiently advanced a slot opening 40 feet high is blasted at the hangingwall end of each crosscut from the slot drift through to the slot cutoff drift. As the broken ore from the slot is removed by a load-haul-dump machine, caved hangingwall rock follows down by gravity to fill the opening.

Blasting of the drilled slices of ore is then commenced. The drill holes are loaded and blasted with anfo, the combination of ammonium nitate and fuel oil, which is blown up into the holes by air-operated loaders. Polyethylene film is spread to catch spillage of anfo in the loading operation and avoid generation of ammonia fumes.

Breaks Against Rock Cushion

In blasting, the slice of ore breaks against the backdrop of caved hangingwall rock, which cushions and contains the blast so that the broken ore can be readily removed by a load-haul-dump machine without rock dilution. As each slice is mucked out, the cushion of hangingwall rock follows in behind, the pressure of its weight then assisting in the removal of the broken ore.

As full-scale production in the upper sublevel gets underway, mining proceeds on additional sublevels until a series is in operation, with straight ore production on the uppermost, fan drilling on those immediately below, and a continuing program of sublevel development at the lower horizons.

The orderly development and sequenced removal of mined ore by mechanized equipment makes sublevel caving a highly efficient bulk mining method. It is used extensively in Sweden, and when it was being planned for introduction at the Company's mines in the Sudbury district, several Swedish mines were visited by an Inco party of G. R. Green, assistant general manager (mining), R. J. Hall, assistant chief mines engineer, and W. J. Taylor, mines research engineer, to observe its operation.

And Out Goes the Muck!

After a fast trip back through the crosscut and along the haulage way, Olaf Nylund's load-haul-dump machine is shown here dumping its 6-ton load into the ore pass through which the muck travels down to the main haulage level below, where it is trammed to the crusher. Like all other diesel-powered underground equipment, the machine is fitted with an oxy-catalytic scrubber to remove objectionable exhaust fumes.

AND THE FIGHT WAS ON!

The proud father was talking about the intelligence of his son.

"You know, dear," he told his wife, "I think he must have got his brains from me."

"He certainly must," retorted his wife. "I've still got mine."

Red Hot Brakes

Addition of small amounts of nickel to the cast iron used in brake drums for heavy construction equipment has made it possible for the drums to operate to red heat without failure.

Dunc White Top Skip in Refinery 'Spiel

Good fellowship reigned supreme during the annual bonspiel staged at Copper Cliff by the copper refinery's active athletic association, with 80 curlers and near-curlers enjoying the fun. Winners of the first event are shown above: Harry Lanning, Al Cruthers, John Koski, and skip Duncan White, receiving their trophy and prizes from president Wayne Wilson. Runners-up were Rolly Roy (skip), Brian Rogers, Emil Jolicoeur, Brian King.

A large share of the credit for the success of the refinery 'spiel went to the drawmasters, Howard Coldwell, Dunc White and Wes Hart. Popular pensioner Barney Caverson came out of retirement to skip the winning rink in the second event; he's shown here receiving the A. C. Kerr trophy and prizes from Wayne Wilson, with his team of George Trimmer, Al Zandri and Phil Lindsay. Runners-up were Jack MacInnes (skip), Jerry Rienguette, Mike Cirello, Don Ley. The curlers appreciated a fine buffet dinner served by the curling club caterer, Mrs. Estelle Johnstone.

Live-wire athletic association secretary Bud Eles stepped in to present the C. B. Mathews memorial trophy and prizes to the victors in the third event, Leo Pevato (vice-skip), Richard Duguay, Gabe Prevost; skip of this rink was Graham Dick. Runners-up were Percy Larocque (skip), Tony Huska, Tom Whiteside, Rick Barrett.

"Homecoming" for John Shaw at Copper Cliff

When he came up from Inco New York to address the Sudbury Branch of the CIMM on Ocean Mining, in which he is now engaged in wide-ranging research for the Company, executive assistant John Shaw enjoyed a real "homecoming". He renewed many friendships of the years 1954 to 1960 when he was stationed at Copper Cliff, developing electro-magnetic gear for geophysical exploration. He's shown above, second from the left, with chief geophysicist John Dowsett, pilot engineer Norm Linnington, geophysical technician Tom Turgeon, and research geophysicist Gus Leask.

J. A. Pigott presents to Sudbury hospital council chairman Gordon Browning the first of five $500,000 contributions by International Nickel over the next four years.

Inco Gives $2.5 Million for Sudbury Hospitals Expansion

A gift of $2.5 million to the capital building campaign of the Sudbury and District Hospital Council was announced January 20 by International Nickel.

In a ceremony at Sudbury J. A. Pigott, assistant vice-president and division general manager (Ontario), presented a cheque for $500,000 to Gordon Browning, chairman of the hospital council. The balance of the Inco gift will be contributed in instalments of $500,000 each over the next four years.

Inco's donation raised the total amount received by the hospital council from private and municipal sources to $8.5 million of its $10 million campaign goal. Government grants are expected to amount to another $20 million.

Four hospitals serving the Sudbury area will benefit from the capital building program. St. Joseph's plans to build a new hospital to be known as Laurentian Hospital, and part of the present St. Joseph's facilities will continue in use to house about 75 patients with chronic illnesses. Renovation and expansion is also planned at the Sudbury General and Sudbury Memorial hospitals, and Sudbury Algoma Sanatorium.

Four-Team Inter-Mine Loop

(Continued from Page 4)

Levack is on top of the heap, closely followed by Stobie 7 shaft, Frood, and Stobie 8, in that order. Playoffs get underway the week of February 17, with the Frood-Stobie A.A. trophy at stake. League games have been played at Sudbury Arena and Copper Cliff's Stanley Stadium, but Capreol Arena will probably also be used during the playoffs, which will go three games in the semis and five in the finals.

During the season the teams have sharpened their shooting in exhibition matches against such lineups as Warren, Sturgeon, Gore Bay, Elliot Lake, Levack Old-Timers, and Creighton mine.

Personnel of Teams

At Levack, playing coach Maurice St. Amour has had good goal-scoring help from Maurice Ayotte and Ron Roy; others on his team are T. Todd, J. Janahawski, H. Blais, G. Smith, G. Tremblay, E. Lavigne, M. Carriere, L. Blaseg, D. Stewart, A. Brazeau, J. Proulx, B. Filion, R. Rivet, M. Charbonneau, D. Amyotte, T. Del Mastro, A. Tremblay.

Eddie St. Martin, Gerry Renkers, and Sonny Pelletier are big goal-getters for coach Harry Thurlow of Stobie 7 shaft; also in his line-up are M. Jordan, J. Marriott, B. Coyne, S. Pelletier, J. Johnson, M. Blanchette, P. Cross, H. Oram, D. Crawford, A. Gauthier, J. Lacey, D. True.

Dave Timms has been one of the big producers for playing coach Tom Hywarren of Frood 3 shaft. His lineup includes Dan Hebert, H. Neeley, A. Rivet, W. Dearing, J. Gibson, A. Tryon, R. Chretien, K. Lavalley, L. Lamore, R. Kerr, C. Lahti, B. Petran.

Stobie 8 shaft's team has a high-class hockey connection in that goalie Armand Desjardins is a brother of Gerry Desjardins, net-minder of the Los Angeles Kings. Coach Bill Lampert's hottest scorers include Gerry Baronette, Bill Manning and Don Boucher. Others in the lineup are R. Piette, R. Rickard, R. Wilson, S. Bastarache, G. Cole, R. Corneau, R. Leduc, G. Ellison, G. Brideau, R. Pharand, M. Labbe, E. Gervais, D. Norman, W. O'Neill, D. McCormick, J. Imbeau.

Well insulated in her hooded one-piece wind-proof toboggan suit, Ingrid Conway shows good racing form as she solos the family machine around the track. Reports have it that the sport has inspired some diligent weight-watching — the less you weigh the faster you can travel.

Power Toboggan Fans Have Club at Thompson

The conversation was very technical and the atmosphere was heavy with the fumes of gasoline and lubricating oil. Terms like "souped-up," "lean mixture," "domed high compression heads," "over bore," and "tuned exhaust," filled the air along with the roar of revving engines.

The scene — complete with crash-helmeted and be-goggled drivers — might have been in the pits at a race car track but it was a weekend get-together in the clubhouse of the Thompson Power Toboggan Club.

Incorporated in 1963, and with a current membership of 55, the club's headquarters comprise a 20 x 40 foot building and a circular super-elevated track one-third of a mile around, located a mile or so south of town. "Let's face it," said Frank Montieth, the club's president since it was formed, "our machines make a lot of noise. This way we don't disturb anybody except maybe the Thompson turkeys and a squirrel or two."

Other club officers are vice-president Harry Towes, secretary Ted Smith, treasurer Bob Currie, and publicity man Ed Bolig. Membership fee is a yearly $15 and entitles a member to use of the clubhouse and the race track.

Air-borne at close to 50 miles an hour, expert tobogganer Gordon Foster jumps his machine on the club's circular race track. He is a timberman at the Company's Thompson mine.

The group's big event is their annual "Hullabaloo" held on the last weekend in March, and during the two days of competition, racers vie for a big bundle of prize money and trophies.

It's a mixed club with enthusiastic participation by both wives and girl friends. The ladies have their own annual event in the "Powder Puff Derby," which usually attracts some 30 flying females who demonstrate that sometimes the weaker sex can be pretty durable.

A relatively new sport, power tobogganing has won tremendous popularity across Canada. Northern Manitoba temperatures even down to 40 below don't deter enthusiastic Thompson fans, who regularly organize 50-mile cross-country races from the clubhouse to Paint Lake and back. "Some of the bigger 52-h.p machines can step along at 70 miles an hour," said club member Gordon Foster. "And believe me, a driver has to be well insulated to enjoy winter weather at that speed. But it's a terrific game."

Bi-monthly race meets draw large crowds of spectators, and are popular with the younger set who enjoy the thrill of free rides around the circuit.

Planning Safe New Railroad Operation

Always a step ahead with their concern for formulating a sound set of safety rules and practices covering the use of new equipment and operational innovations, members of the Company's Manitoba division safety department were photographed in discussion with transportation personnel at the Thompson smelter.

Gathered around one of the three 1800-h.p diesel locomotives that will operate on Inco's new railroad linking Scab and Pipe mines with the Thompson plant are, in the foreground, maintenance superintendent John MacDougall, plant safety engineer Wilf Lederhaus, transportation supervisor Mike Babulic, heavy equipment foreman Jim Kennedy, dispatcher John South, labor foreman Steve Ogrodnick, and yardmaster Ken MacDonald. On the loco are safety engineer Bernie Whalen, brakeman Glen Finney, locomotive engineer Jack McKinnon, and track foreman Gordon MacDonald.

Some of the 55 members of the Thompson Power Toboggan Club, lined up with their machines alongside their brand new clubhouse, are Ray and Ingrid Conway with daughters Ruth and Margaret, Bob and Pat Powell, Walter and Betty Klym with Carol Anne, Ted Smith with daughters Connie and Bonnie, Ed Bolig, Frank Montieth with Kelvin and Teri Koutecky, bearded Gordon Foster, and Bob and Marg Currie with their youngsters Dawn and Kevin.

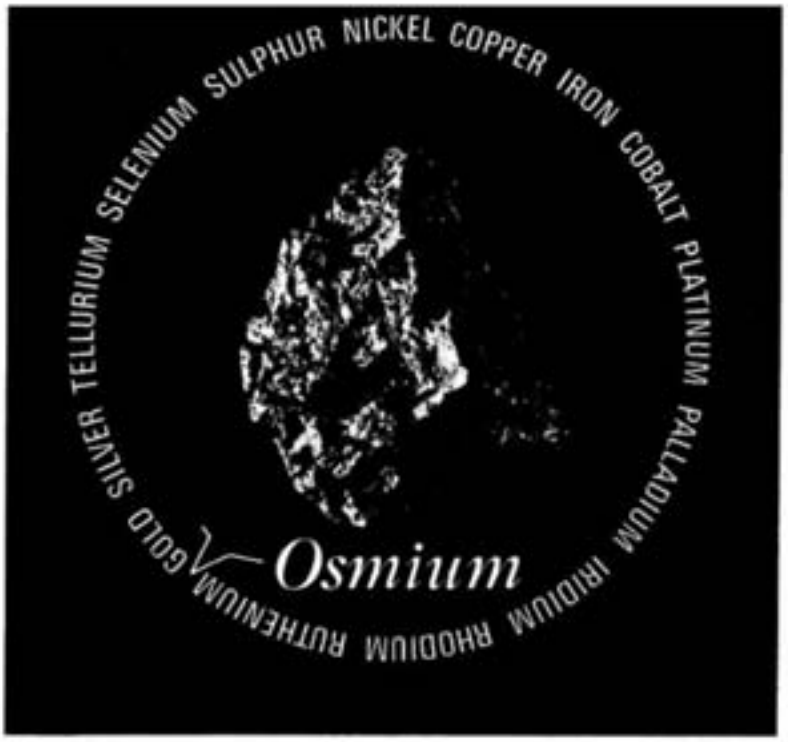
Inco's World Stature Is Growing Steadily

Bon jour. Guten morgen. Buon giorno. Buenas dias. Those are among the greetings that can be heard every day at offices of International Nickel. And in English, you can hear these greetings with a South African, Canadian, American, British or Australian accent.

Inco and its distributors have centres in principal cities of the Free World, helping industries solve metal problems by keeping them up to date on the latest metallurgical developments.

Then there are growing numbers of Inco mines, research laboratories, and exploration units in many parts of the Free World. Facilities of that magnitude mean jobs and raised standards of living. They mean international cooperation between governments for their mutual benefit.

Exploring, mining, conducting metals research, providing new alloys to meet the needs of industry, International Nickel is attaining steadily increasing world stature as a pillar of progress.



It's in plain enough sight on the Periodic Chart of the Atoms, but extracting it from Sudbury ore was something else.

Putting the Finger On that Elusive 15th Element

A STORY of tenacious and imaginative research over a long period of time lay behind the announcement that the familiar family of 14 elements Inco recovers from its Sudbury District ores had been increased to 15.

After an eight-year campaign by scientists of the research department at Copper Cliff, with the assistance of colleagues at the copper and nickel refineries, as well as other departments of the operations, the extremely scarce and elusive element osmium was successfully tracked down and cornered.

Symbolic of Determination

This outstanding achievement was announced in the Company's 1966 annual report in the following terms: "Symbolic of the professional determination of our research staff to wrest the maximum possible number of elements from our ores is the perfection in our laboratories in 1965 of a process to recover the sixth and last remaining platinum-group metal, i.e., osmium. Thus we have started, if only on a modest scale, the recovery of a fifteenth element".

With this "blessed event", the family of elements recovered by International Nickel became: nickel, copper, iron, cobalt, sulphur, gold, silver, platinum, palladium, iridium, rhodium, ruthenium,

Inco scientists Alex Illis and Allan Manson are shown with a sample of the blue-gray osmium powder won at long last from Inco's Sudbury District ores. Behind them is the original distillation apparatus used in the osmium recovery experiments. Both men have since moved from the Copper Cliff research department to the new J. Roy Gordon research laboratory at Sheridan Park, near Toronto, Mr. Illis as technical assistant to the director and Mr. Manson as senior research chemist.

Joe Bischoff, works metallurgist at the copper refinery, Chris Dunkley, assistant manager of the refinery, and Walter Curlook, assistant to the general manager, are pictured as they worked on development of a mechanical flow diagram for the practical extraction of osmium.

selenium, tellurium and osmium.

It was almost inevitable that this latest Inco stride in extractive metallurgy would, like the Company's first production of high-grade iron ore at Copper Cliff in 1956, be likened to "getting everything out of the pig but the squeal". Actually the recovery of osmium came pretty close to bagging the squeal itself.

Osmium occurs in only very minute trace quantities in the Sudbury ores, and is closely associated with the other platinum-group metals, platinum, palladium, iridium, rhodium and ruthenium.

Undetected for Years

Because it is present in such minute quantities, it went undetected for many years. In 1957 the research department at Copper Cliff made an intensive search for osmium with the object of ascertaining how much was actually present in the Company's Sudbury ores, and what happened to it at various stages between mine and refinery.

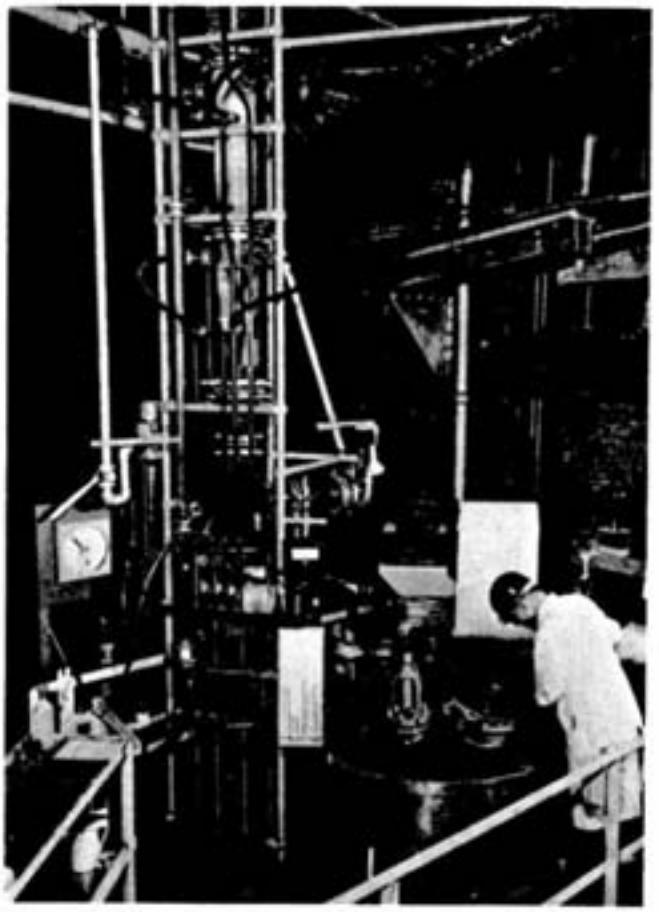
When it was established that there was a very small amount of osmium associated with the platinum-group metals, a program was undertaken to separate and recover this elusive trace element.

Testwork continued for some two or three years in the laboratory, after which mini-plant scale testwork was undertaken. At this stage, process engineers from operations were introduced to the problem to assist with devising a practical scheme for recovering Element 15.

Its Secret Revealed

One important characteristic of osmium, one which was responsible for its evasiveness, is that its oxide is extremely volatile. This feature, which explains why osmium went undetected in the Sudbury ores for so long, has been turned to advantage. It is possible to separate osmium from the other platinum-group metals by subjecting the host material to an oxidizing treatment, thereby volatilizing off the osmium. The osmium is then collected from the oxidizing gases, and after being subjected to several exacting purifying steps, emerges with a purity greater than 99.8 per cent. As they say on the Seine, "Voila!"

In the slow controlled cooling of the matte coming from the nickel converters at the Copper Cliff smelter, the molten mass crystallizes into three products, one of which contains most of the precious metals — gold, silver and the platinum group. Separated magnetically from the nickel and copper sulphides, this product undergoes treatment involving the smelter, the nickel refinery at Port Colborne and the copper refinery at Copper Cliff. After being separated from copper, nickel, gold and silver, the platinum group metals proceed to the precious metals refinery at Acton, England. Osmium which hitherto had just gone along for the ride and ducked out when the fares were being collected, is now added to the list of precious metals recovered.



Part of the specially designed experimental equipment used in developing a process for the extraction of osmium was this big distillation apparatus erected at the copper refinery. It separates an osmium concentrate from a very low grade sludge precipitated in precious metal recovery operations.

Very High Melting Point

Osmium, blue-gray in color, is the most refractory of the platinum metals, with a very high melting point around 5500 degrees Fahrenheit. It is extremely brittle and is regarded as unworkable even at high temperatures. Its principal applications at present are in the various hard, corrosion-resistant alloys used for tipping pen nibs, phonograph needles, and instrument pivots.

Although all the platinum-group metals were isolated and named early in the 19th century, it was not until the mid-1950's that the application of platinum catalysts to petroleum refining brought a great surge in the demand for this metal, although it had already won extensive use in industry. Similarly palladium, which like platinum had been popularly known in a jewelry context, has gained great industrial status since 1960 through its application in electrical contacts in communication switch gear. Presently the need for refractory ware in which

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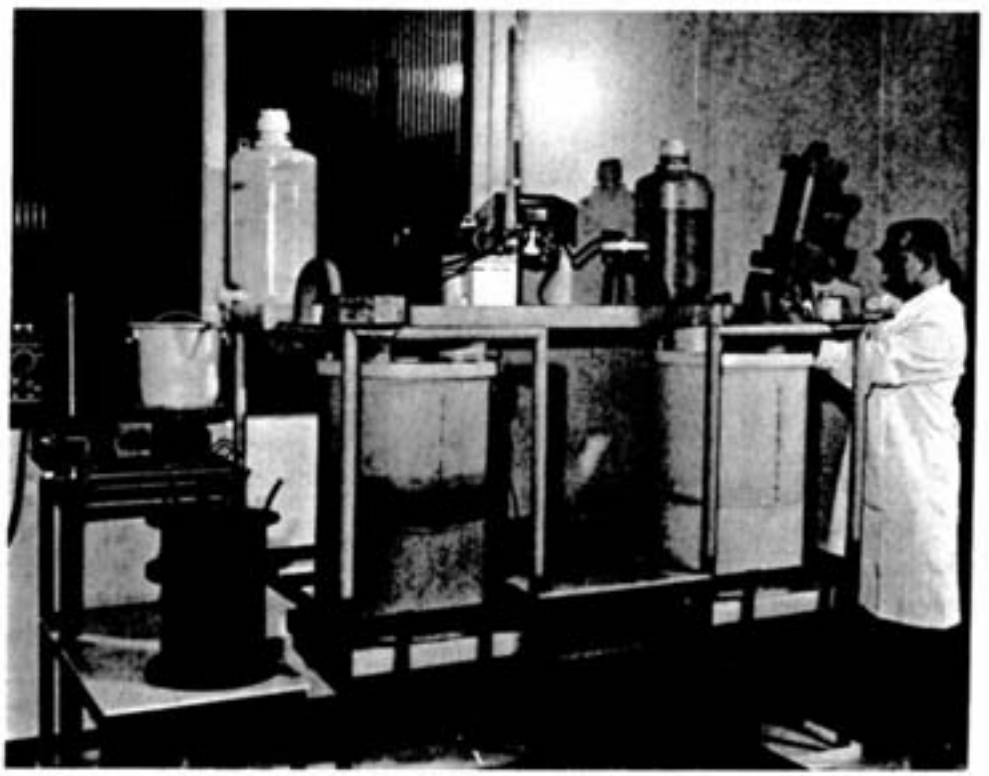

Another device designed by Inco scientists in their experimental campaign to capture the long-sought osmium, this chemical processing unit at the copper refinery treats the liquor concentrate from the distillation apparatus to produce a pure osmium salt which is subsequently reduced to pure metal. This unit is constructed of non-corrosive plastic material, rather than metals, to prevent contamination of the osmium in this final delicate phase of processing. The operator shown is metallurgical supervisor Bud Eles.

L. S. Renzoni, Toronto, vice-president—process research, explains a detail at the press conference to announce the $13 million project. In the centre is D. A. Fraser, assistant general manager (administration) and on the right is consultant Dr. Morris Katz of Syracuse University, one of the world's leading experts in sulphur dioxide emission and control.

Tallest Stack in World

Inco Announces $13 Million Project At Smelter to Combat Air Pollution

A $13 million project to combat air pollution was announced by International Nickel February 5.

A 1,250-foot chimney, highest in the world, will be erected to serve the Copper Cliff smelter complex.

Coincidentally Inco will install two new electrostatic precipitators for dust abatement and collection, and will also enlarge existing precipitators at the smelter. This will decrease the dust content of the gases to well below Ontario Health Department standards.

Anouncement of the project was made at a press conference at the President Hotel, Sudbury, by D. A. Fraser, assistant general manager (administration).

The chimney will assure that air in the Sudbury area will be considerably cleaner on average than that in any other industrial community of Ontario and will exceed by a substantial margin the air quality standards established by the Ontario Air Pollution Control Service.

The increased draft created by the higher stack, in conjunction with the Company's continuing program for improved containment of sulphur dioxide gases, will provide better smelter working conditions.

Intensive Research Continues

Company officials emphasized that erection of the 1,250-foot stack is regarded only as an interim measure, providing clean air now while intensive research is continued toward more complete recovery of sulphur from the smelter gases. In this research on other processes for recovery of sulphur values, Inco's laboratories and pilot plants are being assisted by internationally known consultants.

Consultants have assured the Company that the new stack will eliminate any possibility that ground concentrations of sulphur dioxide from Copper Cliff will again reach the point where they can cause damage to vegetation. This is supported by experience gained from recent high stack installations in Europe and the United States. Gases from the smelter will be emitted at high velocity, temperature and altitude to assure their adequate dispersion and dilution even under adverse weather conditions.

Gases will be emitted from the new stack at a velocity of from 50 to 60 feet per second, carrying them upward to about 4,000 feet. This will place them in the path of radiant winds which have a velocity three times greater than winds at ground level, so that the resultant dispersion will be much greater.

Exceeds Standards

Design bases for the new stack have been drawn up in consultation with the Ontario Department of Health and also with Dr. Morris Katz of Syracuse University, one of the world's leading experts in sulphur dioxide emission and control.

Dr. Katz reported that a stack height of 1,000 feet would meet air pollution control standards, but Inco decided to increase this to 1,250 feet so as to be well over the standards.

Engineering work will start immediately and construction will be underway this summer. A "guesstimate" puts the diameter of the new stack at 100 feet at the base and 45 feet at the top. The existing smelter stacks, two of 500 feet each and the third 350 feet, will be closed down and capped.

SPOKE AT THOMPSON

K. H. J. Clarke, Toronto, assistant vice-president - Canadian Sales, addressed the January 29 meeting of the Thompson branch of the CIMM, discussing world developments and trends in the markets for International Nickel's products.

The 15th Element

(Continued from Page 15)

to melt laser compositions has increased the demand for iridium, and since osmium is closely comparable to this metal although of greater hardness and corrosion-resistance, it naturally is very high on the "wanted" list for tomorrow's hungry industrial technology.

Annual world production of the platinum metals amounts to about 40 tons, as compared with 1,500 tons for gold and 9,000 tons for silver. Current Canadian production of the platinum metals, as a by-product of nickel-copper metallurgy, is roughly one-third of the world's annual production, South Africa and Russia being the other two major producers.

Inco's potential production of osmium may be reckoned only in ounces, not tons, but it represents a highly important contribution to the technological progress of the future. And the extraction of this elusive 15th elment was a challenge which the Company's research scientists could not leave unanswered.

Appointment

J. A. Pigott, general manager of the Ontario division, announced the appointment effective February 1 of **N. C. Hillier** as assistant to the manager, Port Colborne nickel refinery.

N. C. Hillier

Joining International Nickel at Port Colborne in June 1948 as a research chemist, Norman Hillier became a general foreman in the refinery in 1949. He was appointed assistant superintendent of the leaching, calcining and sinter department and the anode department in 1958, and four years later became superintendent of these departments.

Born at Westeyville, Newfoundland, he attended Mount Allison University at Sackville, New Brunswick. He served with the Royal Air Force in World War 2.

His marriage to Esther Patriquin of Amherst, Nova Scotia, took place in Toronto in 1948. He has two sons and one daughter.

He is chairman of the minor hockey program of the Port Colborne Lions Club. Fishing and hunting are his favorite recreations.

Port Colborne Curlers

Prize for travelling farthest to the Copper Cliff ladies' highly successful open curling bonspiel was easily won by this rink from Port Colborne: skip Foy Hudgins (with stone), Betty Lindenas, Terry Hart, and Ermo Todd. They returned home praising northern Ontario hospitality.

Embryo Soccer Stars Learn Ball Control

"Keep your eye on the ball," said Stu Bramley as he demonstrated foot control to some of the 30 youngsters who belong to the junior indoor soccer group and work off excess energy on Tuesday evenings between six and nine o'clock at the Thompson Community Club.

Stu, a shipper in the refinery shipping and shearing department, and a forward with the Durham Redwell Rangers before he came to Canada from England, is one of three soccer instructors who willingly donate their time and experience to the younger set.

Watching the lesson is instructor Lindsay Cunningham of the machine shop, who played second division football for Ballymena in the Northern Ireland B League. The third fember of the teaching trio is Peter Norbury, a miner at the Company's T3 shaft.

"One of our biggest problems," said Lindsay, "is to stop the boys from catching the ball, like they're used to doing in basketball. But we're getting there, they're beginning to use their heads, both literally and figuratively."