INCO TRIANGLE

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Mark Well the Lifeline!

(STORY ON PAGE 10)

INCO TRIANGLE

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Board of Directors Photographed at Thompson Meeting

Earl Kennedy

Twenty of the 25 members of the board of directors of Inco Canada are shown in the above photograph which was taken after their meeting held in Thompson, Manitoba, on September 11. Also shown are John McCreedy, vice-president and general manager (Manitoba) and F. Foster Todd, executive vice-president. Mr. McCreedy is on the right of chairman Henry S. Wingate and Mr. Todd is on his left. Standing in the back row, from left to right, are: directors Donald H. McLaughlin, Samuel H. Woolley, Norris R. Crump and James H. Goss; middle row, Rt. Hon. Viscount Weir, Ellmore C. Patterson, H. C. F. Mockridge, Lewis W. Douglas, Peter D. Curry, William C. Bolenius, George T. Richardson, Allen T. Lambert, and Rt. Hon. Lord Nelson of Stafford; seated, J. Roy Gordon (former president of Inco Canada), Sir Ronald L. Prain, senior executive vice-president James C. Parlee, John McCreedy, Henry S. Wingate, F. Foster Todd, president Albert P. Gagnebin, George C. Sharp and G. Arnold Hart.

Survey Reveals Huge Impact of Mining Projects

When a mining company brings a new property into production, what are the social and economic benefits to Canada — beyond the obvious ones, to the company, shareholders and employees?

International Nickel sought the answers by commissioning Hedlin Menzies & Associates Ltd., a prominent firm of economic consultants, to do a comprehensive analysis of Thompson, Manitoba. This is the mining complex and municipality some 400 miles north of Winnipeg which was initiated and developed by Inco in a co-operative agreement with the Manitoba government.

Out of Wilderness

Less than 15 years ago Thompson was a wilderness area.

The economic study shows the mining project has resulted in the following:

1. Generated an accumulated national income of $2-billion during the period 1958 to 1968.

2. In 1968 almost 18,000 people in Canada held a job, directly or indirectly, related to the Thompson development. Only 20% were directly engaged in mining (Inco personnel).

3. The 10-year accumulation of the net revenues and accrued interest brought the net value of the development to $290-million to the federal government.

4. Accumulation of net revenues and accrued interest up to 1968 resulted in a net value of $27-million to $34-million to the province of Manitoba.

5. All other provinces, without making any expenditures to the development, received a total of $44-million.

6. A survey conducted during the study revealed that almost half of Inco's vendors in Manitoba established their businesses in that province after the Thompson development started.

7. Of $345-million spent by Inco in operating expenditures during 1958 to 1969, $215-million was spent in the Thompson region and $57-million in the rest of Manitoba. Inco's operating expenditures in 1969 were $71 million.

8. The generated incomes for Manitoba in the year 1968 were $156-million; 1969 estimates indicated generated incomes of $165-million.

9. Inco's operations contributed almost 5% to the gross provincial product in 1968.

10. Inco's contributions to community services, for capital investment and operational expenses, totalled $14.5 million during 1958-1968.

Huge Investment

Hedlin Menzies estimate that autonomous and induced investments in Thompson resulting from the Inco development totalled more than $550-million by 1969. "Autonomous" is defined as expenditures by Inco, Manitoba Hydro, and the CNR. "Induced" investments are by other sectors of the economy including individuals, commercial enterprises and institutional bodies.

The induced investment in residential, commercial and institutional construction is estimated at 11% of the total. Investments in inventory and equipment for this sector (over and above the value of buildings and property) is estimated in excess of $40-million.

Aside from the creation of this community and its contributions to the provincial and national economy, the Hedlin Menzies' report calls attention to certain other results of the mining project observed in the region and in northern Manitoba. For example, it says there has been a significant impact on transportation facilities. The building of a 31-mile CNR spur line from Sipiwesk to Thompson in '57 "has lifted the CNR Hudson Bay line out of the severe underutilization that has prevailed ever since its construction in 1931."

Public Facilities

Construction of an all-weather highway from The Pas to Thompson opened the way for truck transport. There is an airport six miles from the townsite now capable of handling intermediate jet aircraft. The report says these new facilities have not only improved service to towns and settlements in the entire northern region, but have reduced the shipping costs of goods and supplies.

The 200-page report traces Manitoba mining back to 1890 and Inco's entry into the Mystery-Moak Lake area with exploration surveys in 1948. It was not until eight years later and after expenditures of about $10-million that the major nickel ore body was discovered.

(Continued on Page 7)

George Hunter

The growing Manitoba city of Thompson, with International Nickel's big complex in the background.

WHEN ASKED about his spare time activities, Orval Couture pointed with a proud smile to his good-looking family. Along with a continuous home renovation program, Orval goes on many family trips in his camper trailer unit. Born in Sudbury, he has been with the Company since 1948; he transferred to the safety department in 1968 and is a first aid attendant at Copper Cliff smelter. Standing left to right are Randy, 15, Mark, 3, Carol (Mrs. Gordon Winch), and Brian, 17; seated with Orval and his wife, Lorraine, are Kelly, 5, and Cathy, 8.

PETER AND GERDA DELEEUW sailed for Canada in 1956 two weeks after their marriage in Holland. He farmed in the Port Colborne area before joining the Inco refinery in 1964; he is a stripper in the electrolytic department. Peter enjoys hunting and fishing, and still has a strong yearning for mixed farming. Gerda is an accomplished seamstress and makes pants, shirts and suits for the men in her family, but she prefers housework to sewing. Their attractive children are David, 3, George, 12, Jerry, 10, Andrew, 13, Paul, 8, and Jo Anne, 11.

INCO FAMILY ALBUM

COMING TO Sudbury from North Bay, Patrick McColman joined the Company at Frood in 1954. He is now a level boss at the new Kirkwood mine. He is active as a leader in the Boy Scout movement. Left to right are Victoria, 3, Ernie, 7, and Pat's wife Madelaine, a nursing assistant whose home was Fort Frances; she is holding 4-month-old Cynthia, and Patrick has Patricia, 19 months.

YVES BELAND was born in Remigny in northern Quebec, and worked for nine years in a North Bay planing mill before coming to Inco's copper refinery in 1964, where he is a crane follower in the tankhouse. Posing in their Val Therese home with their parents are from left to right in the rear, Steven, 11, Marc, 9, Margo, 13, Richard, 6, and Suzanne, 7, and Catherine, 2. Yves' wife, Roberta, is originally from North Bay. He enjoys bird and deer-hunting during annual fall forays to the Temiskaming area.

BEFORE COMING to Inco in 1951, Peter Muzyka was a no-accident truck driver between Winnipeg and Dauphin, Manitoba. Safety is still the key word on his job as a Frood-Stobie training area instructor, the job he has held since 1967. His wife, Anne, is also an ex-Manitoban. The flower beds around the Muzyka home in Sudbury attest to Peter's gardening skill, while his deep freeze accounts for a good number of the pickerel missing out of Lake Nepawassi. Sons Peter and Todd are 15 and 5, respectively.

BOTH JACK CLELAND and his wife, Fran, are Sudbury people and both work at helping other people get a job done: Jack is a storeman at the Creighton warehouse, handling supplies to the miners, while Fran is an operating room nurse. Jack started with the Company in 1960 at Copper Cliff, then transferred to the Creighton mill. He moved over to the warehouse just last spring. The three Cleland children, from top to bottom, are Lois, 8, Vickie, 6, and Marc, 7. The whole family enjoys outdoor sports the year 'round at their Green Valley home in Broder Township.

Copper Cliff in 1900 . . .

In 1916 . . .

and in 1970 . . .

Greenery Big Difference in Comparison Views of 'Cliff'

An interesting comparison of three stages in the development of Copper Cliff is seen in the photographs on the opposite page. The most noticeable change, of course, is in the trees and lawns that now flourish in the town, reflecting the good work over the years of the Company's agricultural department and also of the citizens themselves as well as improvements in smelting processes and plants. Many of the landmarks starkly visible from the air in the 1916 picture, such as the Copper Cliff Hospital at the foot of Serpentine Street and some of the residential sections, are now almost obscured by the trees.

The 1970 picture was taken from the top of the new 1,250-foot smelter stack, and shows as much of the town as could be caught from that vantage point with a wide-angle lens. In the immediate foreground are the data processing building, the general offices, and the laboratories. Easily recognizable additions since the 1916 scene are the curling and skating rinks and the Canadian Legion building on the left, the modern business section, and the high school on the far side of the park. At top left is a corner of the new Copper Cliff Gardens residential development of town houses and an apartment block.

Pioneer Days Recalled

One of the best photographs of early Copper Cliff is the view taken in 1900 from the hill on Granite Street back of the present municipal building. It shows Serpentine Street, the town's "main drag", with Clarabelle Road leading up the hill on the left. It was first published in the Triangle in 1954.

The building partly shown at the far left, on the present hospital site, was the general office of the Canadian Copper Company, Inco's corporate predecessor. The railings in front were required to maintain an orderly procession on pay day when the employees filed past the front window to receive their wages from the paymaster, A. P. Turner, who later became president of the Company.

On the left side of Clarabelle Road as it climbs the hill in the distance can be seen the log cabins which were the homes of such pioneers as the Stoddarts, the Boyds, the O'Donnells and the McKerrows. Some of those well-built cabins still stand.

No. 2 Mine Plant

On the skyline about the centre of the picture are the rockhouse and powerhouse of No. 2 Mine, and to the right of them the East Smelter, the second smelting plant built by the Company. On the trestle leading down from the mine "jimmy" cars were operated to take the ore to the first smelter, which had been abandoned when this picture was taken and was doomed to be destroyed by fire. Years later the trestle was filled in with rock removed when excavations were blasted to prepare the site for the present smelter; the rail line is still in use.

Facing the camera at the corner of Serpentine Street, where the Toronto-Dominion Bank now stands, was the Yellow Club, a toney bachelors' residence. Next was Hamilton's Store, later to become Oliver's Hardware Store. Next was Smith's Boarding House, which served meals at all hours, and then Bill Kilpatrick's Store, which had the post office.

There was a single-plank sidewalk on one side of the street only. After a heavy rain wagons would get stuck axle-deep making the turn at the main corner.

Horse and Rig, $1.25

The building on the corner in the immediate foreground was Dick Anderson's tailor shop. Only the peak can be seen of the roof on Hamilton's livery barn, where a horse and rig could be rented for $1.25 for the trip to Sudbury. Pioneers such as the late John Garrow and Billy Chapman recalled the wild night this little cluster of buildings burned down. Seven or eight horses were lost. Among those answering the fire alarm was Billy Moore, who paused only long enough to don a raincoat and a pair of rubber boots but nothing else. Not soon forgotten was the sight of Billy atop the Greek confectionery, heroically manipulating a fire hose in the ruddy glow of the flames, the wind tugging and tossing his raincoat.

The two larger buildings in the right foreground were Boyle's and Boyd's boarding houses. McBeth's Tailor Shop, and the Greek confectionery which was eventually bought by John Anderson, occupied a building put up to the left of Boyle's a short time after the picture was taken.

Fought Fire with Snowballs

On the right, next to Boyd's, is seen the structure erected by Dr. Struthers and J. S. Gill, jeweller. When he closed his Copper Cliff office Dr. Struthers rented his half to a milliner. The milliner had a big dog, perhaps not as big as Mrs. O'Leary's cow of Chicago Fire fame, but in any event big enough to kick over a lamp early one winter's morning, and soon the building was ablaze. Pitt's boarding house, the long log structure next door, was saved from the flames only because Bill Kilpatrick, the storekeeper from across the street, quickly recruited a bunch of men to pelt the logs with snowballs and thus protect them from the flying sparks and embers.

26 Joining Quarter Century Club at Port Colborne Dinner October 28

Class of 1969:

Class of 1970:

OTHER NEW MEMBERS: 1969, Royal St. Louis, Victor Mangar (deceased); 1970, Edgar Given, Jean Plante (deceased).

Sudbury Went to the Dogs at Annual Mutt Show at Shopping Centre

Both Cathy Cvar and Debbie Toffoli entered their mutts in the best-groomed class. Taksi, Cathy's little toy Pomeranian placed third, while Debbie's Yorkshire terrier, Whiskers, promised to try harder next year. Both girls' dads are Inco men: Ivan Cvar works on surface at Creighton No. 5, and Rudy Toffoli is a shift boss at Frood-Stobie mill.

THERE WERE PRIZES for the best-dressed, best-groomed, tallest and shortest — and there were also prizes for the muttiest, hairyest, barkiest and waggyest. It was the fourth annual Mutt Show, organized by Jon Brush and Janet Wilson of the Sudbury SPCA, and it featured some of the best-loved dogs in all the world, short on pedigree but long on affection, proudly paraded by owners old and young. Part of the scene is pictured above. The John Bailey Centennial Trophy for dog of the day was won by Bridgitte, a part-Labrador owned by 14-year-old Oscar Gravelle, whose grandfather is Inco pensioner Rene Gravelle.

Sam, the year old American spaniel belonging to 7-year-old Della Downie, didn't take home any silverware, but she thinks he's the best little dog in the world. Della's dad, John, works as a shovel operator at the Clarabelle open pit. Sam was one of 113 dogs entered in the show.

Mill Team Takes Frood-Stobie Title

Rudy Toffoli's boys from the mill captured the Penman Trophy for the championship of the seven-team Frood-Stobie softball league. They beat Aurelio Petracchi's Stobie engineering team in a hotly contested final series that went the full five games. The hitting and defensive work of mill fielder Larry Strachan was a big factor in the victory.

The victors are shown above: front row, Richard Boyer, Gerry Funk, Andy Courtemanche and Larry Strachan; middle row, Dave Baldwin, Wilf Valentino, Ron Papineau, Alan Wiita, and Roger Emond; standing, John Szendrey, Bob Brunette, coach Rudy Toffoli, Ken Randall and Jack Hynes.

Pictured below are the runners-up: front row, Eddy Luoma, Denis Kingsley, Steve Jones and coach Aurelio Petracchi; middle row, Gerry Chartrand, Frank Reynolds, Bob Brisebois and Doug Marshall; standing, are Gary Boyd, George Zieba, Bob Dubnewych and Steve Yorkovich.

Eleven-year-old Scott Eldridge won't need a motorized toboggan to get around this winter. Pal, his 130-pound Newfoundlander, is quite up to the job. By contrast, little Snoopy, held by Mrs. Tina Maisonneuve, isn't as big as Pal's head. Pal was first prize winner in the tallest dog category. Scott's dad, Jack, works in process technology as an analyst at the copper refinery.

Lively Drop-In Centre Carried on Despite Temporary Curtailment in Facilities

"The Twain", a rock band comprised of members of the Lively drop-in centre, provided the music for a windup dance. Centre directors Jim Springer and Lauretta Roper supervised the swinging affair.

Again last summer the youth of Lively had an opportunity to participate in the organized activities of a drop-in centre. A slump in total participation to about 125 young people was due to the fact that the drop-in switched its base of operations to the George Vanier public school because of extensive construction under way at the high school, and so the popular gymnasium activities such as badminton had to be curtailed.

The centre once again enjoyed the enthusiastic guidance of director Jim Springer and co-director Lauretta Roper. Jim is a 1970 Laurentian University graduate in sociology while Miss Roper has completed her third year in a physical education degree program at the University of Western Ontario.

Given Strong Support

Creighton mine's Ken MacDonald, the originator of the drop-in idea last year in Lively, was again chairman of the adult committee, and was helped in his duties by Marion Marlow, Jan Noonan, Jin Edmonds, Jack Cooper, Floyd Kennedy, Bob McCleary, and Ray Chateauvert. The IDT's, an older established interdenominational group of Lively teenagers, got out the elbow grease once more and raised funds for the drop-in by washing cars and windows and doing cleanup work for the Town of Lively. The town council and the community's different organizations were quite happy to repeat their financial backing.

Activities at the centre included table tennis, outdoor basketball, soccer and card games. The luck of the Irish may even cover such things as table tennis, for a brother and sister team of Kevin and Mary O'Brien were undisputed champs in that activity.

As well as changing location, drop-in officials had to cut short their program to make way for renovations to the George Vanier school. The program ran from July 1 through August 16 and was open to Lively and vicinity youth from ages 13 through 20.

Old-Timers Helped Disaster Relief

The old "Rocket", Maurice Richard, had his booster turned on when the Montreal Oldtimers played the Sudbury Oldtimers in aid of the Sudbury and Area Disaster Relief Fund. The Rocket got three goals to help Montreal win 8-4 in a real crowd pleaser before some 3,000 fans at the Sudbury Arena. Referee Red Storey made sure everything was on the up-'n-up.

In the picture, the three Montreal oldtimers in the back row represent over 60 years of professional hockey — Elmer Lach, Maurice Richard, and Bernie "Boom-Boom" Geoffrion.

The trio of Sudbury oldtimers are Yacker Flynn, Frank O'Grady and Tug Parri; all are with Inco at Copper Cliff, Yacker in the accounting department and Frank and Tug at the mill.

$50,000 from Inco for Disaster Relief

A gift of $50,000 to the Sudbury and Area Disaster Relief Fund by International Nickel was announced by vice-president J. A. Pigott following a meeting of the Company's board of directors at Thompson.

Presenting the cheque to fund chairman Loring Martin, D. A. Fraser (left), assistant division general manager (administration) conveyed the board's sympathy in the disaster of August 20, and its admiration of the fund committee's efforts on behalf of those who suffered financial loss.

With an original goal of $250,000, the fund to date has received about $270,000, which will be matched by the provincial government. More than 300 requests for assistance have been received by the fund committee.

To Our Readers:

October 30 has been set as the cut-off date for return of the reader survey questionnaire which was published in the September issue of the Triangle.

The cards will then be turned over to the computer department for analysis, and we plan to publish the results in our December issue.

A sampling of the returns, which are still briskly coming in, indicates many valuable suggestions and comments have been volunteered for our guidance in publishing what is of interest to the majority of our readers.

If you have mislaid your questionnaire, a telephone call to the Triangle at 682-2604 will bring one to you pronto. Your interest will be appreciated.

—The Editor.

Survey Reveals

(Continued from Page 2)

The original concept was that the townsite would have an estimated population of 8,000. By 1968, the population had soared to about 20,000 and was growing at the rate of 3,000 annually. Inco provided the original townsite, roads, sidewalks, sewers, water treatment plant, schools, administrative building and a 32-bed hospital. Thompson is a municipality without any capital debt.

As Hedlin Menzies point out, this expansion of the "livable" area in Canada toward the north, and the creation of the necessary infrastructure of the mining complex, the municipality and such services as rail and air transport and hydro, has occurred without any net cost to the taxpayer.

A careful driver is one who has just spotted a policeman.

Clicks for $400 Payoff

Bob Taylor and his wife Helen will take off next spring on a holiday fling to Arizona and Mexico, with a stopover for some night life at Las Vegas.

That's the result of a $400 Suggestion Plan award Bob received the other day from section superintendent Box McIntyre of the maintenance department at Copper Cliff. His money-making

idea was to use rubber rollers on the electric braking mechanism on trippers and conveyors in the crushing plant, eliminating the bolt-shearing and consequent wear caused by steel rollers.

A maintenance electrician, Bob has been an Inco man since 1947. This is the third time he has clicked for a Suggestion Plan payoff.

Almost $10,000 has been paid out in awards this year to date in the Sudbury area.

WINS GAGNON TROPHY

Inco pensioner Robert Pascoe, residing at 334 10th Avenue, is the 1970 winner of the A. L. Gagnon Memorial Trophy for the most improved lawn in Lively.

Assistant agriculturist Tom Peters made the presentation to the genial Bob, a veteran horticultural enthusiast.

Environmental Control at International Nickel

- **There is no pollution panacea. The key to achievement is technology. Success can only be achieved through dogged effort over long periods of time and with major outlays of capital.**
- **The new stack is not the final answer, but it is today's answer . . . the best solution that we, or anyone else, can find within the limits of today's technology. And it will be effective.**
- **In the Sudbury area we require some 30 million gallons of fresh water daily. On average we use it four times over before we return it treated to a natural watercourse.**
- **Six hundred acres of tailings area — basically sterile waste rock — are under cultivation to prevent dust storms.**
- **We are currently doubling our sulphuric acid production . . . although this is a case of solving one problem only to create another.**
- **Pollution control is not a simple case of waving a "magic money wand". Extensive research must be carried out to increase our knowledge.**
- **The challenge is clear. I can assure you that we are meeting it, and we are winning.**

An address by R. R. Saddington, assistant to division general manager (Ontario), The International Nickel Company of Canada, Limited, at the 12th biennial Conservation Authorities Conference, Sudbury, September 16:

TODAY, we are keenly aware of the need to conserve our resources and prevent pollution of our air, water and soil. International Nickel's philosophy and position on pollution control was stated clearly by our chairman, Mr. Wingate, at this year's annual meeting. "It is clear", he said, "that nearly everywhere past standards are no longer acceptable". He stressed that to make a significant improvement in the Sudbury area's environment requires a determination to make environmental protection a key objective. "And", he added, "we have that determination."

R. R. Saddington

Determination, of course, is not enough. We must also have the know-how. As our vice-president — special technical projects, Dr. Louis Renzoni, said in a recent address:

"Man has used technology to shape his consumption patterns . . . now he must direct a greater portion of his energy and skill to intelligent use and protection of the environment."

My purpose in speaking to you today is to examine briefly the various types of pollution confronting us, the considerations brought into play while searching for solutions, and what one company, International Nickel, is doing to meet the challenge.

Best Now Possible

One obvious example is the tallest chimney in the world, which was "topped off" at 8 p.m. on Friday, August 21, at our Copper Cliff complex. Building this huge stack, which will be operational towards the end of next year, is a case of making full use of a proven method of dispersing sulphur dioxide-bearing smelter gas so that it will be rendered harmless.

The new stack is not the final answer, but it is today's answer. It is the best solution that we, or anyone else, can find within the limits of today's technology. And it will be effective.

At the same time, we are continuing a program of intensive research to develop a method of processing our ores that will not involve the generation of sulphur dioxide. A promising process is

AIR . . .

BY KEEPING waste gas aloft as long as possible, and diluting it by effective vertical and horizontal diffusion, the new 1,250 stack at Copper Cliff will minimize ground concentrations of sulphur dioxide and keep them within harmless limits.

LAND . . .

FLOCKS of ducks and geese are frequently seen this time of the year making a "refuelling" stop at the tailings disposal area just west of Copper Cliff. There with a special fertilizing program developed during many years of research the Company has transformed 600 acres of sterile waste rock into farm land growing grass and grain. Picture shows a combined harvesting and seeding operation. Stabilizing tailings to prevent dust storms, the enterprise has won international attention among mining and conservation authorities.

WATER . . .

ONE PHASE of International Nickel's $40-million pollution control program is the purification of mine water before it is pumped to surface for release into natural watercourses. Picture shows a huge clarification tank, 40 feet in diameter, 2200 feet underground at Copper Cliff North mine, in which precipitated metal salts and suspended solids settle to the bottom. The clear water overflow is channelled to underground reservoirs where it is impounded before being pumped to surface. The settled sludge is fed to a vacuum drum filter, and the dry cake joins the normal ore flow from the mine. Water removed in the filtering process is recycled through the clarification tank. The system, also already in operation at Garson mine, was designed and installed by Inco engineers.

now being thoroughly tested in our pilot plants as a step in the sequence from test tube to commercial plant. It takes time and capital to develop an interesting laboratory reaction to a viable commercial scale.

Meanwhile, we are working hard to comply with the recent directive of Ontario's minister of energy and resources management, the Honorable George Kerr, to reduce our sulphur dioxide emissions at Copper Cliff by 40% in 1972.

The new stack is part of an overall air pollution control program costing more than $40 million. It will replace two existing 500-foot stacks and another of 350 feet. Emissions from the tall stack will be at a scientifically predetermined temperature, mass and volume to provide effective diffusion so that ground level concentrations of sulphur dioxide will be below the maximums allowed by the province. Two additional electrostatic precipitators will be installed and existing precipitator capacity will be enlarged to minimize dust control in the emissions.

The tall stack has been the object of considerable criticism. Fears have been expressed that it will simply spread pollution over a wider area and put more poisonous sulphur dioxide in the atmosphere. In fact, it will do neither.

There is widespread misunderstanding of the nature of sulphur dioxide. On a world-wide basis, a full 80% of the sulphur dioxide in the atmosphere comes from organic decay. Some 14% can be attributed to the burning of fossil fuels, and about 6% to smelting operations.

Sulphur dioxide survives only about four days in the troposphere, or lower atmosphere. It does not accumulate in the air as a poisonous layer in the earth's atmosphere. Therefore, the problem is not so much the volume disseminated from a stack, but rather the ground level concentrations. We can minimize such concentrations and keep them within harmless limits by keeping waste gas aloft as long as possible and diluting it by effective vertical and horizontal diffusion.

The design of our stack has, of course, taken into account the location of the plant, the topography of the region, and the variance in weather conditions. Diffusing a pollutant in our area presents a different set of problems than diffusing the same pollutant in the centre of a large urban area.

Another part of our air pollution control program involves recovery of sulphur dioxide before it can be emitted as waste. We are currently doubling our sulphuric acid production capability in conjunction with expansion of our iron ore recovery plant and construction of a nickel refinery at Copper Cliff. The existing facility is already the world's largest metallurgical gas-based sulphuric acid plant, and when expansion is finished in 1972, our acid production capability will be increased to about 5,000 tons per day.

Creates New Problem

The question of where the markets will come from for this large increase in acid production or what will be done with it presents somewhat of a problem in itself. One only has to look at the enormous quantities of sulphur accumulating in Western Canada to see what can happen. This is one example of solving one problem only to create another.

It is not a simple case of waving a "magic money wand" to end pollution. Certainly, pollution control costs money — lots of it. But because our knowledge is limited, it is only reasonable to divert a large portion of pollution control expenditures to research and development that will ultimately improve our technology.

At Shebandowan, Ontario, west of Thunder Bay, where International Nickel is developing a 2,500-ton-per-day mine/mill operation, we have engaged a consulting firm to help us preserve the quality of the environment. The firm's environmental science division sent its marine biologists and ecologists to the area to conduct studies before the installation goes into operation. The knowledge they acquire and pass along to us will be invaluable in the development of a program to control industrial effluents, which they will continue to monitor after the plant is in operation. This same consulting firm has been engaged by International Nickel in the Sudbury area as well.

Have to Respect It

Water quality control in an operation such as ours requires a combination of technical know-how and sound management. Our Sudbury operations require enormous amounts of water, and we have to respect it as an important resource. Our main areas of concern are the oxidation of sulphides in contact with ground water, resulting in acidic water containing dissolved metals, and human error or mechanical breakdown resulting in accidental spills or overflows.

In the Sudbury area, we re-use more than 100-million gallons of water each day in processing the ore, by cycling it through a holding and recirculation system. We require some 30 million gallons of fresh water daily, and this figure has remained fairly constant despite a large increase in production in recent years. In other words, on average, we use our water four times over before we return it treated to a natural watercourse. Studies and changes are continually being made with an aim to achieve maximum circulation of both mine and process water. The new Clarabelle mill — a 35,000-ton-per-day operation — will not require any additional fresh water for processing.

Laboratory tests showed that the dissolved metals in mine and plant effluents could be effectively reduced to acceptable levels when treated with a lime solution, which resulted in the precipitation of metal salts. This principle is employed where required.

Created by Inco Men

Some of our systems designed to ensure that water we return to natural watercourses is acceptable are unique — the brainchildren of our own engineers. For example, they conceived, designed and installed a huge clarification unit 2,200 feet below surface at our Copper Cliff North mine. A

(Continued on Page 15)

Equipped and ready for their first day of instruction at the Levack area mine training centre, trainees Jim Follett and Bernie Lewis get some sound advice and encouragement from assistant mine superintendent Grant Bertrim; standing is the chief instructor, shift boss George Ruller.

Training New Min

Three Are Give 5-Da

"To see — to do — is to learn." That one short sentence, the motto adopted at Levack, neatly sums up International Nickel's method in the initial training of new employees for the 10 operating mines in the Company's Ontario division.

Formal programs for the training of men new to mining are by

During a safety instruction session in the surface lecture room at Levack, area safety supervisor Gary Moore uses an animated model to demonstrate correct manual lifting methods. The trainees are, standing, Marcel Ledouceur, Phil Hawkins and Ed Crann, seated, Jim Follett and Bernie Lewis.

The Front Cover

Safety rules and regulations are strongly emphasized throughout the training of new employees.

In our cover picture instructor Myron Didur is impressing on two trainees, Greg LaRonde and Jim Follett, the importance of wearing a safety lanyard when working near an open hole.

He is demonstrating the belt connection of the "lifeline", a heavy nylon strap with a tensile strength of over 5 tons.

Training centre organizers follow the principle that a trainee will learn quicker by "doing" than by studying a write-up. Starting with Richard Davies, each member of the class will operate this air leg drill in turn under the eye of instructor Lloyd Brear (right).

In the 1400 level lecture statio begin their first day of training tion methods and safety rules, mining. Listening to instructo Richard Davies, Jim Follett, Jim Bailey, Aeneas Morrison and G

rs

a Centres
y Courses

no means new to Inco's mines. The original "school stopes", as they were then called, were started more than 30 years ago. Since that time the value of an early and thorough understanding of mining procedures and safe working practices has been reflected in many outstanding safety achievements, including Frood-Stobie's world record run of 3,047,774 man hours without a lost-time accident between March and December of 1965.

Rising production at existing properties and the birth of several new mines in the Sudbury area has steadily increased the numbers of new men requiring initial mine training, and prompted Inco's mining department to reappraise its instructional system.

Three Main Centres

A comprehensive study, co-ordinated by the Company's hourly employee training program personnel, has resulted in the establishment of three "area mine training centres."

One centre, on 600 level at Stobie No. 7 shaft, serves Frood-Stobie, Garson, Murray, Copper Cliff North and Kirkwood mines, will also train men for Copper

(Continued on Page 12)

The method of delivering material from a level to a working place, above or below the level, nipping with a tugger hoist is one of the first operations performed by these new miners. Demonstrating the proper method of slinging a load is instructor Leroy Talbot. Ready to operate the tugger hoist is Norm Bailey.

During their five days at the centre, trainees drill, load, blast and muck out a drift that is being driven solely for training purposes. Learning from Leroy Talbot how to handle explosives are Jim Follett and Norm Bailey.

at Levack, these new miners
y studying the mine's produc-
nd are shown various tools of
Lloyd Brear are, front row,
Turner and (back row) Norm
eg LaRonde.

Making their individual solo runs on a slusher under the guidance of Leroy Talbot are another class of trainees, Brendon Madden, Barry Williams, Frank Dyke, Roy Yetman, Stewart Harding and Wayne Furlong. At the controls in the picture is Stewart Harding.

Training the New Miners

(Continued from Page 10)

Cliff South and Little Stobie mines when they come into production. Another centre, located on 5600 level at Creighton No. 5 shaft, trains men for that mine, Creighton No. 3 shaft, Crean Hill, and Totten. The third area mine training center, at Levack, handles the new men there and will also train those for Coleman mine when it goes into operation.

Newly employed miners receive a five-day course of training at one of these centres, and after completion of this initial phase they go to the next phase of training at the mine to which they have been specifically assigned. Experienced maintenance men transferring from a process plant to a mine may need only one or two days of familiarization training at the centre.

Shift Boss in Charge

At each centre a fully experienced shift boss is responsible for the training organization. He is assisted by instructors who have long mining experience. While imparting their knowledge to the trainees, they gain valuable experience in handling men and expressing themselves clearly.

The number of instructors on the job at any of the training centres depends on the size of the current class. On the average, an instructor will spend between two and three months at this work.

At the Levack area training centre, for instance, where shift boss George Ruller has been in charge of training since 1967, a trainee, escorted by a personnel officer, starts his first day with a visit to the warehouse and the first aid room to pick up his necessary mining gear and safety equipment. He will then be welcomed to the mine by assistant superintendent Grant Bertrim, who will acquaint himself with the trainee's background, answer any questions, advise him of his responsibilities, and offer an open invitation: "If I'm in my office the door will be open. If you have any problems, feel free to drop in and talk about them."

One of the first items on the program is a talk to each group of new men by the mine safety supervisor, who carefully explains the basics of safe workmanship and the mine rules and regulations. He follows up this talk later in the course. Built into all instruction the men are given is emphasis on the safety principles of every job.

Supplied with a miner's lamp, the trainee then takes the cage, along with other members of his class, to the 1400 level station where instruction begins with an explanation of the bell signal

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During an instruction period concerning the importance of correct sounding and scaling, training centre relieving shift boss Lloyd Dean demonstrates the ringing sound produced when the bar strikes solid ground, and the dull sound when it strikes loose. Trainees are Bill Card, Ron MacDonald and Kaarlo Paavola.

At the end of their fourth day at the centre Jim Turner, Aeneas Morrison and Richard Davies are deep in a three-hour session with a six-page questionnaire covering their course of instruction.

With the five-day area mine training centre course behind him, new miner Aeneas Morrison is introduced to Levack mine superintendent Dave Lennie by mine personnel officer Harvey Nadeau, and given best wishes for success as an Inco mining man.

Football Without All That Padding, Rugger Is Rugged

A game that has gained a firm foothold on the Sudbury sporting scene during the last three years, rugger is here to stay.

Founded in 1967, the Sudbury Exiles Rugger Football Club boasts a playing membership of 55 — which includes 17 Incoites — and a social membership of 20.

As a member of the Ontario Rugger Union, the club fields two teams. Its top squad competes in the western branch of the league, together with Balmy Beach, Peterborough, and other Toronto teams, while its second team plays off against Kapuskasing, Porcupine, and North Bay in the northern branch.

A sport which combines the dress of the soccer player and the ball-in-hand action of North American football, rugger has been described as "a game for ruffians played by gentlemen".

Unlike soccer, and regardless of the lack of protective wearing apparel, rugger is a body contact sport. Surprisingly, there are few major injuries. "If I hurt the other guy it's a good bet that I'm going to hurt myself," observed an Exile, "so I don't try".

15 Men to a Team

A rugger team is 15 strong, compared to 12 for soccer and football. A knee-skinning "scrum" takes the place of football's scrimmage, a "fly-half" has similar duties to that of a quarterback, but forward passing is not allowed.

A "hooker" performs the job of football's centre, and is supported in the front line of the scrum by two sturdy gentlemen appropriately known as "props". The ball is oval, as in football.

Scoring plays — a touchdown, a field goal and a drop goal — are worth three points, and a convert two. Game time is 80 minutes divided into two "halves", with a half-time break of five minutes. Time-out for an injury is the only reason the clock is stopped.

Player substitution is not allowed, and an injured player is given two minutes to get back on his feet before the game continues without him. He can return to the game at any time during the remaining period of play.

Had Excellent Season

The Exiles have had a very successful 1970 season, winning six of their seven games played to date. They scored 174 of the total 212 points involved. They have a good chance of making it to the Ontario final at Toronto in November.

A special honor came to the club when three of its star players, John Nieucombe of the Copper Cliff mines department, John Whiting of the South mine, and Andy Kenneally were invited to tryouts at Toronto for an all-Ontario 15.

Club president Gordon Whittaker is optimistic that the Exiles will be playing on their own home ground next season, and all hands are ready to help build a much-needed clubhouse for social activities.

Future plans include a trip to England in April of 1971 for a two-week playing tour of six games. "We'll have some tough opposition," Gordon prophesied. "The end of the season over there is in March, ours is in November. They'll still be in good shape and we'll be a little flabby, but by the time we get back we'll be all set for the season opening here."

At the age of 20 we don't care what the world thinks of us. At 30 we worry about what it is thinking of us. At 40 we discover that it wasn't thinking of us.

THIS, GENTLE READER, is a rugger "scrum". Tossed in from the side, the ball has been heeled back by the white-shirted North Bay Vandals in a match with Sudbury Exiles' second team, and is about to be snapped up by their "fly-half".

HAVING ELECTED to carry the ball himself, the North Bay fly-half turns on his jets and races down the touch line. Malcolm Morris of Inco's mines planning department can be seen in hot pursuit right behind him.

Fickle Nickel

Nickel can give the metals it is alloyed with seemingly contradictory characteristics. One nickel alloy can stand heat that would melt most metals, while another can endure sub zero cold. Nickel is used in the most powerful magnets. In some combinations it is no more magnetic than wood. Some nickel alloys make thermostats work because they expand with heat and shrink with cold. However, other nickel alloys hardly change at all under fluctuating temperatures.

WITH A NORTH BAY Vandal firmly attached to his leg, Exiles' John Searle dives across for a touchdown.

Gentler Sex Brightening the Scene at Inco Mine Offices

Startled looks and rapid double-takes were not uncommon this summer among personnel at some of Inco's Sudbury district mines. Sacred strongholds of masculinity, except for the wartime emergency over a quarter of a century ago, the mines are gradually being invaded by the gentler sex, and the pleasant smiles of pert young ladies are brightening the scene around the surface offices.

Deeply entrenched in tradition, one security guard firmly refused entry to one young steno when she appeared at the gatehouse for what was to be her first day on the job. "Women just don't work at the mines," he tried to explain. He was seen muttering quietly to himself and shaking his head sadly after a hurried phone call had confirmed the sweet young thing's right to enter.

To date 11 of the 246 female employees on the Company's Sudbury district payroll have crashed the barrier and are performing secretarial and office duties at five mines.

There are more on their way to ease the ever-increasing paperwork load that has settled on the shoulders of the brawny breed.

Linda MacNeil

Seen above giving security guard Don Nicholson a big smile as she comes off work, Linda MacNeil is a scheduler at Crean Hill. "Mining was one big unknown to me when I started," she confessed, "but people patiently explained things to me and I soon caught on. Everybody was so polite." Linda joined the Company in June, after graduation from Lively High School. Her favorite off-the-job activities are dancing and reading. She is the daughter of iron ore plant powerhouse engineer Mike MacNeil.

Diane Marcotte

FIRST GIRL to enter the sacred male mining domain was Diane Marcotte, who became secretary to the Garson mine superintendent in March 1969. She is now in the engineering department, where she is seen checking time sheets with transitman Gerry Mulligan. Diane was born and brought up within sight of the Garson headframe and has listened to mining talk as long as she can remember. Her father is Dan Lamarche, a mine maintenance mechanic. She and her husband Frank have two daughters and live in Garson.

Laura Mitchell

Laura Mitchell had more mining savvy than most young ladies when she joined the Creighton engineering office staff — she was a steno for 18 months in the mines engineering office at Copper Cliff. Her husband George is a caving control technician at Creighton, and her dad, Gilbert Sell, is a switchman at Frood. Seen here, supplementing her stenographic and clerical work, she is checking a grade calculation while tracing a tramway layout.

Barbara Davis

Apart from transposing the odd well-known name, such as referring to "tramscoops" instead of scooptrams, Barbara Davis slipped quite comfortably into her job as scheduler with the maintenance department at Creighton. She has been on the job since August. A native of Shawville, Quebec, Barbara is the wife of Jim Davis, who works with the accounting department at Copper Cliff.

Angie Gagnon

"Very interesting, with never a dull moment," was the way Angie Gagnon described her job as receptionist and secretary to the superintendent at the North Mine. She has been on the job since May of this year. Her husband, Maurice, is a process technology chemist at Copper Cliff.

Heather Moore

Heather Moore gave up handling nickel in a finished form, as a bank teller, for a practical job connected with mining the metal. In the maintenance department at Creighton since July, she is the daughter of Copper Cliff maintenance foreman Harris Moore, lives in Sudbury, enjoys young adult groups, dancing, tennis and bowling.

Minnetta Dahlvick

Since she started her stenographic duties with the efficiency department at Garson last January, Minnetta Dahlvick (better known as Min) is now quite confident that she can tell a hangingwall from a footwall. The daughter of Copper Cliff welder Ken Howard, Min and her husband Gordon have a family of three and live in Garson.

Elaine Lalonde

Asked how she tackled the problem of learning the many terms peculiar to mining, Elaine Lalonde replied to (our delight): "From back issues of the Triangle". Superintendent Jowsey's secretary at Garson since June, Elaine and her husband Joe have one daughter and live in Sudbury. Her father, Clifford True, is a maintenance mechanic at the iron ore plant, and her three brothers are also Inco men.

Margaret MacKay

Two years at a Sudbury telegraph office preceded Margaret MacKay's move to the Stobie mine engineering office last August. The readjustment wasn't too difficult — "just different, working with numbers rather than letters." Margaret is shown operating a teletype terminal that is connected to a time-sharing computer located in Toronto. Her father, John MacKay, is a maintenance mechanic at Copper Cliff. Engaged to be married, Margaret will be wearing a gold band come next June.

Donna Mohns

Donna Mohns joined the North mine engineering department in July. Together with her general secretarial duties, she spends some time at the drawing board preparing Clarabelle open pit schedule maps. Her father, Alfred Dempsey, is a loading machine operator at Copper Cliff, brother Tom is with the Copper Cliff police force, and brother Jim works in the converter building. Donna and her husband Doug live in Sudbury.

Shirley Koehn

Superintendent's secretary at Stobie mine since May, Shirley Koehn was a native of Saint John, New Brunswick. Her husband Al is a design engineer with the general engineering department at Copper Cliff and they live in Sudbury. Shirley is seen compiling information with area engineer Gerry Smith.

Environmental Control

(Continued from Page 9)

tank 40 feet in diameter collects mine waste water. Solids settle to the bottom and are fed to a vacuum belt filter below. Water taken from that "sludge" is recirculated through the clarification tank. Meanwhile, the continuous clear water runoff from the top of the tank is channeled to clear water storage ponds underground before it is pumped back to the surface. A similar system is in operation at Garson mine and is being considered for other mines where such a system would be practical.

Mine water from mines adjacent to mills is pumped with mill tailings to the tailings areas. Mill tailings, a ground rock waste, are treated to separate the coarser material. The fine material is sent to the tailings areas, vast saucer-shaped basins, where during a long retention period solids settle, and clear water overflows to a natural watercourse. Wastes from all plants are directed to the tailings areas or other retention ponds for clarification and neutralization and to permit them to adjust to the temperature of the watercourse before they are released into it. All mines have back-up systems in the form of either alternate circuits or single and double treatment basins, with two exceptions, and these are now being engineered.

Other Examples

To give you an idea of the magnitude of water quality management in an operation as complex as ours, here are some examples of procedures in effect or under study:

—Milling operations are continually revised to maximize the use of recirculated water. The Shebandowan mill for example has been designed to operate in closed circuit with the tailings area.

—Additional lime is being added to tailings disposal systems to maintain the basicity of tailings effluents.

—A dual retention basin is in operation on the effluent discharge of the Copper Cliff smelter. Lime is added to the effluents prior to entry. And here again, water circuit changes will be made to optimize circulation.

—Schemes are being studied, both by Inco and the staff of consultants, to determine the best method of treatment of the effluents from Coniston smelter and the refineries at Copper Cliff and Port Colborne. In the interim, lime additions are being made to existing circuits at these plants.

—Three retention basins are in use at the iron ore recovery plant, which have eliminated spills to the natural watercourse from this source.

—Studies are being conducted by our process technology department to reduce the ammonia content of effluent pumped to the Copper Cliff tailings area.

—We monitor all waste water prior to discharge, and the receiving watercourse both "up" and "down" stream from the point of discharge.

From this broad spectrum of control procedures, you can see that our task is not a simple one. We have to keep on top of technological advances, put our own inventiveness to work, and practice sound round-the-clock management.

Tailings Controlled

Tailings can give rise to another type of pollution . . . that of the land. We have tackled this problem successfully. Coarser solid tailings are no longer deposited in the tailings areas, but are treated and returned to the mines as sandfill. This practice serves the dual purpose of decreasing the volume of tailings waste and helping to fill mined-out areas.

Abandoned tailings areas may become barren wastelands, subject to dust storms during periods of high wind in the summer months. But through the efforts of International Nickel's agricultural department, we have succeeded in overcoming this problem. Some 30 years of research and experiment culminated in a program for controlling the problem during the past decade. We are now growing grass on what was basically sterile, waste rock. Six hundred acres are under cultivation. There has even been a certain amount of volunteer growth, and wildlife is also making use of the reclaimed area.

In this discussion, I have tried to cover the highlights of our programs to show that my Company — at all management levels — is deeply concerned and involved in pollution abatement and prevention. The key to achievement is technology. There is no pollution panacea. Every problem has its own solution, and each must be tackled step-by-step from research, through development to application. So-called "breakthroughs" rarely occur. Success can only be achieved through dogged effort over long periods of time and with major outlays of capital.

The Company has at least 25 scientists and engineers working full time on environmental control, backed up by process technology teams, researchers at Copper Cliff, Sheridan Park and Port Colborne, as well as outside consultants to provide specialized assistance. Effluent treatment facilities are designed into every new plant we build.

The challenge is clear; I can assure you that we are meeting it, and we are winning.

Retired on Inco Pension

WITH 20 OR MORE YEARS OF SERVICE

BILL LISTER

Although hampered by a heart condition and a hearing loss, Bill Lister's spirit is still in fine shape. Born in Perth, Ontario, he came

Mr. and Mrs. Lister

to Sudbury in 1937 and started with the Company the same year in the reverb department at Copper Cliff smelter.

Before coming to Inco, Bill was with Ontario Hydro, and also worked putting in the railroad between The Pas and Flin Flon, Manitoba.

He was married in 1930 to Rose Ann Hickey at Portsmouth, now part of Kingston. Their five children have presented them with 23 grandchildren. Two sons are carrying on the Lister name at Inco; Percy is a 1st class plateworker at Copper Cliff, and Leroy is an electrical foreman at the copper refinery. Their daughter Irene is the wife of Copper Cliff 1st class electrician Del Borgogelli. Bill likes to putter in the garden or just take it easy at the family cottage on Wabagesik Lake.

JOHN A. TAYLOR

When Jack Taylor graduated from the University of Toronto in electrical engineering in 1932,

Jack Taylor

jobs were extremely scarce since he was a physical culture enthusiast (football and hockey, Ontario wrestling champion, and Canadian open tumbling champion), he decided to become a professional acrobatic entertainer, playing circuses and vaudeville theatres throughout the U.S. and Canada.

He performed at the opening of the Port Colborne Inco Recreation Club in December 1937, as an adagio and apache dancer, and stayed on to work in the electric shop and as P.T. instructor at the club. A substation operator for the past 15 years, he has now taken early service retirement.

Jack is a bachelor and intends to remain in Port Colborne. He is looking forward to more trips to his favorite haunts in California and Mexico. He is still keen on physical fitness and enjoys swimming, exercising and health spas.

MARTIN SEKARUK

With six children and 17 visiting grandchildren, Martin Sekaruk doesn't lack for company at

Mr. and Mrs. Sekaruk

his Sudbury home. His penchant for carpentry, plumbing and general puttering will keep him as busy as he wants to be.

Shortly before coming to Canada from Czechoslovakia in 1928, Martin married Mary Kapalko, and they settled at Sudbury.

He punched tuyeres on the nickel converters at Copper Cliff from 1933 until 1942, when he transferred to Creighton. He moved over to Frood mine in 1944, and wound up his 37-year Inco career as a sandfill boss.

Martin and his wife revisited their homeland in 1966, but plan to continue residing in Sudbury. Their son, Mel, works as a field engineer for the general engineering department at Copper Cliff, and their daughter Ann is married to Copper Cliff police constable Dick Marsh.

NESTOR LEROUX

After spending his final 15 Inco years on Levack's 2350 level motor crew, Nestor Leroux in-

Mr. and Mrs. Leroux

tends to stay mobile, and has bought himself a camper trailer so he can hit the road whenever he feels like it. Nestor was born at Chelmsford and farmed there for several years with his father. He joined Inco in 1944, working at Levack until his retirement.

Nestor married a Chelmsford belle, Aurilda St. Onge, in 1932. Of their nine children, Clement works for the Company as a driller at Levack. They have 15 grandchildren, and live in Chelmsford. A bit of arthritis is the only complaint of this cheery new Inco pensioner.

GEORGE PASSI

Retiring on full service pension, George Passi looks back on a record that first started when

Mrs. Passi

he was a lad of 13, picking rock at the old Mond mine. He later worked for Mond Nickel at the Worthington.

His father came from Salmon Arm, British Columbia, where George was born, to settle on a farm near Whitefish and work for Mond and later Inco.

George started his 42 years of Inco service in 1927 as a rigger helper at Frood mine, where No. 3 shaft was being sunk. He was later assistant master mechanic at Frood for seven years, and went on to serve as master mechanic at the Murray, Levack and Creighton mines. During his final two years, as mechanical erection specialist for the electrical-mechanical section of the general engineering department, he supervised such important installations as the hoists at Creighton No. 9 shaft, Coleman, and Stobie No. 9 shaft.

Fit as a fiddle, George says, "I'd just like to be starting all over again". He is a keen outdoorsman, with a summer camp on Little Penage Lake.

Helen Hjouth became his bride at Sudbury in 1932; they have one daughter and three grandchildren. They plan to do considerable travelling, and recently returned from a trip to Europe, including a tour of Finland.

JOSEPH ANDERSON

One-time coal miner Joe Anderson, retiring on service pension from the nickel refinery at Port

Mr. and Mrs. Anderson

Colborne, has no regrets over having left Sydney Mines, Nova Scotia in 1947. "I've been back a few times to visit relatives and things are really down." He was

Big Crowd at Stag Party for George Passi

George Passi's colleagues and friends presented him with a power lawn mower at the stag party held to mark his retirement. Among the 235 present at the Italian Club in Copper Cliff, shown with George are G. R. Green, assistant general manager (mining), Don Bradley (assistant chief engineer), Bill Van Allen, George's brother John, a rigger at Crean Hill, Geoff Griffiths, and Al Cameron (general superintendent of maintenance).

born there and went underground at the age of 19. He served for five years overseas with the Royal Canadian Engineers.

Joining Inco at Port Colborne in 1947, Joe has worked in the electrolytic, anode and mechanical departments and has been a boxmaker since 1966.

He and Anne Jackson were married in Sydney Mines in 1924. They have four sons and a daughter. James, Lloyd and son-in-law Ron Pietz are employed in the refinery mechanical department. The Andersons have twelve grandchildren and a great grandson.

Joe does a bit of fishing and enjoys working in his garden.

DAVE LATENDRE

An enthusiastic member of the Garson Fish and Game Club for 20 years, Dave Latendre has retired on disability pension, after a 23-year association with the Company. Born in Tweed, Ontario, he first joined Inco in 1937, working at the Copper Cliff smelter until 1942 when he joined the RCAF for a three-year wireless operator posting in Newfoundland. In 1945 he married Joyce Toupin, herself a member of the Air Force, in her home town of Ville Marie, Quebec.


Dave Latendre

Dave finally returned to Inco in 1947, again to Copper Cliff, but transferred later to Garson, where he was a trammer. Dave and his wife have been very busy the last 25 years, raising a family of 10, including a set of twins who are now 16.

HENRY RENAUD

Before coming to Sudbury in 1941, Henry Renaud worked as a lumberjack for eight years north of Field. He was born in Rimouski, Quebec, and started


Mr. and Mrs. Renaud

with Inco at Creighton in 1943. He broke his service three years later to run a small grocery business in Sudbury, but returned to the Company in 1949, again at Creighton where he was a sandfill pipefitter.

Aline Lacroix of Sturgeon Falls became Henry's wife at her home town in 1939. The Renaud family now consists of four children and six grandchildren. Troubled with poor circulation, Henry restricts his activities to gardening at his McFarlane Lake home and travelling to see his daughters in Montreal and Toronto.

WILFRED CLEMENS

"Of all the places I worked — and that's more than a few — Inco treated me the best." This was the way Levack's Wilfred Clemens summed it up as he eased into a disability pension. And he had certainly worked "at more than a few".


Wilf Clemens

Born at Eston, Saskatchewan, Wilfred was employed as a fumigator in Ohio for five years and then crossed the continent three times taking various jobs. Finally in 1948 he joined Inco at Levack and worked there throughout his 22 Company years, mostly as shaft man and a skip tender. He was married to Elizabeth Brash of Toronto in 1947. They have one daughter. They reside near Levack Station.

ALEX DAVID

Alex David was two years old when his family came from Hungary to homestead at Plunket, Saskatchewan, and he became a farmer too when he grew up. He married Ethel Pertro in 1928. They moved east in 1934 when drought forced them out.


Alex David

Alex became employed at the Port Colborne nickel refinery in 1936, but farming was still in his blood. "I bought a farm and left Inco in October, 1943, couldn't make it go, and came back to the Nickel Plant."

He was re-hired early in 1948, and his entire service has been in the anode department. He was an electric furnace operator at the time of his service retirement.

Mrs. David died in 1965. Alex has three sons and 12 grandchildren. He plans to visit his son Alex in Florida again, soon, but expects to continue residing at his country place east of Crystal Beach, where he puts in a big garden. His favorite vegetable? Onions. He also raises fryers and has a small egg business. He has a hundred chickens working for him.

PETER BARAN

Peter Baran came to Canada in 1928 from the Eastern Ukraine, and came to Inco the following year at Coniston smelter. He was caught in the 1930 layoff, but returned in 1933, and was a skimmer for 20 years.

He was married in 1936 at Fort William to Olga Duchnicki, and they have one daughter and one grandchild.

Peter's quite a gardener. His grounds at Coniston have won him a prize in the annual Inco competition every year since 1955; once they placed second. Another thing that really "keeps


Mr. and Mrs. Baran

him out of trouble" is his handyman job at his church.

Enjoying excellent health, he hopes to make a trip in the near future to see his 85-year-old mother in the Ukraine and also to British Columbia to visit his wife's sister.

Two hundred people attended Pete's retirement party at the Club Allegri in Coniston. Among other gifts, he was presented with an electric power mower to ease the job of keeping his lawn in championship trim.

GEORGE KYLLONEN

When George Kyllonen came from northern Finland to Canada in 1927, it was "just to have a


Mr. and Mrs. Kyllonen

look". Well, 43 years later, George is still "looking", at Canada, and liking what he sees.

He first settled at Cobalt, but joined the Company in 1929 at Frood, where he stayed throughout his long Inco service.

He worked in the Frood open pit from 1945 to 1950, then transferred to maintenance department where he was a second class maintenance mechanic.

His marriage to Fanni Rautio took place at Sudbury in 1933. Three children and five grandchildren make for many happy family reunions at the Kyllonen residence in Sudbury.

George's favorite pastime is fishing and hunting around his sauna-equipped Lake Penage cottage.

The Kyllonens recently enjoyed a trip to old haunts and relatives in Sweden and Finland.

ALEX HADDAD

Born in Parry Sound, Alex Haddad spent 10 years trucking


Mr. and Mrs. Haddad

on his own in Sudbury before joining the Company in 1943. Starting in the nickel converters at Copper Cliff smelter, he quit after two years but was back the next year, this time at the Copper Cliff mill, where he remained for his entire service.

Eleanor Lawson, who came from England, was married to Alex at Toronto in 1953, three years after her arrival in Canada. The Haddads have two children.

Alex has been busy this summer building a new home in Sudbury. He also recently completed a trip to visit his sister in California.

GLEN JANSEN

"I just can't do heavy jobs any more and am now going to take it easy," announced furnace helper Glen Jansen, retiring on disability pension from the nickel refinery at Port Colborne. His service, dating back to 1941, was all in the anode department.


Glen Jansen

Glen was born in Fort Erie in 1907. As a youngster, he did carpentry work with his father and worked at various other jobs prior to coming over to Inco. He is a bachelor. Country living in nearby Bethel for 13 years agreed with Glen, where he lent a helping hand at farm work. He has now moved back to his native border town to relax in retirement.

EPHREM LAPORTE

"I'm in better health now than ever," stated Ephrem Laporte when he posed for the Triangle camera. "We're both going to


Mr. and Mrs. Laporte

live past 100," added his wife enthusiastically.

Ephrem started to work as a boy of 12. Born at Thurso, Quebec, 30 miles east of Ottawa, he worked in lumber camps between Sudbury and Ottawa from 1922 until 1935, the year he started with the Company at Frood. Transferring to Garson in 1939, he was a blacksmith until 1959, but finished his service as a plateworker.

He was married to Aurore Leduc in 1935 at Blezard Valley. They have one son and three grandchildren.

Working at the shop in his Sudbury home, Ephrem has built five canoes and two outboard boats over the years. His production is geared these days to assembling hunting knives between training sessions with Chum, his English springer spaniel.

Appointments

By D. A. Fraser, assistant general manager (administration):

Arthur V. Bennett, superintendent of industrial relations, Ontario division.

* * *

By G. R. Green, assistant general manager (mining):

D. G. Valentine, project superintendent, Shebandowan mine;

H. C. Fraser, maintenance superintendent, Levack mine;

D. Reynolds, assistant superintendent, Creighton No. 3 mine.

* * *

By W. V. Barker, manager Port Colborne nickel refinery:

R. E. Butler, superintendent, mechanical department.

ARTHUR BENNETT

In his capacity as superintendent of industrial relations, Arthur Bennett will be responsible for industrial relations, hourly employee training, and hourly job evaluation. He will report directly to Hugh S. Judges, manager of industrial relations and personnel. His office is at Copper Cliff.

A. V. Bennett

He was formerly personnel manager (North Atlantic region) with Weyerhauser Company, an international firm with operations in Canada, the United States, Europe and Asia.

He studied law and personnel administration at Middlebury College, Vermont, and later completed a graduate course in collective bargaining in municipal government. He was prominent in municipal government in Fitchburg, Massachusetts, for the past 10 years.

He was married in 1946 to Priscilla Munson, and has one son and one daughter.

D. G. VALENTINE

Douglas Valentine, whose appointment as assistant engineer at Kirkwood mine was announced last January, succeeds A. P. Olive, who has retired as project superintendent at the new Shebandowan mine near Thunder Bay.

D. G. Valentine

Graduate of Queen's University in 1954 with a B.Sc. degree in mining engineering, he was chief engineer and manager of gold mining operations in Quebec. Immediately prior to joining International Nickel in July of last year, he was an instructor at Cambrian College, Sudbury.

Married in 1955 to Vivian Barker at Lachute, Quebec, he has two children.

GUYANESE STUDENTS GUESTS OF INCO ON SUDBURY AREA VISIT

As part of an exchange visit with students at the Tweedsmuir Public School in North Bay, 26 junior high school students from Georgetown, Guyana, toured the Sudbury area as guests of International Nickel. The interesting young visitors, ranging in age from 11 to 16, saw the copper refinery and iron ore plant sites, along with the Copper Cliff North mine site, where many of the students collected souvenir rock samples. After a luncheon at Cassio's, a tour of the Laurentian University campus concluded their visit. Picture shows the group at Copper Cliff. John Dennison, director of the visiting students, is seen standing on the right between Inco public affairs officers Sam Laderoute and Ken Fyall. Mrs. B. M. Fredericks, co-director, is standing second from left in the third row.

H. C. FRASER

Born at North Bay, where he received his high school and technical training, Harry Fraser came to International Nickel at Copper Cliff in 1937 as an electrical helper. He was transferred to Frood mine, and in 1942 to Murray mine, where he later became assistant chief electrician. It was in this capacity that he returned to Frood-Stobie in 1956.

H. C. Fraser

His marriage to Olive Davis took place at Powassan in 1938. One of his two children, his son Bruce is a shift boss at Frood.

An ardent "ham" radio operator in earlier years, his chief recreation now are hunting and fishing. He has a summer camp on the south shore of Lake Nipissing.

D. REYNOLDS

Doug Reynolds, the new assistant superintendent at Creighton No. 3 mine, was appointed assistant superintendent of Clarabelle No. 1 and No. 2 pits in June of this year, and a biographical sketch of him appeared in the Triangle at that time.

D. Reynolds

A general foreman at Creighton since 1965, he had previously been at Garson, Frood-Stobie and Levack. He joined the Company at the Frood open pit in 1939.

R. E. BUTLER

Graduating from the University of Toronto in 1949 with a B.Sc. degree in mechanical engineering, Ross Butler joined Inco at the Port Colborne nickel refinery that year in the mechanical department, and became assistant mechanical superintendent in 1956.

R. E. Butler

Born in Toronto, he served overseas with the Canadian armored corps in World War 2.

His marriage to Doreen Darling took place at Toronto in 1948. He has two children.

He has been an active leader in first aid competitions at the Port Colborne plant. Photography, travel and skiing are his recreations.

Training the New Miners

(Continued from Page 12)

system and shaft procedures. It continues as he is guided to the centre's specially equipped lecture station, which will serve as his home base until he writes his nipping and drilling tests on his fourth day.

A Tour of the Level

His first day includes a tour of the 1400 level to observe all regular mining operations, such as scaling, car loading and dumping, battery charging, the use of fuse, explosives, safety lanyards, stop logs and earplugs. He then moves into the training area, where his actual initiation begins when he operates an air leg drill in a hole that has been started for him.

On the second day the embryo miner will sound the back and scale loose, load holes with explosives, learn the routine with bootleg holes, operate both an air leg drill and a stoper, and install roof bolts.

He will be introduced to a tugger hoist, operate a slusher, drill several holes, and study nipping procedures on the third day, and on his fourth day he will fill out a detailed questionnaire on the complete course. The results of the group's answers to the questionnaire are then discussed.

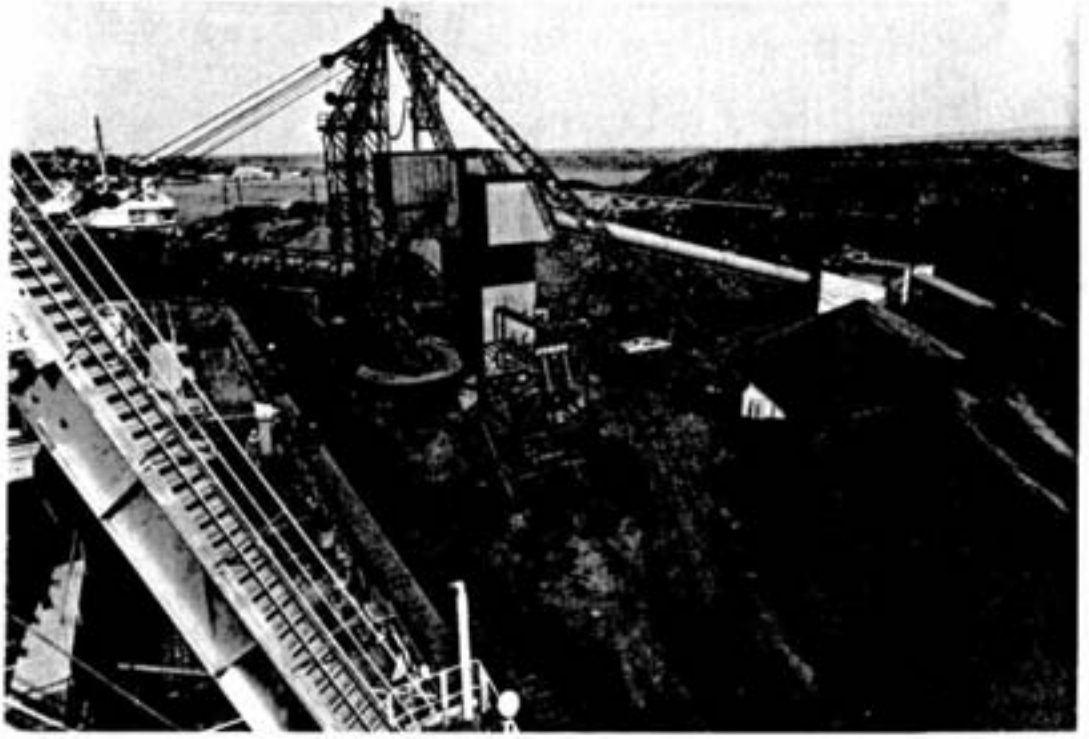
The trainee's fifth and final day at the Levack training centre is spent observing the surface operations at the mine, renewing contact with the personnel officer, and usually winding up with an introduction to mine superintendent Dave Lennie.

Next Training Phase

The new man's background and previous work experience are carefully studied, together with the instructor's reports, to determine the most suitable posting for him. He is then directed to his next phase of training, which may be a further week's period at the centre, or assignment to a shift boss who will pair him off with an experienced partner and launch him on his mining career.

"My advice to them all," said assistant superintendent Grant Bertrim, "is that they should not hesitate to ask questions. One of our problems lies in the fact that some features of his training may not be absolutely clear to him but he is reluctant to say so. We don't want him to feel that way — we want him to speak up at any time. Our aim is to keep him out of trouble as well as to make a good miner of him, and we're here to help him any way we can."

Inco Iron Ore Goes to Mills By Rail, Boat



PART OF THE IMMENSE Inco iron ore storage at the Goat Island dock, and the boat-loading facility, are shown here. Railway cars arriving from Copper Cliff are dumped at the bridge seen on the right, and the high-grade pellets are moved to the stock piles by 20-ton front-end loaders, which feed the ore to the inclined conveyor as a boat is being loaded. In the central tower the ore is automatically sampled; the analyses of physical and chemical properties are certified by an independent chemist. Leading from the tower on the left is the boat-loading boom, which can swing through 180 degrees for alternate loading of the boat's hatches. The storage area has a capacity of half a million tons.

About 75% of International Nickel's high-grade iron ore goes to market by train and lake vessel from the plant at Copper Cliff to the steel mill centres such as Buffalo, Detroit, Cleveland and Chicago. The other 25% is shipped directly by rail to Canadian customers, of which Algoma Steel at Sault Ste. Marie is the largest. Arriving at Goat Island, just across the North Channel from Little Current on Manitoulin Island, the bottom dump railway cars empty their cargo of iron ore pellets in the Inco storage area at the CPR dock, which has a capacity of almost half a million tons.

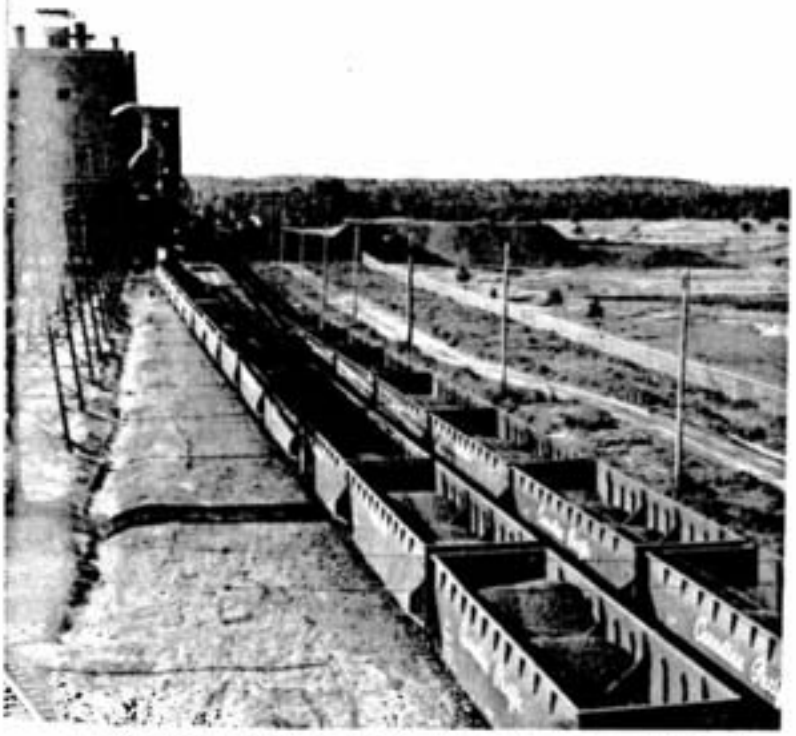
During the average seven-month shipping season from April to December, Algoma Central Steamship Line's ore carriers transport the regular daily shipment from Copper Cliff, plus the ore that has accumulated on the dock during the five winter months when navigation is closed. Self-unloading boats like the Roy A. Jodrey, Sir Denys Lawson, Algorail and E. B. Barber are familiar names on the Inco iron ore shipping bills.

Load in Seven Hours

The capacity of the boats is limited by the depth of the North Channel off Goat Island, but they normally load up to 15,000 tons, usually in about seven hours.

Now producing at the rate of 850,000 gross tons per year, Inco's iron ore plant is undergoing its third expansion which will boost its capacity to 1,120,000 tons in 1972.

When it started shipping in 1956, the plant had the continent's second travelling grate pelletizing machine, and its production of 68%-pure iron ore pellets was much favored by the steel companies over the 51% direct shipping ores. Since that time pellets have displaced natural shipping ores to the steel mills by over 50%. The pellets have the advantages of improved furnace feed, good physical and chemical qualities, and uniform grade.



THERE LOOKS TO BE a lot of waste space in these bottom-dump hopper railways cars as they leave the pelletizing building at Inco's iron ore plant at Copper Cliff, but actually each is weighed out with a capacity load of 75 tons of iron ore pellets. A train averaging 30 cars leaves the plant daily.

A SURVEY TO DETERMINE the tonnage of iron ore pellets in storage at the CPR dock at Goat Island is made periodically by the Inco field engineering section. The team shown in action are Jorma Nordman on the instrument and Norm Vallee, rodman. In background is one of the Algoma Central Steamship Line's ore carriers.

Meeting Some of the Sudbury Area Incoites in

Process Technology

. . . the department that's dedicated to control and improvement of the multitude of processes involved in the Company's operations.

MARTHE SIZGORIC

Marthe Sizgoric, who came from Montreal, works as a mineralogist in the Copper Cliff process technology lab. Holder of a master's degree in science from McGill University, she started work with the Company in October of last year. Her husband, Sebastian, is completing his university studies in electrical engineering.

Mrs. Sizgoric is fond of the outdoors and particularly enjoys swimming and canoeing.

In this picture she is producing report photographs of mill concentrate samples.

BOB McCONNELL

Bob McConnell and his wife, the former Jeanne Dubreuil of Garson, live in Lively with their two daughters. Bob started with Inco in 1959 as a junior sampler in the Copper Cliff smelter. He is now a chemist in the control lab at Copper Cliff, and is seen standardizing the atomic absorption spectrophotometer prior to analysis of a sample. Bob's favorite recreations are golfing and skiing.

DR. HING PANG

If you ask "What's cooking?" at the Dr. Kwok-Hing Pang residence in Sudbury, it may quite possibly be the man of the house and not his wife, Maggie, who gives you the answer; for, along with table tennis and badminton, Dr. Pang's interests also include preparing Chinese foods, particularly soya sauce chicken.

Born in Canton, China, Hing came to Canada in 1959 and started work with the Company this year. He is a research engineer and is shown carrying out a computer study pertaining to process control.

Dr. Pang and his wife have one daughter, 15-month-old Frances. Mrs. Pang came to Canada from Hong Kong.

LAWRENCE MOCHIZUKI

Lawrence Mochizuki, who was born in British Columbia, joined Inco in 1968 after graduating from Lakehead University. A research technician in the process technology lab at Copper Cliff, Lawrence is seen loading a crucible of roaster calcine sample into an induction furnace prior to conducting a smelting test.

He enjoys curling and golfing as well as duck hunting and fishing on Lake Nipissing. He and his wife, Janet, live in Sudbury; she was a Fort William girl.

DR. JOHN BOZIC

Dr. John Bozic is supervisor of the Copper Cliff control lab and is also responsible for the development of analytical procedures employed in the Sudbury area plant laboratories.

He was born in Sudbury and after taking his doctorate at the University of Windsor, was on the faculty of Laurentian University as an assistant professor of chemistry. He is a bachelor, living in Sudbury, and enjoys fishing for pickerel and bass on Lake Nipissing.

Dr. Bozic is a second generation Incoite; his father, the late Ivan Bozic, worked for the Company for 20 years at the Copper Cliff smelter.

BILL STRAND

A section head at Levack mill, Bill Strand is shown here carrying out an airflow determination on the concentrate dryer.

A mineral engineering graduate of the University of Minnesota, Bill has been with Inco's process technology department for two years. He and his wife Nancy, with their four children, live in Levack. He likes fishing and hunting, and building fibreglass canoes.

BOB MATTHEWS

Toronto-born Bob Matthews had worked at Inco during three university vacations prior to "joining up" in 1968.

Bob is a metallurgical supervisor at the copper refinery, where he is shown inspecting a test batch of copper sulphate that has been crystallized from regular tank house electrolyte.

Bob's interests include bowling and baseball. He and his wife, the former Gwen Mazza of Sudbury, live in Lively.

WAYNE MAITLAND

In his spare time Wayne Maitland is a flying instructor at Manitou Airways, and has logged more than 600 hours in the air. He is also an experienced scuba diver.

A research technician, Wayne was photographed while inserting one of the carbon electrodes into an electric furnace.

His father, Arnold Maitland, a 40-year Incoite, is a shift boss underground at Frood. Wayne joined the Company in 1965 after teaching school for a year at Webbwood.

GRAHAM SKELTON

Graham Skelton and his wife Lola came to Sudbury in 1969 from Australia where he had worked for 15 years in the copper and steel industries. Graham is a project leader at the iron ore recovery plant's roaster kiln building.

A lifetime horse racing fan, Graham now plans to take up skiing and skating this winter, hoping to keep up with his three children.

He was photographed while introducing a sample of kiln discharge gas into the gas chromatograph for analysis.