See what Guy Larochelle, is looking at on pages 6 and 7.

INCO
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Mine Rescuers boost safety awareness

You can't beat teamwork and training.

The winners of 1998's Mine Rescue competition, within Inco's Ontario Division, received excellent training and worked very well as a team, said **Peter Buratti**, captain of the winners.

For the second consecutive year the Creighton Mine team won the District Mine Rescue Competition.

"They came out ahead by one demerit point. So it was very close," said the Ministry of Labor's **Bruce Hall**, who trained the team.

"You learn all aspects of mine rescue," said Peter, who praised the annual event for what it teaches miners.

"When you come out of it you're prepared for any emergency. And that's the whole point of it. It's a good way to set standards in training and mine rescue."

Members of the Creighton Mine 'Red Devils,' as they dubbed themselves, are: **Bob Chiasson**, a miner with six years at Inco; **Ken Tellier**, a surveyor with eight years; **Mark Bardswich**, a construction leader with three years; **Ron O'Bumsawin**, a miner with 17 years; **Grant Last**, a miner with six years; **Franco Cazzola**, a foreman with three years; spare **Jules Guillemette**, a shaft service leader with six years; and Peter, a mechanic with six years.

Winning this year's top

continued on pages 2&3

Third dimension catching on

As three-dimensional orebody modeling increasingly becomes the standard in the Ontario Division, savings in costs and time are being realized.

"You can maximize your drill patterns, because you can view the orebody in 3-D," said **John Townend**, Garson Mine senior geologist.

"We've learned how we can use it more in our planning process. It saves us time and money," said **Emile Mailloux**, superintendent of Mines Exploration.

Put simply, Emile said, "It's more efficient."

Many geologist like using DATAMINE software because of its flexibility in terms of updating the shapes of orebodies.

"Geologists can build a data model based on what is economically feasible to mine. If the value of nickel rises or falls then you can modify the model based on the new values," said **John Kelly**, senior geological technologist at Stobie Mine.

For example, Emile said, what is ore at a nickel price of $2.80 a pound, is not ore at $2.00 a pound.

John Kelly said the level of detail that can be modeled in the 3-D orebody modeling is useful.

Exact locations of ore sections and rock inclusions can be detailed in a 3-D model to greater precision than previous two-dimensional mapping, which reduces dilution by the time the ore reaches the milling process, he said.

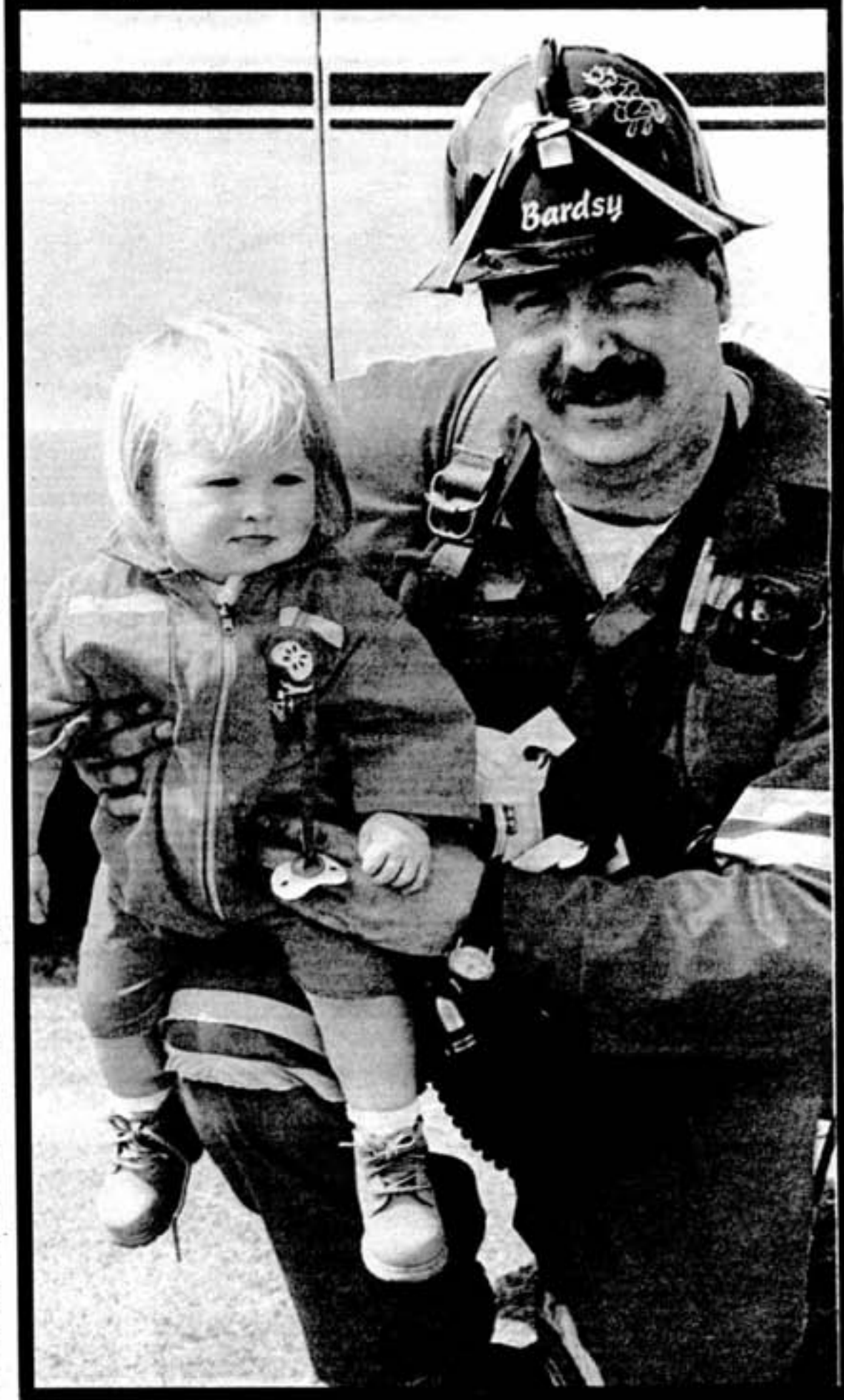
"We can blast around rock inclusions to reduce dilution."

With data from a cavity-monitoring survey instrument, 3-D replicas of mined out areas are created in DATAMINE. It's then possible to determine more accurately how much ore was left behind, or how far the cavity intrudes into adjacent stopes.

"You couldn't go back before," John Kelly explained. A blasted out area is too

continued on page 4

Daddy's little miner



Future Creighton miner one-year-old Jennifer Bardswich came out to cheer on her dad Mark 'Bardsy' Bardswich. Jennifer just learned to walk. And her dad has just won the Division's mine rescue competition along with his Creighton teammates. For the second consecutive year the Creighton mine team won the District Mine Rescue Competition, an event among teams from the Ontario Division. The Creighton team will now compete in early June at the provincial event in Timmins.

Creighton edges out tough competitors from

continued from page 1

mine rescue technician title again was Andy Scott of Frood-Stobie Mine. Andy has won the last two provincial technician titles.

Peter said the test for the mine rescue teams was challenging, as usual, this year.

The most difficult part was splitting the team up during part of the mock mine fire staged at Copper Cliff's McClelland Arena, he said. Keeping the team together is one way to ensure everyone gets out safely.

"But we needed two guys to stay back to hold the inductor in the pail of low-expansion foam (used to combat the fire)."

In the mine rescue scenario, a fire breaks out on a bolter in a drift at the 1000-foot level of the mock mine. A shift boss reports he thought he could see someone on the ground, but smoke is heavy. The teams had to rescue anyone caught in the fire scenario.

"We used the fire hose to keep the team together. You want to keep the team together as much as possible," Peter added.

"The competition is a good way to set standards in training and mine rescue."

But achieving those standards in an emergency situation is only one of the skills required to save lives. Teamwork makes it happen, he said.

"We performed well together because we worked as one unit."

The competition at the Copper Cliff arena will be good practice for the province-wide event, Peter said.

Top technician Andy and the Creighton team are competing in early June at the Ontario Mine Rescue Competition in Timmins.

The Stobie team goes over their plan in a conference room before entering the arena, where the mine rescue scenario was laid out.

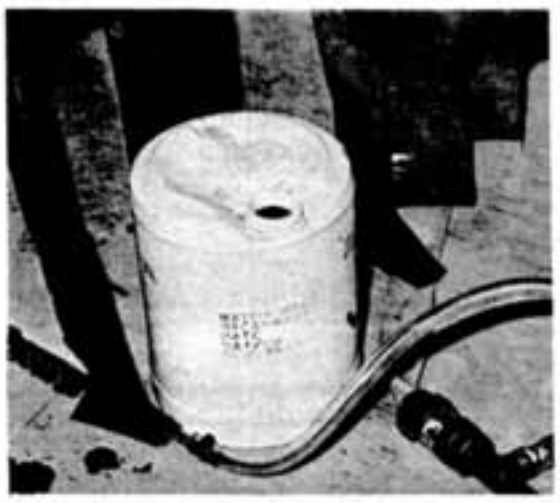
The winners, and still champions – The Creighton Mine Red Devils. The Creighton team won the Ontario Division mine rescue competition, judged by the Ministry of Labor, for the second year in a row. The team consists of, from left: standing, Ron O'Bumsawin, Mark Bardswich, Franco Cazzola and Jules Guillemette; bottom row, Ken Tellier, Grant Last, Peter Buratti, and Bob Chiasson.

South Mine gets the hose ready before entering a smoke-filled chamber – just part of the real-life simulation in the annual Mine Rescue Competition within Inco's Ontario Division.

across the Ontario Division in Mine Rescue

Stobie Mine's Pierre Lauzon works on a compressed air tank during another of the varied parts of the mine rescue scenario tests.

The 'victim' Howard Scott, of Creighton's Mines Training, acted as the lost mechanic, who the mine rescue teams had to assist.



Something here just doesn't look right. That's because the Ministry of Labor's Bruce Hall has removed the foam ineductor pick-up from the pail of foam to show how unpredictable things can happen in a fire situation.

The South Mine Rescue Team goes over its plan before taking on the test, set at McClelland Arena earlier this month.

No these mine rescuers were not catching up on their soaps or the Stanley Cup playoffs. A TV monitor was set up so teams having just completed the test could watch their competition.

The Levack Mine team takes care of a 'victim' just outside the smoke-filled chamber.

3-D reveals lower production costs

continued from page 1

unpredictable for a person to examine on site. "So you never really knew what you had in terms of leftover ore.

"You can recover ore that might have been unrecovered before," he said.

"That's why DATAMINE is so good. You can add it to the existing model and it'll appear in its proper place in space."

Geologist **Mario Paventi**, of Garson Mine, said he likes the speed of using DATAMINE to produce a large number of plans and section plots.

"I like the fact that it can spit out information quickly. And you can view it from any perspective."

John Townend added, "It gives you an infinite number of viewpoints."

Brian Huston, senior staff geologist at Coleman Mine, agreed saying DATAMINE allows geologists to see the spatial relationships of an orebody and surrounding rock.

"The ability to see the relationships in 3-D is the biggest improvement over how we did it before (with two-dimensional maps)," Brian said.

"It helps us reduce dilution of the ore. It also allows us to get our footwall development where it should be."

Brian said capital development costs are being reduced by three-dimensional modeling because "we can be closer to the orebody."

Greg Greenough, a chief mine geologist with Mines Technical Services, and currently coordinating DATAMINE's use at the Division's mines, said that major time savings have been realized through three-dimensional modeling in the last few years.

Providing the planner with an ore outline used to take the geologist two or three hours by hand. The three-dimensional model cuts the job down to a matter of minutes, with fewer chances for error.

Bore hole safety searches for a layout can take a planner at least two days to complete, Greg said. "That information can now be provided by a DATAMINE plot in five to 10 minutes, again with less chance for human error, thereby improving safety. In short, we're providing a better service with fewer people."

"It gives you an infinite number of viewpoints. You can maximize your drill patterns, because you can view the orebody in 3-D," said John Townend, Garson Mine senior geologist, of DATAMINE software.

Greg said, "Because of commitment and hard work by the DATAMINE users at the mines, we have made some great improvements in the way we do our job and we will continue to improve, through more customization, training, standardization and implementation of more tools in the DATAMINE package."

– MINING WORLD NEWS –

Asia strips stainless

The market for stainless steel strip products in Europe is coming under renewed pressure and there are fears that a further weakening in transaction prices may be imminent, the **Metals Bulletin** reported from London earlier this month. Producers say that demand in Europe is good, but that attempts to increase price levels have been hampered by the effects of the weakness in the Far East. Those effects have been most keenly felt in the US market, but are spreading globally. There have been no moves by any of the European producers so far to increase prices for third quarter deliveries, although lead times are already stretching towards July for new orders. European stainless strip exporters remain pessimistic about the prospects for tonnages and prices for the remainder of the second quarter and into the third quarter. With benchmark prices in the Far East falling back once again most European suppliers are staying out of the market. Many said they have done no business in the region this year.

Delay at Voisey's Bay

Talks between **Inco** and aboriginal groups over Voisey's Bay benefits stalled earlier this month. Negotiations for an impacts and benefits agreement won't be finished until the Labrador Inuit Association and the Innu Nation negotiate a share of royalties. Final agreements have not being signed, in part because financial compensation is tied to other issues including the world price for nickel. Spokesmen for both Innu and Inuit say talks have been positive. But they warn financial issues are an obstacle to any kind of settlement. The agreements include payments to counteract the effects of development, as well as a plan to get aboriginal people work in business opportunities at the mine.

Shake up at copper producer

Philip Services Corp. has removed many top figures and repositioned others – including the chairman, chief executive and chief financial officer – in the name of restoring investor confidence and to bring a "new culture" to the troubled Hamilton company. Announcing a first-quarter loss tied to operating losses in its copper division, the metal recycler and industrial services company also said all assets are up for review and 10 per cent of the company's 3,700 salaried employees will lose their jobs. But co-founder **Allen Fracassi** remains a force, taking the title of executive vice-chairman. Philip shares lost 20 per cent of their value on the New York Stock Exchange on May 7. Philip shocked the investment community in March with a $346.2-million (US) writedown, which included a loss of at least $125 million (US) from speculative copper trading. Philip still has not said who is responsible for the spectacular copper trading losses reported in March, although it has said those people are no longer employed there.

Spanish mine to re-open

Toronto-based **Boliden Ltd.** reports it hopes to open its Los Frailes zinc mine in southern Spain within six months, following a major toxic spill. Boliden was forced to shut the mine on April 25 after a reservoir, containing mine tailings, ruptured sending a torrent of contaminated water flowing into a nearby river and causing one of Spain's biggest ecological disasters. The mining company says it will pay up to $6.5 million (US) to Spanish farmers, who had wanted $10 million in compensation for the spill. Although it has agreed to pay, Boliden says it has not accepted responsibility for the accident.

From Russia with platinum

Russia may resume shipments of platinum group metals to the international markets by the end of June, said the country's state owned export agency Almazyuvelirexport. Russia, the world's largest palladium producer and second largest platinum producer, hasn't shipped any platinum group metals this year because of bureaucratic delays in issuing export licenses. **Sergei Gorny**, deputy general director of Almazyuvelirex-port, said it's unclear whether the planned merger of the foreign trade and economy ministries will result in more delays, though he added that the agency had "unpleasant experience of similar mergers" in the past. Russian president **Boris Yeltsin** ordered the two ministries to merge when he announced a restructuring of the new Russian government last month.

Norilsk exports palladium

RAO Norilsk Nickel, Russia's palladium producer, is ready to provide palladium for exports, said **Yuri Kotlyar**, the company's vice president. Gorny refused to say how much palladium Russia plans to export this year or even whether this amount will be lower or higher than last year. "We certainly will ship enough to meet market demands," he said.

Raglan close to capacity

Falconbridge Limited President and Chief Executive Officer **Oyvind Hushovd** said the company's Raglan nickel mine in northern Quebec is "running close to capacity." April was the first month of full production at Raglan. Raglan is expected to produce 21,000 metric tons of nickel, 5,000 tons of copper and 200 tons of cobalt a year. Ore from Raglan is being transported to Falconbridge's smelter in the Sudbury region for processing.

$200M for BC copper refinery

Cominco Ltd. unveiled plans earlier this month to expand its metals operations in North America. After its annual meeting in Vancouver, chief executive **David Thompson** said the company hopes to begin work next year on a $200-million copper refinery in British Columbia. Possible sites for the refinery, designed to test Cominco's new hydro-metallurgical process, include its Highland Valley copper mine near Kamloops, B.C. The new process is designed to extract copper from ore without producing poisonous sulphur-dioxide gases and/or liquid waste. Cominco is also mulling a further expansion of its flagship Red Dog zinc mine in Alaska.

Partnerships in mining

South Africa's **Anglogold Ltd.** and Canada's **Barrick Gold Corp.** have announced they will join forces to explore lucrative gold properties on the African continent. "I think we'll see more and more of this joint venturing between Anglogold and other mining companies throughout the world," said **Dave Giese**, a mining analyst with **Merrill Lynch Smith Borkum**. For Johannesburg-based Anglogold, it is another step in the company's drive to shed its South African shell and become a global industry player, analysts said.

Noranda & Teck in Peru

Toronto-based **Inmet Mining** shares dropped 25 cents on May 11 following news that it has sold off its 50-per-cent stake in the Antamina copper project to **Noranda Inc.** and **Teck Corp.** for $70 million. Noranda and Teck have also agreed to acquire a 16.7-per cent stake in the Peruvian property from **Rio Algom Ltd.** – with each company ending up with a one-third stake in the company.

Ok Tedi mine is okay

Ok Tedi copper and gold mine operations in Papua New Guinea are returning to normal and production has risen to 220,000 tonnes of ore a day, following the severe drought conditions that had caused it to shut down last August. Low water levels in the Fly River had prevented the shipment of copper concentrate. Rain in February allowed resumption of some shipments and production. The mine is 52-per cent owned by **Broken Hill Pty. Co. Ltd.**, another 18 per cent by **Inmet Mining Corp.** and the remaining 30 per cent is owned by the government of Papua New Guinea.

P.T. Inco continues in Indonesia

P.T. Inco continues to operate in wake of the resignation of Indonesian President Suharto. Beset by riots and corresponding persistent public demands for his resignation, President Suharto resigned May 21. Most of P.T. Inco's 2,300 employees work on the Indonesian island of Sulawesi in Soroako, about 1,000 miles away from the violence that erupted in the capital city of Jakarta. Some 500 people have been killed in the anti-government protests and rioting.

Mining Week shows Inco spirit

Two-and-a-half year old Thomas Cousins, of Garson, enjoyed sitting in the driver's seat of a front-end loader, which was a big attraction with children coming to the mining week displays.

Two-year-old Taylor Wormington, whose grandfather is Inco pensioner Spike Wormington, stopped to check out the pictures of scooptrams tele-remote mining and to get a pine tree.

Inco pensioner Severo Zanatta talks to children from Carl A. Nesbitt Public School about mining past, present and future at Inco's mining week display in the New Sudbury Centre.

Brad Leonard facets a piece of clear quartz to make it shine, at the mining week display area.

The Inco display was very nice. But as usual it was the pine seedlings that stole the show. Just ask Curtis Ferron, 2, and his mom Lynn Ferron, of New Sudbury, who picked up their seedlings from Inco.

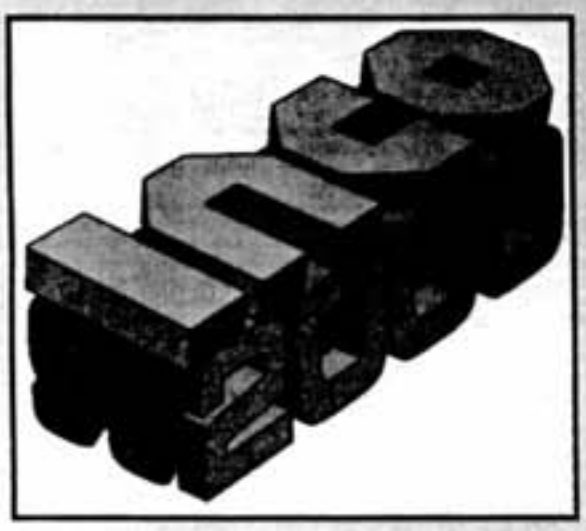
Two-and-a-half year-old Mathew Greenslade, whose grandfathers are Inco pensioners Don Greenslade and Andy Zacharosky, visited with his neighbor Inco Pensioner Severo Zanatta.

Gertie Riles and husband Cyril Riles, retired from Inco's former Coniston Smelter and Clarabelle Mill, stopped by the Inco display to get their pine seedlings for planting this spring.

Inco pensioner Harry Knight was among those to volunteer to greet the public and give out more than 3,000 pine seedlings, grown in the underground nursery at Creighton Mine.

YEAR 2000

Creative entries from children, adults add spice to logo contest



Best Logo Design Winner: Herb Fines, CCNR

Inco's Year 2000 Project thanks all participants: Gayle Akerman, Randy Alexander, E.F. Alling, Doug Armstrong, Paul, Mike and Katie Barrette, Steven Bellisle, Becky Blair, Barry Bowerman, Francois Brunet, Joyce Butler, Bob Cameron, Dan Canapini, Andre , Dan and Mike Chamberland, Michael Colussi, Alain Courchesne, J.P. Courtemanche, Jean Cousineau, Ralph Cuomo, Alexandra and Jordan Dagostino, Gaetan Denis, Nicole Deschamps, John and Matthew Dittburner, Christopher Doherty, Derrick, Christine and Louise Doucette, Mike Dudar, Kiersten and Steven Elford , Matthew Evans, Patsy Fairbairn, Yvon Fayot, Herbert Fines, Doug Fosten, Damien and Reg Gareau, Raymond and Felix Gravelle, Stan and Neil Haskett, Yolande Houle, Gerald Jeanveau, Ted Joiner, Kristina Jokinen, John Kanerva, Norman Kulmala, Cathy Langin, Ed Leblanc, Christopher Mangiardi, Ross, Joel and Andre Meeks, Ryan Meisen, Sarah Milne, Michael and Remi Morelli, Chuck Mossey, J.P. Mrochek, Carla and Barry Muncaster, Jeff Negrych, Barbara Oost, Robert Paquette, Tania and Josée Pelland, Sharon Polehoykie, Rick Riengeutte, Wendy Robb-Bacon, Jesse Rosato, Dave Rusenstrom, Giliu Samoila, Gisele, Gerard and Michel Sauve, Brett Schneider, Larry Slow, Len Somerville, George Stesco Jr., Karen Taggart,Robert Tan, Vic Theriault, Brian Tolin, Luke and Laura Townend, Norm Tranchemontagne, Alix and Kennedy Voz, Meredith Wilson, Marie Wright, Garth Wunsch, Brian, Paul and Michael Young.

THERE WERE MANY GOOD ENTRIES IN THE YEAR 2000 LOGO CONTEST. HERE'S IS BUT A SMALL SAMPLE OF THOSE ENTRIES.

A. LEE TAN, WIFE OF ROBERT TAN OF GARSON MINE
B. GERARD SAUVE OF THE HUMAN RESOURCES DEVELOPMENT GROUP
C. FAMILY ENTRY FROM BOB CAMERON OF THE SMELTER
D. JORDAN DAGOSTINO, AGE 10, SON OF MARIO DAGOSTINO OF STOBIE MINE

A.

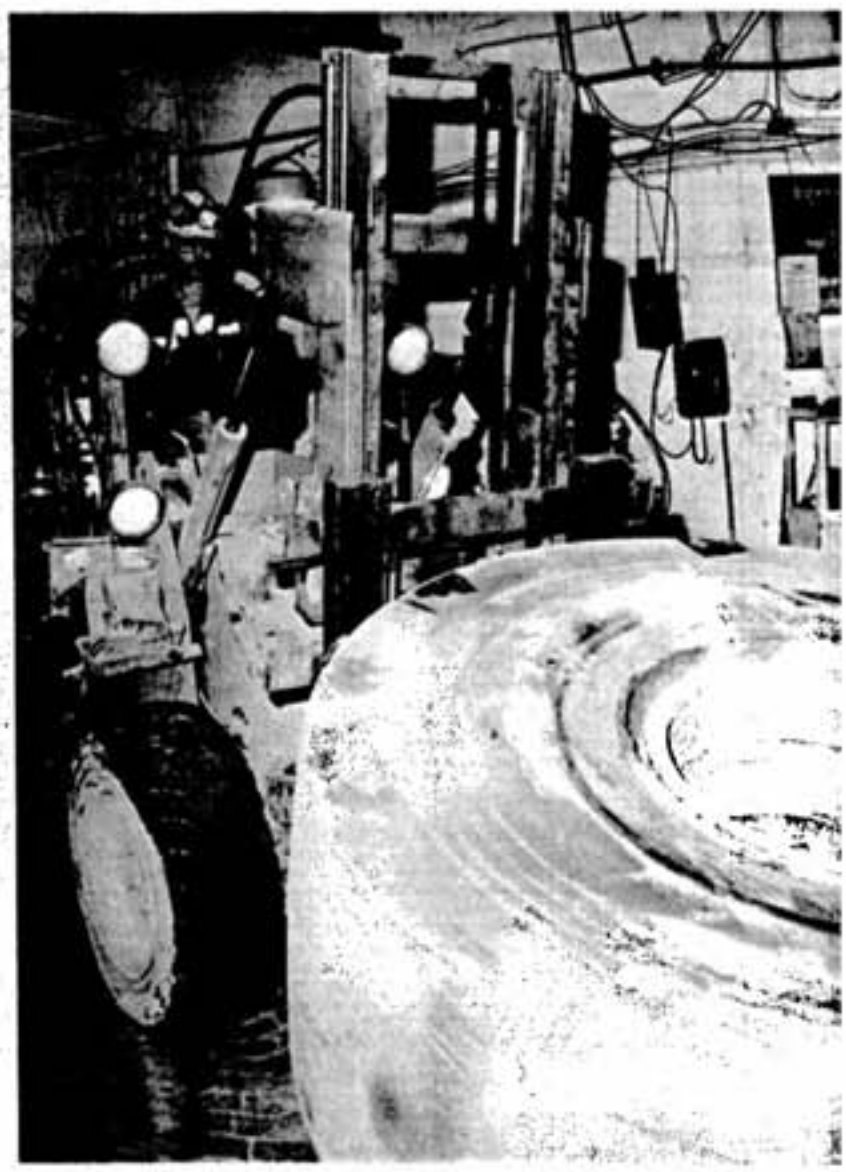
B.

C.

D.

Lowering production costs and multi-ta

"We do a bit of everything," said Gerald Brunet, a 30-year Inco employee who has been a datasolo driller and is currently a warehouseman. In his multi-tasked job he fixes pumps, threads pipes and even does some carpentry.



Moving scooptram tires and positioning them upright for m experience, as Richard LaBrosse demonstrates on the job at S

Multi-tasking and streamlining of scooptram maintenance at Stobie Mine has increased productivity.

"With multi-tasking, nobody says 'it's not my job' anymore. Everything is everybody's job," said **Wayne Tonelli**, Stobie's mine foreman coordinator.

Employees have been empowered to improve efficiency by doing several tasks in their work areas, he said.

"It's important we run everything like an individual business. It's a lower-grade ore here so we have to be very efficient," Wayne said.

"We run our beat as if it were our own business. Our money. And the most important aspect of our business is our people and their safety."

The problem was scooptram service sheets had no organized flow in sequence for employees. The result, before it was addressed, was rework.

Now scooptram servicing is a planned event, which has resulted in equipment getting back to production work much faster.

Employees were spending a total of 840 hours a month to complete the scooptram service sheet for 21 scoops before Stobie's Total Quality Improvement (TQI) team took on the challenge in September 1997.

Now with a more organized approach to maintenance, employees spend 672 hours a month to service 21 scoops, a reduction of 168 hours to work on other equipment and different tasks.

Part of the streamlining occurred in recent months by going from five underground garages to three.

"We had parts everywhere. We had five garages on five levels. Now we have three on three and it's made us more efficient," explained **Mike Paquette**, mobile maintenance supervisor.

"Because we have only three garages to maintain, we've been able to save a lot of money. There was a lot of duplication of parts," Mike said.

In terms of efficiency, he said no time is wasted trying to figure out which garage has the parts. "Now we know what we've got and where. It used to be harder to keep track of our inventory."

Warehouseman **Gerald Brunet** said, "People are taking more responsibility in their work. We work as a team."

On the Total Quality Improvement Team for the streamlining of scooptram maintenance are Stobie heavy-duty equipment mechanics **Dave Hunda, Jean-Marc Chenier, Paul MacPhee** and Mike.

Phil Lance, heavy equipment mechanic, changes an air filter included in the more selective and efficient warehousing of

In the process of examining the flat tire problem, the Stobie team came up with a way to safely mount tires on the scooptrams preventing the valves from getting crushed and speeding up the job to boot. Special bolts, such as those being installed by Services Operator Guy Larochelle, are now used in the rims to mount the tires and are removed once the tires are on the scoops.

sking are everybody's job at Stobie Mine

nting requires skill and bie.

"We had a rash of flats in November. We were having flats, but there was no evidence of why on the tires," said Wayne Tonelli, Stobie mine foreman coordinator. But now Stobie employees like Wayne, near, and Service Operator Guy Larochelle have solved that costly problem.

a scooptram. Filters are ts in demand at Stobie.

Stobie Mine Forklift Operator Richard LaBrosse moves supplies on the 1800-foot level for the garage.

FLAT TIRES NO LONGER A PROBLEM

At a cost of $6,000 each, flat tires were threatening to leave Stobie Mine flat broke, so to speak.

"We had a rash of flats in November. We were having flats, but there was no evidence of why on the tires," said Wayne Tonelli, Stobie mine foreman coordinator.

By the time a scooptram operator would drive the vehicle to a garage to repair the flat it was usually too late.

The tires would arrive at the garage destroyed.

"It was like driving on your rims," said Guy Larochelle, services operator at Stobie.

Driving on rims can ruin tires on a car. But underground, the rocky surface scoop tires travel on basically shreds them when they are deflated.

"It was getting expensive," Guy added.

The tires were the same as those used in previous months without any complications or problems. So there was a new problem.

A Total Quality Improvement (TQI) Team was quickly put together to remedy the situation.

The team quickly found out that the problem originated with the supplier of the tires, Wayne said.

"The supplier had changed the components in his process without letting us know."

A liner in the tires had been changed by the supplier. But the new liner caused the air valve to rub on the hub. In short order, most of those valves were "squashed" and quickly leaked air until the tires were deflated.

"We got a handle on it in December," Wayne said.

"We got the supplier involved on our team."

The TQI team observed the supplier's process and noticed the new liner.

"The supplier admitted it was at fault." The problem has long since been fixed by using the proper type of liner on scoop tires.

***

In the process of examining the flat tire problem, the Stobie team also came up with a way to safely mount tires on the scooptrams preventing the valves from getting crushed and speeding up the job to boot.

Special bolts are now used in the rims to mount the tires and are removed once the tires are on the scoops.

By making better use of forklifts and skilled employees, such as forklift operator Rick Labrosse, efficiency in tire mounting has been significantly reduced.

Wayne said, "It used to take two men half a shift to change a scoop tire. Now it takes 15 minutes on average. That's because of training, implementing of procedures, use of a hydraulic jack system and use of a forklift."

On the tire TQI team were: Marcel Lemieux, services operator; Lawrence Dagenais, TQI plant facilitator; Stan Cole, of Mines Research; Rick Labrosse; and the tire supplier.

Inco's connection to SNO runs deep

Inco's connection to the potentially groundbreaking Sudbury Neutrino Observatory (SNO) is much more than that of being its honored host two kilometres underground at Creighton Mine.

"The project would have almost been inconceivable without the help and expertise of Inco," said federal Industry Minister **John Manley** during his two-day visit for the official opening of SNO.

In addition to donating the space underground and providing skilled employees for the original excavation in the 1980s, SNO can be considered one example of how Inco technology is applied.

"Stainless steel is used extensively (in SNO's design) with close to 40 tons of stainless steel tubing, bearing 10 per cent nickel, in the geodesic sphere," said Inco Chairman and Chief Executive Officer **Mike Sopko**, in his speech to about 250 guests attending the official opening ceremony on April 29, at Creighton Mine's warm room.

"Hastelloy, a special corrosion-resistant alloy containing more than 60 per cent nickel is a key to the SNO's water purification room. And nickel vapor deposition technology developed by Inco is used in metal tubes for neutron detectors in the heavy-water vessel," Mike said citing another prime example.

Beyond the Inco nickel connections, he said he enjoyed celebrating the beginning of the study of the subatomic neutrinos because he was a part of its start.

"I take a special interest because the idea of a neutrino observatory in a mine was brought to Inco's attention when I was President of the Ontario Division in the late 1980s. All of us at Inco are excited about the months and years ahead for the Sudbury Neutrino Observatory."

Mike gave "a special 'thank you' to the experienced, dedicated Inco miners who got the chamber shipshape for the great experiment."

The cathedral-sized observatory's inauguration drew several high-profile scientific and academic minds to Sudbury. They included Cambridge University physicist Prof. **Stephen Hawking**; Nobel laureates **Bertram Brockhouse** and **Richard Taylor**; and Princeton University astrophysicist **John Bahcall**, who helped bring neutrino research to the forefront of science in the late 1960s.

Pure science important

The pure-science experiment at SNO could lead to spectacular, but unforeseen benefits for humanity as pure science has done in the past.

Some examples, as cited by Prof. Hawking during the first day of his two-day visit in Sudbury, are: the discovery of DNA, which led to the bio-technology industry and the treatment of disease; and particle physics and quantum mechanics, which led to the trillion-dollar electronics industry and television.

"The fundamental research did not seem to have any application at the time the basic research was performed," Prof. Hawking said through his voice synthesizer before a packed Fraser Auditorium at Laurentian University on April 28.

SNO director **Art MacDonald** explained during one of his speeches that if enough neutrinos, emanating from the sun and passing through the earth, are detected then the theory that they change form must be true.

Therefore, neutrinos originally thought to be just balls of energy, would have a mass.

"The question of whether the universe continues to expand, or at some point in the future begins to contract back upon itself, is affected by the masses of all the particles in the universe and, in particular, by the mass of the neutrinos," Mr. MacDonald said.

At SNO physicists will study that proposition as they study neutrinos passing through an acrylic vessel containing 1,000 tonnes of heavy water worth $300 million, on loan from Atomic Energy Canada Limited.

Ontario Minister of Northern Development and Mines **Chris Hodgson** said the SNO experiment is worth the expense and even credited previous provincial governments of different stripes "on this one point" for their support.

The federal and Ontario government covered about 70 per cent of the project's $74 million cost.

The remainder came from U.S. and British sources. SNO is expected to be fully operational by July, when the last of the heavy water is to be pumped into the acrylic globe.

What are they?

Neutrinos are subatomic particles produced at the core of the sun and other stars. They zoom out from solar furnaces at near-light speed by the trillions of trillions every second.

About 100 billion of them pass through every square inch of the earth every second. Several pieces of sophisticated scientific equipment have detected neutrinos during the past 20 years. But these detectors never found enough of them and could only detect one of the three types of neutrinos.

The underground location of the observatory will filter out background radiation from the sun making it more feasible for the sensitive equipment to detect all three types of neutrinos. A key part of the observatory will be the heavy water, which can detect all varieties of neutrinos by having them interact with an extra neutron that heavy water has in its molecular makeup. Whether neutrinos change types as they travel will also be studied.

Federal Industry Minister John Manley, left, and Ontario Minister of Northern Development and Mines Chris Hodgson spoke with Prof. Hawking during lunch at Creighton Mine.

The neutrino observatory has more links with the Inco than just being located in one of its mines. "Stainless steel is used extensively (in SNO's design) with close to 40 tons of stainless steel tubing, bearing 10 per cent nickel, in the geodesic sphere," said Mike Sopko, Inco Chairman and Chief Executive Officer (right).

Prof. Hawking's visit to open SNO drew community leaders, international scientists, national media and federal and provincial politicians to Sudbury.

Hawking's visit adds to significance

"Let's hope the neutrinos cooperate by turning up and having a mass in the interesting range," Prof. Hawking said adding some humor to the topic of pure science at SNO.

The bright, subtle charm of Prof. **Stephen Hawking** brought an added element of historic significance and sentiment to the official opening of the Sudbury Neutrino Observatory (SNO) at Inco's Creighton Mine last month.

"Neutrinos could be the dominant matter in the universe," Prof. Hawking said in the most brief, yet eloquent speech during the fittingly sunny afternoon event at Creighton's warm room.

"They (neutrinos) are even colder than Sudbury in winter," said Prof. Hawking getting a round of laughter from the community leaders, provincial and national politicians, internationally renowned scientists and partners in the SNO project.

Inco Chairman and Chief Executive Officer **Mike Sopko** was also delighted to meet Prof. Hawking during a luncheon prior to the official opening.

"To quote Stephen Hawking's book A Brief History of Time: 'Today we still yearn to know why we are here and where we came from. Humanity's deepest desire for knowledge is justification for our continuing quest,'" Mike said during his speech.

Prof. Hawking had gone to the observatory the day before the opening in a private tour, which was memorable for Creighton Complex Manager **Fergus Kerr**, who led the underground visit.

"The honor of taking Prof. Stephen Hawking underground was the highlight of my 30-plus years in mining," Fergus commented afterward. Fergus and his Creighton team were involved in organizing details of the underground tours and in creating a special cage car for Prof. Hawking, who uses a motorized wheelchair and communicates using a computer and voice synthesizer as a result of the degenerative Lou Gehrig's disease.

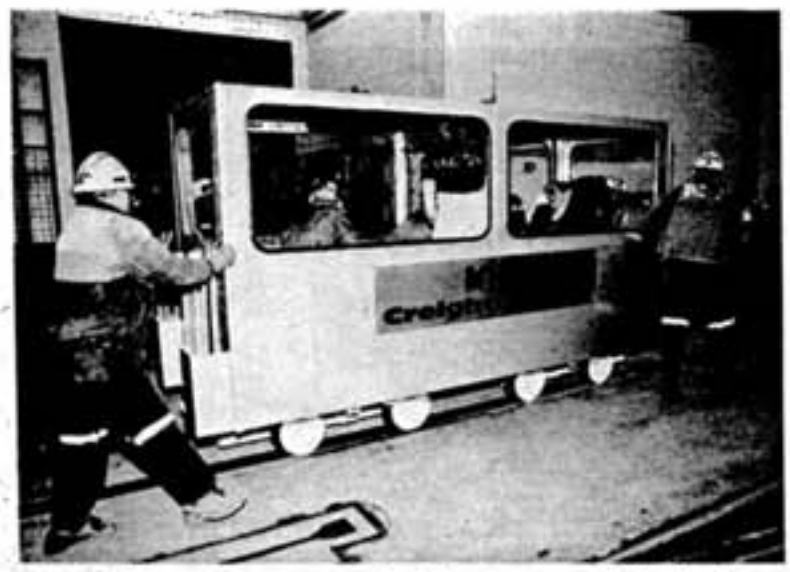
Fergus' response to Hawking's visit characterized the feelings of many people who met and heard the Cambridge University professor speak during his two-day visit in Sudbury.

"It was a spotlight for the boys. It was an historical moment for Creighton Mine and for the people of Sudbury," said **Mike Larocque**, a serviceman with 23 years at Inco.

He was one of the people to escort the professor in for the SNO opening. He also said he felt the importance of Prof. Hawking's visit.

"We've been setting up for this visit for about a week-and-half – mostly renovation and housekeeping."

Fergus added that the success of the event made the preparation work between SNO and Inco worthwhile.



A special Inco car was created to accommodate Prof. Hawking's trip down the shaft to Creighton Mine's 6800-foot level, where the Sudbury Neutrino Observatory is located.

"The honor of taking Prof. Hawking underground was the highlight of my 30-plus years in mining," said Creighton Complex Manager Fergus Kerr.

Creighton employees bring in Prof. Hawking's underground car to the 6800-foot level enroute to the observatory.

'Mysterious' neutrinos fascinate Hawking

"There are indications that neutrinos have a mass and we hope that Sudbury will confirm this," Prof. Stephen Hawking told some 250 invited guests at Creighton Mine's warm room.

Using his computer and voice synthesizer aboard his wheelchair, Prof. Stephen Hawking spoke briefly on the importance of the Sudbury Neutrino Observatory (SNO). Here is his entire speech to about 250 people gathered at Creighton Mine's warm room on April 29.

"Can you hear me? (audience reply "Yes."). I'm glad to be here for the opening of the Sudbury Neutrino Observatory.

Neutrinos are mysterious and elusive particles, yet they may make up 90 per cent of the density of the universe. It all depends on their mass, which is one of the things that S-N-O will measure.

If the mass is zero, neutrinos left over from the Big Bang will have zero mass and will contribute less than a tenth of a per cent to the density of the universe. That would be the boring possibility (he smiles, audience laughs).

But there are indications that neutrinos have a mass and we hope that Sudbury will confirm this.

In this case, neutrinos could be the dominant matter in the universe.

They would be what is called 'warm dark matter' that distinguish it from 'cold dark matter,' in which the particles don't move.

But let me add 'warm' is only relative. The neutrinos would be at only 2.7 degrees above the absolute zero temperature. They are even colder than Sudbury in winter (he smiles, audience laughs).

Let's hope the neutrinos cooperate by turning up and having a mass in the interesting range.

Thank you." (loud applause)

18,000 to 6,000 – 25 years of change

Bryan Grooms could be excused for thinking he was born with Inco in his blood.

The furnace operator at the Copper Cliff Smelter joined 93 other new inductees earlier this month at the 48th annual Quarter Century Club celebration for an evening of dinner, dancing and entertainment.

But Bryan's history with the company dates back further than 25 years.

He first signed on at Inco in 1964, but quit three years later to further his education. With his schooling behind him, the best job on the horizon was Inco again, and Bryan rejoined the company in 1974.

Growing up in Copper Cliff, it was hard to miss the ever-present influence of Inco, said Bryan. His family ties to the company pre-date his own employment history.

His father Ross Grooms was a craneman in the Smelter Casting Building and his grandfather Gerry Mackinnon was a shift foreman at the converters.

"My very first shift I worked for my grandfather — unfortunately for me," said Bryan with a grin. "He was just as surprised as I was. I may have been young and foolish back then but blowing a shift was out of the question."

A lot has changed since his early years at Inco, said Brian, particularly in the areas of working environment and productivity.

"I've seen a lot changes," he said. "The improvements to the working environment are just fantastic. The gas is gone — it's an astronomical change from the early days.

"Mechanization has also made the work easier and we're starting to see employees taking on more responsibility. In 1974, we had 200 or so employees per shift. Today, we have 11, with the same or better production. Everyone works together. There's more teamwork than there used to be."

Bryan also feels employees are treated better today, not only in terms of working conditions, but "little things like cleaner lunchrooms."

Roger Lachance of the Nickel Refinery Utilities, another new member of the Quarter Century Club, needs a map to follow his career at Inco. He started in 1965 and quit in 1972 to return to school and become a stationary engineer. He rejoined the company in 1980.

His work has taken him to the Smelter, Stobie Mine, Crean Hill, the Power Department, the Iron Ore Recovery Plant and even a one-year stint in Thompson, Manitoba.

The biggest changes he's seen in his time with the company have been in the areas of technology and people, said Roger.

"There were 18,000 people when I started and we're down to 6,000 today," he said.

"I've also seen a lot of computerization come in, especially at the Powerhouse. In the mid-1980s the boiler was operated by computer — it was the first time I had ever saw that."

The intrusion of technology hasn't posed a problem for veteran employees because they've always been allowed the time to learn and adapt to change, said Roger.

"There's computers all over the workplace now, for everything from chemicals to water treatment. As long as there's no big rush, you can learn anything."

Denis Herard, of Clarabelle Mill, celebrated his 25 years at Inco with his friend Liette Maisonneuve.

Dinner and talk at the tables was half the fun of the party. At this table of Nickel Refinery employees were, clockwise from left: Lise St. Louis; Germaine and husband Jean-Guy Paquette, of the Nickel Refinery's Powerhouse; Don Martin of the Nickel Rotary Converter area and his wife Denise; Gaytane and husband Roger Lachance of Utilities; and Rick St. Louis, maintenance mechanic. The Copper Cliff Nickel Refinery itself is 25 years old.

Ontario Division President Ron Aelick, who joined the Quarter Century Club this year himself, made a few jokes and stressed the importance of employee contributions. "The qualities that make a good person, make a good company. People – you people – have made our company successful. And it is people who will continue to make Inco successful even as we go through these difficult periods."

A Second City performer tries to engage Clive Lewis, refining facilitator at the Nickel Refinery, in the act during an interactive part of the show.

South Mine's Terry Turcotte, of Ventilation, and his wife April Turcotte, were among the many Quarter Century inductees to get their Polaroid photo taken during the celebration of Terry's 25 years with Inco.

Second City offered up several quirky, humorous sketches, like this one where valley-girl type university students unwittingly pick-up hitchhiking Nazis.

The dance after the dinner and entertainment proved to be very popular among Quarter Century members listening to the music of Flashback.

EVH
FOR YOUR HEALTH
From the Occupational Medicine Dept.

The shape you're in

by Pamela Tobin

Getting started. Keep going.

For all that has been written and broadcast on fitness in the last few years, these are two areas which have received relatively little attention.

Yet, for many people today these are the most pressing fitness issues. Most everyone knows that fitness makes sense. But for all those who want to get fit about eight in 10 either can't get themselves started or keep themselves going in a fitness routine.

Conventionally, a look at how to reach goals focuses on issues of motivation. How can you find and tap into willpower? Willpower is the drive that successful people seem to rely on to propel them to their goals

The trouble is that if you can't find that power or can't count on it to be there when you really need it, the idea that you can achieve what you set out to achieve seems like so much wishful thinking.

If for example you would like to get fit, you might well conclude that as worthwhile as fitness might be, it is really for the chosen few and you, unfortunately, are not one of them.

However, that is by no means accurate.

It is important to get this one single point clear right from the start. Fitness is a readily attainable goal for absolutely anyone.

This statement is based on certain facts – facts of fitness and facts of life. In the first place, the physical part of fitness is not difficult. It takes no special skills. It makes no unreasonable demands on your time or your energy. In fact, it is a perfectly natural process you can adapt to suit your tastes, interests and routine.

Second, getting fit involves acknowledging this simple fact of life: Anytime you set out to achieve a goal you are bound to find problems reaching it.

That you encounter problems is not a reflection on your potential for success. Rather, dealing with problems is an integral part of getting from here to there.

In other words, that problems present themselves is neither significant nor unusual. But how you respond to these problems is of pivotal importance to your fitness efforts.

The premise is that all fitness problems are solvable. The problems come in many shapes and sizes. No two people are affected in exactly the same way or to the same degree by all of them.

In each and every case, however, the strategy is simple: Use your head.

How you think about a problem will determine more than anything else how you act. If something stalls or stops your fitness efforts, the most unproductive line of thinking is to suspect that fitness is not for you or that you don't have what it takes.

Accept that you have a problem and ask yourself what it could be and why it exists and then look for a specific way out of it.

There is no question that you can achieve fitness once you put your mind to it. There is no doubt that it is worth achieving. Aside from all its many benefits, however, getting fit can make an invaluable point. It can prove that you can affect real positive change for yourself and that is a lesson you carry into many other areas in your life.

LET'S TALK SAFETY

with Ron Rafuse

Hazards don't take a holiday – neither should safety

It is again the time of year when our activities shift into high gear from the house to the outside world – some to cottages, others to recreational vehicles and some to the backyard kingdom.

Everyone's out to enjoy the beautiful short summer to its fullest.

Out comes the same equipment and tools that have been used every summer: barbecue, lawnmower, electric hedge trimmers, stepladders, bicycles and the list goes on.

We all read the statistics of people who are injured by not following the rules in the use of this equipment or do not take the time to read the manuals or train their children on it.

Everyone thinks "it won't happen to me." But the law of averages is very clear in that the more chances you take, by not following the rules, it can and will happen to you or your family.

Did you know that each year more than 60,000 injuries related to lawn mowing are treated by emergency rooms in hospitals. Children under the age of 15 years old have the most mower accidents of any age group.

Most of the injuries are caused by unsafe use of power lawnmowers rather than by mechanical malfunction.

When using electrical equipment such as lawnmowers, hedge trimmers or even power tools around pools or water remember it only takes 0.1 amp to cause a fibrillation of the heart. The average house outlet has 15 to 20 amps.

Only use electrical cords that have three prongs or are double insulated.

The third prong is a ground that could prevent you from being electrocuted.

Double-insulated equipment is designed to contain any short within the equipment itself without allowing it to contact the operator. Also try to use a ground fault circuit interrupter whenever possible.

Before the start of each season go over the equipment and maintain a routine maintenance program. Don't forget to read the owner's manuals to familiarize yourself with the seasonal gear.

As in the work environment, take all appropriate safety measures, such as wearing steel-toe shoes and ear plugs when you mow the lawn.

Check the equipment at home just as you do at work.

We can have all the training material for each task and on all equipment. We put people through safety training. But without people following up on these initiatives nothing is gained. The safety standards you apply at work should not be ignored when you go home.

Your own safety is up to you. Each of us must decide to accept responsibility for safety and be personally committed to using and following all the safeguards put in place to protect the people in the workplace.

Safety is habit forming, but it must be worked at on and off the job.

There is only one way to do anything – the safe way.

Ron Rafuse is Superintendent of Safety in the Ontario Division

Decoys a great retirement hobby

Tom Peters is carving a place for himself in retirement.

Tom, who retired from Inco's Agricultural Department in 1985, is one step away from being rated as a pro wildlife carver, after taking first prize overall at the Annual Ducks Unlimited Competition for Wildlife Carving, Painting and Photography recently.

Tom has competed in the show almost every year since it started 10 years ago and has won numerous ribbons, including one previous first place finish.

"You have to win three firsts before you lose your amateur status, so I'm two-thirds of the way there," he said.

Tom started carving wooden decoys in the early '50s. By 1970 he was doing table-top carvings just for show.

He doesn't sell any of his work. And he has no plans to start because he couldn't charge enough for the time he puts in and "if I take it out of the realm of being a hobby it loses all the fun."

Tom said he prefers to give his work away.

He occasionally gives one away to a charity like Ducks Unlimited as a fund raiser.

The closest he comes to making money is a receipt for tax purposes.

Carving can be done using specific plans, but Tom prefers something closer to nature.

He uses his own image of various birds in his mind, along with photos to start. But he admits to getting exact measurements from bird books so everything is in the proper perspective.

Once that's done a scale has to be picked. The goose he entered in the show was life-size while the owl was half-size.

"Then you start chiseling and gouging."

Tom said he doesn't like to work against time when he carves.

He spent about 160 hours carving the owl between Christmas and the show and worked on the goose off and on during the last five years or more.

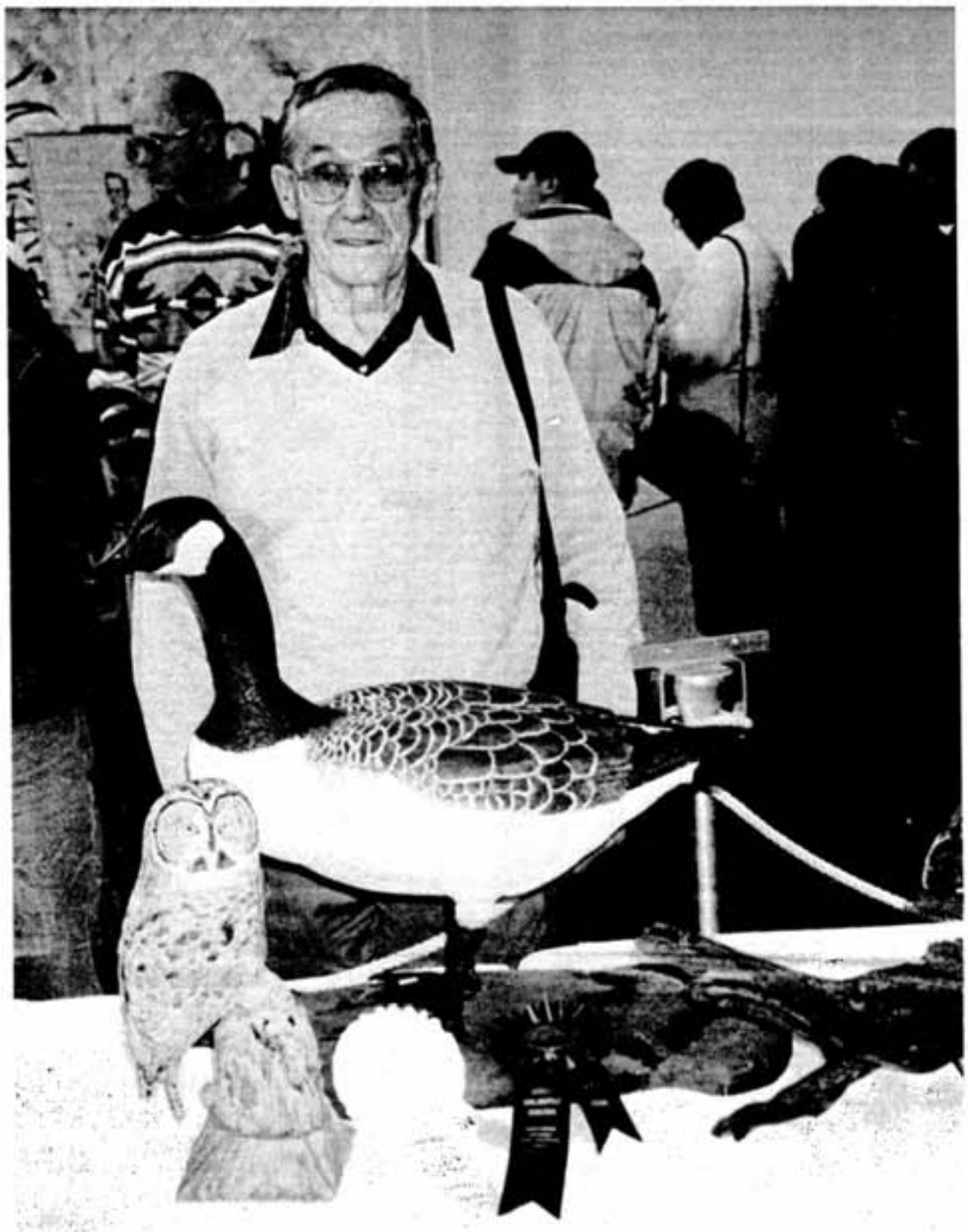
Tom said he sees the annual show as a learning experience.

"The judges are accomplished carvers themselves and they will give a critique if you want it," he said. "It gives you a benchmark to see if you're measuring up. That's the main reason I show really.

"You can go and learn too. I figure if I spend enough time looking at what other people do I can steal some of their ideas and they steal mine and we get an idea of what we could be doing better."

Tom said he's looking forward to moving up to the pro level after his next first place because he'll enjoy the competition and it'll make room for new carvers at the amateur level.

"It's encouraging."



Pensioner Tom Peters doesn't want to sell his work because he said it's more fun to carve as a hobby. The goose he entered in the show was life-size while the owl was half-size.

Inco helps college students

Cambrian College thanked Inco for its open scholarships and engineering bursaries recently during presentations to students. From left: Wendy Fraser; Sharon Sanders; Brian Clark; Inco's Dave Paganucci, manager of General Engineering; Corey Crane; Marc Gauvreau; and Darren Leach.

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