

the triangle

Volume 33

Number 5

Published for employees by the Ontario Division of The International Nickel Company of Canada, Limited.

Editor, Peter Marshall

Photography

By the Public Affairs Department -Derek Wing, Photographic Editor

Port Colborne -Les Lewis

Prints of most photographs appearing in the Inco Triangle may be ordered direct from: Rene Dionne, 170 Boland Ave., Sudbury. Or call: 674-0474. Cost: \$2 each.

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On the cover . . .

Signalling the arrival of Summer is Ontario's provincial flower, the Trillium.

Inco has a picnic



Plans for improving Lively's "swimming hole" were announced at a picnic. The pool will be landscaped and water quality improved for the 1974 season.

A picnic on the site was the setting for the announcement of plans designed to make the "old swimming hole" in Lively the finest outdoor pool in Ontario. The plans were presented by Inco to representatives from the community and the news media. Located between Lively and Creighton, the swimming area is fed by Meatbird Lake.

"We choose to interfere as little as possible with people's activities at the pool," said Don Young of Inco's agriculture department. "That means we have to start in the fall. We'll have all the major earthwork done before winter, and in the spring we'll stabilize the surface with planting. It'll be ready whenever swimming season starts next year."

Inco plans to drain the pond, recontour the bottom, fill in an adjacent marsh to provide a parking area, and refill the pond with drinking-guality water from its new Vermillion River water treatment plant. Pond water will come from the same system that supplies drinking water to Creighton, Lively and Copper Cliff.

The development plan also calls for widening the strip of land between the pool and Highway 536, to provide a buffer zone for traffic noise and as a safety measure. A nature trail will pass through this heavily planted area from the beach to the west bank, which will be cleaned up and planted with seedlings. The shoreline will be reinforced with riverstones.

Along the north bank, a causeway which divides Meatbird Lake and the pool will be widened and heavily planted.

The beach area will be graded and covered with sand. It will be widened to about 25 feet, and near the causeway it will be 75 feet wide in an area to be designated for children's play.

The existing access road will be extended to reach the new parking area. which will hold 25 cars. Paths will lead from the carpark to the beach. The development will eliminate two present roadways and leave no through roads.

Roy Aitken, the Ontario Division's vicepresident of engineering, presented Walden Mayor Tom Davies with an artist's impression of the new pool, adding: "We at Inco are very, very pleased to be able to help and bring things along to provide an important and much-needed facility."



Walden Mayor Tom Davies shows the artist's impression of how the pool will look next year to Pete Jarus of Walden, and Inco's Tom Peters and Charile Ferguson.



"Firstest with the mostest"

Held by powerful clamps, the long copper cylinder glides downward, followed by the whirring automatic saw which finally swings out and cuts it off at precisely the 48-inch mark. The cylinder, now a high quality copper billet, pivots and falls on the conveyor which carries it away for inspection and testing. Another copper billet is cut seconds later.

They're excited at the Copper Cliff copper relinery about their latest installation: a novel method of casting phosphorous deoxidized billets. The first saleable billets from the relinery's new highly-automated continuous casting line were produced last December.

The copper refinery has always been "the firstest with the mostest". Dedicated to producing high quality products, the refinery pioneered the introduction of electric arc furnaces to the copper industry, and last year commissioned one of the world's largest vertical shaft furnaces to produce horizontal wire bars: the million-tonner No. 3.

The new continuous casting process, combined with its neighbour, the semicontinuous casting system for vertical cast cakes which comes on-line later this year, has taken the new technology one step further. Soon all refined copper will be produced in efficient shaft furnaces.

The retired conventional static casting system used an electric arc furnace and moulds suspended on a casting wheel. Two mould "pockets" were filled each time before the wheel was turned. While this system was satisfactory, it was slow and out-dated and expensive to operate. Metal losses were also high because each billet had to be cropped top and bottom to the required size.

The continuous casting system includes a small vertical furnace, a holding furnace, ladle and mould, Stored in bunks, these billets are ready for shipment, John Engstrom is hand-stamping the "ORC" trade mark.

Furnaceman Ken Murphy poles the launder to keep it open so the molten metal can run through.



automatic saw, and a handling and inspection system, all with a design capacity of five tons per hour.

The new system, based on an Asarco-process, produces a denser billet with fewer surface imperfections, and eliminates the metal scrap from butt end cuttings. As a consequence, there is a higher recovery rate of acceptable billets and fewer are rejected and reverted back through the furnace.

Copper cathodes from the "daily pull" from the tankhouse are delivered to the new casting area in the south end of the refinery on the plant's narrow gauge railway. Picked up by a 10-ton overhead hoist, the cathodes are lifted to an upper floor where a fork lift truck takes over and dumps the charge into the top of the vertical furnace.

The continuous casting furnace is similar to the huge No. 3 vertical furnace, which was described in The Triangle. Vol. 32, No. 6. Fired by natural gas, vertical furnaces have three to four times the melting rate of electric arc furnaces. The column of copper in the vertical shaft moves downward as it melts in the burner zone, making room for additional material. As a consequence, there is



The new continuous casting line at the copper refinery. Using a very efficient vertical furnace, the line produces high quality copper billets.

never a large amount of molten metal in the furnace at any one time. This facilitates quick reactions to the operator's instructions. The furnace quickly reaches its operating temperature of about 2,030°F. after the burners are ignited and it can be shut down in less than two minutes.



Larry Gilbert, the assistant furnace operator, keeps a close watch on the holding furnace as a pour begins.



Inside his control booth. Larry turns the holding furnace to increase the amount of copper being poured.

The molten copper flows from the vertical furnace to an enclosed gas-fired holding furnace through a refractory-lined launder. The holding furnace is a barrel-shaped vessel which helps control the flow, temperatures and homogenizes chemical composition of the metal. The furnace, mounted on trunions, has an off-centre pouring spout and its rotation determines the rate of molten copper flowing through an intermediate ladle into the mould. A reducing atmosphere is maintained in the holding furnace to remove the last traces of oxygen remaining in the copper.

The key to the continuous pouring operation is the ladle's spout which contains a unique siphon tube. When opened, the siphon tube draws the molten copper out of the ladle and into the mould pocket by air pressure. Jets of water circulate around the mould to cool the copper which solidifies in seconds from its casting temperature of 2,080°F.

A series of "pinch rolls" pull the cylinder of copper to a flying saw. Although the system is designed to cut billets up to 72 inches long, all are cut 48 inches long, due to customer requirements. Diameters vary, however, and can be 3%- or 4-inches.





Gino Cavallin, an inspector, and foreman Ken Cox operate the inspection line. Ken is testing each billet with an eddy current tester.

Morris McQueen, the saw attendant, adjusts the pinch rollers. The rollers draw the copper billets out when a casting is in progress.

A clamp, synchronized with the pouring action and the saw, grips the billets until they pivot to drop on a conveyor which transfers them from the saw pit to the inspection and handling area. There each casting is stamped with Inco's "ORC" trademark and production symbols. A visual inspection is made for physical blemishes, which could hinder customer fabrication operations, and an eddy current tester determines each billet's conductivity in relation to its phosphorous content. Billets with a 3%-inch diameter are also "cupped". A "cup" is a shallow hole drilled at centre to accommodate the piercing rolls at customer plants.



Foreman Dan Brickett inspects the automatic saw.

Good billets are stored in bunks, adjacent to the test area, ready for strapping and shipping. Rejected billets are returned to the furnace. Sample billets are selected regularly to be tested by the refinery's lab to ensure the line is producing billets of acceptably high standards.

Fifteen men make up the team that produces billets continuously round the clock. Used to manufacture water and condenser tubing of all kinds, the billets find their way into furnaces, air conditioners, oil, propane and natural gas fuel lines, plumbing, and the heating elements in home appliances.



Harry Pentney, project supervisor, and Arnold Kalllo, material control clerk, look over an electric arc furnace which is being disassembled

for later sale. The old furnace has been superseded by the more efficient natural-gas fired vertical shaft furnace.

Pssst... want to buy a used furnace?

Employees of the central surplus disposal depot might cringe at any reference to TV's "Sanford and Son", but the similarity is close. Located on the Frood-Stobie complex, the team operates a giant second-hand store: their mission is to dispose of the Ontario Division's surplus or obsolete equipment.

"Actually, there's no such thing as obsolete equipment. It's just material out of place," Harry Pentney, project supervisor, purchasing and warehousing, says. "Somewhere in the world there's a need for it. The trick is to find that need and to fill it."

Finding a home for some of the equipment is a challenging task, because much of it is unique to the mining industry, such as the huge shovels from the Murray Open Pit, slushers, and electric locomotives from underground. The list of material for sale reads like a hardware store catalog: pumps, transformers, conveyor belts, rails, pipe, paint, heaters, electrical motors, cable and electrical trays, and over 1,000 reels of surplus electrical cable. How so much material came to be surplus is explained by Jim Metcalfe, central salvage coordinator for the division: "Inco supplies much of the construction material on some contracts and sometimes we don't use as much as is ordered. Materials may be substituted, due to changes in operating or engineering specifications. Underground, the advent of trackless LHD equipment made slushers and locos obsolete in some mines. Most of our surplus equipment is useable but obsolete for Inco's purposes due to technological advances."

A good example of the enormity of the task caused by technological change is the Copper Cliff Concentrator. When Clarabelle mill came on-stream in late 1971, the entire crushing and grinding aisles in the older plant became obsolete. Twenty of the 34 grinding mills were scrapped but the rest of the plant is for sale. The crushers have all been reserved for use as spares for the other concentrators or underground crushing plants. Another example of technological change is found in the copper refinery where more efficient vertical furnaces and casting processes have rendered the older electric arc furnaces obsolete

One of the biggest problems facing Harry and Jim was the scrap lying around in plant yards. Although there has always been an effort to keep the yards clean, scrap such as worn-out pipe, floor plates, and cuttings from the various machine shops accumulated until there was an estimated 100,000 tons clogging the yards. A scrap contractor has been working for several months collecting and sorting the scrap, some of which is reverted through the smelter fumaces. The rest is sold to steel plants.

Another problem, that of locating and assessing the scrap or surplus material at each plant, was solved by the appointment of salvage coordinators responsible to each local manager. These men locate and list material no longer of use at their plant and forward the information to Jim.

Once they have assessed an item as surplus and it's cataloged, Harry's group hustles to dispose of it. Equipment is first offered within the Division, then an attempt is made to obtain a credit from the supplier or manufacturer, thirdly the list is circulated to interested parties outside the company and, finally, if the item is still unsold, it's scrapped.

Business has been good since the disposal depot's inception. Often an item that is surplus at one plant will be in demand at another. The depot records all items declared surplus and a catalog is issued periodically and distributed to all plants. If another plant can find a use for a surplus item, Harry pointed out, that is a direct saving to the company because the cost of buying a new item has been eliminated, the cost of warehousing the surplus item is eliminated and scrapping it or selling it at surplus prices has been avoided also.

Customers for items listed in the catalog have included the Port Colborne nickel refinery, the Thompson complex, Falconbridge, McIntyre-Porcupine Mines, and Ontario Hydro.

Several organizations in the community have also benefited from donations. The Stinson Community Hall obtained building steel, the mining museum at Bell Park received scrap timber to rest the rails on which displayed equipment will stand, the Big Nickel got one of the old slag cars, and the Boys' Home a television set from the old staff village. Employees too, have taken advantage of the depot and Harry's books show sales of cable, drums, chain, wire rope, and even a wheelbarrow to Incoites.

Not all items are transferred physically to the depot, which has storage facilities at both Stobie and Little Stobie mines. The larger pieces, such as the shovels, slag cars, older first generation LHDs, slushers, etc., are tagged as surplus and left at their original plant.

"We haven't done badly," Harry said reflecting on his first seven months of business, when the depot sold about \$2 million worth of surplus equipment. "We're actually running a company within a company and we've only scratched the surface."



Speed reducers to the left of them, speed reducers to the right of them: Jim Metcalfe and Norm Ripley, the division's central salvage coordinators, are surrounded by equipment used to control conveyor belts no longer in use.

Old cathode boxes never die ... they just fade away





Boxmen Victor Chartrand and John Byng pound spline into the grooves of a reconditioned box to hold the canvas cloth.

Henri Lecourse cleans four or five loads of cloth a day in his washing machine. After washing, the cloth is patched and reused.

The cathode boxes take a beating from the hard electrolyte solution. Rudy Koch, a plating tankman, was inspecting a tank when he found this box in dilapidated condition.



All Ontario Division people play a part in moving nickel from mine to market, but the reputation of the final product rests on the skill of employees on the tankhouse floor of the Port Colborne nickel refinery. There, impure nickel anodes are converted almost magically into pure nickel.

The secret of this amazing process is an electric current which is carried from the anodes to thin starting sheets of pure nickel by a nickel sulphate chloride solution, called electrolyte. The current slowly dissolves the anode, freeing the nickel, cobalt, iron and copper contained in it. The nickel is attracted to the starting sheets, while the cobalt, iron and copper are removed in the impure electrolyte and are recovered later.

It takes about a week for the starting sheets to grow to ½-inch thickness and be harvested as cathodes of nickel or S Nickel Rounds, described in The Triangle, Vol. 32, No. 8/9. Each anode hosts 2½ crops of cathodes, before its skeleton is removed and charged back to the refinery's reverb furnaces.

The key to the operation is maintaining an even flow of pure electrolyte. To achieve this, the starting sheets are enclosed in special canvas-sided boxes. The electrolyte is added through a small hose at the top of the box and, because the boxes hold a higher head or level of electrolyte than the anode compartment, a constant outward flow of electrolyte circulates through the canvas.

Maintaining these boxes is the task of a team of men at one end of the tankhouse: the box gang.

When the tankmen check the tanks for short circuits, they also inspect the condition of the cathode boxes, because a leaky box means poor cathodes. If a box or its canvas has begun to deteriorate, it is pulled and replaced.

"Waste not, want not"

Most of the boxes aren't scrapped but become the temporary responsibility of the box gang who quickly recondition them as good as new in a matter of hours. After the boxes are removed from the tanks, each is disassembled and all the pieces are inspected before salvage begins.

Each box is washed in an acid bath, followed by a hot-water rinse to remove any trace of anolyte or impure electrolyte. Broken sections of the boxes are repaired or replaced on-the-spot. Most of the spline, which is pounded into grooves in the box frame to hold the canvas, is reused again and again. None of the canvas is thrown away either, unless it too is worn out and full of holes. Otherwise, the cloth is collected in batches and laundered in a large washing machine on the box floor. About 200 cloth panels are washed each load and are dried by hot air on racks next to the machine. After washing, any holes in the panels are patched on a sewing machine and the repaired material goes back into circulation.



Almost hidden by stacks of new box frames, carpenter John Arnold glues plastic corners.

They rebuilt a lot of boxes in the tankhouse. In addition, the refinery's carpenter shop made almost 26,000 brand-new boxes to replace those which failed in the tanks. Both crews used a total of 91 miles of new cotton and Dynel cloth, the canvas-like material used for the sides of the boxes, as well as 56 miles of new spline.

Many hands helped produce the millions of pounds of nickel Inco sold last year, much of which was electrolytically refined in Port Colborne. Quietly and efficiently doing their jobs, the box gang are but a few of the unsung employees in the story of nickel. Without them, and their essential job which ensures the formation of good cathodes, Inco's long tradition of high quality nickel would be impossible.

Sewing machine operator Denis Trepanier finishes a patch on one of the sheets of duck.





Horses, man's best friend until someone invented a machine which went faster, are still a way of life for Cliff Boyce. Born on a farm near Perth in the Ottawa Valley, Cliff has been around horses since he was a child. His first job was as a handler and he travelled around Ontario and Quebec on the show circuit for one season.

"I can't leave them alone," he said about his passion for horses which has developed into a full-time money-making hobby. "It's like a fever, I've got to be near them. My wife asks me sometimes why I don't move into the barn."



Jo-Anne pays a visit to the family's latest addition: a two-day-old Colt. Sired by a world champion stallion, the colt will probably be named "Vandy's April Girl".

A mine foreman at Coleman mine, Cliff started mining at age 17 for Falconbridge. "Mining's a challenging job. You can settle into it and get a lot of satisfaction from seeing things happen. You get it in your blood and when you work somewhere else, you feel out of place."

Cliff started with Inco as a driller at Garson but was laid off in the 1962 cutback. He returned to Inco in 1965 and has been a mine foreman since 1966, first at Levack and then at Coleman when it opened last year. Responsible for a safe and efficient mining operation on his beat, Cliff directs 18 men on the 1880 level in room-and-pillar mining. He has two giant ST8 load-haul dump machines, as well as an ST4 and a smaller ST2 on his level.

Cliff worked on several major underground projects away from the nickel district, including a tunnel project for a railroad in Labrador, and driving a 4½mile storm sewer under the City of Ottawa. He always returned to the Sudbury Basin, however, because "I've lived so many years up here I felt lost. There's always something to bring you back."

The "something" in his case was land and a dream Cliff had of raising his own horses. Vermillion Farms is now a reality and he has two spreads a half mile apart on the Vermillion Lake Road: a 320 acre ranch and an 88 acre homestead. Inside his barn are 24 horses, half of them valuable registered guarter horses.

Lots of tender loving care, provided by Cliff and his family, pays off at show time. Last year, they won 123 ribbons and trophies for "placing" at shows in Toronto, Massey, Warren, Manitoulin Island, and the Sudbury district.



Cliff Boyce and sons Cliff Jr. and Gordie prepare a penicillin shot for a new horse which caught a cold after Cliff bought him.



Cliff Jr. was the first Sudbury Basin rider to ever win an event at "Quarterama" in Toronto. Cliff placed in three events and is holding the plaque he won for coming first in the barrel races.

This year, the younger Cliff became the first local rider to win events at "Quarterama", one of the biggest horse shows in North America. Held at the CNE grounds in Toronto, the show attracts over 1,000 horses every March. Cliff Jr., came first in the youth activity barrel racing and fifth in both the pole bending and the stake races. He'll be fêted May 12 at a Cliff Boyce Awards Night at the Sudbury Inco Club, sponsored by the Nickel District Light Horse Association.

Hard work preparing the horses for shows also results in Cliff's horses being much sought after by buyers and breeders. He's sold horses for six years and sold seven of them in one week alone in April. Cliff buys his horses in the United States and other provinces, as well as breeding his own. His stallion, "Vandy's Blazer", carries the name of a world champion runner and recently sired a new colt for Cliff.

With so much traffic through his stables, Cliff has to be his own vet and has become knowledgable about animal medicine and breeding methods. Ovid Methe of the Copper Cliff blacksmith shops has been his blacksmith for eight years. "I wouldn't let anyone else touch my horses," Cliff says. Another Incoite, Coleman driller Bill Meekers, cuts and bales hay for Cliff. Bill supplied 2,000 bales from the 45 acres cleared at Cliff's homestead spread.

Later this spring, Cliff is going to clear another section. The trees will be cut in a portable sawmill and used to build a new barn and exercise arena for his horses.

Married for 17 years, Cliff met his wife Velma in Garson. They have three sons — Cliff Jr. 16, Glen 15, Gordon 14 and one daughter, Jo-Anne 11. Each has chores to do after school. Cliff is in charge of feeding and exercising the



Dennis Maloney, one of Cliff's LHD operators, gets instructions where to muck from the mine foreman on 1880 level at Coleman mine.



Velma Boyce refers to her pricing guide inside Chelmsford's Canadian Tire store stock room.

horses, Glen handles the watering, and Gordie cleans out the stalls and beds down the horses. Jo-Anne does the housework at home since her mother works during the day. Velma works at the Chelmsford Canadian Tire store where she is in charge of pricing.

Besides riding in competition, 16-yearold Cliff is a bronc-buster. He entered six rodeos last year and placed in all. He is especially good in the steer events, 1973 is a "make or break" year for him. He's entering about 20 rodeos and if he wins enough, he may tour the professional circuit in 1974. If he does, he'll be the youngest rodeo cowboy in North America.

Cliff Sr.'s latest enthusiasm is racing. Quarter horse racing has the reputation of being the richest racing in the world, with purses topping \$1 million at some tracks. Popular for over 50 years in the United States, last year was the first season in Canada.

"My first race was a beginner's race." Cliff said. "I was so nervous and excited about my horse being in it, that I was shaking all over. She ran the quarter mile in 21 seconds and won the race." Cliff entered a total of four races last year at Pickering Downs, the only recognized quarter horse track in eastern Ontario, and placed in three.

Quarter horses, the cowpuncher's favorite mount, are a versatile breed.

HORSE SENSE



The horses are bred for endurance and stamina, and for their breaking speed over the quarter mile, as well as for their ability to herd cattle. There are over 200 in northeastern Ontario.

President of the Nickel District Light Horse Association, featured in The Triangle, Vol. 32, No. 4, Cliff is one of the organizers of the newly-formed Northern Ontario Quarter Horse Association. The association hopes to build a recognized track near Massey as well as promote more horse shows.

"We want to improve the breed and get all the owners together so we can get a registered quarter horse show up here." Cliff explained. At present, all of the local shows are unrecognized and don't count for points awarded to show winners by the American Quarter Horse Association. The more points a horse amasses, the more valuable it becomes for breeding purposes.

The automobile may have killed the horse and buggy as a means of transportation, but it can never equal the enjoyment and pride an owner achieves when he adopts horse raising as a hobby. Cliff Boyce would probably say "Amen" to that.



Bob Keffer — Copper Cliff nickel refinery



Safety is fashionable

No job or assignment is so important that we can't take the time to perform work safely. All Ontario Division



Peter Knoblauch — copper refinery

employees know this and the most visible "tools" at company plants in Sudbury, Port Colborne and Shebandowan are safety clothes.

Safety clothes will never draw a whistle from passing admirers, but employees who appreciate why the clothes are recommended for their protection, and who regularly wear them, could make any Inco "best dressed" list.



Rocky Gagnon — smelter reverb furnaces

Dave Stalker - North mine

the exercise route

Summertime ... and the living is easy. Too easy for most Canadians who exercise by walking from the T.V. set to the refrigerator during commercials, and who've become a nation of spectators rather than participants.

By the time you've reached 40, your mortality rate has increased one per cent for every pound overweight, and most Canadians are at least 10 pounds overweight.

If that scares you, even if you're not 40 yet, there's a simple remedy: exercise. You can't add a foot to your height, but doctors believe you can add years to your lifespan, be freer from disease, and have more zest for living, by keeping fit.

Contrary to how you may feel at the end of the day, work isn't exercise. This is because you're rarely working hard or fast enough to challenge your heart and lungs. You may have developed good muscles, but that's only one system in the body and like a coat of paint in a car. The real key to fitness is oxygen.

Just as a car converts a mixture of gasoline and oxygen into energy to move. so the body produces energy by burning food. The body's burning agent is oxygen. Unfortunately, while we can store food in our stomach, we can't store oxygen. This is what separates the fit from the unfit, according to Dr. Kenneth Cooper, author of "Aerobics". "Because, in some bodies, the means for delivering the oxygen is weak, and limited in its resources, so the energy demands surpass the body's capacity to produce it," he says. Excess food accumulates as fat, around our heart as well as waist, which means the heart works harder to pump oxygen-carrying blood around our systems. If the heart and lungs can be strengthened at the same time as the fat is lost or converted to muscle, the battle is won.

The methods of keeping fit are a controversial subject, even among the experts, who seem able only to agree to disagree. Surprisingly, the best exercise isn't necessarily pushing yourself away



Instructor Shirley Fox leads a group of women through a vigorous exercise session at the "Y".

Chester McGilvary, a copper refinery pensioner, uses a 35-pound weight to expand his chest through "upright rowing" at Connie Lou's.



from the dinner table. Diet is important, of course, but if you're fit you can eat almost anything you want. Keeping fit isn't difficult and doesn't have to turn your life upside down. It can take as little as eight minutes a day of Dr. Cooper's "Aerobics" to half an hour three times a week in one of Sudbury's gyms.

"Aerobics" are exercises which force the body to consume more oxygen and include running, swimming, cycling, walking, running-on-the-spot, and games



Alli Jokinen and Shirley Fox jog past the YMCA. Running seems to be the favored exercise amongst instructors.

such as handball, squash, basketball and golf.

All the experts agree that the heart and lungs have to be exercised if there's to be any improvement in fitness. To Connie Laframboise, however, the best way to achieve it is through weight lifting and pedalling the exercycle. "With weights, you're working the skeletal muscles and every major muscle in the body. Bicycles of any kind are a terrific exercise too."

At Connie's gym, new members are first tested to determine their heart performance and their physical capabilities before a program is set. He claims that the average man or woman will experience at least a 30 per cent improvement in personal fitness in four months' time.

Connie, who was 18 when he started weight training "for something to do", has been Mr. Canada three times, Mr. World twice, and a runner-up in the Mr. Universe competition. While he believes body building is a young man's game, he emphasizes there's no age limit for physical fitness.

If you've ever complained of stiff muscles the morning after some hard exertion, such as moving heavy furniture, Connie has sympathy and an explanation for you. "It's the training effect," he says. "Exercise produces a strain upon the body and tears down tissue. This is because the body is being fuelled by fats so there's a certain amount of muscle being used up doing the work. The benefits don't begin to take place until after you've finished when the rebuilding process takes over. Each time you exercise, however, your body builds up an immunity to the destruction of tissue."

As far as Bob Plant, the Y's physical director, is concerned, "People in Sudbury are fairly fit. The whole area seems fitness-conscious. I see lots of people out walking, jogging and cycling year 'round." Bob has no explanation for this good news but does have some basis for his observations because he's worked as a fitness instructor in Calgary. Saskatoon and Lethbridge before coming to Sudbury.

Bob recommends jogging, which he combines with calisthenics and games, as the best route to fitness. "Jogging can be done by anyone anywhere and it's a relaxing way to keep fit. I use calisthenics because if you can lift your own body weight, that's all you need to do." His classes concentrate on pull-ups, push-ups and sit-ups, all of which stress flexibility and either lifting or balancing the body's weight. "We found women prefer a tougher workout than we thought. They don't do as many repetitions in calisthenics because they're working on flexibility and power, not muscle building."

Any kind of activity, as long as it gets the heart pumping, is good exercise.



Armand Roy uses a dumbbell to do a straight arm pull to strengthen and enlarge his trapezoid muscles in his upper arms.

according to Bob. He lists swimming, cycling, and even dancing as appropriate activities. "People who live in high rise apartments should climb the stairs instead of using the elevators. They'd find it rough at first but they'd benefit from it."

"Exercise is the best thing in the world," agrees John Teale of the Frood-Shamrock Club. John advocates what he calls "natural exercises", or calesthenics, as the best way to keep fit or lose weight "because they don't hurt the body system". His list of natural exercises includes push-ups and sit-ups, throwing medicine balls, pumping the exercycle, and running on the tread machine. Hardly surprising with his background as a former Canadian light and welter weight boxing champion, John is a great believer in the merits of skipping rope.



An enthusiastic cyclist, even snowstorms don't deter David DeLange.

He says it relaxes the whole body at the same time as it forms muscle and improves coordination. Another part of John's basic training is steam baths. "The sauna," he says, "is a perfect finish to exercise. It cleanses the body and lets the natural sweat come out."

Keeping fit. A great idea isn't it? Many people go to a lot of trouble to learn their job but overlook the fact that their individual bodies need care and attention too. The body remains strong only if it's used. Physical fitness is the cheapest insurance you can provide for yourself. The fringe benefits are immense: sounder sleep; more mental alertness; more energy to enjoy life after work and, maybe, a longer life.

- Try this simple prescription:
- Get a thorough checkup from your doctor.
- Make exercise a habit.
- Start gradually. Build up your endurance and fitness level without overexertion.
- Balance exercise with a sensible diet.





John Teale times Henry Dunn on the treadmill. Henry broke both legs and his hip in an accident and credits workouts in the gym for his complete recovery.



Levack West is the first inco mine to be developed without a headframe. The mine will be ready for production in 1974.

"Topless" mine at Levack



A teletram heads up the ramp underground at Levack West. Ore from the new mine will be trammed underground to Levack mine and hoisted up the No. 2 shaft headframe.

The first Inco mine without a familiar headframe, Levack West is currently under development in the Sudbury Basin.

The new mine features a ramp over 8,000 feet long, driven along a 20 per cent incline, to the 1,600 foot level. The ramp will provide access for men, vehicles and supplies.

Instead of a headframe, the surface buildings include a warehouse and shops, dryroom, offices and a sand plant.

Ore produced will be trammed about 1 ½ miles along the 1,600 foot level to the Levack mine. There it will be hoisted to surface and treated in the nearby mill.

Announced in November 1970, the new mine is scheduled to come into production in 1974, and will have a production rate of 4,000 tons per day using mechanized cut-and-fill techniques.

Over 22 per cent of the Ontario Division's ore production is achieved by cut-and-fill methods which involve the removal of ore in horizontal "slices", as mining proceeds upwards. After drilling, blasting and mucking, using modern trackless mechanized equipment, sandfill is poured to fill the excavated area. The sandfill supports the walls of the stope and acts as a floor for the men and machines to mine the ore above.

Why not plan for retirement

For most of us, retirement probably means independence and freedom. But it can be a "bust or bliss", depending on how well you planned in advance. Happy retirement days require thoughtful planning. Here's some ideas to consider.



Retirement: The day all dreams come true? The start of a life of leisure? It could be you're in for a disappointment if you haven't planned ahead.

Don't think of retirement as the time to play games you aren't used to just to fill in time to escape boredom. During his working career, a man spends his day thinking about his job and doing it. This becomes a habit of mind and body and unproductive leisure won't take its place.

Retiring is like your first day at school, your first job, your wedding day, or your first promotion. It's a milestone in your career. But the moment to ask "What now?" is before the day of retirement comes; not the day after your last shift.

Everyone has qualities and talents which can be exploited after retirement. But hobbies that are adopted at the last moment are unlikely to be fulfilling. Set your objectives early.

Retirement is a time for dynamic living. It's an opportunity to change daydreams into reality. It's not loafing or withdrawing, but a time to participate in life in a new way.

For some, dreams are of long and leisurely travel to far-off places. Others fondly hope that their retirement years will bring the opportunity to really dig into a second career or a favorite hobby, such as wood working, photography, coin and stamp collecting, or mechanics. For many, the dream is to relocate to places and scenes from their childhood — a small farm, a sunny beach, or the town they were born in.

Keep in mind, however, that such daydreams can only come true if financial planning starts early too. The hard facts of economic life are that you may not be able to afford retirement unless you plan far enough ahead.

If you're 40 years old now, plan to retire between 60 and 65, and think you can live comfortably for \$500 a month, then expand your thinking for by that time you'll probably need more. In 1973, \$500 a month will cover basic expenses — housing, food, clothing and even such modest luxuries as movies, paperbacks and magazines, and small gifts. But if you want a better than average retirement, even an adventuresome one, then you need to plan carefully. And early.

Most retirement incomes are from three sources: pensions, savings, and investments. Fixed incomes, such as pensions and savings, might be adequate alone if the economy were a constant factor from now through to your retirement. But that's not the case. There's usually inflation. For example, a \$500 a month retirement today would have the buying power of about \$200 in 19 years if there is an annual average inflation rate of six per cent.

Too many consider their pension as an income. It's dangerous to think of it that way. Pensions aren't designed to provide a life of luxury but rather to provide a sense of security.

To provide the means for an adventuresome retirement, and to counteract inflation, you'll need a "growth income", such as common stock, an investment trust, or real estate. There is an element of risk involved which can be controlled by the kinds of investments you choose. Real estate, for example, might be safer than stocks. Another method is to purchase a personal pension plan, putting money aside now for income later. The tax department permits you to deduct this money from your income today, when it is subject to higher taxation rates, for taxation when you withdraw it as income upon retirement.

There are over 12 million Canadians enjoying retirement today. Experts suggest that to enjoy retirement you should have in 1973 dollars: a retirement income of at least \$6,000; \$6,000 to \$8,000 in savings and other assets; and outright ownership of your home. It also helps if you're married and in good health. All this takes planning and preparation, and in this respect, retirement is no different from any other stage of your life.



try this quiz

At 65, you can't suddenly decide to pick up a hobby and expect it to be absorbing and exciting. The time to try out ideas is in your earlier years. Then, if you're on the wrong track, there's still time to change your direction.

An expert on retirement prepared the following test to help your judge whether you are on the right track to retirement:

 I am currently assisting a group of younger people interested in a common project.

Yes 🗆 No 🗆

 I am interested in some activities that could be useful in my mature years.

Yes 🗆 No 🗆

 My spouse and I plan things that we can do together.

Yes 🗆 No 🗆

 I have participated in an educational program during the last three years.

Yes 🗆 No 🗆

I keep up with current events.
 Yes □ No □

I spend some hours each week with an outside group: church, community or fraternal.

Yes 🗆 No 🗆

- 7. I have a hobby.
- Yes
 No
 8. Lenjoy joining friends for
 - dinner, cards or just good conversation.

Yes 🗆 No 🗆

- I have served on a committee in the past two years.
- Yes I No I 10. I like to plan vacations to
- places I've never been. Yes
 No

SCORE 1 POINT FOR EVERY "YES" ANSWER:

8 to 10 points — Retirement should be fun for you.

5 to 7 points — It would be wise to do a little planning now to avoid the letdown later.

1 to 4 points — Get with it. It's later than you think!



When is the best time to start planning for retirement? Well, if you're not doing it now, find your age on this timeable and act accordingly.

- IN YOUR 30's Strive to increase your income and manage it wisely. Although money is not necessarily the most important factor, careful financial planning can provide a feeling of well-being and assurance. Start good health habits if you have not been taking care of yourself. A proper balance between exercise and rest is important. Try some new hobbies, too.
- IN YOUR 40's These are your achievement years when you're busy at your job and educating your family. Your money should be working to provide for them.

Maintain those friendships which can be invaluable in later years when the pressure of work lessens.

OUNCER 50 s — Review your situations carefully. When exactly will you retire? Identify your assets. Have you developed hobbies to keep your interest and perhaps add to your income? Are you maintaining your health and getting a yearly checkup? If your children now are on their own, perhaps you can increase your regular savings.

- IN YOUR 60's Make sure your affairs are in order: insurance, wills, property. Give a lot of thought to whether you will continue to live where you are or pull up stakes for a new location. You can use your vacations to evaluate possible sites for a future home.
- AT 65 Welcome retirement as a new career. Get a complete medical checkup at least once a year. Replace some of your growth stocks with dividend-paying stocks, high-interest bonds and other stable, incomeproducing investments. Medical statistics say a man of 65 can expect about 14 more years of normal, active life.

Faces & Places

Clear thinking rewarded

Would you recognize a blasting cap if you found one? Randy, James and Bobby Tunney did, thanks to a demonstration given Copper Cliff Scouts and Cubs by Lloyd Watford, then a Copper Cliff Police sergeant.

The three boys were exploring near the family's West Arm camp when they found a stick of dynamite with a cap attached beside a highway construction site.

Remembering the training they'd received, the boys covered the dynamite with moss and reported it to their father. He notified the provincial police who removed the lethal object.

The boys were presented with an emblem and a certificate for meritorious conduct at a special ceremony in the Copper Cliff Community Hall last month. Chief Scouter for Canada, Governor-General Roland Michener praised the boys "for their sensible and appropriate action" in an inscription on the certificate.



Bobby, Randy and James Tunney look over the certificate they received from the Governor-General with their parents and Bill Verkaik (right), president of the scouting movement's district council.

Blasting caps are used to set off the dynamite used in mining, quarrying, land clearing, and building railroads, highways, bridges and dams. Dynamite itself is relatively insensitive and needs a heavy shock to set it off, which is provided by a blasting cap.

The typical blasting cap is a metal cylinder about the thickness of a pencil. The length varies from 1 ¼ to five inches, and the color is usually silvery although some copper types are still used. The caps are filled with a very sensitive and extremely powerful explosive.

One type of cap has an open, hollow end. It is prepared by inserting a length of fuse in the open end. When the fuse is lit, it burns up to the cap and fires it, the explosion causing the dynamite to go off.

Another type is the electric blasting cap, which has two colored wires protruding from one end. These caps are detonated by means of an electric circuit.

While all caps are safe in trained hands, they can be detonated easily by accident: a blow from a hammer or stone; the heat of a match; pulling out the electric wires; picking out the explosive with a pin or nail. Each of these methods has already caused the death of a child when a cap exploded without warning.

Harold Tunney said he was "relieved and thankful" his sons didn't tamper with the dynamite. His wife, Sonja, said: "We've had proud moments with our children, but this really topped them all."

Harold and Sonja form a husband and wife team to lead the Copper Cliff Scouts and Cubs. Harold has been Troop Scouter for two years and Sonja a Pack Scouter for three years. "It's moments like this that make it worthwhile being a Cubmaster," she said after the ceremony.

Randy, 14, has been a Scout and a Cub for six years, 11-year-old Randy has been a Cub for four years, and Bobby, 8, is a second year Cub. The rest of the family includes Doug, a Department of Highways surveyor, Tom, 13, a member of the Copper Cliff Cadets, and Vicky May, 2. Harold is a 33-year veteran with Inco and is a machinist 1st class in the smelter machine shop.



Sitting astride a giant raise bore head, Dick Beauchamp holds his miniature diamond drill reamer in his hand.

Employees invent mini reamer

An employee-designed modification to diamond drills has halved the direct costs and operating time to ream sandfill holes. Carbide reaming heads, made in Inco's own drill shops, have replaced the costly diamond bit reamers used to back-ream the holes. Carbide has also proven to be faster than diamond in cutting through hard Creighton granite.

The reamers are the invention of drill foreman Dick Beauchamp and Frank Vaillancourt. They are being used in a program to drill 18,000 feet of holes for the new Creighton sandfill plant. About 700 feet of the total will be backreamed with the new heads.

With an average length of 585 feet, sandfill holes are drilled to a 3%-inch diameter. They have to be enlarged at both ends, however, by backreaming about eight feet to a 5%-inch diameter to accept the sandfill pipelines.

The two men got their idea after the

drilling department replaced conventional diamond core cutting bits with a threecone rotary bit. It is studded with carbide cutting "buttons" on three rollers, which



Invented by Dick Beauchamp and Frank Vaillancourt, this reamer is a major improvement to sandfill drilling.

they removed and welded in a reversed position on a 5%-inch plate.

The new reaming head looks like a miniature raise bore reamer. The device has been so successful that a second version has been made with two reamers back-to-back. The "stinger" permits backreaming to be done for both the top and bottom ends of the holes from the same drill set-up, saving even more time.

Suggestion Plan awards seven ideas

Seven Sudbury district employees shared \$135 in the latest awards in the Suggestion Plan program. Gerald Renaud of the smelter received \$25 for his suggestion concerning an alternate arrangement for roaster rabble arms.

Sergio Mancinelli of the iron ore plant thought a new overflow hole below "A" floor in the roaster building would be a good idea. The suggestion committee agreed and paid him \$25.

The copper refinery's AI Cerilli was another \$25 winner. He suggested window screens be added to the plant's narrow gauge railway locomotives.

Three other copper refinery employees received \$15: Ed Donnelly, Tom Robertson and Ray Roy.

Ed suggested warning signs be added to doors in the electrical shop. Tom and Ray were working on the same problem independently but came up with similar solutions to add warning signs to reduce crane hazards in the tankhouse.

Gerald Davis of the iron ore plant suggested a "door closer" for the roaster building. He received \$15 for his idea.

One winner at Port

John Bisson was Port Colborne nickel refinery's lone winner of a suggestion plan award last month. His idea was to install a recirculating line on the anode slimes tank to help solve a recurring plug-up problem. He received a \$15 merit award for his idea.

Faces & Places

Inco sponsors outdoor show

Calling all sportsmen. Make it a habit to watch "Fin, Fur and Feather" on CKSO television. Sponsored by Inco's Ontario Division, the half-hour weekly show can be seen ever Tuesday at 10 p.m. with host Jim Prince.

The program, in color, features news and stories about outdoor life and outdoor personalities. The early programs included an interview with Ontario's sportsman of the year, Armand Belanger, and a film about a snow machine safari.

Among the subjects to be covered in the future are family camping, tips on where to fish in this area, boating, and advice on hunting game in Northern Ontario.

If you belong to a game and fish association, you can use the commercial

Japanese honor employee



Inside Tokyo Nickel Company's plant, this street is named after the late Keith Fordy.

Six years ago during start-up operations, the Matsuzaka plant of Tokyo Company ran into instrumentation problems requiring expert guidance. The original design had been carried out by the Copper Cliff engineering department, in conjunction with research station personnel in Port Colborne, from whom they requested help.

The late Keith Fordy, then instrumentation supervisor in Port, and three other experts from Copper Cliff and Toronto were sent to Japan to test the equipment.

Keith was assigned to check out the complex instrument panels, an especially difficult job because all conversation had to be through an interpreter. In two months, operations were running smoothly

Appointments

- Dave Wells, superintendent of maintenance department, copper refinery
- Stan Dutchburn, supervisor office services
- Norm Ripley, mechanical engineering specialist, general engineering department
- Mike Sharpe, senior project engineer, general engineering department

May means music

Sudbury Board of Education's 23rd annual concert will be held May 16 and 17 at Laurentian University's Fraser Auditorium. On the program, which starts at 8 p.m., will be a 50 piece band and 90 voice choir from Sudbury area elementary and secondary schools. Selections will include music from "Fiddler on the Roof", Italian movie themes, ballet music from "Prince Igor" a Russian master's suite, and catypso melodies. The dedicated youngsters started rehearsing last November. Tickets cost \$1 for adults and 50¢ for children and the proceeds will go to purchase music and instruments for the talented groups.

enough for all the group to return to Canada. Keith continued with the research station complex in Port until his untimely death.

When the Tokyo Nickel Company learned of his death, they flew the Japanese and Canadian flags at the plant at half-mast for three days. Subsequently, in recognition of the high esteem in which he was held, a thoroughfare in the plant was named Fordy Avenue.

Keith was born in Sudbury and received his early education here before graduating from Ryerson Polytechnical Institute in Toronto in 1952. He moved to Port Colborne and joined the nickel plant in 1959. He is survived by his wife. Audrey, a registered nurse from Ottawa, and three children: Shayne 11, Tyrone 10 and Randy 9.



"breaks" to publicize your association

or club. Write, well in advance of your

event, to Jim Prince at CKSO-TV.



One of the largest in Ontario, the Creighton water treatment plant will soon be operational.

Creighton water plant ready soon

Construction of Inco's new 22 million gallons per day water treatment plant near Creighton is now complete and the shake-down of systems prior to start-up will begin soon. The plant will be turned over to Inco by the contractors in July, when operations will officially begin.

Part of Inco's multi-million dollar program for treatment, distribution and storage of water, the plant will improve and control water quality for Creighton, Lively, Murray and Copper Cliff, as well as Inco mines and surface plants in these areas.

The plant will receive water from Vermillion River, about six miles west of Creighton. The purification process will use chlorination, high-rate filters, and clarification. Waste water from the plant will be pumped to the tailings area.

"Vermillion River water is typical of Northern Ontario surface waters," Charlie Ferguson, Inco's superintendent of environmental control, said. "The water is nearly neutral, and is very soft, but has seasonally high levels of color and turbidity, from surface run-off."

The water will be pre-chlorinated before it enters the plant for disinfection purposes. Alum and a coagulant will be added to settle out any color and suspended solids in the "pulsator" clarifier, identical to the units used in Paris, France. Five banks of deep bed filters will strain out remaining solids before phosphate and sodium hydroxide are added. These chemicals will neutralize and stabilize the water so it won't attack the iron or steel in pipes.

Before the water leaves the plant it is again chlorinated to disinfect it for the long trip to water taps. While the chemical treatment in the plant is similar to that done in other water plants world wide, the extent of the clarification and filtration, coupled with the degrees of automation controlling the steps, make the plant unique.

Inco Indonesia gets go-ahead

Work will begin immediately on the design and construction of facilities for the lateritic nickel project that P.T. International Nickel Indonesia, a subsidiary of Inco Canada, is establishing at Soroako on the island of Sulawasi.

The Indonesian plant, which will produce some 30 million pounds of nickel annually in the form of 75 per cent nickel matte, will begin operation during the first half of 1975. The total cost of the first phase is estimated at over \$135 million.

The company has proven up ore reserves sufficient to subsequently increase production to more than 100 million pounds annually. Three Japanese nickel companies have signed agreements with Inco Canada and Inco Indonesia to purchase the output of the new plant for 15 years.



Les Ramsey, a supervisor in process technology, was invested with a 25-year medal for service to the Boy Scout movement in Sudbury. Les, who is past president of the local district scout council, worked his way up the ranks from cub to scout and also served as a leader and committee member. Bill Verkalk, president of the 1973 district council, presented a proud Les with a certificate and the medal.

Spring into gear



Summer. The driving-for-pleasure season is with us again. Incoites will be taking to the road to enjoy a mobile style of life with their cars. Virtually a necessity today, whether for shopping, travel to work, or for comfortable vacation travel, cars are still complex and potentially death-dealing.

It's a fact that approximately 10 per cent of Canada's annual half million traffic accidents involve mechanical malfunctions and most of these are caused by improper maintenance. Sixty per cent of all cars in provinces where there are compulsory safety checks fail on the first test. That means there are a lot of potentially dangerous cars on the road right now. Is yours one of them?

Preventive maintenance is the solution. You're legally and morally responsible for the upkeep of your car. Good maintenance can make the difference in an emergency because all the driving skill in the world is little help if your car doesn't respond as it should. Here's a safety check you can do yourself:

- · Rear view mirrors
- Horn
- · Windshield wipers and washers
- · Window glass
- Lights operation, alignment, and functioning of directional and brake signals
- Tires tread wear, cracks, air pressure, alignment, cambre
- Steering steering gear play, steering linkage wear, tie rods, condition of springs and shock absorbers
- Brakes master cylinder fluid level, hydraulic system leaks, foot and hand brake stopping ability, linings
- Exhaust system manifold pipes and mufflers for tightness and leaks