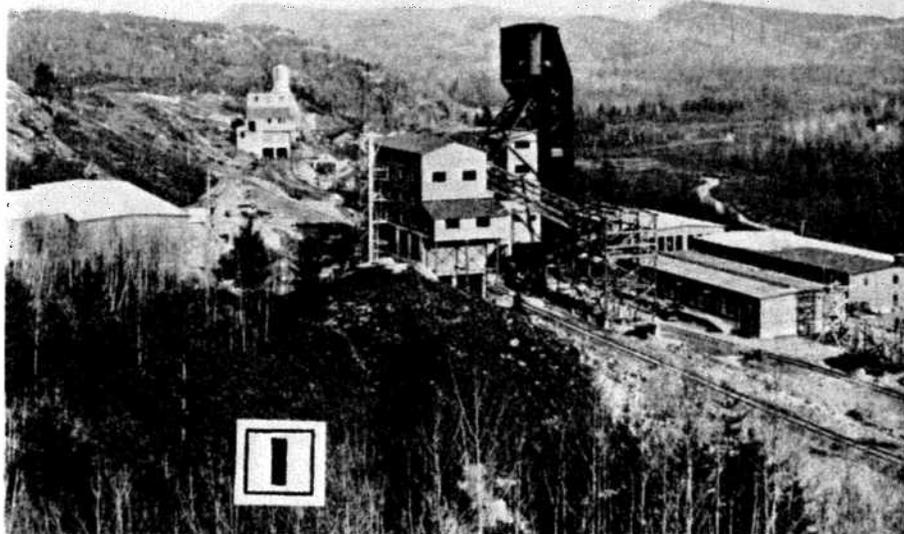


# INCO TRIANGLE



1

## Levack's No. 2

**1** Located near the first nickel-copper deposit to be discovered on the Northern Range, and reared in the picturesque setting which Prospector James Stobie roamed in search of ore back in 1887, Levack's new No. 2 shaft surface plant nears completion. The ore body which will be mined through it is not that which was sold to the Mond Nickel Company by Stobie, Robert J. Tough, and Rinaldo McConnell, but was discovered by the Mond people later. In the course of a dip-needle survey they found a large body of ore separated from the original outcrop by rock, and lying beneath the marshy ground adjoining. Operations at Levack were begun in 1913. Photo shows No. 2 shaft in the foreground. On the left is the hoisthouse, and at the right are the warehouse, office and changehouse, shops, and other surface buildings. Workmen are putting finishing touches to the conveyor gallery and transfer tower at the rockhouse. The headframe is also almost completed. The shaft has been sunk to 1860 feet, and shaft stations have been cut at the nine working levels. Next week installation will commence of the crusher and loading stations underground, and these will be completed in the spring. Then hoisting through the new shaft will commence. The main crosscuts connecting No. 2 shaft with the No. 1 shaft workings have been driven, and about November 25 all handling of men will commence through No. 2 shaft.

★ ★ ★

## Three Bells!

**2** Group of miners at Levack No. 1 shaft pose for the Triangle camera just before going underground to start their shift. Judging by those 18-carat grins, their jobs agree with them.



2

## To Introduce Shift Curling

It's to be hoped that the ice-makers at Copper Cliff Curling Club are considering an asbestos base for the sheets they lay out this winter, because there's going to be shift curling. Both day and night the Shifters will be in action, and the competition is expected to be plenty hot. The shift league will operate its own schedule, in addition to taking part in the regular club competitions. Valuable prizes have been promised, and the executive will do all they can to help along this new branch of the club.

It looks as if the number of curlers this season will just about double those taking part in the roarin' game last winter, and interest is keen in the regular opening night, at which all newcomers will be heartily welcomed by the club veterans. In the meantime, membership application forms are available from D. Finlayson, R. S. Young, K. Madill, W. W. Henderson, T. H. Rowe and J. Hazleden.

# Fine Record Of Activities

Electing new officers and squaring away for another year of service to its 2,200 members, Copper Cliff Athletic Association could look back on 12 months of successful endeavour when it reviewed its activities at its annual meeting. Here are some highlights of the record, which is decorated with championship laurels in almost every department:

Sponsored a seven-team shift hockey league, providing Stadium hours and equipment for 100 players on a long schedule.

Sponsored midget and junior "B" hockey for more than 115 boys, providing Stadium hours and equipment.

Co-operated with ORCO A.A. to sponsor Copper Cliff entry in Nickel Belt Hockey League.

Sponsored children's skating carnival and races at Stanley Stadium, with INCO inter-plant competitions, and drew big attendance.

Staged benefit hockey game for injured shift league player.

## BACKED BIG CARNIVAL

Sponsored Copper Cliff figure-skating club with nearly 200 members, about 65 of whom were children, and whose annual three-day Carnival took place with the leading events of this kind in the country.

Sponsored Copper Cliff Ski Club, with 90 members, which has cleared trails and is now building jumps and chalet.

Sponsored broomball team in Sudbury league.

Sponsored badminton team in Nickel Belt League.

Arranged special sales depot to enable members to secure hockey tickets.

Sponsored midget baseball league of four teams, 60 boys, from which all-star team travelled to Georgetown and won exhibition match.

Sponsored juvenile baseball league, three teams, 45 boys, from which winners won Nickel Belt championship.

Sponsored junior baseball team which won Northern Ontario championship and lost out in finals of Ontario championship at Niagara Falls.

Sponsored senior ball club in Nickel Belt League.

Sponsored Copper Cliff Softball League for seven teams, 100 men, mostly shift workers, supplying equipment.

Sponsored entry in Royal Trading League softball, winning Nickel Belt and Northern Ontario titles, Intermediate B, and losing in finals for Ontario championship at Hamilton.

Sponsored entry in Nickel Belt Softball League, winning Ontario Senior "B" championship at Toronto.

## BUILT NEW DIAMOND

Built new softball diamond and resurfaced tennis courts. Sponsored tennis club of 72 members and provided free tennis for children. Tennis club team reached finals of Nickel Belt League championship.

Sponsored INCO Amateur Nights, giving competition to more than 80 inter-plant competitors and free weekly concerts to average audiences of 1,800 people. Sent party of contest winners to Exhibition at Toronto.

Sponsored May 24th celebration, outstanding Victoria Day event in the north country.

Sponsored boxing and wrestling club, members of which hold the following championships: Northern Ontario heavyweight, middleweight, welterweight, lightweight, featherweight, bantamweight, flyweight; Algoma middleweight, lightweight, welterweight and bantamweight; Ontario 133-pound wrestling. Sponsored Northern Ontario championship elimination at Stanley

Stadium, and sent boxing and wrestling teams to compete in outside events.

Carried on routine miscellaneous activities.

## EXECUTIVE MEMBERS

New executive of the C.C.A.A., succeeding Chairman Everett Gillespie and his staff, are: Chairman, C. W. Nute; vice-chairman, Dr. C. R. Ferguson; secretary-treasurer, R. A. Corless; executive members, office, C. H. Buck; town, W. Darrach; hospital, Dr. C. R. Ferguson; mechanical, J. W. Garrow; electrical, A. McIntyre; Orford building, M. Farrell; converter, W. Acheson; reverberatory, W. Dopson; concentrator mechanical, E. Jones; concentrator operating, H. McBriar; screening and crushing, R. McNeally; figure skating, F. Taylor.

## FOR HEALTHY BODIES

Classes of from 30 to 40 boys and girls are attending the gymnasium instruction periods held at INCO Employees Club for children of members. Joe Costigan and Miss Verna Cliff are in charge. The periods are on Wednesday afternoons from 4.30 to 6.00 o'clock, and on Saturday mornings from 9.30 to 12.00 o'clock.

## 32 ENTER TOURNEY

A total of 32 racqueteers entered the men's tennis singles championship contest at Port Colborne, which A. C. Steed won from A. C. Saville in the final. Last year's champ, A. F. Prittie, was eliminated by Saville in the semi-finals. The doubles championship also brought out 32 players. The old-timers, R. A. Wilson and Jack Weg-

rich, won out. Group 2 was won by William McDonald and R. Rivers, Jr.

## "Pro" Midgets Receive Medals

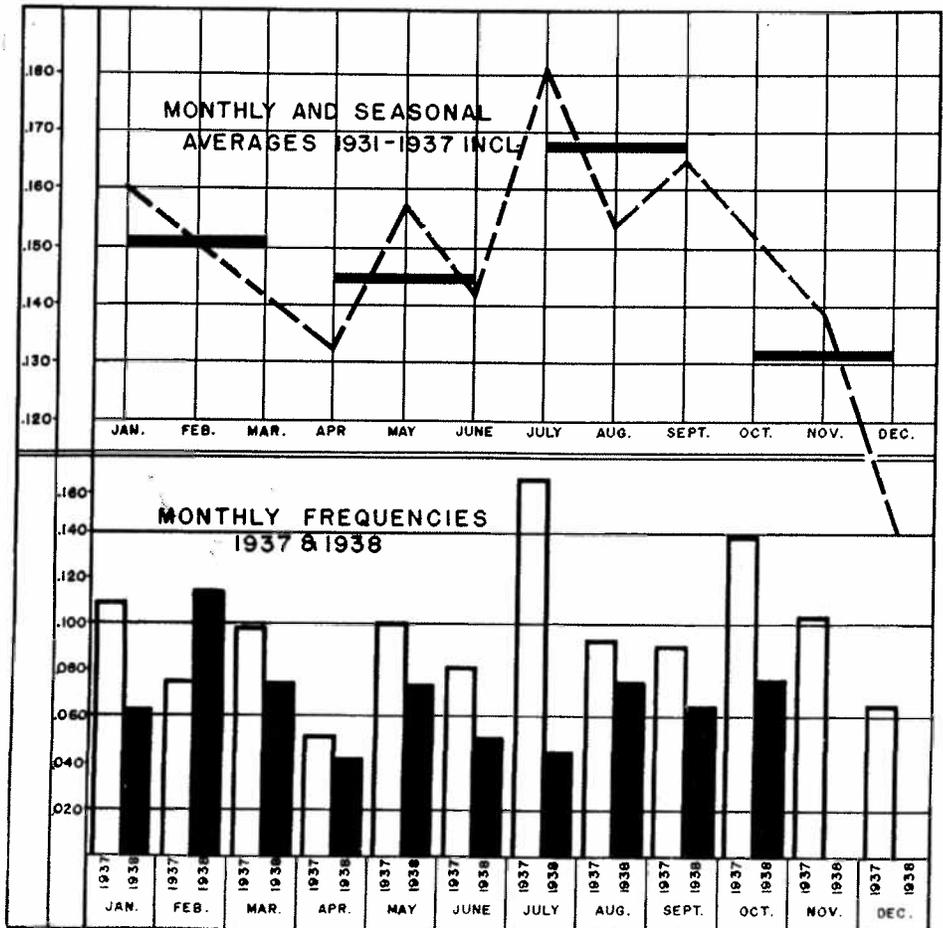
A "Dutch treat" banquet, to which the boys brought their own fare and the ladies of the church served it for them, wound up the season for Copper Cliff's midget pro baseballers. About 50 boys attended.

Feature of the evening for the lads was the presentation by Bert Flynn of medals to the Americans, winners of the league. The prizes were donated by Coach Gordon Alcott, who was chairman of the evening's program. The champions who got awards were: Artie Wulff, pitcher; Donald Smith, first base; Al Dunn, coach-manager; Richard Dopson, third base; William Van Allen, left field; Eddie O'Reilly, second base; Bob Johnston, centre field; Wesley McNiece, right field; Malcolm Dunn, shortstop; Jay McCarthy, catcher.

## HAVE MANY VISITORS

In the first six months of its operation, more than 1,000 visitors registered at Port Colborne Recreation Club. From as far away as Oregon in the United States, British Columbia in Canada, and from the British Isles came the 400 guests who resided outside the district. Many admiring comments were overheard about the facilities made available to employees at the INCO refinery, and also on the enthusiasm with which they are put in use.

## Safety Results Hold the Pace



In only one month to date, this year, has the Mining and Smelting Division failed to better its safety record of 1937. September and October are the latest gains reported, as the above chart shows, and it remains only for November and December to record improvements in the accident frequency. Keep up the good work, men!



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

EDITORIAL OFFICE COPPER CLIFF, ONT.  
Don M. Dunbar, Editor

VOL. 2, No. 8

NOVEMBER, 1938

## The City Fellers

Not long ago the papers were full of stories about a city feller who came up from Toronto with a bow and some arrows and vowed he would bring down the biggest buck in the Northland with his archery. He canoed and portaged bravely about for several days, breathlessly shadowed at a respectful distance by a journalist who kept the wires humming with play-by-play descriptions of the thrilling hunt. But eventually he had to put his barbs back into their quiver, unstringing his bow, and return buckless and inglorious to brood by his fireside, a William Tell who missed the apple.

Last week Jerry Ovens of the concentrator crew drove past in his jallopy with a very fine buck draped carelessly over the right fender, and we hailed him to offer congratulations on his marksmanship. "Yep," said Jerry, with elaborate nonchalance. "Yep. Got him up near Espanola with my bow and arrow."

Now we're not going to suggest that the twang of Jerry's bow will have any influence one way or another on the controversy re Canada's armed might, nor is it likely (albeit a thought of immense possibilities) that the hunting fraternity will be fired by his example and will burst forth in Robin Hood regalia. Our point is this: "What have these city fellers got that we haven't got?"

And the point may well be taken seriously, just while we're on the subject. We own to having become definitely warm under the collar on several occasions at the patronizing pity of people who seem to think Northern Ontario in general is a frozen, uncivilized area of parkas and pemmican, wolves and wilderness, and huddles of hardy pioneers somehow chipping nickel and nuggets out of the Pre-Cambrian Shield.

We would compare our INCO living with life in any other community in the country. Measure, for instance, our entertainment with theirs. The class of hockey we watch is indicated by the way our teams have brought home the world's highest honors at the game. Provincial recognition has been won by our baseball and softball teams. Within our ranks are some of the Dominion's best soccer players, some of Ontario's ablest boxers and wrestlers. A 10-piece



The candid camera caught these players in action at the semi-annual inter-plant bridge series at Memorial Community Hall: Left to right, top row: R. Beggs, of Levack; L. Desilets, of ORCO; Mrs. R. Beggs, K. McTavish and Mrs. C. Dorian, of Copper Cliff; second row: Miss Smale, of Creighton, studying a new deal; Andy Spy, of Frood, who has apparently just picked up 12 deuces and one three-spot; Dr. H. F. Mowat, of Copper Cliff, about to lead the fourth of his longest and strongest; Mrs. R. H. Waddington, of ORCO; third row: H. Kurtz, of ORCO; Bob Bell, of Copper Cliff, making a strategic play from dummy; J. Harber, of ORCO; J. R. Gordon, Copper Cliff, hearkening to a demand bid from his partner; Clark Burlingham, of ORCO, stopping games instead of goals for a change.

all-INCO orchestra can be recruited which will take its place with leading dance bands. Our figure-skating carnival reaches a standard equalled only in the largest cities. We have our tennis, golf, badminton, bowling, and so on, all under the best possible playing conditions. Where else in Canada is there a community of this size with advantages like those offered in the Sudbury INCO Employees Club, or in the Copper Cliff Club?

Think of some average fellow you know "back home." How about the security of his job? Does he have the benefits of low-cost life insurance, low-cost sickness and accident insurance, a retirement system, a program unrelax-

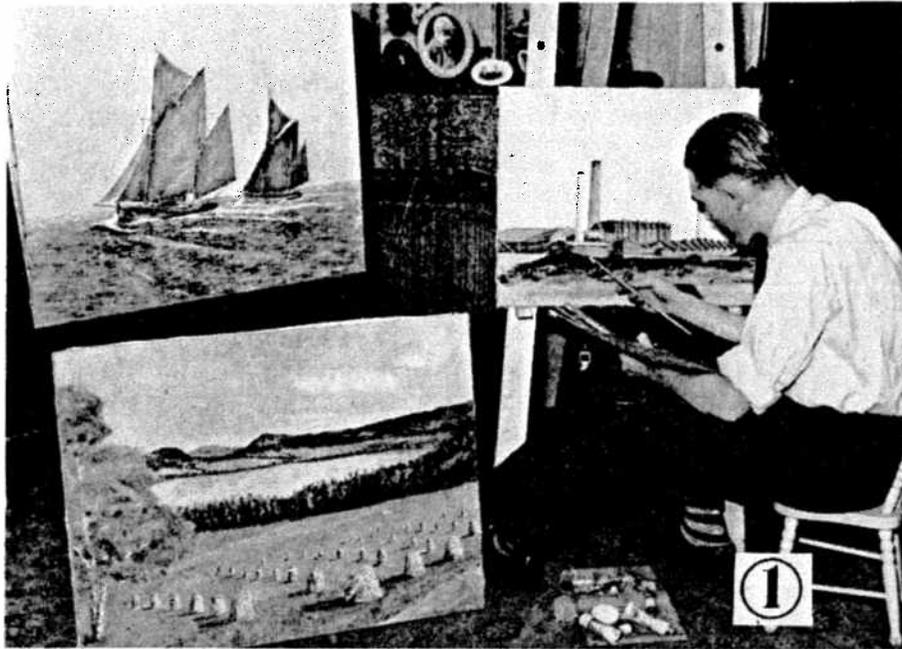
ing in its vigilance to make his work safe for him, the latest advancements of science to assist him at his studies, a high wage scale, and the other guardians of contentment that are standing by us every day?

"What have these city fellers got that we haven't got?" We're inclined to believe the bulk of them would trade with us in a jiffy, and be mighty glad of it.

As for us, we're not trading.

"You've already had leave, McSnortle, to see your wife off on a journey—for your mother-in-law's funeral—for your little girl's measles—your boy's christening—what is it now?"

"I'm going to be married!"



### Talented Artist

**1** Man of many parts is Bill Van den Belt, of Copper Cliff concentrator, whose exploits as an air-mail pilot in Java and a surveyor among the Borneo head-hunters Triangle reported in some detail in May, 1937. Because leisure time hangs heavy on his hands, Bill recently turned again to the painting he learned as a young lad in Holland. Quickly becoming enthusiastic as the long-neglected talent began to express itself, he now spends most of his evenings with brush and palette. He is finding a ready market for his canvases, too. Several owners of summer camps in the district have commissioned him to do paintings of their places. Versatile, he lets no subject deny his brushes, as the photo shows. Asked why he didn't paint portraits, he said he just hadn't got around to them. Which reminds one of the irrepressible man who, when a friend inquired if he could play the violin, replied that he didn't know because he'd never tried. So, if you want to be done in oils, call Copper Cliff 630, and ask for Wilhelm.

★ ★ ★

### C.C.E.B.A. Party

**2** Always good for a crowd and a snappy evening's fun are the dances staged at Memorial Community Hall by C.C.E.B.A.'s entertainment committee, of which Gordon Adams is chairman. Photo shows a group at one of their recent affairs, and although it was 2.00 o'clock in the morning when the camera clicked, nobody looks ready for bed. That's the test of a real party.



### First Contest For New Trophy

Both badminton and bowling are well under way for the winter season at Port Colborne Recreation Club. In bowling a trophy for 5 pins, five-man team challenge competition, has been donated by Richard Dwor. In the first contest, to determine original holders of the new tankard, a pipe-fitter crew topped the elimination schedule. The team was composed of Gordon Noyes, Ray Brown, J. Sacco, J. Stickles, J. Royal, J. Hannah. On their way up they trimmed the crack laboratory and sample room team in the final match. Seventeen teams competed.

### CONISTON INSPECTION

The annual inspection of the Coniston division of the St. John's Ambulance Brigade took place in the Nickel Club.

Commanding Commissioner Colonel A. E. Snell, Ottawa, was inspecting officer. All 42 members were examined and were found to be efficient. Colonel Snell was on his annual inspection tour of brigades in Ontario.

W. J. Warwick has been superintendent of the local brigade since it was formed in 1932. Meetings are held weekly in the Nickel Club.

### MONEL IN RAZORS

An electric razor has been patented with monel contact "arms" which open and close 200 times every second.

12-4; Lawson, 11-9; Pitchford, 11-9; Hodges, 11-9; Van Exan, 10-10; Turner, 10-10; Dominic, 9-7; Gillen, 8-8; Thompson, 8-8; Smith, 8-10; Crowther, 8-8; Coleman 6-10; Adair, 4-16; Fraser, 3-17; Fee, 1-15; O'Reilly, 0-12.

### ORCO

Yard, 10-1; Tankhouse 2, 10-7; Tankhouse 1, 7-5; Lab., 7-4; Shops, 7-5; Office, 4-4; Tankhouse 3, 4-12; Stores, 2-10.

## 400 Bowling In Club Leagues

Now in the thick of the first half of their schedules, the plant bowling leagues at INCO Employees Club will declare their respective winners about two weeks before Christmas, and the victorious teams will then play off for the right to meet the winner of the schedule's second half next spring, with the Employees Club trophy at stake.

More than 400 bowlers are taking part in the three leagues. Stephens leads the 33-team Froid loop with 25 wins and three losses as of November 14; his players and their averages are as follows: Stephens, 216; Dunne, E., 171; Dunne, F., 180; Sinden, R., 187; Leore, N. 204; Russell D., 200; Mills, C., 192. The Hurd lineup, defenders of the Employees Club trophy, are in second spot.

About six teams are likely to withdraw from the Copper Cliff setup, but there are 20 left to battle for the honors. To date Mel Edwards, of the concentrator, is the leading captain, with 14 wins and six losses.

His men and their averages: Edwards, M., 235; French, J., 167; Stevens, F., 180; Shore, K., 160; Dyce, S. 157.

In the eight-team ORCO league Yard sports the best percentage at this writing, with 10 victories against one defeat. These are the players: Thornton, H., 166; Atkinson, C., 234; PePnner, 181; Fletcher, J., 161; Hilderly 183; Comyshyn, 154; Hammond, 183; Vincent, A., 170.

Following are the teams and their wins and losses to November 14, wins being recorded first in each instance:

### FROID

Stevens, 25-3; Hurd, 22-6; Henry, 22-6; Vanhamme, 21-7; Kilby, 21-7; Gilchrist, 21-7; Aylings, 19-9; Cadieux, 19-9; Maitland, 19-9; Boyce, 18-10; Mason, 18-10; Collins, 18-10; Pickard, 18-10; Amon, 16-8; Storey, 15-13; Jones, 15-13; Still, 15-13; Gordon, 15-13; Kufske, 13-15; Dinnes, 13-15; Scott, 12-16; Richardson, 12-16; Stone, 11-17; Lemmon, 11-17; Kellette, 11-16; Field, 10-8; Charsley, 9-19; Price, 8-12; McKernan, 4 20; Lung, 4-24; Moore, 4-20; Geldie, 3-21; Parker, 1-27.

### COPPER CLIFF

Edwards, 14-6; Trahan, 13-3; Ferguson, 13-3; Davey, 13-7; Carrol, 12-0; Wright,

# Frugal Finn Sound Citizen

Hail the frugal Finn!

Of all the nationalities blended to make up this cosmopolitan Canada, none better wears the mantle of citizenship than the industrious type of Finn who, eager and conscientious, takes full advantage of the great opportunities his adopted country offers him. Within INCO are many Finns who have become valued employees by their faithful and efficient service to the Company, and who also have become Canadian citizens in the fullest sense of the word by the homes they built for themselves. Such a man is Eli Kiviaho, who has worked underground at Creighton since 1910.

Five years ago, after patient saving, Eli had sufficient money to buy a farm for himself and his family, and they moved out to it, on the Soo road just this side of the old Victoria mine. The place was a bit run down, the buildings needed repairing. Eli and his five sons went to work on them, and fixed them up. But Eli kept his job, and struck off on a shortcut across his fields every day to work his shift at the mine. It was a 10-mile hike, and often he ran it, just to keep in trim. As soon as his work was over he headed for his farm again. In the meantime, his boys brought the place along, sold the eggs and milk in town, became full-fledged scns of the soil. In the winter they trapped. They were all tireless, and proud, and very happy.

**1** Last year fire destroyed Eli's house and barn, and would have swallowed up Eli's family too, if they hadn't cleared out in a hurry that night. There was no insurance. In the morning Eli stood and looked out over his acres, and said, "Well, we will build it up again."

So the family moved into a little cook-house to live, and the boys slept out in the machine shed, and everybody knuckled down tight to save money and get ready for this spring.

**2** This spring Eli bought one of the abandoned houses at the old Crean Hill mine, and he and his boys brought it to their place. They tore it down, saving all the lumber carefully. They got used lumber other places, and then they started to build a house. They'll have it finished for this winter, the way the weather is holding out. They've done all the work on it themselves. Next spring they'll build a barn, the same way.

**3** One of the most important buildings on Eli's farm, of course, is the Finnish steam bath. It has no tile floor, no fancy fittings, but Eli wouldn't trade it for the shower in Clark Gable's palace. You know how it works. In the oven beneath the stones a fire is built. Water from the barrel circulates through pipes on which the stones are piled, so there's warm water in the barrel for washing. When the stones are piping hot the bather throws water on them. The cloud of steam soon fills the little bath house and opens every pore in the pelt of the bather, who sits on a bench and beats himself rythmically with a bundle of birch twigs in full leaf. Two or three soapy scrubbings, interspersed with cold water duckings, complete the bath. It's an exhilarating business, and the Finns love it. Eli's two youngest sons, bashful but obliging, did the demonstrating for Triangle.

**4** Another Finnish institution is rye bread. In Finland, where the women help with the farm work as well as look after their big families and their housekeeping (get that, girls) they bake rye bread in large batches, leave a hole in the centre of each



loaf, and then hang it up to dry so it will keep indefinitely. Here Mrs. Kiviaho takes a loaf of rye bread from the oven. She's looking forward eagerly to getting into the new house, where there's to be a fine big kitchen. It will always be spotless.

**5** Eli steps into the cage at Creighton to go underground to his regular job. He's been a machine doctor for the past 10 years. When he's riding the cage from one level to another, or when there's a lull in his work, Eli's mind turns happily to thoughts of his home. It's coming along okay. Canada is doing well by him, because he is doing well by Canada.

## THANK INCOITES

Sincere appreciation of the support accorded its Poppy Day sales in INCO towns is expressed by Copper Cliff command of the Canadian Legion.

"We would like to extend our thanks to everyone who helped make the tag day a success," said W. W. Henderson, Legion treasurer.

About 2,200 of the 8,000 or so standard alloys in use today contain nickel.

# The Electro Department

... third and final article  
in the series on Port  
Colborne Refining Opera-  
tions.

BY JAMES WALTER

In two preceding articles in "Triangle," the progress of nickel has been traced from nickel sulphide as received from Copper Cliff, through various stages and products to the threshold of the electrolytic refinery and the main marketable product produced at Port Colborne—electrolytic nickel.

## COVERS NINE ACRES

The Refinery in its present form is the result of a series of additions, built as increased demand for nickel necessitated expansion. Consequently its dimensions vary, but it covers an area of approximately nine acres. For descriptive purposes, the building is best divided in three sections, north, middle and south—north and south sections housing the work floors, plating tanks, cranes and other facilities for bringing anodes to the plating tanks and removing cathodes produced. For handling production, two warehouses are closely connected with the north and south sections, with facilities for shearing, shipping or storing the nickel cathodes. The middle section consists of purification trains for north and south section plating tanks.

Having roughly described the layout of the department, its main function should be outlined—the refining of 96 per cent. nickel anodes, production of which has been described in a previous article, to the finished product, electrolytically deposited nickel cathodes 28" x 36", and weighing 135 pounds. Between these two points lie many steps, of which the main process operations will be described.

## TOTAL OF 1,400 TANKS

There is a total of 1,400 plating tanks in the department. These tanks are of reinforced concrete cast in blocks of two and mastic lined, inside dimensions being 16' 9½" x 2' 10½" x 5½" in the north section and slightly longer and deeper in the recently constructed south section. The plating tanks

## Refined Nickel

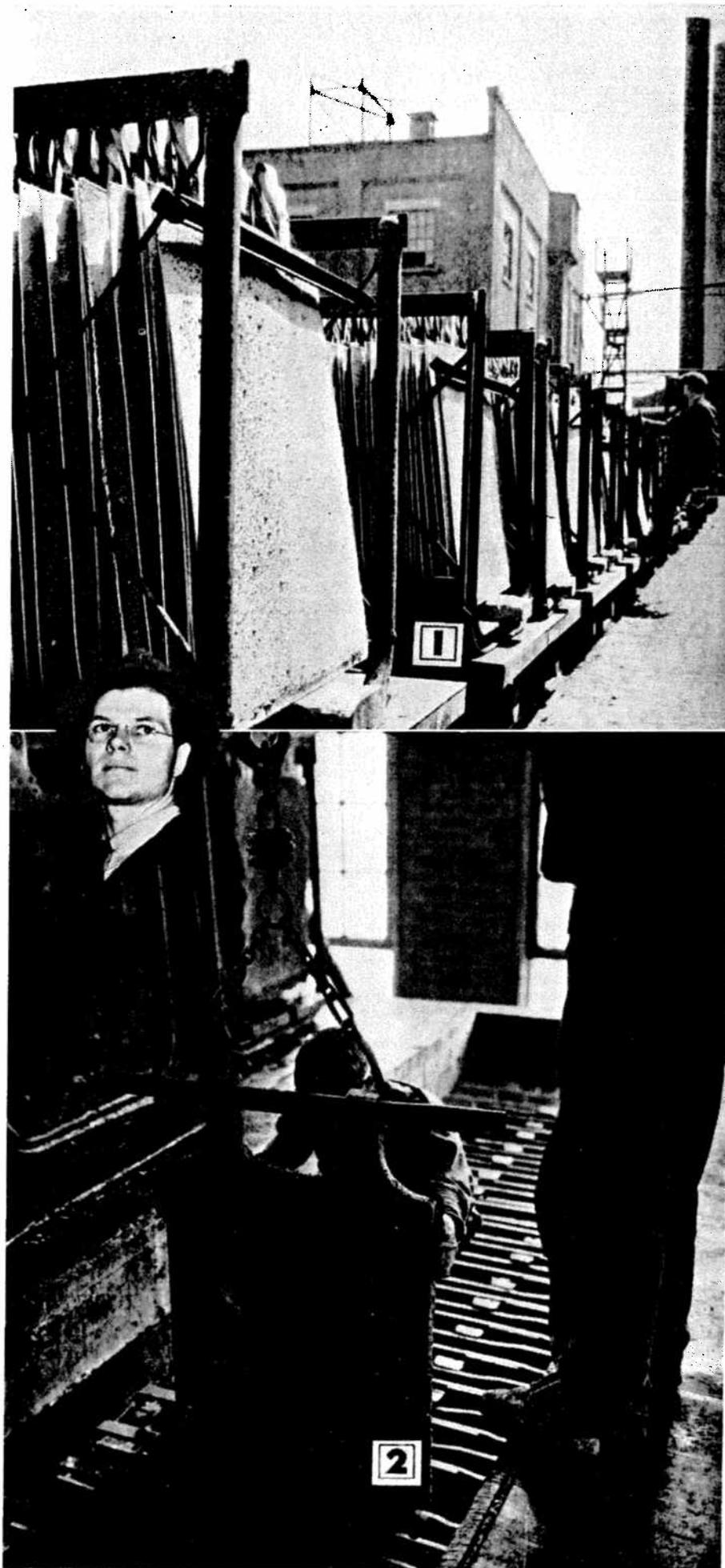
1 Pure electrolytic nickel as it appears after refining in INCO's Port Colborne plant.

The sheets, which are cathodes from the electrolytic cells, have a deceptive silvery softness in the sunlight, and are often mistaken by laymen visitors for precious metals. The surface of the cathode is covered with what appears to be minute silver bubbles. How the cathodes are produced is described in the accompanying article by James Walter, who is shown in the inset.

★ ★ ★

## Silent Magic

2 A 475-pound anode of 96 per cent. nickel is disappearing into the acid bath of an electrolytic cell. It will not reappear. In about 12½ days a travelling bridge which rides back and forth over the cells will call here again to pick up a silvery cathode of pure nickel, and also the skeleton of the anode which has been broken down in the silent magic of the electrolytic process.



compose seven units of 156 tanks and three units of 104 tanks, which in turn compose nine electrical circuits of 104 tanks each in the older north section, each circuit being supplied with power by a rotary converter providing 4,900 amperes at about 245 volts. In the new south section of the building, three electrical circuits correspond to the three 156 tank units, supplied by larger rotary converters with 4,900 amperes at 360 volts. All units are served by bridges, two to each unit, suspended from 25-ton cranes, with an auxiliary hoist and trolley for handling electrodes in and out of the plating tanks.

In a complete plating tank there are 31 anodes, 30 cathodes suspended in boxes with canvas sides, and about 240 cubic feet of nickel sulphate electrolyte.

#### NICKEL STARTING SHEETS

Starting sheets which form the cathodes are produced by plating thin sheets of nickel on stainless steel or aluminum blanks. These sheets are stripped off, nickel straps attached by spot-welding, and suspended in the cathode boxes by means of copper pipe bars which contact main bus bars carrying the current to following tanks in series. Passage of electric current through the tank, carried by the electrolyte from anode to cathode, causes nickel, copper and iron to go into solution from the anode. It will be recalled that the anodes are relatively impure, containing about 96% nickel, 2% copper, 1% iron, and the object is to produce as pure a cathode as possible. Consequently it would not do to plate directly from anode to cathode, and it is here that the cathode box plays its part.

#### MAINTAIN OUTWARD FLOW

Each box is provided with a constant flow of purified electrolyte; since the canvas sides are tightly woven, a slightly higher head is maintained in the box than in the surrounding tank, thus insuring a constant outward flow through the canvas. This outward flow prevents copper, nickel and iron ions from migrating to the cathode, but current passes unhindered and deposits nickel at the cathode from the pure electrolyte in the box. The analyte, or impure electrolyte outside the boxes is carried out of the tank by means of an overflow leading to a wooden trough or launder which in turn transports the liquor to the middle section of the department, later to be returned to the cathode boxes after purification. A rather interesting point is now evident,—although anodes and cathodes are approximately 3/4" apart, nickel going into solution from the anode might travel a quarter of a mile or more, depending on the location of the plating tank, before being deposited on a cathode.

#### REMOVE IMPURITIES

Removal of copper and iron is the next step in the process and this is done in the middle section of the department, containing the series of purification tanks or trains, one train for each unit, although supply tanks distributing purified electrolyte to the plating tanks are usually equalized or interconnected to maintain a fairly constant and common level or head.

Copper is removed by means of metallic nickel powder, produced as described in a previous article, entirely for consumption in the electrolytic refinery. This operation is accomplished in the wooden pachuca tanks 30' deep, with conical bottoms and a 10" suction hose leading to a vertical shafted centrifugal pump which draws electrolyte continuously from the bottom of the tank and discharges just below the surface. The metallic nickel powder is placed in these tanks and, well distributed by the agitation, goes into solution, displacing copper which cements out on the fine grains of nickel and settles in metallic form, to be removed at definite intervals and returned to Copper Cliff, where it re-enters the process and is finally produced as blister copper.

#### PRECIPITATE IRON

Having disposed of copper, elimination of



## Golf Champ

Winner of the 1938 INCO Athletic Association golf championship at Port Colborne was Glenn C. Winger, recognized as one of the best mashie-wielders in the Niagara district. There were 43 starters in the event. Curtiss Cross took Lambert and Lymburner in his march to the finals, but couldn't overcome Winger's mastery of the ball. Of the Group "B" players, with handicaps of from 15 to 22, C. Roy Howard proved best, eliminating J. C. S. Wilson en route and besting Dave Cowper in the finals. George Burns won Group "C," composed of players with handicaps over 22. Although it was his first year at the game, George turned in a neat 85 during the tourney.

iron is the next problem. After the pachuca train the electrolyte flows through a large Dorr thickener or settling tank to catch and return through an underflow pump any float nickel powder from the pachuca. The overflow from the Dorr tank flows through another series of tanks called oxidizers. These tanks are equipped with perforated pipe distributors for blowing fine bubbles of air through the solution. With careful control of temperature, acidity and air agitation, iron is hydrolyzed and precipitated in the form of ferric hydrate and removed by filtering through wooden plate and frame filter presses. A further treatment of this iron sludge is necessary to reclaim a portion of the nickel which is co-precipitated with the iron, after which the final sludge is returned to Copper Cliff for reclamation of any values still contained.

With copper and iron reduced to a minimum, the electrolyte flows by gravity to supply tanks, ready for the return, through wood solution lines under each row of plating tanks, to the cathode boxes again and final deposition on the cathodes. When operating at full capacity the volume of electrolyte following this cycle would be enough to float one of the Duchess ocean liners and a few of its life boats in addition.

Returning to the production sections again, the small percentage of precious metals contained in the anodes does not dissolve during electrolyte refining, but is retained in the anode slime. This slime is carefully washed and collected from scrap anodes and from the bottoms of plating tanks when cleaned. After concentration to

a product containing about 60 per cent. precious metals, it is shipped for final treatment to the precious metals refinery at Acton, a suburb of London, England.

#### SHIPPING FACILITIES

Having described the more important process operations, a short description of the warehouses taking care of cathodes produced is necessary to complete the picture. Both anodes and cathodes are placed in iron racks, which lend themselves to convenient handling by cranes, and also to transportation on small buggies by means of gasoline locomotives. There are a total of 5 gate-type shears capable of cutting the cathodes to any desired size down to 1" x 1" squares. Two cranes in each warehouse take care of pickling sheared nickel to remove any contaminating material, piling nickel to stock, or transferring it to locations convenient for shipping. Small-sized material is shipped for the most part in kegs and barrels, while the larger sizes usually are shipped loose. The greater part of the shipments are made by rail, a depressed track being provided so that cars may be loaded from work floor level. And so the final step is completed. Refined, produced, sheared, pickled and loaded, the electrolytic nickel—more pure than a widely-advertised brand of soap—is ready for the customer.

## New Officers Were Invested

To fill vacancies caused by the graduation from the corps of all officers and most of the N.C.O.'s, 11 crack cadets of Copper Cliff Highland Cadet Corps were invested with commissions at an impressive ceremony in Memorial Community Hall. Sgt.-Major John Young, of Toronto, who conducted a three weeks' school for the new staff, conducted the squad drill. During his brief remarks, he said, "I can truthfully say that I have never seen a finer group of boys. They could stand shoulder to shoulder with any corps in the province."

#### NEW COMMANDER

A sword, symbolical of new command, was presented to Cadet Capt. Douglas Gathercole by retiring Cadet Capt. Orville Hickey. Retiring Cadet Lieut. Allister McPhail presented his sword to Cadet Lieut. Allister Finlayson, of No. 1 platoon.

As Cadet Lieut. Richard Coleman is at Queen's University, his sword was presented to Cadet Lieut. William Barnes of the 2nd platoon, by Major Cressey.

Cadet Master Roy Barnes presented a Stratheona Trust medal to retiring Cadet Captain Orville Hickey, as a tribute to his work. A token of appreciation of the work he has done was presented to Sgt.-Major Young.

#### LAUDS INSTRUCTOR

Major Cressey also paid tribute to the work of Cadet Master Roy Barnes in building up the fine corps.

Other presentations were: No. 1 platoon—Sgt. John Humphrey, Sgt. Grant Morrison; No. 2 platoon—Sgt. Morley Ayers, Sgt. John McCullough; No. 3 platoon—Cadet Lieut. Ross Ferguson; acting adjutant, Cadet Sgt. Lawrence Wulff. Presentations were also made to Cadet Lieut. Quartermaster James Glade; Cadet Company Sgt.-Major Ronald Gourley.

## NICKEL CUTS WEIGHT

An oxygen cylinder of nickel-chromium-molybdenum steel has been developed by the British for mine rescue work, which weighs less than six pounds, yet contains 10 1/2 cubic feet of free gas with a test pressure of 3,360 pounds per square inch. The cylinder, made of ordinary steel, would weigh more than twice as much.

# the CANDID CAMERA



## GEORGE HUDSON

With almost 37 years of steady service to his credit, George Hudson, of Copper Cliff, joined the ranks of INCO pensioners November 1. Released from the routine of his post as fire inspector, which he filled for the past 25 years, he is free to give full time to the hunting, fishing and curling which have always been his favorite sports. Despite his 65 years he can still handle gun or rod, or draw a rock dead to the "button," with the best of them.

Born in Perth, son of a shoemaker, he was the second son in a family of eight boys



and one girl, all but one of whom are living. He attended school in Perth, but soon rustled his first job—water boy on a construction project. After he had carried all the water in the district, he picked off a job in a woollen factory, for which he was immensely proud to draw the sum of 30 cents per day.

His next step was to the C.P.R., with whom he was a helper in a woodworking shop, and this work he followed for about 10 years. Then the urge to travel farther afield prompted him, and he came North to Copper Cliff, signing on as blacksmith's helper in the shops then located where Nickel Park is now. John Simons was master mechanic.

As INCO expanded and new mines and plants were acquired, the necessity arose for careful attention to fire equipment, and to this task George was assigned. Periodical inspection of all installations has been his work, and unfortunate has been the individual who in any way neglected or tampered with the fire-fighting paraphernalia George has supervised so well, or whose carelessness resulted in creating a fire hazard upon which he was sure to come.

He was married at Val Marie, 30 years ago, to Miss Mary Martin, a Copper Cliff girl, whose family had recently moved to the Quebec town. Five children were born to them, of whom four sons are living. Three of the boys are INCO employees: Lorne, of the Orford building; Gordon, a skimmer in the converter building; Harold, who works in the concentrator.

He is a member of the Canadian Order of Forresters, and, of course, of INCO's

Quarter Century Club, whose button he wears proudly.

A fishing and hunting acquaintance of long standing was severed for George when Dr. W. A. McCauley, INCO's chief surgeon, passed away last year. Both inveterate sportsmen, the two seldom missed an opportunity to get out into the bush, or to head for the doctor's camp at Lake Penage. This summer George kept a fatherly eye on Stackhouse, Ferguson and Forsythe, the three Copper Cliff hustlers who are building their own log cabin on Hasta La Vista Island in Penage. Pete Stuart's camp, also in that area, is another of his favorite visiting spots.

His work has brought him in contact with many at INCO's plants, and they'll all miss his regular visits and his ready Irish arguments. They all hope he will thoroughly enjoy the opportunities which his retirement opens for him.

## ★ ★ ★ DAN TOTINO

Dan Totino once owned a grocery store in Coniston, and operated a billiard hall in connection. Business started off briskly enough, because the Totino family is well known in Coniston and everybody wanted to see the 18-year-old shopkeeper get along.

Then one day somebody gave Dan a cornet. He'd always wanted to play a cornet, so he took it to the store with him and during the lulls between customers, he puffed experimentally into its mouthpiece. Soon he could pick out the odd air on it, and, anyway, the billiard hall could almost run itself. Gradually it got to the point where Dan didn't even lay his cornet down hurriedly when Mrs. Grundy came in for a pound of sugar. Rather, he'd let her stand there while he finished the number he was playing. Cornet solos in grocery stores being something different in Coniston, business boomed for a while. Customers got a kick out of having a spirited rendition of "Yes, Sir, She's My Baby" literally wrapped right up with their cheese and crackers.

Dan got so he could play "Yes, We Have No Bananas" with one hand, and count out a dozen of them with the other. He taught his trusty cornet to say "Thank you, call again," "Nice weather we're having," "How's your Aunt Millie today, Mrs. McCorkadale," and other nice little pleasantries.

But he couldn't teach his cornet to write out charge slips, or keep the books, or fill the cookie jars when they ran low, or rack up the pool balls. In fact, it was surprising how limited were the practical uses to which a cornet could be put. On top of that, there was the odd hurrying shopper who couldn't wait for Dan to toot the "Wabash Blues" before he served her with butter and eggs.

So the Totino grocery store and billiard academy quietly folded up like an Arab's tent, and Dan was left with his cornet. This he took to Toronto, and so thoroughly had he learned his instrument at the expense of his business that he had no trouble signing up with leading orchestras. Eventually he went to Rouyn to lead an orchestra and manage the restaurant in which it played in that booming mining town.

When he returned to Coniston on a visit in 1935, they coaxed him to stay at home and organize the band. So he did.

There were about five musicians available when Dan took over the Coniston Band.

Even they hadn't had a great deal of experience. But the town had a flock of eager young fellows who wanted to learn music, and these clubbed together to pay a band leader's salary, buy instruments, order music, and so on. INCO made a hall available, and the thing was underway.

Note by note, bar by bar, Dan taught his band their first selection. They couldn't read the music, so they had to memorize the finger movements. At times the outlook was rather discouraging, but everybody stuck to the task. And it was a mighty proud evening for them all when they sat up and played the Corinthian Overture right through without a mistake. The Corinthian Overture was their first number, and it's still one of their favorites.

Coniston Band has come a long way since 1935. At present it has 33 members, and plays a repertoire ranging from marches and novelty numbers right through to the most difficult overtures. Right now it's practising Shubert's Unfinished Symphony, which is Class A band music. It reels off without a flaw that technically tough overture from Norma. It reaches real musical heights with its overture from Rossini's Barber of Seville. Its concerts, next of which is slated for the



Nickel Club at Coniston on November 25, are very popular events.

Three nights a week the entire band rehearses, and in addition to that the reed and brass sections have special practices on extra nights, and there's a school for newcomers. It takes plenty of hard work to keep a good band good.

Dan was born in Incurso, Italy, March 23, 1911. The family followed his father to Coniston in 1924, and by that time Dan was an accomplished performer on the French horn, having studied under Serafini. He's single, and claims he's unattached, which should be thrilling news to the lasses of the district. We have a lot of other little things to tell about him that Tony Desautels passed on to us, but space is limited and it's getting late. Which is probably just as well for Dan.

The next time you see him step to the conductor's platform, raise his baton, and start his band in one of their selections, listen carefully to the arrangements and the musicianship of their performance. Think of the plugging they've done to reach their objective. And you'll probably agree that the grocery business may have lost a durned good cornet soloist, but the musical world got a durned good salesman.

## STRONG AND STAINLESS

When screening, used to sift face, baby and similar powder, began to sag in one cosmetic plant, the manufacturer substituted Monel screening. Tough, strong and stiff, Monel proved thoroughly satisfactory. Furthermore, being rustproof, it does not stain the powder.

# Nickel...and Its Uses

## NICKEL ON THE FARM Mining Lends a Hand to Modernize and Speed Up a Great Sister Industry

One of the most striking effects of the modern machine age in American agriculture is the fact that approximately 20 per cent. of the people of the United States today produce as much farm produce as did 80 per cent. of the population little more than a century ago.

Nor is such startling growth confined to America and Canada but is world wide; and if reliable statistics were available, even more startling comparisons could be drawn.

In this great march of progress the nickel alloys have played an important role, particularly in the one instrument of farm mechanization which has contributed most to the modernization of the farm—the tractor. A recent survey of the farms in the United States revealed that there were in operation over one million tractors, or more than double the number 10 years ago.

Over the years since the first introduction of this "handy man" of the farm, constantly increasing life, more and more silent operation, greater and greater power, fewer and fewer part failures are some of the outstanding advantages gained from the increasing use of the nickel alloys in farm tractor and engine parts.

### MAIL-ORDER TRACTOR

Significant of the development of this modern machine is the fact that it has become possible for a farmer to buy a tractor through a mail-order catalogue, a newly developed unit having been included recently as part of the regular merchandise line of a well-known mail-order house. Said to be the first of its kind to have practically all of the proven mechanical features of an automobile, the machine uses nickel alloy steels in the engine and other heavy duty parts. Like the modern automobile, it can be driven at a speed which offers the advantages of an extra truck as well as strength and ruggedness for work in the fields.

Thanks to metallurgical development and research, tractor weight per horsepower has been greatly reduced, giving the farmer more than twice as much power per dollar as a few years ago. A shift to higher quality steels has resulted in a lighter weight, more compact tractor, with consequent economy of operation through lower fuel consumption. The higher quality materials have included several types of nickel steels as well as nickel cast irons.

### THEY MUST BE TOUGH

Tractor gears and axles, and exhaust manifolds, valves, crankshafts, bolts and other engine parts have been developed in nickel alloy steels and nickel cast irons to meet exacting requirements. The heavy work which the tractor must do definitely requires the toughness which nickel will give for certain vital parts. The tractor must necessarily meet conditions of vibration, shock and strain. Parts of it may be exposed to water, mud, grit and other abrasive materials during much of its working life. For these reasons, every tractor is built on the presumption that it will work under the worst conceivable conditions without breaking down or time out for repair.

In the INCO laboratories and in the great rolling mills and foundries which turn out the engineering materials from which agricultural machinery and industrial equipment are made, metallurgists and chemists are constantly striving to improve and develop special alloy steels and cast irons for particular purposes. And in this research nickel

has maintained a leading position as a dependable alloying element. Thus the millions spent by the metal industries in research have been of direct value to the farmer through the improvement of farm machinery by the wider use of nickel alloys for vital parts.

What is true of the modern development of tractors is also true of other farm implements used for tillage, planting and harvesting operations—for ploughs, mowers, reapers, binders and silo fillers. For instance, tests conducted on "ni-hard" ploughshares operated in various types of soil have shown them to have a distinctly longer life.

Despite our so-called Machine Age, there still remain a lot of mechanical operations around a farm that require the use of tools directed and powered solely by human hands. Most of these tools are made of steel. In this application, we again find that steel is a material that can be vastly improved through the judicious use of small quantities of alloy. Again, we find that one of the most effective of these alloying materials is nickel. Shovels come under this classification, many of the improved products being constructed of nickel-chromium steel and nickel-molybdenum steel in order to assure longer life and greater strength, together with lighter weight.

Although the first cost of such tools is more than that of ordinary steel shovels, the life may be as much as ten to twelve times as long, the edges remaining sharp and not

turning up as so often happens with ordinary implements. Hand tools of all kinds, even the common variety of household screw-driver, are turning from horse and buggy design to modern age alloys in order to reduce bulkiness and weight with no sacrifice of strength.

But if the average farmer is unaware of these important technical advances and still thinks of his metal equipment in terms of so much steel or cast iron, he must be conscious that the tractor of today is a very different "farm hand" than it was a few years ago.

Then it was a noisy, weighty, cumbersome affair, requiring a great deal of area in which to turn around and impractical in many other ways. For instance, the old tractor mired down and was difficult to manipulate in the thawing soil during the early Spring months. Its wide, heavy wheel marks left inferior crops as grim evidence of soil packing. Broken parts were more the rule than the exception, presenting the constant danger of disastrous delays during the tilling, planting and harvesting seasons.

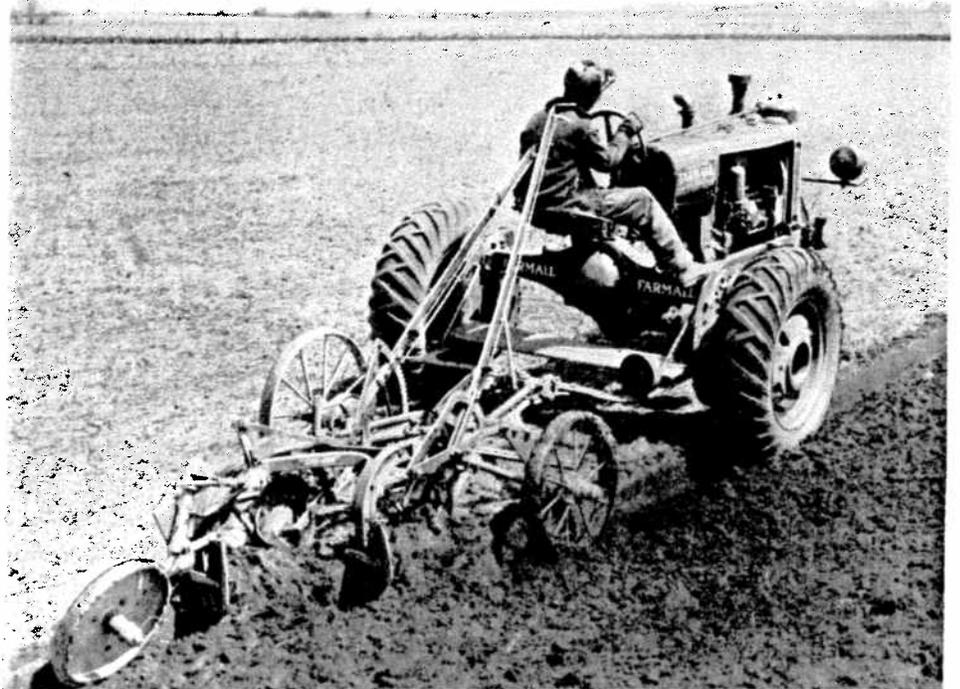
### CONTENTED MILK

Not only in the fields but in the dairy as well, nickel alloys continue to work for the farmer.

"Inconel," the nickel chromium alloy, was developed especially for dairy use. Although milk is not ordinarily looked upon as a corrosive liquid, it is easily contaminated by most metals and alloys in the range of temperatures encountered during pasteurization. "Inconel," however, has been found to be satisfactory in contact with milk at all temperatures. In one of the largest dairy plants in North America, 10,000 pounds of "Inconel" have been used for the regenerator and cooler units alone.

So you will see that nickel is finding its place on the farm as well as in the factory. And the farmers, whether they realize it or not, are becoming important purchasers of the nickel we mine and refine right here in Canada.

## Nickel Increases Tractor Efficiency



Within the ranks of INCO are many employees who came from Canada's farms, and to them particularly will be obvious the big improvements nickel has made possible in this I.H.C. tractor by cutting down weight and improving efficiency.

## Alloys to Order

**1** On the doorstep of INCO's splendidly equipped Research Laboratory at Copper Cliff, is laid many a knotty production problem from one or another department of the Company's operations. For instance, the Research Lab. was recently requested to see what it could do about developing an alloy of nickel which would resist a particular type of corrosion encountered at one of the INCO plants. So the metallurgists and the chemists go to work. First they study the problem carefully, and work out as closely as they can on paper the constituents of an alloy which should do the job. Then they mix up their ingredients—some nickel, a dash of ferro-chrome, a pinch of ferro-molybdenum, iron seasoning, etc., and this they place in a crucible in their high-frequency induction furnace. When this mixture is thoroughly melted, elements such as aluminum or silicon are added to deoxidize the molten metal, and it is then cast into bars. Then they heat the alloy again in another type of furnace to a high temperature—in this case 2,200 degrees Fahrenheit—and quench it in water. This heat treatment improves the corrosion resistance of the alloy because its various constituents are more closely combined at the high temperature. If they were allowed to cool slowly they would separate again. And so the alloy is ready for testing. Perhaps it fills the bill, but more likely dozens of other experiments will have to be made, with slightly different ratios of constituents, before exactly the right type of alloy is discovered for the job. Photo shows Kel Sproule pouring an alloy cast, and obligingly spilling a few drops of it on the floor so Triangle could give its readers a colorful picture. "Good journalism but not good practice," he was careful to point out.

★ ★ ★

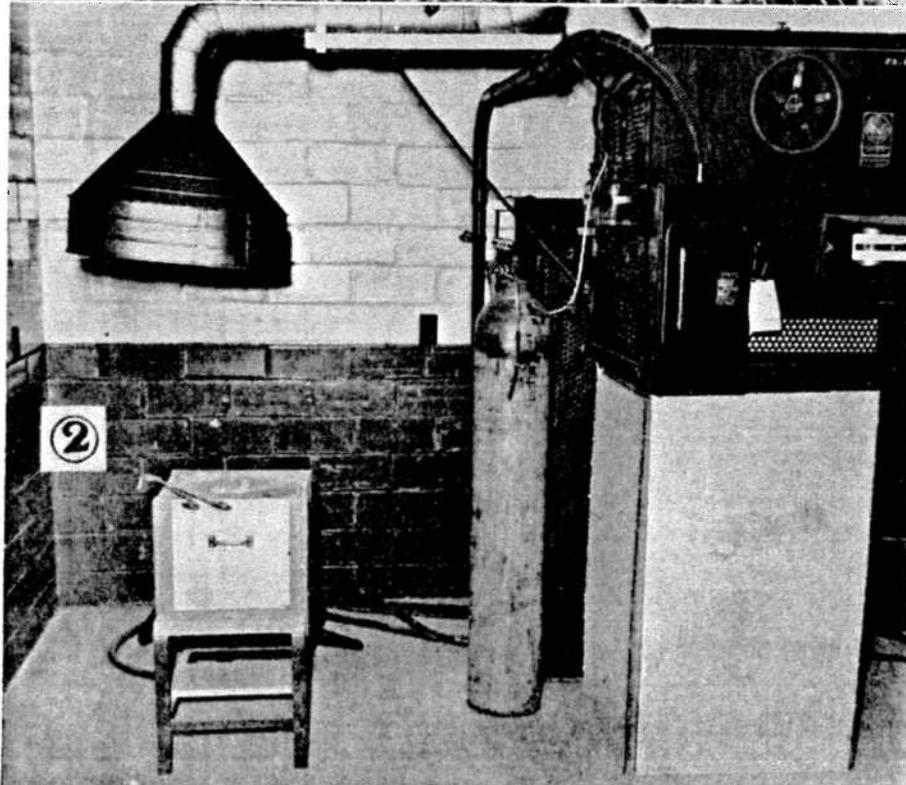
## Slick Furnace

**2** Alloy research such as that just described would not be possible at the Research Lab. without a high frequency induction furnace, suitable for making melts at extremely high temperatures and at the same time protecting the melt from contamination. Note the massive electrical installation required to operate the small furnace, in which it is possible to produce a temperature of 5,000 degrees Fahrenheit in half an hour. Although it is carrying this high frequency current, the copper coil in the centre of the furnace is actually water-cooled. The heat is all generated in the charge inside the coil, so that the furnace itself, outside the coil, remains cool. Thus it is possible to make a melt without the charge picking up any contamination from the heating medium, as would be the case from the electrodes in an electric arc furnace. The range of temperature is regulated by the type of crucible and insulation used, because the crucible which is a good conductor of electricity will carry more current, resulting in more heat. In the case of this experiment, the crucible was of graphite, lined with magnesia to prevent the metal from picking up carbon from the graphite.

## ORCOITE BAGS BRUINS

Duncan Williams, ORCO, stepped into the Martin Johnson big-game hunting class when he and Archie Vincent, a Sudbury contractor, bagged two bears and a cub near the Onaping river about five miles from Levack. The two bruins weighed 400 pounds each, and the cub was about a year old.

The two marksmen found the dens of the bears and waited. "I was about 15 feet from one bear when I saw his nose coming out of the den," Duncan said. His bullet hit the bruin right between the eyes, which, according to all the better books on how to shoot bears, was just as well.



# Fast Hockey Winter's Menu

On the eve of the third game of the MacAskill Trophy series, with Creighton billed to meet Frood, it would be dangerous business for Triangle to forecast a winner in this hectic schedule. Creighton must win, but there's nobody on our staff who's willing to go out on a limb and say they can't do it. And, if they do, the fat is in the fire properly.

**1** When Frood trimmed Creighton 8-0 in the second game, they looked like this in their dressing room afterward, and there were many who went home from the match convinced that the Tigers were all set to steam roller their way to another Nickel Belt title, like they did in 1936. But a few nights later it was an entirely different story when Copper Cliff took Frood into camp 5-3. This, with the Cliff's 3-2 win over Creighton in the opening game, altered the picture completely and gave hockey fans exactly what they wanted—a series with plenty of the old suspense in it.

Completely revamped and showing many new faces, the three INCO teams look at this early writing to be exceptionally well matched for the Nickel Belt schedule they are to fight out among themselves. There's the odd rough corner that must be smoothed out, but even though the season is hardly under way, the play is already sparkling with the speed and spectacular scoring thrusts which Stanley Stadium customers have come to expect.

**2** Here's Clark Burlingham, of Copper Cliff, pulling off a hair-raising save. The spunky little ORCOITE seems geared for another season of smart net-minding. At the other end of the ice that night was Leo Sargent, who is back in the Nickel Belt after showing his wares to Jack Adams and the Detroit Red Wings in a preview last month. According to **3** reports, Leo's age was the only thing between him and a pro contract. The big leagues like their puck-stoppers young. In this photo, Chipman, of Copper Cliff, has just snared a rebound and lifted it over Sargent's prostrate form into the tapestry.

## Ladies' Team Leads at Bridge

If Copper Cliff ladies' team can hold the 4,000-point lead they established in the first two matches of the series, they will win the INCO inter-plant bridge championship at Memorial Community Hall next Thursday evening, November 24, and the E. A. Collins Rose Bowl trophy will be theirs until spring.

Captained by Mrs. T. D. Price, the series leaders scored 27,220 points in the first match, and followed up with 29,650 on November 10, to build a commanding margin. Bridge being a capricious pastime, however, they must still look closely to their fitnesses to stave off final evening challenges from General Office with 52,900 to date, Ramblers with 52,160, and Outlaws with 51,320. Outstanding recovery of the series was staged by the "Duke" Jarrett-coached Outlaw brigade, which came from eighth spot in the first night's standing to fourth.

In fifth position is Creighton with 50,280. Frood has 45,340 to date, Levack has 47,710, Refinery has 47,140. Smelter, defenders of the trophy, rank sixth with 50,060, and must score many a grand slam next Thursday if they are to retain their laurels.



## "You Get a Lovely View"

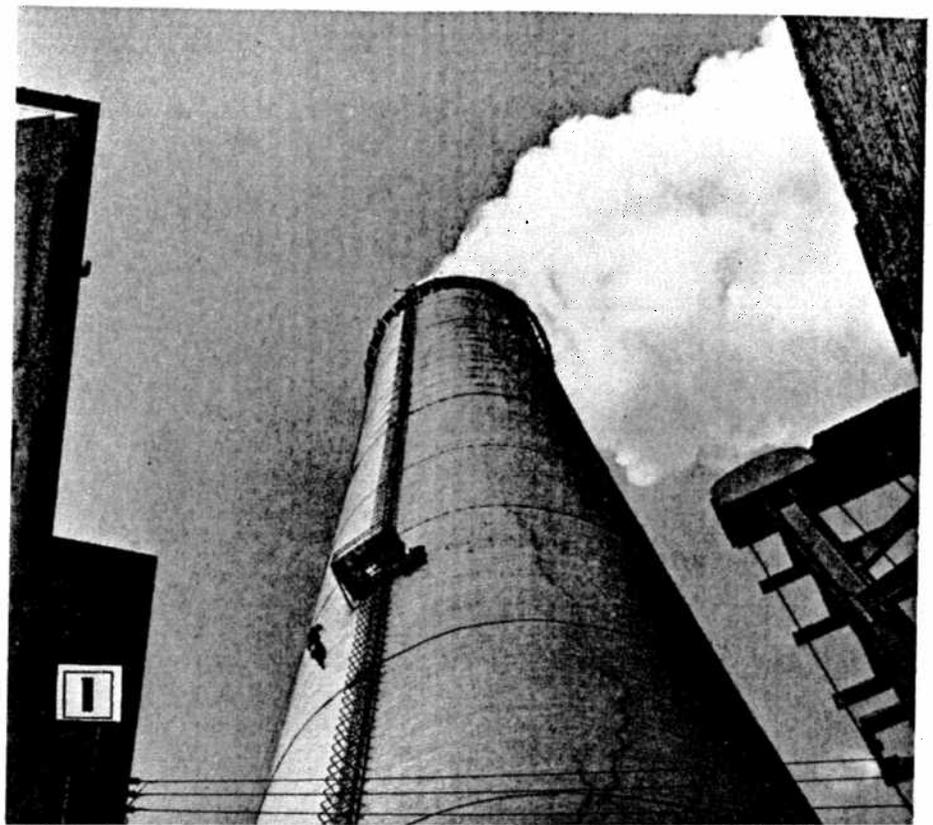
**1** There's nothing more intriguing to a dyed-in-the-wool "landlubber" than to watch these fellows who clamber around the high places with no more concern than if they were playing marbles on the sidewalk. During the past couple of months Copper Cliff employees have often paused on their way to and from work to gaze up the towering face of the big brick smoke stack and watch the crew which has nonchalantly been working away up there. The scaffold on which they stand is 20 inches wide, has no railing, and is hung from a cable which is stretched around the stack and tightened with turnbuckles. They all wear safety belts, of course. Their job includes the replacing of any cracked bricks in the stack and the repairing of any cracked mortar. That wavering line up the side of the stack that looks like a crack is really some of their work,—they have used "dum dum," a mixture of asbestos and oil which hardens on the outside but remains elastic underneath to take care of contraction or expansion, to patch superficial heat cracks in the mortar. At intervals on the final 300 feet of the stack they have stretched a total of 25 steel bands, the last eight of which have a nickel content of 8% to enable them to withstand smoke corrosion, adding strength to the enormous pillar, and around the top they have installed 26 of the latest type of lightning rods, each eight feet high, replacing the original rods.

**2** To get to their work, the stack crew "ride the ball." About the size of a powder keg, and filled with cement for weight, "the ball" is hoisted on a special steel cable which will stand many times the greatest strain ever placed on it, although at first glance it looks more like a strand of clothesline. The workman straddles the ball, like Andy Sutton is doing in this photo, and steadily ascends to his job. Andy, if he is feeling like stretching during the journey up, will stand on "the ball" and hang on with one hand. You'd think a fellow would want to yawn pretty badly, before he'd do anything like that. But it doesn't bother Andy, who has worked on stack jobs in at least twelve of the United States, and can't quite understand why the average human being gets a definite prickling of the scalp at even the thought of riding up to his everyday perch. Height is the last of his worries, but during the past few days, as his job reached the top of the stack, he admits the going has been a bit tough. An accumulation of soot, in places six feet high and five feet in diameter, had built up around the 140-foot circumference, and this had to be removed. What's more, it had to be removed carefully, pail by pail, in case a chunk should fall on someone below. Chipping off that soot, with your face exposed to the swirling smoke and heat belching from the stack, is no tea-party. But, as Andy says, "you get a nice view up there."

**3** Andre Deschenes, a Sudbury man hired by the stack crew for the Copper Cliff job, demonstrates his nervousness at great height by holding on to the top of the stack with one arm and standing on the gin pole,—the steel pipe, attached to the stack ladder, on which the "ball" cable operates. A 500-foot drop yawns below him. This is the first chimney job on which Andre has worked. He had never previously been employed "up in the air." Yet the sudden change in altitude didn't phase him. Why? Well, just because he's built that way. Stack experts say you can't acquire the knack of working at height, despite the fact that many people claim you can get accustomed to it if you hoist yourself a little higher every day, not noticing the difference and eventu-

ally becoming used to it. That, say the men in the business, might work alright up to a certain point, but beyond that point the average man can't go. "It's just something in your head, like the balance wheel in a watch," they tell you. "If you have it, you're okay. But if you haven't got it, you'll never be okay up there." When they're testing a local man for a job with them, they take him up on the scaffold; but they're not

interested in whether or not he can look down to the ground without getting dizzy. Instead, they hand him a bottle of water, put a safety belt on him, tell him to stand free of any handhold, and make him drink the water. If he can do so without losing his balance, his head tilted back and his eyes watching the pretty blue clouds sweeping by, he'll do. And if he complains bitterly about it being only water in the bottle,



he's probably an old hand at the business. Of the seven Sudbury men hired on this particular job, none had any previous experience. One of them, Sid Pollard, formerly worked underground at Frood. He's had his ups and downs, eh?

Bill Kuhl, foreman on the job, watches Andy Sutton "ride the ball" to the top. Bill has been with his company since 1903, and has worked on stack jobs all over the British Isles, through Europe, and in many of the United States. During one 10-week stretch he jumped to contracts in no less than 14 different states of the Union. A veteran of the game, he takes most pride in his safety record. He has never had a man injured on the job in all the years since he became a foreman. His one big thrill, a hair-raiser that was front-page stuff for British newspapers and mighty handy for Bill's scrapbook, would have been right down "Believe It or Not" Ripley's alley, if that connoisseur of the unusual had been in action at the time. In 1911, 15 miles from Belfast, Ireland, Bill was working 240 feet up a stack at a linen thread mill. He had stepped out of his bosun's chair to the scaffold for some material, and, since it was 11.45, he decided to go down for lunch. But the man on the ropes below had relaxed his hold, and when Bill stepped back into the bosun's chair, straight down it plummeted at a sickening speed. Death seemed certain, but the edge of the chair glanced off a steam pipe some 20 feet from the ground and Bill was catapulted by the impact into dense shrubbery nearby. He had his lunch, and was back up top at 1.00 o'clock, ready for work again.

## Teal Knocking At Title Portals

Johnny Teal, C.C.A.A.'s classy young welterweight, enhanced his reputation in fistic circles recently with decisive triumphs over two standout performers in his class. He was given the nod over Gordie Schmalz, of Kitchener, Canadian champ, in a bout at the Palace Rink, and he easily outpointed "Peaches" DeNapoli, of St. Catharines, who has fought the best at this weight in the country, on the INCO Employees' Club card November 8.

Just 20, for all the experience he has had in the ring, Teal is conceded a smart future in the fight game if his hands hold out.

### O'HAGEN A STANDOUT

Because both men were counter-punchers, however, the Teal-DeNapoli set-to was not the highlight of the Employees Club show. Game to go in at the last minute and pinch-hit for Zavelitch, of Ottawa, who left the matchmakers in the lurch after agreeing to take part, flailing Freddy O'Hagen, of Frood, stole the spotlight. He put up a whale of an argument against "Chuck" Butters, of St. Catharines, and many of the fans thought he should at least have had a draw. Fight followers have come to expect action where there's O'Hagen. He's a crowd-pleaser.

About 400 fans turned out for the card, another feature of which was Announcer "Barney" Barnett's able imitation of the Madison Square Garden style made famous by the late Joe Humphries.

### IT'S NEVER GRUMPY

It "whistles while it works." A beer gauge, recently developed, consists of a monel container which fits between beer barrel and cooler. Holding about three gallons and equipped with a small valve that whistles when the beer goes below a certain level, the container holds enough beer so that service is uninterrupted while another barrel is being tapped. It also enables the bartender to give a full glass under varying conditions of pressure.

## Severs Link With Old Days

The last of the old open roast beds in the Sudbury district will soon be no more, for workmen are busy tearing down all equipment left standing at the O'Donnell roast yards, closed since 1929. Located about five miles west of Creighton Mine, the O'Donnell, owned by INCO, was one of the last ties with the nickel industry of past years.

O'Donnell was established in 1915 by the then Canadian Copper Company, which was later amalgamated into The International Nickel Company. When the roasting yard was constructed it was the largest in use in this country, and sixty per cent. of the company's ore was roasted there, its sulphur content being reduced to ten or twelve per cent.

### HAD UNLOADING BRIDGE

In 1919 a new unloading bridge was installed at O'Donnell, to make it the foremost pit in the nickel industry of that day. The bridge, which is now being wrecked by acetylene torches, had a clear span of 176 feet and travelled the full length of the roasting beds. Its addition doubled the capacity of the yard. When the beds were being loaded by manpower, it was impossible to place more than 2,500 tons of ore on any bed. But the bridge allowed the capacity of each bed to be doubled.

There were fifty beds at O'Donnell and they could roast 250,000 tons of ore at one time. When O'Donnell closed in 1929 it was a blow to the cord wood business. When the yard was being used extensively, enormous quantities of firewood were needed to roast the ore. Most of this was cut in the vicinity surrounding Sudbury, near Naughton and other points.

### SIX-MONTH ROAST

Each of the 50 beds was prepared with a pile of wood 100 x 60 feet square. The wood was cut in four-foot lengths. Over the fire-bed was placed the five thousand tons of ore.

And each bed burned for six or seven months in the roasting of one consignment of ore.

The ore was hauled to O'Donnell in fifty-ton steel, drop-bottom cars. After it had been roasted, it was hauled back to the Copper Cliff smelter. Now the old former Algoma Eastern Railway line to O'Donnell is seldom used.

With the forward steps taken by INCO in the processing of ores, curtailment of O'Donnell's use began in the early 20's and increased until the Copper Cliff smelter was improved to such an extent that it could handle the roasting and complete processing of the ore under one roof.

## Coniston Assn. Plans Activities

Coniston will sponsor an entry in the Nickel Belt Junior "B" Hockey League this winter, if home games are played there, it was definitely decided at the annual meeting of the Coniston Athletic Association.

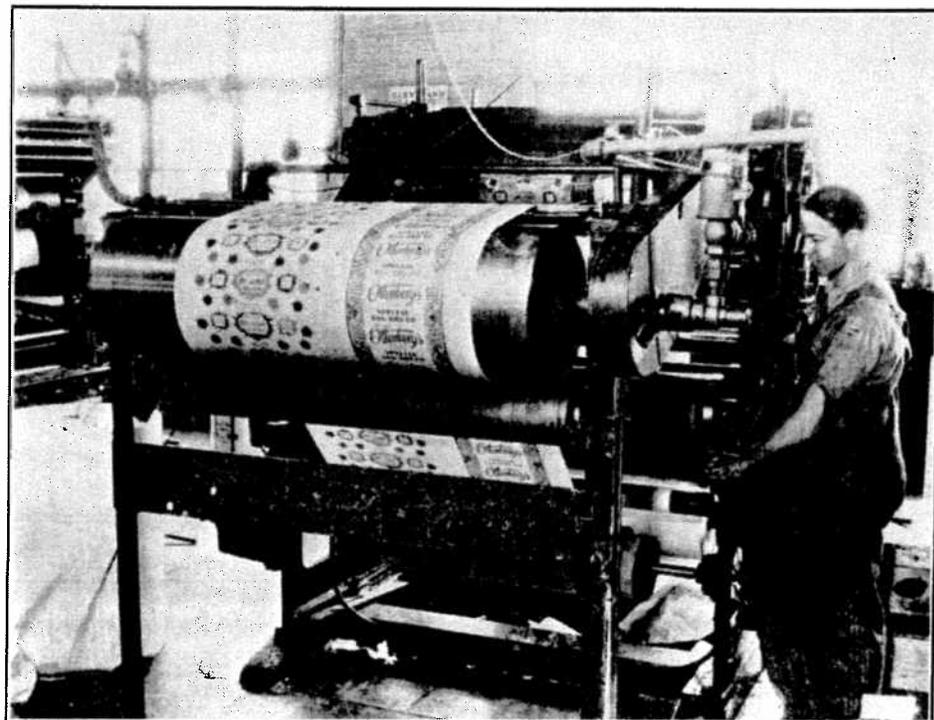
The meeting also decided to take over midget and juvenile entries in the Nickel Belt Minor Hockey Association again this year.

Reports of activity last year in all branches of the association showed a bank balance of \$500. Officers reported that the deficit sustained in N.B.H.L. senior operations in 1936-37 had been wiped out.

### BURNS RE-ELECTED

Bill Burns was re-elected chairman of the association, after serving since October, 1938. The only changes made in committee heads were in hockey and softball. Jack Stacey replaces Sam Cresswell as hockey chairman, and Hal Legris is the new softball executive in place of Bill Evershed.

The executive personnel for 1938-39 is Bill Burns, chairman; Jack Lown, Sr., vice-chairman; J. L. Rogerson, secretary-treasurer; Fred Discher, baseball; Jack Stacey, hockey; Hal Legris, softball; Ken Montgomery, tennis; and Bruce MacCrindle, Joe Bloeman and J. Lilley, general committee.



Not only in the actual production of pulp and paper, but also in the various processes which dress the products for use in the printing industry do nickel alloys play a prominent part. Here is a Monel-covered steel roll installed in the Minerva Wax Paper Co. at Minerva, Ohio. The Monel was applied over the existing roll by pressure welding of the seams.



1



2



3



4



5



6



8

### Recipe for Fun

**1** Out for a good time were this member of INCO Employees Club and his lady faire Hallowe'en Night, and they went to the right place for it along with about 600 other merrymakers. The Hallowe'en party was a big success from every angle, and added to the reputation the Club is acquiring for the "best dances in the North country." Joe Harrison of ORCO, chairman of the house committee, welcomed the couple at the door and sold them their ticket. Inside, on the

**2** stage, the original old Hallowe'en witch, astride the inevitable happy pumpkin, extended a spooky greeting. She was another creation of Harry Costello of Copper Cliff Shops, who handles special decorative features of the Club, of which he is a member.

★ ★ ★

### Cooper Incognito

**3** Two of the maskers snapped as they watched the high-class floor show brought from Toronto for the occasion. The one facing the camera, unless we're mistaken, was Gary Cooper, representing Rebecca of Sunnybrook Farm.

★ ★ ★

### Swing Maestro

**4** Maestro Paul Koster, of Frood, poises his baton for a spot of swing music, and ivory-tickler Hughie Maguire, of Creighton, soon has it rolling from his baby grand. Lombardo of the Northland, Koster is building a very smart band with the high-class musicians found in INCO ranks, most of whom have had experience with leading orchestras of the country. A ten-piece outfit, the Koster troupe is highly popular with Employees Club members.

★ ★ ★

### Horns Jive It

**5** Hot trumpets swinging it sweetly in this one, with, right to left, Doug Pearce, of Copper Cliff concentrator; Stan Peterson and George Gibson, of Frood rockhouse.

★ ★ ★

### No Complaints

**6** Three Froodians at the Club dance face the camera with their ladies. The lads don't look exactly displeased about the company they're in. Who would?

★ ★ ★

### Balcony View

**7** Up in the balcony these merrymakers had a bird's-eye view of the floor show, and are registering their approval of the clever dance team which was included in the Toronto troupe.

★ ★ ★

### Merry Maskers

**8** Don't make any mistake about this picture. These vivacious young ladies weren't sitting out a dance together when the camera caught them. Not by a long shot. It was floor-show time, and the stag line was sitting down too.

### WINS AMATEUR CONTEST

One of the winners in INCO Amateur Nights last summer, "Pat" McCue, Copper Cliff baritone, went on to another vocal triumph when his rendition of "In a Monastery Garden" took first award in an amateur contest conducted from a Toronto theatre, Sunday, October 16.

### 80% NICKEL ALLOY

An alloy of 80% nickel has proven of special value in airplane exhaust manifolds where high resistance to heat is necessary.

## In Club League

**1** Because the majority of their basketball enthusiasts are able to play all their games in the evenings ORCO has two teams in the INCO Employees' Club inter-plant loop, while other plants are limited to one lineup in this league and are organizing shift schedules for the remainder of their players. Dr. R. M. "Moe" Mitchell drops his scalpel and takes up the whistle to coach the ORCO squads on their practice nights, and here he is with some of his proteges: Left to right, standing, A. Hagerman, P. Brown, Dr. Mitchell, J. McArthur, L. Roy, W. Keegan, A. Crossgrove, V. McNab, I. Keegan, K. Clarke, R. Heale; front, C. Scott, B. Haight, B. McDermott, E. Steadman, J. Smith, H. Smith, P. Nazar.

★ ★ ★

## Silicate Plant

**2** Replacing the old plant erected in September, 1934, a new silicate dissolver has been constructed near Copper Cliff concentrator, and is now in operation. Sodium silicate is a reagent used in the flotation process in the concentrator, whereby a rough separation of nickel and copper concentrates from the crushed ore is effected. The silicate must be dissolved for concentrator use. When it is received at the mill, it is in the form of small glass-like cubes, which are not soluble in water but are soluble in high-pressure steam. In the dissolving plant the dry sodium silicate is put into a steam-tight cylinder which holds about 5,000 pounds, and steam is turned on at 100-pound pressure. After about 70 minutes of "cooking," the silicate is in the form of a syrupy liquid, about 60 per cent. water, which is then blown out into a settling tank where any undissolved solids or foreign matter settle to the bottom. The silicate is then ready for use in the flotation process. A feature of the new plant is the electric boiler, in which three-phase electrodes are partially submerged in water. When the current is turned on, the water is vaporized so rapidly that the pressure needle will record 100 pounds of steam in about three to four minutes.

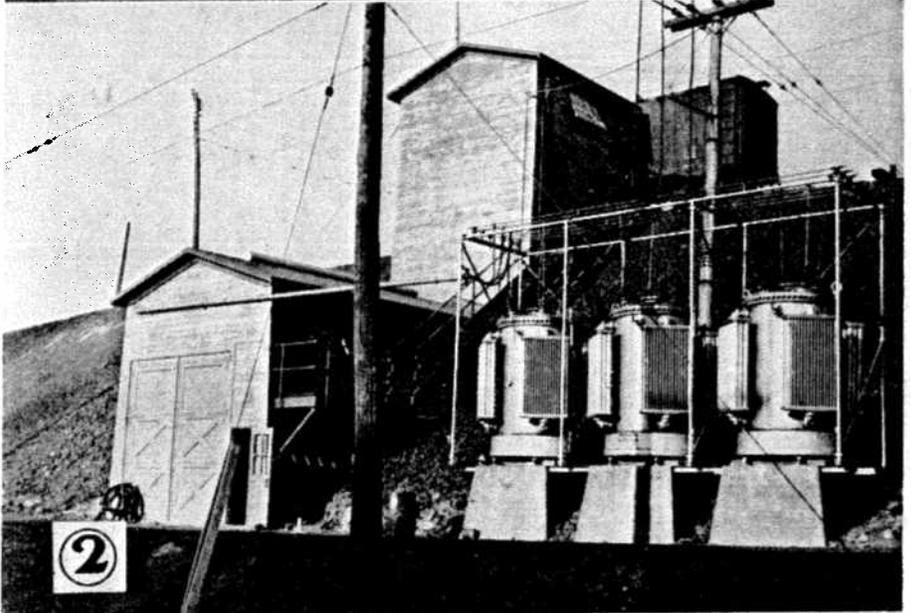
★ ★ ★

## Gym is Popular

**3** The addition of parallel bars and "horse" to the gymnasium at INCO Employees Club has proven popular with those who use the gym to help them keep in top physical condition. Often a crowd of members gathers to watch the boys work out, because some of Northern Ontario's finest mitt and matt artists are found in the ranks of INCO workers. When the combatants unmixed themselves for the camera the other night, they were, left to right: Back row, Dave Moore, Mike Miller, Jim Croal, Squint Felcioni, Johnny Teal; front row, Jim Martin, Alex Sandulo, Nick Choma, George Black. The junior boxing and wrestling class on Tuesday and Friday evenings from 7.00 to 8.30 o'clock, is making great headway in teaching the sons of club members the manly art. The class averages 50 eager young leather-pushers who pitch into everything from setting up exercises to showers with tremendous zest. Boxing instruction is given them by George Black, Vic Skerlton and Hugh Craig, and with another winter's training many of them will be good enough to step into curtain-raiser bouts on senior cards.

### HALLOWE'EN TEA

Levack Ladies' Welfare Society held a much enjoyed Hallowe'en tea, October 26, in their Community Hall, which was attractively decorated for the occasion. Guests were received by the president, Mrs. McLeod, and piano selections during the afternoon were played by Mrs. Dixon. Those assisting were: Mesdames Bolton, Thompson, Hurst, Aitchison, Killah, Robb, Armstrong, Bracken, McNab, Sisler, Brown and Walkom.



# Basketball is Big Attraction

A surprise even to its strongest advocates, the inter-plant basketball league at INCO Employees Club bids fair to draw top billing on the Nickel Belt sports calendar this winter. Six strong clubs have been entered, and the schedule which got under way November 9 promises tough tussles any way you look at it. More than 100 fans were on deck for the opening matches, although the event got no special publicity, and it was obvious that a big basketball following in the district was just waiting a chance to show its interest.

ORCO puts two teams in the loop, Blues and Whites; Frood, Creighton, Copper Cliff Smelter, and Copper Cliff Town, are the other entries. The latter, composed of players who hadn't had practice facilities as long as the other clubs, will round into shape now that a court has been equipped at Memorial Community Hall.

It took overtime to decide the curtain-raising battle between Smelter and ORCO Blues, which went to the former 21-18. Frood and Creighton fought a close-checking engagement to an 18-11 verdict for Frood, and ORCO Whites put the skids under Copper Cliff Town, 39-8.

Well organized, with capable referees engaged, the league is off to a sound beginning. Its Wednesday night fixtures are sure-fire attractions.

## Narrow Escape From Electrocution

A narrow escape from death was the harrowing experience of Donald Wilson, of Frood, one of the parachute enthusiasts at the Sudbury Flying Club.

Carried into the high tension wires one mile north of Sudbury, by a stiff northwest wind as he neared the ground after a 2,000-foot parachute drop, Wilson suffered severe burns about the leg and abdomen from electrocution as a charge of 22,000 volts shot through his body. A huge, purple-blue sputtering flame, said by observers to have been 10 feet high, accompanied the contact of the jumper with the wires.

Lights throughout the city were dimmed as the helpless youth, dangling at the end of the chute shrouds, struck the high powered "death-lines," which supply Sudbury homes with light. A fuse was blown at No. 1 plant as Wilson's body shorted across two wires. The strong wind, filling the two collapsing parachutes, pulled the tortured victim along the wires for about 30 feet, and then carried him clear of the dead lines and dropped him in the water and slime of a swamp under the lines. He was rescued by horrified onlookers and rushed to hospital, where he was confined about six weeks.

### INCO CLUB FEATURES

More than 125 players are regularly taking part in the badminton program at INCO Employees Club. Many newcomers to the game have come along rapidly under the guidance of Jack Gordon and Don Nickerson, and the practice of setting aside one court each evening for the use of beginners has been appreciated. Round robins and badminton bridge have been staged, Badminton nights are Tuesday, Thursday, and Saturday.

Another popular feature at the Club are the bridge tournaments every other Tuesday night. An average of from eight to ten tables is entered each evening. Prizes are awarded.



## Thrice Champions

**1** Being champions has become a habit with the Smelter Softball Club of Copper Cliff reverbs. Three years in a row they've copped the honors in the town Softball League, which is composed mostly of shift players from the mill, shops and smelter, and this year, under the capable leadership of George Johnston, sported seven teams. The Smelter crew, besides playing winning softball, stick together as a team socially and stage several peppy get-togethers during the season at Memorial Community Hall. They wound up the season with a very enjoyable banquet, and topped it all off by having this photo taken: Left to right, seated, J. Newell, D. Hanning, H. Smith, C. Theriault, R. R. Regimbal, J. Moroso, N. Gegegar; standing, M. E. Somers, D. E. Wilson, H. Bortolussi, J. Maguire, L. McNeil, B. Scully, H. Gegegar, N. Martin, H. Johnston. Mascot, David Wilson. The league they dominate is a C.C.A.A. enterprise.

## "A" Shift Picnic

**2** "A" shift in the Electro Dept. at Port Colborne always stages a very successful midsummer picnic, and this year's event was no exception. Scene of festivities was the Laki farm, about a mile west of town on the Lake Erie shore. Outstanding athletic events on the program were the 100-yard dash, won by John Hannigan in a hotly contested finish, and an exhibition of high and fancy diving featured by Jim Haynes. Toward the close of the evening the party was entertained by John Hannigan and fellow-artists formerly with Hannigan's Old Tyme Dance Band of radio fame. Photo shows some of those in attendance.

### 400-DAY CLOCKS

Clocks with specially constructed pendulums of nickel steel have been developed, which require so little driving power that they can run for as many as 400 days on a single winding.