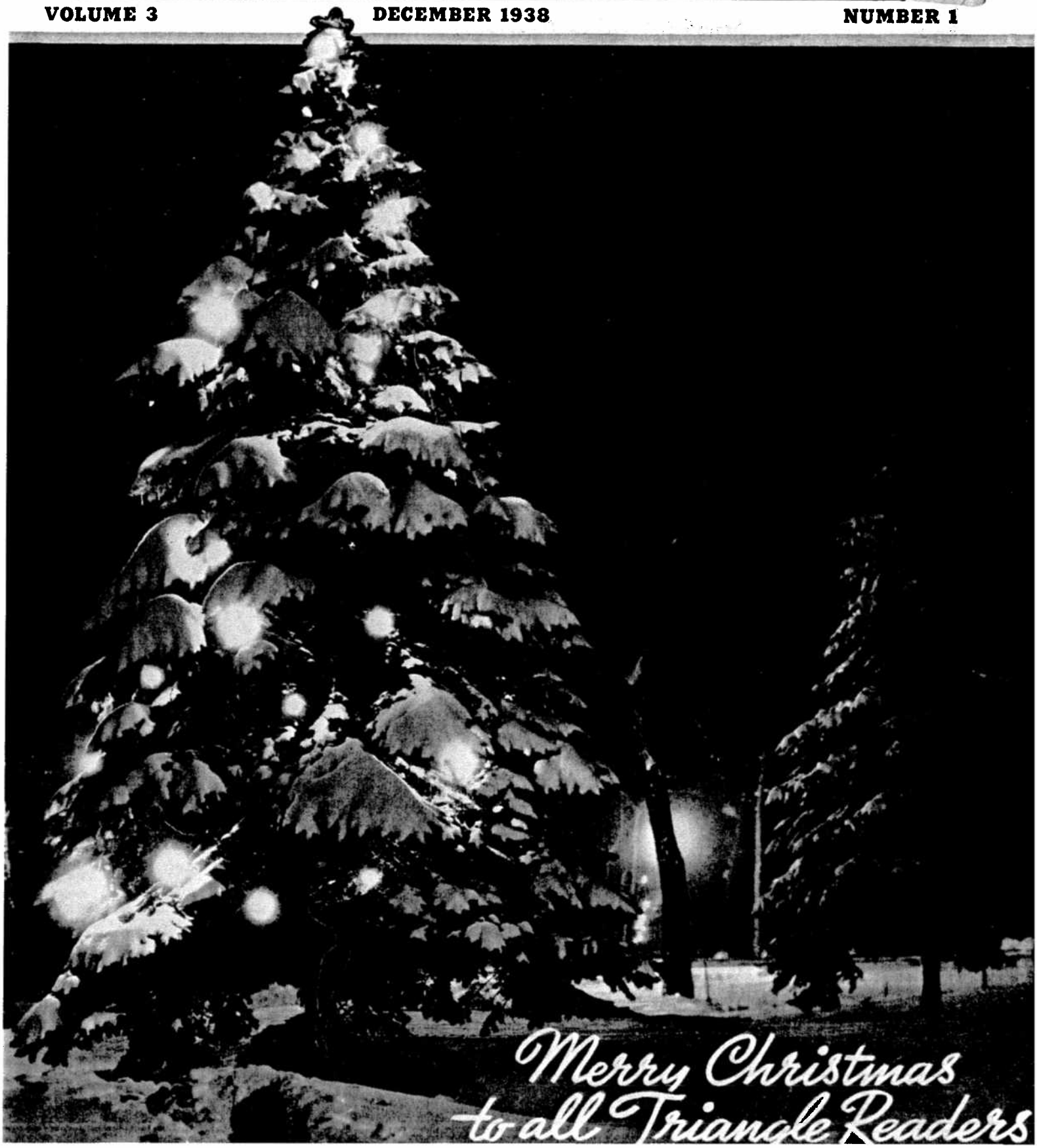
Within The

INCO TRIANGLE

VOLUME 3 DECEMBER 1938 NUMBER 1



Creighton Threat

Many Nickel Belt hockey fans are already picking Creighton Eagles for the season's hockey champions, although with the competition as close as it is, this date would seem a trifle early for any serious crystal-gazing. However, if the Creighton club does come through triumphant, it will be due to the great work of players like the trio pictured here, Hogarth, Stahan and McGlashen. A pillar of strength is Hogarth, who fits neatly into the well-balanced Creighton lineup. Stahan, who may have been something of an uncut diamond when the season opened, has come along fast and now has plenty of polish on his playing. He's a big bulwark at his defence position, but his speed and scoring ability also make him a constant threat when he gets up there around the opposition's goal. McGlashen, the old fox, handles himself perfectly and seems pointed toward one of the best seasons in his long and colorful hockey career. Creighton has speed, goal-getting finish and a wealth of that fighting spirit which often turns defeat into victory.

After four straight losses, which had both players and supporters hanging on the ropes, Copper Cliff came through with a decisive 4-1 win over Frood December 16, and looked good for many more marks. The Indians have two or three of the league's smartest puck-chasers, and will be a great deal tougher to handle than their early-season record indicated. Robbed of Jim Dewey, who got a broken hand, Frood kept punching right along, and covered up its big shortage remarkably well. Mel Carey, Tiger custodian, rang up four consecutive shutouts prior to the Copper Cliff 4-1 defeat.

★ ★ ★

Going Strong

No small contribution to the remarkable safety record established by INCO's Mining and Smelting Division in November was that turned in by the Coniston Shops. As Triangle went to press, this group of men had completed a total of 71,800 shifts without a lost-time accident, and were still going strong.

★ ★ ★

Hold Open House

Copper Cliff Curling Club officially launched its season with a most enjoyable "Open House" party at which members of the Club extended a welcome to newcomers. Presentation of prizes to last season's winners, musical numbers, short speeches, and a "parade o' the besom" led by T. H. "Jock" Rowe with pipers in attendance, were features of the evening. A group of executives posed for the Triangle camera: back, W. W. Henderson, vice-president; left to right, P. F. McDonald; T. H. Rowe, secretary-treasurer; Frank Taylor, chairman for the evening; Jas. Hazleden, asst. secretary-treasurer; D. Finlayson, president. This year's membership will probably be 85, against 37 last season, and ice is soon to be ready with George Hudson giving this department his expert attention. There will be six scheduled events on the program: the Inter-Rink, the Single Rink, the Collins Trophy, the Colts' Bonspiel, the Shift League for the Waterbury Trophy, and the Macdonald Brier eliminations.

"K" MONEL DOES JOB

In paint factories the "breaking down" of coarse color pigments into thin films is usually accomplished on mills equipped with doctor or scraping-blades. Steel formerly was used for this purpose, but rusted and tended to discolor paints of light hue. Now "K" Monel is used. It won't rust and it is hard, stiff and strong as many highly alloyed steels.

Within The INCO TRIANGLE

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

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

VOL. 3, NO. 1 DECEMBER, 1938

The Spirit of Christmas

AMONG the many fine Christmas stories there are few that are finer than the legend of the French shoemaker. According to one version of the tale, there lived in the city of Marseilles, a hundred years and more ago, an old shoemaker, loved and honoured by all his neighbours, who affectionately called him "Father Martin."

One Christmas eve as he sat alone in his little shop, reading of the visit of the wise men to the infant Jesus, and of the gifts they brought, he said to himself: "If tomorrow were the first Christmas, and if Jesus were to be born in Marseilles this night, I know what I would give Him!"

He arose and took from a shelf two little shoes of softest white leather with bright silver buckles.

"I would give Him these, my finest work. How pleased His mother would be! But I'm a foolish old man," he thought, smiling. "The Master has no need of my poor gifts."

Replacing the shoes, he blew out the candle and retired to rest. Hardly had he closed his eyes, it seemed, when he heard a Voice call his name.

"Martin, you have longed to see me," the Voice continued. "Tomorrow I shall pass by your window. If you see me and bid me enter, I shall be your guest and sit at your table."

The old shoemaker was so happy that he could sleep no more. Before dawn he rose and swept and tidied up his little shop. Fresh sand he spread upon the floor, and green boughs of fir he placed among the rafters. On the table he set a loaf of white bread, a jar of honey, a pitcher of milk, and over the fire he hung a pot of coffee.

When all was in readiness he took up his vigil at the window. He was sure he would know the Master. From childhood had he not gazed in love and reverence at His image above the great altar in the cathedral? And as he watched the driving sleet and rain in the cold, deserted street, he thought of the joy that would be his when he should sit down and break bread with his Guest.

Presently he saw an old street-sweeper pass by, blowing upon his thin, gnarled hands to warm them. "Poor fellow, he must be half frozen," thought Martin. Opening the door he called out to him: "Come in, my friend, and warm yourself." The man gratefully accepted the invitation.

An hour passed, and Martin next saw a poor, miserably clothed woman, carrying a baby. She paused, wearily, to rest in the shelter of his doorway. Quickly he flung open the door.

"Come in and get warm while you rest," he told her.

"I am going to the hospital," she said. "I hope they will take me in, and my baby. My husband is at sea, and I am ill, without a sou."

"Poor child!" cried the old man. "You must eat something while you are getting warm. No? Then let me give a cup of milk to the little one. But you have put no shoes on him!"

The mother sighed: "I have no shoes for him."

Martin took down the soft little white shoes he had looked at the evening before, and slipped them on the child's feet. They fitted perfectly. And shortly the young mother went her way, full of gratitude, and Martin went back to his post at the window.

Hour after hour went by, and other needy souls shared the meagre hospitality of the old cobbler, but the expected Guest did not appear.

At last, when night had fallen, the shoemaker retired to his cot with a heavy heart.

"It was only a dream," he sighed. "I did hope and believe, but He has not come."

Suddenly the room was flooded with a glorious light. And to the cobbler's astonished vision there appeared before him, one by one, the poor street-sweeper, the sick mother and her baby, and all the people whom he had aided during the day. And each one smiled at him.

Then softly out of the silence he heard again the gentle Voice, repeating old, familiar words:

"Whosoever shall receive one of these little ones, receiveth Me. I was hungry and ye gave me meat; I was a stranger and ye took me in. Verily I say unto you, inasmuch as ye have done it unto one of the least of my brethren, ye have done it unto Me."

Nickel AND Its Uses

Nickel's Influence on the Christmas Scene

Nickel plays a part in the sparkle around the Christmas tree just as much as do the gay balls that we tie on the tree and the brightly colored bulbs that light its branches. At Christmas time more than any other time throughout the year, we desire to give and surround ourselves with things that shine out as new and especially nice. And, more often than not, nickel and its alloys have a great deal to do with making even the most common things that we know today "especially nice."

THE CHRISTMAS STOCKING

Let's begin by hanging up a stocking. Just as silently as Santa Claus comes at Christmas time, so nickel enters into the picture. It's very likely that even your Christmas stocking had something to do with nickel during its making, for the dyeing tanks and other dyeing equipment used in the manufacture of all kinds of hosiery constitute one of the most important markets for nickel and nickel alloys. The dyes and acid baths used in tinting and coloring hosiery maybe off color unless proper metals are used for making the dye tanks, pipes and other equipment, and this results in imperfect stockings. Nickel's importance in this industry lies in the assurance that the equipment will turn out hosiery with an even color and texture.

KEEPS CANDY PURE

On Christmas morning it's what's in the stocking that counts. It's very likely that a red and white striped candy cane will be found popping out, as candy sticks in thousands of stockings in thousands of homes all over the country will do on this particular day. The candy stick represents a great industry which, like many other food industries, uses nickel and monel for the huge boiling vessels in which candy is cooked, for the tables on which candy is handled and for the metal contact parts of the machines which cut and shape candy. Here again the corrosion resistance of nickel and the assurance that nickel equipment can be kept absolutely clean and free from impurities is the reason for its wide use. Even in the inexpensive candies and in children's candies especially, our modern standards of health are demanding high quality and purity of the product.

NICKEL AND FOOD

The subject of candy brings us around to food in general—to the good things that we have come to associate with Christmas dinner. In the preparation of many of these foods and drinks nickel and its alloys have played an important part. We might almost say that the nickel alloys have been responsible for making available to us at reasonable prices most of the splendid packaged foods we know today. In the manufacture of jams and jellies, all sorts of canned goods and bakery products such as breads and cakes, and in the processing of dairy products, the nickel alloys have come to stand for the guarantee of purity. And the same is true of the modern processing and bottling equipment for wines and beers and whiskies.

NICKEL IN GIFTS

But let's get on with exploring the contents of that stocking. "For him" there's apt to be a new pair of suspenders with shining chromium sides, or a much needed key ring or perhaps a handy pair of pliers to add a useful touch. "For her" there may be a new change purse which closes tightly with a bright metal slide fastener, or maybe there's an attractive charm bracelet that will jingle in true Christmas style. A gayly wrapped package, too big for "her" stocking, may perhaps yield a longed-for electric toaster. It is a pretty safe guess that some of these gifts will be nickel plated, for nickel plating has undergone such rapid progress during the last few years that more and more things are being finished by this material. It has become one of the most important fields for the whole nickel industry. A graphic way to represent the extent of nickel plating at the present time is to point out that the total amount of plating, if spread out at average thickness on a single strip of steel, would plate a path four feet wide around the equator.

The rapidly growing popularity of chromium plating has added to the total amount of nickel used for plating purposes rather than decreased it, for chromium cannot be plated directly on steel but must first have a coating of nickel underneath.

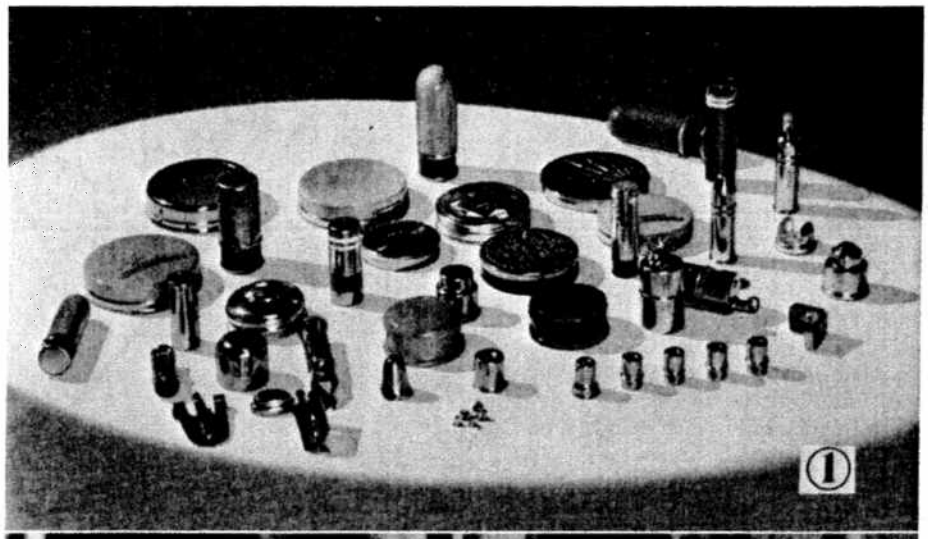
"ST. NICK'S METAL"

Back in the 18th century, superstitious miners named nickel "Old Nick's" metal because the difficulty of mining it made them believe that it had been cursed by the devil, but we moderns have come to appreciate how useful nickel has become. At Christmas time we might very well dub it "St. Nick's metal."

"Saint Nickelas"

Not only as a background for many of the preparations for a joyous Yuletide, but also in a great variety of the actual gifts which carry the spirit of Christmas, is nickel an ally of good old Saint Nicholas. In fact, they might even spell it "Saint Nickelas." Here is a collection of dainty novelties For Her. In their making several alloys of nickel were used.

The first requisite of a jolly Christmas for the kiddies is a good big stocking to hang up on the night before, leaving Santa plenty of room in which to leave his surprises. And even here nickel has its influence, for the leading stocking manufacturers use big Monel-lined drums like this in which to dye their products. No corrosion, no discolouring, and plenty of good long wear.



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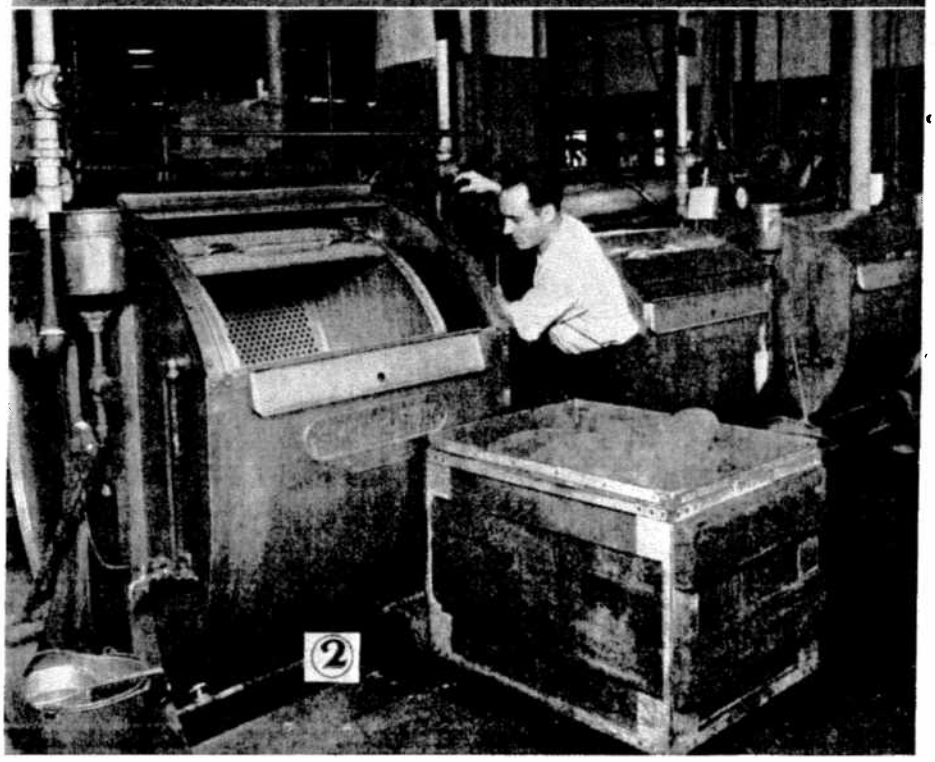

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Compete With Niagara District

An impressive badminton program has been lined up for the season at Port Colborne. Teams from the INCO Recreation Club have been entered in both the A and B sections of the Niagara District Badminton League, and should finish among the leaders at least.

Finals of the Niagara District will be played at INCO this year, and since this event has drawn about 300 entries the last two years it should prove a big attraction at the Recreation Club. Regular Club badminton is going strong, and the various group schedules are proving popular. Mixed progressive badminton, an innovation, is being tried out once a month, and looks as if it will click with the members.

ORCO Inter-Dept. Hockey League Set

Headed by a live-wire executive consisting of J. L. Crawford (Chairman), G. Penner and T. J. Kurtz, the ORCO Inter-departmental Hockey League seems to be in for a banner year. Enthusiasm is running high throughout the Plant and with the amalgamation of the Office-Lab. and Casting-Yard teams to produce one strong entry the league looks to be better balanced than ever before.

Each department has already appointed a manager and coach: Office-Lab. and Casting, H. B. Shoveller and F. J. Faught; Tank House, D. Wilson and J. S. Duncan; Shops, C. Bell and H. J. MacDougall. As soon as ice is available in the Palace Rink in Sudbury the league will commence. Two games a week are to be played and judging from the excitement around the Plant a large turnout of fans should attend each game.

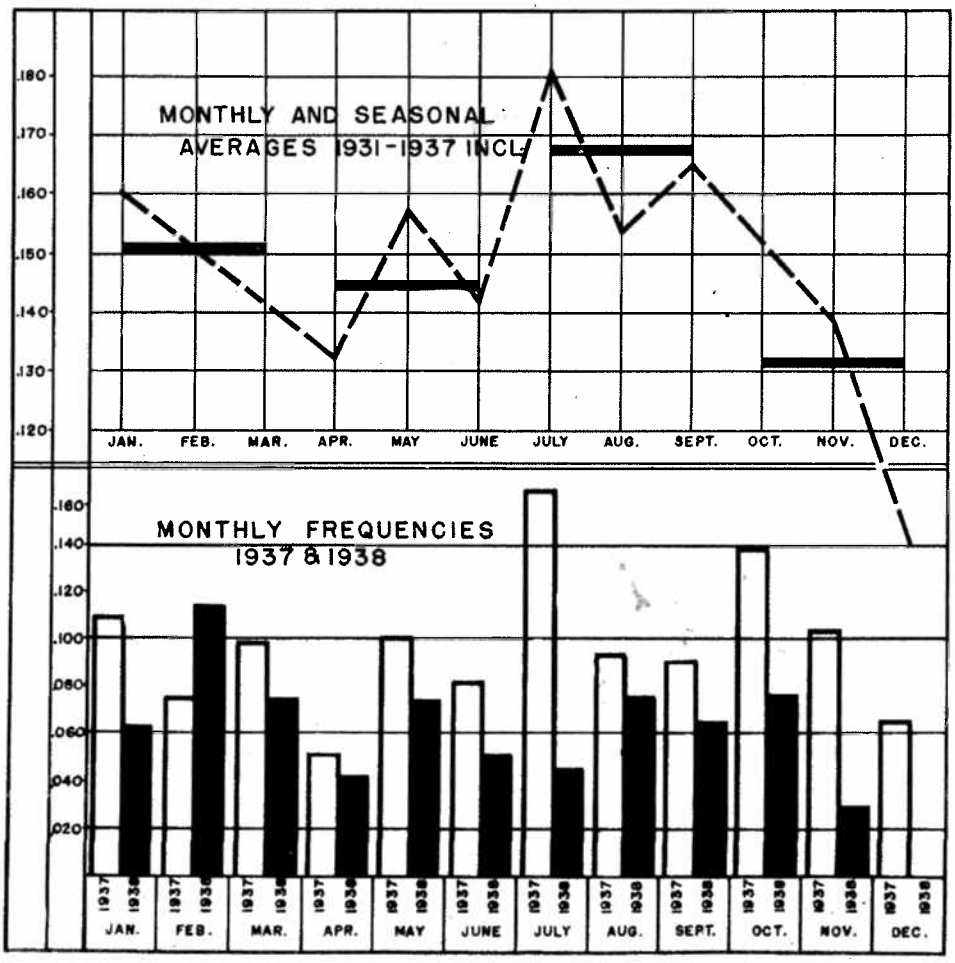
WINNER IN PLAYDOWNS

The winner of the league will represent the Refinery in Intermediate playdown competition and with the undoubted coaching ability of "Freddie" Faught and "Jawn" Duncan, two old "pros" and "Punch" MacDougall of Soo Greyhound fame, a battle should result right down to the finish. So, Copper Cliff and Frood, beware of the Refinery.

WOOL FROM MILK

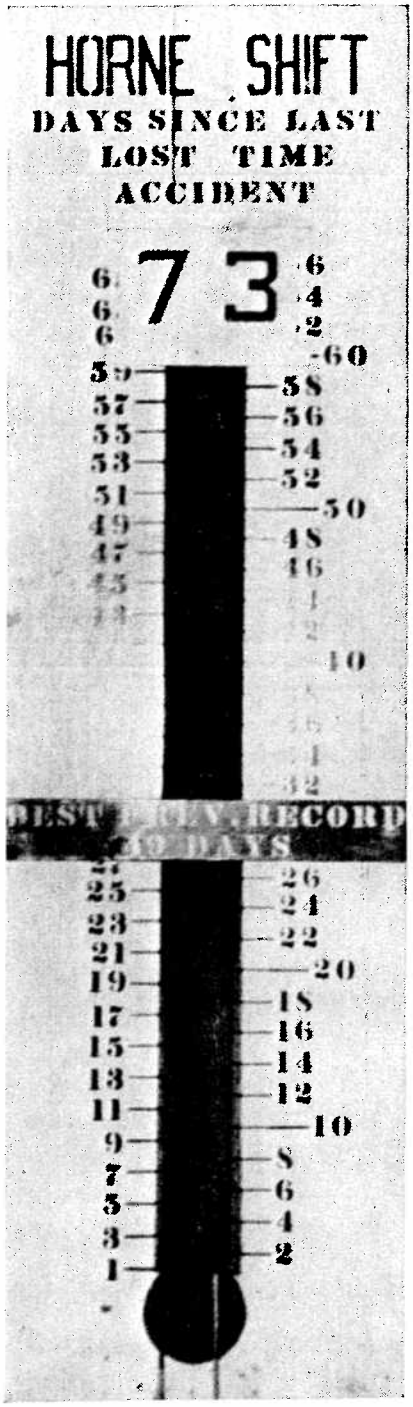
A method for making artificial wool from casein, a compound of milk, has been recently devised by the U. S. Department of Agriculture. The substance is precipitated and forced through platinum spinnerets for the formation of the fibre. The new material is said to be almost identical with wool, but does not shrink as much as natural wool.

November Was Safety's Biggest Month



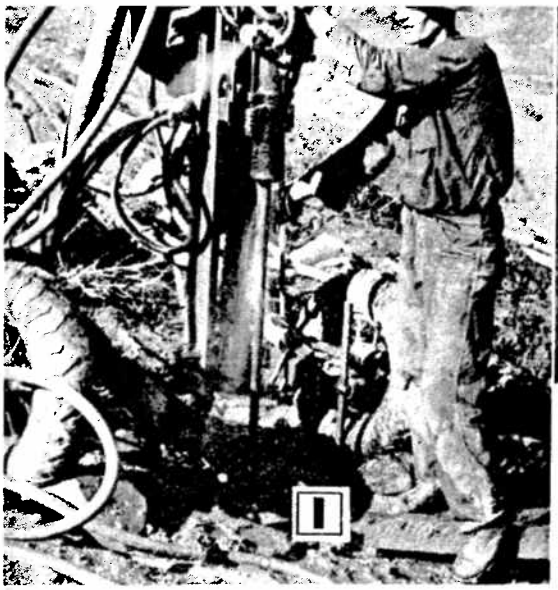
November made history for the Mining and Smelting Division's Safety records. The concerted efforts of employees in all departments to beat out the accident bogey resulted in a new low mark of only .03 accidents for every 1,000 shifts worked. The previous best figure was established in April, and was .042. Prior to that, April of 1937 held the record with .052. The figure for December will not be available until next issue, but it is practically a certainty that 1938's average will be the most favorable since 1930. Which is precisely what the Safety Department last January started out to make it. Congratulations all around!

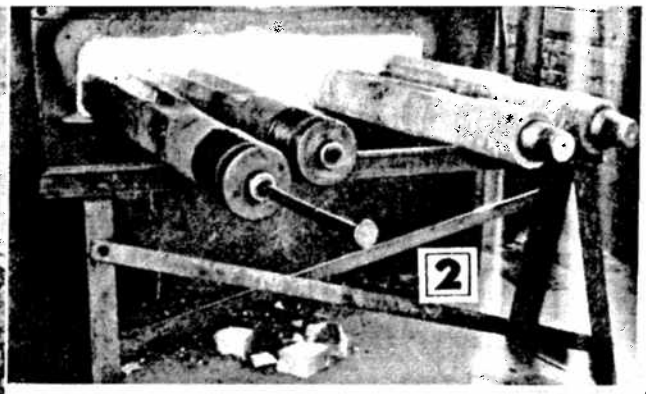
Frood Record



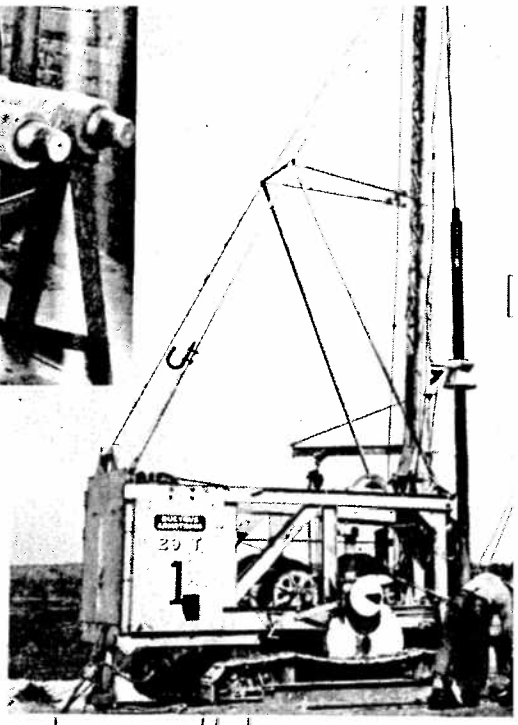
A glance at the Safety thermometers in the collarhouse at Frood tells the story of the best month of accident-prevention in the history of the mine. For the first time since operations started, Frood was able to report a calendar month in which there was not one lost-time accident. Anyone conversant with mining can appreciate the significance of a record like that, and also the co-operation among men and supervisors that made it possible. Photo shows the thermometer covering the safety activities of the Horne shift. There wasn't enough "mercury" in it to record the number of days worked without an accident, and special numerals had to be called in.

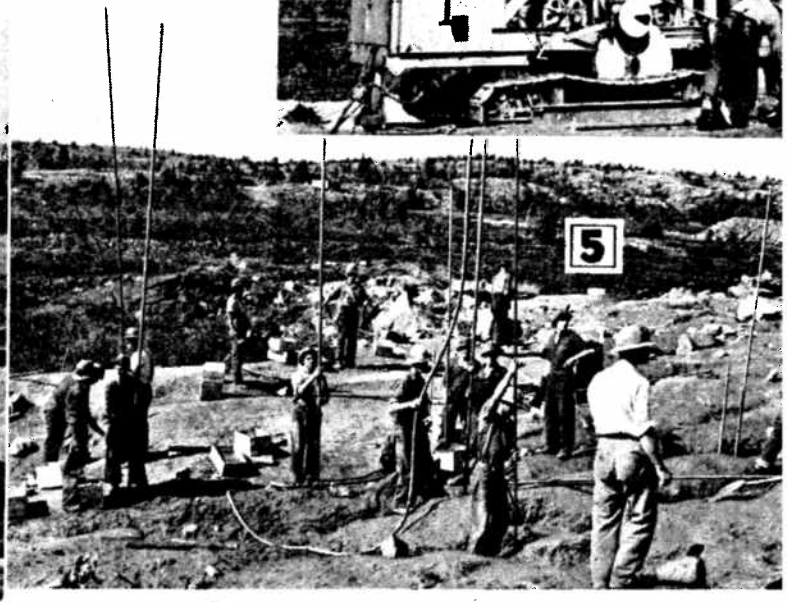
According to recent estimates, the production of finished chromium and nickel-chromium corrosion and heat resisting alloy steels has increased 90 per cent. in the last two years.





The Camera Visits Frood Open Pit





Camera Visits Frood Open Pit

Because of the extent of the operation, its novelty to this section of the country, and the spectacular size of the equipment involved, the open pit mining at Frood is a subject of keen interest to all INCO employees. On the opposite page Triangle gives its readers the first published set of photographs of this large-scale addition to the Frood setup.

An area approximately 4,000 feet long by 400 feet wide has been marked for open pitting, and the first 18 months is to be devoted to levelling off the ore outcrop to the general surface elevation, after which mining below the general surface will be carried on. Sides of the open pit will be maintained at an angle of 45 degrees for safety and to provide roadways for the trucks which haul the material from the pit to the crushing and sorting plant.

Balance of production is what INCO will achieve by launching open pit recovery of the lower grade ore found in the top portion of the Frood orebody. As President Robert C. Stanley said in his report to the shareholders last February: "The combination of surface mining and mining at depth will assure an average grade of ore over the future life of this mine." Because the orebody outcrops at surface, the only removal of overburden necessary is some stripping to expose the hangingwall, which makes the Frood open pit one of the few shovel operations of its kind in the world.

The Triangle camera now focuses on the story:

Wagon Drills

1 Smaller of the two types of drills used at the open pit is the wagon drill, of which there are four in operation, and which is actually little more than an oversized "plugger" on wheels. Mounted on pneumatic tires for convenience in moving, it drills an average of from 40 to 60 feet in the waste per eight-hour shift. The "starter bit" is of three-inch diameter, but the bit is changed after approximately each two feet of drilling, so that when the drill's maximum depth of 26 feet is reached, the bit in use is only one and three-quarters inches in diameter. Both forged and detachable bits are being used. Holes are drilled a maximum of 10 feet apart for efficient blasting results, and a constant stream of water from the drill's feed line not only keeps the bit cool but also washes out the cuttings from the bottom of the hole, the principle of sludge removal being the same as in underground drilling. The drill is raised and lowered by an air motor.

Churn Drills

2 Of the regular well-drill type, the churn drill at the Frood open pit drills a blast hole nine inches in diameter. A sharp blow with a quick up-swing, rather than a dead blow which lets the drill rest on the bottom of the hole for a fraction of a second, is the secret of good drilling action, perhaps on account of the vibrations set up in the rock by the drill point. Accordingly, these churn drills are equipped with rubber shock absorbers which, compressed by the drill tools in their last few inches of downward travel, put a heavy strain on the line as the tools reach the bottom of the hole and snap them back, away from the bottom, the instant they have struck their blow.

Mounted on its own caterpillars for travel convenience, the churn drill is equipped with its own "power plant"—a 20-h.p. variable speed electric motor. Its nine-inch bit weighs about 600 lbs., and the "tool string" to which the bit is attached runs some 3,000 lbs. with bit. The bit operates in a casing which is projected through the nine-inch hole to solid rock, and an eccentric in the operating mechanism transmits the reciprocating motion to the tool string and produces the ponderous pounding of the bit on the rock. The regular drilling rate is from 56 to 58 strokes per minute, and the travel of the tools is 44 inches, measured when the rope socket is about at ground level. Sludge is removed from the bottom of the hole by periodical bailing. The complete machine weighs almost 23,000 lbs., and there are four of them in action at the open pit.

Bit Dressing

With more than 300 lbs. per inch of penetrating edge imposed on it by the weight of the tool string, the massive nine-inch bit used can stand only about three feet of hammering against the tough orebody before it is taken away to "the showers" for reconditioning. Because of its size, the job of sharpening or "dressing" it for further use is a major feature of the operation.

3 Smaller bits, such as are used with the wagon drills or underground, can be hand-dressed, but it is a slow, laborious task to attempt to hand-dress the big fellows, and often the necessary reheating would burn or decarbonize the steel. So the bit-dresser is called into service. After being uniformly heated in an oil-fired furnace which would make the legendary village smithy sigh with envy, the bit is pounded alternately by an upsetting die and a radial hammer, the former upsetting the bit steel and shaping the penetrating edge and crushing surface, and the latter forming the reaming edge of the bit and bringing the tool to accurate size. At the rate of 500 blows per minute this machine accomplishes its task.

Preparing Blast

The two types of drill hole produced at the Frood open pit require slightly different preparation for blasting. After a careful survey has been made of the amount and texture of the rock or ore to be blasted, to determine the quantity of powder necessary, loading of the holes proceeds.

4 Granulated powder, in bags, is used in a churn drill hole, which has a capacity of 36 lbs. of powder for each foot of depth. Some 85 per cent. of the charge, which in a 40-foot hole would be about 600 lbs., is placed at the bottom of the hole, followed by sand "stemming" or packing which is tamped into place with a long wooden pole to confine the blast and concentrate its efficiency. Then the remaining 15 per cent. of the charge is inserted as a "deck charge," followed by more sand stemming. In contact with the powder is placed a length of special high-speed explosive fuse, which is used to connect all the loaded holes in one circuit and is then attached to an electric blasting cap. When, from a safe distance, the operator applies electric current to the hook-up, the high-speed fuse burns at the lightning-like rate of 20,350 feet per second, thus discharging the entire group of blast holes simultaneously. The average amount of rock shattered in a blast is about 12,000 tons, over an area of about 3,000 square feet.

5 To blast the wagon drill holes, it is first necessary to "chamber" or "spring" the hole by releasing small blasts at the bottom, creating a pocket of sufficient size to accommodate the charge of powder. In loading, stick powder is used, and this is packed into the chamber with long tamping poles. Into one stick of powder is inserted an electric blasting cap from which wires lead to the surface. Once sand has been packed into the hole, it is ready for blasting. The wires are hooked up in series, and the subsequent electric current detonates the charges simultaneously. The number of wagon drills holes blasted at the same time may run up to 150.

The Big Shovels

6 Following the blast the huge electric shovels, of which there are two at the open pit, swing into action to scoop up the ore and start it on its way to the crushing plant. In startling contrast to the size of one of these 165-ton leviathans is the uncanny precision with which the operator can handle it. A mere Lilliputian within the steel-walled control room, he nevertheless directs the big 4½-cu. yd. dipper unerringly as it noses into the mountain of muck, picks up its load, swings swiftly around to dumping position above the truck, and with surprising smoothness drops its six tons of ore, all in a matter of 30 seconds. Modern as tomorrow, this type of shovel, with its full Ward-Leonard direct current field control, entirely eliminates the usual constant adjustment and maintenance of mechanical brakes and clutches, yet at the same time gives its operator perfect control over the dipper during all parts of the cycle.

All digging motions are governed by three small master switches operating magnetic contactors. Handles connecting the dipper to the boom are 22 feet long, and the boom itself is 32 feet long. The hoist rope is 1½-inch steel cable, the boom guy-ropes 1¾-inch cable. The machine has a cutting height of 31 feet and a maximum dumping radius of 38 feet. Mounted on a caterpillar truck with 72 three-foot treads, it has a normal propelling speed of .91 miles per hour.

In the electrical equipment housed in the control room are an M.G. set driving motor of 275 h.p. capacity, a hoist motor of 187½ h.p., two swing motors of 30 h.p. each, and a crowd motor of 37½ h.p.

Transportation

7 For several weeks following their installation, the six trucks purchased for Frood open pit transportation were the largest in their class of hauling in North America. Then another manufacturing firm completed delivery of a larger machine, and the "biggest on the continent" title went elsewhere. First of their kind ever used in Canada, they looked like a herd of elephants when rolled into position for a photograph, and posed just as docilely.

With a capacity of 35 tons, or about 21 cu. yds., each truck weighs some 57 tons loaded, yet with its 10 forward and two reverse speeds it can manoeuvre as readily as the ordinary transport which is a dwarf beside it. The wheelbase is 160.56 inches, and the overall width of one of the massive rear tires is 123¼ inches. Each unit is powered by a Diesel engine developing 150 b.h.p. at 1,800 r.p.m.

8 Because three of the trucks were used for hauling rock for road and rail beds while the crushing plant with its automatic dumping device was being constructed, they were equipped with hoists providing a dumping angle up to 65 degrees.

Crushing Plant

At the open pit crushing plant, located about 400 feet northwest of No. 3 shaft, ore is unloaded from the trucks into a hopper from which it drops on to a 10-ply feed belt with a ¾-inch rubber face, a 3-16-inch rubber back, and a total thickness of about two inches,—90 inches wide and 46 feet long. Tumbling off the feed belt, the big chunks of ore pass over a grizzly with three-to-five-inch openings to take off the fines, and then drop into the powerful jaws of the crusher, to be reduced to a maximum of eight inches in size. The opening in the crusher is 84 by 66 inches, compared with the 66-by-48-inch opening of Frood's next biggest crusher, on 2800 level. Weighing about 300 tons and standing more than 15 feet high, the open

pit crusher is powered by two 225-h.p. motors.

From its jaws the feed drops to a conveyor belt 48 inches wide and 775 feet long which travels at a speed of 265 feet per minute in an enclosed conveyor house to the top of the addition built to No. 3 Shaft rockhouse. Here the feed passes through trommel screens and over picking belts, and larger sizes are put through a seven-foot cone crusher set at two and one-half inches. Screened, sorted, and crushed, the ore drops into bins, there to await shipment to the concentrator and smelter at Copper Cliff.

Frood Skyline

And so drill derricks and shovel booms are added to the headframes and surface plants of the Frood skyline. From surface outcrops, as well as from orebodies traced deep into the bowels of the earth, now comes the nickel which plays such a vital part in the world industrial scene.

Significant of the recognized prowess of nickel as an alloy is the fact that in the drills and shovels and trucks, in the two caterpillar tractors which are part of the road-building and maintenance equipment,—in any of the open pit machinery where terrific stresses occur, there nickel is, to give strength, durability and efficiency.

Take one of those big trucks, for instance. Although the nickel content necessary in the steel alloy to produce required toughness averages only between four and five per cent., nevertheless in each truck there is a total of more than 100 lbs. of the nickel which they now help to produce.

Frood Leads In Basketball

With none of the teams showing a marked superiority and prospects of a close race throughout the schedule, interest in the newly formed Basketball Association at the Employees Club is increasing greatly as the league progresses. Teams are entered from Frood, Creighton, Copper Cliff Smelter, Copper Cliff Town, Refinery Whites and Refinery Blues and with the same rivalry shown as in baseball and hockey, competition is keen.

PLAY TO APRIL 5

The schedule opened on November 9th and will end April 5th, with each team playing twenty games; that is meeting each other four times. At the end of the schedule the first three teams will be eligible for the playoffs. The semi-finals will be a two-game series—points to count,—between the second and third place teams, with the winner playing a best-two-out-of-three series with the first place team for the championship.

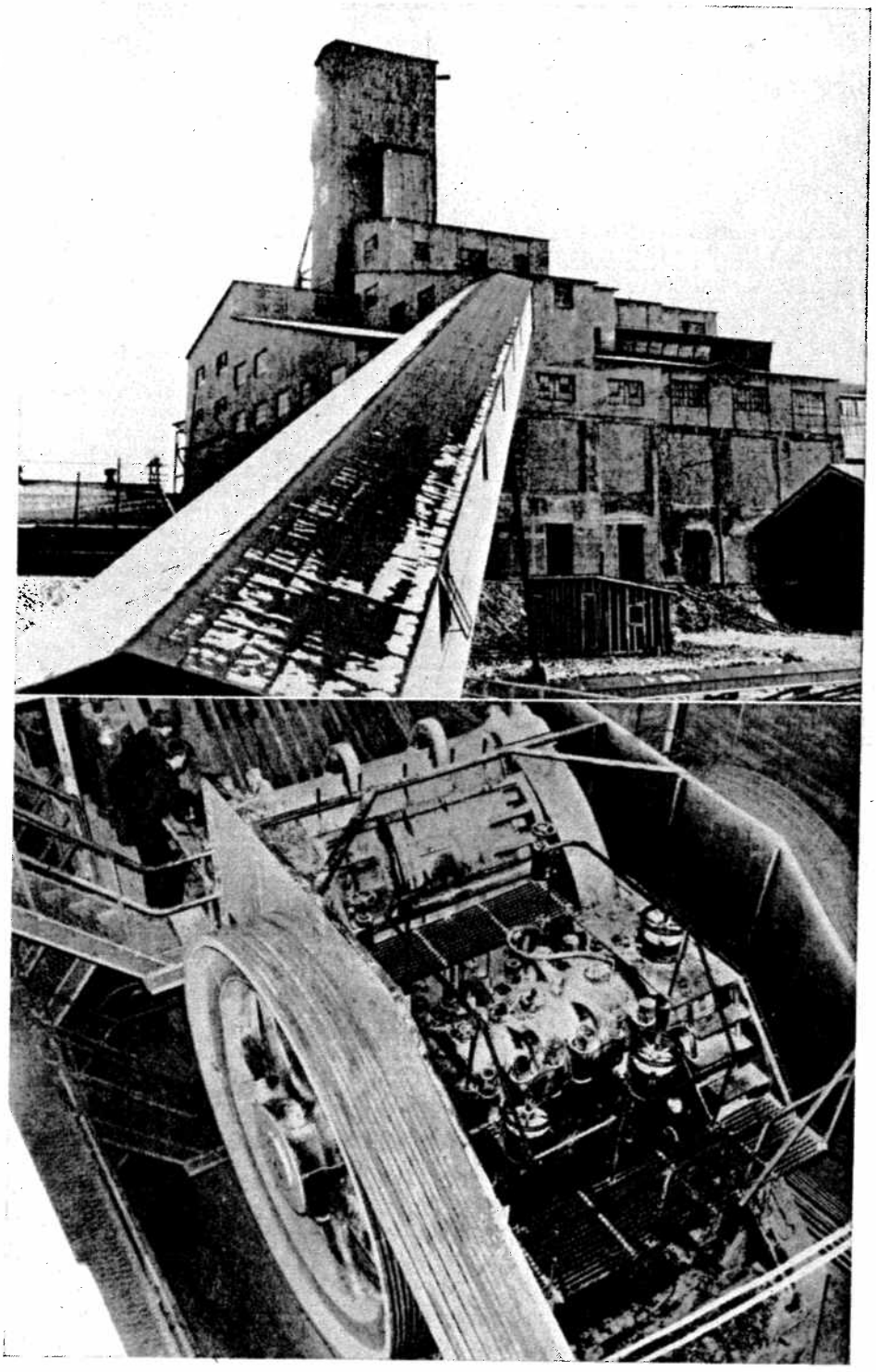
The scores of most of the games to date have been close. Frood, without a loss to date, have had two or three close calls. Copper Cliff Smelter, Creighton and both Refinery teams are fairly evenly matched, and Copper Cliff Town, off to a bad start, have shown steady improvement and will be heard from before the season is much older.

TEAM STANDING

The standing of the teams up to December 8th:

Team	Won	Lost	Points
Frood	5	0	10
Creighton	3	2	6
Refinery Blues	3	2	6
Refinery Whites	2	3	4
Copper Cliff Smelter	2	3	4
Copper Cliff Town	0	5	0

Games are played every Wednesday night, with all teams participating. The first game starts at 7.00 p.m., with the second at 8.00 p.m., and the third at 9.00 p.m.



A new ore artery now leads into No. 3 Shaft rockhouse at Frood mine. The long conveyor gallery from the open pit crushing station is shown in the upper picture, and is part of the general change of scene coincident with the stripping operation. The conveyor belt which carries ore from the crusher is 775 feet along. In the lower photograph is shown the huge crusher, which handles open pit ore. Weighing more than 300 tons, it can handle a chunk of ore 84 by 66 inches. A cubic yard of ore weighs a little more than one and one-half tons.

Nickel Bi-Metal Is Almost Human

When two metals which react differently when heated, are welded, riveted or brazed together, they form a thermostatic bi-metal which can almost be said to possess "brains." The principle of operation is that when two metal strips are joined, one expanding a great deal upon the application of heat, the other practically unaffected by temperature changes, the joined strips must curl. The definite amount of movement or curl can be made to operate levers, valves and switches of all kinds. In current practice, certain nickel-iron alloys are widely used for bi-metals, nickel-chromium-iron containing 22 per cent. of nickel being used on the high expansion side and an alloy containing up to 42 per cent. nickel being used on the low expansion side.

An electro-plating process which will coat nickel-plated articles any color of the spectrum is now on the market.

Ladies' Team Wins Collins Cup

Each time INCO's bridge sharks play a series for the E. A. Collins Rose Bowl, the competition seems keener and the scoring closer than previously. So it was in the fourth semi-annual battle for the Company's inter-plant bridge championship, held in November at Memorial Community Hall.

1 Always strong contenders in past tilts for the title, Copper Cliff Ladies finally won the honors this fall. Captained by Mrs. T. D. Price, the Ladies' team rolled up the imposing aggregate of 84,630 points in the three-game series. Their 27,220 gave them a small lead the first night, and although other teams staged strong comebacks to juggle the standing considerably in the course of the three matches, Ladies held the pole and were first under the wire. The trophy was presented to them by Mr. Collins during the lunch which was served at the end of the matches. Here were the winners: left to right, front row, Mrs. F. J. Wilson, Miss E. Kennedy, Mrs. T. D. Price, Miss E. Browne, Mrs George Ferguson; back row, Mrs. Norman Kearns, Mrs. W. C. Campbell, Mrs. Harold Keast, Mrs. R. L. Beattie, Mrs. R. M. Coleman, Mrs. C. H. Buck, Mrs. C. W. Nute.

Little more than one grand slam behind the Ladies came General Office, with 81,860. Although they gained about 1,300 points on the winners in the final night's play, they could not make up the entire difference. In third spot were Ramblers with 81,700. In seventh place at the beginning of the final night's play, Levack finished strong to take over the fourth position, scoring 32,740 points. Their aggregate was 80,250. Outlaws counted a gross of 77,100 and were fifth, and right behind them came ORCO with 76,660. Seventh position went to Creighton, with 74,740, eighth to Frood with 73,550. Winners of the trophy last spring, and out to repeat their triumph, Smelter proved an outstanding example of the fickleness of bridge fate. Last spring they picked up a total of 87,550 points; this fall they could not get distribution or declarations clicking for better than 69,280, and finished last.

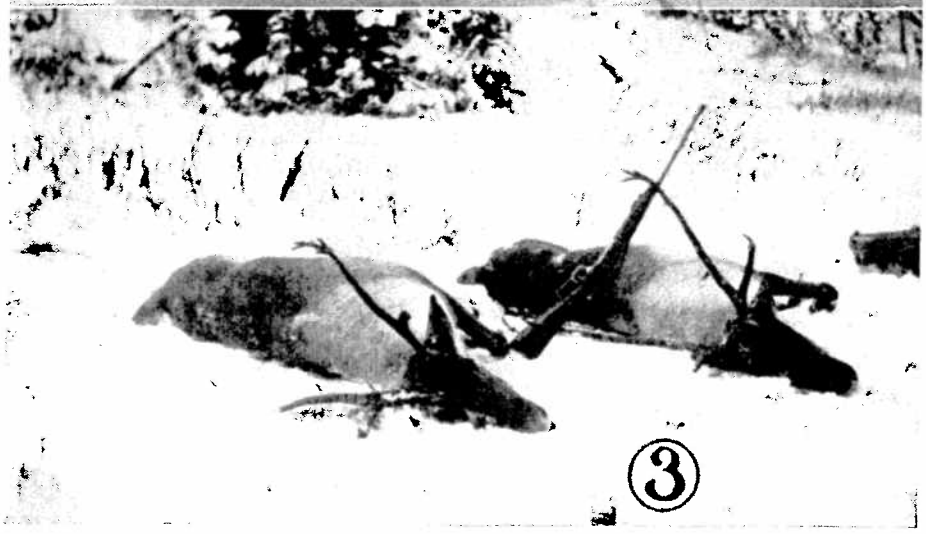
2 Memorial Community Hall's silver serving trays, awarded to the couple scoring the highest aggregate in the three matches of the inter-plant bridge series, are almost as coveted a prize as the Collins Rose Bowl. The names of Jack Carpenter and Jim Montgomery, of Levack, didn't figure in the standing of the first 10 couples when the third night's play started, but that's nothing to a pair of determined bridge players. Picking off 7,560 points, while other couples were falling by the wayside, the Levack experts wound up with a gross of 17,620 and won the silver trays. They were only 480 points ahead of Beach and Vandyke of Ramblers. Lawrence and Devonshire, of Creighton, had 16,930 for third place. Highest single-night score since the Collins Rose Bowl was donated was the 9,030 collected by Mrs. Waddington and Mrs. Cawthorpe of ORCO, and this boosted their aggregate to 16,890. Mr. and Mrs. S. R. Fredeen, of Garson, playing for Ramblers, got 16,120. Mrs. McLean and Mrs. Russell, of Creighton, had 16,100. Photo shows Carpenter and Montgomery, of Levack, doping out a crafty play during the lunch-hour.

★ ★ ★

Music Devotees

3 Rapt attention is what Coniston Band gets from its audience when it plays a concert in the Nickel Club in its home town. Young and old alike get keen enjoyment from the extensive repertoire of Bandmaster Dan Totino and his musicians.

From Mushing to Mining Is Their Story



Six Years IN THE NORTHERN Solitudes

There are many in INCO to whom Christmas brings memories of Yuletides spent in distant corners of the world.

Often the reminiscence is marred by memories of suffering or sorrow, or the inhumanities of men which stifle the spirit of peace and goodwill.

But more often the memories are of joyous homecomings and happy reunions at the family hearth. Such they are, at any rate, for Casey and Joe Jones, of Frood, whose thoughts on Christmas Day will go back to the years when they were trappers in the far North.

ONE WEEK'S RELEASE

Christmas to them was a week's release from the ice-locked solitudes hundreds of miles north of Edmonton. Along about December 18 or 19 they met at the main cabin on their trap lines, and mushed back to Fort Vermilion, there to enjoy the comforts of their home and to join with other trappers in celebration and barter at the Hudson's Bay Company post.

In 1918, when their father's indifferent health made it necessary for him to get out into the wide open spaces, the Jones boys left Edmonton with him and the remainder of the family, having decided to locate in Fort Vermilion, small fur trading post some 785 miles north. There were three sons, the father and the mother.

Let Casey and his brother tell the story:

"Putting most of our possessions together, we started our journey, going 350 miles by railway, some 200 miles of which we travelled at almost a walking speed because the road was built over muskeg. At Peace River, about half way on our trip, we changed from rail to boat and proceeded down Peace river for 435 miles, eventually landing at Fort Vermilion. There we found about 30 white people and 100 Indians.

BUILT NEW HOME

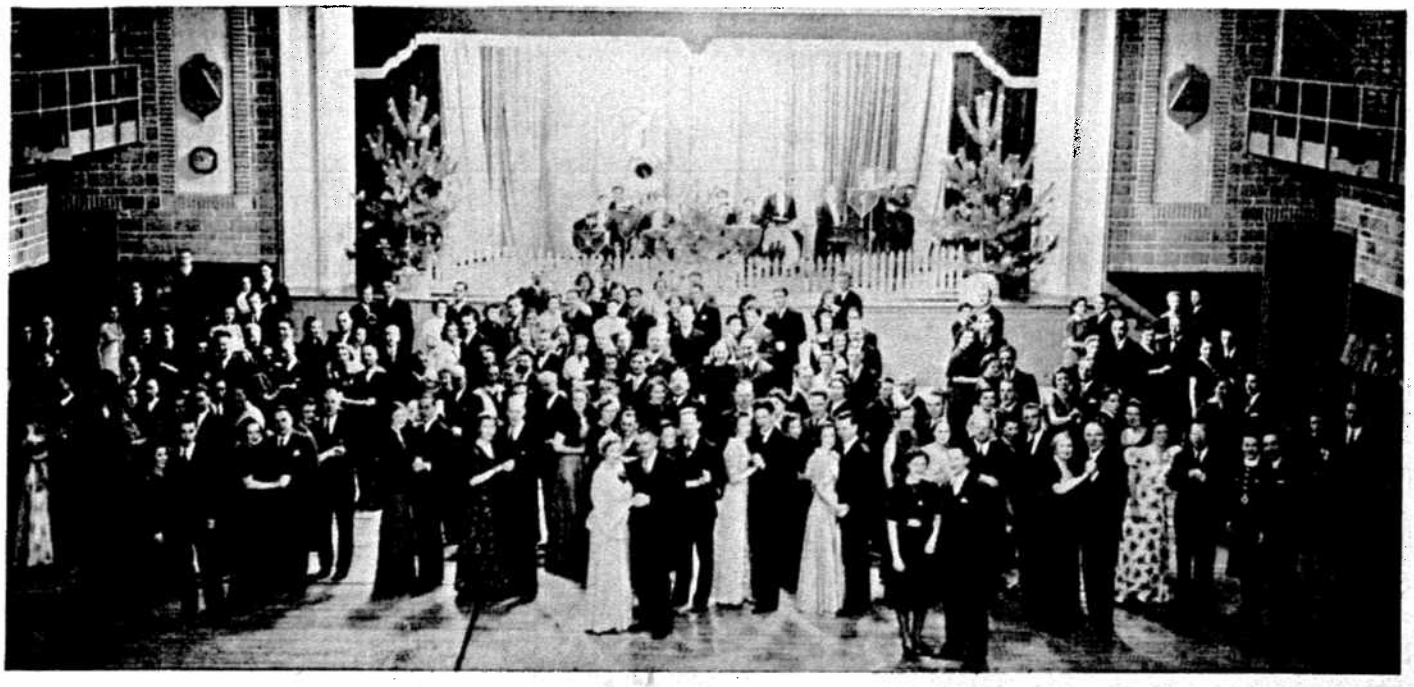
"Having previously obtained a homestead in this section, we then set about getting implements and stock which we would need. We got a team of horses, four cows, a couple of pigs, and some 25 chickens. With these and other necessities we made the trip to our homestead, some 16 miles over a trail cut by rivers and creeks, which we had to ford because there were no bridges. It took us 10 hours of travelling before we reached our homestead, and there we put up our tents and made ourselves comfortable until we could build our log cabin. Of course we had to cut and trim the logs, and it was two weeks before our new home was finished.

"After it was settled and secure for the winter, we set out with our father to start a trap line, leaving our older brother with mother to look after the homestead.

"We got our supplies and traps from the Hudson's Bay Company post at Fort Vermilion, and gathered up dog teams from the Indians. Dogs cost about $65 each. We

In (1) are Casey and Joe Jones, the two Froodians who spent some six years as Trappers in the frozen North, and who recount some of their adventures here for Triangle readers. Photo (2) shows the extensive array of dogs and equipment acquired by the Jones family for operation of its 120 miles of trap lines. In Photo (3) are two fine buck brought down by Casey Jones, who was both marksman and photographer in this case.

First Anniversary Dance at Port Colborne Recreation Club



The First Anniversary Dance, held Friday, December 9, in the INCO Recreation Club at Port Colborne, was an outstanding success and drew a big turnout of members and their ladies. Clarence Colton and his band provided the music. The Club was very attractively decorated, and many compliments were handed Bill Irvine for his master-minding in this connection. In the one year it has been operating, the Port Colborne Club has won the enthusiastic support of its members with its snappy programs of activities.

travelled down Peace river for 60 miles, using two canoes, and one of us following on shore with the dogs. At Loon river we branched off, and after following it for about 200 miles we arrived at our destination. We then built the main cabin as a base for our trap line.

"Dad, an experienced bushman, planned our layouts and locations for our trap lines, which covered about 120 miles. Along this route we built a total of five small cabins. Then we separated, each taking a line of our own. Sometimes we didn't see one another for a month.

PLENTY TO DO

"Lonesome? You bet it got lonesome. But there was always plenty to do in the evening when you came in from the trap lines. There were moccasins to dry, bannocks and beans to cook for the next day's meals on the trail, hides to take off the stretchers, skinning to be done. And a fellow was usually ready for sleep when these jobs were done, after mushing from 20 to 25 miles during the day.

"We kept track of the days by cutting notches in sticks.

"We trapped mink, fox, ermine, lynx, beaver, wolverines, marten, fisher, muskrat, wolves and bear. To keep ourselves and dogs supplied with meat, we shot deer, moose and caribou.

"Our first year on the trap line was very hard but successful, and we picked up a lot of experience. In the summer we returned to Fort Vermilion, cashed in our skins to the highest bidder among the three or four fur buyers there, and then helped out on the homestead, cutting the winter's fuel supply as part of the summer's program.

$200 FOR SILVER FOX

"Early in September we'd be off to the trap lines again, and it was a long wait from then until Christmas. About December 18 we'd meet father at the main cabin, pack up the skins and start for home. We always arrived at Fort Vermilion on December 24. About 150 trappers from the district would come in at that time, and thousands of dollars worth of furs would be traded. We got about $100 for marten, $200 for silver fox, from $50 to $100 for cross-fox, $28 for mink.

"When the trading was over, the Christmas festivities were well under way. There'd be dances in the Hudson's Bay post or in the homes. There was always a big party at the Sheridan Lawrence home, with a barn dance and lots of fun. The people came from all over the district in cutters or by dog team. Christmas lasted a week, but the day after New Year's we were usually away on the trail again, not to return home until June.

THEY WALKED HOME

"After six years of this we took a trip 'outside,' visiting Edmonton, Vancouver, Prince Rupert, Calgary and other places, and taking a real fling in the bright lights. It was February when we headed back, and this time we could travel as far as Peace River by train. From there, however, at that time of the year, the only way we could get to the trap line was by foot, and we decided to make a try for it. We picked up another chap who wanted to go with us, and the three of us set out on the long trip on snowshoes, each loaded with an 80-pound sack of supplies.

"After two days on the trail, Jack, the chap who came with us, got blistered feet and frozen toes, and that delayed us a lot.

"On the third night we had to take turns at keeping the fire up while the others slept, because the thermometer dropped to about 60 below. The only shelter we had the first three nights was under big spruce trees, which kept out a little of the wind. After the third day things were a little easier, when we hit trappers' trails and could spend the nights in trappers' cabins. It took us 17 days to make the trip to Fort Vermilion. We spent three days at home there, got our grubstake together, and then went on to the trap lines by dog team.

"We trapped until the beaver season opened in the spring, and then went up Owl creek setting beaver traps. We ran out of supplies and had to go back to the main cabin for more. On arriving, we couldn't get in the cabin, the door being held fast from inside. We discovered a hole in the top of the cabin, which was built of spruce poles, birch bark and dirt. We crawled through this hole and found that our supplies had been almost all destroyed and several beaver hides torn to pieces, by a bear. Even our cans of lard and jam were opened and eaten. The only thing Mr. Bruin didn't fancy was beans, so beans we had for supper."

Things happened to Casey Jones, out there in the frozen wilderness. One day he cleaned his guns and stood them outside the cabin while he went in to prepare his breakfast. A few minutes later he heard a growl behind him, and there was a huge bear, standing in the open doorway. The guns were on the other side of the bear. Casey grabbed a pail of boiling water off the stove and threw it in the bear's face. The visitor retreated far and long enough for Casey to get to his guns. A bullet did the rest.

LOST IN THE WILDS

One spring Casey left the trap line alone and started for home in a big canoe with his catch of furs. He went through all the rapids until he came to the last one. Here his canoe upset, and half his furs and all his provisions went into the river. He saved his gun, but no shells or matches. He walked about seven miles down the river and then met some Indians. From them he misunderstood directions, and after two more days of travelling he knew he was lost. He had no food or means of getting any for almost five days. Then he found a blazed trail and followed it to a homestead. Exhausted, and his clothes in shreds, he was taken in, fed, clothed and given a lift to Fort Vermilion.

Tiring of life in the North, Casey and Joe pulled out of Fort Vermilion and went to Pennsylvania in 1927. Three years later they came to Frood. Casey is a captain, on 2200 level; Joe is a stope boss on 2950. They were both married in Pennsylvania, and each is a daddy now.

Sometimes they long for the old life, but not hard enough to want to leave the Frood.

Make Sound Picture of INCO

INCO goes "on the air" Wednesday evening, January 4, from 10.00 to 11.00 o'clock. The program will be carried on a Canadian coast-to-coast network, and will be heard over CKSO in Sudbury. It will also probably be recorded and sent as an exchange feature to the British Isles, South Africa and Australia.

Canadian Broadcasting Corporation's portable sound-recording equipment, compactly installed in a trailer, was brought to the Nickel Belt for two days the latter part of November, and sounds characteristic of INCO's plants were picked up and made into records for the program, which is to be the first of a series of "sound pictures" of Canadian industrial life.

Inside the trailer were two short wave radio transmitters and receivers, two miniature short wave sets, and recording machines, cutters, etc. With this portable outfit, broadcasts can be made from almost any section of the country where there is a road, the pick-up being strong enough for relay to a national network from a distance of 50 and even 60 miles. Several events of Dominion-wide interest have been broadcast from the scene of action by this mobile unit, which will be of great value during the visit of Their Majesties to Canada next year because it will be able to travel right along with the royal party and keep the whole country informed about their activities.

1 The purpose of bringing the unit to INCO, however, was not to broadcast, but to pick up sound recordings now being built into a studio program which will graphically tell the world how nickel is produced. Percy Field is here at the controls in the trailer on surface at Frood mine, listening carefully to sounds which are coming up from 2800 level over the mine telephone. His eyes are on the cutting machine, which is making a gramophone record of the sounds as they come in. As soon as the record is cut, he will apply a solution to it to harden its surface, after which it can be played over to check up on the success of the pick-up.

2 The script for the nickel industry program was written by Graham McInnes, who visited INCO's plants to get atmosphere for his story. Triangle's camera caught him chatting with the cage-tender on surface at Frood. He is a well-known journalist, and his articles appear frequently in "Saturday Night."

3 To pick up sounds of drills, blasting, mucking, etc., at Frood, it was necessary to carry a microphone, attached to 200 feet of wire, into one of the stopes, and send the sounds out to an amplifying set which was temporarily installed in a refuge station. The amplifier, connected to the mine telephone, "boosted" the sounds and then relayed them to the trailer at surface. Percy Gould was the engineer in charge of this link in the operations, and his was the ticklish task of regulating the amplification so that the sounds were levelled off evenly.

4 The "sound detective" on the job, who went prowling into the stope with his "mike," was R. T. "Bob" Bowman, CBC's Director of Special Events. Radio fans will recall his series of "Night Shift" broadcasts, during which he visited prominent industrial plants with a portable microphone and sent out descriptions of the operations to the national network. When the camera focused on him he was describing for the microphone the mucking operation that was going on directly below him in the Frood stope.

5 Not only Frood and the Copper Cliff smelter were visited by the mobile unit. A sound picture of INCO would not be complete without recordings of INCOites at play as well as at work, and so Bob Bowman

and his microphone covered the Employees Club in the evening. At the bowling alleys, for instance, there was an interview with one of the fair young ladies, while her friends listened in with keen interest.

The nickel industry program is being built around the activities of one employee during a regular day. It follows him from his home to his job on 2800 level at Frood, describes his work as a driller as well as the other operations going on around him, catches him coming off the cage at the end of his day's work, follows him into the showers in the "dry," goes with him to a hockey game in Stanley Stadium in the evening, sees him safely to bed, and tells how some of his friends are spending their leisure hours. It also follows the ore from Frood mine on its trip through the concentrator and smelter, and winds up with a summary of the importance of nickel in the world industrial scene.

Make a date with your radio for January 4, from 10.00 to 11.00 o'clock p.m., and hear "INCO on the air."

Fyfe Chairman Mining Institute

J. B. Fyfe, Garson Mine superintendent, who took over the chairmanship of the Sudbury branch of C.I.M.M. when H. W. Reid was transferred to Montreal last April, will direct the branch's destinies again in 1939.

The branch's annual meeting this month returned Mr. Fyfe to the executive chair, selected J. R. Gill as vice-chairman, and re-appointed D. M. Dunbar as secretary-treasurer.

Retiring members of council were succeeded by: Frood, T. M. Gaetz; Levack, F. F. Todd; Garson, S. R. Fredeen. Members of council continuing in 1939: Creighton, B. F. Crandall; Copper Cliff, J. R. Gordon; Coniston, E. T. Austin; ORCO, R. H. Waddington; Sudbury, W. A. McMitchell; Sudbury District, D. C. McKechnie.

BIG MEMBERSHIP

Almost twice that of the next largest C.I.M.M. branch in the Dominion was the membership reached by the Sudbury branch this year, it was reported at the annual meeting. The roll had 488 names on it, increased from 204 in 1937. Six meetings were held during the year, three dinners and three smokers; the average attendance was 186, and the peak attendance was 251, highest in the branch's history.

Prospective members for 1939 were told that several men prominent in Canadian life had already promised to address the Sudbury branch, and a most interesting year's program could be expected.

12 Teams Enter Frood Hockey Loop

Twelve teams are expected to take part in Frood's inter-level hockey loop this season. Slow to take his annual grip on things, John Frost is holding up what looks to be the best inter-level league Frood has yet organized.

The Welfare Association has purchased pads and other equipment to protect the tender forms of the players from the brutal attacks of their opposition, and each team will sport snappy sweaters.

Teams already entered, and their captains: 2950, V. Malkoski; Yard, I. Boal; 2600-2400, F. J. Lutz; 2600, F. Short; Supply Dept., J. Kilby; 12-8 Shift, A. Cumming.

In Soviet Russia, scientists are preserving valued records by printing them in reduced size on thin sheets of platinum. The printed sheets are enclosed between glass slabs and stored in sealed boxes built of basalt.

1 work and will be tough to oust from the leadership. Here a group of Frood stars rests on the playing floor between periods. In the foreground, No. 2, is Waide; the other players, left to right, are Swan, Kusmaski, 2 Leore and Lines. In the meantime, on the bench, four other Frood stalwarts follow the game closely: left to right, Young, Edwards, Eby, and Graham.

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Hockey Moguls

Directing the destinies of ORCO interdept. hockey this winter is a strong committee which the Triangle camera found making up schedules and laying down rules and regulations barring the half-Nelson, the flying mare, the deep-sea tackle, and other 3 rude gestures which shift hockey players are inclined to use in the excitement of the game. Left to right: H. Shoveller, Yard and Casting; D. Wilson, Tankhouse; G. Penner, committee; J. Crawford, chairman; F. Faught, Office-Lab.; C. Bell, Mechanical; H. Kurtz, committee. Not present were J. Duncan of Tankhouse and H. MacDougall of Mechanical. The president of the ORCO A.A., Joe Bischoff, was in too unnerved a condition, on account of recent complications in his private affairs, to face the glare of the camera's flash bulb.

Frood Loopsters

Undefeated to date in the Employees Club basketball league is the Frood entry, which is flashing some pretty combination

PRODUCTION UP 90%

Last year there were more than 6500 plating establishments in the United States and Canada, which used a total of more than 6,000 tons of nickel for nickel plating—more than four times the amount used six years

Manhattan's most important manhole is probably one which is located in back of historic Trinity Church. The hole leads to what has been called the "nerves of the city," the telegraph and telephone trunk lines that carry stock market news to the nation. Repair men descend into the pit on a monel ladder, used, it is said, to withstand the sea water, fumes, polluted ground water and mud that seep into the intricate web of tunnels that lie beneath New York's downtown district.

Language of Converter Aisle

Visitors to Copper Cliff smelter usually regard as some sort of psychic phenomenon the traffic in pots and ladles which is carried on up and down the converter aisle. Just how the craneman knows where to take his cargo is a riddle which invariably intrigues them.

In their cabs more than 40 feet above the converter aisle the cranemen would have little or no chance of keeping in touch with 1 that traffic if it weren't for a very complete signal system which has been developed gradually over the past 25 years or so. The roar and hiss of the converters make a full-sized shout into something less than a gnat's whisper by the time it reaches them, but nevertheless they are in close contact with everything that goes on down below.

The big hooks with which the cranes lift pots of molten matte as easily as a hostess lifts a cup of tea are called bales, and the men down in the converter aisle who assist in swinging the bales into place on the sides of the pots are called balemen. It is the baleman who tells the craneman which pot or ladle to lift, what it contains, where to take it, and so on. If the occasion arose, he could also tell the craneman the price of beans in Algeria, or who scored for the Redmen in the second period at Stanley Stadium.

There's nothing psychic about it. It's a language. For instance, the craneman has just received a signal from a skimmer in the Orford department that his cupola furnace 2 would be willing to part with a pot of matte, if the pot were handy. The craneman manipulates his controls and his crane goes rumbling down the aisle to pick up an empty pot which will do for the job. As it happens, however, this is a cold pot. It has not been warmed sufficiently to allow molten matte being poured into it without a great deal of fuss and muss. So the baleman down there on the floor, signals "cold pot" to the craneman. He does it by swinging his arms about his body as a man would when he is cold and is trying to restore circulation. Immediately understanding, the craneman moves on and picks up another empty which has been properly warmed for the purpose.

Or, in the course of his duties, the baleman notices that one of the big transfer ladles, with its 15-ton load of matte for the 3 converters, apparently had too thin a coating of slag when it was filled, with the result that the matte is burning through and already is showing a red hot spot on the side of the ladle. If the ladle is left standing too long, in this condition, the matte will burn a hole in it. It must be poured as soon as possible, so the baleman signals "hot pot" to the craneman. He does it by going through the motion of wiping sweat from his brow with his gloved hand.

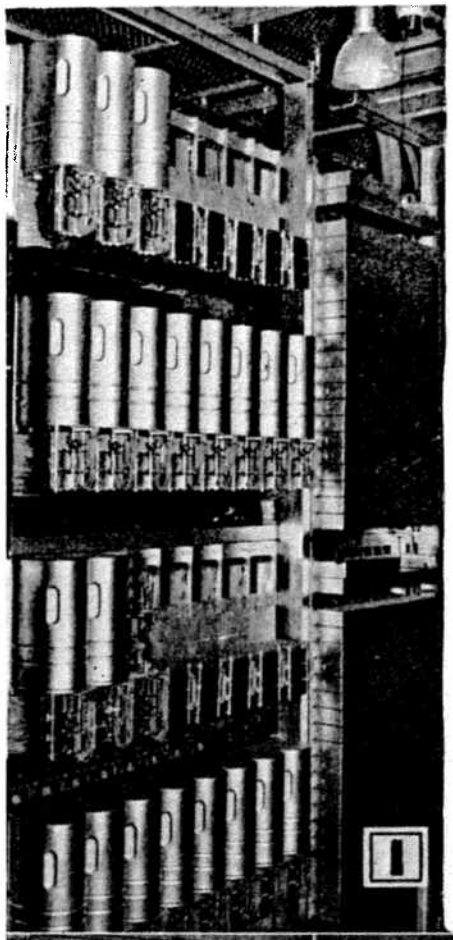
4 Again, suppose a skull of slag or matte, which has built up in one of the pots, must be dumped in the cracker to be broken up. The baleman signals "cracker" by pounding one fist on top of the other.

And should one of the pots be filled with scrap which has been swept and shovelled 5 from the floor of the converter aisle and is to be sent to the cracker, the baleman signals "scrap" by motioning as if he were pulling up his sleeves for a fight.

Wally Campbell, who posed for this series of signal pictures, is seen waving away a ladle. He has some 37 standard signals with 6 which to "talk" to his craneman, and the fluency with which the conversation is carried on is little short of amazing. In every case the motion is the most natural pantomime of the command that it is possible to use.

Copper Cliff Gets Dial Phones

Copper Cliff's present manual telephone switchboard will be replaced about the end of January, 1939, by one of the most up-to-the-minute dial offices. The dial telephone system may seem a modern innovation, but actually the principles used in the latest type systems were patented in 1891 and an automatic exchange was installed in La Porte, Indiana, in 1893.



1 Behind the Research Laboratory has been erected the building which is the brain centre of Copper Cliff's new communication system. Here is an interior view, showing some of the silvery switch boxes through which, without the aid of human hands, John Doe can call his cousin. Known in technical circles as the "Step by Step" system, the mechanism by which a call is transmitted appears extremely complicated to the casual observer. Everything is done by switches, which can be divided into three different classes: Line Finders, Selectors and Connectors. When John Doe lifts his receiver from the switch hook, the Line Finder immediately locates his line; then, as he dials, the Selectors build up the connection step-by-step until the Connector is reached; at that point his call is connected to the line being called, and the bell is rung. If the line should be in use, John Doe will hear a busy signal. Millions of feet of wire have been used in the new building. If any trouble develops in the mechanism, an alarm automatically indicates this condition and a repairman promptly restores the service to normal.

2 And here is the setup which the dial system replaces. Familiar to every subscriber are the switchboards with their myriads of tiny lights to signal the operator, the plugs which she manipulates to make the connections, and her cheerful "Number please." Now Copper Cliff says goodbye to a great deal of that and steps into the big-city telephone classification. Most of its daily 4,800 calls will go through the equipment without the human factor. By dialing "Zero" an operator at Sudbury will be reached who will provide help on any calls requiring assistance. These girls will also take care of all calls to Sudbury and long distance messages.

3 For Cliffites not familiar with the operation of dial telephones, Triangle reproduces here, with the co-operation of the Bell Telephone Company, sketches of the eight important steps in dialing:

(1) Make sure of the number by consulting your latest telephone directory.

(2) Remove the receiver from the cradle.

(3) Listen for the dial tone, a steady humming sound indicating that the line is ready for your call.

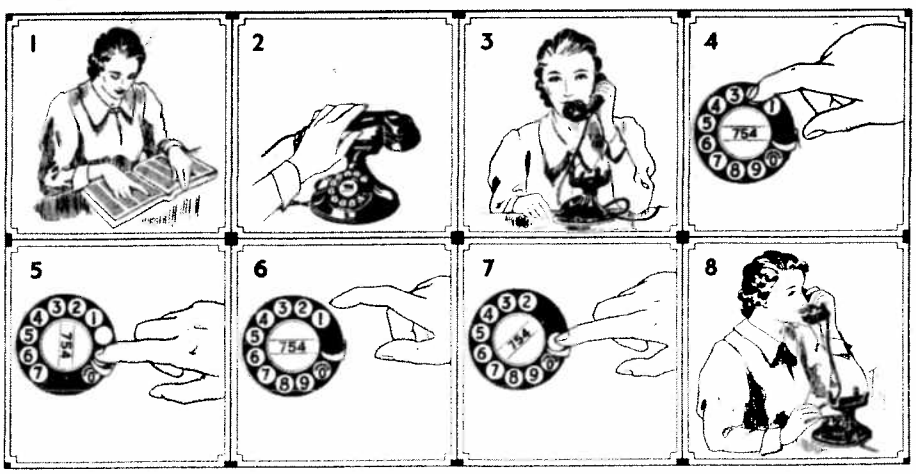
(4) Place your finger firmly in the hole in the dial through which the first figure of the number appears.

(5) Pull the dial around to the finger stop.

(6) Remove your finger and let the dial spin back to rest. Do not interfere with its return.

(7) Dial the remaining figures of the number in the same manner as the first.

(8) You will then hear either the ring at the distant telephone or the "busy" signal.



22,000-LB. PROPELLER

The world's largest ice-breaking boat is one which keeps the upper St. Lawrence River navigable throughout the winter months. The ship's huge propeller is composed of four detachable nickel steel blades, each weighing 5,800 pounds. Nickel steel is required since the propeller must be sufficiently strong to resist the shocks of heavy impacts at low temperatures.

Full Program at Recreation Club

Both volley ball and bowling are drawing plenty of attention again this season at the INCO Recreation Club in Port Colborne. Eleven teams have entered the volley ball league, and new players are being urged to take up the game and take part in the new schedule which will be launched after the turn of the year. In the meantime, "Nipper" Wilson is counting on laurels for his 4-C team, but Ralph Haines of Boxes and Tommy Christie of Electros are promising "Nipper" plenty of headaches before it's all over.

A total of 24 teams are taking part in the mixed bowling league, a popular innovation. High individual scores at the Club alleys to date are: Men's 5 pins, P. Bertoni, 398; team 5 pins, Office, 3,382; men's 10 pins, K. Vasco, 264; team 10 pins, four men, Stores, 2,067; ladies' 5 pins, Mrs. H. Haun, 280.

Other recent Club activities included: First showing of movies, December 10; Lions Club Minstrels of Fort Erie, presented by the Welfare Association December 13; Christmas entertainment for all kiddies of public school age, staged December 17 by the Welfare Association, the Athletic Association, and the Company; Parents' Night at the Club, held December 20, at which Jack Taylor's young P.T. charges demonstrated the results of their training.

Christmas Day a Carol Service is being held in the Club, in co-operation with all the churches of the town, and it is hoped that the building will be taxed to capacity for this event.

Garson Heroes

Wednesday evening, December 14, was a gala night at Garson, when presentations of windbreakers were made to the members of the 1938 Garson Football Club, winners of three of the four trophies up for competition in Nickel Belt soccer. Supt. J. B. Fyfe made the presentations, and warmly congratulated the team on its splendid showing. Plans were already under way, he said, for the purchase of sweaters which would be given the players next year when they brought home the Dominion championship. Mr. Fyfe is seen extending his congratulations to the team captain. A dance followed the presentation ceremony.

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Bowling Champs

First winners to be declared in the bowling leagues at INCO Employees Club were the members of Bill Stephenson's team in the Frood loop. With 44 wins and only four losses, they were decisive victors of the pre-Christmas tournament. Tied for second place with 37 wins and 11 losses each were the Hurd and Aylings lineups. Photo shows Stephenson's trundlers, left to right: Danny Russell, Ned Leore, Reg Sinden, F. Dunn, Charlie Mills, E. Dunn, with Captain Bill about to toss a strike in the foreground. Winner of the specal prize for the highest individual average in the league was Jim Henry who had 219 for 36 games and reached 336 in one of them. His team finished fifth.

In the Copper Cliff league, Wright's team is leading with 23 wins and five losses. Davey, with 21 and seven, is second, and Trahan with 20 and eight is third. There are four teams tied for fourth spot. Playoffs to name four winners will be completed after Christmas. Mel Edwards looks like the big individual winner. He has the best three-game total, 860; the best single game, 342; the best average, 242 for 21 games.

In the ORCO league, which runs until spring instead of being split into two schedules like Frood and Copper Cliff, Yard leads with 22 wins and four losses. In second spot is Tankhouse No. 2 with 18 and 10.

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Gobbler Raffle

Welfare Associations at the various INCO plants have staged draws of one kind and another to boost their exchequers for Christmas parties for the children of their members. At Frood, Triangle's camera caught part of the crowd which collected for a turkey draw staged by the Welfare. Ted Dandy was in command, and Secretary E. Dickie kept track of the names of the winners. Frood's Christmas entertainment at the Employees Club gave a thrill to some 1,600 kiddies, and was a full day of celebration. ORCO's Security Association feted about 700 youngsters, also at the Club, and Creighton entertained about 600 in the Community Hall at the village. Levack, Garson and Coniston also had parties for the kiddies, and Copper Cliff is arranging a theatre party December 27. A gift for every child was supplied, as well as candies, nuts, etc. Special decorations at the Employees Club drew many favorable comments, and were a feature of the festive season which is also to be marked by a rousing dance New Year's Eve.

NICKEL CAN "TAKE IT"

Throughout the 120-B electric power shovel, manufactured by Bucyrus-Erie Co., South Milwaukee, Wis., nickel chromium steel castings and nickel and nickel chromium steel forgings are used for highly stressed parts. With but minor variations, similar uses of nickel alloy steel are made in all of the Bucyrus-Erie quarry and mining shovels.