

INCO TRIANGLE

INCO Teams Make Splendid Showing

SAILORS ARE SNAPPY CREW

As far as INCOites are concerned, this Allan Cup race has turned out to be pretty much of a family affair. At no stop on the long playdown trail will the excitement be greater or the hockey more thrilling than in this series between the two great INCO teams, Port Colborne of the sunny South and Frood Mine of the rock-ribbed North.

TENSE STRUGGLE

They're tied at 1-1 as we go to press, with one more game to play in their total-goal series. That first tangle, at Copper Cliff March 15, was the closest, most tense match the North has seen this season. Electing to play a strictly defensive brand of hockey with the hope of staging a successful offensive once they got Frood on their home ice, Port Colborne's Sailors closed up like a cluster of clams. Nabbing a one-goal advantage in the early stages of the game, they packed an air-tight defence back of their own blue line and refused to be drawn out by sly Froodian strategy.

Frood unleashed a terrific bombardment. Playing five men up for most of the third period, they turned on enough heat to melt the Sailors' goalposts, but they couldn't melt that cool and canny custodian in the Port Colborne nets. Brownlee was superb. He kicked out at least six shots that would have gone for goals in any league from Nairn to New York. The one that beat him gave him absolutely no chance, with Jim Dewey whipping home a fast pass from Kampman. The latter was the driving, speeding, wheeling, back-checking demon of the Frood attack. He could not have been denied.

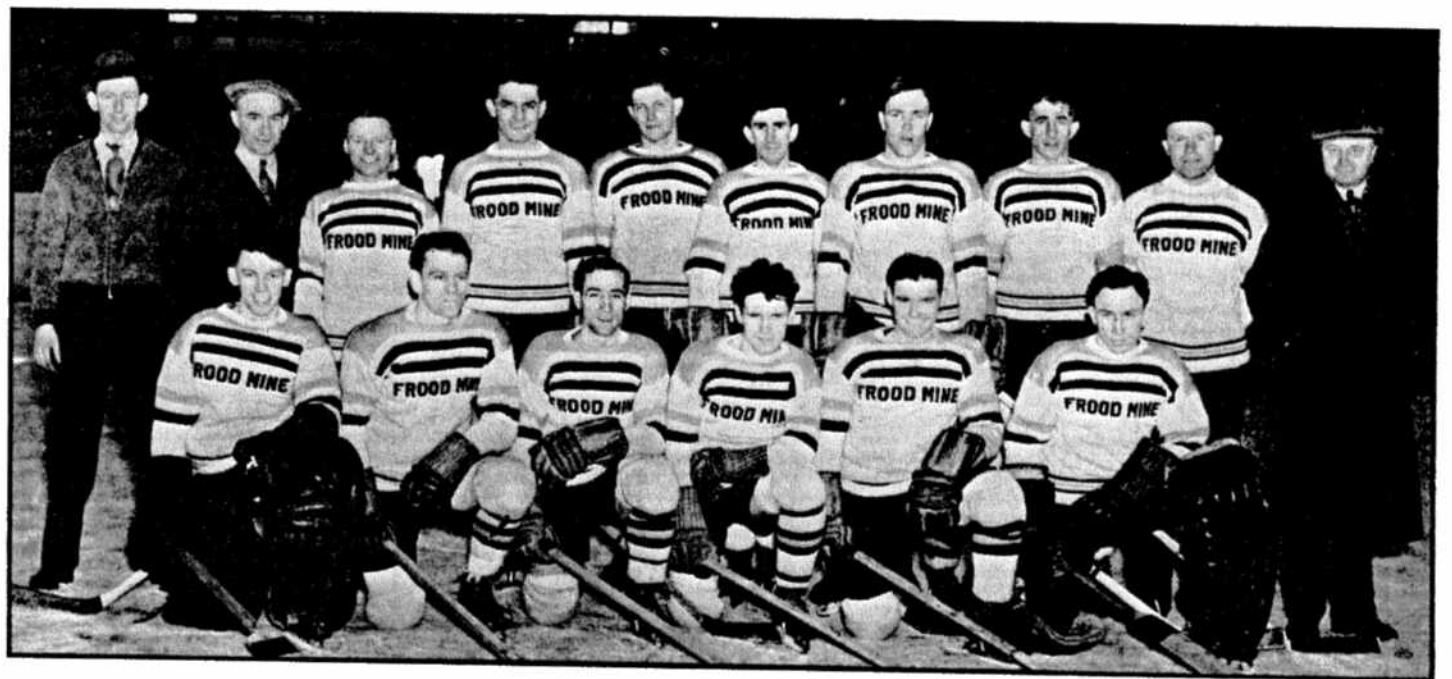
GREEK MET GREEK

It was breathless hockey throughout. The irresistible force had at last met the immovable object. Just what will result in that second game, when Port Colborne come out of their shells to seek a scoring advantage, it's too difficult to guess. And whatever happens, INCOites will know that within their own family are two of the finest hockey machines in the Dominion. Whichever team wins the right to continue on the Allan Cup trail, both the Southern and the Northern divisions will be right behind it.

Sailors, new to Northern fans, were: Goal, Brownlee; defence, Morrison, Upper; centre, Reynolds; left wing, LaRoche; right wing, Arnott; alternates, Runions, Wade, White, McGowan; sub-goalie, Forbes.

JUNIORS HIT STRIDE

Copper Cliff Juniors, Memorial Cup



Champs of Tough Northern Schedule

Frood Tigers, champions of the 1936-37 Nickel Belt Hockey League and, as Sudbury Tigers, N.O.H.A. champions and Allan Cup prospects: back row, left to right, A. Lenore, trainer; Red Stuart, coach; Red Geddes, Jim Dewey, Murphy Chamberlain, George Hastie, Bingo Kampman, Don Grosso, J. Atkinson, rubber; Harry Towns, manager; front row, left to right, Dave Kemp, Jules Chellette, Frank Lavigne, Steve Conick, Frank Graham, Charlie Teno.

hopes, seemed to have finally hit their scoring stride at Timmins the same night Frood and the Sailors were fighting to a deadlock. After beating Timmins Juniors at Stanley Stadium the week before, 5-3 in a mediocre game, the Cliffites in the return game at Timmins romped away with an 11-2 decision, to win the round and the Junior N.O.H.A. title 16-5. Southern Ontario observers who have followed the season's play down there, are calling Copper Cliff for the Memorial Cup without any hesitation. But there's many a slip 'twixt the Cup and the lip. At any rate, the smelter town entry, with that 11-2 triumph, effectively silenced its critics and justified its supporters.

To loyal supporters in the Athletic Associations of the different plants, to managers, and to coaches, the spectacular showing of each INCO team in its class is a source of pride. It's a long and expensive season, is hockey, but the thrill of producing three clubs of championship calibre is a splendid achievement.

Keen Competition for New First Aid Trophies

With Thursday evening, March 25, tentatively set as the date for the final showdown, hand-picked teams from Coniston, Creighton, Copper Cliff and Frood are being groomed for the first annual test for the handsome new R. D. Parker Shield, emblematic of the Inter-Plant First Aid Championship.

Never before in the history of INCO First Aid work has interest been at a keener pitch than this year. Inter-Departmental competitions, recently inaugurated in all four plants, wound up March 16, and all were hotly contested, with the snappy new shields donated by P. F. McDonald and H. J. Mutz at stake.

CHAMPIONSHIP TEAMS

Inter-Departmental champions have been declared as follows:

Coniston: (P. F. McDonald Shield), Electric Shop, W. Evershed, capt., W. McKee, A. B. Sabourin, R. Duncan.

Creighton: (H. J. Mutz Shield), Surface and Shops, H. Stephenson, R. Pascoe, G. Carpenter, V. Lesjac (substitute recruited from No. 3 Shaft team).

Copper Cliff: (P. F. McDonald Shield), Converter Bldg., T. Gladstone, capt., E. Lawson, W. Trotter, N. Crawford, T. Cornthwaite (spare).

Frood: (H. J. Mutz Shield), 12-8 Shift, G. Andrew, W. MacCoy, L. Sliter, C. Couzens.

The Inter-Department Shields are for annual competition, but the winning teams may be challenged after three months from the date of winning or last defending it. The department holding the trophy must defend it if challenged. The trophy may not pass from one department to another by default. In the event of the department holding the trophy being unable to field a team to meet a challenge, the Safety Engineer may appoint a department to defend it.

CLOSE CONTEST

By a margin of half a point the Electric Shop earned its triumph at Coniston, Transportation being right on its heels. A large and appreciative audience was at the Nickel Club to watch the contest. Other teams taking part were:

Transportation: H. Patterson (capt.), R. Gustin, L. Gauthier, A. Halverson.

Stevenson's Shift: E. Albert (capt.), J. Ismay, J. Forestell, O. E. Laporte.

McMullen's Shift: F. J. Cresswell (capt.), W. Easton, N. Todosichuk, J. Williams.

Geoffrey's Shift: K. Montgomery (capt.), R. Morehead, C. Chezzie, C. Squires.

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Dates Fixed for Inter-Plant Bridge

Postponed so as not to clash with play-down hockey dates, the series of three Inter-Plant bridge competitions will be staged at Memorial Community Hall, Copper Cliff, on the evenings of March 30, April 13, and April 27.

Teams of six couples from each plant will be entered, and cash prizes will be awarded the two highest-scoring couples on each evening's play. At the end of the series the team with the highest aggregate score will receive a handsome trophy recently donated by E. A. Collins of Copper Cliff for semi-annual Inter-Plant bridge competition.

Captains of the teams are: Creighton, V. Tremblay; Copper Cliff, C. E. Dorlan; Refinery, Wm. Stesco; Coniston, F. G. Murphy; Frood, T. Fee. Referee of the tournament will be Gordon Harry of Copper Cliff, whose decisions shall be final.

SHIFT LOOPS FULL OF PEP

A three-cornered playoff for Inter-Plant hockey supremacy and possession of the Cochrane-Dunlop tankard, will probably be arranged by the time this issue of Triangle is off the press.

Copper Cliff and Refinery are both winding up very successful shift and inter-dept. league schedules; Coniston has already declared a winner. When the representative teams of these three sporting hotbeds are tossed into cup playdowns, the result should be cyclonic, to say the least.

SHOPS CONISTON CHAMPS

Shift and inter-dept. hockey at all three plants has gone great guns this season. Coniston's league wound up March 8 with a thrilling playdown series in which one-goal margins were all that stood between victor and vanquished. In the sudden-death semi-final March 2, Day Shift nosed out Stevenson Shift 4-3 for the right to meet Shops in

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Your Lawn — MAKE IT LOVELY THIS SUMMER

By C. D. FERGUSON, Copper Cliff

The fundamentals of lawn culture are the same in the Sudbury district as anywhere in Ontario. That is, for the production of a good lawn one must have a well drained, fertile soil, which should be cultivated to form a friable seed bed and then seeded with first grade seed of the best turf forming grasses.

The lawn must then be maintained, with constant attention being paid to mowing, fertilizing and watering. However, due to the rigors of our Winter and Spring weather, and the natural lack of fertility in our soils, the details of cultural practices which are applicable to southern Ontario are not applicable here. Some of the more desirable grasses are not hardy here. More frequent applications of fertilizer are necessary and the re-seeding of thin and killed out areas with the scattering of seed and a mere scratch with a rake is not successful here. As the people in Copper Cliff and other INCO towns have always taken a keen interest in growing grass, a few notes outlining the cultural practices that have given the best results here may be helpful.

DURING DORMANT SEASON

Let us first consider the care of the established lawn during the dormant season. Many people fail to realize that the grass requires some attention during the Winter and that the careless habit of forming paths in the snow over lawns and parks very often

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Prize Creighton home surroundings in 1936 were those of Ed. Myhill. Here's an attractive corner, attractively occupied.

TELL TRIANGLE

Port Colborne

¶ Now that winter is gone, the boys are thinking of where to spend the week's vacation with pay. Shall it be in the big city with rich Aunt Sue, or on the farm with Uncle Ned where meals are meals.

¶ Fred Bacon (exponent of the art of making cathode boxes), and his wife are planning to visit his 80-year-young mother in Blighty after an absence of 20 years. Fred expects to see some of the nickel alloys on the Queen Mary on the trip from New York. It will be a family reunion and Fred wants to see his mother while she is still hale and hearty; she reads without glasses and walks to church every Sunday, weather permitting. He expects to be in England for the coronation, but has not yet reserved his seat in Westminster Abbey. On the way back Mr. and Mrs. Bacon intend to visit their son in Montreal.

¶ Eli Kiviahio, of Creighton, and the wolves must take a back seat to pugilist Tommy (Biscuits) Christie, bushman from the Soo (not Zoo) and trained by none other than Jim Curran of the Soo Star, of wolf story fame. Tommy's fame this time is as a runner; jack rabbits are slow in comparison. While casting his eagle eye over the basement of the Electro Bldg. (and by casting, bear in mind there is a space of a ten acre field over which to do your casting) he saw what at first he took for a cat, but upon closer inspection proved to be a jack rabbit. The chase was on, around the pillars, between the tanks, over the gutters, with the pipe fitters bringing up the rear and soon dropping out. Biscuits ran the rabbit to exhaustion but was unintentionally robbed of his capture when Lee Cupp appeared on the scene. The rabbit ran into Lee's hands in a state of collapse. Examination by Doctor Booker pronounced death due to over-exertion. Let Eli beware. To chase a jack rabbit to—well, say "Eternity"—is an achievement that takes some beating.

¶ Robert Merrill, popular hockey star, bowler, and soft ball player, has crossed his last blue line. He came to Port Colborne from Collingwood in 1927 and to the Nickel Plant in October 1928. He was one of the best goal-getters ever to propel pucks on a Port Colborne team. He played in Junior, Intermediate and Senior O.H.A. with such stars as Apps, Thoms, Oliver, McGowan, Kaminsky and others. On March 1, he and his partner were operating a bridge crane in the tank room of the Electro Dept. The crane was being moved onto the stripping platform, and he had removed the safety guards, and signalled the crane ahead. In some unknown manner he stepped between the crane and the platform and was crushed. He leaves a wife and two small sons and a widowed mother. The family will be financially provided for by The Workmen's Compensation Board pension and the Group insurance policy of the company.

¶ A new visitor, baby Jean, arrived at the home of Mr. and Mrs. Ronald Clayton.

¶ Louis Concessi, anode mould wrestler, and lanky right wing player of the senior hockey team, had the misfortune to break a leg at hockey practice a few evenings ago. This will keep him out of the game for the remainder of the season.

¶ Joe Gal sustained a fractured arm when hit with a sledge hammer while working on No. 4 furnace.

¶ Two of our younger employees have been attending classes in Guelph re nursery problems, under the tutelage of trained attendants. If you have any horticulture questions take them to Frank Noble or Frank Heard and they will give you a Frank answer.

¶ Speed, plus! This time it is Cy. Minor running to get a part for R. C. McQuire's car and Jack Spencer dashing out of the machine shop to the shears at the Electrolytic. Result—terrific head-on collision.

¶ It is contended that it takes 65 muscles to make a frown, and only 13 to smile. Let's take the easy way and smile.

¶ Fred Davies tried his luck again at the fistic game, but as before he was left smiling at the moon. Fred claims he was up at the count of nine but the referee was in high gear and the bout was all over in the second round. The suggestion has again been put forward to get the football helmet.

Refinery

¶ G. A. McFarlane returned recently from a vacation trip by plane to sunny California. He reported flying over the devastated flood area in the midwestern United States.

¶ Mr. and Mrs. "Russ" Hewgill left March 6th for a vacation cruise to the West Indies.

¶ D. A. Betts of the Tellurium Plant attended the Ontario Agricultural College reunion at Guelph on February 5th.

¶ Born: To Mr. and Mrs. "Reg." Hiscock, on February 3rd, a son, John.

¶ A recent addition to the mighty clan of Refinery "duck hunters" was made on January 31st by the birth of a 7½ lb. son, Peter Alexander, to Mr. and Mrs. A. D. Crossgrove. "Alex" reports that Peter's training as a hunter will start this Fall.

¶ Interplant bowling in competition for the A. C. Kerr trophy suffered a temporary set-back due to the keen interest in the district's hockey schedule. Games in the second half have now been resumed, however, with

the Yard in first place and the Office team in second place.

¶ Such interest has been shown in the Plant Hockey League that the Ontario Refinery Athletic Association have found it necessary to lengthen the schedule, which had been originally planned. Shops and Power, pre-season favorites, have won all their games and stand firmly entrenched in first place. Yard & Casting combine and the Office-Laboratory crew are battling strongly for second place and the right to meet Shops-Power for the C. H. Aldrich trophy. Tank House, Silver Refinery and Acid Plants lone win against the Office-Laboratory team on March 6th has resulted in the announcement of a "grudge" match to be played at the end of the schedule for a chicken and spaghetti dinner, losers paying all.

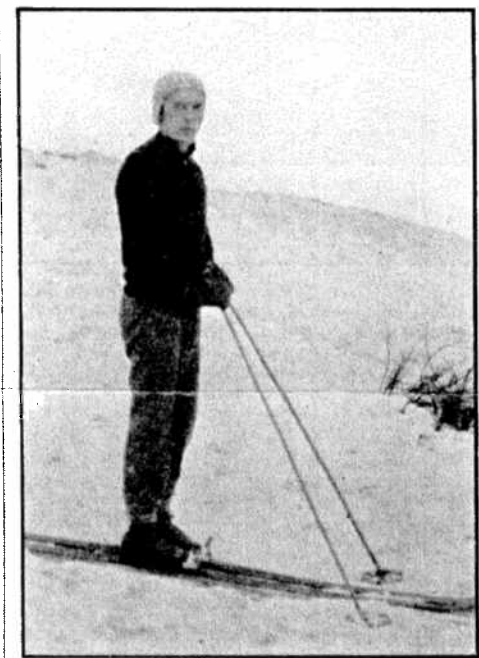
TEAM STANDING	Goals For	Goals Against	Pts.
Shops & Power 4	0	22	5
Office & Lab. 2	2	14	19
Casting & Yard 2	3	16	26
Tank House 1	4	13	15

Frood

¶ Wed in Sudbury on February 13 were Nora Smith, of London, Ont., and Cyril "Tiger" Meadows of Frood football fame.

¶ New Froodians: On February 24, to Mr. and Mrs. George B. Sullivan, a daughter, Mary Kathleen; to Mr. and Mrs. C. B. "Chuck" Crane, on February 22, a daughter.

¶ Ontario's cross-country ski championship was brought to Frood last month by Lauri Tulku, who slid across the finish line at North Bay two minutes ahead of his nearest rival despite the fact that twice during



the race his ski harness broke and he had to waste precious minutes stopping to repair it. Ever since he could see over the door-sill at his home in Pybajarvi (Sunday Lake) Finland, Lauri has been loping thither and yon on skis. Cross-country titles he's held since coming to Canada 10 years ago: Viking Ski Club, Montreal; St. Maurice Valley; Laurentian; Province of Quebec; Province of Ontario. Lauri is 33 years old, and trains steadily for his favorite sport by running and walking the three miles from home to his job at the Frood. February 27 he gave an excellent account of himself in the Dominion Championships at Banff, although he had to race under the colors of the Huntsville Club because Frood A. A. is not affiliated with the Canadian Ski Association.

¶ As we go to press George Simpson's Frood Tigers are making lots of hay in the Sudbury Broomball League. Many of them footballers anxious to get into condition for the coming season, the Tigers are playing their first year of broomball, but have reached the semi-finals of a hotly contested schedule. In the first semi-final match against Creosote they won out, 1-0, Reg. Sinden banging home the pigskin for the only tally of the set-to. Some of the footballers on the Tiger lineup are: Capt. Dick Waide, Andy Raine, Angus McDonald, Bill Campbell, Sam, Perch, and Bill Grassam, Alex Gray, Johnny Lindsay, and Taffy Davis. The team is bolstered with other stars like Al Brady, Johnny Wozno, Wilburn Herman, Bill LaPierre, Bill Ruff, and others. The other Frood entry in the Broomball League, Aces, under the lead of "Shinny" Shinbein and recruited chiefly from surface, did not fare so well in the schedule but put up many a hot argument.

¶ Still good for a giggle is the story about Lord Tweedsmuir's recent inspection trip to the Frood. While he was there, someone phoned the Frood and asked if Lord Tweedsmuir were underground. "What's his number and what level does he work on?" queried the Froodian who took the call.

¶ Back on the job as a powderman at Frood is Frank Stack, speed demon of the ice lanes. During his month of barnstorming in the U. S. this year, Frank won the Paul Bunyan International Championship at Bemij, Minn.; tied with Marvin Swenson for the Minneapolis Silver Skates Derby, during which he equalled the world's record for 220 yards and skated a close second to Swenson

when the latter hung up a new world's record for the 440 yards; was runner-up to Swenson for the North American Indoor Championship at St. Paul; won the North American Outdoor Championship at Saranac Lake; picked up two trophies and 22 medals to add to his huge collection of prizes. Crowds of anywhere up to 100,000 turn up for these contests, Frank says, going on to give a word picture of the Minneapolis Silver Skates event, which is staged on a beautiful artificial lake in the city's largest playground, Powder Horn Park. Natural ice, planed to perfect smoothness, beckons about 3,000 contestants. The track is oblong, six laps to the mile, and the spectators fill the bleacher-like terraces on the surrounding hills. After the long weeding-out process in the elimination events, the finals are reached. Every contestant must skate seven races in the finals—220 yds., 440 yds., 880 yds., 1 mi., 1 mi., 2 mi., 5 mi. When the last heat is in, they count up the points and dish out the medals and silver skates.

¶ George Merette's high-powered hockey machine from 2950 and 3100 levels took on 2400 level and trimmed them 6-0. A good crowd of rooters turned out to watch the fray. Any other level which would like to hurl out a challenge should get in touch with George.

¶ Lefty Esbaugh, we hear, can't sleep much these nights, what with the old baseball bug starting to bite. So spring must be just around the corner.

¶ After two-and-a-half years with the Frood safety department, W. E. Bawden left last month to become resident manager at Lake Geneva, the lead-zinc operation about 35 miles west of Sudbury. Foster Todd takes up his duties.

¶ George Fleming, who was standing timber below ground, is now placing it on plates and tracings in the Engineering Dept. Tom Patching is another underground recruit on the Development staff. Tom can be included in the "peaceful penetration from the West." Harry McGowan, formerly of the Efficiency Dept. and then a relieving shift boss, is now at Matachewan. Bill Hargraves of the Engineering staff is now stope boss on 2600. And the first sod for Bert Souche's new house has been turned.

¶ STOP PRESS: Born, January 23, to Mr. and Mrs. Andy Smith, twins, boy (6 lbs. 4 oz.) and girl (6 lbs. 2 oz.). First twins at Frood this year, unless we're mistaken. Andy is on 2200 level.

¶ If you've run across strange new blue-clad, silver-buttoned forms around the Frood yard in the past few weeks, charge it up to changes in the policing personnel. Stewart Lane, who hails from the lower levels of the mine, is one of the new coppers. George Dewey, Art Miron, and Bill Currie, who come from Copper Cliff smelter, along with S. F. Ramsay of Refinery, are other newcomers. Another recent arrival is E. J. Cleland, former member of the Ontario Provincial Police, who did duty down around North Bay and Callendar, and is an authority on the habits and customs of quintuplets. A familiar face now missed from the patrolling squad is that of Thomas Mahon. A lad of extremes, Tommy prefers to be either 2800 feet overhead in an aeroplane, his favorite off-hour sport, or 2800 feet underground when he's working. So he's forsaken the blue and silver uniform for a block-hole machine down below.

¶ Powerful smashing and nifty work around the net carried Joe Ebeby to the Nickel District's men's singles badminton championship in the open tournament concluded March 10 at Memorial Community Hall. He defeated Fummerton, ace of the Empire Club, in the final. Another outstanding INCOite in the tourney was Charlie Michener, of Copper Cliff, whose victory over Gauthier, of St. Louis Club, in an exciting match was one of the features.

Creighton

¶ A familiar figure in the "dry" at No. 3 Shaft is Mike Sochoski, to whom the loss of a leg in a hunting accident some years ago proved no serious handicap as far as his enjoyment of life is concerned. Mike came to Creighton in 1916, at the age of 23, after spending four years in Western Canada. He started here as a mucker on 10 level, and later graduated to a piston machine. In 1919 he worked in No. 3 Shaft, during the



sinking from 20 level to 30 level, and then for three years was shaft inspector. After that he went to No. 4 Shaft, and ran a machine during the development of all lower levels. On October 25, 1931, while out hunting deer near Trout Lake, about 30 miles from Sudbury, with seven others, he had the misfortune to have his right leg shot off

when a gun was accidentally discharged. He was off work for a year, then returned as "dry man" at No. 3 Shaft, the job he still holds. Loss of the limb did not affect his ardour for sports or his ability to take part in them. He swims, skis, fishes and hunts, and draws big dividends of happiness from his cozy camp on Bass Lake near Fairbanks Lake, where our photo shows him wielding the scythe on a fine crop of sapollo tomatoes. Mike was married in 1918, and has one son, Tauno, who is also on the Creighton force, a rock-picker.

¶ Recent Creighton newcomers: to Mr. and Mrs. Robert Seawright, on February 7, a son; to Mr. and Mrs. John Compeau, on February 11, a son, Bernard Francis.

Copper Cliff

¶ That vacation with pay was hailed with delight by every INCO employee, but to none has it brought greater thrills than to Galiano Crasi and Mel Fullerton, Copper Cliff fitters. Last year these two drove with C. E. Lockhart to his home at Middleton, New Brunswick, right beside the sounding sea, and during the holiday got their first fling at deep-sea fishing. Three or four miles out from shore they'd putt-putt in their motor-boat, always watching the tide, and drop about a mile of line with a couple of hooks on it. In no time at all there'd be a cod to argue with—a big, fighting, thrashing fellow of perhaps 45 pounds. And if a dog-fish, like a small shark, didn't grab off their catch before they hauled it in, the 20 minutes of ensuing struggle was something that thrilled them stiff, but raised plenty of



blisters on their hands. Other times they'd pull in halibut or fearsome-looking skates, or catch beautiful glimpses of a school of porpoises, rolling and tumbling like great whitecaps far off the shore. Between fishing trips they'd roam the lovely countryside, and one day posed for the accompanying snap with a picturesque team of oxen. This summer they plan to return to New Brunswick, probably in June, and Galiano swears by the beard of the prophet that he'll have a crack at a swordfish if he gets the chance. He's on the right in the picture, wearing an Orford Aces sweater.

¶ Experience proved an expensive teacher for "Ben Hur" Heglar, Mining Engineering Department. Stranded in Coniston one night when he missed the last bus after paying what he lightly terms a social call, he had to hoof it the eight miles into Sudbury, and got home at 3.30 a.m. Next day he bought a car.

¶ Signaling his 45 years of highly valued service to Copper Cliff churches and choirs, W. J. "Cap" Hambley was the recipient of a handsome hymn book in a brief presentation at the United Church February 21. Mayor Collins made the presentation.

¶ From 1919 to 1925 Father Fawcett was in charge of his church's Copper Cliff parish, and during that time endeared himself to all with his kindly counsel and his quiet generosity. Deeply regretted was his death at Sault Ste. Marie in February.

¶ Determined to master the deeper mysteries of bridge, Mac Forsyth went to Sudbury, bought a copy of a book on the game by a well-known authority. Picture his embarrassment when he landed back at the Engineers' Club and his pals pointed out with ill-concealed glee that the volume was about auction bridge, not contract.

¶ Two Copper Cliff entries made their presence felt in the annual Sudbury bonspiel of the Northern Ontario Curling Association. Early winners in the schedules were Skip J. L. Hudson and his men—J. Morrison (lead), K. Madill (second), J. Spalding (vice-skip)—but they did not manage to reach the jewelry in any event. The Jordan rink, on the other hand, dropped its opening games and then settled into stride to cop third prize in the Consolation event. With Skip Jordan were P. Bregman (lead), R. S. Young (second), R. LePage (vice-skip). They brought home sides of bacon.

¶ To the boys on Bowman's shift at the concentrator Mr. and Mrs. T. A. Sirkka (nee Helen L. Kentala), and Mr. and Mrs. Samuel Nodwell (nee Sadie McNab) extend sincere appreciation for wedding gifts of handsome silver tea services.

¶ The concentrator bowling league is all hopped up as we go to press. The powerful Evan Jones quintet turned on the juice to defeat Boehmer's team and make a three-cornered tie possible as the league heads down the home stretch.

¶ Garfield Foy, of the Parlee shift, formerly of Westmeath, was united in marriage

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Don M. Dunbar, Editor

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Heroes of Mining

Probably in no other great industry is there waged a more vigorous campaign to safeguard its men than in the mineral industry of Canada. Yet, despite all precautions, there arise from time to time those inexorable emergencies when men, to save others from injury or death, must risk their own lives.

Then men take those risks instinctively, valiantly, heedless of the cost, and with no least thought of praise or of reward.

Almost 20 years ago E. A. Collins, of Copper Cliff, urged that the Canadian Institute of Mining and Metallurgy cite and acclaim such acts of heroism. Finally, in 1933, the Institute approved donation of medals for the purpose, which have been awarded annually since. Representatives were appointed from each province to act as a committee for the selection each year of the most outstanding deed of valor among miners of Canada.

First winner of the Medal for Bravery was Patrick Meehan, who, with his helper, had lighted the fuses for a round of shots in a stope of the Central Manitoba mine. The time was about 6.30 a.m. As they were leaving the stope the helper fell from the ladder and was stunned. Their lights were extinguished. Meehan then came to the rescue and while he was endeavoring to lift Carlson, to carry him up the ladderway, the first shot exploded. The helper was saved from the flying rock and sustained only a few injuries. Meehan was more severely injured, receiving cuts in the back of his head, neck, back and legs. Regardless of these injuries, Meehan, at the risk of his own life, succeeded in carrying the man to the level above.

This month at the annual meeting of the Canadian Institute in Montreal, Medals for Bravery were presented to three more heroes, John Leja, James Clark, and Chas. P. O'Dale, of Lake Shore Mines.

At the end of the shift on March 26, 1936, Leja, the runner, and O'Connor, a timberman, were in the act of lighting a round of 14 slash holes when a premature blast occurred after 12 of the fuses had been lit.

Clark and O'Dale were at another breast about 70 feet away, waiting for Leja and O'Connor to finish. They heard a shot and a cry for help. Without regard to their own safety and with no assurance of the time at their disposal, they rushed over to find O'Connor temporarily blinded, with fine particles of rock and dust in both eyes, lying on the top mining floor of the stope, where he had been knocked by the concussion.

Leja, although having both eardrums punctured and a severed tendon above the elbow, as well as multiple puncture wounds on the arms and body, crawled back from the mucking floor below, to which he had been knocked down, and was in the act of helping O'Connor when Clark and O'Dale arrived. Leja could easily have saved himself and escaped from the stope without danger to himself while on the mucking floor, but he elected to help his partner.

The three men, Leja, Clark, and O'Dale, assisted O'Connor to the manway, a distance of some 12 feet from the slash, passing directly in front of the remaining holes, which were lit and ready to go off. Clark, after making sure that O'Connor was safely in the manway below the mucking floor, made his way out of the stope for assistance, leaving the other two to see O'Connor through to the level, a distance of some 50 feet. Although O'Connor had regained consciousness at this time, he was unable to be of any assistance to himself.



Trials of a Great Artist

Reginald Stewart, great Canadian concert artist, gave a piano recital at Copper Cliff Club on February 19, and once more delighted its members with his musicianship. But the above cartoon, from the droll pen of Fred Cowling, of Copper Cliff, should bring some discomfiture to the columnist of the Toronto Telegram who wrote in the issue of February 19: "Tonight Reginald Stewart is giving a concert for the miners way up in Copper Cliff. This will be the third time he has played for them, and he is making the stopover on his way home from a tour of the West. We were chatting yesterday about the music club which has been formed for miners in the North, and their enthusiasm and eagerness for good music is most touching. Few of them have had much chance to hear worthwhile composers and yet their favorite program is one which has something of Bach, Mozart, and a modern group of Debussy, and Ravel . . ."

NICKEL . . . AND ITS USES

"FOR BETTER LIVING"

. . . that's the ideal of the chemical industry of which nickel is an unobtrusive but invaluable ally

"There is nothing new under the sun," said Old King Solomon, but today he could not make such a statement and keep his reputation for being wise. Of course in his own time he was probably right, but then he did not know about such things as modern synthetic plastics which are providing mankind with absolutely new materials. He did not even know about nickel, platinum and rhodium which are important in the production of plastics.

PRODIGES OF SCIENCE

These plastics are among the newest of the things the descendants of the ancient alchemists have created, and, some people believe they rank with the most remarkable products of science. Until a relatively few years ago civilization had to depend on the materials which nature has provided from time immemorial—on stone, clay, metals, the hides and other parts of animals and the products of plants. But now it is possible to take various unlikely looking chemicals and make strong, light, hard, handsome materials which can be formed into a multitude of shapes ranging from ornamental buttons to gears for certain types of machinery.

The story of the plastics is an interesting one. It is especially interesting to us who work and refine the copper-nickel ores of northern Ontario, for it shows how nickel is performing another unobtrusive and valuable service for mankind and how two of the precious platinum metals in the ores are playing an important part in industry.

FIND 'EM EVERYWHERE

Take the toothbrush you used this morning—the handle was almost certainly made of a plastic. The top of the toothpaste tube, your fountain pen, the top of the gear shift and the buttons on your automobile dashboard, insulating parts of your radio and perhaps the radio cabinet, your comb—all these things may be made of plastics. And they are only the beginning of a long list of items which make people who ought to know believe that there is a marvellous future for these new materials.

How important nickel is in the manufacture of plastics can be seen by observing the production of the bright colored phenolic resins, which belong to the most important plastic family. These are made out of phenol, better known as a combination of carbolic acid, which is commonly used as an antiseptic (as in Lysol), and formaldehyde, which is also used as an antiseptic and as a preservative in hospitals and laboratories. Phenol, in turn, is made from coal tar, an oil and coal distillation product, so nickel enters the picture right at the beginning because nickel alloys are highly important in refining oil and in manufacturing coal tar.

NICKEL PROTECTION

The phenol which goes into the bright, clear colored plastics, moreover, must be extremely pure and free from rust and other harmful metallic contamination. Hence it is redistilled in pure nickel equipment and it is shipped in nickel-lined tank cars, fitted with nickel heating coils. These heating coils make the phenol liquid, when the cars are emptied. Nickel is the material chosen because nickel will not contaminate phenol and is not weakened by the corrosiveness of phenol.

From the tank cars the phenol is pumped into storage tanks made of nickel or nickel-clad steel and capable of holding from eight to twelve thousand gallons. It is then pumped through a nickel pipe line into a pure nickel steam-jacketed kettle, where it is

mixed with the formaldehyde. Not only the strength and corrosion resistance of nickel are important in this tank, but the ready heat transfer properties of the metal are also valuable, for the mixture is held near the boiling point for from ten to 20 hours during which a catalyst assists in the process. Incidentally water which is given off during the process is drawn from the kettle in a pure nickel condenser fitted with nickel tubes.

COLORS ARE ADDED

When the mixture is cooked, so to speak, it is drawn out of the kettle through a pure nickel valve into small, pure nickel casting pots, from which it is poured into lead molds. At this point the material has been transformed from two unlikely looking chemicals into phenolic resin;—the colors, if any are desired, are added in the steam-jacketed kettle.

The rest of the process is very similar to that used in casting and machining metals. The phenolic resin is either cast into rough castings which are later machine finished into such delicate objects as bracelets, or knife handles, or is cast into rods, bars, sheets and the usual forms which can be turned or cut into the desired finished pro-

ducts, whether these be billiard balls, chessmen, poker chips, cigarette boxes, beads, paper weights or clock dials and cases.

Or, the plastic can be used to make varnish, which is cooked in monel kettles and which has good color and clarity partly because it was kept pure by being manufactured in nickel and nickel alloy equipment.

OLDER PLASTICS

While the phenolic resins can be considered at least as important as any of the plastics, they are by no means the oldest. One of the oldest type is Celluloid, or, in more technical terms, cellulose nitrate, which is made from cotton linters treated with nitric and sulphuric acid. Gun cotton is made the same way, and this explains the fact that cellulose nitrate is rapidly losing the ground it gained by being the first synthetic plastic in the field. It burns with terrific speed and ignites very easily. Still, a good many things, including a great deal of movie film, are made of this material, and it is interesting to note that most synthetic nitric acid is produced with the aid of considerable nickel equipment and with platinum-rhodium catalysts.

These catalysts are screens made out of an alloy of platinum and rhodium. They act through some strange force to make nitrogen—though they do not enter into the reaction themselves. In other words they are like a coach on the bench, who does not enter the game but still has a great deal to do with his team's success.

Other plastics are cellulose acetate, which is very much like cellulose nitrate but does not burn easily and can be used for such things as safety movie film; Plaskon, which is made from nitrogen and carbolic acid and is made into the same sort of things as phenolic resin is; Caselin, which is made of milk and formaldehyde, and others which are still newer.

NICKEL IN AT FINISH

Thus in the production of plastics, nickel is used because it is clean and does not discolor the ingredients which go into the light colored plastics, just as it is used to assure the purity of soap. Moreover, nickel is used in even more unobtrusive ways to produce the plastics, for steel alloyed with small percentages of nickel provides dies and machinery parts which are strong, hard and tough and possess some corrosion resistance. This type of material also lends itself to the manufacturing processes uses in producing fine dies.

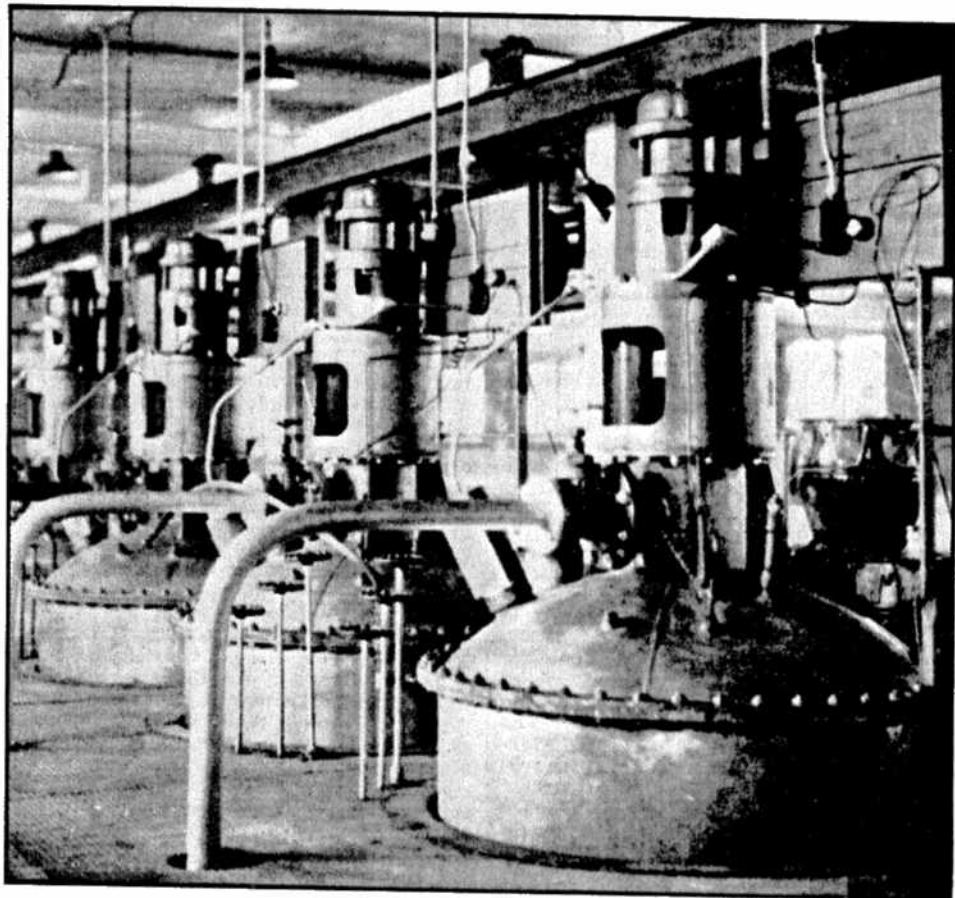
Recently one of the world's leading chemical engineers described the ideal of his industry as "better living through chemistry." In achieving this better living, nickel is playing an inconspicuous but nevertheless important part.

Piled Moulds in The Wrong Manner

Near a holding furnace at Copper Cliff one day recently, an employee had made two piles of copper moulds, six moulds in each pile.

While he was placing a cable around one pile for the crane to move it, the other pile slid and fell, one of the 600-lb. moulds striking him on the right leg and fracturing the fibula. He will be off work from six to eight weeks.

The practice of piling moulds in this manner is wrong. They should be handled singly.



Where Purity is Imperative

In the manufacture of catalin, a pure phenolic resin from which is made a wide variety of articles including jewelry novelties, absolute purity of the product is essential. So the American Catalin Corporation at Fords, New Jersey, installed processing kettles of pure nickel, the only metal which leaves the catalin free of any processing contamination. Three of the 18 kettles are shown above, and the making of catalin is described in the accompanying article.



No "Sissy Sport" is Figure Skating

George Daley, ace sports columnist on the New York Herald-Tribune staff, wrote last year: "Figure skating, as expressed by the ice carnival in Madison Square Garden over the last few days, is nothing short of fascinating. In all my life nothing in the way of entertainment has been more appealing to me. The Carnival is a vivid dramatization of elegance, beauty, grace, dash, daring, and almost everything which appeals to human senses."

Figure skating was first introduced into Canada in 1875 at Halifax. In 1924 it became part of the official Olympic program.

NO "SISSY" SPORT

Dividends of health, grace of movement, and the fact that it seems to set up no age limit for its devotees, are part of its lure, and it is sweeping the country with its popular appeal. Girls seldom need persuasion to take to it. Boys sometimes shy from it, thinking it a "sissy" sport. They

do not realize that to compete for several hours in figure skating's school figures, or for several minutes on a modern program of acrobatic jumps and spins, requires the stamina of a wrestler, the timing and muscular control of a boxer or acrobat, the speed of a fast hockey player, and the grace of a dancer.

Copper Cliff's figure skating club, organized last year with an enrolment of 75, is showing a steady increase in membership, interest, and talent. If it keeps up the present pitch of enthusiasm, it can expect in time to become one of the country's leading figure skating centres.

COPPER CLIFF CLUB

Some of the members, photographed above for Triangle in February, are:

Left to right, top row: G. Valin, E. H. Rose, W. Lawson, C. O. Maddock, J. Winckler, J. Coleman, R. Gray, S. S. Macfarlane.

Second row: W. Ripley, A. Small, M.

Boyle, A. Faddick, M. Faddick, M. Closs, D. Bilbie, K. Cummings, E. McIntyre, R. Price, E. Germa, H. Craig.

Third row: M. Kennedy, A. Sangster, M. Learned, I. MacAteer, A. Hall, M. O'Brien, P. Alfrey, M. Ripley, E. Darrach, P. Macfarlane.

Fourth row: B. Walker, E. Winckler, M. Perras, L. Stevens, P. Sauriol, M. Ferguson, M. Sauriol, S. Taylor, S. Gordon, S. Vesanen, D. Digby, R. Williams, B. Hodgins, G. Stone, M. Coleman, E. Chapman, M. Flynn, E. Germa.

Front row: Rose Mary Bell, Patricia Bell, Vivian Atcheson, Joan Stoddard, Claire Chapman, Betty Rowe, Lois McNeil, Aline Buck, Veronica Sauriol, Betty Coe, Mary Stevenson, June Maddock, June Wulff, Carol Henderson, Nancy Stephen, Lorraine Rowe, A. Laakso, Carol Maddock, Betty Harkens, A. Falcioni, Molly Yeo, Patsy Thompson, Lillian Smith, Vera Wulff, Ruth Flynn.

out of Esquire and been rushed through in an air-conditioned train.

He's the team manager, butt of all post-game attacks, and never really at his best unless someone has made him arch his back in defence of some team strategy or player. Then he goes to Towns.

BOWMANVILLE BOY

Robert Harris Towns was born in Bowmanville in 1895, got his first job with the Grand Trunk Railway in 1914, eventually was transferred to the General Superintendent's office in Toronto. From 1921-25 he was sales manager for the Maple Leaf Sand and Gravel Co., which may explain where he gets all that grit he displays when his team is being criticized. In '25 he came to the Murray Mine, and four years later, and a brief spell in INCO'S Real Estate Office at



Harry Towns

Copper Cliff, went to Frood as General Surface Foreman. He's mixed up in a managerial way in all Frood sporting activities, and likes to drop into the mine's trophy room and gaze proudly and fondly at the impressive display of tankards there.

So there you have them—Brains, Brawn, and Beauty. To them Triangle says, on behalf of Frood fans, "We appreciate what you've done, and we're all for you!"

Athletic Club Getting Big Play

With George Black, Hughie Craig, Ole Olson, Jim Croal and other fully qualified instructors giving generously of their time, Athletic Club classes at Memorial Community Hall are drawing large attendances.

Copper Cliff Athletic Association installed wrestling mats, boxing gloves, and various gymnasium equipment, and then issued a general invitation to all INCO employees to come along and join the fun. As a result, Frood, Creighton, and ORCO have all been represented in the turnouts, which some evenings run as high as 70.

Although some of the enthusiasts have had experience, the majority are beginners anxious to get into good physical condition or pick up slants on boxing or wrestling. There's always a big crowd on hand to see them go through their paces, and the progress many of them have already made is remarkable.

During an evening's workout there's usually a pause while classier wrestlers like Dolph Beaudry, Ole Olson, George Black, or Bill Hall get down to some serious grunting and groaning.

There's still ample time for any interested INCO employee to join the spring class. The gym is open to the Athletic Club each Monday and Thursday evening from 7.30 to 11.00 o'clock, and also on Monday and Thursday morning from 9.00 to 12.00 o'clock for training purposes.

Jammed Between Parked Mine Cars

The importance of mine motormen always taking care to leave ample clearance from the main line when parking cars on siding switches, was clearly demonstrated at Creighton Mine one day last May.

Two cars were switched to a siding on the 2300 level, but when the employee who was acting as switchman stepped between them to allow a motor to pass, the latter struck the corner of the first parked car and the switchman was jammed.

He suffered fractures of the spinal column and severe bruises, and it was some months before he was able to return to work.

Brains, Brawn, Beauty Three Big Frood Assets

"All that glitters is not goals," to paraphrase the old expression.

No deprecating a team, of course, but winning the Swenson Cup and the right to seek Allan Cup honors takes something else besides galloping out there on the ice and pumping the old tapestry full of pucks.

So, when Frood fans salute their 1937 championship team, they're not forgetting the figures behind the scenes—the coach, the buffer, and the manager.

For effectiveness and results, the famous forward line of Faith, Hope, and Charity can take a leaf or two from the book of these three Froodian creators of co-operation—Brains, Brawn, and Beauty.

"Brains" of the Frood squad is quiet, unostentatious Red Stuart, coach, and builder of the plays that have carried his team to the Nickel Belt title and honors farther afield.

A PRO. AT 20

Christened William R., and born February 1, 1900, at Sackville, N.B., Red played pond and school hockey as a prelude to a colorful career. In 1919 he got his first taste of important victory when he travelled with



Red Stuart

Amherst Ramblers to the championship of Cumberland County (Nova Scotia). Then in 1920 he made the jump straight into big-time pro stuff, signing up with Frank Carroll on Toronto St. Pats, and spending the first season on the bench watching Cleghorn and the lads cavorting about. Carroll did send him in for the last game of the Stanley Cup

playoffs that year against Ottawa. The latter had lads like Benedict, Gerard, Neighbor, Broadbent, and Denny, and there was no stopping their march to titular laurels.

In 1921 Red slid into a regular defence berth with St. Pats. There were usually eight or nine men dressed for a game, and a fellow often went 60 minutes unless he took a penalty to get a rest. Alongside Red was Harry Cameron, whom Red thinks was the fastest breaker yet in hockey. He scored 17 or 18 goals in 24 games. Others with St. Pats were Ken Randall, Reg Noble, Babe Day (who never had to look at the net to unleash that terrific drive of his right on the button), Dr. Rod Smylie, and Corbett Denny (who in 1918 in the Stanley Cup series at Vancouver scored the winning goal in overtime of the seventh gruelling game, and was so exhausted he sat right down in

the middle of the ice and cried like a child.

WON STANLEY CUP

St. Pats that year reached the Stanley Cup finals against Vancouver. The series was played in Toronto. When the fourth game came up, Randall and Cameron of St. Pats were out with injuries, so Vancouver, leading two games to one, magnanimously agreed to let Toronto import Eddie Gerard from Ottawa. With Hockey's No. 1 defence player on their line-up, St. Pats won the next two matches 6-0 and 7-1, scoring 13 straight goals on "Eagle Eye" Hughie Lehman before Vancouver got a counter.

So Red Stuart was a Stanley Cupper. He stayed with Toronto in 1923-24, then went to Boston in 1925 with the first American professional team. They won four games out of 36 that season—just didn't have the power in their club. But in 1927-28 they had gathered up Eddie Shore, Oliver, Fredrickson, Hitchman, Coutu, and Cleghorn, and it was only after a bitter fight that Ottawa put them out of the Stanley Cup finals.

MINNEAPOLIS COACH

The years 1928-31 found Red at Minneapolis as playing coach, and in '30 his club copped the American Association title. After seasons at Seattle and again at Minneapolis, he went to Halifax in 1934 to coach the Wolverines. Graham, Lavigne, Shields, McGlashen, and Mosher—all familiar figures to Nickel Belt fans now—were on his club. Flu knocked them out of the Maritime playoffs, but the next year they covered the long bruising trail to the Allan Cup, knocking out Prince Albert in two straight games in the finals. They passed up the Olympic trip in favor of steady jobs, and five of them headed for Frood and Creighton, where they are now.

Red's most thrilling hockey experience? Well, he's had a flock of hair-raisers, but probably the hottest one was during a game with Boston in Pittsburgh in 1926. Dr. Jerry Laflamme was toting the whistle, and it was a grudge match in the finest sense of the word. Finally Laflamme had chased every Boston man to the cooler with the exception of Red and Hal "Old Baldy" Winkler. Pittsburgh, on the other hand, were at full strength. For more than a minute Red and Hal kept the entire Pittsburgh clan at bay, scoreless, until help arrived. But it was some minute!

And that's the hockey background behind the "Brains" section of the Frood triumvirate.

BRAWNY MARTIN

How about the "Brawn?" Martin Horne supplies it, and a mighty important commodity it is, too. Long a booster of tug-of-war and other activities requiring bulging biceps and rippling flanks, Martin was the logical choice when the Frood club sought a strong man to act as buffer and champion when the going was rough. He's done his

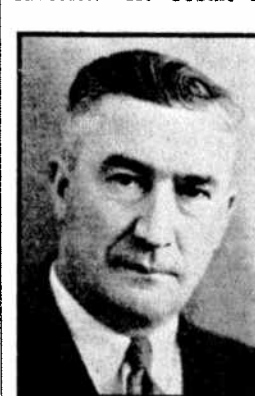
job well. Besides serving as an impregnable barrier at the dressing room door, he has been the "sweetener" for the team, soothing ruffled spleens and promoting the spirit of harmony for which the club is known, and without which it could not have succeeded.

Born at Enfield, Nova Scotia, Martin landed his first job there at the age of 14, driving a horse on a winch by which the hoisting was done at Renfrew Gold Mines. It's an interesting coincidence that Charlie Lively, of Creighton Mine, drove an old gray mare on the other shift, and the friendly rivalry which was born between them then is still thriving in the Frood-Creighton competitions.

After working for a time at Sydney, Martin came to Ontario, and has been at Cobalt, Gowganda, Porcupine, and Kirkland Lake. He's been at Frood since 1927, and is a right wise miner.

ALMOST SANK SHIP

Miners' field days and competitions have always appealed to him. The last drilling contest in which he competed was at Cobalt, when he and his partner set up their machine on a tripod in 55 seconds and in another 15 minutes had drilled 13 ft. 7 ins. into hard rock! Tug-of-war has always been his favorite. At Cobalt he pulled with Kerr Lake Mine team and they were never defeated. During the war he pulled anchor for the Infantry team from Camp Whitby, and coming back on the ship they challenged an all-officers team. The officers proved to be a line-up of the large, bulky, non-tippable type, and Martin's men had to turn on the heat. Finally the Infantry pulled the officers



Martin Horne

clean to the bow of the ship. Her nose went down and her propeller spun high above the water, but still they wouldn't give in. Finally the cargo started to shift, and then the officers conceded defeat.

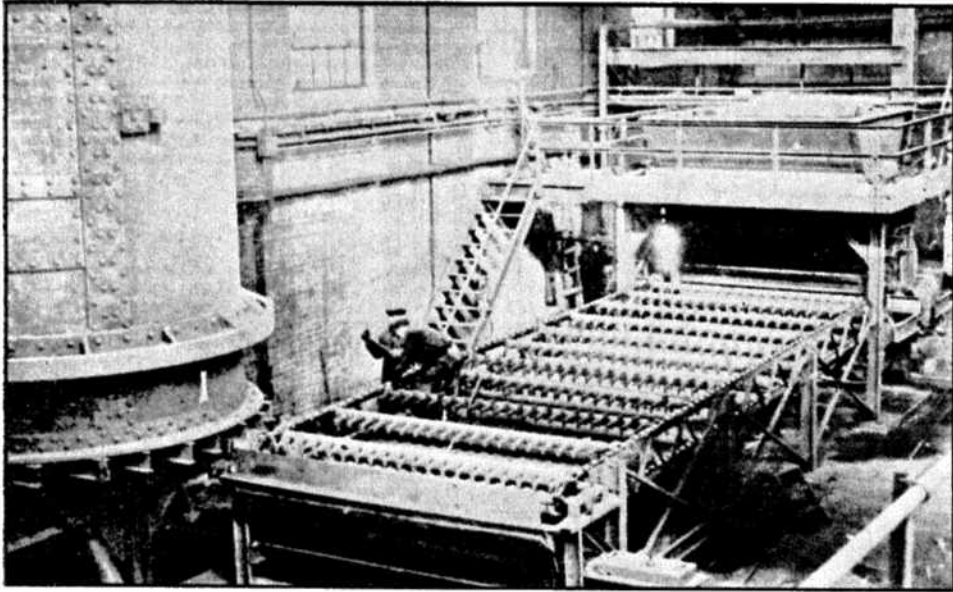
At Frood, where he is Underground Superintendent, Martin has captained the mine's championship tug-of-war squad, and is just waiting for the day the Company decides to have one of the big Copper Cliff stacks shifted a few feet. He says his boys will be only too pleased to handle the job. That's "Brawn" for you.

HOW DOES HE DO IT?

"Beauty" in this Frood threesome is Harry Towns. Of course he draws that name because we really had to have another word starting with "B," but even at that the cognomen is not undeserved, because Harry is the fashion plate of Frood. See him hustling from one end of the yard to the other, up to No. 4 Shaft in a foot of dust or snow or mud, ducking around timber piles, trucks, railroad cars, and fill dumps. Yet at the end of the shift, when he slows down to a trot, you'd swear he'd just stepped



"Calcines Cooler" is Smart Solution of "Port" Problem



Pardonably proud they are at Port Colborne of a "home-grown" machine they've rigged up to solve a very aggravating storage space problem.

One product of the Port Colborne plant is a soft-roasted sulphide which is shipped to INCO'S refinery at Clydach, Wales. The sulphide, at the end of the process it goes through, emerges from calcining furnaces at a temperature of 1,800 degrees F. Naturally it must be cooled before it can be packed for shipment.

The cooling was formerly done by just spreading the calcines on the floor and letting the air get at them. This took time and space, both of which are very valuable commodities at Port Colborne.

So a calcines cooler was constructed. The hot calcines are drawn from the calciners and charged directly into the hopper of the cooler. They are then fed onto the water-cooled table, which is 10 feet wide and 31 feet long, and they are slowly moved along the table by rables and discharged at the end of the table at approximately 100 degrees F. Then they are elevated to storage bins, ready for packing and shipment to Clydach.

The capacity of the cooler is about five tons per hour. Or, put it this way: if hot calcines were spread two feet deep over 6,800 square feet of floor space, and left there to cool for five days, the results would be only one quarter of what the new cooler can accomplish.

HE KNOWS 'WHAT'S WATT'

Port Colborne people, as well as old timers in Copper Cliff, need no introduction to Joe Charland, who has been electrically connected with many of INCO'S plants.

He was born in Drummondville, in the province of Quebec, on January 21, 1882, eldest of a family of five and son of a steam engineer who ran boats on the broad St. Lawrence and engines on the old Inter-Colonial Railway.

FIRST JOB AT 14

Young Joseph's first job, after he had gone to school in Drummondville, was helping to instal the first electric lights in his home town. He was 14 years old then,



Mr. and Mrs. Charland at Port Colborne's Golf and Country Club.

and the dollar a day they paid him looked like just about all the money in the world. The following summer he had a whirl at blacksmithing, and then later he donned a white hat and tried baking, but volts and amperes were in his blood and he yearned for another electrical job.

So, after he'd spent a year in camp at Halifax with the 3rd Royal Canadian Regiment, he went West in 1900 to Sault Ste. Marie and started handling sparks and kilowatts for Algoma Steel. In September of 1905 he moved to Copper Cliff, where a couple of small blast furnaces and converters were the modest forerunners of today's huge operations.

Extensions were starting then, with A. P.

Turner as general manager, Captain Lawson as his assistant, and W. D. Fleet as electrical superintendent. That fall construction commenced of the Copper Cliff sub-station, and in April of 1906 power from High Falls was turned on.

ON DOME CONSTRUCTION

In 1907 Joe Charland had a hand in construction at Crean Hill and at Creighton, and then came back to his post at the Cliff. He was in a party sent by the Company in May of 1911 to Dome Mine to help with the installation of equipment there. They'd just nicely finished their job when the famous Dome fire in July destroyed the complete plant, so back they went in September to rebuild, and it wasn't until June of 1912 that they returned to the Cliff.

Joe was sent to Froot for installation of hoist, compressors, etc., but before the work was completed Creighton ore had indicated big things, so some of the equipment was moved there.

The spring of 1913 saw his appointment as assistant to the electrical superintendent, and so he remained until April of 1927, when he was transferred to Port Colborne as electrical superintendent, and that's been his position since.

He was wed at Crean Hill in September of 1907 to Gracia Katherine Guay. They have one son, George, who is following in the paternal footsteps at Copper Cliff.

OUTDOORS ADDICT

When he was at the Cliff he was an ardent hunter and fisherman, and likes to recall hectic trips into the bush with Doc McCauley, George Hartman, and others. The Wahnapiatae area was best for hunting then, he says, and Lakes Vermilion and Penage were choice fishing waters. He carries with him all the time a snapshot showing a string of 20 beautiful bass, running from two and one-half to four pounds each, which he and a crouy once hauled from Vermilion in two hours.

Since going to Port Colborne he's been bravely struggling with golf, but admits he'd get along better if his mashie had a reel on the shaft and 50 yards of trout line dangling from its head.

With delightful French-Canadian tact he promptly declined to be quoted when asked if he'd sooner live in Port Colborne than Copper Cliff.

"Father of Canadian Music"

(By HUGO CHATELAIN, COPPER CLIFF)
If someone were to tell you that in Sudbury lives the son of the "Father of Canadian Music," allegations of day-dreaming, wool-gathering, etc., would probably come to your mind. But it is true. Dr. F. H. Torrington was the Father of Canadian Music, and Dr. H. M. Torrington, chosen president of the recently formed Sudbury Branch of the Canadian Concert Association, is his son.

Two things have kept this interesting information comparatively secret for so long in our vicinity. One is the district's lack of knowledge of the history of Canadian music; the other is the modesty of the great musician's son. In the country's large musical centres, however, the name of Torrington is immortal.

HIS FIRST VIOLIN

Dr. F. H. Torrington, the famous musician, was born at Beudley, England, in 1835. When he was a young lad his mother promised to give him the violin she had won



Hugo Chatelain

at a bazaar if he could play, in a certain length of time, a favorite melody. The child accepted the proposition, and when the time was up he played not only the particular selection his mother desired, but also many others which pleased her fancy. Thus the "fiddle" which had cost his mother one shilling became the possession of the boy and launched him on his musical career.

It was not long before he showed unusual signs of virtuosity. Through the advice of friends he was placed under the care of masters with whom he studied rudiments, harmony, counterpoint, and the instruments. Nothing seemed too difficult for him. He mastered the violin, the organ, the piano, and even choral and orchestral conducting—subjects which are usually mastered only after years of patience and labor.

CAME TO MONTREAL

At 19, fresh from the hands of European masters, F. H. Torrington arrived in Montreal, where he was soon engaged as organist and choir leader at the St. James Street Methodist Church. One would think this would have been sufficient work for him, but he found time to organize orchestras and choirs, and even to teach.

It was then that Lord Dunmore, the Red River hero, became very much attached to the young musician. A story tells of Dunmore going to visit Torrington one day, an Amati violin tucked under his arm. His face reflected embarrassment, for how was he to present this valuable instrument to his young friend without making the latter feel extremely indebted to him? As Dunmore approached his destination, an idea entered his mind—why not ask Torrington to exchange violins with him? The little plan worked successfully. Today the Amati is in Sudbury at Dr. Torrington's home—value inestimable because of its maker and the sentiment attached to it.

WAS IN BOSTON

In 1874 F. H. Torrington went to Boston, where he became concert master to the Boston Symphony Orchestra. Besides this great responsibility he accepted the position of choir leader at King's Square Chapel. A few years later Thomas Mason, of Mason and Risch, brought him to Toronto. It was then that he established his reputation as the Father of Canadian Music. His great musical mind and experience, coupled with untiring efforts, converted Toronto into an artistic and musically-conscious centre, and from there his influence spread across the Dominion. He inaugurated the Toronto College of Music; he organized the Toronto Concert Orchestra; he started choirs; he was official organist at the Metropolitan Church; he taught; with his consuming enthusiasm and tremendous energy he brought to Toronto and all Canada an appreciation of the harmonic traditions of the "Romantic School."

When he died, in 1918, he had established for our country a permanent place in the world of music.

FIRST AID COMPETITIONS

(Continued from Page 1)

Mechanical Shops: A. G. Duberry (capt.), J. A. Langlois, W. Johnson, T. C. Bryce.

WALL NO BARRIER

With Culham absent on account of illness, and Wells unable to attend, Surface and Shops squad at Creighton had to borrow Lesjac at the last minute from No. 3 Shaft team. They went on to win by a goodly margin, while No. 3 Shaft finished in second place. The competition was keen and, as at Froot, there were some amusing moments before it was over. Solution of the problem included the removal of a car from a garage, and although of course the "door" was indicated to the teams, some of the boys in their excitement insisted on dragging the auto right through the "wall." The personnel of the other Creighton teams:

No. 3 Shaft: A. Seymour, V. Maki, B. Lean, R. Brown.

No. 4 Shaft (Day Shift): A. Emblin, E. Bulchuk, P. Cayen, R. Rayworth, A. Banas.

No. 4 Shaft (Afternoon Shift): W. Thi-beault, W. Latvala, A. Stone, W. O'Neill, L. Hodgins.

No. 5 Shaft: F. Bidgood, D. Rygalo, J. B. Fyfe (Jr.), Maensivu, L. Vereilli.

HALF-POINT AHEAD

At Copper Cliff also, only half a point separated winner and runner-up, Mechanical Dept. giving Converter Bldg. a real chase for the honors. Reverbs. was the other lineup competing in the finals, these three having survived previous eliminations. The championship Converter Bldg. crew were all first-year men with no previous First Aid experience. Other teams competing were:

Mechanical: G. Guthrie (capt.), G. Adams, J. Toivenan, R. Polano, J. Gilpin.

Reverbs: W. McNeice (capt.), A. Cocker, J. McRobert, W. Powell, E. Collins.

Electrical: J. Tighe (capt.), P. Krull, J. Ferguson, C. Robertson.

Concentrator: B. Allen (capt.), J. Walker, A. Blanchard, H. McLean.

Orford: P. Gibbons (capt.), F. Lapierre, P. Heaphy, C. Moxam.

AMUSING MIXUP

All four teams entered in the Froot Inter-Departmental were experiencing their first year of competition. An amusing feature cropped up in the contest after some of the teams had bound the fractured leg of their "patient" in splints, and had then tied it to the other leg for support. When they came to lay their patient on the stretcher, they found they had to use a "stope basket" instead, which is a stretcher with a separate

compartment for each leg. There was some frantic hustling to redress the "patient" to fit the basket. The 12-8 Shift's crack team had a lead of one or two points when the tally was finally counted, with 2400-level, the other finalist team, making an excellent showing. The other teams:

2400-level—D. Inglis, W. Hahn, G. Brosekeyk, M. Pechkoff.

2600-level: J. Douglas, H. Robertson, J. Damstead, W. Quarrel.

3100-level: J. Smith, E. Baker, A. Bealer, G. French.

FIRST SAW CLIFF IN 1892

Albert McAllister first saw Copper Cliff

in 1892 when he was a boy of nine. He went skating on the creeks with his chum, Dan Winks, who was later to become one of Canada's outstanding speed skaters. He built up a reputation for his appetite, because he was a lad who spent every possible moment in the open air.



Albert McAllister

As a matter of fact, he has since been such an outdoor sport fan that he has never danced a step in his life and maintains he is a 100 per cent. wallflower at a social function. What's more, he couldn't tell the Jack of Spades from the Queen of Clubs if they were husband and wife.

He was born on a farm near Elmvalle, Ont., on May 15, 1883. His father was born in Ireland of Scotch parents; his mother was born in Canada of Scotch parents. This may have had something to do with the name McAllister.

His father came up to Copper Cliff in the early spring of 1892 and went to work in the yard of the Copper Cliff mine. The family followed him on April 9. Pierce and Byers were operating a general store where the old McIntosh block is now.

NO MUSICIAN

Albert went to school in a little shack at the corner of Evans Road and Copper Cliff Road. Two of his boyish obsessions were racing home from school against Tom Hambley (now C.P.R. superintendent at North Bay) and trying to play a baritone horn. Now and then he could beat Tom Hambley, but he never mastered the intricacies of the baritone.

As he got older he worked summers in the rockhouse at the Copper Cliff mine, and went to school in the winter. When he was 16 he started to work steadily, and for three years served as "chief cook and bottle-washer" in the laboratory for David Browne and D. P. Schuler. In 1901 he transferred to the sampling room of the Ontario Smelting Works in the plant near the location of the C.P.R. station.

TO MOND IN 1910

His family had gone back to the farm at Elmvalle, and in 1904 they persuaded him to join them, but after a year of the quiet rural life he went to work for the Canada Iron Furnace Works at Midland. He had been thoroughly bitten by the "northern bug," however, and on June 1, 1910, was back in the Sudbury district to hook up with the Mond Nickel Company at Victoria Mines under Bill Mumford. After the merger of Mond with INCO in 1929 he went to Garson as a shift boss. In 1933 he became a shift boss at Froot, and now is back at his old haunts at Garson.

In 1905 at Webbwood he was married to a northern girl, Miss Letitia Tario. They have three sons.

COACHED GARSON

Keenly enthusiastic over outdoor sports of any kind, he was a prominent supporter of hockey and baseball, and was for some time manager and coach of the Garson football team. He is a past president of the Sudbury District Football Association. In 1926 his Garson cohorts made a clean sweep of honors in Northern Ontario, but did not press through for Dominion honors, although it has often been said since that they would have had a walkaway. Fred Pentney, now assistant master mechanic at Creighton, and George Murray, now with Canadian Industries, Limited, at Copper Cliff, were members of that team.

Further Expansion Chalked Up By INCO

On two fronts INCO has chalked up further expansion recently.

Levack Mine, closed since 1931, is being placed in condition for production. Repairs to track and dewatering of the lower levels are being effected, and since underground workings have been kept in good condition, full-scale hoisting of ore will likely commence about May 15.

Out in Saskatchewan INCO has purchased the plant of the Horseshoe Lake Mining Co. at Ormiston, for the production of sodium sulphate, used extensively in the smelting process.

MINING—PAST and PRESENT

First of a Series of Articles By K. V. LINDELL, Copper Cliff

The art of mining from the very first beginning has been extensive and comprised of manifold ramifications. To undertake the description of its various phases without recourse to technical language is well nigh impossible, but we shall endeavor in this series of articles to compare mining methods of Agricola's time with methods in practice today in the Frood and other mines of INCO, without making it necessary for you to have a dictionary at your elbow.

ACKNOWLEDGEMENTS

As announced in the last issue of The Triangle we are fortunate in having a copy of Georgius Agricola's "De Re Metallica" for reference, through the kindness of Mr. R. L. Peek. We have also secured the kind permission of the publishers, The Mining

Magazine, of London, England, to use some of the text and wood cut from the translation from the original Latin edition of 1556. The translation was done by Herbert Clark Hoover, former President of the United States, and his wife, Lou Henry Hoover.

Before proceeding with our comparisons of methods of yesterday with those of today, we feel we should give you a picture of the era of which we shall write, as well as a brief review of the life of the ancient author and the difficulties he had to surmount in the preparation of his text. That he performed his task well can be appreciated from the fact that Agricola's "De Re Metallica" served as guide to Geology, Mineralogy, and Mining Engineering for almost two whole centuries after its publication. It passed through some ten editions in three languages at a period when the printing of such a volume was no ordinary undertaking, which is in itself sufficient evidence of the importance in which it was held, and is a record that no other volume upon the same subjects has equalled since. Practically the whole of it has been given from personal experience and observation, for the material available for reference concerning the subjects upon which he wrote was indeed scant.



K. V. Lindell

Considering the important part mining has played in human history, the scarcity of information prior to Agricola's time is amazing. This may, however, be due to several reasons, such as the fact that at that time trade secrets were not freely dispensed, and that there was a general lack of literature on industrial projects. Writers were prone to discuss only subjects of general interest, and possibly those engaged in mining were not literary minded—especially not to the extent of chronicling in regard to their own industry. Moreover, copies of hand-written literature, in the years before the printing presses, were limited and therefore not generally available.

HIS DIFFICULTIES

To complicate Agricola in his undertaking, he chose Latin as his medium, feeling that it would be more widely read and better preserved for posterity than his native German, but, in so doing he chose a language which had ceased to expand about a thousand years before. Consequently he was in immediate difficulty because there were not many technical words or expressions in Latin to aid him. He had therefore to coin hundreds of new words and prepare a glossary to explain their meaning. As this glossary was incomplete, the work of the translators was of course made difficult, but by study of the contemporary literature they have rendered what may well be termed a true translation of the thought of the author.

COINED NEW WORDS

Georgius Agricola, whose real name was Georg Bauer (meaning peasant) was born at Glachau, in Saxony, on March 24th, 1494. Thus he was born at the beginning of the Renaissance, 40 years after Gutenberg's first book was published. Martin Luther was born but the year before Agricola; Columbus had made his great discovery but two years before; Vasco Da Gama rounded the Cape of Good Hope but three years later. Thus you can see that "De Re Metallica" was written during a period of awakening and exploration; it took 20 years to complete and was not published until the year after the death of Agricola in 1555.

BORN IN 1494

A MAN OF PARTS

Agricola received an educational ranking of the highest of his time, being a graduate of the University of Leipsic, having received the degree of Bachelor of Arts in 1518. After he graduated he spent some time teaching Greek and Latin at the Municipal school in Zwickau, in Saxony, lectured for several years at the University and then went to Italy for further study of Philosophy, Medicine, and the Natural Sciences. On his return from Italy he was town physician for many years, resigning in 1530 to devote several years in travel and study among mines, after which he held office as

city physician of Chemnitz, in Saxony, as well as holding many other political offices until his demise.

During his entire lifetime he was continually interested in mines, invested in them, studied them, and kept in contact with mining in some manner or other and was therefore well qualified to prepare the volume "De Re Metallica" which has formed the backbone of the present mining industry by its departure from the previous trend of thought by basing his work on research and observation as opposed to previous fruitless speculation as was being practised by the alchemists of that time.

TWELVE BOOKS

"De Re Metallica" is composed of twelve books and using Agricola's description of them, "the first book contains the arguments which may be used against this art, and against metals and mines, and what can be said in their favor. The second book describes the miner, and branches into a discourse on the finding of veins. The third book deals with veins and stringers, and seams in the rocks. The fourth book explains the method of delimiting veins, and also describes the functions of the mining officials. The fifth book describes the digging of ore and surveyor's art. The sixth book describes the miners' tools and machines. The seventh book is on the assaying of ore. The eighth book lays down the rules for the work of roasting, crushing, and washing the ore. The ninth book explains the methods of smelting ores. The tenth book instructs those who are studious of the metallic arts in the work of separating silver from gold, and lead from gold and silver. The eleventh book shows the way of separating silver from copper. The twelfth book gives us rules for manufacturing salt, soda, alum, vitriol, sulphur, bitumen, and glass."

Many wood cuts are used in the book and

it was this work by the illustrators that delayed the publication for such a long period. As will be seen in the reproduction of the cuts accompanying these articles, Agricola adopted a unique manner in his wood cuts to ensure that the reader would get the true picture of the thought he desired to convey.

DEFENDS MINING

It is not our intention to dwell at very great length on the subjects discussed in the first few books, but a few extracts from Book I are of considerable interest and the advice offered is applicable to those who would be interested in mines today. Agricola points out that the usual argument against mines is that they are not stable, profits are dubious, and while about one hundred to one suffer losses from deception, few ever gain wealth from mining. In rebuttal to this argument he says stoutly that usually those deceived are the ones who have taken to mining when pressed by debts or other fetters, and are therefore unqualified to weigh such matters as mining, and who acquire fortunes more by luck than by good management.

There was also much argument at the time of Agricola against mining because many contended that "inasmuch as Nature had concealed metals far within the depths of the earth, and because they are not necessary to human life, they are therefore to be despised and left untouched." In refutation of this argument Agricola says—"I will on behalf of the metals instance the fish, which we catch, hidden and concealed though they be in the water, even in the sea. Indeed, it is far stranger that man, a terrestrial animal, should search the interior of the sea than the bowels of the earth. For as birds are born to fly freely through the air, so are fishes born to swim through the waters, while to other creatures Nature has given the earth that they might live in it,



Did Its Duty

On the morning of March 2nd F. McLean, Drill Room laborer at Ontario Refinery, prepared to pull a coupling pin to split a string of narrow gauge flat cars.

McLean leaned over and inadvertently put his foot across the track. The advancing wheel hit his metal toe-guard and dented it badly, but his toes escaped without injury. Without his toe-guard this man would have probably suffered a major accident.

and particularly to man that he might cultivate it and draw out of its caverns metals and other mineral products.

EULOGIZES METALS

"On the other hand, they say that we eat fish, but neither hunger nor thirst is dispelled by minerals, nor are they useful in clothing the body, which is another argument by which these people should strive to prove that metals should not be taken out. But man without metals cannot provide those things which he needs for food and clothing. For, though the produce of the land furnishes the greatest abundance of food for the nourishment of our bodies, no labour can be carried on and completed without tools. The ground itself is turned up with ploughshares and harrows, tough stalks and the tops of the roots are broken off and dug up with a mattock, the sown seed is harrowed, the corn field is hoed and weeded; the ripe grain with part of the stalk is cut down by scythes and threshed on the floor, or its ears are cut off and stored in the barn and later beaten with flails and winnowed with fans, until finally the pure grain is stored in the granary, whence it is brought forth again when occasion demands or necessity arises. If the bull or goat is led to the butcher could it be cut up without tools of iron? . . . not to speak of clothing, which is made out of wool, flax, feathers, hair, fur, or leather. First, the sheep are sheared, then the wool is combed . . . the threads are drawn . . . each in turn Agricola describes the various uses for the metals, summing up his arguments by the statement that "if there were no metals, men would pass a horrible and wretched existence in the midst of wild beasts; they would return to the acorns and fruits and berries of the forest. They would feed upon the herbs and roots which they plucked up and by day they would rove in the woods and plains at random like beasts, and inasmuch as this condition is utterly unworthy of humanity, with its splendid and glorious natural endowment, will anyone be so foolish or obstinate as not to allow that metals are necessary for food and clothing and that they tend to preserve life?"

That the question of allowing mining operations was a serious one can be fully appreciated from the fact that Agricola devoted an entire book to the discussion of this subject alone.

In Books II, III, and IV, Agricola discusses the various requirements of a good miner in regard to his knowledge of where to find minerals as his experience had indicated, and he describes at great length, supplemented with wood cuts, the various types of veins and stringers in which metals and minerals may be found. The subject matter in Book IV continues in the same manner and also includes a discussion which may be described as the legal difficulties in connection with mining claims and their definition.

It is not until we reach Book V that we begin to touch upon the fundamentals of actual mining operations, and our next article may be heralded in Agricola's own words—"I will describe first of all the digging of shafts, tunnels, and drifts . . . then I will speak of the tools by which veins and rocks are broken down and excavated; the method by which fire shatters . . . etc."

Should Make Certain of Footing

An accident to a Creighton shaft driller last September showed clearly how important it is for miners to make certain that their footing is secure when they are working.

This shaft driller and his partner were moving a bulkhead, and when he leaned over to pick up his end of a 6x8, another 6x8 on which he was standing rolled over, causing him to bump against a pile of timber behind him, knocking him off his balance so that he fell three sets or 21 feet. He suffered lacerations to his scalp and to his right knee, and lost four days' work.



A—SHAFT B, C—DRIFT D—ANOTHER SHAFT E—TUNNEL F—MOUTH OF TUNNEL

"X-Ray" of a Mine in 1556

The above illustration reproduced from a wood cut print from Agricola's "De Re Metallica" depicts quite clearly the two principal means of access to underground mine workings: by tunnels and shafts; as well as the usual connecting passage called a drift. Agricola resorted to many illustrations to complete his text . . . "lest descriptions which are conveyed by words should either not be understood by men of our own times, or should cause difficulty to posterity . . ." Several of the illustrations which will appear in later issues of the Triangle will show the unique method adopted by Agricola's illustrators in order to amplify his word descriptions of mining equipment.

Extreme Care Taken in Precious Metals Recovery

Another in the Series of Articles Describing Operations at Ontario Refining Company, Copper Cliff

The anodes to the Tank House, as described in a previous issue, contain nickel, gold, silver, platinum metals, selenium and tellurium, in addition to copper. The recovery of these various impurities and their production as marketable by-products is the function of the Silver Refinery, Acid, and Selenium and Tellurium Plants. Silver Refinery and Acid Plants will be described in this issue.

ACID PLANT'S JOB

During electrolysis, or copper deposition, the nickel, being partially soluble in the copper sulphate electrolyte has a tendency to build up in the solution. The increasing nickel content very markedly increases the electrical resistance of the solution and this element must therefore be regularly removed. This necessitates the daily withdrawal of approximately 4,000 cu. ft. of solution for treatment in the Acid Plant. The solution passes through Pyne Green cells, located in the Tank House, where, by restricted circulation, a segregation of copper takes place. The copper content of the solution in the upper portion of the cells drops from 3 per cent. to 1 per cent., and thus provides a source of nickel-enriched solution, greatly simplifying the subsequent treatment.

NICKEL RECOVERED

A portion of this upper layer of solution is pumped to the Acid Plant where it is again subjected to electrolysis in 20 tanks known as liberators. These draw a current of 5,000 amps., and each have 25 insoluble lead anodes and 24 regular Tank House starting sheets. In these cells the remaining copper is plated out until the solution contains only .35 grams per litre. The deposited copper is returned to the furnace. The "decopperized solution" is then fed to vacuum evaporators, where it is concentrated from 23° Baumé to 60° Baumé. At this concentration the impure nickel sulphate crystallizes from the solution. The impure nickel sulphate, or "nickel residue" is pumped to settling tanks from which the sulphuric acid liquor is decanted after cooling. The residue is then fed to centrifuges, where it is dried and stored ready for shipment. The copper and nickel-free sulphuric acid is returned to the Tank House for re-use. A recent addition is the Nickel Salts Plant, where the residues are dissolved, purified and crystallized out as nickel sulphate and nickel ammonium sulphate crystals of extremely high purity.

PRECIOUS SLIMES

Returning to the Tank House, the other anode impurities including silver, gold, and platinum metals being insoluble in the electrolyte, fall to the bottom of the cells as a "slime" or "anode mud." This slime, with its high precious metal content, is sluiced from the tanks every 28 days when the scrap anodes are lifted from the tanks. It is led to a central sump and pumped to the Silver Refinery settling tanks, where the slimes are allowed to settle for 8 - 10 hours to effect a separation of the solids from the excess liquor. The clear solution is pumped back to the Tank House and the settled slimes dried by centrifuge to about 20 per cent. moisture. A typical slime would contain approximately 25 per cent. copper, 20 per cent. nickel, 12 per cent. selenium, and 2 per cent. tellurium. The gold and silver content varies considerably with material being treated and operating conditions.

METICULOUS CARE

To remove the copper and nickel the slimes are roasted with sulphuric acid for

six to eight hours in order to convert these impurities into soluble forms. The roasting is done in a cast iron bottomed reverberatory having magnesite brick side walls. The roasted slimes are then leached with dilute sulphuric acid and water, producing a residue of the required purity for the Doré Furnace. During all these operations the most meticulous care is taken to avoid even the smallest losses, due to the value of the material being handled.

The leached slimes are dried by centrifuge and returned to the furnace room. The leach liquor from the roasted slimes is pumped to cementation tanks, where copper sludge is added to bring down any selenium, tellurium, or silver present. Cemented slimes are then treated in a similar manner to incoming raw slimes.

PRECIPITATE DUST

During all the furnace operations, a certain portion of the metallic constituents of the feed is volatilized and also carried away as dust with the flue gases. In order to reduce losses to a minimum, a Cottrell precipitator was recently installed to electrostatically filter all Silver Refinery gases. These pass up through lead pipes, which have central electrode wires extending their full lengths. Directional current at 60,000 volts passes from the wire to the outer shell. This ionizes the solid particles in the gases, causing them to adhere to the tube walls, from which they are periodically washed and recovered.

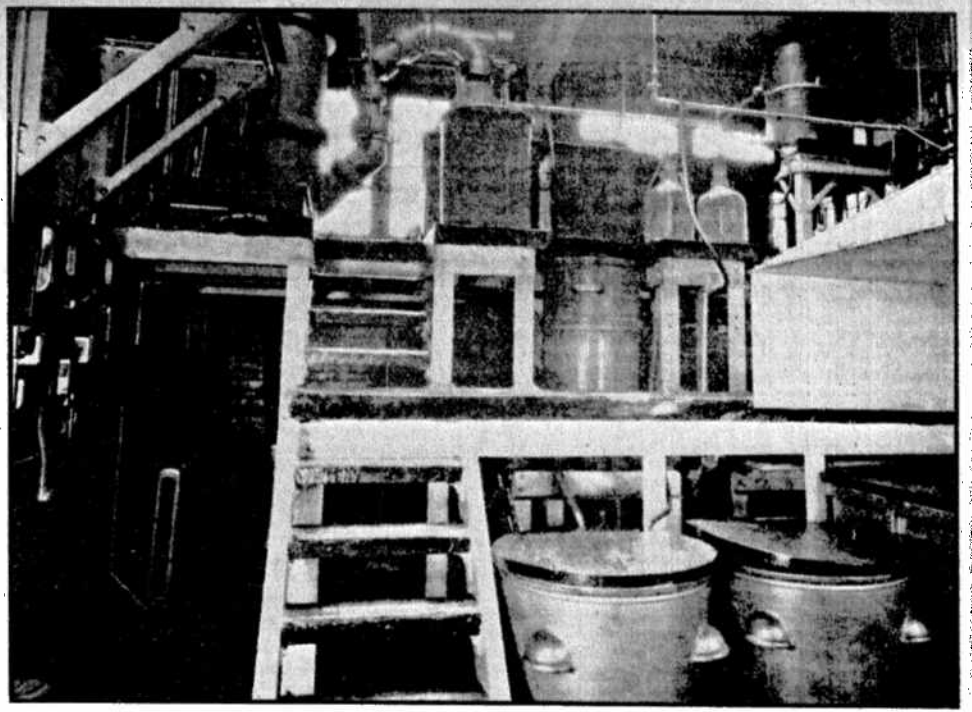
The treated slimes are smelted and refined to "Doré metal," a gold-silver platinum metals alloy, in the Doré Furnace. A Doré charge consists of about 14,000 pounds of slimes, fed 1,000 pounds at a time until the whole batch is melted. The impurities are fluxed from the bath of molten metal by means of small sand and fluor-spar additions. A batch treatment takes about 48 hours and the various slags produced are returned to the furnaces or leached for the recovery of selenium and tellurium.

The Doré metal is cast into small slabs 17" x 9 1/2" x 1/2" containing about 97 per cent. silver; gold, and platinum metals making up the remainder. The selenium and tellurium have been recovered from the slimes during the processes leading to the Doré production and are present in various leaches and washes. These are pumped directly to the Selenium and Tellurium Plant.

OUT COMES SILVER

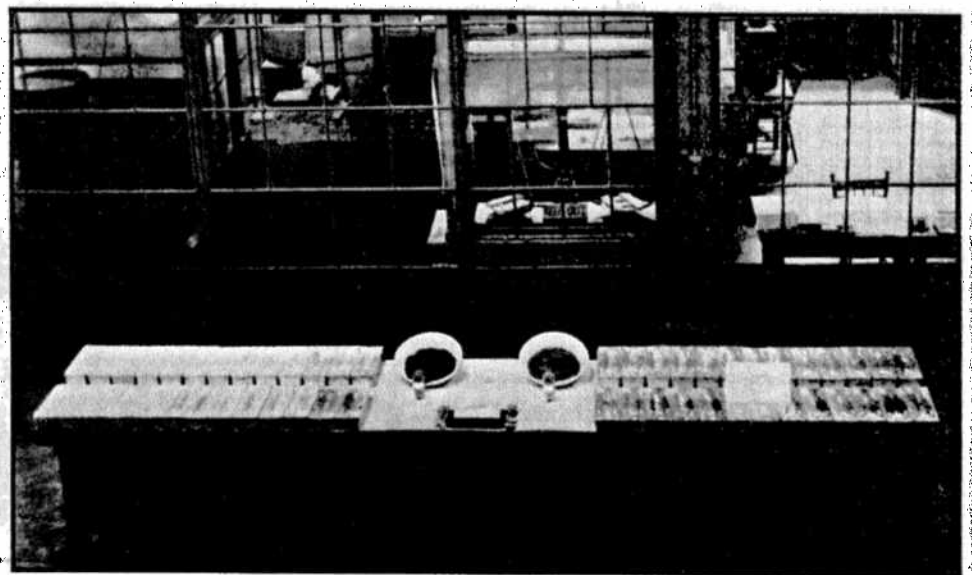
The Doré metal is refined in 40 Balbach-Thum parting cells, similar in principle to the electrolytic tanks. The slabs, now anodes, are held in a horizontal position by "parting baskets," yellow pine boxes with canvas as a filtering medium, which retain the gold and platinum metals. Pure silver crystals are deposited in the lower part of the tanks by electrolytic action. These crystals are gathered, washed, dried, and charged to an oil-fired crucible furnace from which the silver is cast into bars of 999.85 parts fineness ready for shipment to the market. Several of these 1,000-ounce bars can be seen in the accompanying photograph.

Periodically during a parting plant campaign, the gold-bearing slimes containing about 25 per cent. silver and 20 per cent. platinum and palladium, are taken in 100-pound batches and dried. All subsequent gold operations are carried on in locked, glass-encased rooms as an added precaution. These slimes are charged to stoneware pots in the gold room, where they are digested with aqua regia for 14 hours. The silver,



The Refinery's "Gold Room"

This is the gold room at Ontario Refining Co., where the parting plant slimes are treated for the recovery of gold and platinum metals. In the stoneware pots at the top of the platform the slimes are digested with aqua regia, or a mixture of nitric and hydrochloric acid, for 14 hours. Remaining silver in the slimes is thus precipitated as silver chloride, leaving the gold and platinum metals solution free for final treatment.



And Here's the "Real McCoy"

Don't look now, but that little gold brick in the centre of the table is worth, at the present market, just \$17,500. This is a display of the Silver Refinery's products. The large bars are silver, 99.985 per cent. pure, each weighing 1,000 ounces and worth \$450. The black material in the dish is a sample of selenium, a product of the Selenium Plant. The light grey material in the other dish is a sample of the platinum and palladium concentrate recovered by ORCO and shipped to INCO's precious metals refinery at Acton, England. The small gold bar is 99.98 per cent. pure and weighs 500 ounces.

precipitated as silver chloride, is filtered from the gold solution and returned to the Doré Furnaces.

RECOVERING GOLD

The gold solution is treated with ferrous chloride, bringing the gold out of solution as a fine gold sand. This is filtered from the solution, melted in a small oil-fired furnace, and cast into small anodes. These are electrolytically refined in Wohlwill cells, to ensure platinum-metal-free gold cathodes for remelting. The starting sheets for use in these cells are made from gold bars weighing 60 ounces rolled uniformly to 3/1000 of an inch. The cathodes are washed, dried, and melted in the same type crucible as before and cast into 500-ounce bars of 999.80 parts fineness, ready for shipment. One of these bars, an example of which can be seen in the forefront of the display photograph, at the present price of gold, is worth about \$17,500.

Scrap hoop iron is added to the gold-free solution. The platinum and palladium are cemented out by this treatment and, after washing, are dried, ground and packed ready for shipment to Inco's precious metals refinery at Acton, England.

The extreme purity of product and the care taken to minimize losses in all steps of the process are outstanding features of the Silver Refinery operations.

Must Always Heed a Warning

"Watch out for that cage," a Creighton construction boss had warned his men.

And everything went well until one of them relaxed his vigilance for a few moments.

Engaged in replacing a shaft discharge line, this timberman was helping to nail a plank to the ladder rungs, to serve as a slide. The topman, after checking to see that the men were clear, rang the signal to lower the cage, and as it moved down the timberman put his left hand on the rail. The rear wheel of the cage passed over it, fracturing fingers and severely lacerating the palm and wrist.

Safety precautions are often most important when they seem least necessary.

Copper Cliff

(Continued from Page 2)

to Alberta Lennox, of Magnetawan. Those wedding bells are ringing out, also, for Percy Dyce and Gabrielle Duranleau, of Espanola. On January 25 Louise Wilkins, of Paisley, became the bride of Kenneth Weaver. At Estevan, Sask., Leonard Wellock and Annie Pierce were wed March 17.

¶ Do good turns always pay? Jim Closs lent a willing shoulder to help hoist a car out of a slippery rut on Elm Street February 18. As the auto finally got under way, the chained rear wheel passed over Jim's foot, crushing the toes. He's hoping to be in perfect condition in time for the Shift League playdowns.

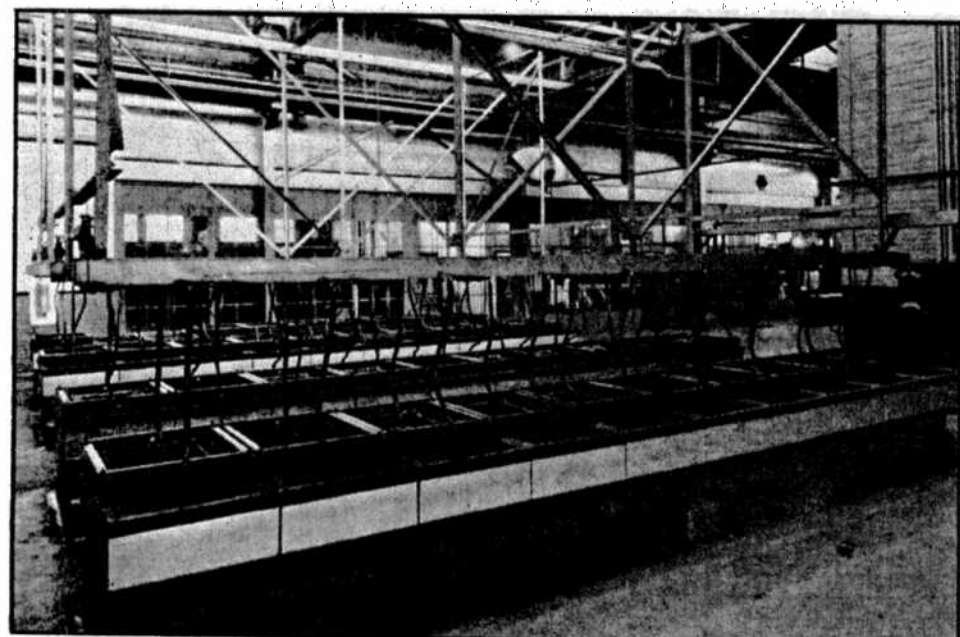
¶ Recently enrolled in the big INCO family: to Mr. and Mrs. Victor Morbin, February 22, a daughter; to Mr. and Mrs. Harry Meades, January 29, a daughter, Carole; to Mr. and Mrs. R. Hamilton, February 9, a daughter; to Mr. and Mrs. C. Meaden, February 11, a daughter, Clarene Joan; to Mr. and Mrs. L. O. Cooper, January 25, a daughter, Laura; to Mr. and Mrs. Sam Nute, December 30, a son. Looks like young Master Nute has his hands full already, with all those girls around.

¶ Because Sonja Henie, international figure-skating star, was in the cast of his feature picture, Manager Syd Scott, of Sudbury's Capitol Theatre, gallantly invited all members of Copper Cliff Skating Club to attend his show on March 17. The gesture was thoroughly appreciated.

¶ Handy kitchen things for the apartment she has taken in Sudbury were presented to Ethel Whalen at a "shower" given by the girls of Copper Cliff general office at a party at the Club on February 25.

¶ INCO's sales department might well consider signing up Mary Owens, who sold no less than 24 books of tickets for the draw recently conducted by Copper Cliff Athletic Association.

¶ At the annual meeting of the American Institute of Mining and Metallurgical Engineers, in New York on February 18, a paper was presented by G. H. C. Norman on "Methods of Dust Sampling and Determination in the Mines of Ontario."



Where Silver is Separated

The "parting plant" at Ontario Refinery, where the silver crystals are separated from the gold and platinum metals. Slabs of Doré metal are placed in these parting cells inside "parting baskets," which are yellow pine boxes with filtering medium. Electrolytic action causes pure silver crystals to be deposited in the lower part of the tanks, while the gold and platinum metals are retained by the canvas. The locked, glass-encased gold room is in the background.

Your Lawn — MAKE IT LOVELY THIS SUMMER

By C. D. FERGUSON, Copper Cliff

(Continued from Page 1)

kills the grass and makes an ugly scar that mars the lawn the following season.

Just as firmly tramped snow is injurious to grass, so also is the indiscriminate tramping or playing on grass in early Spring while the ground is soft and before growth becomes vigorous. Usually the daily tramping on grass during the critical three or four weeks in the Spring means much work and expense for renewal and the loss of the use of the lawn surface for seven or eight weeks in early Summer. The inference is clear.

DURING GROWING SEASON

The care of the established lawn during the growing season is another matter and involves some real work throughout the entire season and a little expense. The chief problems are fertilization, watering, mowing and repairing the lawn and we will consider each separately in the order given.

(1) **Fertilization**—It has been estimated that the grass clippings removed from a lawn in one season may represent as much soil fertility as is contained in ten hay crops. Is it any wonder, then, that lawns respond to applications of fertilizers even when the grass clippings are allowed to remain? Equally is it any wonder that the grass on



Judged Copper Cliff's best-kept home surroundings in 1936 were those of John Thompson, partially shown here.

unfertilized lawns runs out after a period of years and fails to show improvement from the sowing of seed on undisturbed turf?

Today the best way to maintain the fertility of lawns is to make frequent applications of commercial fertilizers. On any lawn one may profitably apply a complete fertilizer, such as 5-8-7 at the rate of 2 to 3 pounds per 100 sq. ft. of grass in early Spring. This is easily spread by hand and may be done without fear of injury as soon as a few inches of frost has left the soil and before active growth has commenced.

After a very little careful practice anyone can distribute it evenly and quickly and early Spring is a good time to learn. Every lawn should receive this treatment annually. If a really good lawn is desired, continue to apply fertilizer at intervals of six weeks and for these Summer applications it is cheaper and better to use nitrate of soda at the rate of one-half to one pound per 100 sq. ft. Make these applications when the grass is dry and follow with a good watering. If you distribute the nitrate evenly you may have no fear of burning the grass and in any case the burning is a temporary injury to the leaves which is soon overcome by the benefits of the fertilizer.

Persons should not forego the benefits to be derived from the application of chemical fertilizers through fear of them for their application is really simple. All INCO employees of the mining and smelting division may purchase fertilizers from the Purchasing Department at cost in any quantity desired. The Spring application on 1,000 sq. ft. of lawn will require 30 pounds of 5-8-7 fertilizer and will cost approximately 65 cents. Nitrate of soda costs slightly more per pound but goes three times farther.

(2) **Watering**—In applying water to a lawn, tree or flower, one should try to obtain the same result in the soil as is accomplished by several hours of continuous soaking rain. Obviously a short, daily sprinkling from the hose does not moisten the soil at the roots, is not effective, and indeed may be harmful. Sufficient water should be applied at one time to soak the soil to the depth of several inches and then no additional watering be done for several days depending on the type of soil and the weather. Only on shallow or very sandy soils which



Beautiful peonies in the garden of David Hutchison, awarded the 1936 prize for the best Copper Cliff home surroundings.

Why Not Your Name This Year?

1936 winners of INCO's annual awards for gardens were:

CLASS 1, Best Home Surroundings in Copper Cliff—1, David Hutchison, 33 Power St., \$20.00; 2, Robert Stevens, 36 Power St., \$15.00; 3, Harry Trotter, 1 Balsam St., \$10.00; 4, E. McKerron, 13 Power St., \$8.00; 5, C. Lyons, 4 Kent St., \$7.00, and 27 others who received \$5.00 each.

CLASS 2, Best Kept Home Surroundings in Copper Cliff—1, John Thompson, 31 Power St., \$20.00; 2, Wm. Chisholm, 17 Rink St., \$15.00; 3, Wm. Zinkie, 6 Oliver St., \$10.00, and three others who received \$5.00 each.

CLASS 3, Most Improvements to Home Surroundings in Copper Cliff, 1936—1, R. H. Boehmer, 10 Granite St., \$20.00; 2, R. Chugg, 8A Peter St., \$15.00; Frank E. Wolfe, 28 Serpentine St., \$10.00, and six others who received \$5.00 each.

CLASS 4, Best Home Surroundings in Coniston—1, John Angove, 131 Balsam St., \$10.00, and three others who received \$5.00 each.

CLASS 5, Best Home Surroundings in Creighton—1, Ed. Myhill, 33 Lake St., \$10.00, and two others who received \$5.00 each.

provide no storage for water should it be necessary to water every day.

(3) **Mowing the Lawn**—Probably the word "trimming," used in the sense as by a man's barber, expresses in a better way just what we should aim to do in cutting the grass on the lawn. The grass should not be left to grow so long that the removal of the clippings is necessary and it should not be cut so close to the ground as to present a shaved appearance. It is necessary to trim a good lawn every four or five days, except during the hot, dry weather of mid-Summer when every week or ten days will be sufficient.

The oftener grass is trimmed the thicker and more luxuriant it will grow. Infrequent, close mowing is injurious to grass. Neglect in cutting the grass in late Summer is injurious, while timely trimming helps to strengthen the turf for the succeeding year. The belief that to allow the grass to grow up long strengthens the sod is sheer fallacy and the practice actually weakens the sod.

(4) **Renovation**—It frequently happens in this district that patches of grass become killed out during Winter and early Spring. Usually the quickest and best results are obtained on our soils by spading over the turf, fertilizing and re-seeding. Thin grass may be thickened by fertilizing or, better still,

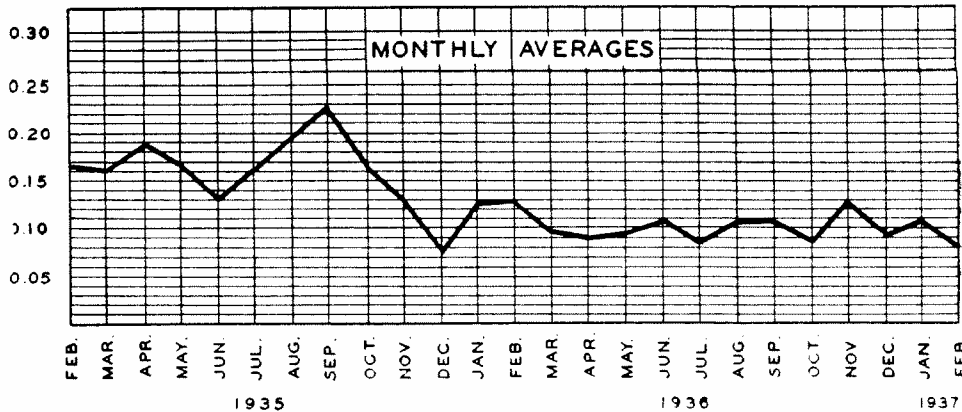


Lovely flowers bordered a garden path in Coniston's 1936 prize-winning grounds, home of John Angove.

given an application of screened loam and black muck in equal parts fortified with say 5-8-7 brand or a nitrate fertilizer. The soil can easily be brushed into the grass with the back of a garden rake. Very poor lawns should be entirely renewed and the method is discussed in the following paragraph.

(5) **Making a New Lawn**—In constructing a new lawn or renewing an old one, the rough grade is probably the first consideration. If possible, see that the ground has sufficient slope to give good drainage in all directions from the dwelling. One should try to have four inches of reasonably good soil over the surface and this soil should be fairly heavy if over a very light sub-soil, or a good loam if over a clay sub-soil.

With our soils barnyard manure is a necessity and should be applied to the top of the dug-over surface and thoroughly worked in. A layer of good black muck thoroughly incorporated with loam or clay top soil will take the place of some of the manure and will prove more lasting and a greater holder of water. Then, if quick growth and especially good grass is desired, just before the final raking before seeding, broadcast 3 pounds of 5-8-7 fertilizer per 100 sq. ft. One thing to remember, the more you culti-



"How Are We Doing?"

ACCIDENTS PER 1,000-SHIFTS-WORKED, MINING AND SMELTING DIVISION

In only one other month during the past seven years has the number of accidents per 1,000-shifts-worked been lower than it was in February of 1937. In December of 1935 the figure was .072. Last month's mark was only fractionally higher, at .074. This looks as if the Mining and Smelting Division may in 1937 give quite an argument to 1936's record-establishing yearly average, which was by a wide margin the lowest yearly average in years. To better such a mark, however, will take the best co-operation of every employee in the Division. **BE SURE IT'S SAFE!**

vate to thoroughly mix soil and manure, the better and more lasting the results.

PLANTING THE SEED

Before the final smoothing to grade, the soil should be well compacted by rolling or tramping, and raked level again. Apply the seed and rake very lightly to work it into the soil. Usually it is not advisable to roll after seeding. If the soil is very dry it should be soaked to the depth of several inches and then allowed to dry on the surface before seeding is done. In dry, hot weather, newly seeded ground must be watered, but only a fine spray is used and the soil soaked thoroughly at one time. It is true the seed may be washed into pockets that will show for a few weeks, but better that than no germination at all. Always the heaviest watered areas show the best stand of grasses. If the weather is hot during the seeding stage of the grass, extra watering may be necessary to prevent burning and killing out of the clover.

SELECTING SEED

Only the best grades of seed should be sown. The mixtures sold by many seed firms may contain too great a percentage of

tender grasses which thrive the first season at the expense of the more hardy ones and then disappear. The same is true of white dutch clover when used in too large a proportion in the seed mixture. The most satisfactory mixture over a period of years has been Kentucky Blue, Canadian Blue, and Red Top, in equal proportions, to which is added about one pound of white dutch clover to 12 to 15 pounds of the mixture. Grass sown broadcast by hand should be applied at the rate of 1 pound to 200 to 300 sq. ft. of lawn, depending on the type of lawn required and the care it is likely to receive. Time and care are necessary to scatter the seed evenly.

Trim a new lawn regularly but not short and the turf will form quickly. Do not worry over such annual weeds as lambs-quarter, pigweed and barnyard grass. Plantains and dandelions may be spudded out. Dandelions and chickweed may be killed in an established lawn by three sprinklings or sprayings of a solution of 1 pound of iron sulphate, granular form, to one and one-half gallons of water. The foliage must be moistened with the solution which causes burning and death to the weeds and clover and leaves the grass green and healthy.

Peppy Shift Leagues Winding Up Fine Season

(Continued from Page 1)

a two-game total-goals contest for the championship.

Day Shift took the decision in the first match, 3-2, on goals by G. Gobbo, N. Farnell, and W. Evershed; Shops' two tallies came from the sticks of D. Cresswell and J. Stacey. In the second tussle Shops came back strong with a 4-2 triumph to cop the title, 6 goals to 5. For Shops in the final match goals were scored by D. Cresswell and A. Benoit, who bagged a brace apiece. Benoit had the pleasure of whipping home the winning tally after a neat solo rush. Day Shift's point-getters were G. Gobbo and C. Bryce.

Lineups of the two teams: Shops, goal, G. Chabot; defence, J. Stacey (Capt.), M. Watchouski, J. Low; centre, D. Cresswell; right wing, C. Barazzuol; left wing, A. Gobbo; subs, A. Stocker, C. Bray, V. Balde- sera, A. Eastwood, A. Benoit, H. Benoit; coach, Bill Johnson.

Day Shift: goal, L. Blake; defence, Riv- ard, Fitzgerald, Forestell; centre, E. Oliver; right wing, G. Gobbo; left wing, C. Bryce; subs, F. Leclair, N. Farnell, W. Evershed, R. Boles; coach, Bill Walker.

MORROW TOPS SCHEDULE

Undeclared in scheduled play, Morrow's Shift from the converter building naturally head into the Copper Cliff Shift League playdowns the favorites, although they will have to dish up plenty hockey to take the measure of the other three finalists, Frank Wolfe's Orford Aces, Bowman's concentrator crew, and the Closs crowd from the crushing plant. Wolfe's Aces, last year's titlists, dropped only one decision in the schedule, a 3-2 verdict in overtime to Morrow; Bowman lost two; Closs lost three. Here's the way the league standing wound up, with the last two games not played:

COPPER CLIFF SHIFT LEAGUE STANDING						
	W.	L.	T.	Pts.	GF	GA
Morrow	7	0	0	14	22	7
F. Wolfe	6	1	1	13	32	15
Bowman	5	2	1	11	53	20
Closs	4	3	1	9	41	27
Johnstone	4	4	0	8	19	13
A. Wulff	4	4	0	8	35	25
Parlee	2	5	1	5	17	29
Trotter	0	7	0	0	6	64
Duberry	0	6	0	0	11	36

Apparently a team doesn't have to score a whole flock of goals to win a league, since Morrow's men sagged the twine only 22 times in seven games. Bowman's big 53-goal total was built up with a 12-2 win over Trotter and a 14-0 verdict over Duberry. Other clubs rolling up scores of 14 goals were Closs and A. Wulff, each time at the expense of Trotter.

KEEN PUBLIC INTEREST

Evidence of the interest in the shift

matches was the crowd of 700 people which turned out the night of March 3 when Morrow and Bowman played an evening match instead of the usual morning encounter.

The Hughie Johnstone lineup from the re- verbs looked like a pretty fair bet for the playdowns until the last few days of the schedule. Then they dropped two decisions, one at 5-4 to Closs and the other at 2-1 to Bowman, and they were squeezed out of the picture. You can't ask for a closer finish than that. The Johnstone crew, incidentally, scored two of the nine shutouts recorded in scheduled play.

The combination crew from Parlee's concentrator shift and Somers' reverb shift were pretty slow to start, scoring only one goal in their first four games. Then they trimmed Trotter 7-0, beat Duberry 4-3, tied Closs at 3-3. Apparently tired from this effort they faded in the home-stretch, losing their last match to Bowman at 8-2.

While they failed to garner any points, both the Trotter and Duberry teams went through the schedule enthusiastically, and put up the best arguments they could. Trotter's outfit, weak defensively, proved a sweet fattener for league scoring averages.

HOCKEY WAS CLEAN

With the exception of a few minor flare-ups when tempers got a bit frayed, the schedule was played out harmoniously. At times checking was a bit strenuous, but play on the whole was clean and a credit to the clubs. Although some of the decisions went by wide margins, 17 of the 35 games were won by a difference of only two goals or less, and two were tied.

Picking stars from the various playdown rosters is no sinecure, but there are some of the boys who stood out in almost all their league games. On the Morrow club, goalie Rusty Abrams has been in great form, and Carthy, at centre ice, has shown class. His goal on March 3 against Bowman, when he took the disc in the corner, stick-handled through a maze of players, and drew the goalie out to score, was a sweet spot of hockey. Gladstone, on the wing, and Klem, a defenceman, have also been hot stuff for Morrow.

With the Frank Wolfe lineup, Murray and Mahoney get the call. The former, captain of the club, is one of the most versatile players in the league. Perhaps the loop's best complete forward line is Bowman's trio of Stevens, Webster, and Edwards.

Laurie Riutta, igloo-watchman for Closs, is a young goal-tender who has shown nice ability.

Unless Bowman or Closs upsets the dope, it looks like Morrow vs. Wolfe in the final set-to, and if the boys manage to swing an evening show at the Stadium, wotta crowd it'll draw!