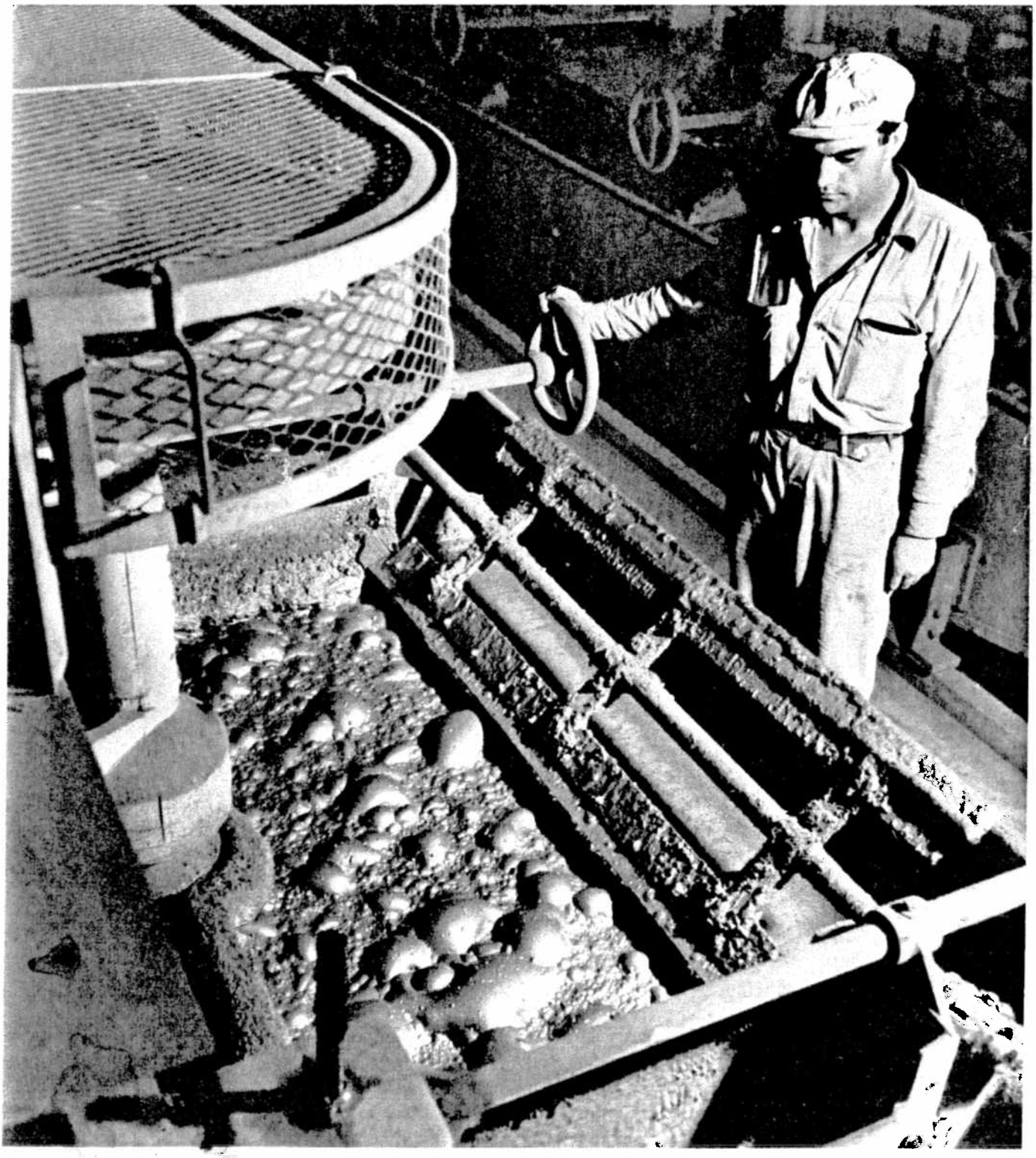
INCO TRIANGLE

VOLUME 11 COPPER CLIFF, ONTARIO, OCTOBER, 1951 NUMBER 7



Concentrate from Creighton

(STORY ON PAGE 7)

INCO TRIANGLE

Published for all employees of The International Nickel Company of Canada, Limited.
Don M. Dunbar, Editor.
EDITORIAL OFFICE COPPER CLIFF, ONT.

This Company of Ours

In a company the size of ours, where operations are conducted on such a big scale, there is a perfectly natural tendency on the part of the average employee to lose perspective. It becomes difficult to grasp the significance and scope of the tremendous show in which we are among the players.

The completion of the development program at Creighton brings this point to mind. Here is a project involving the sinking of a new mine shaft and the construction of a concentrator with a capacity of 10,000 tons a day. It calls for an expenditure of $17,000,000. But it has been planned and carried through with so little fuss or ostentation that we are only vaguely aware of what is going on.

The Creighton program is only part of an expansion of underground operations to offset the loss of production from the open pits, so that the Company will be able to maintain its refined nickel production capacity of about 250,000,000 lbs. per year. This expansion will cost more than $130,000,000.

Because it is by far the world's largest producer of nickel, our Company's responsibility to humanity is much heavier than it would be if it were only one of a group of companies producing nickel on a comparatively equal scale. We are surrounded by evidence of the Company's efforts to live up to this responsibility.

As we know, Inco does things quietly but it does them well. It strives always for excellence, for permanency, for the best. Its citizenship is beyond question.

It is natural for a man to take pride in his work and in the company for which he works. Certainly we in Inco, however difficult it may be for us to keep tab on the broad reaches of our Company's operations, have reason for deep pride in its respect for the letter of its obligation and the way it goes about its business.

Record Pickerel Weighs 15 lbs. 5 oz.

Believed to be the largest pickerel ever caught in Sudbury District waters was the beauty landed at Otter Lake, near Cartier, by Dickie Fellbaum of 9 Michael St., Minnow Lake. Dickie is seen above, holding his prize, which weighed 15 lbs. 5 oz., measured 32½ in. long, and had a girth of 18½ in. He is assisted by Bev Fogal, chairman of the fish contest committee of the Sudbury Fish and Game Protective Association. When he boated the record-breaker Dickie was accompanied by his dad, Walter Fellbaum, a churn driller at the Open Pit, and by Bert Demers of the Copper Refinery. Dickie is a student at Sudbury High School.

THE

Importance of Nickel

IN

Our Everyday Life

(Winner of one of the four $2,000 university scholarships offered by Inco in an essay contest to commemorate the 200th anniversary of the discovery of nickel by the Swedish scientist Cronstedt in 1751.)

By RAYMOND SUUTARI

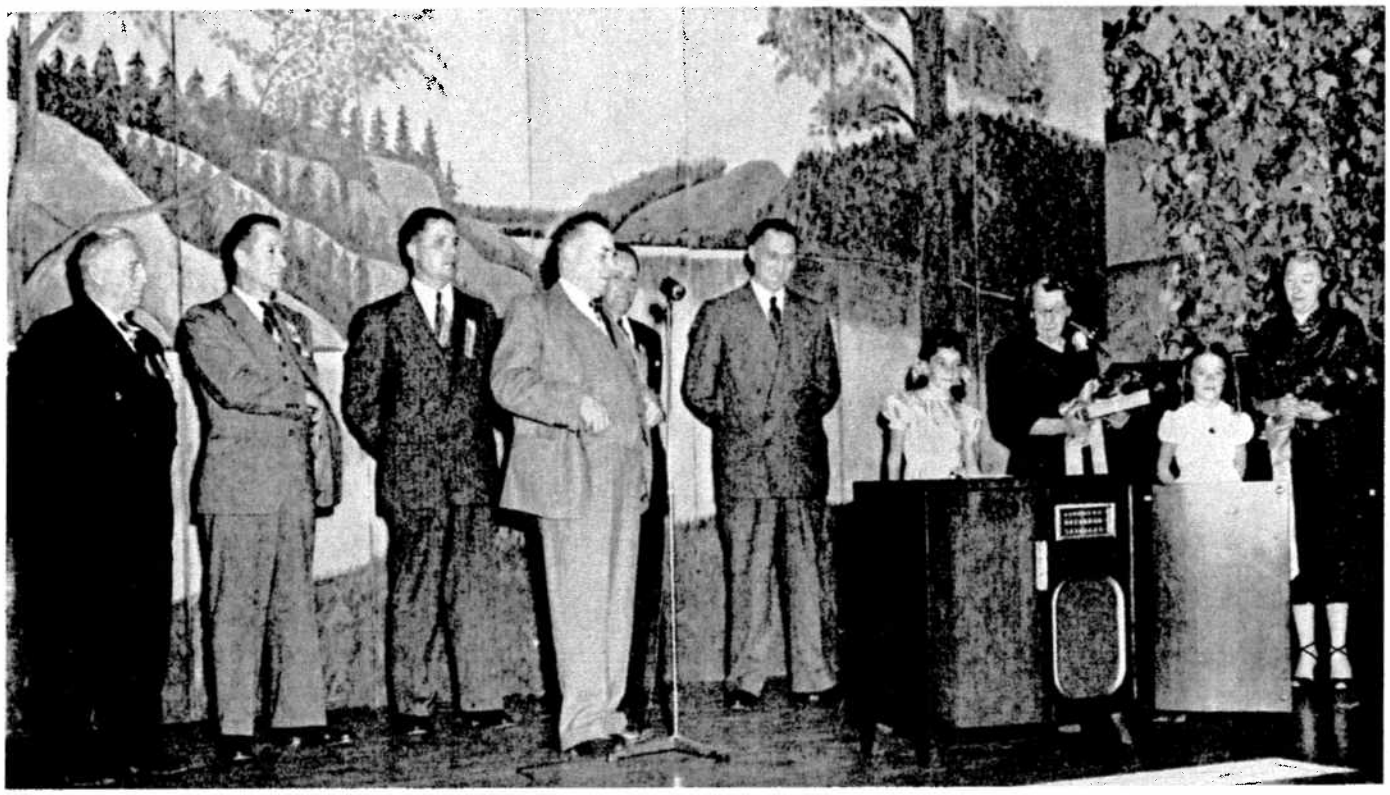
How important is nickel in our everyday life? To answer this question we must first define the words "everyday life." Our modern way of living has become so dependent on everything that goes on about us that our day to day existence may be disturbed by anything from a defective alarm clock which causes you to be late for work in the morning, to a debate in the United Nations Assembly. Thus "everyday life" may be taken to mean everything that goes on around us, local or national, that may in any way affect us. We have seen in the past year how a railway strike affects us. Therefore, transportation and communications are factors in our "everyday life." Similarly, industry, science, war and your home are factors in our "everyday life." To show the importance which nickel plays in each of these, it is best to take them one by one. The uses of nickel today are so many and so varied, that unless volumes are written they must be dealt with in rather general terms.

Transportation and communications have been called the "life blood" of any nation. They are the "veins" and "arteries" of a country. Transportation carries the raw materials to industry and takes the finished products to the markets. Transportation takes many forms. It is a combination of cars and trucks on the highways, trains on the rails, ships on the sea, and aeroplanes in the air. They compete for business but all are important. But where does nickel enter this picture. Let's look at transportation before the extensive use of nickel. Highway transport was a slow and sometimes dangerous venture. Cars and trucks were plagued with broken gears, axles and crankshafts. Repairs were expensive and time consuming. Cars were for the rich only and even then only for the more daring ones. People preferred to travel by train. But even this was far from perfect. Trains were slow and uncomfortable. They too were subject to breakdowns. Failure of vital parts caused accidents which cost lives. Still, this was far better than the automobile. The aeroplane was a mere novelty. They lacked the all important reliable engine. The average person would not risk his life in one. At sea it was much the same story. Engine parts broke down and corrosion took its toll of the steel plates. Then the era of nickel opened. The automobile jumped in importance. Reliable cars and trucks swarmed on the highways, broken gears, axles and crankshafts banished by nickel. Trains adopted it. Speed and comfort increased while accidents decreased. Carriage parts of nickel cast iron, and sides plated with stainless steel, became popular. Reliable engines and strong structure, brought about by nickel alloys, gave the aeroplane the boost it needed to assume importance. Ship engines containing nickel, and corrosion resisting plates of stainless steel saved time and money. Thus nickel gave us safe, reliable, cheap transportation.

In the field of communications the magnetic properties of nickel have made it important. Vacuum tubes, resistors and permanent magnets all contain nickel. They are used in radio and television sets, transmitting equipment, and telephone and telegraph transmitting equipment. Imagine your life without reliable radios and telephones. Your radio dies out as your wife, handkerchief in hand, listens to her favorite soap opera, or as you listen to your favorite mystery program, leaving you to wonder if the butler really did do it. Besides this, your telephone might fade out, as the lady of the house catches up on the latest gossip or as you are about to answer that quiz program question which would win you a free ten years' supply of flea powder. Of course these things do not happen, but if they did, you would appreciate more the reliable communications and the nickel which maintains them, which we now take for granted.

Now how about industry. Suppose industry

Levack Did Itself Proud for Charlie Lively



The people of Levack gave Charlie Lively a great send-off when he left the mine, where he had been superintendent since 1942, to become asst. general superintendent of mines at Copper Cliff.

The Employees Club was packed for the farewell party, at which a keenly enjoyed variety program was presented, including a skit in which the inimitable Joe Ribic got his last chance to give one of his rib-tickling impersonations of the popular superintendent. Musical salutations were presented by residents of the community of English, Finnish, French and Ukrainian descent. H. J. Mutz, general superintendent of mines, brought greetings from Copper Cliff; Mayor Earl Gilchrist said farewell on behalf of the town of Levack, and Safety Engineer Gordon Tulloch spoke for the men of the mine. Ralph C. Gomoll, asst. superintendent, presented Mr. and Mrs. Lively with a beautiful radio-phonograph, the gift of the people of the community.

In the photograph above Supt. Lively is seen at the microphone, expressing the appreciation of himself and his wife; he paid tribute to the various groups and influences which make a mining camp tick on all cylinders the way Levack does. Others in the photograph, left to right: Harry Endleman, representing the town; Edgar Mallette, representing the Electrical Dept.; Joe Piaskoski, representing the men of the mine; Ed. Kauppinen, representing the Mechanical Dept.; Ralph Gomoll, asst. superintendent; Dolores Drohan, flower girl; Mrs. Lively; Betty Bushnell, flower girl; Miss Edo Lively, daughter of Mr. and Mrs. Lively and a member of the Levack school teaching staff.

---

stopped. You would be without its products, if not out of work. What does nickel contribute to industry. Take chemicals as an example. The ordinary products of the chemists, such as soap, plastics and petroleum products might be very expensive without nickel. Chemicals corrode their refining equipment very quickly. Slower production and increased costs result. But again it's nickel to the rescue. Monel resists chemical actions and gives you cheaper, purer products. But nickel is not restricted to the chemical industry. In other industries longer lasting dies and castings of nickel alloys play their part. Thus industry depends on nickel.

Science is the key to our progress. It supplies industry and transportation with new materials and processes, doctors with medicines, and workers with new tools. But science too has a third hand, nickel. Invar, a nickel iron alloy, is used in making the important measuring equipment. This metal has practically no coefficient of expansion, that is, it does not expand with heat or contract with cold. Nickel is also used to store the cold liquid gases in laboratories and in chemical processing tanks. Nickel helps science to help you.

So far we have been dealing with things that are absolutely necessary in our "everyday life." Now we come to one that is not, but yet is so common that it cannot be neglected. I mean of course, war. Our freedom is our sacred heritage. It is like a championship title, something to defend and be proud of. But like a title it is sometimes challenged, and war results. Lately, this has been often. From the ancient time when the Chinese unwittingly made superior weapons from meteorites containing nickel, nickel has been important in war. The ancients made harder armour from these meteorites. Today we make stronger armour plate from nickel. That keen sword has been replaced by a nickel steel rifle barrel, and the vulnerable horse, by the swift armoured tank. Wars are one of the horrors of life but despite our efforts to end them, they still exist and probably will continue to exist as long as there is a human race (which with our modern weapons might not be very long anyway). But as long as our way of life is challenged, nickel will help to defend it. That brings us to the seat of our "everyday life," the home. We have discussed so far, some, not all by any means, of the factors in our everyday life. These have all been on a national scale. Your home, however, is yours alone. Walk through it. The kitchen is a treasure-house of nickel. That new sink of monel, those toaster, stove and iron elements, that thermometer and thermostat all contain nickel, or one of its three thousand alloys. The food in the refrigerator has probably been processed with this element. Walk through to the livingroom. That radio or television set, whichever it may be, the centre of your entertainment, contains nickel. You go into the bedroom. Here you cannot find anything containing or having anything to do with nickel. Look again. The wallpaper on the wall was processed with nickel and the sheets on the bed were bleached and laundered with nickel. You cannot escape nickel.

"So yhat!" says a cynic. "Nickel cannot be that important. I can live without it." This is no way to gauge importance. We can live without everything but food, water, shelter and sleep, but who wants to.

In our world today, industry and transport depend on each other. Both depend on science, but all of them depend on nickel.

DANGEROUS CHARACTER

"Dear me!" said the lady to the superintendent of the insane asylum, "what a vicious look that woman has we passed just now in the corridor. Is she dangerous?"

"Yes, at times," replied the superintendent evasively.

"But why do you allow her such freedom?"

"Can't help it."

"But isn't she an inmate and under your control?"

"No, she's neither under my control nor an inmate. She's my wife."

TRUISM

Life is like a motor car. The faster you go the less mileage you get.

Machinists Top Softball League At Copper Cliff

The powerful Machine Shop lineup strong-armed its way to victory in the playoffs of the Copper Cliff shift softball league, a result which surprised no one who saw this hard-hitting crew in action during the season.

Sponsored by Copper Cliff Athletic Association, the shift league was again an all-round success, producing some rousing entertainment for players and spectators alike.

Accompanying photographs show the teams taking part in the league playoffs:

Top: Machine Shop, front row, R. Dopson (coach) C. O'Reilly, H. Bellay, D. Gathercole, J. Gladstone; back row, W. McNeice, M. Rossi, L. Sauve, G. Renaud, C. Hobden (manager); not shown, L. Duncan, J. McDonald, A. Van Allen, G. Trezise, G. Hashey, A. Wulff, N. Bobbie.

Second from Top: Johnston's Shift, front row, Claude Grenon, Wally Urwin, Ralph Crichton, Armand Emond, Jack Gibbons, Fred Scanlon, Gordon Murray (manager); back row, Leon Methe, Chester Rinaldo, Red Auger, Chick Forest, Earl Mick, Zip Salem, Johnny Gibson

Third from Top: General Office, front row, Bill Thorpe, John Goodearle, Al Roden, Johnny Vanderburg, Bud Buchanan; back row, Johnny Svec, Frank Ressell, George Syer, Jack Holtby, Lorne Tiplady

Bottom: First Aid, front row, M Farrell, F. Mazzie, P. Olsiew; back row, J. MacDonald, P. Didone, W. Pakkala, A. Uhrynew, K. Glynn, E. O'Reilly.

Honor Dr. Graton's 20-Year Service

On completion of 20 years as consulting geolcgist to the International Nickel Company, Dr. L. C. Graton of Harvard was the guest of honor at a testimonial dinner at Idylewylde Golf and Country Club. Seventy-five guests, included 37 members of the Company's Geological Dept., took part in the tribute to the man whose counsel and guidance have been of such value in coping with the complex geology of the Sudbury District.

Asst. Vice-President Ralph D. Parker was chairman of the gathering. Presentation was made to Dr. Graton of a miniature geologist's pick made from metals mined by Inco, and also of a walnut case containing a superb collection of 100 polished and mounted samples of ore and rock types found in the Sudbury District. Flawless workmanship marked the gifts. The presentations were made by B. E. Souch and A. R. Smith of the Geolcgical Dept.

NOT ACCLIMATIZED

A man appeared at the gate of a nudist colony, rang the bell and waited. From inside: "What do you want?"

"I want to join."

"You can't join with that blue suit on."

"It isn't a blue suit—I'm just cold."

SHOWING PROGRESS

Friend: How are you getting along in your driving?

Woman: Oh, fine: yesterday I went 50 miles an hour, and tomorrow I'm going to try opening my eyes when I pass another car.

Electrical Harry Lauders Serenaded the McIntyre

More than 100 admirers, including representatives of all Inco plants, gathered at the Italian Hall at Copper Cliff to give Alex McIntyre of the Electrical Department one of the finest farewell parties you could imagine. The entertainment was all local, all original, and all good. The chorus pictured above, the kiss of the Highland mist still on their brows and the heather yet in their hair, were a sensation to put it mildly; left to right are Frank McShedlar, Stan McRacicot, Bud McGerma, Lloyd McWatson, Chester McMcGillvary, Andy McSchumanski, Evo McFalcioni, and Norm McMcGillvray. Highlights of the McIntyre's colorful career were covered in a humorous song written and sung by McWatson. McGerma and McRacicot put on a skit that cast a revealing light or employee relations, and drew a terrific hand. It was quite a night for the Scottish, and for sundry other folk.

Two handsome travelling bags were presented to Alex McIntyre at his big retirement party in the Italian Hall at Copper Cliff. Bill Sylvestre, a veteran of the Electrical Dept. is seen (right) as he made the presentation to the McIntyre (the fellow they often searched aroon the toon for).

PARENTAL ADVICE

As the little donkey left home to make his way in the world, his mother tenderly said: "Good-bye, Jack. Please try to make an ass out of yourself."

MEOW!

"Look at the lovely ring Hubert gave me. It fits beautifully."

"Yes, it's very nice, dear. It was a bit tight on me."

Close Call for Dom Castanza

Prompt and cool-headed action by Reg Hiscock saved the sight of Dominic Castanza's left eye at the Copper Refinery on August 15.

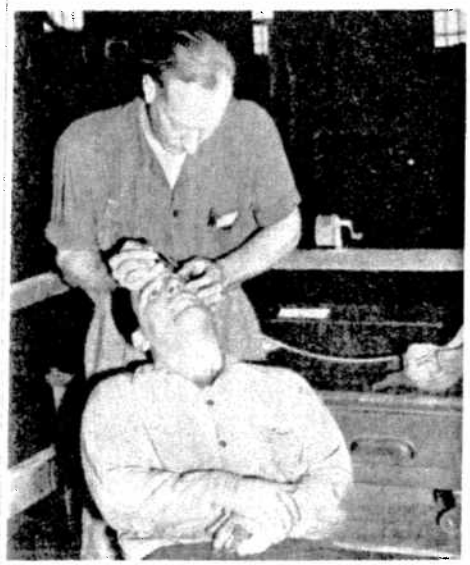
The near-tragedy sharply pointed up the importance of wearing goggles where there is even the slightest possibility of injury to the eyes, and also the value of First Aid knowledge and presence of mind in an emergency.

A welder's helper, Dom Castanza was using a long-handled scraper to remove nickel residue from the edge of a settling tank in the acid plant at the refinery. He was working from a scaffold about eight feet above the tank, which contained reclaimed sulphuric acid at a temperature of 170 deg. F., and was not wearing his goggles because he considered there was no eye hazard in what he was doing. By one of those 1000-to-1 chances, though, when a small chunk of residue fell into the tank a drop of the hot acid flew up and caught him in the left eye.

Reg Hiscock, foreman of the acid plant and an old hand at First Aid knew every second counted if sight of the eye was to be saved. He immediately went into action with the eye-washing device provided for such an emergency, and maintained the treatment until it was certain that all traces of the acid had been removed. As a result of the swift application of First Aid, only superficial damage was done to the eye.

Until he gave up the boxing game three years ago Dom was a well-known local welterweight with a record of 35 fights. Perhaps more than a lot of fellows he appreciates the value of his eyesight. "It's goggles for me from here in, and you can say that again," he told the Triangle. "This thing just showed that a guy can't play it too safe."

When the incident occurred the Refinery Mechanical Dept., of which Dom is a member, had rolled up a total of 182,708 shifts without a lost-time accident. Reg Hiscock's prompt work kept them in the running for a new all-Inco record, which now stands at almost 200,000 shifts.

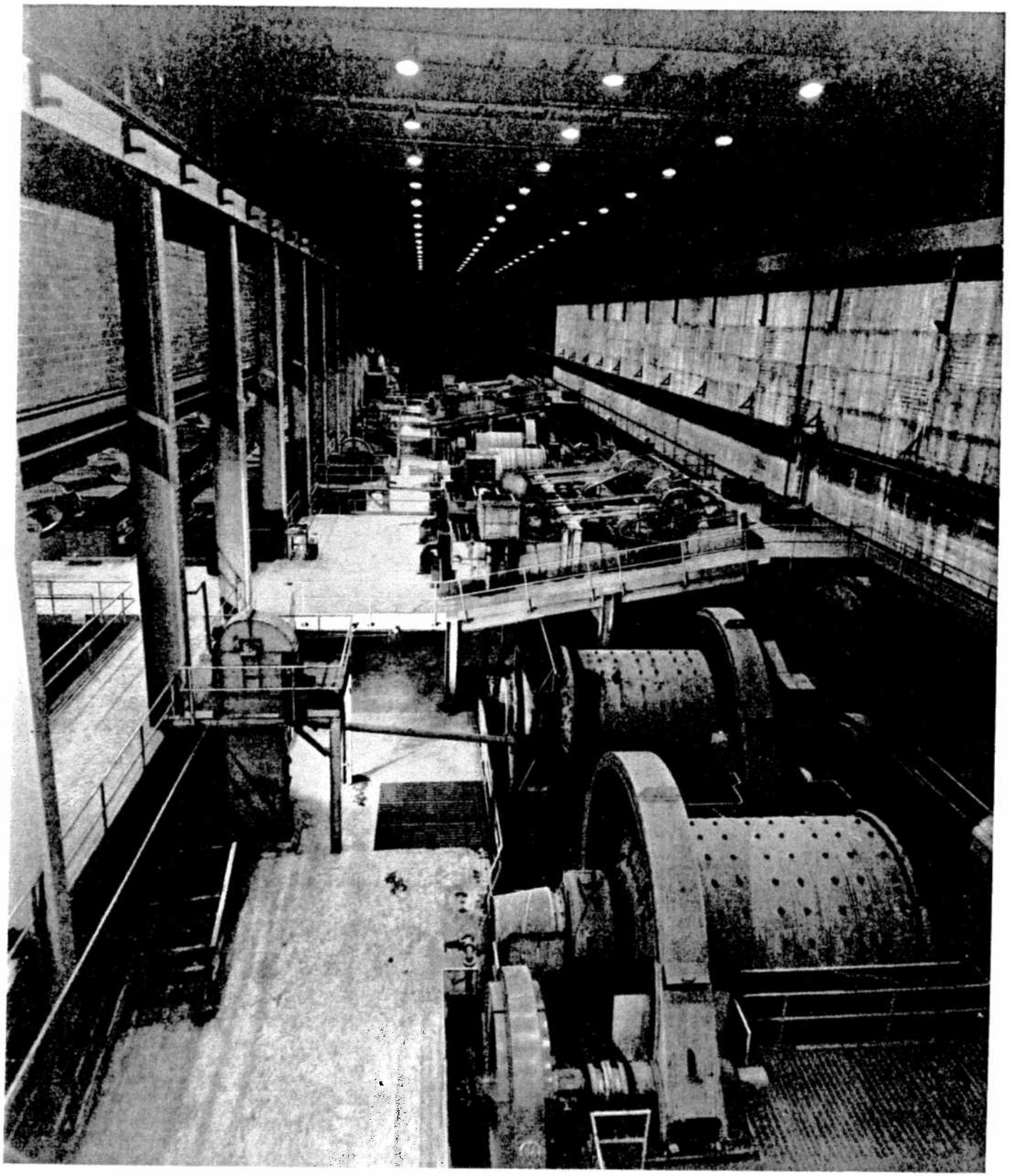


Reg Hiscock and Dom Castanza re-enact eye-saving treatment.

AND HOW!!

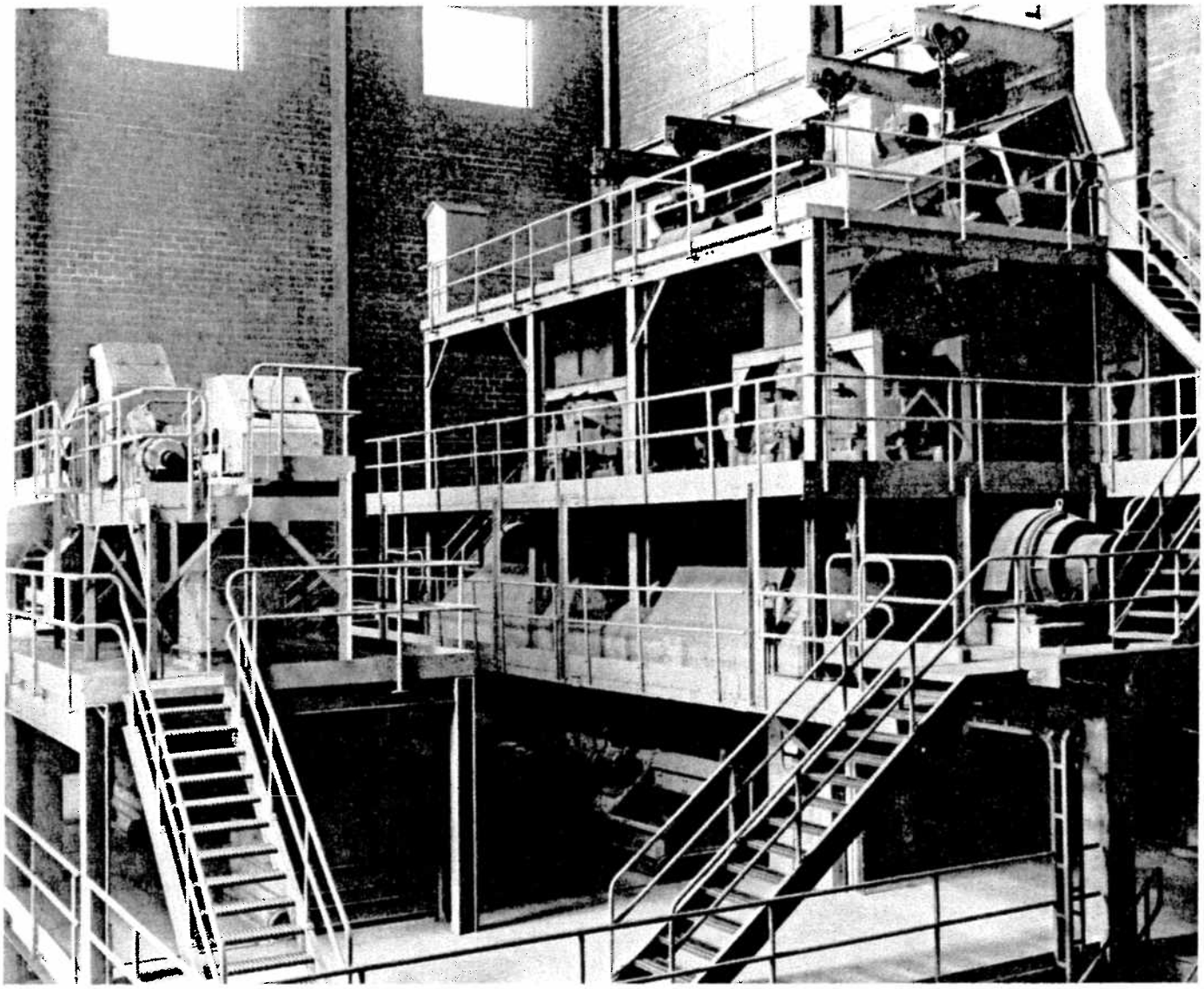
If more than one mouse is mice,
And more than one louse is lice,
Then you'll agree that obviously
More than one spouse would be spice!

Grinding Mills Among the Largest in the World



A spectacular sight, particularly at night, when this photograph was taken, is the grinding aisle in the new Creighton concentrator where the crushed ore is reduced to a pulp so that the minute particles of sulphide can be separated by flotation from the waste material. Each of the four units has two mills, one charged with rods and the other with balls. Each mill, 10 ft. 8 in. in diameter and 13 ft. long, is powered by an 800-h.p. synchronous motor and holds a 70-ton rod or ball charge. The mills are among the largest in the world. A scale automatically controls and registers the tonnage of feed to the mill by regulating the speed of the roll feeders; metered water to the mill controls the grinding condition and, indirectly, the final size of the product. Overflow of the classifiers of the four grinding units is collected in a central sump and pumped to the flotation section.

Crushing Plant in the New Creighton Concentrator



This is the crushing plant in Inco's new Creighton concentrator. Ore flows by gravity through this model installation, and no ore is circulated for recrushing. The product of this plant is conveyed to the mill bin on a 42-in. conveyor 460 ft. long which is separately housed and runs up the south side of the building at an angle of 15 degrees. There are four sections to the mill bin, each with a capacity of 5,000 tons.

No. 7 Shaft and Concentrator in Production at Creighton Mine

A long stride toward achievement of a 10-year program of expansion in its underground mining operations was realized by International Nickel Company last month as the new No. 7 shaft and 10,000-ton concentrator swung into production at its Creighton Mine.

When it became apparent that the Company would have to accelerate development of new underground sources of ore to replace its dwindling surface deposits, on which Allied nickel requirements in World War II were making such heavy demands, one of the first projects sent to the planning boards was a program for recovering at Creighton large blocks of low-grade ore previously considered uneconomical for mining. Exhaustive research had shown that by using new bulk mining methods, and concentrating the ore on the spot to reduce transportation costs, recovery of the low-grade ore was feasible.

No. 7 Shaft

Sunk initially to a depth of 2,050 ft., the new No. 7 shaft at Creighton is the latest addition to a mining operation which has a proud record of production dating back to 1900. Designed for ore-hoisting only, it will handle ore recovered by the caving method. It is concrete-lined throughout and has two skip compartments separated by a manway and pipe compartment, an arrangement which allows the hoist to be set up at a minimum distance from the shaft. The shaft is 8½ ft. by 24 ft. in cross section.

Serving No. 7 shaft is a 14 ft. by 110 in. parallel double-drum geared hoist driven by two 2,750-h.p. 600-volt 500-r.p.m. d.c. motors with rotating type control. The skips have a capacity of 15 tons each, and the hoisting ropes are 2-in. flattened strand with a breaking strain of 380,000 lbs. Hoist operation is semi-automatic, with push-button control at the loading station. Hoisting capacity is 700 tons per hour.

In the caving method of mining, a slice of ore is taken from the bottom of the area to be mined, and the ore supporting the sides of the area is weakened also, to allow the entire mass to move downward. As the ore moves downward it tends to disintegrate, and the weight of the ore in the upper part

(Continued on Page 10)

THE FRONT COVER

One of the 144 mechanical-type flotatioin machines in Inco's new 10,000-ton concentrator at Creighton Mine is seen in our cover photograph this month.

Bubbles carrying nickel-copper concentrate, glowing with metallic lustre, will be scraped off by the rotating paddle and started on their long pipeline journey to the reduction plants at Copper Cliff.

The flotation operator observing the condition of the froth is Henry Bertrand.

To the many men whose closely co-ordinated efforts over the past three years have resulted in the fine new Creighton mill, those bubbles are a mighty sweet sight.

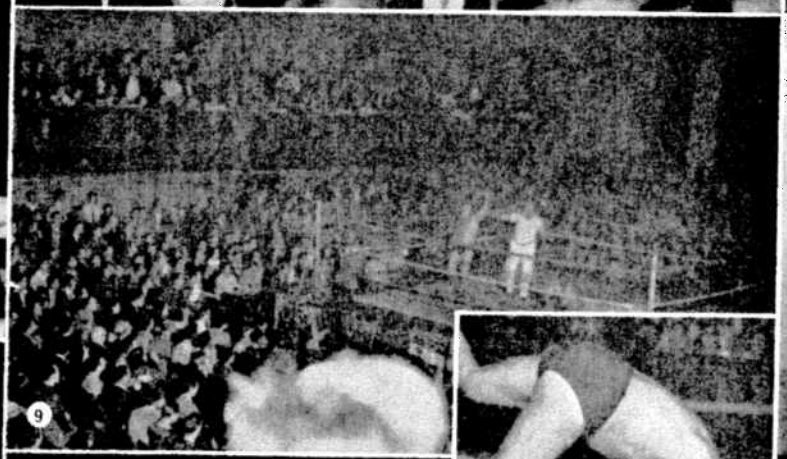

1


2

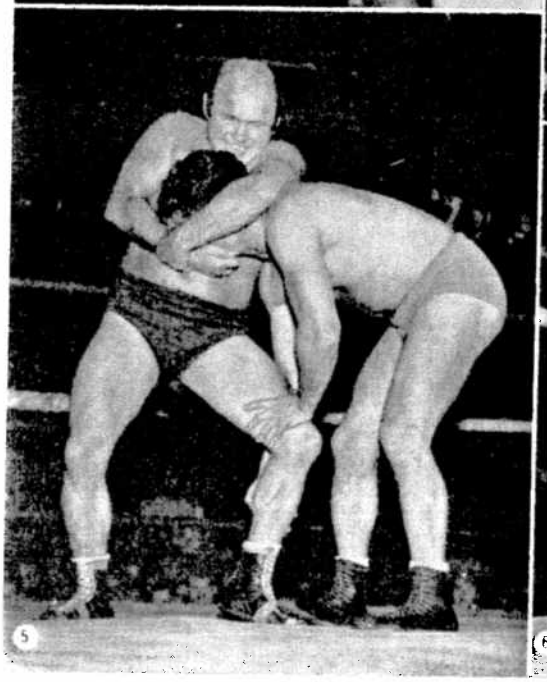

4

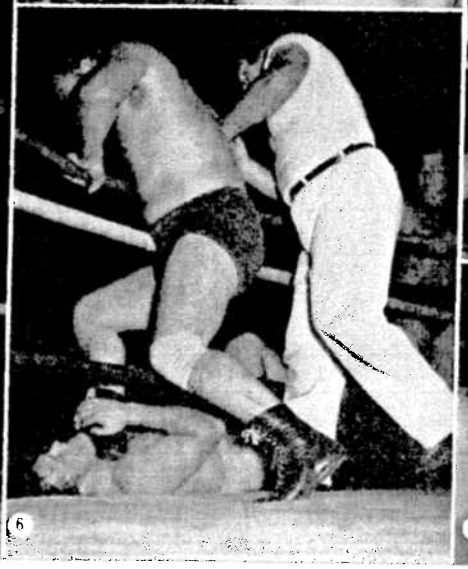

10


11


9

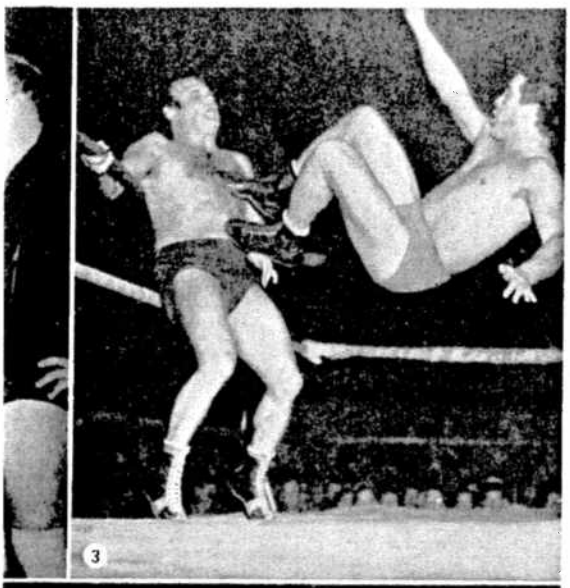

12


5


6


8

7



Not Judy Holliday But Our Tarzan Zimba Should Get Oscar

A fellow said the other night they should take the Oscars away from Hollywood and give them to the wrestlers.

He was watching a great giant of a man, sinews on his sinews and muscles on his muscles, writhe and contort in an orgy of agony while another great giant of a man, hate and rage dripping from his face like sweat, applied a pretzel hold which seemed certain to snap an arm and a leg like match sticks.

The cries and moans of the man on the rack sounded like the tortures of a lost soul. But the referee, vested with the power to put a stop to this 20th Century Inquisition, contrived with a fantastic display of innocence to remain oblivious of the mayhem while he engaged in a polite tete-a-tete with the announcer about the nutritional value of Wheaties.

This sort of experiment with the refinements of pain goes on every Monday night in the squared circle at Inco Employees Club in Sudbury, and at least 1,500 people turn up every time to howl, scream, groan and roar their approval. Sometimes the audience reaction breaks all restraint and customers attempt to lay hands upon the villain to avenge the crushed opponent he has callously left sobbing upon the mat.

The Triangle took a quick camera-look at the scene in the otherwise staid and eminently respectable club the evening of October 1, and here are some of the results:

1. Announcer Lloyd Armstrong and his son Allan, the latter serving as timekeeper, go over the evening's wrestling card while, all around them, the crowd sits in happy anticipation of a complete release from the humdrum of everyday things. The more the mayhem during the next couple of hours, the more they'll love it.

2. The main bout of the evening has been announced, and the referee, Wild Bill Zim, himself a famed professional wrestler, has gathered the principals in the tag team match together in the centre of the ring to warn them about the use of hacksaws, hatchets, brass knuckles, sulphuric acid, strychnine, sawed-off shotguns, and other such items considered beyond the pale. On the left are Rocco Columbo and Leo Wallick, and on the right are Don and Whitey Evans. Many torn ligaments and cauliflower ears later, Don and Whitey, the bad boys, were adjudged victors over Rocco and Leo, the good boys. The crowd, laying this humbling of their favorites to the machinations of Wild Bill Zim, vowed they would have that schemer's highly hirsute scalp if ever he set foot in a local ring again. The police had to escort him to safety.

3. This fine action shot shows Pierre Lebelle performing a nimble toe dance on the tummy of an outraged Tarzan Zimba In this bout, the warmer-upper of the evening, Pierre made easy work of the Vancouver roughneck, pinning him on two occasions with a straining crab.

4 to 8. Here are more pictures of the evening's action, just samples of the sort of thing the boys do to one another in the name of Art.

9. Through the smokey haze the camera has a hard time getting a glimpse of the ring as Wild Bill Zim raises Pierre Lebelle's arm in righteous triumph.

10-11 These candid shots show some of the crowd. The lady in the centre of No. 11 is giving Zim a hand with the refereeing, but Zim isn't paying her any heed at all. If he saw what she is trying to make him see, he'd have to stop the fight.

12. Faithfuls on hand for every match are these lads in charge of tickets: seated, Jack Deacon, dean of the corps; standing, left to right, James Cook, Tom Ratchford, and Arnold Langelle.

13. Intent on the carnage is Dr. Paul Laflamme, an inveterate fan who is always ready to give medical aid to an injured toreador. On the left is Jack McPhail of the Inco police, and on the right are two other fans who are obviously getting their money's worth.

14. Planning next week's card here are Vern Tupling, manager and matchmaker of the Inco Club, and Larry Kasaboski of North Bay, the promoter who has done a terrific job of stirring up the local wrestling pot and then keeping it stirred up.

Fun? Sure it's all fun. No matter what you think about the show yourself, 1,500 other people can't be wrong.

POWERFUL STUFF

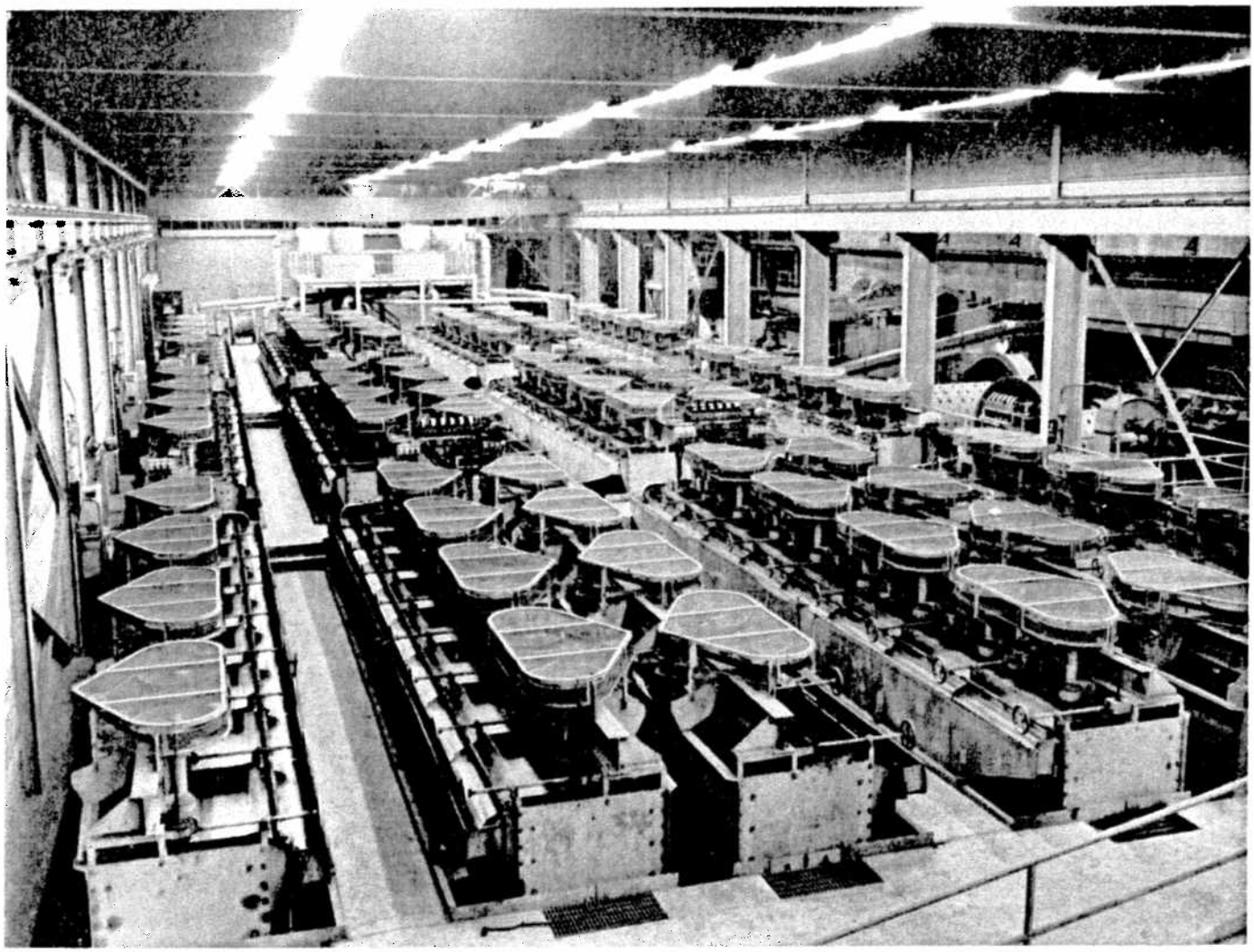
Two hillbillies who had never been on a train before had been drafted and were on their way to camp. A food butcher came through the train selling bananas. The two mountaineers had never seen bananas and each bought one. As one of them bit into his banana the train entered a tunnel. His voice came to his companion in the darkness.

First Mountaineer—Have you et yours yet?

Second Mountaineer—Not yet, why?

First Mountaineer—Well, don't touch it. I've eaten one bite and gone blind.

Night Becomes Day in Flotation Section of New Mill



Pulp from the grinding mills is pumped to this flotation section in the new Creighton concentrator. In the flotation machines reagents are added to the pulp and bubbles are formed around the sulphide particles, and these are swept off the surface. The waste material is piped to the tailing dump midway between Creighton and Copper Cliff; the bulk concentrate of nickel-copper particles is piped 7½ miles to the reduction plants at Copper Cliff. Daylight has been eliminated and fluorescent lighting installed throughout the flotation section to improve conditions for visual observation of the froth. The photograph was made at night with no auxiliary lighting.

(Continued from Page 7)

of the mass acts to crush the ore at the bottom. The broken ore passes into a series of cone-shaped chutes prepared before actual mining is commenced.

The caving method, lowest cost-per-ton-mined of all underground mining methods, can only be used to mine ores that break up and disintegrate in the process of ground movement.

The problem of mining ores from the lower grade sections at Creighton was complicated by the fact that higher grade ores had previously been removed from the area below the lower grade ores. Old mine openings interferred with an orderly arrangement of openings for the new program. This, and many other problems in connection with the proposed caving program, were solved by using models built to scale and embodying the factors anticipated in actual underground mining.

Lower grade ore now being mined at Creighton flows by gravity to 28 level of No. 3 shaft, where huge crushers with openings of 4 ft. by 5½ ft. give it primary crushing. It is then dropped through a concrete-lined bin to 30 level, where it is picked up by a conveyor and carried to an ore bin and loading station at No. 7 shaft, some 1,900 ft. distant.

Concentrator

The new 10,000-ton concentrator at Creighton is a remarkably compact, streamlined plant with many unusual features of design and operation. It is built at the site of No. 7 shaft; the headframe and hoist house are integral parts of the mill building, and ore from the mine is hoisted directly into the crushing plant. Part of the mill feed is non-magnetic ore brought by conveyor from another Creighton shaft two-thirds of a mile distant. The crushing plant has a simple straight-line flow sheet with no circulating loads. The grinding mills are among the largest in the world. The plant's water supply is obtained through a 6-mile pipeline from the Vermilion River, and the product, a bulk concentrate, is pumped through another line 7½ miles to Inco's reduction plants at Copper Cliff. Sand removed from the flotation tailing is returned to the mine to be used as backfill.

Extensive laboratory, pilot plant, and operational scale test work preceded designing of the new Creighton concentrator in 1948. Capacity of the mill was originally set at 6,000 tons, but, before construction was completed, changing world conditions made it essential that this be increased. Two weeks after the commencement of the Korean war the plans were altered to bring the capacity up to 10,000 tons. Inco's engineering department achieved the difficult task of almost doubling the capacity of the mill while construction was in progress, and yet put the plant in operation on schedule despite material shortages.

Constructed of steel, tile and concrete, the mill building's overall dimensions are 440 ft. long, 175 ft. wide and 70 ft. high. It is laid out in three parallel sections: the bin aisle, 380 ft. by 54 ft.; the crushing and grinding aisle, 440 ft. by 60 ft.; the flotation aisle, 380 ft. by 60 ft., containing reagent storage and feeders and also the classifiers of the sand fill plant. Attached to the south-west corner of the building is the hoist house, 116 ft. long, 65 ft. wide, and 58 ft. high. In the north-west corner, immediately adjoining the crushing plant and towering 196 ft. high, is the handsome monolithic concrete headframe of No. 7 shaft. Well lighted and ventilated, the plant offers ideal working conditions.

Ore from No. 5 Shaft

Approximately one-quarter of the feed to the new mill is non-magnetic ore which is transported direct from Creighton's No. 5 shaft rockhouse by a semi-enclosed system of three conveyors with a total length of 3,600 ft. The 30-in. 6-ply belt has a speed of 400

ft. per min. and a rated capacity of 650 tons per hour. The second of two transfer points in the conveyor system contains a 150-ton surge bin equipped with variable speed feeders to control the rate of feed to the receiving belt at the mill. The ore from No. 5 shaft, 2-in. material, enters the mill circuit at the second stage of crushing.

Crushing

Ore from the caving operations in No. 7 shaft receives its primary crushing underground and is hoisted to a 700-ton dump pocket. Chain feeders deliver and control the rate of feed to two parallel crushing circuits. The ore passes on to a scalping screen. The oversize is reduced in two crushers set in series, a 7-ft. Standard and a 7-ft. heavy duty Short Head. A screen eliminates the undersize ahead of the Short Head Crusher. The feed flows by gravity through the plant, and no ore is circulated for recrushing. The crushing plant product is conveyed to the mill bins on a 42-in. conveyor 460 ft. long which is separately housed and runs up the south side of the building at an angle of 15 deg.

Receiving Bin

The reinforced concrete mill bin is divided into four sections, each of 5,000-ton capacity. A four-way tripper, operating on a conveyor belt which runs the full length of the bin, prevents segregation of coarse and fines in distributing the feed to the four sections of the bin. The ore is weighed and automatically sampled before entering the bin.

Grinding

Each of the four units in the grinding aisle consist of two trunnion type overflow mills and one rake type classifier. One of the mills is charged with rods and the other with balls. Each mill, 10 ft. 8 in. in diameter and 13 ft. long, is powered by an 800-h.p. synchronous motor and holds a 70-ton rod or ball charge. A present-day trend is reflected in this use of large-diameter rod mills to replace rolls as a final crusher.

The ore, drawn from the bin by variable speed roll feeders, is delivered to the rod mill of the grinding unit by means of a conveyor system. A scale automatically controls and registers the tonnage to the mill by regulating the speed of the roll feeders. Metered water to the grinding unit controls the grinding condition and, indirectly, the final size of the product. Crushed pulp from the rod mill, which uses rods up to 3½ in. in diameter, discharges into a sump and is pumped to the classifier, from which the rake sands flow by gravity to the ball mill. The comminuted product of the ball mill returns to the classifier. Overflow from the classifiers of the four grinding units is collected in a central sump and pumped to the flotation section.

Flotation

A bulk rougher concentrate ready for separation is produced by flotation. This is accomplished in 144 mechanical-type flotation cells arranged in six 24-cell banks. The flotation feed is delivered to a six-way distributor and then flows by gravity to each bank of cells. Flotation reagents are added to both the sumps and the cells, the feeders and head tanks being conveniently located on a floor overlooking the entire flotation circuit. Daylight has been eliminated and fluorescent lighting installed throughout to improve conditions for visual observation of the flotation froth. The first 21 cells produce the bulk rougher concentrate; the product of the last three cells flows to a sump and returns to the flotation circuit as a control circulating load.

The bulk concentrate is laundered into a sump from which it is pumped through an 8-in. wood stave line a distance of 7½ miles to the Copper Cliff concentrator where it is separated into its final products of nickel or copper concentrates. There are five relay pumping stations in this unique operation.

Sand Plant

Flotation tailing is pumped to a three-way distributor which feeds three classifiers. The coarse fraction of the pulp, the rake sands, is piped directly underground to serve as backfill in the mine workings. The finer fraction, the classifier overflow, enters the final tailing sump and is pumped through a 13-in. wood stave line by way of three relay pumping stations to the tailing disposal area four miles distant. The sand plant may be partially or completely by-passed, with the flotation tailing going directly to the disposal area.

Water Supply

Water supply for the new Creighton mill is pumped through a 20-in. continuous wood stave line from the Vermilion River, approximately 6 miles away. The pump installation at the river can deliver 3,500 gals. per min. at a nominal pressure of 10 lbs. Booster pumps at the mill raise the pressure to 60 lbs. for process water. A chlorinating unit on the line makes the supply potable.

Dust Control

Dust from the primary and secondary vibrating screens and the crushers is piped by a system of ducts to a collecting unit which consists of 20 standard 34-in. conical dust-collecting cyclones through which air is drawn at the rate of 62,000 cu. ft. per min. at 5-in. negative pressure. The dust is withdrawn from the bottom of the cyclones and pumped to the flotation circuit in the form of a sludge.

Changehouse

The mill changehouse, located on the second floor and reached by a ramp, has 130 steel 2-compartment lockers. There are 15 individual showers in the tile-lined group shower room. The floor is covered with mastic. The lockers, lavatories, and shower room are serviced by a ventilation system which exhausts the air through the roof.

Boiler Plant

Housed in a separate steel and tile building 45 by 50 ft., the boiler plant consists of two oil-fired horizontal tube boilers each rated at 500 h.p. Gases are exhausted into a radial brick chimney 6 ft. in diameter and 145 ft. high. Fuel oil is stored in two 12,000-gal. tanks located outside the building.

Samples and Assays

Total metal input to the mill is determined through automatic sampling of the feed by a line of two Vezin samplers followed by a roll crusher and a Snyder sampler. Samples of tailing are assayed every hour, samples of concentrate every two hours. Percent-solids and sizing analyses of the various mill pulps are made regularly for operating control. The mill is equipped with a completely modern sample room and laboratory.

Electrical Service

Power for the 400-odd motors at the new mill is supplied from the Company's 60-cycle distribution systems. Incoming power is at 44,000 volts and is transformed by a 15,000-k.v.a. transformer bank to 550 volts for use by the smaller motors. The motor control equipment is located centrally in switch-rooms throughout the mill. Size of the motors varies from very small electric clock motors to the large 5,500-h.p. synchronous motor driving the No. 7 shaft hoist.

The hoist proper is driven by two 2,750-h.p. d.c. motors under amplidyne controls. Two 2,000-k.w. d.c. generators are direct-connected electrically to these motors and are driven by the 5,000-h.p. synchronous a.c. motor. Amplidyne control permits operation of the hoist by push button from the loading pocket.

The 800-h.p. synchronous a.c. motors driving the rod and ball mills are started across-the-line on full voltage.

Hoisting Capacity 13,000,000 Tons

Involving large-scale developments in its five underground mines, and far-reaching metallurgical process changes at its huge reduction plants, Inco's expansion program has so far cost the bulk of a $100,000,000 appropriation. Another $30,000,000 has been authorized, and it is expected that still further capital expenditures will be made. The new No. 7 shaft and concentrator are major features of the program through which the Company expects to attain by 1953 a hoisting capacity of 13,000,000 tons of underground ore annually, more than double the amount hoisted previously.

Diamond Drill Can Go to 6,000 Feet

The steel derrick of a powerful new diamond drill is seen above on location for Inco in the Sudbury District. Only the second of its kind in operation in Canada, this Boyle Bros. outfit is said to be the latest thing in deep core diamond drills, capable of drilling to almost 6,000 feet, owned by Smith & Travers, it is diesel-operated.

CANADA SAVINGS BONDS

Once again Inco employees are to be given the opportunity of purchasing Canada Savings Bonds on the payroll savings plan.

Bonds of the new issue may be purchased in denominations of $50, $100, $500, $1,000, and $5,000.

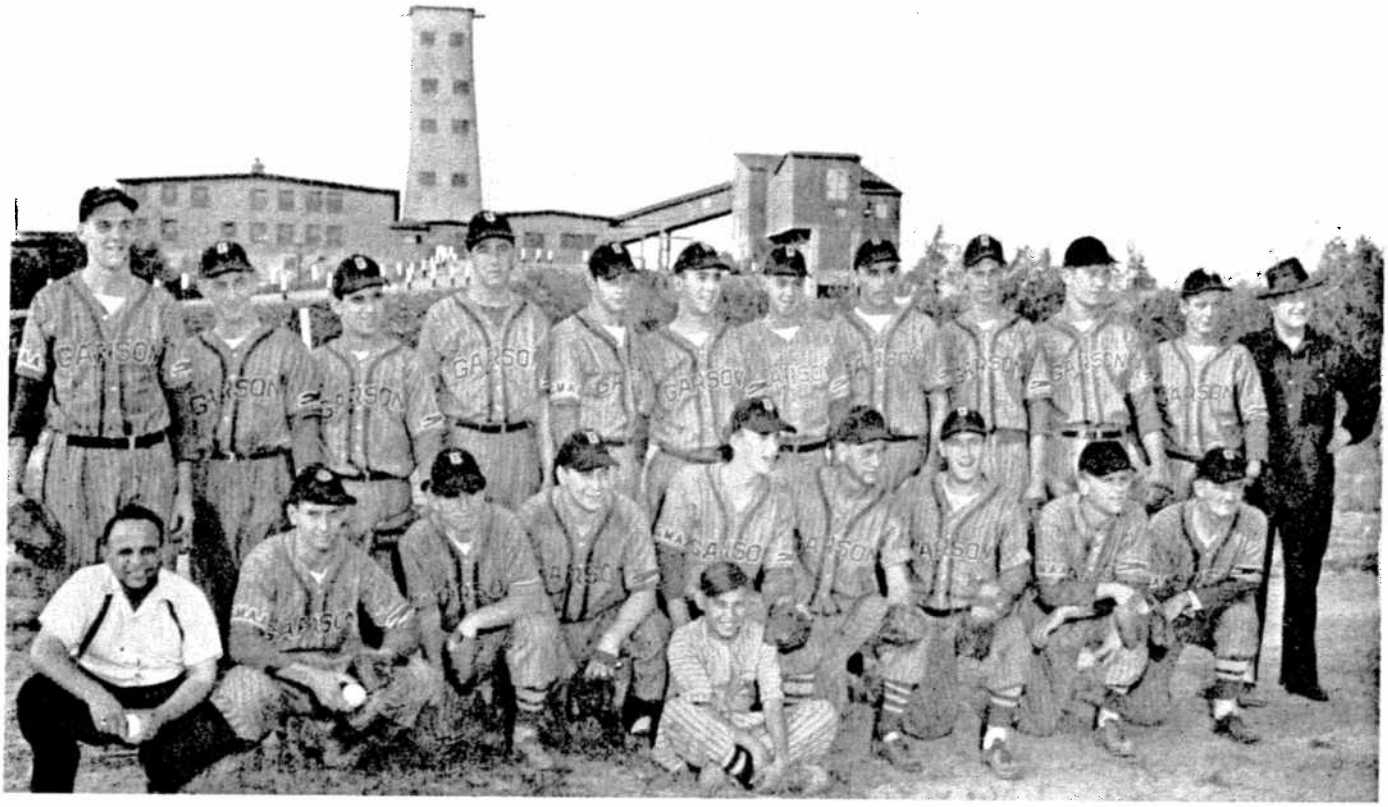
An application for the purchase of bonds will be distributed to each employee with his clock card. The completed application must be turned in to one of the Company's time offices between October 10 and October 31.

DESTINY

Despair is not for good or wise,
And should not be for love;
We all must bear our destinies
And bend to those above.
Birds flying o'er the stormy seas
Alight upon their proper trees,
Yet wisest men not always know
Where they should stop or whither go.

—Walter Savage Landor

Garson Wins Nickel Belt Baseball Title



Garson Greyhounds didn't win a game in their first season in the Nickel Belt Baseball League—1947—but that was only a spur to fame as far as they were concerned. Where other teams might have lost heart they buckled in with renewed determination and, backed to the hilt by Garson Mine Athletic Association, came home this year with the loop championship and the Monell Trophy. All honor to this splendid team, and to the spirit which carried them through to their goal. And honor, too, to the loyal followers whose moral and financial support made the victory possible. In this mid-season picture of the Greyhounds are seen: front row, left to right, Jim Devuono (manager), Johnny Vaillancourt, Claude Watters, Chuck Paul, Dave Reider, R. Petrosky, Oscar Signard, Frank Smith, Barney Barnett (coach); back row, Dick Trainor, Marty Burton, Danny Cuomo, W. Maxwell, Henry Boyd, H. Beaudry, Red McCar'hy, George Armstrong, Bill Aldrcih, A. Dukas, E. Carmichael, George Secker (manager), and, in the foreground, J. Crisonte (mastcot).

Regarded as a likely winner of Nickel Belt laurels this season, Frood Tigers had to be content with second place after the thrilling playoff against Garson. Picture shows: back row, left to right, Harry Towns (manager), Gino Fracas, Johnny Zimany, Harold McNamara, Frank Ovis, Ed. Fortier, Syl O'Hara, Spike Wormington, Ray Puro, Carl Sloan; front row, Bernie Kallies, Joe Schisler, Chuck Montgomery, Joe Mudrisk, Harry Marchand, Billy Demkiew, Bill Pataky, Maurice Roussell, Charlie Cerre (coach). The mascots are George Mitchell and Russ Empie.

Garson Mine Athletic Association's Victory Dance

In this group of merrymakers at the Victory Dance held in Garson Employees Club to celebrate the Nickel Belt Baseball League triumph of the Garson Greyhounds, George Secker, chairman of the baseball committee of the Garson Mine Athletic Association and Vic Stone, secretary-treasurer, hold the Monell Trophy, long coveted by Garson fans. Six of the original members of the team when it was organized in 1947 were on this year's championship lineup: Red McCarthy, Danny Cuomo, Marty Burton, Eldon Carmichael, Henry Boyd, and George Armstrong.

Appointments Are Announced In Mines Dept.

Announcement has been made by Vice-President R. L. Beattie of the appointment of Charles E. Lively as assistant general superintendent of mines.

C. E. Lively started to work for Inco at Creighton Mine in 1915 and remained there for almost a quarter century. He was assistant superintendent when he was transferred in 1940 as superintendent of Garson Mine. Two years later he was made superintendent at Levack Mine and held that position up to his recent appointment. The new townsite between Copper Cliff and Creighton was named Lively in his honor.

New superintendent at Levack is F. M. McAteer, who has been assistant superintendent at Frood-Stobie Mine since January 1950. He is a graduate of the University of Toronto. He started with Inco in June 1934 at Creighton as a mine beginner, and advanced through various positions until he was made assistant superintendent in October 1946, which position he held when he was transferred to Frood-Stobie.

B. T. King, who has become assistant superintendent at Frood-Stobie Mine, was previously assistant superintendent at Murray Mine. He has been with the Company since May 1938.

R. H. Brown has replaced B. T. King as assistant superintendent at Murray Mine. He was a general foreman at Creighton, where he joined Inco in June 1936.

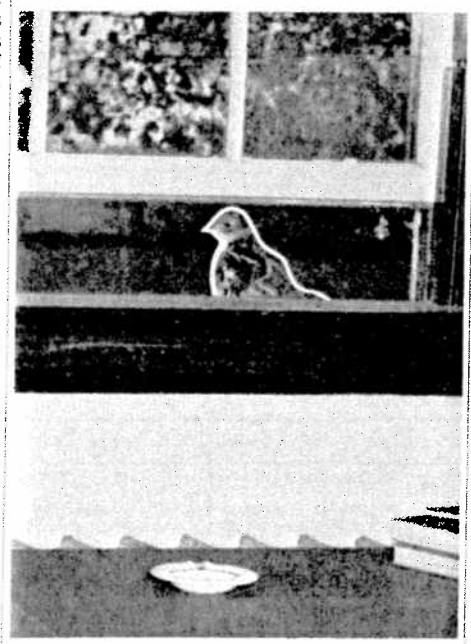
J. W. Cullen has become assistant superintendent of the Open Pit and Frood-Stobie surface operations.

New general foremen have been named as follows: Frood-Stobie Mine, Mel Young, Gar Green (transferred from Levack), Harry Peterson; Creighton Mine, Charlie Quinn, Hughie Finn, Tom Kierans; Murray Mine, Bill Regan (transferred from Garson).

New divisional foremen have been named as follows: Frood-Stobie Mine, Vern Ritzel, Clarence McChesney; Creighton Mine, Emil Pera, Errin Holmes, Grant Bertram, Harvey Bangle, Roger Stabback, John Douglas; Levack Mine, Ed. McIvor; Garson Mine, Walter Colis, Elmo Patching.

SO NEAR AND YET SO FAR

A royal visit could hardly have caused more excitement than the partridge which perched nonchalantly on a window sill at the General Office in Copper Cliff one afternoon last month. Young ladies squealed with delight at the sight of it; nimrods, taking a cautious peek, trembled with suppressed desire. Seven people phoned the Triangle to report its presence. The bird, which was obviously flaunting its legal immunity, loitered around for an hour and then disappeared over the hill. It hasn't been back since the season opened.



Cliff Juveniles Won Series by Default

The way it turned out, the proper way to look at the back page of last month's issue of the Triangle was upside down.

The story said the Garson boys won the Nickel Belt juvenile baseball championship, and their picture was on top. It also said the Copper Cliff boys, coached by Specs Telford, finished second, and their picture was down below.

We heard about it.

What really happened was that in the final game of the playoffs the Garson boys failed to field a full team, so the Copper Cliff boys were declared winners by default.

This was a disappointing windup which brought satisfaction to one. Garson had lost only two games all season, and seemed a cinch for championship laurels, but the Cliffs behind the inspired pitching of Johnny Sleaver and the smart base running of Doug Crouse made a fight of it. The series was tied at three wins each when Garson slipped up on attendance, giving the Cliff a technical victory.

How the Triangle managed to get the verdict reversed is another story. All we can do now is to offer apologies for the bruised ego of the Cliff team.

KEEPING IT DARK

"She told me," a woman complained to a friend, "that you told her the secret I told you not to tell her."

"Well," replied her friend in a hurt tone, "I told her not to tell you I told her."

"Oh, dear," sighed the first woman. "Well, don't tell her I told you that she told me you told her."

HEIGHT OF ALIBIS

A duffer visiting a Florida golf course for the first time teed up, took a cut at the ball and missed it completely.

"I'm glad I learned one thing right off," he said. "This course is at least two inches lower than the one I've been playing at home".

Inco Executives Inspect Mines and Plants

A thorough three-day inspection of mines and plants in the Sudbury District was made last month by Dr. John F. Thompson, president and chairman of the board of Inco, and Dr. Paul D. Merica, executive vice-president. The first stop of their tour was the new Lively townsite, after which they went on to inspect the recently completed $17,000,000 program at Creighton — the new No. 7 shaft and concentrator. In the above group, photographed during the visit to the concentrator, are: Earl Stoneman, concentrator superintendent; J. R. Gordon, asst. vice-president; Dr. Thompson; H. J. Mutz, general superintendent of mines; Earl Mumford, Creighton Mine superintendent; R. L. Beattie, vice-president and general manager; Dr. Merica; R. D. Parker, asst. vice-president and general superintendent of the Mining and Smelting Division; J. C. Parlee, asst. general superintendent, Mining and Smelting Division; Earl McMullen, asst. superintendent, Creighton concentrator.

Bush Mishap Points Up Value Of First Aid

An axeman with an Inco geological survey party, E. Bertrand was walking through the bush about four miles from Levack one day last month when he tripped on a stump and fell on his axe. He received a deep cut in his right thigh in which there was arterial bleeding, and without expert treatment his condition would have been critical indeed.

Fortunately members of Inco's survey parties receive special courses in First Aid from Tom Crowther of the Safety Department. K. McIntosh recognized the arterial bleeding and immediately fashioned a tourniquet which he applied to Bertrand's leg. A stretcher was improvised and the injured man was carried to the office of Dr. Chisholm in Levack, where the wound was sutured and dressed. The doctor congratulated McIntosh on his fine work.

Incidents like the above fortunately are unusual, but they point up the value of Inco's annual First Aid training classes, which get underway this month for 1951.

Any employee who has had six months' service with Inco as of October 15, 1951, may enrol in the First Aid classes. At least 50% of the enrolment will be men without previous St. John Ambulance training. Candidates who qualify and are successful in their examinations for a St. John award will receive a bonus amounting to half the number of hours spent in training to a maximum of eight hours, at their regular rate of pay.

Classes for Copper Cliff residents employed at the Copper Cliff plant will be held each Wednesday from 7.00 to 9.00 p.m. at the Community Hall, commencing October 17.

Classes for Sudbury residents employed at the Copper Cliff plant will be held each Friday at Inco Employees Club, Sudbury, from 7.00 to 9.00 p.m. commencing October 19.

Classes for employees of Frood-Stobie Mine and Open Pit, Copper Refinery, and Murray Mine, will be held Tuesday and Wednesday at Inco Employees Club, Sudbury, commencing October 16. Tuesday classes are from 12.00 noon to 2.00 p.m. and 7.00 to 9.00 p.m.; Wednesday classes are from 7.00 to 9.00 p.m.

Classes are also being arranged at Garson Mine by Dr. J. L. Kirk, at Levack Mine by Dr. A. W. Chisholm, at Creighton Mine by Dr. W. B. McGruther, at Coniston by Dr. C. P. Jessop, at High Falls by J. McBriar, and at Lawson Quarry by R. Dow.

A limited number of employees who reside in Sudbury and work at Garson and Creighton mines may enrol in the Inco Club classes on Tuesdays and Wednesdays.

TAKE TIME

Take time to live, it's one secret of success.
Take time to think, it's the source of power,
Take time to play, it's the secret of youth.
Take time to read, it's the foundation of knowledge.
Take time for friendship, it's the source of happiness.
Take time to laugh, it helps lift life's lot.
Take time to dream, it hitches the soul to the stars.
But, above all, take time to be safe — for without safety we cannot take time for any of the rest.

Apples at Last on Sergeant's Tree

As many a denizen of his bailiwack will testify, Sgt. Denis Brennan of Creighton Mine is a patient man. Nobody really knew how patient he was, though, until this fall when he proudly plucked a crop of apples from a tree growing in his back yard. Then he admitted he had been waiting 20 years

for that crop. The slip which grew into the tree was given to him in 1931 by a shoemaker named Polis, who later moved away to Windsor. Sgt. Brennan planted the slip and then waited with monumental Irish calm until this year for the bees to get around to his place. Very tasty apples, too.

INCO FAMILY ALBUM

People we enjoyed meeting while assembling this month's panel of Album pictures were: *(1)* Mr. and Mrs. Preston Roe (Port Colborne) with Eleanor, 10, Harry, 6, and Doris Anne, 7. *(2)* Mr. and Mrs. Earl Gilchrist (Levack Mine) with Hilly, 6. *(3)* Mr. and Mrs. J. W. West (Murray Mine) with Donald, 1, Terry, 2½, and Bryan, 5. *(4)* Mr. and Mrs. Percy Reasbeck (Frood-Stobie) with Gillis, 1½, Suzanne, 4, Robert, 5, Sandra, 3, and Jean-Paul, 7. *(5)* Mr. and Mrs Hector McKinnon (Garson Mine) with John, 9, and Stewart, 1. *(6)* Mr. and Mrs. Tom Timony (Creighton Mine) with Tommy, 6, Michael, 2, David, 4, Roger, 5, and Andy, 3. *(7)* Mr. and Mrs. Xavier Belanger (Copper Cliff Smelter) with Mrs. Rene Barbe, Diane, 5, Jaqueline, 14, Jeanine, 13, and Leonard, 24.

Surface Mining Completed at the Stobie Section

Deserted as Yonge Street on Sunday morning is the Stobie section of the Open Pits, where mining from surface has been completed. Considerably smaller than the Frood section, where surface mining will be carried on until sometime in 1953, the Stobie pit has yielded 12,561,000 tons of ore since it was commenced in 1941. Almost 10,000,000 tons of rock was removed in the course of mining. The excavation at surface is 1,000 feet wide and 1,400 feet long, and the pit has a maximum depth of 348 feet. Mining of the orebody will be continued from underground.

PRINTED IN CANADA