



NICKEL STANDS READY FOR D-DAY TEST

Is Spearhead of Invasion Forces

Mystery, censorship, rumors and a regular smokescreen of wild guesses have all been a necessary part of invasion preparations. But there have also been a few definite facts. One of these was the selection of Canadian nickel, long ago, to join the spearhead attacks on the European coastline. Even the Nazis knew that but the information was a headache instead of a help to them.

For months landing craft have been among the top items on the priority list. Strange fleets of them have from time to time been reportedly massing in British ports. Whatever the exact facts have been, it is true that these new types of vessels, waiting for D-day, represent a large tonnage of metal from Copper Cliff and Port Colborne. In the final analysis the invasion fleets add up to thousands of working days in these two INCO centres.

Many of the new craft are still on the secret list but some information on the use of nickel in their construction can now be revealed. Canadian troops tried them out at Kiska and at Sicily as well as in sea-going manoeuvres off British beaches. A typical landing craft is a ship with barn doors in the bow. It was designed for service, not for style; built to stand up under beatings which would put any pre-war cargo-carrier out of action. The craft must be able to do limited ocean cruising under their own power but sufficiently shallow draft, according to one colorful commentator, "to navigate on a heavy dew and pour troops, tanks or equipment out on open beaches in the time it takes for a hearty sneeze."

One of the most important uses of nickel in invasion craft and barges is in the propellor shafts. In many these are Monel. This nickel-copper alloy can take the strains, stresses and all-round rough treatment which the designers confidently predicted it will receive. It will withstand corrosion from sea water and, if a shaft is bent or damaged, Monel can be straightened more easily than shafts made from alternative materials.

This illustrates one unusual fact about nickel's multitude of war uses. It was the research and testing done by INCO in thousands of pre-war civilian applications which prepared the way for wartime service. Monel propellor shafts made a name for themselves in speedboat racing in United States and Canada. They stood up better than other types in the long grind of halibut fishing operations on the Pacific coast. From these records naval designers knew this was the alloy which could be counted on to drive invasion ships to their objectives.



The same thing held true when it came to engines. Nickel steels are used extensively. Again the uses were proved in peacetime—in pump parts, trucks, pleasure craft, factories, freighters, locomotives, liners. The Anzio beach head actions proved the value of this. These craft were originally designed to handle short, critically-important runs and not for long, steady periods of service. In this sector of the Italian campaign, they have successfully operated for weeks on end as supply and troop ferries, much of the time under enemy artillery fire and regularly subject to bombing. Mechanically they stood up beautifully and, even when hit, their crews have been able to get them into service again without delay. The rough qualities which nickel gave to their engine steel have played no minor role in this record.

As is to be expected, nickel has been used in the steel plate used to protect crews and troops from enemy fire. This use of nickel is, of course, not as new as some of the others. The British Navy has depended on this protection for years. The newer uses of nickel include the radio equipment on the invasion fleets. The alloys used in these cases are usually highly specialized ones and were just beginning to attract public attention before the war. They are essential in tubes as well as in other parts of the radio equipment. For the details of this story there is likely to be a long wait but nickel's contribution to radar, aircraft and naval communications, walk-talkies and the mysterious crop of hush-hush devices which the Allies have developed, will be to INCOites one of the war's most exciting chapters when finally it can be written.



In landing craft such as pictured here, as well as in a multitude of other key equipment, nickel will help lead the invasion of Europe.

HANDY SOUVENIRS

Neat little leather-bound memo pads, suitably embossed, were the attractive souvenirs given to members of Sudbury Employees Club at the Anniversary Dance on April 28. The usual bumper crowd attended this popular annual event, and, as they say in the weeklies, "everyone reported a lovely time."

• Those who laugh at serious pursuits are serious in their love of trifles.
—Marquis of Vauxenargues



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Overseas Letter

Typical "letter home" was the following interesting epistle received by Warren Koth from "Scotty" Leshon, Refinery employee for many years who enlisted in the Army in February, 1942:

Italy, April 21st, 1944.

Dear Warren:

Many thanks for your letter of April 2nd which I received yesterday. I am still in great shape and hope this letter will find all the Tank House lads in the "pink." Thanks for the newspaper and INCO Triangle clippings. Was glad to see the Tank House boys win the Plant First Aid Competition. Where was big "Cas" (C. Caswell) this year? I don't see his picture in the crowd. The boys are looking fine although there are some that I don't remember. Perhaps they have come since I left. But it's sure great to see old faces like Bill's (Bill Hornby), Fred's (Fred Cooper) and Walker's (Walker Greenwood), even if it's only on paper.

Well, we are rid of the mud here at last and old "Sol" is giving most of the lads a good tan. Just to the rear of our present location, there is a nice small stream where we go down for a "splash." Nothing like keeping clean.

I see you still like to rub it in about the Toronto Maple Leaf hockey team. As soon as I saw the two line-ups, I figured Montreal would win. Still, Toronto did pretty well with a bunch of green lads. Too bad about the Open Pit losing to the Quebec Aces. We get quite a lot of sport news in the army paper, the Maple Leaf. We have our share of sports here, too, including softball, soccer and tug-of-war. Our troop is tops, so far, in our battery. We still have to meet the winner of the other battery for the tops of the regiment.

Well, I suppose the VI Victory Loan will have passed its objective by the time you receive this letter. But just a word about the loan over here. The boys passed their objective in five days, so with six more days to go the mark was raised and now it looks as if they'll pass it again. We can't help but know that the loan is on as there are signs on all the roads in our sector. I guess the boys at the plant will want to do better than last time because this may be one of the last loans.

I can't make my letters as interesting as I'd like to because of the censorship. Therefore, a lot of the news will have to be saved until we come back. You get in a supply of beer, because I'm damn thirsty, and when I get back we'll catch up. Not long ago I visited one of the large cities and had a few hours to look around. At a wine shop I found some of my special cherry brandy, and, after a few drinks, the place looked better than ever.

Give my regards to all the boys and thank them again for the swell parcel.

As ever,

"SCOTTY"

First Stage at Copper Refinery



UNLOADING ONE OF THE HOT METAL CARS

Familiar sight to Copper Cliff workers and residents are the hot metal cars which rumble back and forth between the Smelter and the Refinery with their cargoes of molten converter copper.

In this photo one of the big portable tanks has reached its destination. Hauled into position beside one of the Refinery's anode refining furnaces it slowly rolls over on its side, electrically rotated, and disgorges the fiery liquid which has been seething in its belly.

The molten copper, at a temperature of 2200 degrees F, pours into a big launder, or trough, which feeds into the anode furnace, and thus is launched on the first stage of the refining operation. Part of the nickel, sulphur gases, and other impurities will be removed in the furnace treatment.

In the foreground an employee takes splash samples of the copper during the pouring. These are rushed to the sample department and prepared for analysis in the lab., so that the amount of impurities may be promptly ascertained and metallurgical treatment of the copper governed accordingly.

Eight years ago converter copper was cast into 440 lb. blister cakes at the Smelter and then transported to the Refinery where it had to be remelted. The men at the helm wondered, "Why not a shortcut? Why not take it

to the Refinery hot out of the converter?" Copper experts shook their heads, admitted the idea worked okay with steel, said it couldn't be done with copper. But the Cliff engineers went to work and now it's being done anyway, despite the experts. On the one-mile trip from Smelter to Refinery the copper bath loses only about 50 degrees of heat, even in winter.

The first hot metal car made its maiden trip on August 1, 1936. There are now four cars on the job and a total of 28,500 trips have been made.

Each car tips the scales at 150 tons when its brick-lined steel shell is loaded. Equipped with the finest ball bearings, however, it can be moved with amazingly little leverage.

Refinery worker taking the sample in the picture is John Bidga; operating the pouring mechanism is R. Anglehart.

BOWLING CHAMPIONS

Winners of the Port Colborne 10-pin championship at the INCO Recreation Club last month were the fast-travelling foursome of Stan Bremner, Bob Dobson, Paul Perrault and Bob Morrison. They were tops in the first half of the league schedule and defeated Jack Aston's Electricians in the final playoff on May 10.



Bowling Winners at Employees Club

Keen competition in all leagues made the bowling season at INCO Employees Club one of the best since the big recreational hub was opened in 1938.

On May 7, at its annual banquet, the Froom bowling league wound things up in proper style. Photo shows winners of the attractive bag of booty for which the loop's 22 teams battled it out during the schedule: left to right, from row, Wes Eby, whose team won the George Leech Cup; Spike Boal whose team won the Athletic Association Cup; Andy Winn and A. Jeffrey, whose team won the Athletic Association trophies in B Section of the league. Second row, E. Dickie, master of ceremonies; E. Dunn, E. Warzecha, J. Kilby, B. Cyr, A. McDonald, N. Choma, N. Horne, W. C. Wright, C. Mason, L. Depatie, D. Roy, A. Stone, H. Dunn (Club steward); back row, T. Mahon, E. Simon, C. Price, O. Cyr, M. Bagdanski.

Medal for high average went to B. Cyr (233); medal for high triple to E. Simon (926); medal for high single to J. Kilby, (396). The INCO Club medals for the inter-plant event were presented by G. S. Jarrett.

Tankhouse Terriers emerged as champions of the hotly contested Refinery league. Pictured here before a stack of sheared cathodes they are: Bob Steadman (captain), Phil Brown, Fred Cecutti, George Smith, Bill Solomon, and Fred Jennings. In the playoff they won by 100 pins over Jim Bryson's Lab team. Cliff Atkinson's 244 was the loop's high average and his 926 was the high triple. Rene Bourgeault rolled the biggest single, 369. The champs are to receive the Kerr Trophy at a dance on June 2.

Victorious in the 23-team ladies' league was Doris Paul's lineup of, right to left: Captain Doris T. Schultz, E. Dewey, A. Sancartier, E. Pilatzke, and M. Volpini. Also posing with them for the camera was Ann Hann of Creighton who rolled the league's high single of 370 and also the best triple of any league at the Club, 968. Best average for the season was Lil Williams' 205 for 57 games. Prizes were presented by L. P. Neal.

Open Pit trundling honors went to this crew of eagle-eyed sharpshooters: left to right, Jim Maloney, John Sanganiewicz (captain), Ab Miles, Larry Munro, Dyer Hennessy, and Jack Mayer.



Hello Joe . . . What Do You Know?

By F. H. LOWE, Port Colborne

Answers on Page 13.

1. Who was the only Prime Minister of Great Britain born outside the British Isles?
2. Which of Canada's many island possessions is the most densely populated?
3. The Queen Elizabeth Highway between Toronto and Niagara Falls has many signs along the route with the letters "ER" on them. What does "ER" stand for?
4. You can correctly call a young owl an "owler". Would you call a young frog a "froglet" or a "Frogette"?
5. If you were an oikologist, what would you be?
6. What professional men are happiest when "down in the mouth"?
7. We hear much of submarines and submarine warfare. Who was the first man to make a successful trip under water?
8. What animal even in captivity washes its food before eating it?
9. In what sport are the contestants not allowed to wear any kind of foot coverings?
10. Canada is now leading the world in the production of five essential items. (Get all five to score).

Proudly Flies the Victory Pennant



Tugging at its mast atop the beautiful monolithic headframe at Murray Mine, a Victory Loan flag symbolizes the triumph of INCO employees over a high quota assignment in the Sixth Loan Campaign.

SIXTH LOAN DRIVE SWEEPING SUCCESS

All Departments Pass Their Quotas

Breaking all their previous war-financing records, INCO employees and the residents of INCO towns scored a sweeping success in the Sixth Victory Loan campaign which closed officially on Saturday, May 13.

Total subscriptions in Sudbury District, including bond orders placed directly with the banks, reached the new high of \$1,554,400 against a quota of \$1,200,000, or 129.5% of quota. Amount raised in the Fifth Loan, which was the previous top for INCO workers and townspeople in the Sudbury area, was \$1,336,750.

At Port Colborne the total subscriptions were \$175,000, or 109.37% of the \$160,000 quota. There were 1,383 applications for bonds, so that the average subscription was \$127. The town of Port Colborne, sparked by INCO enthusiasm, blazed the way for all sub-units of the Welland division.

Any way you wanted to look at them the INCO plants' returns in the Sudbury area were record-smashers. Number of subscribers for the Sixth Loan reached 11,681 as against 11,396 in the Fifth Loan. The number of potential subscribers among employees and townspeople had been estimated at 12,515, which meant that the percentage of persons subscribing was the highest yet attained. The average subscription for all plants and towns was \$133, also the best mark to date. And, finally, every individual department went "over the top", the first time this outstanding feat was accomplished.

Long before the opening gun of the campaign was fired on Monday, April 24, it was evident that a super-effort was in prospect. Employee-salesmen, gathering at pep meetings to be "briefed" for the drive by National War Finance experts seemed to be trained finer than ever before and were as impatient as thoroughbreds to go to the barrier. Among the rank and file of employees, wherever they assembled,

BILL SEEP HIT HIGH SPOTS



In March of 1942 Bill Seep, popular INCO Recreation Club lightweight and a brush-wielder with the paint gang in the Port Colborne plant, was selected by New York State A.A.U. officials to compete in the National Golden Gloves Championships in Madison Square Garden, N.Y. The fact that he was a Canadian was offset by his spectacular showing in elimination events. Photo shows him (right) chumming it in the big town with the old Manassa Mauler himself, Jack Dempsey (centre) and Alec Davis, INCO club's high-grade boxing coach. Former middleweight champ of Ontario and now a machine man in the calcine building, Davis was sent by the Recreation Club to accompany Seep. Young Bill enlisted in November, 1942, is now trading wallops with the Nazis. His dad, George Seep, has been with the Company at Port for 18 years.



NIFTY NEST-EGG FOR INCO EMPLOYEES AND TOWNSPEOPLE

Except for \$200,650 worth purchased by people dealing directly with their banks, all Victory Bonds ordered by INCO employees and the residents of INCO towns were bought outright by the Company and will be delivered to their purchasers as soon as payments are completed, the Company assuming the interest charges in the interval. It took the biggest cheque ever written at Copper Cliff to put through the transaction for Sudbury district. That little scrap of paper pictured above was worth just \$1,289,100 which isn't exactly hay in any man's language. The accounting department's cheque-writing machine was stumped and a typewriter had to be used. Another cheque was issued for employees' bonds purchased through the Canadian Bank of Commerce at Coniston; it was for \$204,650.00.

the casual conversation indicated a quiet determination to do a bigger and better job this time.

Everyone knew that on the eve of invasion the need for war money was more urgent than ever if our boys are to get the backing they deserve and must have for victory. Everyone realized full well the wisdom of buying bonds, to build a nest-egg for the post-war era and to take out of circulation extra money which could send prices zooming upward and wreck the economic setup just when stability is so vital.

No "circus" performances were necessary to inspire the INCO folks in their bond-buying job. Smoothly and purposefully they took the assignment in their stride in a manner which reflected great credit upon everyone concerned.

The Victory Loan headquarters in the General Office building had their work cut out for them right from the drop of the hat. From the 18 selling units in the INCO Loan organization reports started to come in shortly after

8.00 o'clock on the morning of the opening day and from that time on the pressure seldom let up. Headquarters set itself the ambitious goal of issuing a complete report covering sales in all departments up to 5.00 p.m. every day, and succeeded in doing so.

By 5.00 p.m. on April 24, the first day, applications for \$482,800 worth of bonds had been received and recorded from 3,790 buyers. No less than five departments had passed their quotas: Nordale, Stobie, Refinery, Lawson and General. The fast-stepping employee-salesmen were losing no time! By 5.00 o'clock on the second day another \$354,200 had been rung up, and another 2,968 buyers had signed on the dotted line. By 5.00 o'clock on the fifth day the \$1,200,000 quota had been reached!

Such was the answer of INCO folks to the urgent call from the battlefield, "Don't fail us now!"

Final report from Sixth Loan Headquarters showed all results as follows:

Department	Sales Fifth Loan	Quota Sixth Loan	Sales Sixth Loan	% Quota	No. Subs.	Avg.
SURBURY DISTRICT						
Frood-Stobie Pitts	85,050	80,000	103,100	128.9	877	118
Frood Mine	204,200	192,000	248,100	129.0	1949	127
Stobie	11,400	10,000	22,600	226.0	112	202
Murray Mine	11,550	13,000	16,350	125.7	144	114
Creighton Mine	162,150	157,000	171,900	109.5	1487	116
Levack Mine	114,300	85,000	125,250	147.8	736	170
Garson Mine	77,050	77,000	100,300	130.3	858	117
Lawson Quarry	4,750	3,000	4,700	156.7	38	124
Coniston	80,700	50,000	80,800	161.6	522	155
COPPER CLIFF						
Mill	47,150	48,000	62,600	130.2	506	124
Smelter	175,600	148,000	193,950	131.1	1638	118
Mechanical	95,700	78,000	78,600	100.6	780	101
Electrical & H. Co.	28,950	22,000	27,700	126.0	229	121
Transportation	10,300	15,000	18,700	124.7	202	93
General	73,250	75,000	122,800	163.7	423	290
Town and Police	89,150	72,000	91,850	127.7	321	286
Nordale	27,550	10,000	16,950	169.5	168	101
Copper Refinery	67,950	65,000	68,150	105.0	691	99
Totals	1,366,750	1,200,000	1,554,400	129.5	11,681	133
PORT COLBORNE						
Nickel Refinery	175,400	160,000	175,100	109.4	1,383	127

"HOME-MADE" HOLIDAYS

Glorious Rest and Recreation Within Easy Reach of Sudbury District INCOites

New pep for the final push to victory on the industrial home front will be gathered by thousands of war workers in Sudbury district within the next three months. And being far more fortunately situated than workers in war plants in other parts of the Dominion, Nickel Belt employees in the vital nickel industry can feel thankful they are within such easy reach of the great outdoors where physical rest and mental relaxation can be theirs almost on a moment's notice.

While others can only look with longing eyes to the turbulent, rushing waters and placid lakes of Northern Ontario, those in Sudbury district are close enough to avail themselves of this heritage, a heritage which is especially enjoyed if one has the eager appreciation of a fisherman. Although holidays "as usual" have been passed up for the duration in striving for greater production, there are few in Sudbury district who cannot make the most of days off to reach their favorite fishing haunts without running foul of gasoline rationing rules or interfering with war production by their absence.

Most of these ardent Waltonites will find some time to spend tempting trout, bass, pickerel, pike or muskies. Unexcelled waters for all these abound within easy reach of Sudbury, one-day excursions being easily made without using too much precious gasoline or wearing away too much rubber from thinning tires. For those without means of transportation, buses and trains still run to dozens of choice spots within only a few miles of Sudbury.

For those to whom fishing and brook trout are synonymous, there are deep holes and rush-

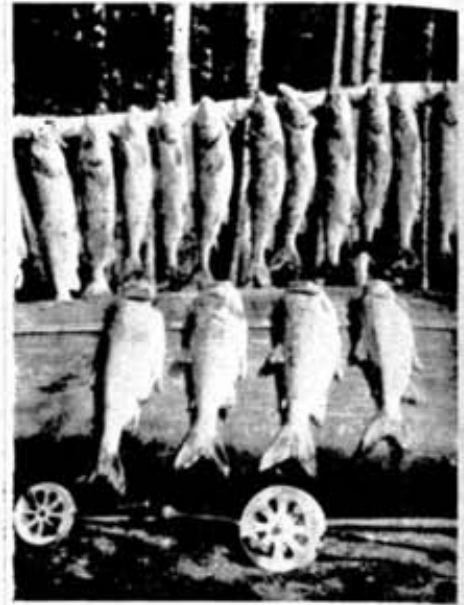
ing water enough to satisfy even the most demanding. A continuous restocking program carried out by the Sudbury District Fish and Game Protective Association has converted practically every spring-fed stream in the district into a speckled trout paradise. To the west is Ministic creek, near Worthington. One can almost step off the bus and drop a fly into this fine stream in an attempt to out-guess trout. If you go further west to Nairn and head north across Agnew lake, you can fish the mouth of John Creek, one of the best. A train trip to Espanola will put you in the centre of crack fishing grounds for all species. To the north, within easy reach, are ideal speckled trout grounds, especially in the Levack and Cartier areas: Pumphouse creek, which can be fished almost from the back of your car, John creek with its turbulent Eddy shutes where the real big ones lurk, Sandcherry creek north of Chelmsford, Nelson river a little to the east, and Rapid river, still more eastward. South and east are the well-stocked creeks in the Coniston and Wahnapiatae areas, all easily reached, while the ever-popular Veuve north of Markstay is always good for a rise.

For those who would sooner seek the other game fish where activity is not so essential, where one can sit in a small boat, still-fishing and watch bass, pickerel or pike nose your bait or grab it with ravenous hunger, there are many places from which to choose. Some of these are easiest reached by short train or bus trips, with better accommodation available than on trout waters. Within 40 miles south of Sudbury one can find the good fishing waters around Paget, Rutter, Bigwood and French River. From the last three many spots can be reached on the French river, long noted for bass, pickerel and pike. To the west are Lake Penage and its many tributary waters where bass, pickerel and lake trout abound. Nairn is the stemming out point to the Spanish river, where fighting muskelonge have been plentiful of late. Espanola, Webbwood and Massey are likewise the starting point for fishing excursions to unbeatable fishing waters such as Lang, Anderson, Loon and Agnew lakes, and the AuSable river. North of Sudbury are such lakes as Wahnapiatae, home of big lurking lake trout, Metagamasing, Chinicouchi, Kokagaming, Maskinonge; Bigwood lake near Milnet; the upper Spanish river reached from Metagama on the C.P.R.; the popular Onaping near Wye; Moose and Windy lakes in the Levack country and Ministic lake off the John creek road.

This abbreviated list does not begin to exhaust the fishing waters within easy reach of Sudbury. But those mentioned here should serve to placate the fishing desires of those who find more extensive travel out of the question for the duration. So here's to good fishing and the freedom and relaxation coming from days to be spent in the open, scouting along treelined streams or lazily at ease in a slowly moving boat on the waters on some placid lake.

WALTER MONCK PROMOTED

Old friends of Walter Monck, who from 1929 to 1941 was electrical construction and maintenance foreman for INCO, will be interested to learn that he has recently been appointed Personnel Manager for the Pictou Shipyard, Pictou, N.S. The Fo'c's'le, shipyard newspaper, says, "His appointment . . . is indeed a compliment, not only to himself but to the men in the yard as it marks an occasion when a man's man through hard work and devotion to the job as a whole has won merited recognition."



GREEN LAKE MONSTERS

Feast your eyes on these beauties, you Waltonites. Denis (son of Steve) Yawney, churn drill operator at Open Pit, hauled them in last September during a fishing jaunt to the trout waters west of Bisco. The big ones weigh 15 lbs. In the head waters of the Spanish, en route, 18-lb. pike snay at your line. But, as the accompanying article says, you needn't go half so far from home to land trout like these.

OLD TIMER PASSES AWAY

A veteran employee at Port Colborne, Theodore "Teddy" Wigston passed away on April 17, mourned by many. He had retired on pension May 1 after 21 years in the employ of the Company as a weigher in the calciner department.

BILL EASTON'S DAUGHTERS



Before we could borrow this picture of Sgt. Bill Easton for publication we had to convince Vivian and Shirley, his two lovely daughters, that we would return it soon unharmed. They need it to kiss good-night before they go to bed.

Shirley explained. Vivian, who is only 16 months and has never seen her dad except in pictures, was equally emphatic if not so intelligible. Bill Easton worked for eight years in the Coniston plant before he enlisted in July 1941, is now in England. Prior to her marriage in 1936 Mrs. Easton was Alice Stacey, secretary to Dr. Corless and later to W. A. MacDonald at the Coniston plant. Her father worked for the Company for 30 years before his death in 1937.



ON THE MISSISSAUGA

The angler with a "long change" and a tank of carefully saved gas can enjoy the thrill of a lifetime on a week-end jaunt over the Aubrey Falls road north of Blind River, where scenic delights such as the one pictured here abound along the the Mississauga River. A paradise for the speckled trout fisherman, the Mississauga in the early days was part of the historic Hudson's Bay Co. route from Huron to Moose Factory.

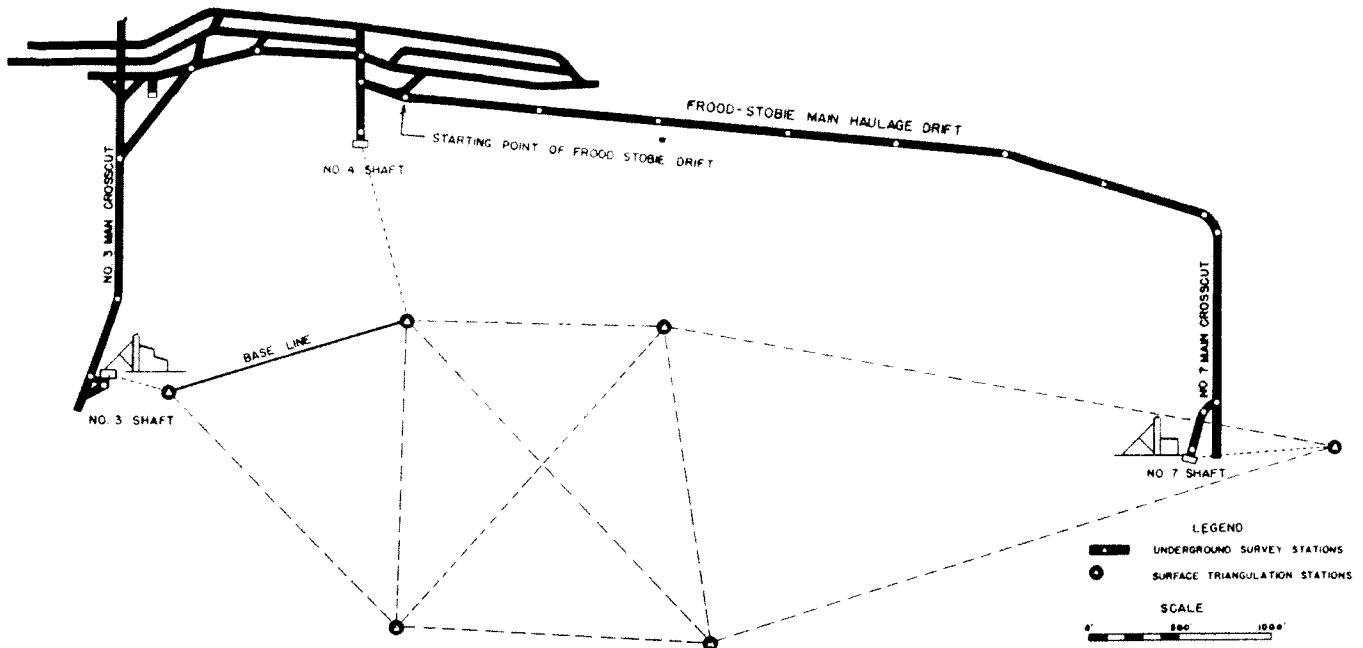


Fig. 1: Sketch showing Frood No. 3 Shaft underground workings in their relation to Stobie No. 7 Shaft, and the course of the Frood-Stobie Drift.

“BLIND” NAVIGATION

How Underground Crew Knew Where They Were Going in Frood-Stobie Drift

Flying high above the clouds so that it seems to be travelling in a strange white world of its own, the big Clipper plane drones steadily on. Suddenly the passenger senses that they are losing elevation. Down through the clouds they drop until the blue waters of the Pacific can be seen below them. A pinpoint of land slowly takes shape in the limitless expanse of ocean and toward this the plane is pointed as unerringly as a homing pigeon. As the ribbon of runway on the island airport becomes visible and the pilot eventually sets his ship down upon it, the passenger marvels at the miracle of navigation which has brought the Clipper out of the vast void of the stratosphere to its earth-bound destination as if drawn by a mighty magnet.

In the same way the imagination is captured by the men who can start from a given point in the blackness 2400 feet underground and, drilling, blasting, and mucking their way through solid rock can arrive at another given point thousands of feet away with astonishing accuracy. Unlike the Clipper pilot they have no sun or moon or stars to guide them—they

have nothing to go on but the black hole behind them.

Here was an example: to serve as a second means of entrance to the Stobie mine workings, and also to permit hoisting of Frood mine ore through Stobie shaft if desired, a main haulage drift has been driven on the 2400-foot level from Frood No. 3 Shaft workings to connect with the new Stobie Shaft, more than a mile to the northeast.

Underground Navigation

On February 3, 1942, a drift crew set up their five-drill carriage at the furthest point in the footwall rock at the north end of No. 3 Shaft workings and went to work. Day by day they drilled off their rounds, blasted, cleared away the muck, drilled again. Track and trolley line, air, water and ventilation lines followed them as they drove steadily ahead. A year and nine months later, on October 27, 1943, they broke into the Stobie Shaft projection right “on the nose”. Behind them lay 5864 feet of haulage drift, exactly on the course which had been plotted for it.

It's not done with mirrors, and a compass wouldn't have been much good either, what with its needle dancing nimbly to the tune of the magnetic ores in the vicinity. To find out just how this mystifying mining magic is accomplished, Triangle ventured into the sacred precincts of the Mine Engineering Dept. There George Thorpe, Frank Learned and Doug McNaughton took us gently in hand and led us through a bewildering maze of base lines, triangles, plumb bobs and centre line points. Late that night John Livingstone found us wandering through the halls, muttering feverishly and running a high temperature; kindly he propped us up at a typewriter, slipped us a couple of aspirins, and went away.

Surveyors Handle It

The job of directing the course of the Frood-Stobie drift as the driving crew advanced underground was the work of the surveyors in the Mine Engineering Dept.

All surveying is really determining the location of points with reference to one another. It follows that if the relative positions of two points are known, the straight line connecting them may be readily determined. To put it very simply, we could have two points which might be seen from each other and between which we desired to erect a straight fence. The straight line joining them could be established by stretching a string between them or, as is usual in survey practice, by sighting from one to the other with a transit and setting stakes or other markers at intermediate points on the line.

In most cases, however, particularly underground, points can seldom be seen from one to the other and it is necessary to establish some method whereby their relationship to each other may be worked out in a simple manner.

Before a survey could be commenced in the Frood-Stobie drift underground, locations had to be determined on surface. When a ship captain or airplane pilot wants to proceed directly from his present location to any other point on the surface of the earth in the shortest and most direct manner he first figures the positions of the points in distances North or South of the Equator and East or West of Greenwich. From this information a simple calculation gives him the bearing or direction from point to point as well as the direct distance between them. A similar system is employed in mine surveying where all points are located with reference to some fixed point of origin in terms of distance North or South and East or West, as well as their distance above or below the original point.

Angular Measurement Easier

First step on the Frood-Stobie job was to determine the exact location of the Stobie Shaft
(Continued on Page 8)

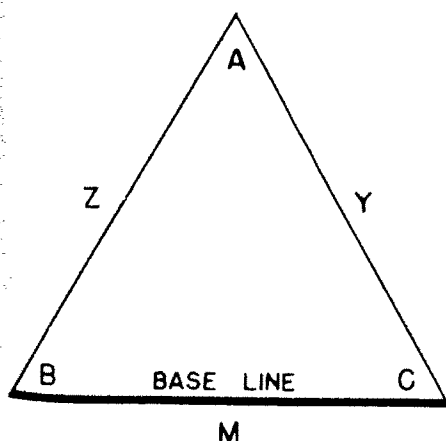


Fig. 2: A base line.

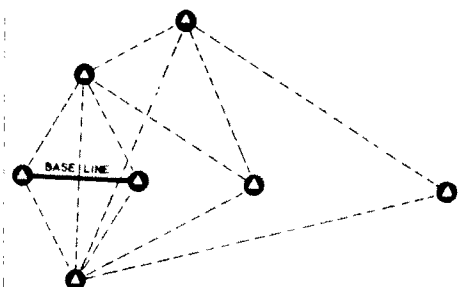


Fig. 3: Triangulation network.

"BLIND" NAVIGATION

(Continued from Page 7)

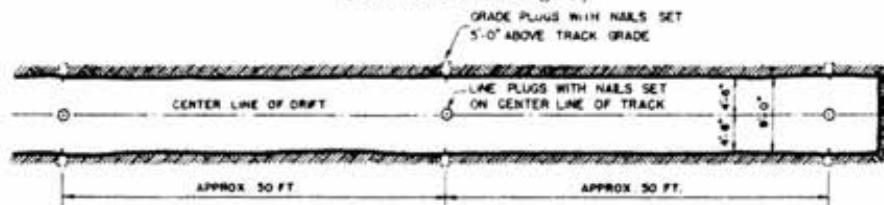


Fig. 4: Plan showing centre line points and grade line points in the drift by which the driving crew are able to keep "on the beam" for direction and elevation.

with regard to the Froid workings. This distance might have measured directly but, in surveying, the measurement of horizontal distances is most difficult to accomplish accurately, precise measuring being a very slow, painstaking process. Precise measurement of angles, on the other hand, is a relatively simple matter and this is the system used.

In a simple triangle (no relation to this newspaper) shown in Figure 2, if the length of one side M and the angles B and C are known, the sides Y and Z and the angle A may be readily determined. The measured side M is known to surveyors as the "base line". Then by erecting further triangles on any of these known sides a system of triangles known as a triangulation network, may be indefinitely expanded as shown in Figure 3 and all points in the system located with reference to one another. Thus the triangle is the surveyor's "yardstick".

Of utmost importance is accuracy in measuring the length of the base line, since any error here will naturally be magnified as the triangulation network expands. Consequently the line is located where the most precise measuring may be done; measurements are checked and re-checked, and are often made during the night hours to avoid the effect of the sun on the tape used.

From a base line established near Froid No. 3 Shaft (see Figure 1) a triangulation network was expanded to a station conveniently located near the Stobie Shaft and the relationship between Froid and Stobie thus determined. Stations, or key points from which further survey work may be carried on, were also established in the collarhouse at No. 3 Shaft.

Now to go Underground

The survey having then been completed on surface, and the course of the drift plotted to conform with plans for future mining operations, the next step was to carry the triangulation network underground where it could be used to guide the driving crew. This entailed "plumbing" the shaft.

In one of the compartments of No. 3 Shaft three fine piano wires were suspended the depth of the shaft to form the points of a triangle, and at the bottom of each wire was hung a 50-lb. bronze weight, or "plumb bob". The bobs are ribbed, or vaned, and each was immersed in a container of water so that its swinging or turning movement would be minimized.

In the collarhouse on surface the surveyors, working from the survey stations already established through the triangulation network, measured the angles and distances of the three wires hanging in the shaft to locate their position. Then, knowing the location of the wires, the surveyors took measurements from them in the shaft station on 2400 level and, from these, "a libatus" underground points were determined which could be used as a base line. Then the surveyors carried their calculations through the original Froid workings to the place where the Froid-Stobie drift was to be started. The vertical distance of the underground points be-

low the surface triangulation system had been obtained by measuring down the shaft.

The starting point of the drift now being located and the position of the Stobie Shaft being known, the direction and distance for driving the drift were calculated and points set by which the directional lines, one for elevation and one for horizontal position, could be carried forward as the drift advanced. Now the driving crew knew where they were going; they were "on the beam."

In order to keep the drift on its proper course, centre line points for horizontal direction and grade line points to give the correct elevation were set every 50 feet as shown in Figure 4.

Centre line points are short holes drilled in the centre of the roof of the drift. Wooden plugs are inserted in these holes and nails are driven in them exactly on the centre line of the

drift. When a drift round was about to begin the driller hung plumb bobs from the nearest pair of centre line plugs, made a vertical chalk mark centre line on the face of the drift after sighting the bobs, and then marked out the drill holes for the next round.

Grade line points, by which the driving crew kept on an even keel, are plugs similar to those for centre line points except that they are set in pairs in the walls of the drift, five feet above and parallel to the bottom of the drift. The driller stretched strings between the nearest pair of plugs and sighted the line on to the face.

Final precaution of the surveyors, to ensure that the centre line and grade points were being accurately extended, was to establish new survey stations (Figure 1) every 500 feet as the drift advanced.

Precision is Everything

Little or nothing is left to chance when the surveyors go to work, and if you think maybe the boys are inclined to be a little too fussy about their measurements, just consider this: if that original base line at Froid No. 3 Shaft had been just one-sixteenth of an inch out of whack the drift crew would have missed Stobie Shaft by more than 100 feet and would probably have had to go on driving through rock until, about 1,000 years from now, they would have broken out into the Atlantic ocean 2400 feet below the coastline of Labrador.

Startling sort of a thought, that.

Geological Party to Spend Summer in Rugged Wilds of Yukon Territory



Deep in the wilds of the Yukon west of Whitehorse an INCO geological party will spend the coming summer making a thorough investigation of the country in the vicinity of Kluane Lake, Aishihik Lake, and the Donjek, White, and Tanana Rivers.

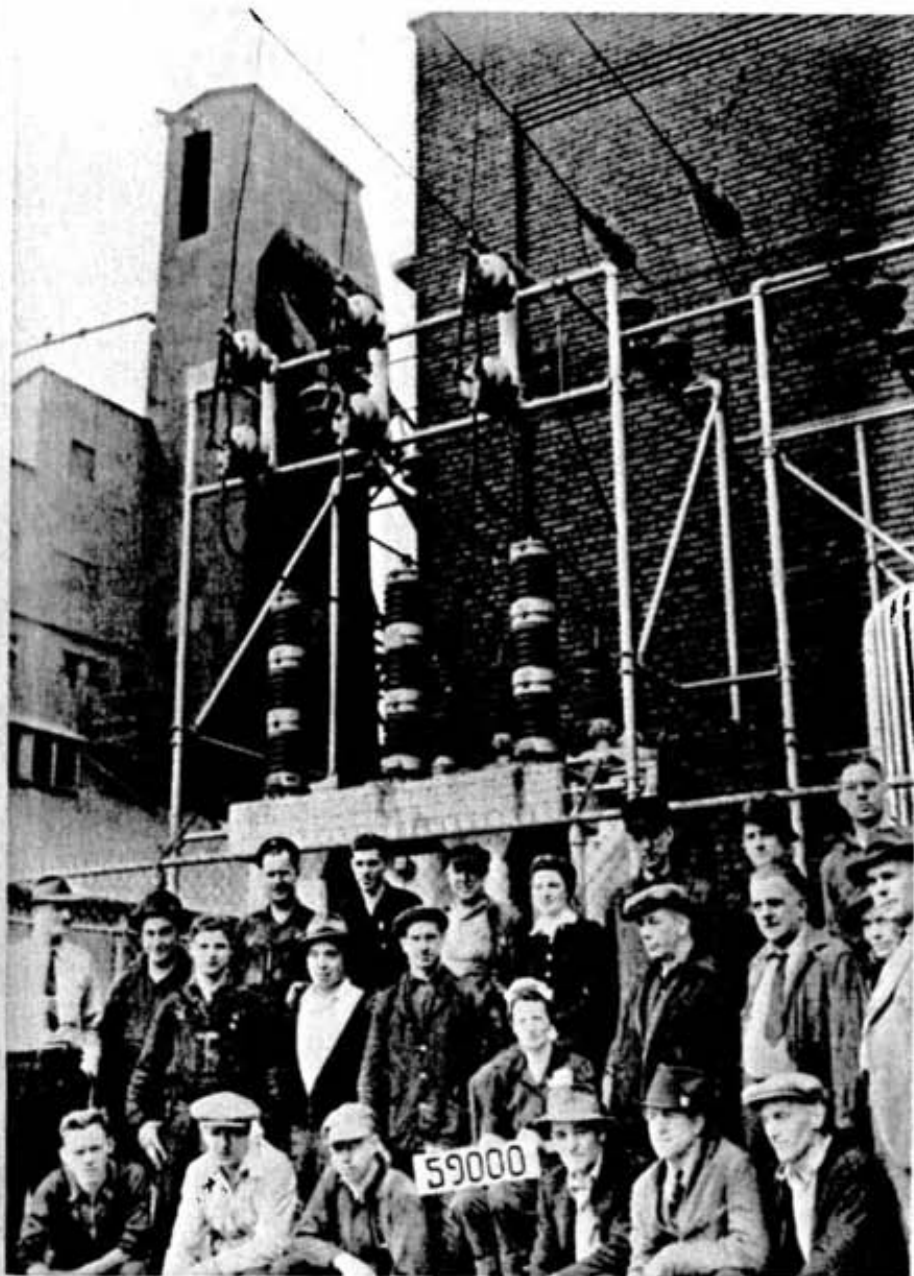
Members of the party are C. E. Michener (in charge), Herb Brownell, Geoffrey Leech, Jack MacNeil of Levak, and Ken Robertson, former Froid geologist who joined the group at Saskatoon. They left Copper Cliff on May 8, travelling by rail to Vancouver, by steamer up the Pacific coast to Skagway with a brief stop en route at Juneau, and then by narrow gauge railroad over the white Pass into Whitehorse. This railroad is now run by the U. S. Army as an adjunct of the Alaska Highway and Canol Oil projects.

Arriving in Whitehorse May 16 the party commenced preparations for their long stay in the forbidding territory assigned them for investigation. One group will examine prospects and known occurrences of mineral. Another will go into a virgin area which has never been mapped, a belt of country about 20 miles wide

and 120 miles long extending from Kluane Lake northwesterly across the Alaska border, and will make the first geological map of this area. Aerial photographs indicate that the boys are in for some rough work and few of the comforts of home. The country is very mountainous and cut by large streams. The timber line is at about 2000 feet and the tops of the hills are bare or covered with grass or moss. To provide transport for the party two half-ton pick-up trucks were fitted with special steel bodies in which equipment and gear can be conveniently stored. These trucks were shipped by freight to Whitehorse and will be used along the main routes, but pack horses will be the chief means of transport away from the roads, and an airplane will be necessary to reach some remote areas.

Photograph shows the two special trucks, some of party's gear, and Geoffrey Leech, A. B. Yates (INCO Chief Geologist), C. E. Michener, Herb Brownell, Harold Elves, and J. W. Garrow, Master Mechanic of Smelters, under whose direction the trucks were fitted for their arduous work.

59,000 Safe Shifts Todate



IMPRESSIVE SAFETY RECORD BY FROOD ELECTRICAL

Despite the highly hazardous nature of their occupation, handling equipment operating at from 110 to 30,000 volts, the Electrical Department at No. 3 Shaft Frood Mine are building up a very impressive safety record.

By May 1 they had worked 59,000 consecutive safe shifts, had no intention of easing up the safety pressure. Their last lost-time accident was on July 28, 1937.

There are 28 employees in the department under the careful supervision of popular Stuart McKenzie, who has a service record dating back to 1912. Most of them were available for the Triangle picture, taken against a background of a three-phase rotary converter transformer and switchgear, with the No. 3 Shaft headframe towering overhead:

Left to right, front row: C. Smith, Charlie Ross, Johnny Butler, Leo Grennon, George Blackmore, Len Boulton; second row, Romeo Chennier, James Ing, Ernie Mason, Margaret Vaillancourt, Fred Harvey, Jim Stanley (assist-

ant chief engineer), Brynolf Poutainen, Stuart McKenzie (Chief Engineer); back row, Ted Dash (assistant chief engineer), Paul Samson Rusty Armitage, George Barsotta, Perry Charlesley, Alice Guolla, Lloyd Martin, Ernie Wagg, Harry Moorehouse.

Old-timers in the department besides the chief engineer are George Blackmore with 27 years service, Ernie Mason with 26 years, Perry Charlesley with 21 years.

Absent when the picture was made were Victor Martinoff, Rudy Joly, Fern Walford, Ilie Koivonen, and Red Stewart.

Nice work, Frood Electrical! Keep on your toes, work safely, and make it 100,000!

BILLIARD CHAMPION

Bill Beckett picked off championship laurels this year in the billiard tourney at the Copper Cliff Club, wielding a wicked stick in all his matches.

Frank Chalmers Lauded at Banquet

Frank Chalmers, known to the boys around the Port Colborne plant as "Pop", has retired on pension leaving behind him a legacy of First Aid Training which could never be valued in dollars and cents.

In the past 20 years colorful "Pop" Chalmers conducted 15 First Aid classes and graduated 1170 people in the St. John Ambulance Association courses. In addition he trained 75 as nurses' aids, and gave instruction to 20 members of the Port Colborne Sailorettes, 120 Air Cadets and 50 Army Cadets, a total of 1435 people.

At the annual banquet of the Port Colborne-Humberstone First Aid class on May 8 Mr. Chalmers' great service as instructor was recognized when he was presented with a handsome wallet containing a substantial sum of money. The presentation was made on behalf of the class by Ed. Rogers and Cameron Lynden, the former paying high tribute to the work of the guest of honor, and during the program other speakers took the opportunity to eulogize him.

Born in Dundee, Scotland, on May 18, 1879, Frank Chalmers came to Canada in 1909 and the following year his wife and their two children joined him in Campbelltown, N.B. After a varied career as a baker, carpenter, and public works supervisor he eventually arrived in Welland to become assistant to the city engineer and had charge of installing the pumping station and building new sidewalks. He was overseas three years in the Great War as a sergeant in the Canadian Army Medical Corps; he had seen action in two previous wars.

On July 1, 1923, he joined INCO at Port Colborne as First Aid man, his long experience in St. John Ambulance work qualifying him for the post. Later he assumed the duties of chief timekeeper. In his 20 years and nine months of service he was only late for work once and that was the morning after he and "Doc" Moffatt had sat up all night with a patient at the hospital.

He was married in 1905 in Scotland to Christina Douglas; they have one son, Alex, in Niagara Falls, N.Y., and three daughters, Isabel, with the Maple Leaf Milling Co., Winnifred, with Canada Furnace Co., and Kay (Mrs. Tom Bain).

In his young days he played soccer in the Old Country, lofting over many a beautiful corner kick from his position at outside right.

Our picture shows him taking it easy on the lawn at his cosy home. If he isn't there when



you call to see him, step over to the bowling green on Catherine St. and you'll likely find him skipping a team in a torrid game.

• Most of us have a pretty clear idea of the world we want. What we lack is an understanding of how to go about getting it.

—Hugh Gibson





THE FAMILY ALBUM

1—Tapping Nickel Reverber

Fred Puzkarenko stands with his cone-shaped plug, ready to "bud up" or seal a nickel reverberatory furnace in Copper Cliff smelter after tapping, or drawing off matte. From 12 to 15 times each eight-hour shift matte is tapped from the reverber through a hole in the side wall of the furnace 17 feet from the skimming end. The matte flows down a covered clay-lined chute, or launder, into a matte ladle which is spotted on a transfer track below the end of the launder, and is then taken to the converters. Fred has worked for INCO since 1930. He became a tapper in 1943 after serving two years as tapper's helper.

2—Suggestion Plan Winner

Wartime straps on safety goggles at the Refinery contained so little elastic they were tight and uncomfortable, and sweat caused the cotton band to twist, aggravating this condition.

Rubber gloves used at the Refinery have a heavy roll at the top of the sleeve. Steve Romanuk, lead welder in the acid plant, took a worn-out glove which was ready for the ashcan, cut a strap out of the sleeve leaving the roll at one end, and fitted it to his goggles. The roll held the strap in the goggles without any alteration being necessary. For his bright idea, a practical improvement as well as a salvage measure, Steve was awarded \$10.00 in War Savings Stamps under the Suggestion Plan. Now worn-out rubber gloves are almost as hard to find as nylon stockings.

Employed at the Refinery since 1929, Steve was married in 1930 and has two sons, Alex (13) and Ephraim (11). He owns a cosy home at 405 St. Nicholas St., Sudbury, grows better onions than Mitch Hepburn, and twists a fast reel as a fisherman. Our parting query: "Where's your favorite spot to fish, Steve?" Steve's cagey answer: "In the water, mister."

3—Copper Cliff Salvage

When the Salvage Committee of Copper Cliff Red Cross really got its organization into high gear during the winter of 1942, the sparks flew so fast and furiously that one night the salvage depot in the old band hall burned right to the ground. Casualties in this setback were half a carload of rags, the bottom of a new paper baler, and other material but the Committee took the loss in its stride and has gone on to make salvage collection in the Cliff definitely big business, apart from the high patriotic issue involved.

Up to March 31 of this year the Cliff Committee had collected and shipped 72 tons of paper, 44 tons of scrap iron and steel, 3300 lbs. of lead and tin foil 15000 bottles and jars, 5200 lbs. of rags, 1222 lbs. of fat, and countless other salvaged items to a total value of \$2380. Disbursements from this revenue have included \$300 in Victory Bonds for the Boy Scouts, \$100 in bonds for the Girl Guides, \$500 to the Red Cross for ditty bags, \$850 for Canadian Prisoner-of-War parcels, and current expenses.

A highly efficient corps of volunteer workers, organized under the tireless leadership of Mrs. I. J. Simcox, has this splendid record to its credit. Copper Cliff salvage collection was first started by the Boy Scouts under Scouter Jim Savage. When the job grew too large for the Scouts the Committee took over and the Scouts continued in charge of transportation. Citizens

of the town, and also of Creighton, cooperated excellently.

The town was divided into four wards and regular collections were made. Sixteen teams of men, each working one night a month, have handled the arduous task of baling and packing the salvage for shipment. More volunteers could certainly be used in this department. Jack Wulff, Keeper of the Bottles, has rendered yeoman service and has displayed his merchandising initiative by selling at a neat profit such unusual items as an old pair of false teeth. The schoolchildren have done themselves proud in taking care of collecting fats. Alex McGinn, Sudbury scrap dealer, has given the Committee a "break" wherever possible. All in all it has been an impressively handled project and a credit to everyone.

In the photo one of the volunteer crews is seen swarming over a heap of waste paper, preparing to bale it for shipment. Left to right they are: Gerry Brose, Archie Frame, Ernie Cox, Eino Tigert, Mel Luck, C. O. Maddock, Al Scammel, Clarence Hobden and Jim Savage.

4—Frood's Victory Banner

Striking signs told the Sixth Victory Loan story at most INCO mines and plants, a daily reminder to employees of the importance of the bond campaign. At Frood No. 3 Shaft the display urged workers to "Erase this face (Hitler's) by Saving for Victory." When the campaign was ended Frood No. 3 had done some erasing, alright. One group of salesmen, complete with their sales kits, posed for the picture. They covered the Anderson shift and were, left to right, back row: H. Labric, Davie Fortin, A. Maitland, J. Beaulieu, A. Little, C. McAfee, C. Cranston, N. Anderson, J. Sundquist, G. Deschene, E. Stobo, D. Golden, N. Morrow, G. Burmaster, D. Munstad, H. Longchamp, E. Savard; front row: A. Labonte, R. Frost, R. Bridges, M. Lahti, N. Bellmore, S. Sheehan, B. Seli, G. Marretto, J. McKenzie, J. Jardine, E. Levo, E. Dellaire, H. McGowan and R. Church. Other Anderson shift canvassers not pictured above were: M. McLaren, R. Day, F. Woodruff, A. Kidder, L. Nelson, N. Nieme, T. O'Connor, L. Generoux, F. Sloan and E. Passi, yard foreman.

5—Shops Girls at Lunch

When the noon whistle blows at Copper Cliff smelter the girls from the shops make a beeline for their own lunch-room in the women's dry, doff their bandanas, shake out their curls, and enjoy their meal in clean, cheerful surroundings. Chaperoned by Smelters Supt. Dunc Finlayson (everybody else was scared) Triangle dropped in one day when the tops were off the vacuum bottles and the sandwiches were going the way of all good sandwiches. We can't begin to record the conversation, but we did get a picture.

6—Refinery Safety Setup

A 44-day stretch without a lost-time accident (still unbroken as we go to press) was the subject of a good deal of comment at the Refinery last month, and Safety Engineer Morgan Shoveller was preaching the gospel in all corners of the plant to get the guys and gals pepped up for a Coniston year. One effective method was a new Safety signboard which arrests every worker's attention as he or she enters the plant. It's floodlit at night and tells a graphic story. Number of days since a lost-time accident in

the various departments up to May 9 were: Acid Plant, 947; Casting, 44; Lab and Metallurgical, 436; Office and Miscellaneous, 473; Power, 187; Selenium, 740; Silver Refinery, 226; Shops, 137; Tank House, 48; Yard and Transport, 45. Morgan Shoveller is a dyed-in-the-wool safety booster, serving in that department for three years after he joined the force at Refinery in 1931. After an eight-year interval in the Mechanical Department he returned to the Safety fold in 1942. Is married, has a son and a daughter, exudes energy, is a prominent Nickel Belt sports figure.

7—Tough Scottish Scrapper

That "DANGER" sign is in the right place when it is nailed up over Johnny Rocks' head. Levack driller who came to INCO in October of 1942 from Lakeshore, Johnny is dynamite in the boxing ring as many a Scottish scrapper testified after Rocks' fists exploded in his face. Before he came to this country Johnny was a national champion in Scotland and had the distinction of receiving a diamond belt from the famous Scottish patron of boxing, Lord Lonsdale, who died recently. The camera caught the powerful little mittman in the Levack collarhouse, about to go underground for his regular shift.

8—Picks Off \$85.00 Award

Movement of the bevel pinion along the low speed shaft of the roaster speed reducers in Copper Cliff Smelter is prevented by a 3/8" holding plate. However, in the course of operations the holding plates became loose on the shaft, causing serious wear to the brass bushing and to the speed reducer housing. Lloyd King, machinist, suggested that the 3/8" plate be replaced by a 1/4" plate. The increase in plate thickness allowed the bearing surface on the shaft to be increased and thus prevented the plate from coming loose. For the labor and material savings accomplished by this suggestion, King was paid an award of \$85.00 under the Suggestion Plan.

Lloyd King started with INCO on April 13, 1931, and worked in the concentrator and on the nickel converters before he became a machinist. Picture shows him with a couple of speed reducers, one before and one after installation of his holding plate.

9, 11—Garson School Scenes

The most modern equipment is provided for the boys and girls at Garson school for the broad program of practical training which supplements their book learning. In Photo No. 9 a group of girls are busy with their sewing lessons, looking to the day when they'll be ready to leap into action as hubby hollers about a button off his shirt. At the sewing machines are Joan Jones and Elaine Desjardins; Bernice McAvoy presides at the ironing board, and grouped around the table, clockwise, are Irene Toivola, Evelyn Ace, Dorothy Bellmore, Rena Farenzena, Cecile Jones, and Joanna MacIver. Classes are held in all departments of Household Science. The boys are equally fortunate in the facilities at their disposal. Photo No. 11 shows a class in the school's machine shop. In the left row Howard Beaudry and Henry Dubbelsteyne are using planes at wood-working benches and George Morin is filing at a vise. In the right row Ross McNeice is at the planer, Robert Laking at the wood lathe, Albert Semenuk at the metal lathe, and Wilfred Legault at the drill press. We have some more pictures of Garson boys and girls at work but they will have to await another issue.

10—Sudbury Baby Parade

Although the little fellow (we think) at the right is lustily expressing disgust at the whole proceedings, most of the kiddies in this group don't seem a bit ruffled over receiving their inoculations against diphtheria at the INCO Medical Centre in Sudbury. The picture was

(Continued on Page 12)

Current and Choice

IN SUBURBY CINEMA

In our book the outstanding screen personality scheduled for Sudbury during June is Paul Lukas, who shares starring honors with Errol Flynn (no relation to Bert) in "Uncertain Glory."

Paul Lukas is a quiet enough fellow but our Hollywood pipeline tells us there's one sure way of getting his pin feathers to twitch and that's to describe him, as have so many critics lately,



as the "find" of the year because of his matchless performance in "Watch on the Rhine," which co-starred him with Bette Davis and for which he received the Academy Award.

Paul hates to be described as a "find" for the simple reason that during his 15 years in Hollywood he has been thus hailed exactly seven times.

Lukas was "found" for the first time in 1926 when, deserting the Hungarian stage, he scored as "Samson" in "Samson and Delilah." Then he was "discovered" again in 1928 when Paramount brought him to Hollywood to play opposite Pola Negri (remember?) in "Loves of an Actress." And so it went. Every couple of years or so, although he regularly delivered first-rate performances every time he faced the camera, somebody got busy and "found" him all over again. For a gent who's never been lost, it got monotonous.

Basically a story of conflict between pursued and pursuer, "Uncertain Glory" unfolds against the background of occupied France, writhing in humiliation under the Nazi boot. For 15 years Inspector Bonet of the French Surete (Paul Lukas) has tried in vain to bait a worthless, unmitigated scoundrel, Jean Picard (Errol Flynn). At long last, his quarry captured and as good as executed, Bonet is made the victim of his own conscience. Picard throws a monkey wrench into the machine by making it an impossible act of villainy for Bonet to execute him. For the wily criminal is determined to do anything to stall for time and proposes that the Inspector save him from the guillotine by turning him over to the Nazis in exchange for one hundred innocent French hostages they now hold. Swayed for the first time in his life from his straightforward path of duty, Bonet accedes and thereby places his own reputation as well as the lives of one hundred innocent Frenchmen into the slippery hands of an unscrupulous villain.

Lucile Watson, well-remembered as the mother in "Watch on the Rhine," appears as a simple Frenchwoman, devoted to her country and contemptuous of the Nazi conquerors.

Also Current and Choice in Sudbury during June:

LIFEBOAT: Eight people, six men and two women, are thrown together in a lifeboat after their ship has been torpedoed in the Atlantic. Stripped of their veneer of civilization by the imminence of death, they plunge into a desperate gamble with life and romance. Superbly directed by Alfred Hitchcock from the story by John Steinbeck, author of "Grapes of Wrath" and "The Moon is Down." (Tallulah Bankhead with William Bendix, Walter Slezak, Mary Anderson, John Hodiak, and others.)

THE BRIDGE OF SAN LUIS REY: from the Pulitzer Prize winner of the same name by Thornton Wilder. A young priest, Brother Juniper, witnesses the deaths of five persons at the fateful bridge of San Luis Rey, starts a search of their lives to discover why the Almighty had chosen that precise moment to cast them into eternity, finds love and hate, violence and hypocrisy in the same old sorry pattern. (Lynn Bari, Francis Lederer, Akim Tamiroff, Nazimova, and many others.)

JANE EYRE: Charlotte Bronte's classic story of the love the shy, wistful Jane Eyre held for moody and mysterious Edward Rochester, master of fabled Thornfield Hall, whose incredible life was matched only by the sense of impending doom which hung over him. (Joan Fontaine, Orson Welles, Margaret O'Brien, Peggy Ann Garner, John Sutton).

FOLLOW THE BOYS: One of those star-studded parades built around the adventures of a vaudeville family. George Raft and Vera Zorina; Jeanette MacDonald, Orson Welles' Mercury Wonder Show, Marlene Dietrich, Dianah Shore, Donald O'Connor, W. C. Fields, the Andrews Sisters, Carmen Amaya, Sophie Tucker. A whole album of song hits and such orchestras as Ted Lewis, Freddie Slack, Charlie Spivak, and Louis Jordan. Double-barrelled entertainment if you like this type of show.

SONG OF RUSSIA: An American concert orchestra conductor and a young Russian girl go through the pillage and destruction of the Nazi assault on Russia, help scorch the earth after Stalin's famous speech, finally through music tell of the courage and suffering of the people. (Robert Taylor, Susan Peters, Robert Benchley, John Hodiak).

A GUY NAMED JOE: Pete Sandich, daredevil pilot, goes to his death while destroying an enemy aircraft carrier. He awakens to find himself in a strange place, the "heaven" of airmen, and carries on in his line of duty unseen by mortals. (Spencer Tracy, Irene Dunn, Lionel Barrymore, James Gleason).

Roy Rogers and Trigger in **THE MAN FROM MUSIC MOUNTAIN** . . . Wallace Beery and Marjorie Main continue their perennial screen battle in **RATIONING** . . . the Dead End Kids and the Little Tough Guys break up a hi-jacking racket in **KEEP 'EM SLUGGING** . . . Kay Kyser jokes and makes the music in **SWING FEVER** . . . Radio comedienne Joan Davis gags her way through a daffy film musical, **BEAUTIFUL, BUT BROKE** . . . Henry Aldrich turns out to be a Daniel Boone on the trail of romance in **BOY SCOUT**.

RESURFACING COURTS

Good news to racket-swinging members of Sudbury Employees Club will be the announcement that the four tennis courts beside the clubhouse are being completely resurfaced and will be manicured into top playing condition. Vern Tupling is urging all tennis players to get their names in his book now so they won't miss any of the special events.

CLUB BOWLING RESULTS

Alec Crossgrove's team of A. Sauve, Olive Lee, and Helen Montgomery emerged as champions of the annual five-pin league at the Copper Cliff Club and annexed the Lambert Trophy.

In the ten-pin loop Barney Hamilton's lineup of Tom Crowther, Tom Birney and "Flat" Elves took the honors.

Still unbeaten was the mammoth three-game total of 1036 amassed by "Unk" Longfellow in a five-pin game on February 8, 1940. Now in the Navy, "Unk" really got hot that night and spilled 'em for counts of 366, 379, and 291.

Another long count on the Club alleys was that made by Clyde Rivers one night in April, 1942, when he rolled successive games of 226, 271, 259, 416, and 284, for an average of 291. No flies on that sort of bowling either.

Family Album

(Continued from Page 11)

made during one of the regular Tuesday afternoon "classes" at the Centre. Part of the medical service to INCO employees for their children is this preventative treatment against diphtheria, smallpox, whooping cough, and other diseases. A series of four weekly inoculations is the usual procedure. A lineup of baby carriages stretching a full city block in front of the Medical Centre often illustrates the way in which INCO mothers take advantage of the service for their kiddies.

12—Cook-of-the-Month

Maybe you could paraphrase Gilbert and Sullivan to say, "A doctor's life is not a happy one." Maybe he does have to run around at all hours of the night, maybe he can't call a moment his own, BUT there are compensations. You take Dr. Alec Duncan, just for instance. Whenever his wife notices him showing symptoms of jim-jams of the stethoscope, or flinches of the scalpel, she whips up a Fudge Candy Cake and—presto!—the doctor is cured in a jiffy. Which is one of the reasons why we nominate Mrs. Duncan as Cook-of-the-Month, and pass on as a hot tip to all June brides, whether or not they're marrying medicos, her recipe for

FUDGE CANDY CAKE

- 1/2 cup butter.
- 1 cup white sugar.
- 2 eggs.
- 1/2 cup pastry flour.
- 1 cup chopped almonds and walnuts.
- 1 tsp. vanilla.
- 2 tbsps. cocoa.
- Salt.

Mix in order given. Bake in moderate oven 15 to 20 minutes in 12" x 12" tin.

Icing

- 2 tbsps. butter.
- 2 tbsps. cocoa.
- 1 cup icing sugar.
- Salt and vanilla.
- Small amount of hot water.

Mix together. Spread on cake as soon as it is taken from the oven. Cool. Cut in squares.

Photo shows Mrs. Duncan in the kitchen of her home on O'Connor St. She came to Sudbury eight years ago from Gravenhurst with her husband, who is on the staff of the INCO Medical Centre in Sudbury. They have three kiddies: Margaret and Sandra, at school, and Reid, the youngest.

13—Levack Cue Artists

Next door to the bowling alleys in Levack Employees Club is the billiard room where the cue artists hold sway all hours of the days or evening. Picture show two husky miners, both of whom hailed from Winnipeg, in the middle of a game of snooker.

Murray Headframe Combines Striking Beauty with Utility

Strikingly beautiful against a blue sky in which a soft summer cloud has come drifting along to set off the background, the clean-cut lines of the monolithic headframe at INCO's Murray Mine are the subject of our picture feature on Page 4.



Due to a desire to conserve structural steel for the most essential war purposes, the new headframe at Murray, built in 1941, was designed and erected of reinforced concrete. This was more or less an innovation for this

type of structure, since the majority of the headframes constructed are of structural steel. The only known concrete head frame built previously in Canada was that of the Hollinger Gold Mines Limited at Timmins.

Contrary to first thoughts on the matter, reinforced concrete has fully met all necessary requirements. It has proved economical for the purpose and the cost was comparable to a steel structure. The concrete structure was completed in less than 60 days, probably much more rapidly than the steel structure could have been built, even had the steel been available. The appearance of the finished construction, as may be seen from the photograph, is very attractive.

STRUCTURAL REQUIREMENTS

The total height of the head frame above the collar is 153' 6". It is designed primarily to handle ore skips holding 12 tons of ore each, travelling at 2400 feet per minute. For this purpose there are two one-skip compartments 6'1" x 10'0". In addition there are two cage compartments 6'1" x 20'0", and one pipe service and manway compartment 5'0" x 20'0".

The head frame is equipped with four 12-foot diameter hoisting sheaves grooved for 1 1/4" steel hoist cable, and is designed to withstand a horizontal pull at the sheave deck equal to the breaking strain of one rope.

CONSTRUCTION DETAILS

The head frame contains 1816 cubic yards of concrete and 57 tons of reinforcing steel. The concrete was designed for a minimum compressive strength of 3000 lbs. at 28 days, which strength was readily obtained.

A minimum amount of water was used in the mix, using vibrators in placing concrete. A well graded sand was used and the coarse aggregate consisted of crushed, washed and screened gravel. The mix was designed so as to produce a plastic workable concrete and, as the surface texture shows, this resulted in a sturdy durable concrete with a minimum of segregation.

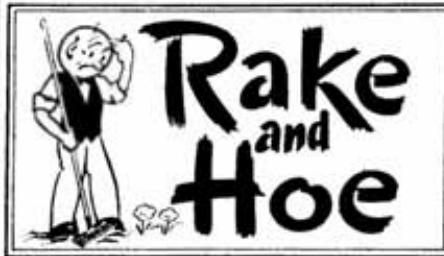
The walls vary in thickness from 9" to 30", depending on the location in the structure, and are of uniform thickness from top to bottom. The curved buttresses were designed to resist the actual stresses induced in the tower by the strain on the cables. On is 21" and the other 42" thick.

Structural glass blocks were used in the manway for lighting purposes, and the window openings were carefully arranged so as to blend in with the general appearance. The only additional ornamentations applied are the cylindrical flutings at the corners. These serve to soften the sharp corners without destroying the bold lines of the structure.

The impression one receives in looking at this headframe is that the designers succeeded in making an extremely good-looking job without sacrificing in any way the usefulness of the structure, and this was accomplished with a minimum of expenditure.

PERSONNEL

The headframe was designed by the Engineering Department of the International Nickel Company at Copper Cliff under the supervision of L. M. Sheridan, Chief Engineer. The structure was erected by the Nordale Construction Limited under the supervision of E. M. Kayser, Superintendent. As stated above, it was completed in less than 60 days, which was considered worthy of note.



(By C. A. Y.)

Correction

In our last issue under "Fertilizing the Garden", 4-12-16 fertilizer was mentioned. This was a mistake. It should have been 4-12-6.

WEED CONTROL

If it weren't for weeds and bugs what a pleasure gardening would be. This month we will give a few hints on the control of both.

Weeds are most easily controlled by early cultivation. A narrow rake used with a light hoeing action when the first plants appear will stir the soil enough to kill any weeds that are just germinating. One can go very close to the rows with a tool of this kind without injuring the young plants. A three cornered garden hoe used close to the rows a few days later will cut off any weeds you missed the first time.

As the plants get larger the three prong garden cultivator can be used for shallow cultivation to keep down weeds and maintain a light mulch to hold moisture.

There is one angle of cultivation that should be stressed. As plants get larger and the season for weed growth passes, only very light cultivation should be practiced in order not to disturb the feeding roots of plants. This is particularly true of onions and corn. It is possible to give these two crops a very severe setback with deep cultivation, particularly if you go close to the rows. If you see white thread-like roots when cultivating your onions you are cultivating too deeply and they would be better left alone. There is a growing tendency to cultivate early to kill weeds and then mulch between rows and around individual plants with grass clippings. This practice will control late weeds and help hold moisture.

ADDITIONAL FERTILIZER

All plants, i.e., cabbage, tomatoes, broccoli, celery, onions, etc., that you moved into the garden should not be given additional fertilizer until they are growing strongly in their new location. Strong growing plants can be given one ample tablespoon of fertilizer once a month during the growing season. This can be applied in a small circle around each plant

GET OFF MY NECK!

A feminine passenger had boarded the bus after the lights had gone out. A tall man, standing near her, asked if he could help her find a strap.

"Thank you," she replied, "but I have already found one."

"Then I wonder if you would mind letting go of my necktie."

and lightly hoed in or the plant hilled up to cover the fertilizer. Fertilizer should not touch the plants. If ground is dry applications of fertilizer should be followed by thorough watering.

Chicken manure spread sparingly between the rows is also a very good supplementary fertilizer. But don't use too much. Swiss chard and leaf lettuce will benefit from extra fertilizer. A band of fertilizer along each side of row and lightly hoed in is all that is necessary. This should be repeated when growth lags.

INSECTICIDES

Derris Dust is possibly the most effective and easily used garden insecticide. It is very effective in keeping cabbage, tomatoes and potatoes free of bugs and worms. In fact there are few instances where it is not effective, being both a stomach and a contact poison. Being only very mildly poisonous to humans it is also much in its favor.

Place a small amount in a burlap bag and shake over infested plants in the evening or after a shower. You will be amazed with the results.

Repeated dustings every week or so will keep your garden clean. Derris Dust can be purchased at your local insecticide and seed dealer.

Before signing off for this month a word about those shrubs or trees you planted a while back: All newly planted stock should be watered thoroughly about once a week until the heat of the summer is passed.

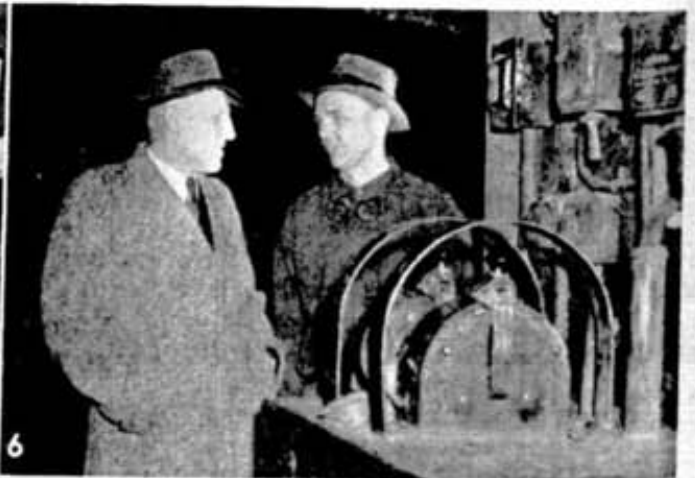
Answers to Quiz

On Page 3

1. Andrew Bonar Law, born in 1858 in Rexton, N.B., son of a Presbyterian minister, buried at Westminster Abbey, 1923.
2. The island of Montreal on which is the city of Montreal.
3. Elizabeth Regina.
4. Tadpole or Polliwog.
5. Just a plain ordinary housekeeper.
6. Dentists.
7. If you believe in the Bible, it would have to be "Jonah".
8. Raccoon.
9. Greyhound Racing.
10. Nickel, Platinum, Radium, Asbestos. Newsprint, (2nd in Pulpwood).

ANSWERS TO THE APRIL QUIZ

1. Anywhere — anytime — anyhow — bar nothing.
2. Being a British mandate the Union Jack was also flown.
3. Canada, Alaska, banana.
4. They can't fall into the hole.
5. Has nothing to do with autos or liquor, but has to do with self-poisoning.
6. Official residence of the Archbishop of Canterbury.
7. Rice.
8. Jesse James (leader of a band of outlaws).
9. (1) Howe, Minister of Munitions. (2) Knox, late Secretary of the Navy.
10. Fishing.



A FRIENDLY SERVICE

Personnel Department Achieves Personal Contact Between Men and Management

A place where a fellow can go to obtain advice on a personal problem, to seek help in some difficulty, or just for the good old-fashioned purpose of getting something off his chest, is INCO'S Personnel Department, organized in November of last year and now handling hundreds of contacts with employees of the Company.

Designed to establish closer sympathetic relations between employer and employee, the Personnel Department has officers stationed at Copper Cliff, Frood Mine, Frood-Stobie Open Pit, Creighton Mine, and Refinery. It is expected that it will soon be extended to take in other INCO plants which it does not directly serve at present.

Personnel is a liaison service by which the employee can secure assistance in matters pertaining to his job or his personal happiness, and through which the management can keep in touch with him and know how he is getting along.

Because so many of the cases which it handles are held in confidence, Triangle is unable to draw a full picture of what the Personnel Department accomplishes. It can be said, however, that its service covers the whole field of human relations.

For instance, a new man joins the Company. Personnel will help him find a congenial home if he has not located one. If he is short of money it may recommend an initial advance of his wages to tide him over. It will interview him as to his previous experience and any special aptitude to avoid his being given a job where he might be a "square peg in a round hole." Then it will help introduce him to his job, seeing that he gets properly registered at the time office, obtains his locker, finds the warehouse where his safety equipment is issued to him, and meets his foreman. This friendly interest means a lot to a new man who otherwise might be bewildered and discouraged by the size of the operations of which he has just become a part.

Then after the new employee has had a chance to get acclimatized to his job, Personnel drops around to see how he is doing, and takes this opportunity to explain the low-rate insurance now available to him, covering life and also sickness and accident, on which the Company pays part of the premium. He is also told about the Retirement System, recreational facilities, and other advantages open to him. He realizes that although he is a newcomer the Company is as interested in him as it is in its oldest employee.

An employee is having trouble at home, to quote another example of Personnel work. He takes his problems to his Personnel officer and perhaps there is something, like a change of surroundings, which can be recommended for him to straighten things out. Another man is in a dither about his income tax (and who isn't, these days). Personnel will give him a hand in filling out the pesky forms.

Two employees, stationed in different INCO towns, marry sisters. The girls would like to live nearer one another, if only in self defense. Personnel tries to arrange this for them because one of its chief ambitions is to help maintain family ties within INCO wherever it gets the chance.

A young man comes to Personnel, worried because he just can't seem to make ends meet financially. They talk it over and finally decide that he might be better off if he got away from the bright lights of Sudbury for a while to embrace the quiet life. He is advised to apply to the proper authorities for a transfer to one of the Company's outlying plants.

These are just a handful of examples, among hundreds, of what Personnel Department is doing for INCO employees. Often it is asked to walk in those delicate places where even angels would fear to tread; sometimes it runs smack into a set of circumstances about which it can do nothing. Mostly, however, it deals in those little personal things which may not appear large to other people but actually are the roots of a man's happiness. Its officers are all men of broad experience in Company service who have held responsible positions and "know the ropes". They can be counted upon to give an employee constructive advice and assistance when he approaches them, or to explain the best procedure for him to take if his particular problem does not come within the scope of their service.

Confers With Vice-President

Chief of the Personnel Department is Clarence Harrison, shown on the right in the first picture of the layout having a chat about business with Vice President R. L. Beattie in the latter's office at Copper Cliff. Frequent conferences like this keep the Company management closely in touch with the type of problem Personnel is encountering among the employees.

Born at Woodstock, Ontario, in 1902, Clarence Harrison went West to Saskatchewan with his parents and spent most of his boyhood in Saskatoon where he attended the University of Saskatchewan and studied mechanical engineering. His first job after leaving college was on irrigation work in Alberta and then for nine years he was a service man with the International Harvester Co., giving the farmers pointers on combines. When drought and depression caught up with the farm machinery business in 1937, he hopped a freight to Sudbury and on June 3 he started work in Copper Cliff Smelter as a laborer, soon graduating to punching tuyeres on "Taff" Montgomery's shift. He transferred to the Smelter testing section of the Research Department, becoming senior assistant to George Norman, Smelting testing engineer, and then in the fall of 1939 he moved to the Orford building where he worked through various posts until he was acting general foreman in the summer of '43. In November of that year he went to the Employment Office in Sudbury to organize and take charge of Personnel for the Company. He was married at Saskatoon in 1928 and is the daddy of three: Mavis (15), Maurice and Kenneth.

Visits New Men in School Stope

Newly hired employees at Frood Mine first go to the "school stope" on 2800 level, where they are instructed in standard practices and the proper way to handle shovel, muck hook, pick, timber dogs, and other equipment they will use in their work in the mine. Frood's Personnel officer, Bert Meredith, makes frequent visits to the "school stope" in the regular round of his duties to see how the newcomers are reacting to their surroundings and to learn of any special qualifications which may influence their future with INCO. Photo shows Bert on the left, and standing next to him on the sill floor of the square-set stope is Frank Pharand, shift boss, who has been with the Company for eight years. The new employees are, left to right, Rosare Angers, who hails from Winnipeg and who has a brother working on 1600 level; W. D. LaChance, back with the Company after a couple of years at other mines; Edmund Lalonde, of Sudbury.

Bert Meredith was less than a year old when he came with his parents from London, England, to Toronto. He started work at the Frood as a mucker in 1935 and successively became timberman, driller, stope boss, employment agent, contract man in the efficiency department, and then Personnel Officer in December of 1943. He was married in Sudbury to Miss Francis Kolari and they have two daughters, Diane and Joyce, ages 5 and 3.

Ironed Out Income Tax Riddle

When Triangle was interviewing Wally McIntosh, Personnel Officer at Frood-Stobie Open Pit, he was an exceptionally jittery young man. It wasn't the publicity—it was just that Mrs. McIntosh had taken a trip to the hospital an hour or so previously, and great things were expected. Sure enough, that night Wally became the proud pappy of a husky young son. Both baby and father are doing fine, we're glad to report.

Wally was born in Sudbury in 1917, but spent eight years of his life at Creighton where his father was a valued employee of the Company. Wally joined the INCO force in 1938, spending his first two years in Copper Cliff Concentrator. Then he transferred to Open Pit Mechanical and subsequently to Safety, Efficiency, and, in November of 1943, to Personnel. Picture shows him in the vulcanizing shop at the Pit. He and Aldo Piccolo have had a huddle about an income tax riddle which was keeping Aldo awake at nights, and the latter is reciprocating by explaining the method of vulcanizing one of the big 300-lb. tire casings for an Open Pit truck. Aldo's wife was the former Gladys Blais and the light of their life, a 9-months-old boy, is named Brian.

At Creighton Mine Since 1925

A braw Scot whose genial countenance is familiar to many at other INCO plants as well as to everyone in his own bailiwick is Tom Starkey, Personnel officer at Creighton, seen here in his office filling out a transfer application for Armand Gauvin. Born in Allon, Scotland, Tom came to Creighton in 1925. He had relatives in the district, including Alec McIntyre of Copper Cliff, his uncle. Starting with the Company on the electrical construction gang he worked his way up to switchboard operator, the post he held until he went into Personnel work in 1943. He was married at Creighton in 1928 to Miss Edna Leck and they have one daughter, Jessie, who is at school.

Now 51 years old and an INCO man off and on for 20 years, much of which he spent at Levack, Armand Gauvin had called on Tom to seek a transfer from Creighton underground to the Open Pit. He spent four and a half years overseas in the First Great War, and his wife is over there now as a nurse. Their oldest son recently returned from Sicily where he lost both legs in the fighting. The Gauvin family have a noble record in their country's service.

On Refinery Staff 14 Years

Another Personnel man of Scottish birth, although he came to Canada when he was only six months old and consequently has no "burr-r-r" to his speech, is Alec Crossgrove (left) who has been at the Refinery for almost 14 years. His father was an INCO man before him, retiring on pension after long and faithful service in the electrical department at Copper Cliff. Alec was in the assaying department until he became Personnel and Efficiency man. Seven years ago he was married to Miss Marguerite Fortier of Pembroke and they have two children, Peter and Heather.

Making the rounds of the plant, where everybody he meets has a friendly nod or greeting for him, Alec has paused in the storeroom to

(Continued on Page 16)



(By INCO Medical Department)

OPEN SEASON FOR TONSILS

The exact function of the tonsils and adenoids is not known. Several theories as to the possible function have been advanced, but none generally accepted. They are principally: (1) protection against bacterial invasion, (2) glands of internal secretion, (3) blood-forming organs.

It is a certain fact that removal of these organs, after the first two or three years of life, causes no physiological disturbances to the body mechanism. It is just as true that the presence of diseased tonsils and adenoids is definitely prejudicial to the health.

The tonsils are two in number, situated in a fold in the side walls of the mouth, one on each side of the root of the tongue. Ordinarily they are not seen on looking into the mouth unless the fold of tissue in front of them is retracted. When they become diseased they usually enlarge, projecting out into the mouth cavity. Many cases are seen in which the tonsils practically touch in the mid-line. However all infected tonsils do not become prominent. They remain hidden and actually may become contracted and scarred as the result of previous bouts of inflammation.

The adenoid, or pharyngeal tonsil, is situated in the upper part of the throat, above the level of the roof of the mouth. It therefore cannot be seen by ordinary inspection through the open mouth. In order to determine its condition it is necessary to use a mirror or feel it with the finger.

When enlarged and diseased it causes obstruction to the posterior exit of the air passage of the nose. It is also in close proximity to the Eustachian tube, which is the air communication between the middle ear and the upper part of the throat. Disease of the adenoid tissue is largely confined to children and young adults as this organ normally undergoes atrophy after childhood.

Neglected and chronic disease of the adenoid tissue which causes obstruction to the nose passage is often exhibited as restlessness during the night; the patient throws the covers off during the unconscious rolling and tossing so characteristic of mouth breathers. Night terrors are frequently experienced, especially in those children when there is associated bed wetting. This leads to voice changes and a characteristic facial expression.

What are the indications for removal of the tonsils and adenoids? No set rule can be laid down, each case requiring special thought. In childhood both these operations are performed at the same time.

The general indications may be listed as follows:

- (1) Cases of discharging ears which have lasted more than 6 weeks. It is of equal, if not greater importance, to remove the adenoids in this condition.
- (2) Tonsils which on pressure extrude a cheesy matter or pus. This type is often associated with recurrent foul breath.
- (3) When the glands of the neck are enlarged and tender. The tonsils are the site of absorption of the infection.
- (4) General systematic infection when no other focus can be found, especially if pus can be expressed from the tonsils.

(5) Enlargement of the tonsils or adenoids causing obstruction to breathing.

(6) Previous, repeated, acute attacks of sore throat and certainly if ever associated with abscess formation.

Removal of tonsils and adenoids in children should be carried out in the summer when there is less prevalence of respiratory infections. Removal may be performed under general or local anesthetics. For removal under local, the complete co-operation of the patient is necessary. It is therefore impractical under 16 years of age.

The operation should be performed in a properly equipped operating room and nursing care is necessary until the patient fully regains consciousness. There is almost always slight bleeding afterwards. Children can usually take liquids or ice cream in six to eight hours. The scab which forms over the tonsillar bed usually separates in about one week. Adults generally feel sufficiently well to return to work in 10 to 14 days.

The doctor who has seen your child in attacks of sore throat can give you the best advice on removal of tonsils and adenoid tissue.

MORE ABOUT

Friendly Service

(Continued from Page 15)

clear up one or two little points about the Sixth Victory Loan with the boys. He is talking with Aldege Vincent of the mechanical department, a Refinery worker for 14 years.

Filling in for Bob Boehmer

Triangle found the Copper Cliff Personnel officer, Alton Brown (left) up on the control platform of No. 19 converter in the smelter, talking with Gerry McKinnon who resides in Gatchell and has been a skimmer for 11 of the 16 years he has been with the Company. Alton Brown is pinch-hitting these days for the veteran Bob Boehmer who is confined to

SPOTLIGHT ON CONISTON

On May 10 Coniston Smelter completed a full year of operation without a compensable lost-time accident.

In fact the only lost time from injuries during the period, other than a few hours, was from one accident which caused a layoff of two days.

Coniston men and women can be justly proud of this fine record. They set themselves a real target, shot a bullseye, and are now gunning for another. All INCO divisions wish them success.

hospital with a severe case of arthritis. Everyone who knows Bob is wishing for his early recovery.

When Alton started with INCO in 1934 he was first a smelter laborer, then a tapper on the holding furnace. When the hot metal cars put the holding furnace out of business he punched tuyeres in the converters and then became a skimmer. Before he moved to the Sudbury office of the Personnel Department last year he was skimming on No. 19 converter, where the picture was taken, and still swears it's the best converter in the building. He was born at Victoria Harbor, near Midland, and was married in Detroit to Miss Jessie Cunningham. Before coming to INCO he spent 14 years in the States, working in various industries and making a hobby of studying employee relations work. Now he's in it, and, like all INCO'S Personnel officers, enjoys it immensely.



PLANT FOREMEN ATTEND SPECIAL TRAINING CLASSES

Job Instruction Training (or J.I.T.) class at Coniston, where plant foremen are coached in the most effective ways of showing an employee how to do his job to promote efficiency and safety. Models of various equipment can be seen on the long table. Clockwise in the picture are: Joseph Deluca, Albert Duberry, Henry Bassett, Hector Levesque, Dan Forrestal, Rene Lemieux, Ab Ladurante, Bill McLaughlin, Aldege Blake, Sid Smith, Bruno Comacchio, Silvio Floreani, and the instructor, Jack Lilley. About a dozen INCO men engaged in supervising capacity are acting as instructors of similar classes at the company's mines and other plants; they are taking a course under the Dominion-Provincial War Emergency Training Program.