Within The

INCO TRIANGLE

VOLUME 1 SEPTEMBER, 1936 NUMBER 1

New First-Aid Contests Announced

It Got to Be a Habit

The old expression "Often a bridesmaid but never a bride" would hardly fit A. Dubery when it comes to first-aid championships, although it might be aimed at some of the teams against which he has competed. Seated in Triangle's photo at the right, he has been a member of six winning Coniston first-aid teams in the Agnew Shield contests. Other members of the 1936 team which took the Shield to Coniston "for keeps" on May 5 are: W. McKee, standing, left, member of three winning teams; R. Gustin, standing, right; K. Montgomery, seated, left. In the centre, standing, is W. J. Warwick, divisional superintendent of Coniston St. John's Ambulance Brigade, and successful coach. Dr. W. S. Johns, divisional surgeon, was not present for the photo.

CONISTON TO KEEP SHIELD

Announcement is made by G. S. Jarrett, General Safety Engineer, that Coniston First Aid team will have permanent possession of the John L. Agnew Shield which they have won six times in succession, and that new inter-department and inter-plant First Aid competitions will be organized.

Full details of the new contests will be announced in a later issue of Triangle. In the meantime it is definite that handsome trophies will be donated both for the inter-plant event and for the inter-department tests in all INCO plants.

LONG SUPREMACY

This will be welcome news to despairing First Aid squads who were beginning to believe that the Coniston men had some sort of a first mortgage on the Agnew Shield. Ever since it was donated in 1930 by the late John L. Agnew, Coniston has entered a team which has walked off with it, although on several occasions by a very narrow margin.

Fresh enthusiasm will be created by the setting up of a new trophy, and the staging of inter-department contests will undoubtedly improve the standard of the teams from each plant entering the grand competition.

HONOR LEADERS

Final presentation of the Agnew Shield and smart individual Monel Metal buttons to members of the Coniston team will take place at an early date. In the meantime, the Coniston St. John's Ambulance Brigade, under whose auspices the First Aid classes are held, took occasion to honor their versatile Divisional Superintendent, W. J. Warwick, and their equally hard-working and popular Divisional Surgeon, Dr. W. S. Johns. To the former, on behalf of the Brigade, W. Evershade presented a pen and pencil set, a pipe, and a cigarette lighter. To the latter, also with the Brigade's appreciation and best wishes, A. Dubery presented a pen and pencil set, and a cigarette case and lighter.

Organized six years ago, the Coniston Brigade has put some 150 men through their First Aid examinations, averaging 12 lectures to each class instead of the usual six. The present class has 42 members.

Safety Slate

(Percentage Change in Accident Frequency for 6 Months of 1936 as Compared With Corresponding Period of 1935)

DEPT.	DECREASE	INCREASE
Creighton Mine	9.3%	----
Frood Mine	44.3%	----
Mines Mechanical	34.6%	----
Total Mines	38.2%	----
Copper Cliff Plant	28.9%	----
Coniston Plant	5.3%	----
Total Smelters	23.8%	----
Electrical	100.0%	

(Percentage Increase in Total Shifts Worked over 1935 ---------- 22.3%

TIMID SCRIBE LOSES ALL HIS HESITATION AT FROOD

Prize Cadets

Corporal Wilfred Ripley (left) and Corporal Douglas Gathercole, voted to have maintained the smartest deportment in the year's training in Copper Cliff's smart Highland Cadet Corps, received their prizes at a banquet following the 18th annual inspection of the Corps June 5. The reviewing officer, Capt. J. M. Cumming, of Toronto, heartily congratulated the unit, which he said was the only cadet corps carrying on for more than a very few years without the advantage of affiliation with some parent regiment. Orchids to Lieut.-Instructor Roy C. Barnes! And to his ranks, over 70 strong!

Triangle's "Believe-It-or-Not" Department dug deep into statistics, turned a couple of calculating cartwheels, made due allowance for the extravagant promises of automobile salesmen, and came up with the startling information that the amount of gasoline consumed every day to transport Frood miners to and from their work would drive a modern light car from Halifax to Vancouver and return as far as Sudbury.

VITAL OPERATION

This discovery will probably not cause any great influx into Sudbury from Halifax or Vancouver, but it does serve to bring to attention a very important and interesting part of the operation of a mine like the Frood—the transportation of men.

Suppose we dispatch our Enquiring Reporter on the trip the Frood miner takes each working day.

To our tender sleuth's illusioned eyes there is scenic beauty along the highway winding through the rocky outcrops between Sudbury and the mine, and in the view finally, from a high knoll, of the Frood surface plant in panorama.

50,000 GALLONS A DAY

He is impressed by the 600 or so automobiles parked outside the main gate, and learns that one man in every five owns his own car.

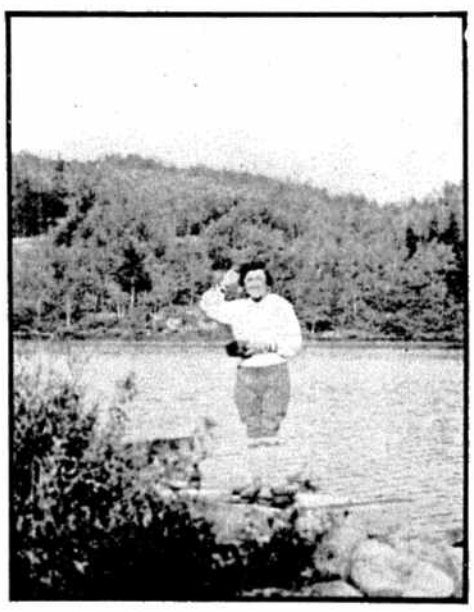
His first step, after satisfying husky police at the gate that he is quite as harmless as he looks, is into the big changehouse with its 35,000 square feet of floor space and its lockers and facilities for 2,750 men. He learns that when the men arrive to go on shift, they find their work clothes completely dried by a stream of hot air drawn constantly through the lockers. He is also told that the men use 50,000 gallons of hot water every day—an average of 20 gallons to a man—and quite a comparison with the days when a miner did well if he could rustle a basin of warm water for a "lick and a promise."

Having figuratively punched one of the six time clocks, all controlled by a master clock in the time office, and having donned

(Continued on Page 7)

ENTIRE ROOF OF MONEL

Sound roofing is essential for the preservation of the valuable archives of the New York Public Library, so the entire roof is now being replaced with Monel Metal. A sample installation of Monel on a section of the roof eight years ago is as good today as when first installed.



On Location

Miss Mary Whalen, of Copper Cliff, recently qualified by good nature and good looks for the unique degree of Mining Engineeress. **(See Page 7)**

AMATEURS IN NOVEL SERIES

As the old song says, "It's hard to tell the depth of the well by the length of the handle on the pump."

Few would have guessed that within the big INCO family would be located such a wide range of talent as appeared before the microphone in the popular series of seven Amateur Nights conducted this summer by Copper Cliff Athletic Association.

LARGE CROWDS

On the lovely greensward at Nickel Park the first four contests were conducted, a loud-speaker hook-up bringing the performances clearly to the big audiences. Then the series moved to Stanley Stadium, where crowds of as many as 2,700 gathered to applaud the contributions of contesting INCO employees or members of their families from Coniston, Creighton, Frood, Refinery, and Copper Cliff.

Applause accorded each contestant decid-

(Continued on Page 7)

Safety Record Improved 64%

Co-operation of "safety-conscious" employees has reduced the accident rate at Frood Mine at the present time to 36 per cent. of what it was in 1930.

As Frood has grown since the mine started, naturally standard practice methods have been improved or newly established to keep pace with developments.

A general meeting of all men in a supervisory capacity is held twice each month, and commencing last May the Frood Safety Department commenced Safety School meetings for the miners in the changehouse hall. A level at a time—sometimes as many as 150 men—they receive direct instruction in safe practice methods.

NEW QUEEN MARY IS "MONARCH OF ALLOYS"

While the new Cunard White Star liner "Queen Mary" rules the waves in her own right as Britain's largest and fastest ship, she bows, in the final analysis, to the development of modern alloys which not only helped to make possible her bulk and her tremendous power, but also gave to the engineers who designed and built her a creative latitude, which went far in enabling her to leave the planning boards in her present form.

200,000 H.P. FROM ENGINES

The "Queen Mary" is 1,004 feet long at the water line. Her beam is 118 feet. Her total weight, as measured by water displacement, is about 78,000 tons. Yet, despite this size she has had little difficulty in achieving a speed equal to about 40 land miles an hour with plenty of power in reserve. Her horsepower turbines, developing approximately 200,000 horsepower, are driven by steam from 27 oil fired furnaces at 440 pounds pressure and at a temperature of 700 degrees Fahrenheit.

While up-to-date in every respect, the vessel, in design and equipment, tempers modernism with conservative regard of time-tried practice in the shipbuilder's art. The same considerations have dictated the choice of materials for the construction of the vessel and her equipment. Alloys have been used throughout and all are of a type sanctioned by tried metallurgical practice. Some go back to the infancy of the alloy era. Others are very much newer, but each came to the shipbuilders with established recommendations of experience behind them. They have come not only from shipyards, but from navy yards, aeroplane plants, automobile manufacturers, locomotive works and from the range of industries.

NICKEL ALLOYS IN FOREFRONT

Alloys including nickel among their constituent elements are in the forefront. They are used for many purposes, to increase strength and lessen weight, to provide long life and low cost maintenance, to furnish resistance to temperatures of terrific intensities, to defeat corrosive attack, to improve appearance, to safeguard cleanliness in the galleys, and for an almost unlimited number of other reasons.

No figures are available on the total tonnage of nickel used in the "Queen Mary." But it reaches large proportions. In her main condensers alone, where spent steam is converted back to boiler feed water, 162 tons of an alloy, containing 70 per cent. copper and 30 per cent. nickel, are used for tubes and ferrules. The same alloy is used also in condensers for auxiliary equipment, including more than 7 tons for the electrical power plant condensers.

NICKEL IN ENGINE ROOM

Other nickel alloys are found throughout the engine and boiler rooms. An 8 per cent. nickel heat-resistant steel is used for vanes to force air into the oil furnaces. Another heat-resistant nickel-steel alloy is found in the soot blowers used for boiler cleaning equipment. The nozzle and deflecting blades of this equipment are made of an alloy containing 20 per cent. nickel and 25 per cent. chromium. Valves and valve spindle of the blowers are made of another alloy steel containing 1 per cent. nickel and 12 per cent. chromium.

Nickel-bronze alloys ranging in nickel content from 7½ per cent. to 33 per cent. are used for parts of a variety of valves, some of which weigh between 2 and 5 tons each. In the superheated steam lines nickel-chromium molybdenum steel bolts provide extra safety margins.

GEAR WHEEL OF 80 TONS

Various turbine parts, including blading, also use nickel alloys ranging in nickel content from 1 per cent. to 8 per cent. Reduction gear pinions were forged from a 3 per cent. nickel alloy steel. The massive gear wheel, weighing over 80 tons, has a nickel steel periphery around which a set of double helical gear teeth are cut.

Pumps, upon whose dependable operation the satisfactory performance of the vessel depends, also make use of nickel alloys, including Monel Metal with its 67 per cent. nickel content, nickel steels, 1 per cent. to 12 per cent. nickel-chromium steels and K Monel. Bilge and ballast pumps are fitted with Monel Metal impeller and bearing rings in a 37 per cent. nickel-bronze alloy.

30,000 ELECTRIC BULBS

In accordance with established modern practice, nickel and nickel alloys find many applications in the electrical equipment. Generator control panels and resistance units use a 45 per cent. nickel, 55 per cent. copper alloy. Each of the 30,000 electric bulbs used to light the vessel use nickel filament support wires. For emergency use, such as fire alarms, call bells and the like, a battery system is provided. These batteries are of the nickel-alkaline type. Food for passengers and crew is cooked by electricity with the standard 80 per cent. nickel, 20 per cent. chromium alloy being used for heating elements. Passengers' cabins are provided with electrical heaters having similar units.

Where safety precautions are concerned nickel alloys also enter. The ship is literally a ship within a ship, having an inner and outer shell, the space between these being divided into 160 water-tight compartments with a similar number of hydraulically operated water-tight doors. The pumps which operate these doors have Monel Metal valves and seats with rods of 2 per cent. nickel, 0.2 per cent. chromium steel.

NICKEL IN LIFEBOATS

The lifeboats likewise turn to nickel alloys. These are equipped with high speed Diesel engines, in each of which are connecting rods of 3½ per cent. nickel steel, crank-shafts of 1 per cent. nickel steel, and pistons of a 1.3 per cent. nickel alloy.

Navigation on the high seas is made automatic by a Sperry gyro compass and a gyro Pilot, or Iron Mike, which—when once the course is set—keeps the vessel on that course until it is changed. To operate these a high tensile nickel-chromium molybdenum steel driving shaft is used with a Monel Metal contactor body for the electrical controls of the rudder.

Nickel alloys also play an important part in maintaining appearances aboard ship. More than 100 tons of nickel-silver with a satin finish have been used for lighting fixtures, grilles, doors, window frames and the like. Faucets, and other sanitary fittings in toilets and cabins are of the same material.

NICKEL-TRIMMED GALLEYS

The galleys likewise are fitted out in nickel and nickel alloys. Trim, certain working surfaces and the like are of 8-18 type nickel-chromium steel. Water boilers and sinks are of Monel Metal, which also has been used with pure nickel for parts coming into contact with the food. In the cocktail lounge, the bar is trimmed with Monel Metal. Furniture is of nickel-chromium steel.

The entire list of alloys as used by the shipbuilders covers many pages. The metals enter the vessel at almost every point from bow to stern and from keel to mast tip. Each application gives dramatic emphasis to the dependence of high speed transportation on sea, as well as on land and in the air, on metals which men have created to meet specific requirements. They also indicate the importance of nickel as a constituent element in these metals and reveal its all-around versatility in mixing with a variety of other elements in a range of percentages to make better alloys.

ZINKIE HOLDS LONG RECORD

"Daddy of them all."

That's William Zinkie, who has the longest service record of all employees of International Nickel Company, Limited.

It is 47 years since as a lad of 12, he started in as a "nipper," carrying water and drills at the old Stobie Mine.

18-INCH HOISTS

In those days the mines were worked with bucket and derrick, and one of their 18-inch drum hoists would make an interesting comparison if placed beside the massive 25-foot drums of the new by-cylindro-conical hoist recently installed at Creighton.

Wm. Zinkie

An early reminiscence related by Mr. Zinzie concerns the first costly delay in operations at the Stobie when carelessness on the part of the compressor operator permitted the lubricator to go dry. With no compressed air to drive them, all drills had to be run by hand for several days. Probably this incident is equally fresh in the memory of Magistrate Thos. Stoddart, of Copper Cliff, who was one of the drillers.

In the early days, Mr. Zinkie also recalls, the mines worked from an open pit, and closed during the winter months on account of snow, when all miners turned to cutting wood in the bush for the roast beds. On pay days, Sudbury merchants used to load their goods on the Stobie ore train and hawk them among the miners.

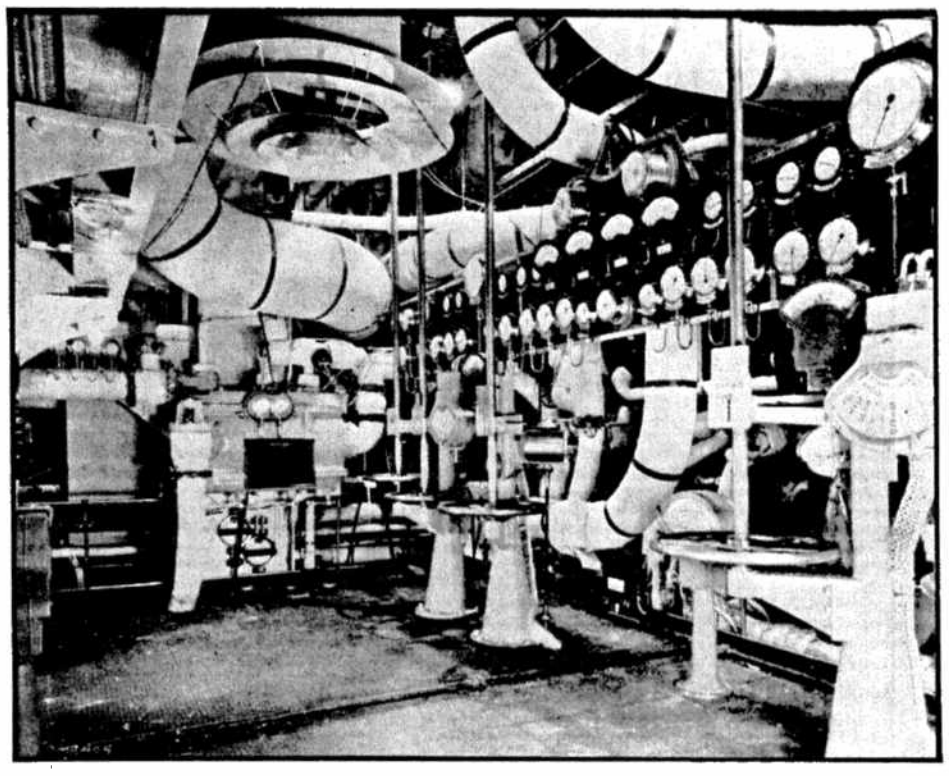
SUB-STATION SINCE '10

Mr. Zinkie transferred to Copper Cliff in 1903 as a hoistman, shifted here and there on operation, and finally wound up, in 1910, as stationary engineer in the sub-station, where he has worked ever since.

He was born in Germany, but migrated to Pembroke at an early age.

BEAT SMOKE PROBLEM

In British Columbia a popular fuel for heating homes is fir sawdust, which is hard on steel smoke stacks—a good average life for such stacks being about two years. A stack made of 26 gauge Monel metal installed in a sawdust burner four years ago is still in good condition.



Forward Engine Room

This galaxy of telegraph signal instruments and power dial indicators gives an idea of the complexities of the forward engine room aboard the "Monarch of Alloys," Cunard White Star's liner Queen Mary. Signals from the bridge are transmitted to the instruments in the foreground while the dials indicate condition and power status of generators, condensers, main and auxiliary feeders, and watertight bulkheads and doors. A novel feature of the electrical equipment is a Reactor-Dimmer Control of public room lighting, whereby lights in the verandah grill, ballroom, and main lounge dim and brighten according to the pitch of the orchestra music.

ISSUE DIPLOMAS TO 148 NEW ST. JOHN'S MEN

Successful candidates in examinations conducted during March and April, 148 employees of International Nickel Company plants have recently received their First Aid certificates from the St. John's Ambulance Association.

Since 1930 more than 1,000 employees have received instruction and passed their St. John's Ambulance tests in the various brigades and divisions of the district. There are two organized brigades, one at Coniston and one at Sudbury, the latter being made up almost exclusively of Frood Mine workers. In addition there are two healthy divisions not yet organized into brigades: Creighton and Copper Cliff.

THANKS TO DOCTORS

Keen satisfaction with the interest the men are showing in First Aid work is expressed by G. S. Jarrett, General Safety Engineer, who pays tribute to the wholehearted co-operation of the medical men in giving lectures and conducting the examinations.

Following are the examination results:

FROOD CLASSES

Lecturer, Dr. F. M. Lively.
Examiner, Dr. R. M. Mitchell.

Successful candidates: Peter Ricard, Joseph Pogorelic, Peter Stelmack, Percy Kidd, Hector Pukkila, John Maki, Joseph Sintich, John Tomas, Frank Staresenic, Ignace Severinac, Wilfred Hahn, Michael Krac, Arni Koskela, Urha Nasi, William Manzloski, John Miller, Hilton Bruce, Frank Kangas, Frank Lavigne, George Morin, Kenneth McNeill, Francis M. McAteer, James France, Wm. Young, Joseph Bratanik, Adam Vujakalijia, Eugene Bulat, Thomas Ballantyne, Joseph Desormeau, Karl Sibiga.

Lecturer, Dr. F. M. Lively.
Examiner, Dr. J. L. Kirk.

Successful candidates: Lloyd Hanwell, Francis Gorman, Martin Wiwichar, Amedie Lapointe, Chas. Langlois, Stephen Primorac, Wm. Pajunen, Frank Pegoraro, Alex Mandiak, Thos. J. Fee, Yreo Kari, Michael Matijevich, Sandra Salminen, Rok Grodosic, Daniel Praedovich, Mike Knysh, Michael Chargales, Frederick Levert, Joseph Zebokivitz, Hector Chretien, Horace Boucher, Cecil Comba, Frank Stackiewicz, George Kyllanen, Vano Marttinen, Reino Koski, Mart Stipancic, Thos. Bermarija.

Lecturer, Dr. F. M. Lively.
Examiner, Dr. R. B. Harris.

Successful candidates: Arvi Kaukkonen, Matt Zajc, George Noble, Stanley Wilson, Andrew Bulat, Wand Kanuch, Samuel Cuthbertson, Fredrick Desormeau, Wm. Crosthwaite, Alexander Armstrong, Joseph Kulchyski, John Puskas, Karl Kudasich, August Wakkur, Fred Clarke, Harvey Leclaire, Albert Roy, Facca Sante, Robert Cockerline, David A. Lefebvre, Leo Horvat, Victor Sippola, George Newman, John Starika, Jos. Hugh Nicholls, Thos. E. Peacock, Oscar Antell, Michael Mteijko, Herman Prussi, Reino Mikkala.

COPPER CLIFF CLASSES

Lecturer, Dr. R. B. Harris.
Examiner, Dr. K. A. MacLean.

Successful candidates: Marshall Kostash, Keith G. Harkins, Norman Gegear, Alex Nadorozny, Bertram Logan, Robert Clark, John Kennedy, Robt. Morrison, Wesley McNeice, Bruce Allen, Chas. R. Stemp, William Rogers, Patrick Heaphy, John Walker, Alfred Cocker, Thos. McVeigh, Ainsley Roseborough, Ivan Fraser, John MacKay, Aubrey Wright, Lucien Aubin, Malcolm Carey, Earl McFadden, Bayne McKelvie, Thos. Wheatley, Ralph Kelly, Victor Vaillancourt, Alex Morrison, George Gilpin.

Lecturer, Dr. R. B. Harris.
Examiner, Dr. F. M. Lively.

Successful candidates: Victor Gladman, John Taylor, Gordon Guthrie, Cameron Alexander, John Williamson, Richard Williams, Chas. Wainman, Alex Blanchard, Alfred Digby, Thos. Mulligan, Byron Wood, William Yorke-Hardy, Horace Deskett, Thos. Crawther, Louis Scanlon.

CREIGHTON CLASSES

Lecturer, Dr. K. A. MacLean.
Examiner, Dr. R. B. Harris.

Successful candidates: Harry Stevenson, Vencil Lesjac, Stanley Newman, Louis Verelli, Hugh Simpson, William Thibeault, Jack Thomas, Archibald Seymour, Limpio Tomasini, Ralph Gomoll, Gordon Carpenter, Jack Randall, Alfred Emblin, Arnold King, John Petrakos, Nelson Brown.

Risked His Task Without Goggles

Opening up a slag launder hole in Coniston smelter, a workman was taking the risk of not wearing his goggles, although he had been supplied with them and, of course, was warned to use them.

He was pushing the heavy slag with a bar, and as the bar went through the crust, the slag followed up the bar and a splash struck the employee in the left eye.

He could not return to work for a month.

So They Say!

It's a good thing they brought home the picture, or else these Ontario Refinery anglers would have had a tough time proving their tall tales of success on an expedition to White River. And, at that, maybe they bought the exhibits anyway: How should we know? Left to right: Jack Knight, Don Cowell, Len Kitchener, and "Napoleon" the long-suffering guide.

Within The INCO TRIANGLE

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

VOL. 1, No. 1 SEPTEMBER, 1936

How Do You Do!

WE won't go into the pedigree part of it at all. Perhaps this new newspaper, Triangle, is by Crosscut out of Main Drift; or by Rod Mill out of Converter; or by Anode out of Tank House. We're not just sure. And anyway, it's not the pedigree that interests us, it's the form sheet.

Periodically the Triangle will try to pin to its pages glimpses of the fascinating panorama INCO paints across the industrial life of Canada and the world. It will print articles describing in layman language phases of operation and recent developments so that employees may be brought into closer touch with their company's far-flung activities. It will probe the reminiscences of veteran workers, whose record of faithful service is a matter of deep pride. It will tell what the Copper Cliff cousins, and the Port Colborne nephews, and all other branches of the big INCO family do with themselves in their leisure hours.

In short, we hope it will be a family journal in the truest sense of the word, chronicling what goes on from month to month "Within the INCO Triangle." And we hope you'll like it.

Lest We Forget

THERE could be no more fitting memorial to the warrior dead than an institution dedicated to the happiness of those for whom they paid the supreme sacrifice.

This was the thought behind construction of Copper Cliff's handsome Memorial Community Hall, the suggestion of such a cenotaph being advanced by the Canadian Legion and promptly and generously acted upon by the International Nickel Company.

The finishing touch to the distinguished memorial was added on July 24 when His Honor the Lieutenant-Governor unveiled in its auditorium a beautiful bronze tablet on which are inscribed the names of the men from INCO towns who gave their lives in the Great War.

Memorial Community Hall is modern and complete in its entertainment facilities. Residents of all INCO towns have been cordially invited to make full use of it. When they do so, they should recall the sentiment expressed by His Worship Mayor Collins on the occasion of its official opening, and pause to give grateful thought to the brave fellows whose sacrifice it commemorates.

Object Lessons

THROUGH the columns of this and future issues of Triangle will be found brief descriptions of accidents which have happened to men in the various INCO operations.

It is not the intention of Triangle to parade the misfortunes of these employees as a means of censure. Surely the physical suffering, the worry of idle working days, and, as is the tragic result in some cases, the loss of life or limb, are ample retribution. For this reason names and dates are deleted, and only details of the accidents are presented.

The purpose of publishing this information should be quite clear. There is a lesson in every item, and our readers are urged to study them thoughtfully and note in each instance the error in practice responsible for the accident and injury.

If through this service we can be the means of preventing even only one accident, Triangle will have been worthwhile.

Our Nameplate

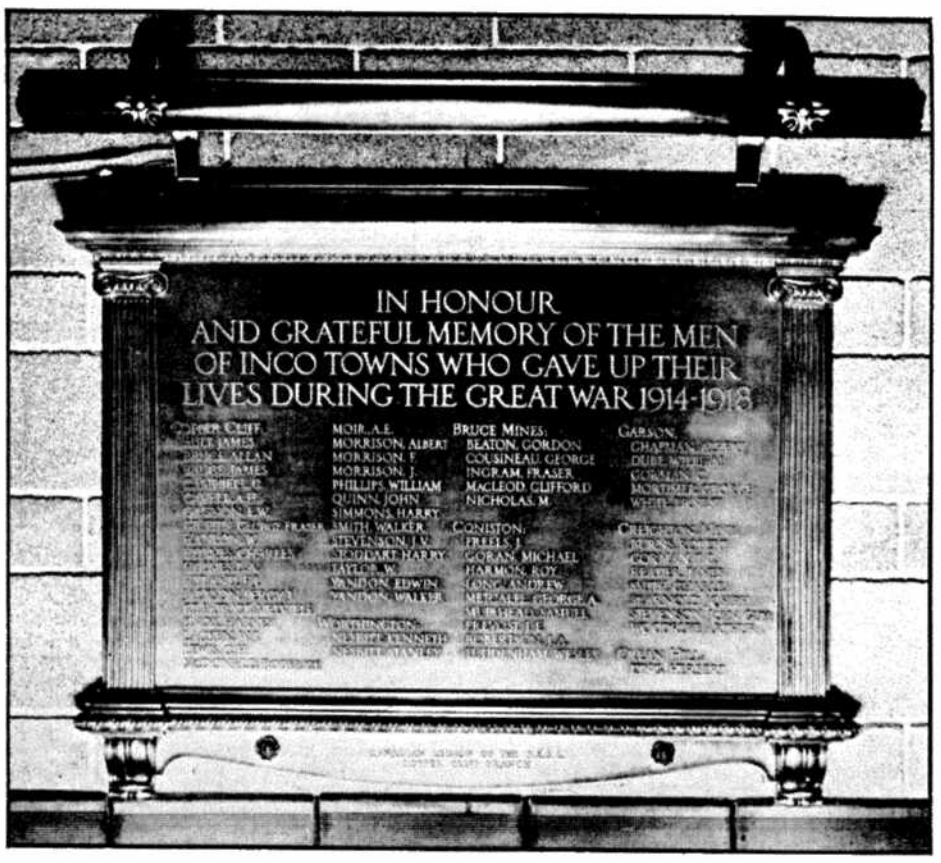
TO the artistic talent of Mr. Fred Cowling, of the Copper Cliff engineering department, we make grateful acknowledgement for the nameplate adorning the front page and, in miniature, this column of Triangle.

His skilful pen has cleverly signified the three angles making up the big triangle of INCO production. In the left-hand corner there is the miner at work underground with his drill; at the top are the mill and smelter buildings; in the right-hand corner is a casting wheel at the refinery.

As he was putting the finishing touches to the drawing, an engineering wag looked over his shoulder, and after a quick glance, immediately took issue with Mr. Cowling. The smoke from the big chimney, he said, was blowing in the wrong direction! They argued, as engineers will, and probably haven't settled the point yet.

Which really didn't concern us very much. We picked up our drawing and hustled away, pausing only to remark that as long as there is smoke billowing out of all those chimneys, and plenty of it, we don't give a hoot what direction it blows in.

Are you with us?



"Their Name Liveth . . ."

His Honor Lieutenant-Governor Dr. Herbert A. Bruce unveiled this beautiful bronze tablet in Memorial Community Hall, Copper Cliff, July 24, "In Honor and Grateful Memory of the Men of INCO Towns Who Gave Up Their Lives During the Great War, 1914-1918."

NICKEL . . . AND ITS USES

NICKEL AND CHEMISTRY

. . . and how these two, hand-in-hand, lead the march of industry

by R. S. YOUNG, COPPER CLIFF

From the time the diamond drills bore into the rocks of the Sudbury district till the finished metal, whether it be nickel, copper, silver, gold, or one of the platinum metals, is shipped from the refineries, chemistry plays a vital part in the operations of International Nickel.

R. S. Young

Less spectacular than the swift ascent of ore from the depths of the mines to the surface, lacking the magnitude and complexity of the crushing and concentrating processes or the brilliance of molten metal or slag pouring from furnaces and converters, the laboratory operations are only rarely glimpsed by employees or visitors and probably overlooked completely by the general public.

NON-SLEEPING CHEMICAL EYE

Yet day and night samples of the products of mine, concentrator, smelter, and refinery are rapidly and accurately analyzed to determine if operations are being carried out satisfactorily, if the products conform to the composition demanded by chemical and metallurgical practice, and to determine how changes in original material or in operation affect the composition of the resulting product.

We cannot see what is actually happening in furnaces, converters, refining tanks and many other parts of a metallurgical industry, but a chemical analysis of the incoming and outgoing product enables us to reconstruct a picture of what is occurring in the operations.

We use this "chemical eye" to discover sources of trouble and to follow efforts to overcome defects and improve processes.

CHARTING THE FUTURE

The indispensable functions of the chemist in controlling and improving production, however, are only part of his services to the nickel industry. Greater still have been the contributions of the research chemist in extending the markets for the product.

One of the most remarkable features of the rapid rise of alloys in the last few decades has been the onward march of nickel. The work of the research and development staffs at Bayonne and elsewhere, based on chemical foundations, has been a major factor in the elevation of International Nickel to the forefront of metallurgical progress.

Hundreds of new uses for nickel have been developed, and at least 75 alloys of nickel with iron, copper, chromium, aluminum and many other metals are currently used in industry. In this task of developing nickel alloys, in which the nickel content may range from 0.5% to 80%, the chemist has worked hand in hand with the metallurgist.

FIXING ALLOY STRENGTH

Microscopic examination shows that metals and alloys are rather complex in structure and are built up of aggregates of crystalline grains. The strength and other properties of alloys depend to a marked extent not only on the chemical composition but on the arrangement of these grains.

Such a microscopic study is called metallography and is really a branch of physical chemistry.

Probably to many people nickel plating is the most obvious use of the metal. The older generation will recall that the nickel plating of their bicycle days was neither lasting nor brilliant. The difficulty lay in the fact that if a heavy coating was attempted all kinds of trouble occurred in the plating bath.

The electroplating industry floundered along for years without scientific control, trying to dope baths with secret concoctions none of which proved effective. Careful researches into the chemistry of the process led in a short time to the thick, bright, adherent layers of nickel that protect and embellish innumerable objects today.

Chemistry and nickel have travelled far since Cronstedt in 1751 and Bergman in 1774 with crude laboratory equipment isolated nickel from a Saxony ore and studied a few of the properties of this new element.

Chemistry at that period had not shaken off the mysticism which surrounded the work of the alchemists. Over a century was to elapse before nickel became one of the key metals of industry.

EQUIPMENT MUCH BETTER

Laboratory equipment and analytical methods have been improved to a remarkable degree in recent years. New analytical and research tools such as the microscope, spectroscope, and the X-ray machine have been brought to the aid of the metallurgical chemist.

Refinements in methods have occurred to the extent that the deleterious effect of traces of certain metals in beverages, fermentations, dyes, etc., has been traced by the analytical procedures in use today.

As a result of this work a large market has been opened for corrosion-resistant nickel and its alloys. This leads us to the other side of the relationship between chemistry and nickel.

NICKEL IN THE CHEMICAL INDUSTRY

Fundamental as chemistry is to the nickel industry, nickel metal is not without great significance in the chemical industry. Nickel is used in quantities varying from the small heating coil of a laboratory oven to the huge vessels of pure nickel used in many chemical industries.

It is just thirty years ago that the alloys of nickel and chromium known as Nichrome, Chromel, etc. were developed. Today they are found in ovens, hot plates, stills, furnaces, in fact wherever electricity is used for heating purposes in laboratory, plant, or home.

Nickel and its alloys are also found in the laboratory in the form of crucibles, tongs, supports, clamps, dishes, wire, spatulas, and numerous other pieces of equipment.

PURITY IS ESSENTIAL

It is obvious that the chemical industries, handling a variety of substances subjected to high temperatures and pressures, often corrosive, would require large tonnages of nickel and its alloys. In many cases purity of the product is a paramount consideration, the slightest contamination or discoloration arising from corrosion of the container rendering the product unfit for use.

Nickel and Monel Metal are extensively used in equipment for the production of salt, caustic soda, soaps, cosmetics and pharmaceuticals, rayon, leather, solvents for dry cleaning, photographic reagents, phenolic resins like Bakelite, dyestuffs, sugar, varnish and lacquers, coke, and in the processing of foods.

The International Nickel Company has recently concluded a comprehensive test into the suitability of non-corrosive metals for winery application. Over 400 corrosion tests were made for a period of several years to determine the resistance of metals to wine, and 125 wine samples were compared to determine the tolerance of wines for metals.

Inconel, an alloy of nickel and chromium, was found to be the most satisfactory and is already in use in a few beverage and food processing industries.

NICKEL GIVES STRENGTH

For purposes requiring great strength under high temperatures and pressures, as well as resistance to corrosive substances, the stainless steels, nearly all of which contain nickel, are used. Where ordinary cast iron failed to stand up to abrasion or corrosion in the chemical industries, the nickel cast irons have demonstrated their superiority and economy and are rapidly growing in favor.

NICKEL AS A CATALYST

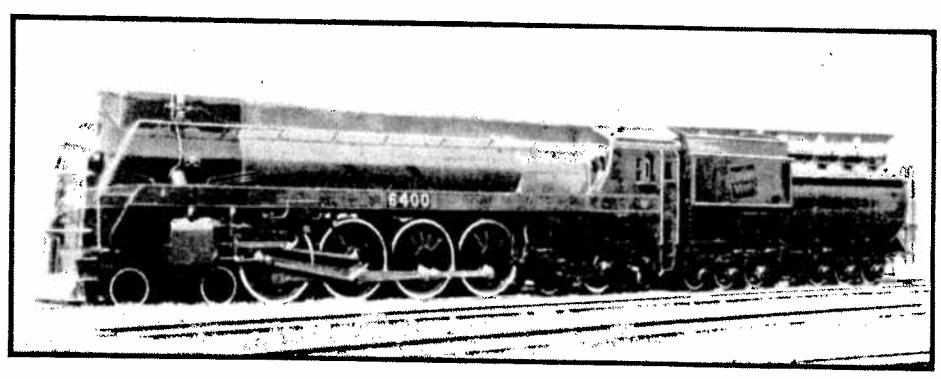
Nickel is used in several important reactions as a catalyst, i.e. a substance that promotes or hastens a chemical reaction. When finely-divided nickel is exposed to gaseous hydrogen the latter is retained on the surface of the metal in an active form. Enormous quantities of liquid oils and fats derived mainly from cottonseed oil are transformed into solid edible fats by passing hydrogen through the liquid in the presence of finely-divided nickel.

Little does the housewife dream that nickel is essential for the production of Crisco, Snowdrift, and similar substitutes for lard. Some liquid fats are also hardened in this manner to produce soaps.

Thus does nickel, through its many and ever-increasing applications in the chemical industries, repay the debt it owes to the science of chemistry on which its production rests.

NICKEL SILVER SEAL

A 78-pound 18% nickel silver seal, measuring 36 inches in diameter, and carrying the city's coat of arms, is embedded in the new city hall floor at Pawtucket, R.I.



100 Miles an Hour

Described as the "world's largest streamlined locomotives," the new 6400 type of the Canadian National Railways are estimated to be capable of speeds up to 100 miles per hour. Streamlining eliminates old familiar features like the smokestack, bell, cow-catcher, and coupler from the locomotive's silhouette. Its cylinders are of nickel iron, and nickel steels have been used in main and side rods, piston rods, main frames, and grossheads.

CREIGHTON LEADS IN TIGHT BASEBALL RACE

Creighton and Frood have supplied most of the fireworks in one of the best seasons the Nickel Belt Baseball League has seen in 10 years. The Creighton crew were a standout with their eight-straight-games winning streak at the start of the schedule, and Frood copped the spotlight by settling into their stride and taking six in a row at the end of the season to oust Copper Cliff from second place in the loop standing. At this writing (August 27) these two powerful clubs have entered the playoffs against Refinery and Copper Cliff.

ROUNTREE'S ACES

Ace chuckers of Captain Jack Rountree's Creighton lineup are Babe Marchildon, whose fast curve ball was the big bomb of the Penetang barrage last year, and Wild Bill Tennant, who pitched the 1935 Smiths Falls Club to the E. O. B. pennant over McIntyre. Tennant's wildness repeatedly gets him into tough spots where it appears all is lost, but then he settles down and extricates himself like Houdini getting out of a straitjacket. He has a hot fireball, a nice change of pace, and a tantalizing slow curve. Fielding steadily and at times brilliantly, and bunching their hits to most advantage, the rest of the Creighton club have put up a reliable brand of ball all summer, to win 12 and lose 3.

Jack Rountree

STRONG INFIELD

A determined drive down the home stretch brought the Frood team into second place in the final standing, with 10 wins, 5 losses. Perhaps the league's best infield is Frood's boast, with Esbaugh, Boal, Beaver and Barrett. Sprung and Fine are this club's leading hurlers, and the team as a whole can be regarded as a major contender for the season's laurels. It's an interesting example of the fickleness of Old Man Baseball that while Frood has handed some powerful lickings to Creighton this summer, it has lost three out of four to Copper Cliff, and yet the latter didn't score a single win over Creighton in league tussles. It must be the way you part your hair that makes the diff.

Bill Fine

Finishing in third place, Copper Cliff won nine, dropped six. Tough luck seems to have dogged the footsteps of the Cliffites. Merle Noyes, regarded as one of the club's best hurlers, twisted his ankle May 24th and was out of action. Jules Goldman, star first sacker and probably the league's best in this position, as well as a heavy hitter, hiked away to the Olympic Games to coach Canada's basketball entry. Since Joe Costigan, ex-Sandwich sensation, turned out to be a cold-weather starter, the bulk of the season's chucking fell on the shoulders of reliable little Bob Deacon. The Cliff's championship aspirations therefore got a rude jolt when Deacon wrenched his shoulder and may be used only sparingly in the playoffs.

Bob Deacon

HEAVY HITTERS

Refinery won eight, lost seven, and rolled up some mighty totals in its victories, due to its fine array of batting talent. With Woods, Watt, Baird, and Donald all hitting over .400, Refinery boasted some of the mightiest slugging in the loop, but its pitching staff failed to live up to expectations. Could Cooke and Wilson have delivered a little more stuff on the old apple, Refinery would be the club to beat for the flag. Even as it is, they've pulled out of their disastrous mid-season slump and can be expected to make things interesting for everyone in the playoffs.

Cooney Wood

Really a "B" club, and playing in "A" company only for the experience, and to round out the league, Coniston has since won the "B" championship by default from Copper Cliff B's. Muirhead and Boulay head their pitching staff, and they have an outstanding backstop in Jack Wilson. Dunn, a 19-year-old outfielder, is a prospect at whom the other "A" managers cast many a covetous glance.

Although they won all their games in the season's schedule, Buccaneers slipped when it hurt most and dropped the Copper Cliff midget loop championship series to Vaticans.

A group of Copper Cliff and Sudbury boys have been lined up for a Nickel District junior ball team under the management of Thos. Birney and Redmond Kinchsular, and are entering the provincial playdowns.

EVEN MUSEUMS USE IT

When squirrels are mounted for museum purposes, Monel metal wire is first covered with a stuffing of tow, or fibre, and then used to stiffen the tails and legs. Monel alone withstands the corrosion which would attack other metals.

Amateur Contest Winners

The camera wavered when it faced such a galaxy of entertainment stars, which explains why this picture isn't as clear as it might be. These are the winners of INCO Amateur Nights final contest. Kneeling at the left is Herman Thompson, the Frood cowboy. Standing at their xylophone are J. W. Risdale and J. W. Black, Refinery, and between them is Evan Jones, Copper Cliff saw wielder. Next is Ted Reed, the official pianist, and then, just up from the stopes, are the Nickeldiggers' Quartet, Tom Starkey, Bob Wagstaff, Ralph Hawkins, Bert McCormack, and Jack Buchanan. Completing the back row are Jean and Johnny Davidson, of Creighton; Mr. and Mrs. Volu Varpio, of Frood, and F. Favretto, Copper Cliff accordian player. Seated in front of the xylophone are Nora and Robert McKenzie, of Copper Cliff. Members of the Frood Croatian Boys' tamburiza orchestra are: front, Mike Jankovich, Conductor Paul Celinski, Mike Dracula; kneeling, Nick Monican, Walter First, Joe Ribic; standing, George Jankovich.

Bert Flynn was "Mighty Atom" Of Ball Diamond and Net Game

Nearly 1,000 people packed the stands and jammed the sidelines of the ball park in Cobalt that day back in the spring of 1913.

The Silver City's arch-rival in all matters athletic, New Liskeard was on hand for a scheduled baseball fixture. Rivalry was born easily and died hard between Cobalt and New Liskeard, and it was no laughing matter for the home fans that their team was already lagging sadly in the race for the league championship.

EXCITEMENT HIGH

But this day was to see a turning of the tables. Cobalt's baseball strategists had imported a high-class shortstop from Toronto, and, the news having spread quickly through the camp, there was a full turnout of bleacherites to watch the newcomer hang the Indian Sign on the powerful New Liskeard nine.

Bert Flynn

The game was called and out from the Cobalt bench snappily stepped Thomas Bertram Flynn, first man up.

The crowd gaped. Usually it took at least six feet of hard-bitten manhood to make a ball-player in those parts.

Could this little fellow be the celebrated Toronto shortstop, the Moses who was to lead their children of "miseryal" out of a slump and into the promised land?

Why, he was a mere stripling.

'Twas so. Flynn stood 5 ft. 2½ ins. with his insteps fully arched—weighed 120 pounds after a big dinner.

WAVED MIGHTY BAT

But he cocked himself at the plate, hitched up his belt, and waggled a bat which looked as if it might start to waggle him instead.

New Liskeard's pitcher slowly shook off his surprise, shifted his quid to the other cheek. This would be easy. A fast one would do it—a fast one, low and on the inside to dust the little bird away from the plate and start him back to Toronto. He wound up, let it go.

There was the business-like crack of hickory meeting horsehide, and meeting it hard. Flynn was away like a flash, and while the Cobalt crowd roared themselves hoarse, he completed the circuit of the bases for a home run!

THE TURNING POINT

Rallying behind this "mighty molecule," the league-lagging Silver City team decisively won the game, and went through to cop the T. & N. O. loop championship, not only that year but also the next.

Such was Bert Flynn's debut into Northern Ontario. And he's been hitting home-runs, figuratively speaking, ever since.

Bert Flynn was born in Toronto in 1893, with a baseball bat in one hand and a tennis racquet in the other. There were seven in the family, which is perhaps why he turned out to be a "natural." He went to St. Paul's School at the corner of Sackville and Queen, but it's still standing. He also went to St. Michael's.

The first leg of his long athletic career was representing his school at the Canadian National Exhibition's track meet in 1907. A nifty little sprinter, he kept at it until he was finally admitted into the charmed circle of "10-second men," although his time for the 100-yard dash was usually around 11 seconds.

HIS BASEBALL BIRTH

At 16 he was launched into baseball. He played shortstop for the Grand Centrals, the team that won the juvenile championship of Toronto. They were financed by Tom Flannigan and named after his hotel. The Flannigans and the Flynns got along pretty well together.

The following year the Grand Centrals amalgamated with the Strollers and entered the Toronto senior league. They won the Star Trophy, emblematic of the city championship. They were the youngest team ever to win it. If many of them were built like Bert, they were probably also the smallest.

Toronto Maple Leaf scouts had spotted the Flynn, and at 18 he was signed up and farmed out to Hamilton in the Canadian league. The next year he secured his release to accept an offer from Guelph Maple Leafs, who were under the management of Jim Cockman and still are.

His fame as a real hustler in and about the shortstop location had spread, and he got his bid from Cobalt in the T. & N. O. league. Haileybury, North Cobalt, and New Liskeard, were other teams in the loop. It was good Class C pro. ball.

GETS BID FROM CLIFF

When Cobalt played off with the Canadian Copper Co. team in 1914, for the championship of Northern Ontario, J. W. Rawlins and E. C. Lambert, who were managing the Copper Cliff lineup, liked the look of Flynn out there. He liked the sound of their offer, since the printing game in Toronto, at which he spent his winters, was in the doldrums. So Bert Flynn came to Copper Cliff, and has been here ever since.

He'd thrown away the tennis racquet that lay beside him in the cradle, but Smelter Superintendent Bill Kent found him another. Bill Kent, now of New York and recently a Copper Cliff visitor, had been runner-up for the singles championship at Harvard. Jim Cumming, assistant master mechanic at the Smelter, had been Canadian Intercollegiate singles champ.

They educated Flynn in the court game. Big fellows, they could bounce the ball over his head on their services, so he learned how to hop back from the baseline when he saw a fast one coming, scramble up the wire backstop, and play it from there.

After a year or two he could trim them both. Then he won the Northern Ontario singles title 10 years in a row. Once, with J. W. Rawlins master-minding him from the sidelines, he fought through to the semi-finals of the Canadian Open. It took Dr. Art Ham, Canuck Davis Cup player, to oust him, 6-4, 6-3.

Either as a player or manager, and often as both, Flynn has led Copper Cliff baseball teams to the Ontario senior championship (1925), the Ontario intermediate championship (1928), and to the provincial senior semi-finals five times. In '15, '17, '18 and from '20 to '28, he piloted his club to the Nickel Belt League pennant.

HIGH-CLASS PRODUCTS

He's seen some smart ball players groomed in this district. John Wanamaker, who caught for Sudbury in 1913, donned the New York Giant mask in 1916. Johnnie Jacobs, with Coniston in 1915, later capered with the New York Nationals, Baltimore, and Buffalo. Fred Walmsley, otherwise known as "Wiggy," had his fling with Toronto Maple Leafs. Taylor, Creighton shortstop in 1916, later played that berth for Chicago Cubs. Red McLaughlin, brother of Leo McLaughlin, of Creighton, is still in a managerial capacity with the Ford semi-pro. team at Detroit, although he must be about 50 now.

Of all the heavy hitters who have hammered the old apple in these parts, Flynn still picks the booming bats of Leo McLaughlin, now a Creighton hoistman; Sammy Rothschild, now of Sudbury, and Charlie O'Reilly, now a fitter in Copper Cliff concentrator. From 1918 to 1925, Bert claims, they were the three heaviest hitters in Ontario. O'Reilly still holds the Ontario amateur record of 11 home runs in 11 games. Rothschild hit over .400 for six years in a row, and McLaughlin was equally valuable. The pitching was no cinch, either. They faced such moundsmen as Joe Spring of Toronto Oslers and Scott of Hillcrest.

But anecdotes from Bert Flynn's memoirs would fill a book rather than a newspaper article.

HE'S QUIETER NOW

The old heart isn't what it used to be, and he does his playing these days from the manager's bench, while the crowds still get a kick out of watching him show the way to fellows twice his size.

Down the long windings of Ontario's sport trail, they don't come any better than Bert Flynn of Copper Cliff.

So He Rode to the Hospital Instead

Waiting to be hoisted from the 2400 level after coming off shift, a Frood miner one day in March realized he had forgotten his dinner pail.

Instead of walking back for it, which he had ample time to do, he and a friend commandeered a nearby motor, although it is a definite rule that nobody must handle a motor without authority.

One of them acted as switchman, although he knew nothing of tramming practice. He threw the switch the wrong way, then jumped on the front of the motor, another forbidden act.

The motor ran into a car standing on the other track, and in the impact the employee had the muscles of his left leg crushed and torn. He is still in hospital, recovering from his injuries.

New Creighton Shaft Completed

Measuring 30 ft. by 18 ft. 6 ins. outside the timbers, the new six-compartment No. 5 vertical shaft at Creighton Mine has been sunk to the objective of 4,074 ft., and the next chapter in this development is to open up levels from the 42nd to the 52nd, to work the lower orebodies of the mine.

A complete description of the new shaft, and of the huge hoist which will handle the ore through it, will be published in the next issue of Triangle. The hoist, largest ever constructed in Canada, is a bi-cylindrical conical unit.

Should Stay Clear Of Line of Blow

When an employee is at any time engaged in holding a bar or striking tool, he should always be very careful to keep clear of the line of blow of the striker.

One man who didn't was a converter fitter at Copper Cliff, holding a wrench on a nut while his partner struck the wrench with a 16-lb. hammer. The hammer missed the wrench and hit the fitter in the face, causing a contusion of the mouth and damage to two incisor teeth.

NEW "DRY" IS GREAT COPPER CLIFF ADDITION

With shining Monel Metal walls and fixtures in the big bath-houses, and streamline copper piping in the hundreds of feet of plumbing connections, two of International Nickel Company's products return to their native haunts as unique features of the handsome changehouse which the company recently erected and placed at the convenience of its concentrator and smelter employees at Copper Cliff.

A total of 2,160 lockers gives the new changehouse, or "dry" as it is popularly known, the largest accommodation of any plant of its kind in Ontario, excepting Frood.

One complete floor of the "dry" is equipped with combination lockers, each of which is divided into two compartments. The employee whose clothes are wet when he comes off work puts them in a roomy separate locker where he finds them completely dried by a constant stream of hot air when he returns to go on shift.

Measuring 95 by 172 feet and covering nearly half an acre, the new changehouse is fireproof throughout, constructed of tile and brick with steel columns and beams supporting the roof and floors, and wood used only in the doors and roof. Gently sloping concrete ramps connect the concrete floors, which in the locker and toilet rooms have a total of 17,500 square feet of mastic covering. Walls are in green and white.

TEMPERATURE CONTROLLED

There are 1,040 lockers in each of the main rooms on the two floors, those on the second floor being of the double compartment type. Apart from the latter distinction, the equipment on each floor is the same. Six Bradley foot-operated wash fountains on each floor have mixing valves which constantly control the temperature of the water. Each is 54 inches in diameter, has a soap fountain in the centre, and accommodates 10 men simultaneously.

It is in the complete continuous bath-houses, one of which is located in the centre of each floor, that the beautiful Monel Metal covers the walls and gleams in the fixtures. Fifty-six feet long, 13 feet wide, and seven feet high, each bath-house is equipped with soaping troughs, showers, and a drying room.

Divided into three runs, the showers have overhead sprays providing water at 114 degrees, 75 degrees, and cold. Hot air is forced into the drying room, 20 feet long, to facilitate drying, and through a duct in the centre of the ceiling mist and foul air are extracted to the exhaust system.

The foremen's change room has 80 dry clothes lockers, one Bradley wash fountain, and individual showers lined with Monel Metal. It is in ready communication with the general locker rooms.

Ample toilet facilities are installed on both floors.

POWERFUL FANS

A remarkably efficient unit is the ventilating and heating equipment in the basement of the new changehouse. A blower fan with a free-air capacity of 36,000 cubic feet per minute exhausts through a tubular steam heater into the main heating duct, a 5-foot concrete tunnel running the full length of the building. From the main duct the hot air is discharged through four vertical ducts into the locker rooms. In continuous operation, this plant completely changes the air in the building twice each hour.

Through vents in every locker the air is drawn back from the rooms and down into two exhaust tunnels paralleling the main pressure tunnel, and is then removed by two exhauster fans, each of which has a capacity of 18,673 cubic feet per minute. The three fans of the ventilation system require a total of 55 h.p. for operation.

A constant supply of hot water is assured from two big tanks, four feet in diameter by 15 feet long, which hold approximately 4,000 gallons. Heated by steam coils, their temperature is automatically controlled.

FIRST-AID ROOM

In conjunction with the changehouse is a doctor's office and complete first-aid station, equipped with examination and dispensing tables, sterilizer cabinet, instrument sterilizer, stretcher, and miscellaneous supplies. A first-aid man is on duty at all times.

Commodious quarters are also provided in the building for the time office staff and for the transportation department. The clock-room, through which the men pass on their way to the lockers when coming off shift, has eight clocks and card racks to accommodate all employees from the concentrator, smelter, and auxiliary departments.

Plans for the new "dry" and supervision of installations were handled by The International Nickel Company's engineering department.

Fresh Air for North Workings

In December of 1931, the No. 1 shaft at Frood was completed to the 3,100 level for ventilation purposes. The shaft was concrete-lined and is completely fireproof. Two large fans were installed at the collar of each shaft capable of forcing 360,000 cubic feet of fresh air per minute into the mine. This volume of air more than satisfies the requirement of fresh air to the workman, and the clearing of gases after blasting.

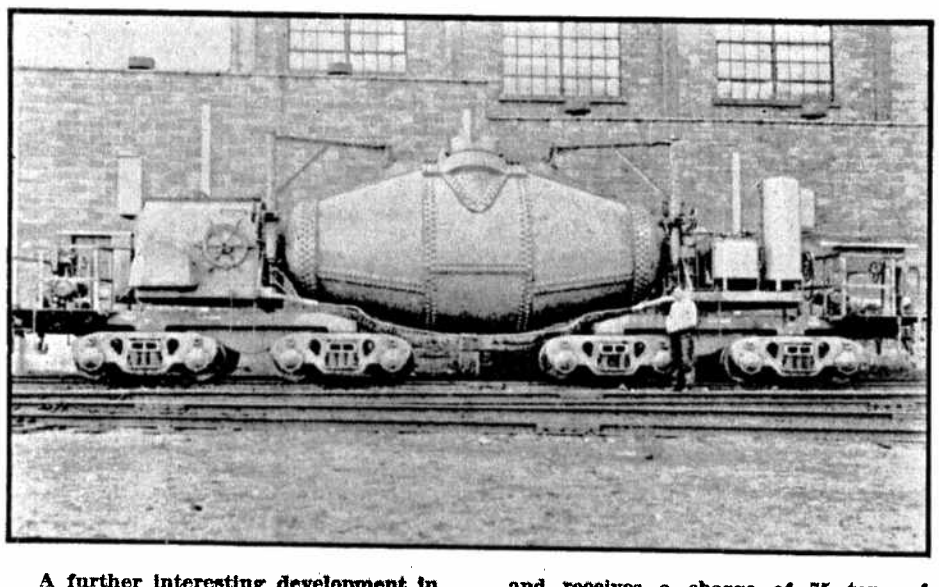
FAN WAS NEEDED

However, in 1935, with development being carried on more than 2,000 feet north of the ventilation shaft, it was found advisable to instal an auxiliary fan if employees in the farthest north workings were to enjoy the best of air circulation.

Accordingly, a fan capable of circulating 100,000 cubic feet per minute has been installed on the 1,700-foot level. It draws air from a system of raises through the levels below, and assures a circulation of air in the stopes at the extreme north end of the mine equal to that in the stopes close to the main ventilation shaft from which the fresh air is delivered.

The total amount of ore mined by INCO in 1935 would make a solid mountain 450 feet in diameter at the base, 1,000 feet high, and weighing 3,382,000 tons.

New Portable Furnaces to Move Molten Copper to Refinery



A further interesting development in the copper division is the inauguration of portable holding furnaces to transport molten copper from the INCO smelter direct to the furnaces of the Ontario Refining Co. The previous process involved casting the "blister" copper at the smelter in 500 lb. cakes or slabs, loading onto a flat car and transporting these to the refinery where they were charged to the anode reverberatory furnaces and melted down subsequently to be cast into anodes.

CARRIES 75 TONS

The first movable furnace car has been operating for more than a month and receives a charge of 75 tons of molten copper direct from the INCO converters. The car is then transported over to ORCO—1¼ miles and the copper poured into the anode furnaces referred to above.

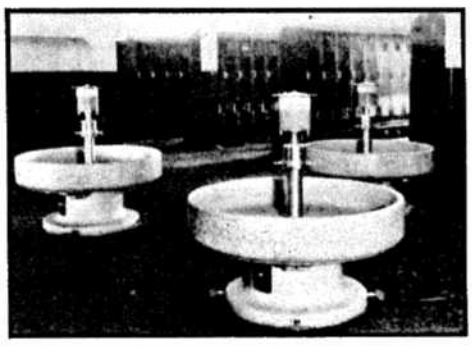
FIRST FOR COPPER

Although the practice of conveying molten metal over considerable distances has long been in use by the steel industry this represents the first time it has been attempted with copper.

The illustration above shows the furnace after assembly at the smelter ready to receive a refractory lining at the refinery.

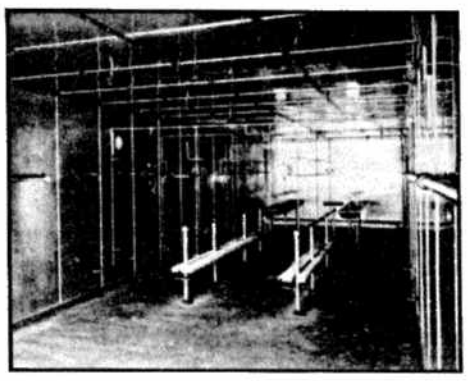
Fine New Changehouse

The new Copper Cliff changehouse, or "dry," for employees of the concentrator, smelter, and auxiliary departments, is the largest plant of its kind in Ontario with the exception of the Frood "dry."



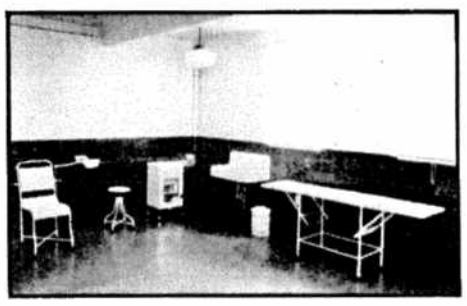
Wash Basins

There are six of these big foot-operated wash basins on each floor. Automatic mixing valves constantly keep the water at proper temperature.



Bath Houses

Lustrous Monel Metal lines the walls and gleams in the fixtures of the big bathhouses, one of which is located on each of the two main floors.



First Aid

A corner of the first aid room, modern and complete in its equipment and with a first aid man constantly in attendance.

60,000 Volts a Treacherous Friend

There is an old saying that "familiarity breeds contempt," but a serious accident at Ontario Refinery last December clearly illustrated that no employee can afford to let long acquaintance with his duties dull his respect for the hazards of his job.

The employee in this case was instructed to remove some wiring used during construction hanging from the ceiling of the Cottrell building. He should have gone up the stairway on to the upper platform and pulled the wires up, but instead he climbed a building column and stepped on top of the lead platform.

An electrician of 17 years' experience, he had been warned by his foreman to stay clear of all conductors. He knew the Cottrell plant was in operation, carrying 60,000 volts.

Yet for once his vigilance relaxed. His head touched a high-tension insulator cap. After he had received the shock, which seriously burned the top of his head and the sole of his right foot, he fell 10 feet and struck his head against an iron ladder.

MONSTER DISPOSAL PLANT

Nickel figures prominently throughout the specifications for Milwaukee's model new sewage disposal plant, which can handle 155 million gallons of waste per day and extract from it each year fertilizer worth $500,000.

DAVEY STILL HUSKY SMITH

Except for a few months when operations were temporarily suspended, Ben Davey has kept his anvil ringing at Creighton Mine these last 22 years, and is good for many a resounding echo yet, too

Ben Davey

When first he landed at Creighton, and was signed on as a blacksmith by Master Mechanic John Symons, there was just the No. 2 shaft, and it only down to 10 levels. Since then he has seen the No. 3 go down to the 30th level, and the No. 4 to the 40th, and now they're burrowing the No. 5 deep into the bowels of the earth, and Ben Davey is wondering if they might not as well just send the No. 5 straight down to China and be done with it.

A SMITH AT 17

In Pool, Cornwall, England, Ben Davey was born 51 years ago, and after his public school education he started as a blacksmith's helper at 14 years of age, in the Tuckingmill Foundry, which made mining machinery. When he was 17 he was a full-fledged blacksmith at the South Crosty tin mine near Pool. When he was 21 he struck out for the United States, and became a general blacksmith in Calumet, Mich.

Calumet was paralyzed by a general strike 10 years later, so Ben Davey heeded the suggestion of his brother-in-law, Howard Bodea, who was a contented miner at Creighton, and came up to Canada himself. Except for periods in 1921-22, and in 1933, when the mine did not operate and he transferred to Copper Cliff No. 2, Frood, and McIntyre, he has been general blacksmith to the Creighton mechanical department ever since.

AN INCO FAMILY

Married in 1910 at Calumet, Mr. and Mrs. Davey have lived in the same cosy home at Creighton for 18 years, and have watched their family grow up in the International Nickel Company. A daughter, Mrs. J. Shrigley, lives in Copper Cliff where her husband is a welder. A son, Raymond, is a steel sharpener at Creighton, and another son, Ronald, is employed in the Creighton rock-house. Two other children are at school.

Ben Davey likes to go and watch a football match, but wouldn't care much for baseball, even if they played it right in his back yard.

It's been mighty interesting, he says, to watch the Creighton grow, and he's been happy at his work.

Challenge!

If there's a golf foursome in any department within the Inco Triangle who find themselves troubled with Bobby Jones Chest, that insidious disease which follows a par-equalling 18 holes, let them get in touch with these lads from No. 4 Department at Port Colborne. A cure is guaranteed. They admit they're good! Left to right: F. H. Lymburner, R. A. Wilson, S. C. Augustine, H. P. Roe.

A "MAN FROM GLENGARRY"

An inspiration to every young lad in the employ of The International Nickel Company should be the career of W. A. MacDonell, general manager of the company's Coniston smelter.

W. A. MacDonell

He started as a surface laborer with the Canadian Copper Co. at the old Copper Cliff and Stobie mines in 1893. He boasted only two years of general high school education, and no technical training whatever. Yet his rise in the ranks was steady to the responsible position he occupies today.

JOINED THE MOND

Following the loss of his right arm in an accident, he was appointed timekeeper at the Stobie, and held the position for six years. In 1900 he severed his connection with the Canadian Copper Co. to join the Mond organization as storekeeper at Victoria Mine.

He was shortly promoted to accountant, and a few years later to Canadian secretary, a position which he filled capably until the merger of the Mond with The International Nickel Company in 1928. Then he was made Canadian business manager for the Mond interests.

For years he had been the right hand man of Dr. C. V. Corless, the Mond's Canadian manager, and since the merger has been general manager of the Coniston Smelter for INCO.

"MAN FROM GLENGARRY"

He is one of those "men from Glengarry" that Ralph Connor used to write about. His home was in Alexandria, but his parents moved to Sudbury in 1893. Married in 1907, Mr. and Mrs. MacDonell have two daughters and one son.

Always a keen student of mining and smelting practices, he is the 1936 chairman of the Sudbury branch, Canadian Institute of Mining and Metallurgy.

Standing out in his reminiscences is the time he measured the first stripping of the surface at Frood in 1897, when Capt. Lawson was superintendent of mines. Little idea had he and his associates then of the tremendous potentialities of the Frood.

In those days drill runners at Stobie got $1.90 per day, underground laborers $1.42, and surface laborers $1.33—a striking contrast to the wage schedules of the present, particularly in view of the great improvements now existing in working conditions and equipment.

EXTENSION TO SMELTER

On the scene of what is probably the biggest and busiest construction undertaking in Canada just now, progress is well ahead of schedule in erecting International Nickel Company's new smelter which, when completed about the end of the year, will house eight converters and two reverberatory furnaces.

12,000 TONS OF STEEL

Long-necked cranes have swung into position most of the 12,000 tons of steel girders, the massive concrete foundations are all poured, and workmen are busy building the brick walls which at some points will be more than 100 feet high.

At times there have been as many as 1,000 men employed on construction, employes of Fraser-Brace Co. of Montreal, the general contractors, or of one of the several other companies which have charge of various sections of the job.

FIRMS ON THE JOB

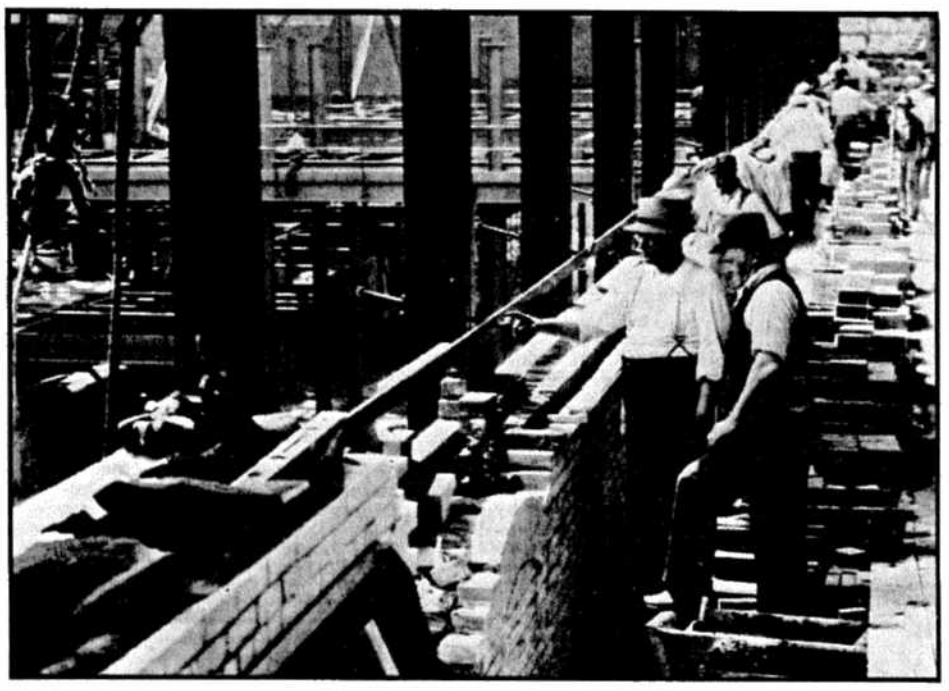
The steel work has been divided between Dominion Bridge Co. of Montreal, Canadian Bridge Co. of Walkerville, and Standard Steel Co. of Welland. The base of the new chimney was built by Fraser-Brace, but the column was erected by Custodis Canadian Chimney Co. of Toronto. H. H. Robertson Co. of Toronto is handling the contract for the processed metal roofing.

Throughout Canadian industry generally will be felt the benefits of INCO's extensive expansion program. Some idea of the quantity of materials used in the smelter addition alone, and not including the new stack or the Port Colborne construction program, may be found in the following figures: 400 carloads of brick, 250 carloads of tile, 100 cars of machinery and equipment, 700 cars of gravel and cement, 50 cars of lumber.

The total, if combined in one shipment, would make a train between 15 and 20 miles long.

22,000 YARDS CONCRETE

More than 22,000 yards of concrete were poured to form the foundations for the new smelter, after excavational work entailing 72,000 yards had been completed.



Talking Things Over

An avenue of industry on the Copper Cliff construction job as bricklayers build the walls of the main reverberatory furnace flue to the big new stack. In the background is part of the framework of steel for the smelter building addition. In the foreground two veterans of the construction game talk things over: (left) Hughie McGovern, Dominion Bridge Co.'s erection superintendent, with a record of 25 years service; (right) R. M. Pomeroy, who hails from St. Stephens, N.B., and has been bricklayer superintendent with Fraser-Brace for 11 years.

New Stack Just Another 20,000 Tons for Poor Old Mother Earth

Can Mother Earth "take it?"

The answer must be definitely yes, on the form she has displayed at Copper Cliff.

What her rock-ribbed bosom may lack in beauty it more than makes up in brawn as, already heavily burdened, she accepts without a murmur the tremendous impost of the new concrete stack, more than 20,000 tons.

Likely to be completed well within the scheduled date of October 22, the big column rises 500 feet above its base.

Its outside diameter at the bottom is 62 ft. 1 in.; its outside diameter at the top is 44 ft.

Anchored deep to rock, its base contains 9,652 tons of concrete and 500 tons of reinforcing steel. The graceful column which soars above it contains 7,100 tons of concrete and 3,000 tons of brick. Which works out to a total of 20,000 tons, and more.

Try that on your big toe!

LARGEST IN WORLD

The new stack lays claim to being the largest concrete structure of its kind in the world, its only possible rival for the title being a pillar in Japan which, however, is partially built up a mountain-side like a flue, and therefore may be declared ineligible. So, even at the risk of diplomatic representations from the sons of Nippon, Copper Cliff can fairly appropriate the concrete chimney championship of the universe.

Radical changes in construction methods, and painstaking care in proportioning materials, have been outstanding features as Custodis Canadian Chimney Co., the contractors, have raised the big concrete column to its place beside the other two giant Copper Cliff stacks.

As scrupulously as a bride measures the ingredients of her first angel cake, Custodis checked the materials for the concrete "mix." Every yard was screened, every pound carefully weighed, in order that the concrete would be of the most favorable consistency throughout.

THE TUBULAR TOWER

For the first time in the history of chimney construction, a tubular tower was used as scaffolding. Erected within the stack foot by foot as it rose, the sturdy steelwork increased efficiency and safety. Once the job is completed, it can be taken down piece by piece and used again with no waste whatever.

How do local men compare with professional steeple-jacks when it comes to a contract like this one? That seemed a logical question to put to the Custodis people.

"First class," they answered Triangle. Out of every ten men who apply, an average of one can't stand the height. The rest have no difficulty whatever in being nonchalant as the big pillar pokes farther and farther toward the heavens.

USED LOCAL LABOR

Out of 50 men employed on the job, only four were not local workers and amateur aerialists. The others were Custodis superintendents.

At the bottom of the stack the wall is 33 inches thick, and 142 cubic yards of concrete were poured into the steel forms for the first 7½-foot section. As the circumference decreased, so did the contents of each section, so that the last 7½ feet at the top of the concrete took only 34 yards of concrete for a wall-thickness finally narrowing to 11 inches.

Within the stack three elevators transport men and supplies during construction. They travel upward at 400 feet per minute, and have a capacity of one ton each.

Responsibility of the new chimney will be to carry off the smoke and gas from the copper converters in the big addition to the smelter, and the highly corrosive action of the gas calls for the utmost precautions in construction.

ACID-PROOF MEASURES

After the entire stack is painted inside with three coats of a highly specialized acid-resisting black paint, a space of from two to five inches is left to pack with rock-wool to insulate the concrete against heat and prevent it from cracking; then the stack is lined with acid-proof brick, laid with special mortar. A 50-foot section of acid-proof brick at the top, further protection against the swirling smoke and gas, completes the job.

And from the lofty pinnacle another plume of prosperity will billow in the breeze, while far below Mother Earth cheerfully bears up under the strain.

He's Had Plenty Ups and Downs

Monday, July 13, was an anniversary of painful recollections for Archie K. Reynolds, field superintendent for Canadian Custodis Company and the man who has managed the construction of all three big Copper Cliff smoke stacks.

In his little office at the base of the new 500-foot cement column his men have shot up into the blue, Reynolds recalled the July 13 of 10 years before. At that time he had been in the chimney game for five years. Engaged on a job down in the States, he slipped and plunged 65 feet to land on a concrete abutment, fracturing his back and his left hip.

Something, perhaps his Southern accent, pulled him through, and he recovered completely.

With the Custodis Co. for the past eight years, Reynolds has superintended chimney contracts at many points in North America, but the Copper Cliff stacks are the highest he has ever built.

Triangle's photographer has snapped a group 'way up on top of the new stack. Reynolds is on the left; Munroe and Mackie, also of the Custodis Co., are in the centre; on the right is C. H. Buck, International Nickel Company building inspector, on his rounds at the time. In the background is the top of the big brick stack.

HEAD FIRST DOWN SHAFT!

At Frood Pete Martell is foreman of the steel shop, where you have to be a combination of a fire siren and a foghorn to make yourself heard at a distance of six inches.

In the steel shop close friends may go all day without speaking a word to each other, and not because they've had a scrap, either. The tremendous battering of the big steel - sharpening machines makes conversation impossible. A man gets time to think.

Pete Martell

And Pete Martell, with INCO almost steadily since 1896, has lots of things to think about.

CLAIM TO FAME

One outstanding memory he always gets a kick out of is the time he went headfirst down a mine shaft. He is probably the only man who ever did that and lived.

He was a gaffer of 15 at the time, "nipper" at the original old Copper Cliff mine, and one day he was loading a box of powder into a skip to be sent below. To let the box in gently he had crawled headfirst with it into the skip, and only his heels were showing when somebody yanked the cord which clanged a bell in the hoist-house, and away he went. For the first 300 feet the skip travelled down at an angle of 45 degrees. Then it jogged and shot down at an angle of 80 degrees.

But Pete didn't get scared by degrees. When the skip stopped at the 9th level, and he had visions of a load of ore piling in on top of him, he did some high-pressure yelping, and a handy Finn came along and yanked him out by the heels.

STARTED AT 13

Born in Rimouski, P.Q., in 1883, Pete had come to Copper Cliff with his parents, a Scotch-French combination. He started with the Canadian Copper Co. at the age of 13. He started in the blacksmith shop at 16, and was a smith in his own right at 18. In 1905 he was transferred to Creighton, to sharpen steel and make himself generally useful. Three years later he was steel shop foreman.

Wanderlust took him off to Cobalt and Porcupine in 1913, and he picked up some valuable experience before he returned in '15 to take charge of the steel shop at Crean Hill. After that he had another spell at Creighton, and finally went to Frood in 1929, where he has been steel shop foreman since.

He was married at Creighton in 1905 to Miss Julia Hodgins, of Copper Cliff, and they have a family of three.

LIKES TO PAINT

He dabbles a bit with oil and water color paintings, but hasn't had anything hung in the Academy yet. Once in a while of an evening he gets out the trusty violin, and modestly he suggests it might be a good idea if somebody got up an old-time fiddlers' contest.

Coniston Notes

The Coniston Ladies' Softball Team hurdled their first obstacle for the Northern Ontario ladies' softball championship when they defeated North Bay Orioles August 26th by a 38-7 count. The Coniston girls were superior in both team play and hitting. They combined their heavy hitting with North Bay's many errors, which accounted for the one-sided score. Jerry Fitzgerald pitched well for Coniston and had 14 strikeouts. Irene Horrick and Helen Buchowski starred at the bat for Coniston with four hits each. The two teams met again August 31 at North Bay for the second game of a series of three games.

The Coniston Intermediate "B" Baseball Team was declared the Nickel Belt representative for the N.O.B.A. Intermediate "B" series when Copper Cliff was unable to field an eligible team. The Coniston team, 1935 champs, will defend their title against the North Bay winners. The series should start the first week in September.

Stack Materials 3-Mile Trainload

It would have taken a train three miles long to transport all the materials used in construction of the new Copper Cliff chimney.

Approximate quantities used in the big job are: 54 carloads of cement, 266 carloads of gravel, 6 carloads of reinforcing steel, 1 carload of timber, 2 carloads of form lumber, 49 carloads of brick, 7 carloads of rock wool insulating material, 7 carloads of steel for tubular tower.

Or a total of 392 carloads.

AMATEURS IN NOVEL SERIES

(Continued from Page 1)

ed the three winners each week, who received $10 in credit coupons donated by Copper Cliff merchants. The three weekly winners of each contest, as well as any who tied for the weekly awards, were eligible to compete in the final contest August 24 in the Stadium. This was a colorful success.

FREE PRIZE DRAW

At the base of the platform stood the lovely INCO exhibit which won the blue ribbon at the 1936 Sudbury Flower Show, while on the platform were the sensational young Coniston Band in their bright red, white, and blue uniforms. Several of the contestants appeared in costume. More than 2,500 people were present, and a draw was conducted for a $70.00 Marconi Radio donated by Cochrane-Dunlop Hardware, Copper Cliff, and won by Mrs. H. Seaton, of Sudbury, a former Copper Cliff girl.

Judge of the finals was Mr. Vic Neilsen, manager of Radio Station CKSO, who based his decisions 50 per cent. on applause and 50 per cent. on radio appeal.

Nine winning entries were selected for a trip to the Canadian National Exhibition at Toronto, during which they enjoy an elaborate program of entertainment given by the Toronto Office of The International Nickel Company. As an added feature, they appear before the microphone in a special Sudbury Night broadcast September 4 from CFRB's Crystal Studio at the Exhibition. Expenses of the trip are paid by Copper Cliff Athletic Association.

THE WINNERS

The nine winning entries were: F. Favretto, accordian, Copper Cliff; J. W. Black and J. W. Risdale, xylophone duet, Refinery; Herman Thompson, hill billy music, Frood; Mr. and Mrs. Volu Varpio, Finnish classical singing, Frood; Evan Jones, saw, Copper Cliff; Jean and Johnny Davidson, harmony duet with guitar, Creighton; Croatian Boys' tamburiza band, 10 to 16 years old, Frood; Robert and Nora McKenzie, song and dance, eight and nine years old, Copper Cliff; Nickeldiggers' quartet, vocal, Creighton. Alternate winners selected were: Teddy Latreille, tap dance, four years old, Refinery; Herbert Wilson, violin, 10 to 16 years, Creighton; Nick Haggerty, tap dance, Frood.

Launched as a community project to foster the neighborly feeling between employees in INCO plants, and to encourage amateur talent, the series was counted a gratifying success by Copper Cliff Athletic Association. Nearly 125 took part in the programs, exclusive of bands, guest artist attractions, etc.

COST HIM THREE FINGERS

Engaged in connecting up a heating unit in the slime room of Ontario Refinery's Cottrell plant, an employee wanted to find out in what direction the fan was running.

The fan was located about nine feet from the floor, so he climbed up the framework of the building and held his hand up to see whether the blades were drawing or blowing.

They nipped off the first three fingers of his hand, and he couldn't come back to work for a month.

"Engineeress" Her Title Now

Mining engineers, like hoisting machines, have their "moments."

When the scholarly gentlemen in the Copper Cliff department learned early in July that Miss Mary Whalen, popular secretary to their chief, R. H. Keast, was shortly to be transferred to the accounting office downstairs, they laid aside rope fleet angles, safety factors, and such, and schemed to do her honor.

Out of several deep huddles came history in the making.

A SOLEMN CONVOCATION

A picnic was held, and appropriate expressions of regret were heard, and words of appreciation for her bright and valuable co-operation. Then, with all the solemnity of a convocation, Miss Whalen was presented with the degree of Mining Engineeress, and became the first lady ever to hold that unique distinction.

Her diploma, artistically designed, read as follows:

The School of Experience at Copper Cliff, Ontario, Established November, 1929,

MARY WHALEN

having completed a prescribed course in Mining, Geology, Hieroglyphic Translations, Cussing, and Other Sciences and Indignities common to the Mining Profession, the undersigned Fellow Workers and Engineers confer upon her the degree of

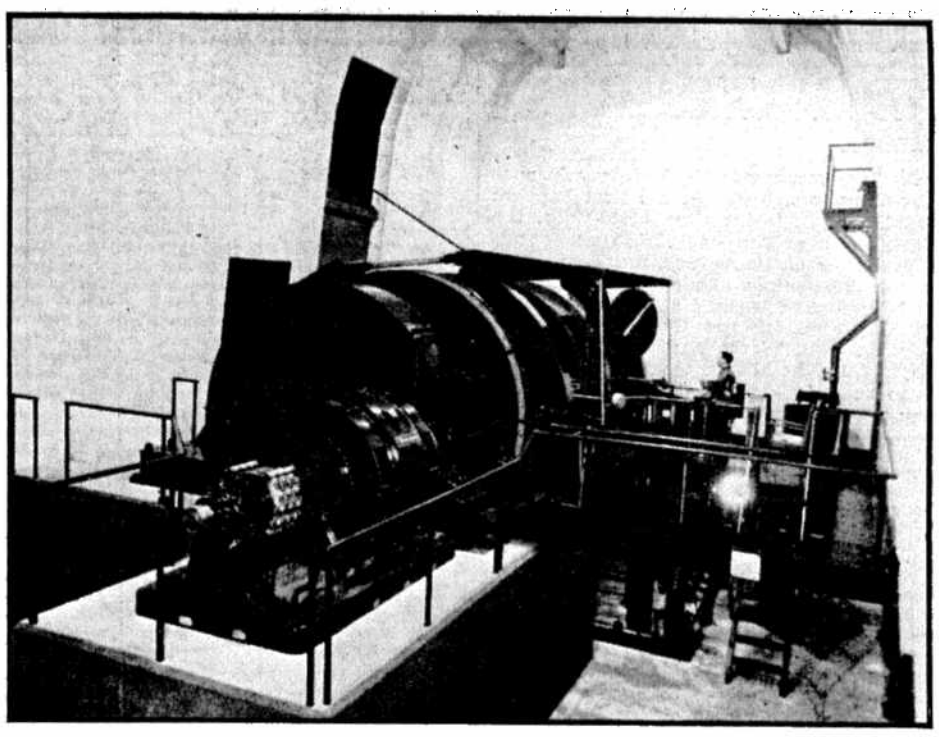
MINING ENGINEERESS

In Testimony to which we here subscribe our Names and attach the Seal of the School this 4th day of July in the year 1936.

Miss Whalen graciously accepted the compliment.

ISSUES FIRM DENIAL

Later, however, having had an opportunity to study the document and appreciate its implications, she quietly denied to a representative of Triangle that she had written on some of the examinations, or, moreover, that she was qualified to do so.



Underground at Frood

Largest underground hoist designed and built in Canada is the distinction attached to this double-drum geared electric unit which takes care of the hoisting of men between the 2,800 foot level and the 3,400 foot level at Frood Mine. Its big drums have a diameter of 12 feet and a capacity of 2,300 feet of 1¾-inch rope in two layers. It is designed for a maximum rope speed of 1,000 feet per minute, and is driven by a 600 h.p. alternating current 2,200 volt motor.

TIMID SCRIBE LOSES ALL HIS HESITATION AT FROOD

(Continued from Page 1)

his "diggers" or working clothes, our correspondent is then taken across the mine yard to the lamp room to get his electric cap-lamp and battery. Here he sees five men employed in issuing to the miners the 2,400 cap-lamps for all of which the batteries are charged between shifts. He is reminded of the difference between the brilliant light of these electric lamps and the uncertain flicker of the candles of 25 years ago.

POWERFUL HOIST

Then, since this is to be his first trip so far underground, he gets reassurance from a preliminary visit to the hoist house. Its interior has all the impressive simplicity of a power plant, but, in place of dynamos, powerful drums gather in and pay out steel cables which slant upward through the ceiling to the shaft head 200 feet away. Their operator, a mere Lilliputian, receives a bell signal from the shaft-head where a cage is about to descend, and carefully repeats back the signal so there is no chance of error. He pulls a lever and the drums turn —swiftly, perhaps, but they by no means whirl; yet the cage at the end of the cable is plunging down at the rate of 1,500 feet per minute.

All hoisting of men and supplies between the surface and the 2,800 level at Frood, our reporter is told, is done in the No. 3 shaft, while an underground shaft, No. 6, handles all men travelling from the 2,800 level to the 3,400 foot level, the mine's present bottom level.

SAFETY ENERGY

The No. 3 shaft, he learns, has five hoisting compartments and one compartment for pipes and ladderway, the latter in case he would sooner climb than ride. Two compartments are used for hoisting ore, two for hoisting men and supplies, and one for auxiliary hoisting of men and miscellaneous work. The motor generator set supplying power for operation of the hoist is of 1,300 horsepower, with a fly-wheel weighing 11 tons, and when it is in operation, the fast-revolving fly-wheel stores up sufficient energy to raise the cages to the surface in case the main power line service is interrupted.

Another reassuring bit of information is that the hoist has a control device which automatically cuts off the power and applies the brakes in case the hoistman should inadvertently permit the cage to overspeed or overwind, and dials show clearly the location of the cage in the shaft at all times.

Even to Triangle's timid investigator these various safety precautions banish all hesitation, and he is even more encouraged when he proceeds to the collarhouse to board a cage for his journey underground.

STURDY CAGES

The cages, he finds, are very sturdily constructed of nickel-alloy steel, weigh 12,200 lbs. each, and can carry 60 men or seven tons of material. Two of them operate in balance—that is, one is being raised while the other is lowered. Except for minor repairs or frequent inspection, they are running 24 hours a day.

Another striking safety precaution is pointed out to him in the wire rope which connects the cages to the hoist. It weighs 5½ lbs. per foot, and is capable of standing a strain seven times greater than the heaviest pull placed on it when the cage is loaded. Further, he learns, it is inspected weekly and a section is actually cut off for testing every six months.

Now fully convinced that he is much safer here than when walking on a busy street, our hero steps into the cage without a care in the world. The bell signal is flashed to the hoistman, and down he goes, dropping through inky blackness to the 2,000-foot level; then, at intervals of 200 feet, the lights of the various working levels flash by.

STEEL AND CONCRETE

As he comes to a stop at 2,800 feet, the feeling has become an obsession with him that he really ought to be suffocated and completely crushed by the myriad tons of rock and earth above him. But the cage door slides up and he walks out into the shaft station, spic and span with its white-painted walls and ample headroom. Steel and concrete, he is told, are built into the roof and walls. The air is clean and fresh.

Electric flood lights illuminate the wide main haulage crosscut along which he walks to his working place at the orebody, and he is assured that all haulage traffic along the tracks is stopped during a change of shift to avoid any possibility of accidents from this cause.

Reaching the section of the mine where he is figuratively employed he reports at the warehouse and moves a metal tag with his employment number from a check-out board to a check-in board. Thus his presence or absence in the working place could be quickly ascertained prior to blasting or in any emergency.

So his trip is concluded, and after an interesting visit of which he will tell more in a later issue of Triangle, he returns to surface.

2,200 UNDERGROUND

En route he is still marvelling at this carefully planned and operated transportation system, learning that of the 2,700 men employed at Frood, some 2,200 work underground, and that approximately six hours daily is spent in raising and lowering them to and from work in the big cages.

Back at his desk in the office, he is now busily engaged in figuring out how many feet a Frood No. 3 shaft cage would have to travel in a week if it could only carry one man at a time. If he gets the answer soon enough, and doesn't go off the deep end doing it, he'll be on deck next issue with another of his Nickel Travelogues.

Usually Careful, Slipped Just Once

Known as a careful employee who did things the right way and didn't take chances, a Frood miner nevertheless made one slip last December and it nearly cost him his life.

He walked out under ground he knew was loose, although only two minutes before his foreman had told him it was soon to be blasted and had warned him to stay back under the timber.

The "loose," a weight of 3,000 lbs., fell and struck him a glancing blow on the back. He suffered multiple fractures of his back and ribs. His pelvis was split open an inch and a half, and it took unusual surgeon's skill to patch him up.

He's not yet able to return to work, and when he does it will probably be to light duty for the rest of his life.

He has things to say about taking chances.

WORK FOR LUMBER CAMP

On the basis of present operations, INCO in 1936 will use 53,000,000 feet of Canadian timber. This would provide a year's steady employment for a lumber camp of more than 1,000 men.

GOLF NOTES FROM "PORT"

In the first Port Colborne INCO tournament for the 1936 season, 40 men teed off. The eight low net scores qualified for the play-down for the John More Trophy.

From the number of net scores under the course par of 70, it looks like the axe will be used on the handicaps before the next tournament. "Ponso" Davidson, with only about a year at the game, is making good rapidly.

In the father and son competition, medal play with handicap, on Dominion Day, the INCO employes were represented by six out of eight entries. The tournament was won by H. W. Walter and son, James, who scored both low gross and low net. The Fathers with a gross score of 561 won from the Sons.

An enthusiastic field of golfers turned out for the championship qualifying round at the Country Club on July 18th. Out of 16 who enter the play-downs, seven are from INCO. W. J. Freeman, Jr., lost to Cliff McBride in finals.

COPS OWN CUP

For the first time since he donated the trophy for challenge competition at the Port Colborne Country Club four years ago, Mr. Walter entered on May 24th and won from the field of competitors. Since then, he has successfully defended it twice, first against E. C. Lambert and then H. P. Roe. These three wins, with his scores which were all under 90, qualified him for a plate on the trophy. Later, on July 12th, he ran into opposition which was too stiff, when V. A. Lynden took it with a 77.

H. P. Roe won the points competition at the Country Club on July 11th, with a score of 82 and 24 points. Points were allotted: 3 for a birdie, 2 for a par, and 1 for one over par.

ORCO Notes

Mid-season finds golfing enthusiasts of the O.R.C. Athletic Association deep in the sand traps of the Idylwylde and Sudbury golf courses fighting their annual handicap competition for the H. A. MacDougall Trophy and additional prizes usually awarded for this event. An innovation this year will be a prize for the golfer turning in the highest net score. This award gives the "duffers" a chance to get in the money and enlightens the down-trodden handicapping committee as to the actual playing ability of the contestants.

BASEBALL BLUES

We hate to mention the deeds of our baseball team this year. After playing the most erratic ball possible the end of the season finds them almost in the playdowns. To Freddie Sheridan we say, better luck next year. The Refinery games were not the only ones with cricket scores and we wonder how the Refinery or any other team got into the playoffs.

MORE BLUES

Smiling George Furchner picked up a few wrinkles this summer. The reason being that his last year's softball champions of the Mercantile League just failed to click in the newly-formed N.B.S.A. and landed almost in the cellar position. We wonder where the fire and pep of last year's team went to?

POPULAR DANCE

To meet the popular demand another Refinery dance is coming—like Castoria the boys and girls all cry for it—and we hope to let out the news of the time and place soon. Watch for it and have a real night of fun and frivolity at the ever-popular Refinery dance.

GROOMS AND GRANDPAS

Joe Harrison, Joe Este, Irv Mason, Bob Cook, Mel Luck, and Ross Lowe are beaming with smiles these days—the smiles of the newly married. Colin Caswell remarks that when they have three girls for whom to buy shoes, they will have something to smile about. Reg. Johnston and Cec. Matthews, however, doubt Caswell's word, having each started with number one of the female sex. Warren Koth is off to a good start with a husky baby boy.

400,000 TON VALVES

Monel Metal and nickel steel castings were extensively used in making the six 168-inch butterfly valves for Boulder Dam. Each of the valves weighs 400,000 tons.

Commend Men Wearing Sandals

Several employees have been noticed wearing sandals when using the showers in the new Copper Cliff changehouse. This practice is strongly commended.

While every possible precaution is taken to prevent the "athlete's foot" infection from breaking out in the changehouse, the task is a difficult one with such a large body of men.

The co-operation of employees, therefore, who wear sandals *to protect themselves* and others, is valuable.

PRIDE OF PORT COLBORNE DISCUS CHAMP AND FATHER

Hats off to Louis Concessi, who before attaining the age of 21, holds the Canadian-born record for discus throwing. This feat he accomplished at the Ontario Athletic Championship meet at Hamilton on July 4th, 1936. He threw the discus 136' 3" and qualified to enter the Canadian Olympics trials at Montreal on July 12th.

The INCO A.A. at Port Colborne are proud of their representative. His quiet and unassuming manners make him popular with all the men. He ran into some tough luck at Montreal, fouling his first two throws, and his third was 126 feet. The winner at Montreal threw 131' 5". Louis has not had the benefit of coaching. He has followed printed instructions, and with proper coaching should become one of the best.

Louis Concessi

ALSO POLE-VAULTER

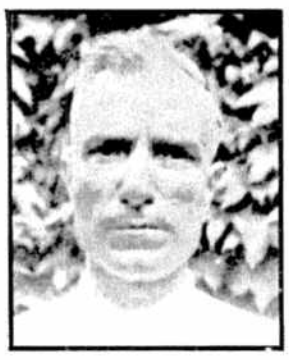
Not only does he throw the discus farther than anyone in Ontario, but he is also a pole vaulter of no mean ability, clearing the bar at 10½ feet. He also plays softball, baseball and hockey. In addition to being such an all around sport, he graduated from the Port Colborne High School getting his senior matriculation. He now holds down a job in the Anode furnace department at Port Colborne.

Is his father proud of him, and is the Company proud of both father and son? Guiseppe, the father, is a good example of the hard-working Italian stock, who came to Canada years ago, made good at construction work, and now in the manufacturing industry. He was born in Italy in 1884 and came to Canada as a boy of 17 along with a cousin. He went to Sault Ste. Marie, Ont., and helped build the Algoma Central Railroad. Anyone who has taken a trip through the rock cuts and over the swamps and around the lakes of this route can picture some of the hard work required to build it. After about a year at the Sault, Guiseppe went to North Bay and continued at railroad construction work for another four years.

MARRIED IN 1900

At the age of 22, the mating call took him back to the Old Country where he married the girl of his childhood school and play days, Mary.

He returned to Canada with his bride in 1907, and again went at the railroad construction work with his old employers, McDonald and O'Brien, this time at La Tuque, Que. After three more years of railroad work he changed to construction work with the Talbot Construction Co. on paper mills at Grand Mere, Que., leaving there in 1916 to come to Port Colborne, where he has lived since. Can you picture in your mind's eye, the pile of earth and rock Guiseppe must have shovelled in those 15 years of hard work?

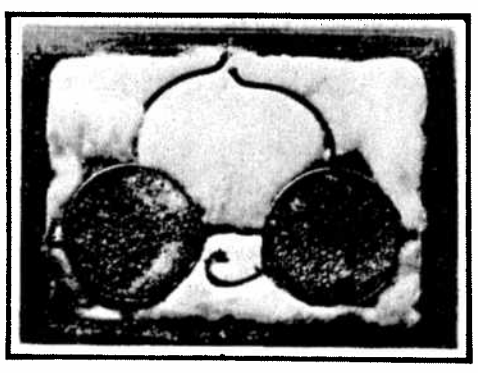


G. Concessi

Again he took up his shovel and helped the Foundation Company build the Nickel Refinery at Port Colborne. At the completion of the refinery, he secured a job with the Nickel Company in the Refinery furnace department, where he got his first baptism of real heat. At this time (1918-1919), the Orford Works at Bayonne, N.J., were operating and Port Colborne was producing only about 100,000 pounds of nickel monthly. He was laid off and worked at various jobs in Port Colborne, for the Canadian Furnace Company, Cork Works and Canada Cement Company, but he always worked when work was to be had.

NOW FURNACE MAN

With the closing of the Bayonne Works in 1920-1921, Port Colborne became the only refinery operated by the Nickel Company and in May, 1922, operations were put on a larger scale and have been steadily increasing until today over 8,000,000 pounds of nickel per month are produced. Guiseppe came back to the Nickel Company in 1922 and has been one of the Company's most reliable and competent furnace men since that time. Today, at the age of 52, he is hale and strong. He has a fine family of three boys and three girls.



Close Call

That dark deposit on the lenses of these glasses isn't dust or soot—it's copper. And had it not been for the glasses, it would have gone searing its way into the eyes of C. Gougeon, ORCO employe, on April 28, 1934. Gougeon was a special shapes operator at the time, casting billets on the small wheel. The molten copper suddenly sprayed out on his face from the mould and funnel. It's incidents like this that make a man realize how important it is for him to wear goggles at his work when his foreman so instructs him.

SCOUTING IS ON INCREASE

Highlight of the summer holidays for 22 Copper Cliff Boy Scouts and Wolf Cubs was the annual District Scout Camp which opened at Windy Lake on Monday, August 3, and continued for two weeks. Scoutmaster Jim Savage of the Cliff was again in charge of the camp, and the total attendance from troops in the Nickel District ran well over 100.

STEADY PROGRESS

Copper Cliff Scouts and Cubs have come a long way since their re-organization on September 15, 1933, tribute to the popularity and leadership of Scouter Savage, and to the enthusiasm of the executive committee, appointed then as follows: Hon. Pres., D. MacAskill; Chairman, R. M. Coleman; Sec'y-Treas., Harold Bruce, and Messrs. E. A. Collins, W. T. Waterbury, Jack Garrow, R. H. Keast, W. J. Ripley, Clarence Buck and Ken Clarke.

The Scout Troop started with only a dozen lads, and had as headquarters the old community building on Granite St. After a few months it moved to Serpentine St., the boys themselves painting the upstairs of an old building, but the winter-night meetings were inclined to be somewhat frigid affairs, since there was only a box stove to heat the place. Yet after the first year the Troop boasted eight new Scouts and a Wolf Cub Pack.

A successful camp was held for 16 days at Windy Lake, perfect weather and no accidents being logged.

FROST-PROOF BOYS

At the beginning of the second year the Troop again began to grow, slowly but steadily, and managed to get through another hard winter without the morale of the lads freezing up. Once again, in 1935, there was an enjoyable summer camp, and after the holidays Scouter Savage counted 20 Scouts and 21 Cubs on his roll.

With the erection of the new Memorial Community Hall, Scouting secured the headquarters facilities it needed so badly, and the impetus provided by the new meeting place was quickly reflected in the membership. Fathers of the boys, attending a banquet and investiture this spring, were surprised to learn that there are now 33 Scouts and 47 Cubs, smartly uniformed and well-trained. The majority of the boys have obtained several of the proficiency badges offered for mastering special tests.

THE CAMP PROGRAM

Of general interest will be the routine of a Scout's day in camp at Windy Lake:

7.00 a.m., rise; 7.15, flag break; 7.30, swim; 8.00, breakfast; 9.00, inspection of tents, dress, and grounds; 9.00-11.00, Scout work; 11.00, swim; 11.30, rest; 12.00, dinner; 1.00-2.00 p.m., compulsory rest; 3.00-4.00, Scout work; 4.00-5.00, games; 5.00-5.30, swim; 6.00, supper; 7.00, inspection; 7.30, flag lowering; 7.30-8.00, swim; 8.30-10.00, camp fire; 10.15, lights out. All swimming periods are under the direction of appointed life guards, and any boy failing to obey orders loses a day's swim.

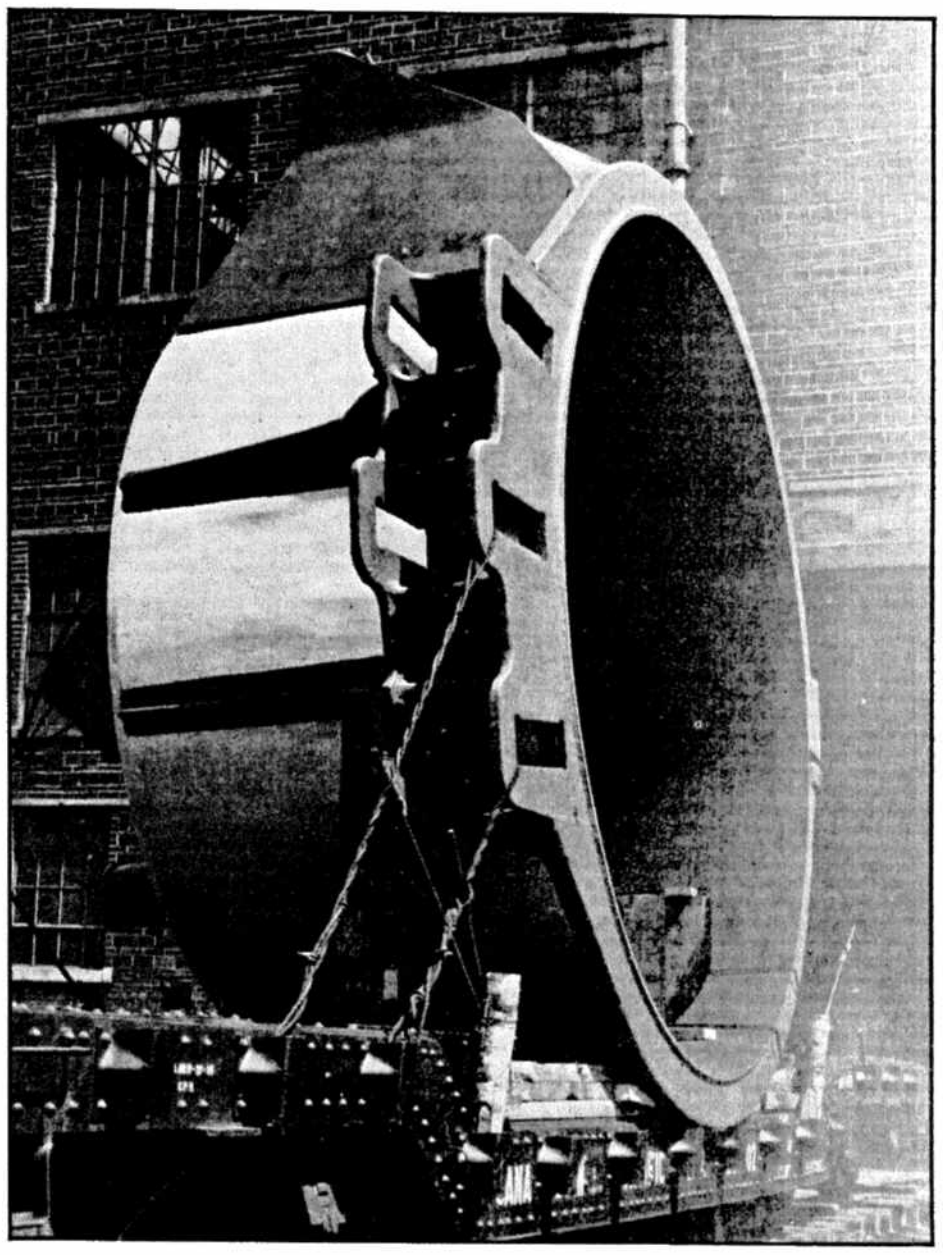
Creighton Notes

Purchased by the Company some two years ago, and redecorated, the Community Hall on Lake St. has filled a long-felt need in Creighton community life, and has been an active rendezvous. Bridge, badminton, table tennis, dances, and other forms of entertainment have been held. The Dramatic Society, conspicuously successful in its ventures last season, plans an ambitious program this coming winter.

SEEK SONG BIRDS

J. Buchanan and B. McCormack are scouting musical talent for a male voice choir or a glee club, and are reported to be discovering some real song-birds in the camp. If a sufficient number are interested, some sort of a musical presentation will be scheduled for the winter season. Anybody with operatic possibilities is urged to get in touch with either of these enthusiasts.

Huge Equipment Assembled for Refinery Processing Innovation



During the latter part of 1935 the Ontario Refining Company brought to a successful conclusion a series of experiments designed to demonstrate the practicability of electric arc furnace melting of refined copper.

Shortly afterwards the necessary expenditures were authorized, power requirements arranged for, and the work of designing the many special features of the installation commenced.

INSTAL FIRST UNIT

Today there is much tangible evidence of this far reaching development. At ORCO's plant at Copper Cliff, the first unit is rapidly nearing completion and the actual work of "burning in" the bottom of the huge electric furnace is now under way. This is the final operation before swinging into actual melting and is a slow, highly specialized procedure.

15-FOOT SHELL

Some idea of the size of equipment involved is given by the above illustration. Here is seen the furnace shell fabricated out of 1¼" steel plate. It is 15 feet in diameter and approximately 10 ft. high. Installed with it is a huge 4,000 K.V.A. transformer which reduces the incoming voltage on the furnace line from 33,000 volts to any one of several values.

As this unique installation gets into production a fuller description of its many interesting features will be published.

CREIGHTON TENNIS CLUB ENJOYING BIGGEST SEASON

From sunrise to sunset Creighton Mine tennis courts are constantly in play as the club this year enjoys one of the most successful seasons in its history.

Although the game has been played at Creighton for many years, available records only date back as far as 1926. Membership in 1929 was 25, with C. Fenton as president, J. McNabb as vice-president, W. Wardrop as secretary, and R. Findlay, treasurer.

78 MEMBERS

From then on the membership varied from 15 to 30 until 1934, when tennis enthusiasm increased and a very successful season was enjoyed with a membership of 34. A tournament was held with High Falls, social events were staged, and the way was paved for this year's record roll of 78 members, all of whom are actively participating in the game.

Generous co-operation from INCO and S. J. Kidder, mine superintendent, made possible heavy new wire netting around the three courts, new boarding, benches, and a water line. The club members themselves have invested over $200 in nets, tapes, and personal equipment, and the large membership provides funds for engaging an attendant to keep the courts in first-class condition.

Club officers this season are: H. J. Mutz and S. J. Kidder, honorary presidents; V. E. Tremblay, president; Ted Lawrence, secretary-treasurer.

HIGH FALLS TRIP

An outstanding event this year for the Creighton Club was a keenly enjoyed outing to High Falls, where they were royally entertained. The town itself is a beauty spot, and the hospitality of its residents, the Creightonites say, could not be excelled. Through the kind offices of Superintendent George Hartman, arrangements were made to show the visitors through the power plant, and also to visit Big Eddy. This in itself was well worth the trip. The ride in and out from Turbine in the converted automobile jitney was another highlight.

Mr. Hartman, an amateur astronomer of note, has a powerful telescope he himself constructed, and several of the guests remained until dark for a squint at the stars and planets.

Messrs. S. McKenzie and McGauley, with Mr. Hartman, were responsible for the details of the occasion, and the High Falls ladies co-operated with Mrs. McKenzie in serving the delectable lunch.

Home-and-home tournaments have been arranged by Creighton with Copper Cliff and enjoyed. Early-season efforts of the Creighton enthusiasts to organize a Nickel Belt tennis league proved fruitless.

Veteran

When Creighton Mine tennis club's tournament party visited High Falls July 18, they found Supt. George Hartman, at 62, still playing a powerful game on the courts. This snap, taken during the tourney, catches him driving from the baseline while his doubles partner, Art McKenzie, starts for the net, alert for a smashing opportunity on a weak return.