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Dr. Thompson New Chairman Of the Board

Dr. John F. Thompson, president of The International Nickel Company of Canada, Limited, has been elected to the additional office of chairman of the board of directors, succeeding the late Robert C. Stanley.

Dr. Paul D. Merica, executive vice-president and a director, has been elected a member of both the executive committee and the advisory committee of the Company.



DR. JOHN F. THOMPSON

Dr. Thompson joined the Company in 1906 as metallurgist to design and operate a research laboratory at its Orford Works for the investigation of the potentialities of the nickel-copper alloy Monel, which had just been developed. This was the Company's first research laboratory. In charge of all research and technical activities on Monel and malleable nickel and head of all field and outside plant operations from 1906 to 1918, he established and became manager of the first Technical Department, which was a forerunner of International Nickel's present Development and Research Division. Becoming manager of operations in 1921, he supervised the construction and initial operations of the Company's Huntington, West Virginia, Works, founded for the production of non-ferrous alloys.

Became President in 1949

He was elected assistant to the president in 1928, and was made a director and a member of the executive committee in 1931, a vice-president in 1932, executive vice-president in 1936, and a member of the advisory committee in 1937. He succeeded Mr. Stanley as president in February, 1949.

Dr. Thompson is a director of Texas Gulf

Rod and Gun Club Winners



Winners of Copper Cliff Rod and Gun Club's annual fishing and shooting contests received their awards at a rousingly successful smoker held at the Italian Hall with an attendance of more than 400.

Picture shows: back row, left to right, Charlie Stemp, 2nd best speckled trout, 3 lbs. 12 oz.; George Silvestre, 2nd best pickerel, 8 lbs. 9 oz.; Jim Lee and Adam Watson of the best indoor rifle team, with the Clarence Sinclair trophy; Charlie Tuttle, best black bass, 5 lbs. 2 oz.; Gordon Adams, best musk-inonge, 14 lbs. 4 oz.; Bill Bray, club president; Francis Clark, best speckled trout, 4 lbs. 15 oz.; Ed. Beattie, winner of the Fred Benard trophy for the club's fishing championship, 26-lb. lake trout; front row, Harry Franss, representing his brother Jack, best pickerel, 9 lbs.; Ken Moxam, 3rd best speckled trout, 3 lbs. 8½ oz.; Fred Gascon, 3rd best lake trout, 11 lbs. 14 oz.; E. J. Sloss, best rainbow trout, 5 lbs. 5 oz., and 2nd best lake trout, 19 lbs. 6 oz.

Not shown: Earl McMullen, best silver bass, 9 lbs. 6 oz.; Ted Taus, 3rd best pickerel, 6 lbs. 8 oz.; Cliff Latrash, 2nd best black bass, 4 lbs. 11 oz.; Hugh O'Connor (captain) and Tom Thorpe Jr., of the winning indoor rifle team.

Awards were presented by Charlie Tuttle, chairman of the fish committee.

Paul Queneau's remarkably fine colored movies of Arctic wild life, made during an expedition with the noted British explorer and artist, Peter Scott, and Harold Hansen of the U.S. Wildlife Management Institute, were the special feature of the smoker program. Paul, former president of the Rod and Gun Club, gave a fine running commentary which held the close interest of the big audience throughout the showing of his film.

Oyster and beaver were among the delicacies served in the buffet lunch which wound up the enjoyable evening.

Sulphur Co., Inc., American Bank Note Company and The American Metal Company, Limited, and a trustee of the Bank of New York and Fifth Avenue Bank. He is a past president of the Mining and Metallurgical Society of America and an honorary member of The Institute of Metals (Great Britain).

For his distinguished engineering achievements, Dr. Thompson was awarded the Thomas Egleston Medal of the Columbia University Engineering School's Alumni Association in 1944. In June, 1950, he was presented by General Dwight D. Eisenhower with an honorary degree of Doctor of Science at Columbia University.

Dr. Merica has been executive vice-president since February 7, 1949. He first became associated with the Company in 1919, becoming director of research and subsequently associate manager of the Development and Research Department. Dr. Merica was elected assistant to the president in 1931, a director in 1934 and a vice-president in 1936. In addition to his responsibilities as executive vice-president he has continued to give special attention to the Company's research activities in Canada, the United Kingdom and the United States. He has evolved numerous iron-nickel and copper-nickel alloys and is the author of many technical papers and articles.

Among the awards, Dr. Merica has received for his contributions in the field of metal-

lurgy and outstanding leadership in physical metallurgy has been the John Fritz Medal, which was presented to him in 1938.

Dr. Merica is a director of The Babcock & Wilcox Company and The American Metal Company, Limited, and a member of numerous engineering societies.

IT WAS A GREAT BATTLE

He was recalling some very exciting fishing adventures. "My muscles of sinewy steel were more than a match for the denizen of the deep," he boasted. "Finally, after a three-hour struggle, exhausted but triumphant, I landed the ferocious monster."

"Ferocious monster?" sneered his friend, "I saw a picture of the fish you caught. At most it might have been six inches long." "All right," conceded the fisherman, "But in three hours of fighting a fish can lose a lot of weight."

TRICKY NEIGHBOR

"Jones, are you using your lawnmower this afternoon?"

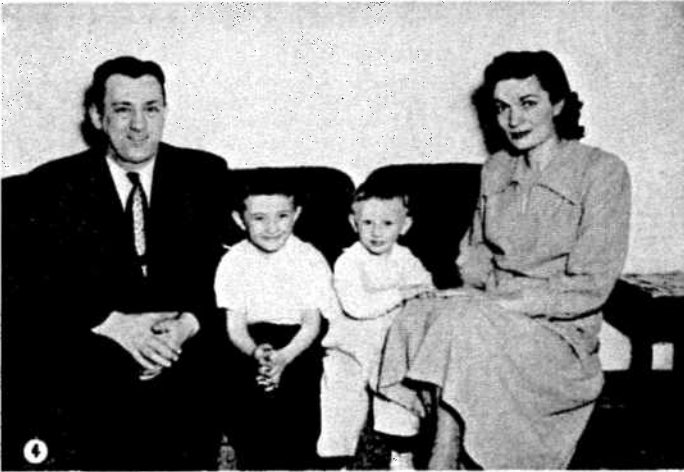
"Yes, I am," said Jones warily.

"Fine, then you won't be needing your golf clubs — May I borrow them?"

If the blind put their hand in God's, they find their way through the dark more surely than those who see but have not faith.

INCO FAMILY ALBUM

Thanks to the whim of circumstance we were able to point the Triangle camera during the past month at the following nice people: (1) Mr. and Mrs. John Talevi (Copper Refinery) with Joan, 14, and Bob, 12. (2) Mr. and Mrs. Chuck Bronson (Copper Cliff Smelter) with Laurie, 6 mos., Judy, 8, and Georgia, 10. (3) Dr. and Mrs. J. H. Stanyon (Medical Staff) with Carol, 8, and John, 11. (4) Mr. and Mrs. Louis Brema (Port Colborne) with Johnny, 5, and Dante, 2½. (5) Mr. and Mrs. John Rolands (Levack Mine) with Cathy, 5 mos. (6) Mr. and Mrs. Harvey Jarrett (Frood-Stobie) with Brian, 3, and Terry, 7. (7) Mr. and Mrs. Jack Wylie (Garson Mine) with Russell, 19 mos., and Sharon, 4 mos.



Basketball New Levack Activity

Plenty of interest and enthusiasm, and a better-than-average brand of play, have marked the Levack basketball league which has been in operation since January.

Two teams from underground, captained by Al Rowley and Doug Unwin, and one from surface captained by Johnny Mazur, have been taking full advantage of the two sessions a week provided for them at the Employees' club, one on Wednesday evenings and the other on Sunday afternoons.

A trophy will be presented by the Employees' Club to the winning lineup.

Following are the lineups of the teams:

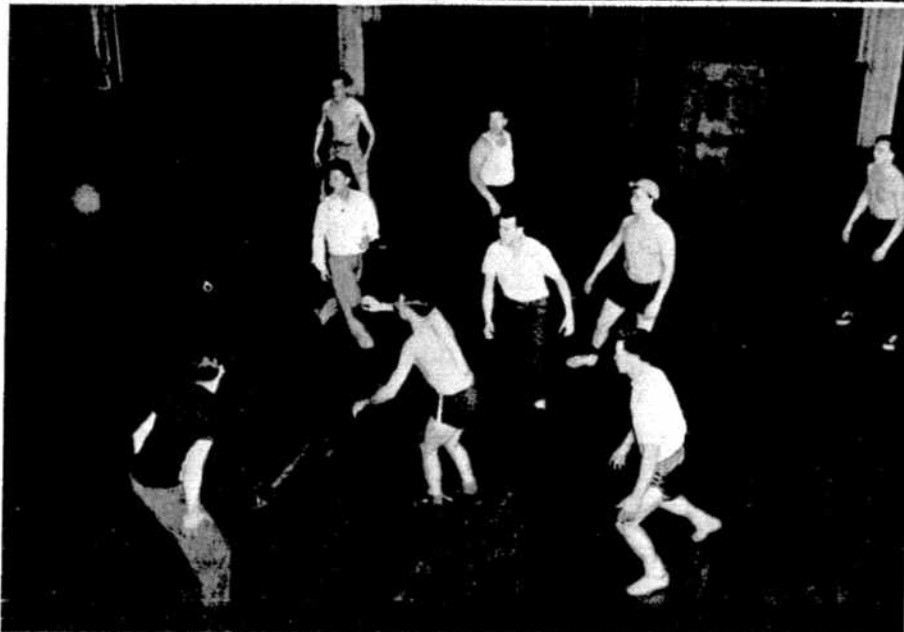
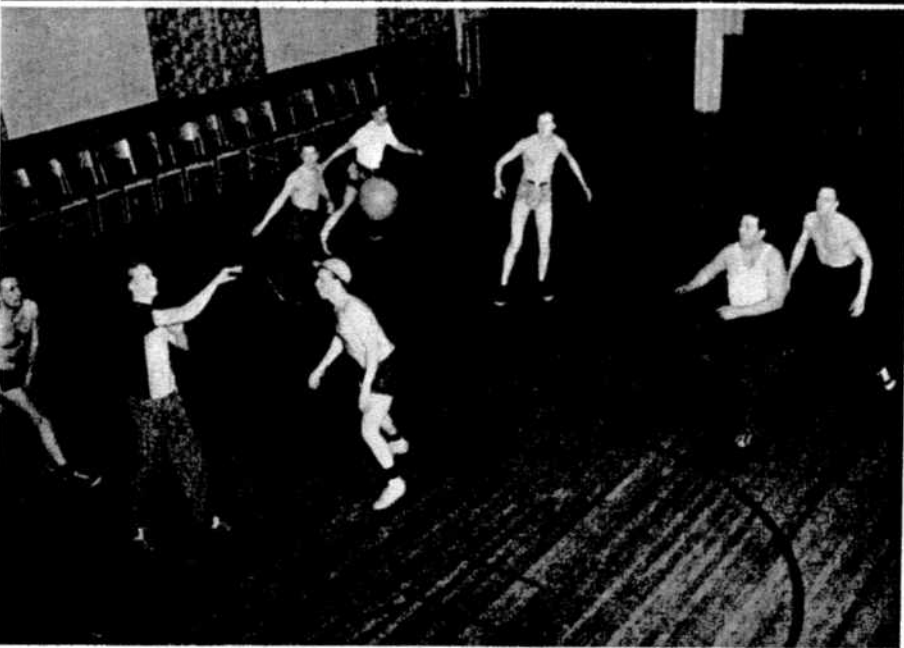
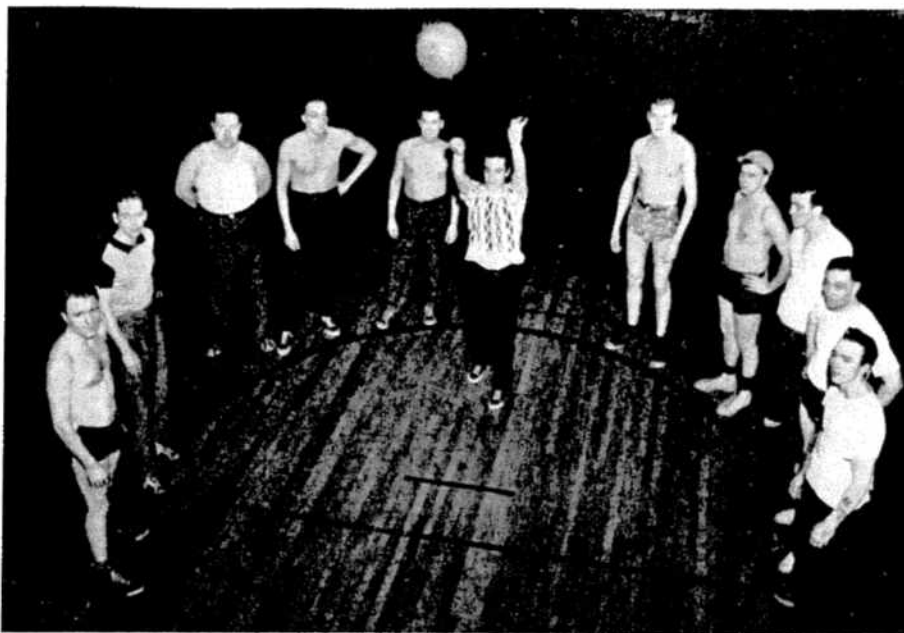
Al Rowley (captain), R. Butterworth, L. Fay, D. Laidlaw, G. Ruller, R. Hargraves, G. Smith, W. Kennedy.

D. Unwin (captain), T. Atkinson, D. Stevens, E. Mallette, G. McCauley, R. Demers, J. Gordon, L. Roberts.

J. Mazur (captain), W. Bilows, G. Keast, B. Ludgate, E. Wrixon, K. Taylor, D. Endleman, S. Plaskoski, D. Coates.

Some of the boys had never played the game before, and the rest had been away from it for a long time, so the first few matches bore little or no resemblance to a title match at Madison Square Garden, but the brand of performance has improved steadily as the players rounded into shape.

The accompanying action shots were made during a match early in the season. Bob Hargraves is taking the free throw in the top picture.



Came to Canada When He Was 14

Walter Yozkowski, 55, track foreman at Coniston who has retired on Company disability pension after credited service of 20 years and seven months, was born in Poland but came to Canada all alone at the age of 14. Now secure in his comfortable home, with a fine family that includes three husky grandsons, he can relax in convalescence from the illness which forced him to stop work.



MR. AND MRS. YOZKOWSKI

Walter first started work at Coniston in 1925, the year he was married to Josephine Bernard. In the First Great War he served with the 234th Battalion in the Canadian Army, and in World War 2 he enlisted in the Signal Corps.

He and Mrs. Yozkowski have two daughters, Violet (Mrs. Charlie Salem) and Bernice (Mrs. Harold Davidson), both residing in Sudbury, and one son, Stanley, attending school.

His many pals at Coniston Smelter hope Walter will soon fully recover his health and enjoy a long and happy retirement.

Some of Season's Hockey Stars



Three smart hockey teams which fought their way into the championship circle during the past season are shown here. Above is the fast-travelling Gatchell lineup, managed by Tom Pierce of the Copper Refinery, which won the NOHA district juvenile title; back row, left to right: R. Frattini, R. Pierce, R. Noble, D. Morelli, S. Dozzi, J. Rumball, E. Howard, C. Brown, and T. Pierce; front

row, L. VanClief, T. Rannelli, B. Pelletier, B. Taylor, H. Seguin, R. Harrower.

In the second photo are seen the Copper Cliff boys who are Nickel Belt bantam champions for 1950-51, winners of the Earl Hodge trophy; back row, left to right, Manley Bennett, manager; Nello Nicoli, George Lama-craft, Ken Hildebrant, Eddy Shack, Pat Mor-row (captain), Leo Pevato, Bruno Pollesel,

Don Finlayson, Jack Bennett, coach; front row, Billy Baker, David Fuller, Dino Pen, Bob Roberti, Jack Mikkola, Pat Cushing, Gerry Bouillon.

Another group of Copper Cliff lads who entered the charmed circle appear in the third picture, the Nickel Belt minor bantam champs for 1950-51, winners of the United Cigar Store trophy. In the back row, left to right, are Manley Bennett, assistant manager; Romano Taus, Don Skelton, Wayne Johnson, Clarence Brousseau, Jimmy Pappin (captain), Paul Nelimarka, Bruce Haavisto, David Crouse, Val McGauley, manager; front row, Don Boyd, Eddie Pagan, Arthur Robertson, George Usitelo, Neil Bray, Harvey Hildebrant, Dennis McLachlan. (Absent, Harry Franssi, coach, and Bobby Stemp, the league's high-scoring winger.)

Don Horne Wins Dramatic Award



A distinguished honor came last month to Don Horne of the Nickel Refinery at Port Colborne. He received the Jordan Award for the best male performance in the Western Ontario Drama League festival, a memorable character role as Captain Jack Boyle in the production of "Juno and the Paycock" by the Welland group of thespians.

Robert Newton, the widely known British drama critic, adjudicated the festival and spoke glowingly of Don Horne's stage talent.

Don has been best known for his outstanding work with Port Colborne Operatic Society as Dick Dead Eye in "H.M.S. Pinafore", Sergeant of Police in "Pirates of Penzance", Koko in "Mikado", Duke of Plazatora in "Gondoliers" and Lord Chancellor in "Iolanthe". That he is equally at home in a straight dramatic production was shown by his triumph in the Drama League festival, and his friends throughout the plant were pleased and proud of his success. They join in best wishes for a brilliant future for this versatile young artist.

REAL POLISH

"Yes, my dear," said the Cockney lady to the Irish nurse, "there's one thing I'm thankful for and that is that my daughter, Halice, married a gentleman."

"And how do you know he is a gentleman?" asked the nurse.

"Because I gave 'im a test. The first time Halice brought 'im 'ome, I gave 'im a cup of 'ot tea, and when 'e poured it out into the saucer, 'e didn't blow on it like an ordinary feller; 'e fanned it with 'is 'at."

Unbloodied and Unbowed—Our Sudbury Miners



Whatever they've said about the Sudbury Miners hockey club, the fact remains that the boys gave us a darned good season of entertainment, and although they were vanquished by the Soo Greyhounds after a welter of charges and counter-charges, they're still our heroes, one and all. Picture shows them, unbloodied and unbowed: back row, left to right: V. Corbeil, A. Ceccolini, H. Bellmore, R. Grenon, D. Rondini, J. Dewey, M. Burton, P. Theriault, G. Zullana, J. Stack, R. Stewart; front row: W. Steele, B. Basso, F. Rogers, J. Hamilton, L. Prete, F. Rebellato, J. Vanier, J. Palladino, A. Tomari.

Inco's 10-Year Transition to All-Underground Mining

A fascinating new chapter is being written into Northern Ontario's colorful mining history as surface or open pit mining passes from the picture in the operations of the International Nickel Company of Canada, Limited, at Copper Cliff. The orderly transition, basic details of which were planned 10 years ago, has been greatly speeded up to offset the terrific drain on production imposed by World War II, and also to meet the increased demand for nickel caused by the current international situation.

When mining is completed in 1953 at Frood-Stobie Open Pits, the excavation at the main pit will be 6,400 feet long, 1,400 feet at its widest point, and about 450 feet deep. From that enormous opening, along with the smaller Stobie Pit, will have been removed a total of more than 62 million tons of ore and 40 million tons of rock since the operation was authorized in 1937. During the war period over 40 per cent of Inco's total ore output was obtained from this source alone, although four large underground mines were also operating on an around-the-clock basis. As it gradually tapers down to the point where open pit mining is no longer economically sound, the task of replacing this production at an accelerated pace with infinitely more difficult underground mining, and at the same time coping with many serious complications which have developed in the regular underground operations since the program was laid out a decade ago, has called for high precision of planning and execution. It is being achieved without interruption of Inco's nickel production schedule.

Final Depth of Pit Fixed

The final depth to which the Frood-Stobie Open Pits were to be mined was decided at

the start of these operations and was influenced by several factors, chief of which was that the walls in an open pit mine must be held to a slope of 45 degrees to insure safe mining conditions. It is necessary to bring in the pit walls one foot for every foot of depth. Thus the pit area steadily decreases as mining continues until it reaches the point when it is too small for further operations. Another factor determining the final depth of a pit is the amount of waste rock which must be removed from around the sides of the ore body to maintain the slope of 45 degrees from the commencement of the operation. The open pit must be planned so that the combined overall cost of removing rock and ore does not exceed the cost of mining the ore below the pit bottom by underground methods. Even when the position and size of an ore body are admirably suited to open pit mining, these two factors must receive full consideration.

Operations for mining the lower grade ore at the surface of the Frood-Stobie ore bodies were originally planned for a production of 6,000 tons a day, and the crushing plants and open pit equipment were designed for this tonnage. The new plant was just settling into steady operation when World War II created a sharply increased demand for nickel for armament. The source at which a large expansion of production could most quickly be effected were the new open pits, and plans were immediately laid, and equipment ordered, to boost the daily ore output there from 6,000 to 20,000 tons. Work was pushed day and night on construction of a larger crushing plant and the necessary ore storage bins to accommodate this greatly expanded operation.

It was soon realized that the Allied nations'

requirements for nickel would extend over a prolonged and indefinite period and at rates much greater than those developed for peacetime purposes. With the increased tempo of mining the comparatively limited open pit ores, additional underground mines would have to be explored and developed to replace and supplement, if needed, the open pit mines many years earlier than had been anticipated. The physical problem of transition from open pit mining on a large scale to an equivalent production from underground mining may be pointed up by comparing the length of time required to place either type of operation on a producing basis. In the case of open pit mining, stripping of overburden and erecting the necessary crushing plant may start immediately. Full scale production can be reached in the comparatively short period of a year and a half. In opening an underground mine on an equivalent basis, the time required to develop and equip the mine for production may be over four times this period even when sufficient labor and early delivery of equipment are available.

As a direct replacement of the tonnage being obtained from the Frood-Stobie Open Pits it was decided to open new underground mines at Stobie, Murray, and Creighton. This program has been carried on in addition to accelerated extension of the regular underground operations at Creighton, Garson, Levack and Frood Mines.

Shaft sinking was started at the new Murray and Stobie Mines in 1941. The rate of opening a mine, in its initial stages, naturally depends on how fast a shaft can be put down. These shafts were planned of large dimensions, 14 feet by 28 feet, to contain compartments for the hoisting of ore and the handling of men and supplies. In shaft sinking, only a limited number of men can be working at the one available point of attack, the shaft bottom. Where the rocks through which the shaft is being driven are not self-supporting, progress is slowed by the

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Tallyho and All That, But Where's the Fox?



Look, chaps, it's going to be a long hard run, so let's not waste too much strength on this posing for the camera. The picture was made in 1905, and the eager athletes were lined up for the annual marathon sponsored by the Copper Cliff Courier, a weekly newspaper which failed to survive its good intentions. The Triangle is indebted for the photo to Mrs. G. H. Davidson of Sudbury, whose late husband was once employed in the Mulligan drug store at Copper Cliff.

Inco's Ten-Year Transition

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necessity for installing concrete and steel support.

During the war period when almost all available labor had to be channelled into production of ore, work in the Murray and Stobie shafts was often slowed down or even suspended for considerable periods of time. At Stobie the shaft-sinking period extended from July 1941 to November 1944, despite the urgency which was attached to the program. Under ordinary conditions the work would have been completed in two and one-half years.

70 Miles of New Openings

Progress in developing the new mines has, as usual, been controlled by the speed of work around the shaft at the various levels where stations and other openings must be made. At first, as in sinking the shaft, there is only the one opening on a level to be advanced, limiting the number of men who can be engaged, although the openings become more numerous as the ore body is approached. Much time is required to advance level drives such as ore haulage drifts and service openings, as well as crushing and ore loading stations. After these facilities are provided, the actual work of preparing the ore body for mining can be accelerated. The transition at Inco, over a 10-year period, from open pit to underground mining, when completed, will have involved the excavation of about 70 miles in length of mine openings of all kinds, or 38% of the total length of mine openings driven by the Company and its predecessors in the previous 40 years.

A serious complication involved in the transition is the paramount importance of certain flexibility in a group of mining operations handling large tonnages. It has been possible, with the open pits in full operation, to meet the demands for milling ore from

day to day, even though they may vary widely over a week on account of such factors as transportation difficulties. In the case of a delay in transportation or in the reduction plants it has been a relatively simple matter at the open pits to adjust the schedules for stripping ore and waste rock on short notice so as to maintain a steady flow of ore to the milling and smelting plants. This degree of flexibility will be very difficult to attain in the change to all-underground production. One electric shovel working two shifts in the open pit can produce 5,000 tons of ore; in a large underground mine production of 5,000 tons of ore per day requires a payroll of 1,000 men with the mining force working two shifts in 40 stopes, or working places.

To some degree the flexibility of operation will be achieved by providing large storage bins both on surface and underground, although the effectiveness of surface bins is limited on account of freezing during winter months; underground bins must be excavated out of the rock and lined with concrete and steel to prevent early erosion and caving of bin walls.

Second Shaft for Stobie

An unusual step toward obtaining flexibility and the assurance of steady production from an all-underground mining operation was the decision to instal a second large ore-hoisting shaft in the Stobie Mine. Additional ore haulage equipment was immediately ordered, along with a large crusher and other equipment to take full advantage of this emergency hoisting capacity.

The twin shaft will be equipped with an ore hoist capable of handling 16½-ton skips at a hoisting rate in excess of 700 tons an hour. It will be inter-connected with the regular shaft of the new Stobie Mine above the ore-loading points by means of conveyor belts, so that the fluctuating demands of the

milling and smelting plants can be met by hoisting ore from one or both shafts at the same time.

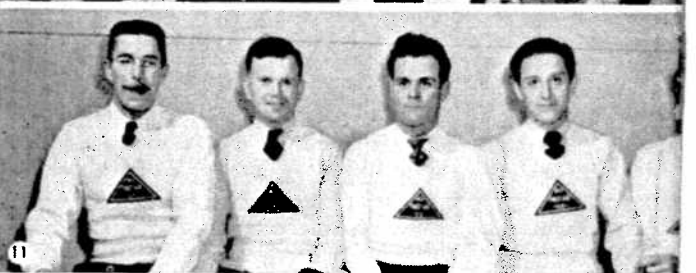
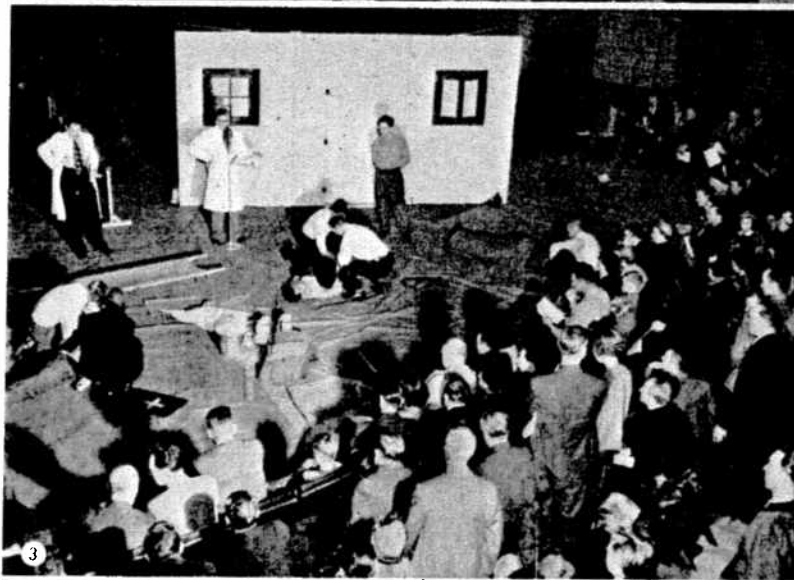
In the third section of the program for replacing the tonnage from the open pits, the new underground operations at Creighton will mine lower grade ores which hitherto had been considered uneconomical for recovery. A 10,000 ton concentrator has been erected at the mine to mill these ores on the spot. The bulk concentrate will be pumped 7½ miles to the main concentrator at Copper Cliff for further treatment, an arrangement posing its own special problems on account of the extremes of weather. Sinking operations are approaching completion in the new Creighton No. 7 Shaft, and development for mining is underway.

Entirely new methods of mining not previously undertaken had to be developed to make possible the economic utilization of lower grade underground ores which are available. Problems which had not been encountered in the selective mining methods in use on the higher grade ores had to be studied and solved before final plans could be made. Details of blast hole mining were tested in experimental blast hole stopes at Creighton Mine, opened and operated solely for the purpose of determining the most effective way of applying this method to the new mines at Stobie and Murray. At the same time an investigation was launched into the possibility of mining the low grade ores at Creighton by the block caving method.

New Methods Described

Blast hole mining is a method of breaking ore from the face of a stope, or working place, by firing explosives in long holes drilled with diamond or tungsten carbide tipped drill bits. The holes are drilled in line to take a 5 to 6-foot slice of ore from the stope face, usually to a length of about 75 feet. The broken ore falls to the bottom of the stope and into a series of cone-shaped chutes

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Copper Refinery Again Cops Inco First Aid Championship

For the second year in succession, and the third since the trophy was put up for competition in 1937, Copper Refinery won the Parker Shield, emblematic of Inco inter-plant First Aid supremacy, in an exciting final-round match against Frood-Stobie at Inco Employees' Club on March 29. Only a slim margin separated the two crack teams on the score sheet.

A large audience watched the well-staged show, in which the teams were required to rescue two men from a burning house, treat one of them for asphyxiation by smoke and the other for arterial bleeding of the right forearm, fracture of the right collar bone, fracture of both knees, and shock. Just when treatment of these two patients was going along nicely, some careless character in the gallery dropped "a bag of groceries" on the head of a bystander who promptly plunged to the floor with a fractured skull, a fractured right arm, and an advanced case of heeby-jeebies. This third patient had, of course, to be patched up by the First Aiders. Neither team turned a hair at the unexpected development and took the avalanche of calamity coolly in stride.

Ralph D. Parker, donor of the championship shield, offered his hearty congratulations to both the finalist teams, and also to all who had competed or otherwise assisted in the 1951 competitions. A total of 126 teams had taken part this year, he announced, resulting in the training of 580 more men in First Aid work, upon which the Company places great importance. Among Inco employees there are now 2,800 fully-trained First Aid men, who are able to take charge in any emergency, he said.

Members of the Refinery team each received a \$50.00 bill in addition to other prizes won in their march to the all-Inco championship.

Ed. Sutherland, who coached the 1951 winners, was captain of the team which took the title last year.

1. Runners-up for the Parker Shield, who put on a great show, were the men from Frood-Stobie, here photographed just after they won the semi-final contest for First Aid teams from Inco underground plants. Left to right are P. Lindquist, P. Jackson, Coach Ed. Chateauvert, J. Lepage, captain of the squad, Phil Carriere, and Jack McNeill. On the right is H. J. Mutz, donor of the trophy for underground mines competition.

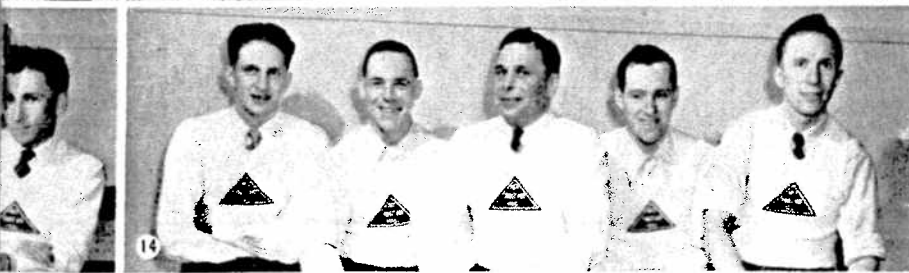
2. Members of the Copper Refinery team are seen after presentation of the blankets they received as individual prizes on winning the semi-final contest for surface plants and the D. Finlayson shield. Left to right are O. O'Neill (captain), M. Swintak, R. Duncan, W. Thornton, C. Larocque and Coach Ed. Sutherland. Donor of the shield, D. Finlayson, stands at the right. In the four years of competition for the Finlayson Shield, the Copper Refinery has won it three times.

3. and 4. These pictures were made during the Parker Shield contest. Part of the big audience, and the Frood-Stobie team in action, are seen in No. 3, and the Copper Refinery team is doing its stuff in No. 4 while Drs. H. F. Mowat and J. H. Stanyon, the judges, follow their performance closely.

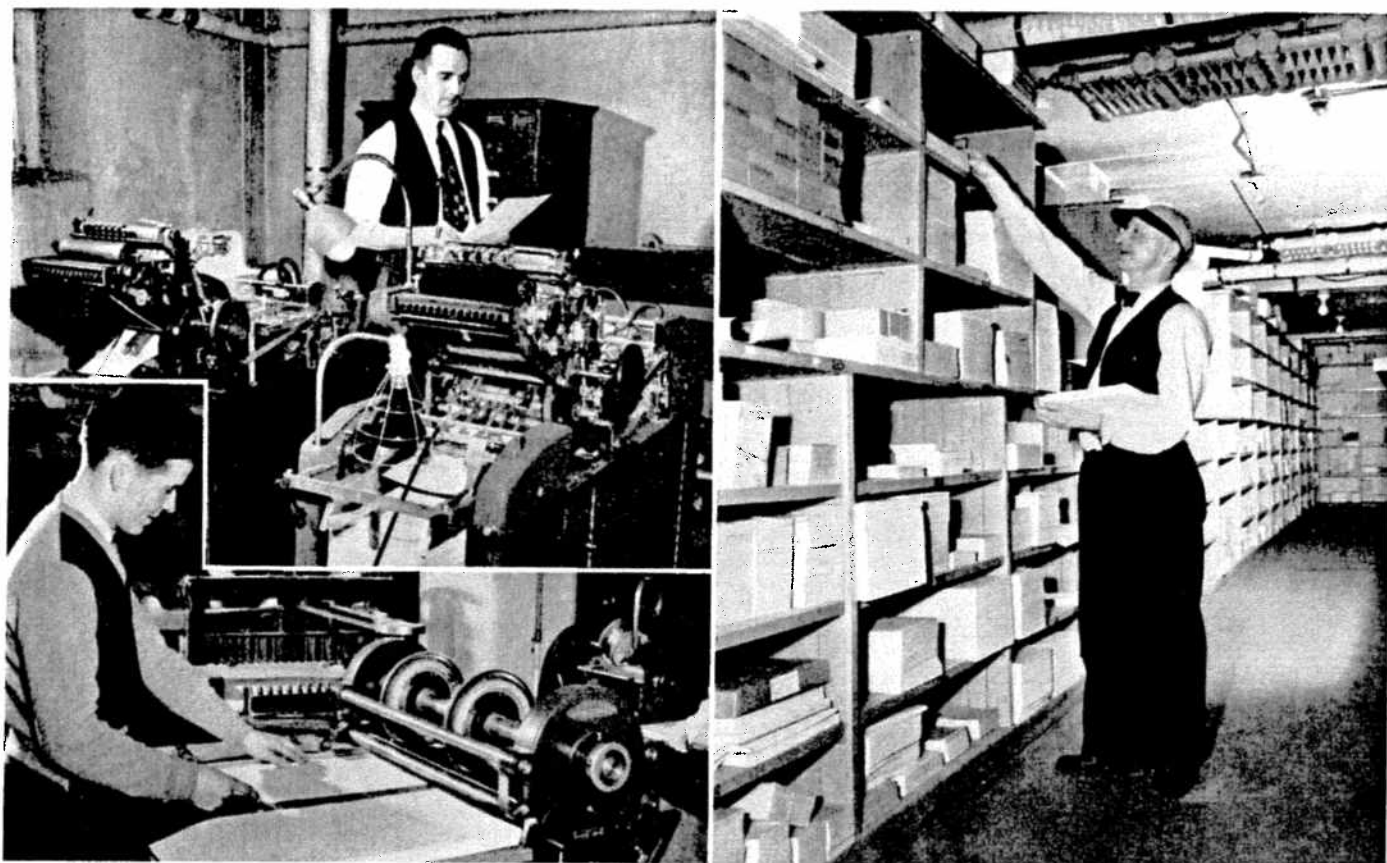
5. Old and young alike watch with complete absorption as the swiftly moving First Aid teams diagnose and treat the injuries of their patients. Particularly gratifying to the Safety Dept. is the number of young boys and girls who accompany their parents to the matches and follow events with obvious interest.

6. A highly amusing burlesque of a First Aid competition was staged at the Parker Shield final by a group of doctors with Marx Bros. inclinations: Drs. W. J. Spence, F. M. Hall, A. R. Foerster, W. H. Atkinson, B. J. Cook, and J. H. Stanyon. One of the tensely dramatic moments of the skit is shown in this photo; on the left is the highly agitated

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Stationery Department Has Record Month



It just happened that March, 1951, when these pictures were taken, was the biggest month they'd ever had. During that hectic 31 days the stationery department at Inco's head office printed 850,000 forms. Regular monthly average for this highly important section of the Company's operations runs about 350,000. All departments of Inco in the Sudbury District get their inter-department forms from this quietly efficient establishment, which also dispenses all the stationery requirements. In the first picture Jim Oliver, who came to the Company 10 years ago from the commercial printing department of the Sudbury Star, is checking the inking on one of the department's two offset printing machines which each has a capacity of 6,000 impressions per hour. Immediately below, looking like Northern Ontario's answer to the challenge of Hollywood, is Joe "Citizen" Hickey, operating the electric perforating machine, and on the right, making a selection from the 1,500 forms which are kept in stock, is Bert Flynn, the patriarch of the department, who was placed in charge of stationery and baseball scores away back in 1916, one year after he had joined the Company.

Inco's Ten-Year Transition

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prepared before actual stope mining is commenced. The bottom openings of the cones lead either to a control for direct loading into ore cars, or to small drifts in which a scraper is used to drag the ore to an opening above the ore cars. In the latter case the ore falls directly into the cars as it is dragged or scraped from below the stope cones.

In the block caving method of mining, a slice of ore is taken from the bottom of the area to be mined, and the ore supporting the sides of the block is weakened as well, to allow the entire mass to move downward. As the block of ore moves downward it tends to disintegrate; furthermore, the weight of the ore in the upper part of the mass acts to crush the ore at the bottom. Openings for the recovery of the broken ore are placed in the bottom of the area to be mined in the same manner as for the blast hole method.

The outstanding difference in the two methods is that in blast hole mining the ore is broken from the stope face by explosives, while in block cave mining the weight of the moving ore mass accomplishes the same result.

The caving method, lowest cost-per-ton-mined of all mining methods, can only be used to mine ores that break up and dis-

integrate in the process of ground movement. It cannot be used where it is essential to prevent extensive subsidence of the surface area around the ore body. In hard, compact ores, where explosives are required to break up the ore to a size that can be handled by underground methods, blast hole mining can be employed where large tonnages of ore can be broken from the stope faces at low cost by means of long holes drilled in the ore.

Used Models to Solve Problems

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

It was found possible to place the large new Creighton crushers, with a feed opening of 4 feet by 5½ feet, near the ore body so that the ore, as it is mined, will flow by gravity to these crushers. As it was necessary to locate the shaft and milling plant a safe distance from the area to be caved, a long underground conveyor belt was planned to

take the ore from the underground crushers and deliver it to the shaft bins for hoisting direct to the surface milling plant. This underground conveyor belt will have a length of 1,850 feet.

At the new Stobie and Murray Mines, however, it was concluded that the most economical way to transport the ore from the stope chutes to the underground crushers was by means of unusually large mine cars hauled by electric locomotives. The cars are of 188 and 260 cubic feet capacity, the latter the largest known to be in use in direct underground ore haulage, and the locomotives weigh 20 tons each. These two mines have also been equipped with the largest crushers which could be installed underground, to handle the extremely coarse ore produced from mining by the blast hole method.

Emergency Measures Dictated

During the war years regular exploration and mine extensions, vital to maintaining operations in orderly and progressive condition, had to be sacrificed in favor of increased nickel output at Inco's four regular underground producing mines. As developed ore areas are mined, other areas must be equipped for mining, shafts deepened, exploration for new ore carried on, and development advanced to keep pace with the rate of mine production. Failure to extend operations can only lead to reduction of ore ton-

(Continued on Page 11)

Inco's Ten-Year Transition

(Continued from Page 10)

nage. The delays and postponements imposed by World War 2 on this work caused serious disruption of schedules. Ore was actually taken from some underground areas ahead of completion of shafts and other construction. At the Creighton Mine, for instance, ore from two levels was for some time handled at extra cost by means of a temporary winze hoist; regular facilities for hoisting this ore have just been completed. As another example, ore from the upper levels of the Frood Mine, removed by blast hole methods, has had to be put through a small crusher designed for ore produced by square set mining. Development work in the Frood upper levels has had to be carried on without interrupting continuous hoisting operations in the No. 3 main operating shaft handling ore from the producing stopes of the mine. Measures such as these were dictated by the necessity of conserving open pit operations as much as possible until a program of flexible underground production could be completed.

To restore normal conditions and at the same time prepare for the doubling of underground production, the extension programs at all the underground mines have been greatly accelerated. Opening of the upper levels at Frood continues as swiftly as possible, and shaft sinking, along with associated development work, is in progress at Levack, Garson and Creighton. These shafts are in addition to the two at Stobie and one each at Murray and Creighton which will handle replacement of the open pits tonnage. In all eight shaft programs are in various stages of completion; a total of 7,000 feet of shafts has been completed since the end of World War 2, and when the entire transition is finished the total will be almost 9,000 feet.

Objective is 13,000,000 Tons Annually

The mines labor force is being maintained at the highest level in its history to achieve the transition without interfering with maximum ore production. Step by step the broad program will be carried through until, in 1953, the new underground mines will have swung into production, and the objective of being able to hoist 13,000,000 tons of ore annually will have been accomplished. Then Inco's underground mining will be unmatched in size by that heretofore attained by any other non-ferrous base metal mining operation in the world.

This program has to date accounted for the major portion of the \$100,000,000 of capital expenditures made during the past 10 years. Substantial additional capital expenditures will be required to complete the program.

The smooth transition would not have been possible without the assistance of Inco's never-ending program of research to improve its mining and metallurgical methods. A number of problems continue to require attention by the research staff. The facilities for exhaustive study and experiment will continue their valuable service on problems which will inevitably arise with increased ore production and the full-scale use of new methods.

As a result of extensive research, process changes are being made at Inco milling and smelting plants to accommodate the evolution of the mining program. Modifications and improvements of present processes have been required for efficient utilization of ores lower in grade and of varying metallurgical characteristics.

As in mining research, where special underground areas are reserved for testing mining procedures, and scale models of chutes and other installations are employed to develop mining details, a most important step in process research at Inco is the operation of pilot plants on a semi-commercial basis to

prove the practicability of proposals before they move from the laboratory to commercial application. As an example during the past year a new method for the direct production of nickel anodes from nickel sulphide concentrate for electrolytic refining of nickel with substantial financial savings, was successfully demonstrated on a pilot plant scale, and a unit of a commercial plant will be erected in the immediate future.

Oxygen flash smelting and matte flotation for the separation of nickel and copper are notable innovations at Inco resulting from more recent process research, which has been intensified during the transition period. Another important research objective has been the greater utilization of ores through the production of by-products, and in this connection a major project still under pilot plant study is a new process for the economic recovery of nickel from nickel-bearing pyrrhotite as well as the production of by-product iron ore.

725 New Homes in 10 Years

Another feature of the overall transition has been allocation by Inco since 1941 of almost \$6,000,000 to provide modern new homes and educational and recreational facilities for families of its employees in the Sudbury District, either by its own construction program or through substantial support of various community projects. To accommodate the increase in manpower and shift of residence involved in the transition, contracts for more than 725 new dwelling units have been issued by the Company during the past 10 years, besides three more large fully equipped employees' clubs and additions to schools, etc.

Movement of manpower to handle the low-grade ore program at Creighton Mine has required the development of an entire new townsite at Lively, situated midway between Creighton and Copper Cliff and named after a veteran employee of the Company who has risen in the ranks from miner to mine superintendent. A total of 1,100 acres has been set aside for the townsite, and to date streets and sewer and water services have been installed for 310 homes, of which 125 have been completed and the balance will be built this year. Ten different architectural styles have been used. A fully modern school, stores, and other community facilities are in the final stages of construction.

With these additions Inco has provided for its employees in the Sudbury District a total of more than 1,600 homes, seven community clubs, a 33-bed hospital at Copper Cliff and medical offices in its mining and smelting towns with a staff of 90, besides a non-contributory retirement system, group insurance, and other welfare advantages.

Scholarships Given by Inco

To commemorate the 200th anniversary of the discovery of nickel by the Swedish scientist Cronstedt in 1751, The International Nickel Company of Canada, Limited, offers a total of four \$2,000 scholarships in any university to Grade XIII students attending Copper Cliff High School, Sudbury High School, Sudbury Mining and Technical School, and Sacred Heart College, and Port Colborne High School.

The 4-year scholarships, each in the amount of \$500 annually, will be awarded on the basis of a competitive essay on the subject, "The Importance of Nickel in Our Everyday Life". Three will be awarded for

Sudbury and Copper Cliff, one for Port Colborne.

To be declared the winner of a scholarship, a candidate must have successfully passed the Grade XIII examinations as set by the Department of Education in the Province of Ontario in June, 1951. The winners may be either boys or girls, and will have their own choice of the university they wish to attend.

All essays must be delivered to The International Nickel Company of Canada, Limited, and marked "Essay", on or before May 31, 1951. Awards will be announced following publication of Grade XIII examination results. The competition for Copper Cliff and Sudbury will be judged by a committee composed of E. D. Wilkins, K. C., R. M. Coleman, and Dr. M. V. J. Keenan. At Port Colborne the judges will be C. A. Bennett, H. E. Hazlewood, and H. W. Walter. Originality, composition and accuracy will be the principal basis of judgment.

The essay is to contain 1,000 to 1,500 words written in English on one side only of 8½ by 11 inch paper. It must bear a fictitious name and be accompanied by a sealed envelope having the writer's fictitious name on the outside and real name and address on the inside.

RECOMPENSE

A WOMAN was sitting home alone,

The hour was growing late,
Dozing, she dreamed she'd passed away
And reached the pearly gate.

Saint Peter said, "The custom is,
Before one enters here,

To tell about their life on earth —
Of what they did down there."

"Oh, I'm the greatest sinner that
Has e'er been here before,

For each Commandment of the Law
I've broken o'er and o'er."

But — here the woman with a nod
Approached Saint Peter's ear

And murmured something that alone
The stooping Guard could hear.

And then, before the startled throng
Saint Peter grasped her hand

And, motioning to the Shining Host
Each side the gate to stand,

He led her to the Golden Stair
And pointing straight ahead,

In clarion, far-reaching voice
To the little woman said:

"Climb up, oh weary one, climb up,
Climb high! Climb higher yet!

Until you reach the plush-lined seats
That only martyrs get.

Then sit you down and rest yourself
For years of blissful life."

Then, to the Angels he remarked:
"She's been a curlier's wife!"

—CAPPY, Halifax, N.S.

OUT OF THE VAST

There's part of the sun in an apple;

There's part of the moon in a rose;

There's part of the flaming Pleiades
In every leaf that grows.

Out of the vast comes nearness;

For the God whose love we sing
Lends a little of His heaven

To every living thing.

—August W. Bornberger

YUMPING YIMMINY

Mr. Biggs liked to know all about the employees who toiled in his vast business. One day he came upon a new young man who was dexterously counting out a large wad of the firm's cash.

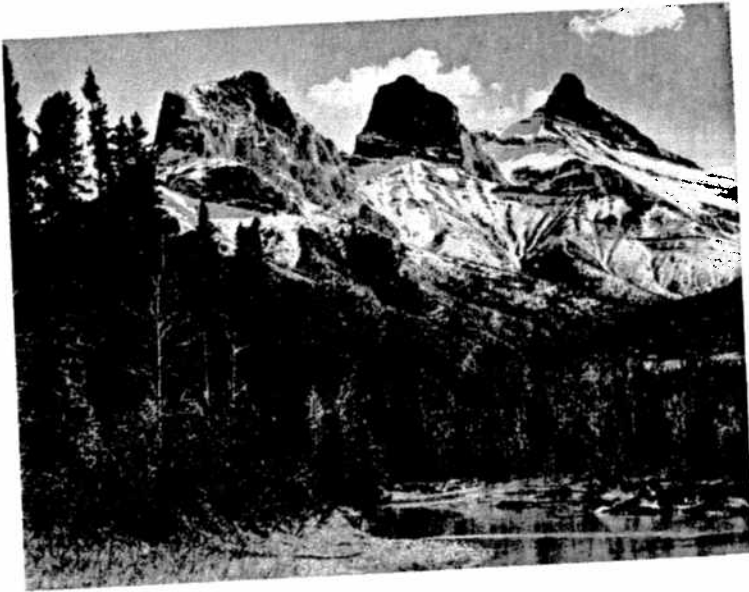
"Where did you get your financial training, young man?" he asked.

"Yale," the young man answered.

Mr. Biggs was a staunch advocate of higher learning.

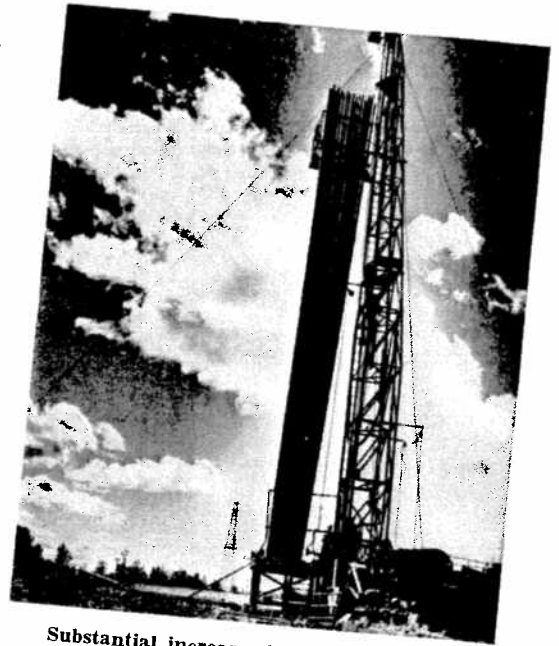
"Good," he said, "and what's your name?"
"Yackson," was the reply.

This Canada of Ours

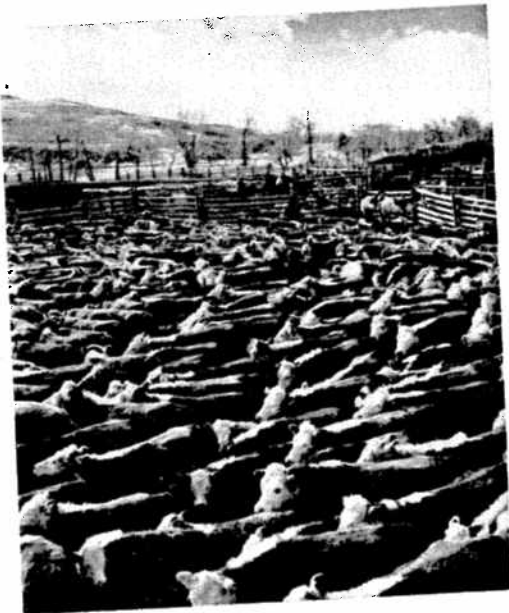


The majestic splendour of the Canadian Rockies is unsurpassed. Here in all their breath-taking beauty are The Three Sisters, in Jasper National Park, Alberta.

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Substantial increases in Alberta's potential oil production are one of the brightest spots in the Canadian economic picture. Scene shows pipes being pulled in Alberta's Leduc oilfield.



Cattle in a corral on an Alberta ranch in the High River district near the famous ranch of the Duke of Windsor.



Alberta farmers have an enviable habit of picking off world grain-growing championships. Scene shows modern harvesting operation on a farm in the foothills.

By JIM DENNIS, Copper Refinery

The most promising province in This Canada of Ours — that's my native Alberta.

Discovery of the rich Leduc oil field in 1947 touched off a program of development which is still gaining momentum. Petroleum reserves estimated to be greater than the entire known world supply lie waiting to be taken from bituminous tar sands when economical methods of recovery are found. The province now supplies more than 90% of Canada's petroleum and natural gas, and in addition boasts the nation's most extensive coal reserves.

These vast natural resources, which have put Alberta in the headlines around the world, will make it one of Canada's leading industrial provinces. There is a fabulous future in store for Alberta, based on the chemical potentialities of her natural gas and petroleum.

Oil is in the spotlight, but Alberta is famous too for its wheat, its cattle and sheep, its rugged scenic beauty. The Columbia ice field near Banff is the world's greatest glacial deposit south of the Arctic, and the Peace River valley cradles Canada's northernmost agricultural development. Tourists marvel at the gorgeous waterfalls and canyons of the Rockies, the petrified remains of prehistoric life in the Badlands near Drumheller.



JIM DENNIS

Time Office Staff at Garson



It's about time we picked up where we left off in publishing pictures of the hard-working personnel at Inco's time offices. Shown above are the men whose speed and accuracy hold a fine reputation for Garson Mine time office: Orville Cull, Vic Stone, Ken Barlow, and Jack Donnelly.

Refinery Wins Parker Shield

(Continued from Page 9)

nurse (Dr. Cook) who swooned at the sight of blood, and on the right is the fussy examining physician (Dr. Foerster) who had to "look up" everything, including his own phone number. The short, snappy little show with its astonishing climax drew gales of laughter. Other special entertainment included songs by Yvette and Simone Gauthier, and guitar and oldtime fiddle selections by Larry Gauthier.

7. Ralph D. Parker (centre) asst. vice-president and general supt. of the Mining and Smelting divisions, is caught by the camera in this candid shot as he watches the close and exciting contest between Refinery and Frood-Stobie for his trophy.

8. Valuable points are won and lost in the oral examination which must be taken by all members of the competing teams. Here Dr. K. J. Bromley of the Inco medical staff scores the replies of Captain O'Neill of the Refinery team, to a series of key questions on First Aid work.

Other teams competing in the semi-final matches, each of whom won elimination contests at their own plants, are seen as follows:

9. Copper Cliff: W. Hnidan (captain), R. Lemieux, L. Lavallie, A. Desotti, G. McNair (spare). Coach: O. Didone.

10. Creighton Mine: R. Roman (captain), L. McGinn, F. Larsson, A. Lauzon, and L. Sharpe (spare). Coach was C. Varney.

11. Coniston: R. Keffer (captain), J. Forestell, F. Richard, F. Pare, W. Knapp (spare). Coach: W. Coppo.

12. Garson Mine: N. Della Vedova (captain), W. McLaren, A. Schillemore, A. Hirschfield, R. Tindale (spare). Coach: O. Matson.

13. Open Pit: W. Scott (captain), F. Maitland, A. Cuomo, E. Schroeder, C. Ritchie (spare). Coach: R. Wotton.

14. Murray Mine: J. Currie (captain), H. Tatton, K. Martin, L. Jankowski, J. Bagdonas

(spare). Coach: H. Chivers.

15. Levack Mine: W. Shesnicky (captain), A. Lavergne, W. Kennedy, W. Bragg, W. Neal (spare). Coach: E. Armstrong.

16. Tom Crowther, of the Safety Dept. at Copper Cliff, is the man in charge of the myriad of details involved in staging the First Aid contests. Just one major slip in arrangements would be about all necessary to cause his abrupt departure on a one-way ticket to Outer Mongolia, and he wouldn't be too safe there. Picture shows him gulping a fast cup of coffee while he runs over in his mind the setup for the final contest. It's a tribute to his organizing genius that the difficult and cleverly staged events go off smoothly year after year.

17. The Inco club refreshment bar gets a brisk run of business during the First Aid showdowns when ardent supporters of the competing teams ease off the pressure with a cold drink or a cup of coffee. Picture shows Mrs. Margaret Vaillancourt serving "Scotty" Richardson of Murray Mine.

Smart Program For 14th Annual Skating Show

The stage is all set for one of the most colorful productions in the long series of successes to the credit of Copper Cliff Skating Club.

At Stanley Stadium on Friday and Saturday evenings, April 6 and 7, and also at a matinee on Saturday, will be presented the club's 14th annual Skating Carnival, "Holiday at the Beach."

Front cover of this issue carries a photo of one of the outstanding young visiting stars whose gifted skating and personal charm will be a feature of the big carnival program. She is Miss Jane Kirby of the Minto Skating Club, Ottawa, a gold medalist, who teamed with Donald Tobin to win the 1951 Canadian

senior pair championship. Both will give solo performances as well as skating as a pair. Another attraction sure to find favor with the carnival crowds, especially the youngsters, will be Hoag and Hilliard, a rib-tickling pair of cut-ups from the Brant Skating Club at Brantford, whose comedy act is reported to be one of the best obtainable today.

Miss Joyce Salo, always a prime favorite of Nickel Belt audiences, will display some of her superb free-skating skill, and other popular soloists will be Miss Inez Yates of the Toronto Skating Club and Paul Tatton of the North Bay Skating Club, who have been receiving instruction during the past winter from Gerry Blair, the professional at Copper Cliff, and are regarded as real "comers" in Canadian figure skating circles.

Coniston Band, under the baton of Maestro Dan Totino, will furnish music for most of the program. The ice will be specially decorated.

Brilliant costumes and intricate skating patterns will be noted in the numbers staged by groups of members of the Copper Cliff Skating Club, who have been working hard to get their routines into shape.

Forced to cancel their carnival last year, the Copper Cliff Skating Club are coming back next week-end with a show that seems certain to win the enthusiastic acclaim of friends and critics alike.

Port Colborne Takes All Titles

With Mrs. Bella Laki and Rod Nixon in starring roles, Port Colborne Badminton club made a clean sweep of the Niagara District championships at Inco Recreation club March 24, winning all final matches.

Mrs. Laki made a clean sweep of her events. She annexed the ladies' singles title, retaining it from last year. Partnered by Mrs. Phyllis Nixon she won the ladies' doubles title, and she also paried with Elery Neff to win the mixed doubles event.

Rod Nixon was a double winner. He won the men's singles championship in a great performance against Johnny Kloss, Niagara Falls stylist. He paired with Ron Siddall to win the men's doubles title as well.

Following the final night's play Archie Saville, president of the Niagara District Intermediate Badminton League, presented the awards and thanked the league executive for their faithful work during the year. He commented on the exceptionally large number of young players rising to the front in championship competition.

The Niagara District league shield, representative of the club championship of the district, was presented by Mr. Saville to the St. George's club of St. Catharines. They won the shield with 61 points in inter-club matches during the season. Welland was second with 53 points and Port Colborne third with 49 points.

Alex McNay, Inco Recreation Club director, welcomed the league championships and guests to the club. He extended the club's congratulations to the winners and extended an invitation to the league to bring the championship tourney back to Inco Recreation Club next year.

NOT A BAD FAULT

At the beauty shoppe the girls were kidding Doris.

Hazel: I certainly can't see what you see in Jim. He doesn't dance, he doesn't swim, he doesn't go in for athletics or sports. What is he interested in, anyhow?

Doris: Me.

Tolerance is the positive and cordial effort to understand another's beliefs, practices and habits without necessarily sharing or accepting them.—Joshua Loth Liebman



Creighton Brownies

In an impressive ceremony held at the Employees Club, a group of Creighton Brownies who had reached the age of 11 and won their "wings" as Golden Hand Brownies, "flew up" to the Girl Guide company. Mrs. Bob McLeod, the brown owl, was in charge of the ceremony at the toadstool. In the front row of the above picture are the Creighton Brownies who achieved the long-cherished promotion: Barbara McLeod, Wendy Drennan, Beverly McLeod, Sandra Samchuk, Margaret Peacock, and Patsy Mumford; in the second row are other members of the Brownie pack: Joanne Treflak, Jane Magill, Carol Ostashek, Patsy Briggs, Shiela Quinn, Judy Massey, Beverley Cassell, Gloria Lavigne, Jeanette Boudereau, Joan Villeneuve, Shirley Ann Ingraham, Maureen Sharpe; back row, Heather Bennett, May Klerans, Jean Palys, Nancy Celestini, Joanne Welsh, Marion Bryan, Shirley Kautto, Frances Peacock, Colleen Coyle, Anny Coyle, Penny Drennan.



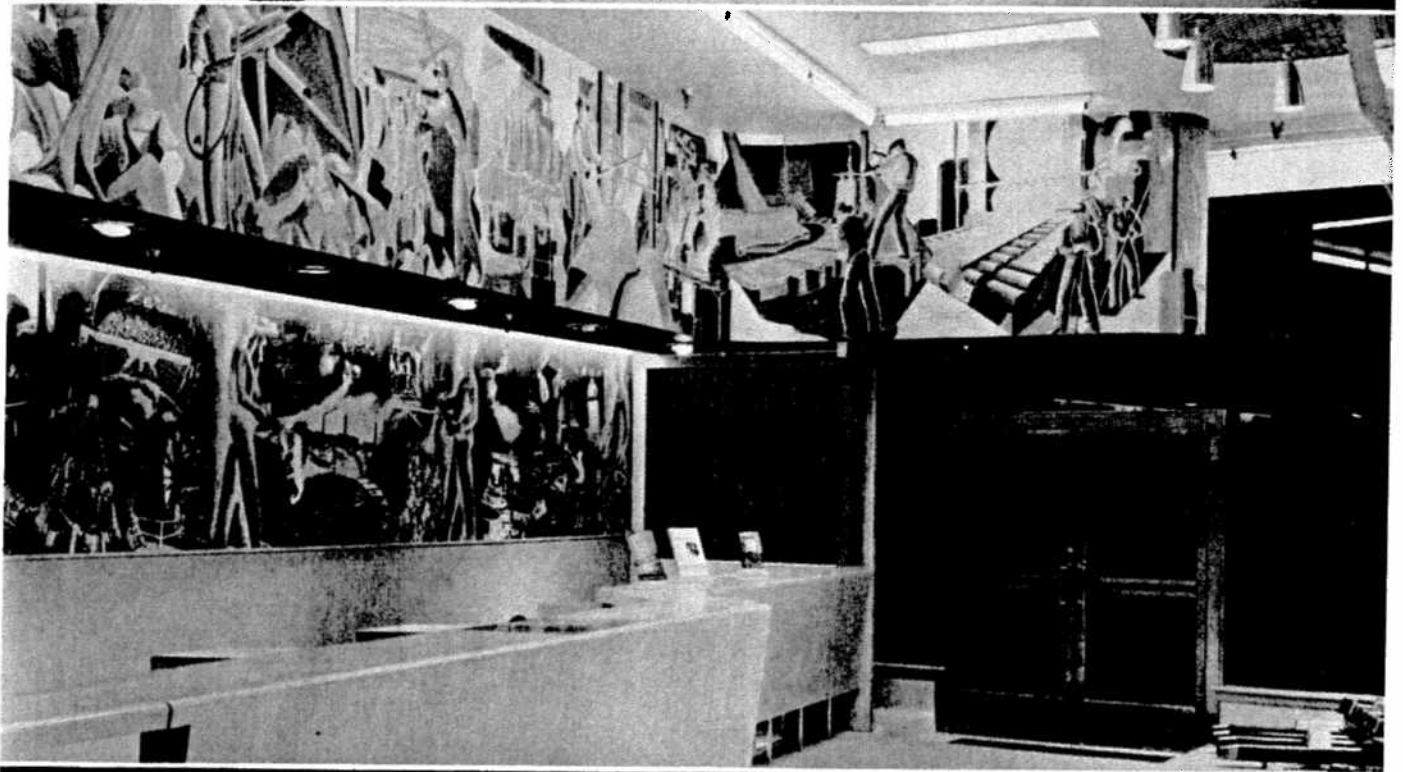
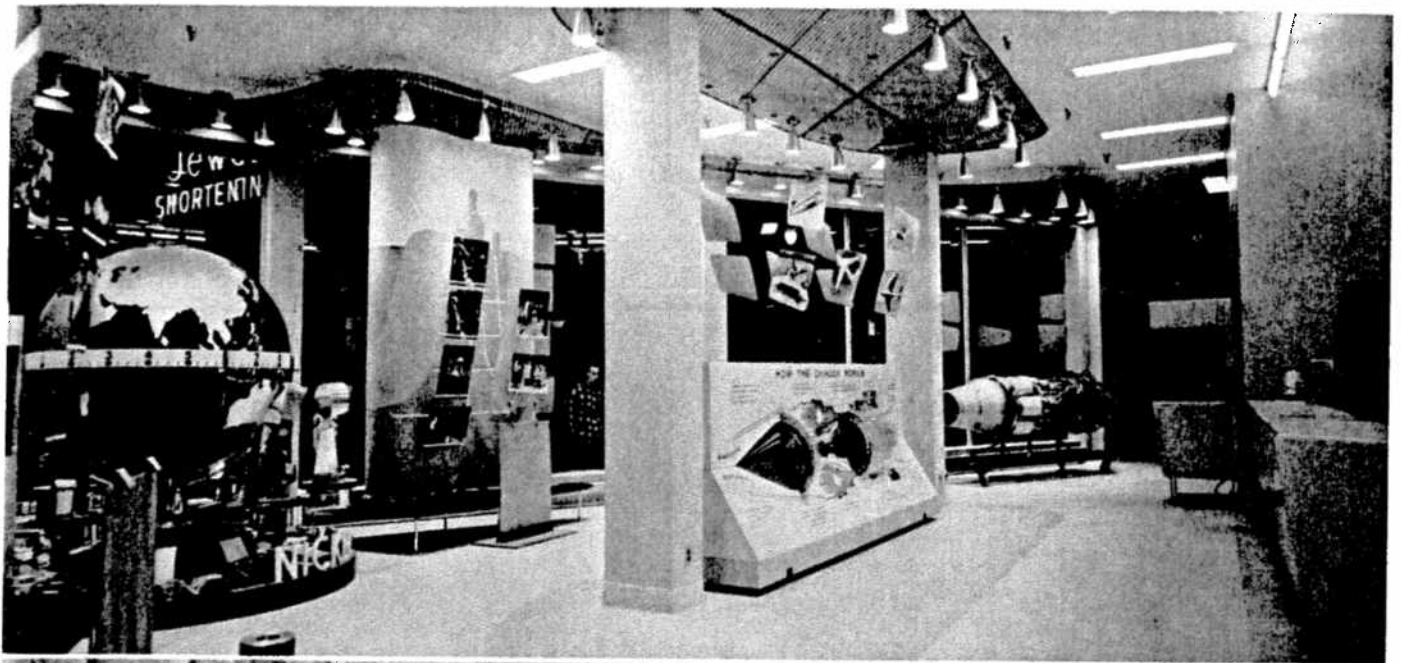
Guides Get Badges, Stars

Eight Creighton Girl Guides received second class badges and service stars following the Brownie "Fly Up", the presentations being made by the captain, Mrs. Norm Silverson, assisted by Mrs. D. H. Forster, the divisional commissioner. In the above photo of the Creighton Girl Guide company, the girls not in uniform had not yet been enrolled as Guides: back row, left to right, Mary Anderson, Emily McCormick, Violet Tokarvk, Anne McIsaac, Rita McMahon, Gail Stephenson, Carole Loupelle, Audrey Loupelle, Merle McIsaac, Teresa Coyle; front row, Catharine Marion, Susan Seguin, Gail Brown, Madelaine Seguin, Patsy Connors, Marlene Moore.

I early found that when I worked for myself alone, myself alone worked for me, but when I worked for others also, others also worked for me.—Benjamin Franklin

Power intoxicates men. When a man is intoxicated by alcohol he can recover, but when intoxicated by power he seldom recovers.—James F. Byrnes

Imagination was given man to compensate him for what he is not. And a sense of humor was provided to console him for what he is.—Morgenbladet, Oslo, Norway



INCO'S NEW SHOWROOM IN SUDBURY — STORY ON PAGE 16

Copper Cliff Club Bowling Champs



Annual awards for 5-pin bowling have been made at the Copper Cliff Club. The new trophy for the ladies, presented by Miss Rosemary Ovens, was won by the above team of Miss Lily Kauppi (captain), Mrs. J. Lama-craft, Mrs. G. Wilkinson, and Mrs. G. Masecar.



In the men's section the Bert Flynn trophy was picked off by Harold Tunney's lineup. The captain is seated in the above photo, and other members of the team are Harold Keast, Norm Temple, and Don MacLennan.

A series of four Saturday night bowling parties for older sons and daughters of members is at present proving a very popular innovation at the club.

We can always square away for a fresh start, no matter what the past has been. It's today that is the paramount problem always. Yesterday is but history

Wally Blackwell of Creighton is Gifted Artist as Well as Trainer



Wally Blackwell of Creighton, seen above with a display of his handiwork, is a man of many abilities and the patience and ambition to make the most of them.

The general public has observed him during the past two years as the faithful and efficient trainer of the Creighton baseball team, but that's just a little sideline with Wally. His chief hobby is working out intricate floral designs with colored shells, painting with oil or water color, and doing pencil sketches. He has never taken lessons in any of these arts. The shell work, requiring enormous patience as well as an artistic eye, has resulted in a wide range of beautifully decorated novelties such as lamp shades, cigaret holders, and lifetime corsages with ear-rings to match. Three of his framed floral designs are seen in the photograph, which also shows a few samples of his excellent work with brush and pencil.

Born at Hastings, in Sussex, England, in 1890, Wally had spent two years in the Imperial Army before coming to Canada at the age of 22. He has been more than 37 years with the Company, starting as a Mond man. His first superintendent was W. J. Mumford, father of Earl Mumford, superintendent at Creighton, where Wally for the past two years has been in charge of the school stope, "underground university" for new miners.

Wally was married in 1918 to Rose Barbeau of Sudbury. Their four sons, all of whom were in the services in World War 2, are Walter (Pete) of Kitchener, Jim of the Royal Canadian Navy, and Bert and Bill of the Creighton machine shop. Their only daughter, Dorothy, is Mrs. Lucien Boyer of Sudbury. They have 12 grandchildren.

Greatly interested in sport since boyhood, Wally served as trainer in the Old Country for water polo, boxing, wrestling, and bike riding. Football was in flower when he first came to Creighton, and he played on a team along with such well-known soccer old-timers as Jack Cullen, Jack Treasure, Tom Starkey, and Bill Barnicott. He has always kept himself in the pink of physical condition, and can sprint 100 yds. against men half his age with no quarter asked.

When a man's knowledge is not in order, the more of it he has the greater will be his confusion.—Herbert Spencer

Inco Showroom Attracts Keen Public Interest

Object of keen public interest ever since it was opened on March 22 is the impressive display sponsored by Inco in the new Loblaw building in Sudbury and devoted to the history and uses of nickel.

Handsomely appointed offices for Sudbury District Chamber of Commerce have been provided in the display centre where tourist information and automobile licenses will be issued and the many activities of the Chamber of Commerce carried on.

On Page 15 are two interior views of the centre, and one showing how it looks from the outside at night.

"Piece de resistance" of the smartly designed showroom is a six-foot revolving model of the world, complete with timepiece, and the theme of this main exhibit is that nickel is in action 24 hours a day around the globe, serving mankind. Samples of various Inco products, and abstract figures symbolizing uses to which they are put, are placed on a revolving platform at the foot of the globe.

A cleverly executed mural depicts the history of the nickel industry in the Sudbury District from the days of ore discovery. Beneath this colorful feature is a skillfully contrived photo-montage of various scenes from Inco operations, and more of these are seen on large decorative panels which carry descriptive captions.

Special exhibits, to be changed three or four times a year, will point up the broad range of uses to which nickel is put in all major spheres of human accomplishment. For the opening display an Avro Chinook jet engine, first to be designed in Canada, is on exhibition along with a descriptive model of its working principles. This powerful 10-foot engine, development of which was possible only through nickel's resistance to stress and high temperatures, has been of particular interest to the public.