Present Trends in Nickel Alloys

(Continued from Last Issue)

Nickel and High Nickel Alloys

The varied and versatile properties of nickel and the high nickel alloys, such as Monel and Inconel, are influencing their uses for many purposes involved in current advances of the various branches of science, including chemistry, aeronautics, electronics and medicine.

Widest use of these alloys continued to be found in the power, chemical, and associated fields where new and higher standards of operating field and efficiency are forcing greater demands upon equipment. These demands include increased resistance to high temperatures and pressures and to new and greater demands upon equipment, such as fluorine, the industrial uses of which are just beginning to be explored. Of particular importance is the use of such alloys in the development of methods for the production of gasoline and fuel oil from natural gas.

Ability to stand up under excessively high temperatures continued to make Inconel an important material for jet engines. The same alloy’s resistance to corrosion as well as its purity-purity—have been growing factors governing its selection for equipment to manufacture penicillin and other modern drugs.

Special electrical and other properties of nickel have developed markets in the rapidly expanding field of television. Typical of this development are the nickel and nickel alloys elements used in the image orthicon super-sensitive eye of the television camera, and in the cathode ray tubes and amplifier tubes used in the receiver.

Some of the high strength alloys, such as heat-treated “K” Monel, are sliding in the deep-well drilling for petroleum, now a major project of the oil industry. Being non-magnetic and highly resistant to corrosion, this alloy is being used for instruments as well as actual drilling and control equipment. Producers have shown particular interest in the material because of its ability to aid in the maintenance of production levels in highly corrosive fields.

Increased importance has been noted in the use of nickel-clad steel plate for such diversified purposes as fermenting vats and other equipment in breweries to numerous applications in paper plants and other industries. The use of this product, also showing market possibilities, in Monel-clad strip and nickel-clad strip.

In the field of accessories, industries facing corrosion problems are turning to Monel fasteners—such as hollow, self-plugging rivets for blind working, and nails with similar grooves to provide power of screws.

A special type of fabricated tubing, in both nickel and Monel, is finding uses throughout a score of industries—from beer dispensing units to chemical and food processing plants.

In sports, there is a marked revival of interest in high strength, corrosion-resistant alloys. Cup winners in all of the important motor boat races during the year were equipped with Monel propeller shafts.

The strong trend toward the use of Monel and Inconel in the home, which was observed immediately after the end of the war, is continuing. Applications include Monel kitchen sinks and cabinet tops as well as Monel hot water storage tanks for gas and electric heaters. There is an increased use of Inconel sheathed heating units for electric ranges.

Alloy Cast Irons

Consumption of nickel in cast iron, particularly Ni-hard for abrasion resistance and high nickel-bearing Ni-Resist for corrosion-resistance, expanded substantially.

The use of abrasion resistant martensitic cast irons, known as Ni-hard, containing 2.5 to 4.75% nickel, has increased considerably and they are rendering excellent service in the mining industry where the material is used for grinding balls, mill liners, pump bodies and impellers, and for other components subject to severe abrasive wear.

Corrosion, heat and wear resisting austenitic cast irons, known as Ni-Resist, containing 15 to 36% nickel, are finding greatly increased applications as cylinder liners and valve guides for internal combustion engines, in chemical equipment, heavy duty commercial ranges, pipe, glass molds, and bolts.

Low expansion wear resistant 35% nickel cast iron is in increasing demand for precision machine tool and instrument parts.

High Nickel Irons

During the year a new magnetic alloy was announced which affords a maximum permeability of about 1,000,000 as compared to about 100,000 for the best previously available material. The alloy, which contains 78% nickel, already has been used in considerable quantities of apparatus supplied to the U. S. Navy. Its use in communication transformers has been found to permit a three-fold increase in the range of frequencies transmitted. Interest in magnetic amplifiers and frequency multipliers using saturating nickel iron cores is growing rapidly.

Wrought Nickel Silver Alloys

There has been a strong post-war demand for the nickel silver alloys, of which the 18% nickel type is the most widely used. Along with the demand in the silver-plated ware industries, there has been considerable utilization of this alloy for zipper stock and springs in telephone and electrical equipment. In addition, nickel silver finds many applications for watch cases, key stock, costume jewelry and a host of other uses

(Concluded Next Issue)
Class Dinner Is Nifty Affair At Creighton Mine

Over at Creighton Mine school, where the principal, Miss Ursula Black, keeps things the constant hop mentally, socially, and physically, they had a nifty class dinner the night of Nov. 22 for Grades 9 and 10. The tables were attractively set in one of the classrooms, with a large replica of the school crest behind the toastmaster's chair, and it was a full-dress affair in every way.

After the dinner the class president, Jerry Gotro, proposed the toast to the King, and Joe Lovsyn toasted the guests of the evening, who included members of the teaching staff and the school board, Mr. and Mrs. R. L. Beattie, R. D. Parker, and Mr. and Mrs. T. M. Gaetz of Copper Cliff. R. D. Parker spoke in reply. The toast to the ladies was proposed by Jim Smith and acknowledged by Emilia Palys.

In the address of the evening T. M. Gaetz, assistant superintendent of mines and formerly "super" at Creighton, stressed the magnificent opportunities Canada offers her youth. "Know your country, husband and utilize her resources, and grow to be good Canadians," was the substance of his remarks.

Certificates Presented
Irene Gallipeau delivered the valedictory speech for the class, after which graduation certificates were presented by R. L. Beattie. Community singing was led by R. L. Goard, with Mrs. E. Tremblay at the piano.

Planned and staged by the students themselves, the affair was a credit to their initiative in every way. In the top picture here is a view across the banquet room, looking toward the head table, with R. L. Beattie on the right of Jerry Gotro, the toastmaster. Miss Black on his left, and T. M. Gaetz second from his left. In the second picture the camera looks down the table at which was seated the graduating class.

DON'T MIND IF I DO
Dinner was late so the hostess decided to play the piano. In the uncomfortable silence that ensued, she turned to a guest and said:
"Mr. Johnson, would you like a sonata before dinner?"

Mr. Johnson looked pleased. "Yes, thank you. I had a couple on the way, but I could stand another."
She Needed a Facial So They Gave Her One

Old Faithful, the ore hoist at Frood No. 3 Shaft, was due for a facial. Day in and day out, with scarcely an interruption since the shaft went into production in 1929, she'd been hauling muck from the underground until her service record was written in millions of tons. Now the old girl was looking a little frayed about the drums, and she needed a beauty treatment to perk her up for another 20 years.

They gave her the works. did the experts from Jim Ferguson's salon. For the first time in Canadian mining history, instead of sending her drums to the factory for a facelift, to renew the grooves in which the hoist rope lies, they practically brought the factory to her where she stood. From Dundas they shipped a special 40-foot lathe, weighing 35,000 lbs., and they installed it so its two tool posts could cut both her drums simultaneously, as a time-saver. In 40 hours of machining time they took two complete cuts off her drums, turning them round and true. For the operation, the hoist was operated at 2 r.p.m. by an electric motor through a worm reduction gear attached to the end of the drum shaft. The lead screw of the lathe to a predetermined size, they slipped on her was driven through a sprocket and chain brand new transformation. Rolled steel shells, on which the previous spiral had been reversed to give the hoist rope a better lead to
Inco Men Active in Novel Y's Men's Radio Stunt

Levack May Repeat Ryan

There's a very strong possibility that Levack Mine will make history this year by winning the safe-mining championship of Canada for the second time in succession.

On Oct. 31 Levack was leading Inco mines in the annual race for the Ryan Award, which it won in 1946, and reports filtering in from outside points indicate that no other mine had a better safety record at that time.

There's no telling what will happen between now and the end of the year, of course, but the boys at Levack are all "in there pitching" to repeat their triumph. Results of the Ryan contest are not announced until early spring, when reports on the preceding year's operations have been received from all over the Dominion.

As far as Inco mines are concerned, on Oct. 31 Levack led the race with a frequency of 5.27 lost-time accidents for each 1,000 men employed; Murray was close behind with 6.65, but the rest of the pack was well back of these two leaders. Garson had 11.44, Creighton 12.17, Stobie 14.17, and Frood brought up the rear with 14.77.

PICK ALL-STAR TEAM

On the second annual all-star senior baseball team selected by coaches of the Nickel Belt League for the Sudbury Daily Star. Frood placed four players, Garson none, and the other four teams in the league two each. Frood had 12.17, Stobie had 14.17, and Frood brought up the rear with 14.77.

To know is nothing at all; to imagine is everything.

-Anatole France.
green light to community bathing. "We enjoy the photo contest very much," Mr. McLennan writes. "Some of the entries have been wonderful shots."

One of those tricky reflection pictures that usually starts an argument as to whether or not we've reproduced it upside down, is picked for second honorable mention and a $1.00 prize. "It came from Frank Brown of Creighton, and shows an old water-filled quartz quarry in the bush between Creighton and the See Highway. Frank made the snap about 7:45 p.m."

Interest Is Holding Up

We're still purring over the lively interest in the pic contest, even though the number of entries has slackened off a little. We're hoping that there'll be a great batch of good snaps taken by Inco people during the Christmas festivities. And please send 'em in for sure, eh? Us folks on the rural routes just love to get mail, particularly during the long, lonesome winter.

Now for a few special mentions. Eddie Henry, son of Dewey Henry of Frood Mine, submitted a fine shot of his brother, goin' fishin' at Lake Vermillion and lookin' for all the world like Huckleberry Finn. Buelah Ellis of Nairn Centre sent a cute snap of Sheila Pomfrey, baby niece of Les Pomfrey who works swing shift at the Nairn and Wabagesik plants; she also enclosed some verses about the young 'un, for which thanks very much and congratulations on the way you express your poetic thoughts. Alex Herrich of Port Colborne entered a couple of good efforts, one showing Lake Erie at Morgan's Point and the other a candid shot of Patrol Leader Keith Wallace fondly toymg with a pork Chop at Boy Scout Camp. W. E. Chaddock offers two fine mountain scenes and also the comment (which just burned us to a crisp) that the Triangle has one fault — it isn't big enough. Brother Chaddock, you should try filling it up some time!

PICTURE CONTEST WINNERS AT LEVACK, SMELTER, CREIGHTON

Harry Sharp, the Levack camera smoothie, gathers up the 10 shining simoleons for first prize in this month's picture contest with the striking cat picture reproduced above. We think nobody will argue with this decision by Gordon Harry, who acted as judge. It's a mighty smart piece of photographic workmanship; nuff said.

To J. McLennan, maintenance electrician at Copper Cliff, goes first honorable mention and a $1.00 award for an appealing snap of his smallest son and a cousin. in the tub. The picture is titled "Saturday Night." By the way, while he says that in this case he regards it as perfectly okay, Judge Harry does not want people to think he is giving the Levack Smelter, Creighton
employee, Harold Maloney; unfortunately the cute youngster couldn't sit tight for 20 seconds, and do you know one that can, by the way? Germain Tessler of Coniston, who works in the crushing plant at the Cliff, sends a dandy snap of his daughter Paulette, 11, taken at his summer camp at Stinson. A hearty thank-you to Frances Moir of Turbinc for her remarks about the Triangle and also for her double entry, a snap of the Spanish River near the Weedmark home and another of pretty little Sharon Macartney, 3, daughter of Mr. and Mrs. H. Macartney.

And that's '30" for this trip. Keep up the great work, you camera clickers! We hope the mailboy gets round-shouldered, lugging in your entries.

51% of Incoites Bought Canada Savings Bonds

The Nickel Belt has a country-wide reputation for its high standard of living, but Incoites don't let their yen for the good things of life interfere with putting something in the old sock for a rainy day.

A total of $1,968,700 was invested by Inco employees in the Sudbury District and at Port Colborne in the 1947 issue of Canada Savings Bonds, indicating that the thrift habits encouraged by Victory Loan campaigns during the war years have by no means been lost in the shuffle of post-war adjustment. This sum represents purchases made through the payroll deduction facilities provided by the Company, and does not include bonds bought directly through the banks.

There was no selling campaign such as in the Victory Loan drives; the only promotion of the bonds was the regular publicity material issued by the Department of Finance at Ottawa.

The total number of subscribers was 6,300, or 51% of the total enrolment, which puts the average subscription at $312. When the 1946 issue of Canada Savings bonds was offered, Incoites bought a total of $1,419,650 worth, there being 5,451 subscriptions averaging $260 each.

A breakdown of the 1947 Inco bond purchases by plants follows:

<table>
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<tr>
<th>PLANT</th>
<th>SUBS.</th>
<th>TOTAL</th>
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<tr>
<td>Frood Pit</td>
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<td>Levack</td>
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HONORED FOR GUIDE WORK

At the semi-annual meeting of Sudbury District Girl Guide divisional committee, held at the Sudbury Inco Club, Mrs. Robert Jack was honored for her great achievements in her 10 years of service as district commissioner for Garson. She received a certificate of merit and ribbon from Mrs. D. H. Forster, divisional commissioner. Under her leadership Garson Girl Guides and Brownies have made outstanding progress, during which they won the Webster Shield in 1945 and the Mackey Shield in 1947.

RUNS CLELAND RANCH

Here's pretty young Jo Ann, better known as "Jody", who rules the roost at the R. H. Cleland home in Copper Cliff. Her dad is General Safety Engineer when he's at work, and his opinion of his 4½-year-old daughter is no accident.

Each Saturday evening from 9:30 to 10:00 o'clock from the auditorium of Inco Employees Club, Johnny Juryczak's orchestra broadcasts a selected program of the dance music they'll be playing at that night's cabaret party. The fact that the cash customers are being lured in steadily increasing droves to these weekly get-togethers indicates that the air samples are popular, but that's not the final measure of how the radio program is going over with the public—no siree, not by any means.

The real down-to-earth dope on that radio show comes from the club lounge, right next door to the auditorium. There, gathered around the radio, wives of the orchestra boys listen to the broadcast, and theirs is no mere bobby-soxer interest. They double-check the performance on every score, and are ready with their verdict as soon as the program signs off. No wonder Juryczak and his men bear down when they hit the ether!

In the top picture the Inco Club orchestra is seen during a regular broadcast, and in the second picture is one of the Saturday night jury panels: counter-clockwise, Mrs. I. Tramontini, Mrs. J. Juryczak, Mrs. Dyke-Parker, Mrs. A. Serent and Mrs. "Happy" Clarke.
Reverb Furnaces Give Ore The Metallurgical “Hotfoot”

Copper Cliff’s reverberatory furnaces make an outstanding contribution to Northern Ontario’s scenic splendours because they produce the slag which cascades down the dump and bathes the night sky in softly beautiful pastels for the delight of the tourists.

Worthwhile accomplishment as that may be from a Chamber of Commerce point of view, it is nevertheless not quite the purpose for which the reverbs are operated.

There are nine of these long brick furnaces in the smelter, seven producing matte for the nickel converters and two turning out matte for the copper converters. Each one is 110 feet long by 27 feet wide, inside dimensions, and is of special brick construction to withstand the intense heat and corrosion of the process which goes on inside it night and day, week in and week out. Since operation of the nickel and the copper reverbs is essentially the same, Triangle will confine this description to one of the nickel furnaces.

It’s A Hard Life

Ore from the mine runs into some very unceremonious treatment in its long trek from skip to cathode. Its age-long slumber underground is rudely shattered by inquisitive drills and thunderous blasts. Crushers squash and crumble it. Rod mills grind it to a pulp, flotation machines drown it, and roasters shove it down from hearth to hearth until it’s plenty hot under the collar. But it begins to get really uncomfortable when it’s dumped into the 2,600-degree bath inside a reverberatory furnace. That’s a pretty tough spot for dumb, harmless sulphides.

Like red hot dust and just below its melting point after its trip over the 11 hearths of a roasting furnace where water and a great deal of its sulphur has been driven off, the nickel-copper concentrate from the concentrator, now in the form of a calcine, is delivered by gravity through pipes to the reverberatory department. It arrives at the head of drag conveyors, the steel paddles of which operate in dustproof housings and run along both sides of the top of the reverberatory furnace.

At a rate of approximately 1,500 tons a day, the calcine drops into the reverberatory through settling pipes, which are six-inch tubes spaced three feet apart and connecting the conveyor with the interior of the furnace.

Inside the reverberatory furnace is roaring, blinding flame. The calcine piles along both sides of the furnace and slowly melts in the terrific heat running into the bath of molten sulphides, the slag floats to the top of the bath.

At one end of the furnace, just below the surface of the bath, is a small hole through which the slag is skimmed off almost continuously. On a cement platform outside the furnace stands the skimmer with his long iron bar, watching that the skimming hole does not clog up, that no nickel-copper values escape with the slag, and that the slag is running freely down the water-cooled launder, or chute, which feeds it into a slag pot on the tracks below.

The only interruption to the steady stream of slag from the furnace is when the pot below has received its load of 20 tons and another one must be pulled into position. Then the skimmer “buds up” the slag hole temporarily with a plug of clay, which is easily broken away when another slag pot is in place and skimming is to be resumed.

The slag train is usually made up of 18 pots, and when these are filled they are hauled out to the slag dump, usually about every half hour.

Tapping The Matte

In the lower part of the bath the molten nickel-copper sulphides, now a grade of matte suitable for the next step in the smelting process, are ready for transfer whenever the converters require them. From 12 to 15 times each eight-hour shift, matte is tapped from the reverberatory through a hole in the side wall of the furnace 17 feet from the skimming end. A heavy dull red, it flows down a covered clay-lined chute or launder into a matte ladle which is spotted on the transfer track in a tunnel below the end of the launder and parallel with the furnace. The tapper, like the slag-skimmer, stands ready to keep the tapping hole clear and matte running steadily.

Its capacity 185 cubic feet, the big steel matte ladle has been lined with two or three coatings of frozen converter slag to protect it from the action which would take place immediately if the matte were to come in contact with it. Although it is made of four-inch steel, the stream of matte would consume it like sugar in tea if the slag were not there to protect it.
Fed To Converter
When it is filled, the matte ladle is hauled through the tunnel to the converter aisle, and one of the powerful overhead cranes picks it up with ponderous ease, swings it carefully into position above the fiery throat of a converter, and nonchalantly pours the 12 tons of molten sulphides into the seething belly of that thirsty monster. So once again a reverb has “delivered the goods.”

Matte ladles are also used when it comes time to skim slag from the converter, into which a mixture of quartz and low grade mine rock is also introduced to lure away the balance of the iron impurity from the sulphides. Converter slag, coming from a more advanced stage of the smelting process, contains nickel-copper values which can be recovered, so it is fed back into the reverber through a launder in the end opposite to where skimming is done.

170 Tons Per Day
Fuel for the reverb is powdered coal, crushed in the coal plant and blown through pipes to an 80-ton bin above the furnace, from which screw conveyors carry it down to be picked up by fan air and blown into the furnace with its four burners. A reverber requires for each day’s operation about 170 tons of coal.

Smoke and gas from the reverb enter a furnace flue which is connected with a main header flue feeding to the big brick stack. In order to eliminate the gas as much as possible from the matte and slag as they are being taken from the furnace, large hoods are hung over the matte ladle and over the slag launder above the slag pot. These hoods are connected to the reverberatory header flue, and have greatly improved working conditions in the reverberatory department.

In five of the reverbs the waste heat is used to accomplish another important purpose besides converting calcines into sulphide soup a la silicate. On the flues of the second, third, fourth, fifth, and sixth nickel reverbs are bypasses which allow the waste heat to be used for heating boilers, two of them 750 horsepower, one 1,200 horsepower and two 1,800 horsepower, which furnish steam to all buildings in the Copper Cliff plant.

Nine men man a reverb. The tapper draws off the matte: the two skimmers draw off the slag. The two roof men clean off any spillage of calcines around the fettling pipes, help the tapper, and operate the conveyor which pulls the matte ladle through the transfer tunnel into the converter aisle. Two fettlers control the flow of calcines into the furnace by operating small gates located just above the fettling pipes. Two converter slag men keep their slag chute clean and assist the craneman in returning converter slag to the reverber.

SKELETON SHOWS HOW REVERB ROOF IS HUNG
The suspended arch roof of a reverberatory furnace is clearly illustrated in this sketch, or “longitudinal elevation” as the boys in the engineering dept. call it. Suspended from beams running the full length and breadth of the furnace are hangers supporting 15-in. magnesite bricks in cans. Construction of the furnace to withstand the terrific heat and weight of the molten bath is also clearly shown.

NUCLEAR FISSION
“We had a bad explosion at our house last night. Somebody told Dad the new maid was dynamite; so he decided to investigate.

“As soon as he touched her she exploded. Mother went through the roof, grandma hit the ceiling, and Dad went all to pieces.”

TOUGH GUY
The criminal was an old ‘toughy’. The law had shot him numerous times without serious injury. He'd been captured, had escaped, and been recaptured. Finally, with obvious bravado, he walked to the electric chair. He didn’t flinch, but after he'd been strapped into the chair by a bunch of huskies, he seemed to sag and grow a little pale. Suddenly he barked: “Well, turn on the juice!”

“Turn on the juice?” the electrician blurted. “Why, it’s been on for five minutes.”

The time which we have at our disposal every day is elastic: the passions that we feel expand it, those that we inspire contract it; and habit fills up what remains.

—Marcel Proust
Nute Memorial to Encourage Embryonic Curlers at Cliff

YOUR HEAD MUST BE USED TO CONSERVE YOUR HEART

The heart is a sealed-in motor which is virtually inaccessible during life. It cannot be repaired or replaced and when it fails, you fall with it.

It is well constructed for the task it has to do and this is greater than most people realize. At the rate of 70 beats per minute, in a week or even a day it totals up to fantastic figures.

However, busy as the heart appears to be, the cycle consists of a beat and a rest and it actually rests about two-thirds of the time. This fact plus an excellent blood supply controls fatigue in the heart muscle.

When the heart is young and healthy there is more reserve to take care of the peaks of stress and effort to which we subject it. But as a person ages the age of 40 a period is reached when it is wise to think of conserving this vital organ.

Heart Strains
Factors which increase the load on the heart are overweight, emotional stresses, prolonged physical effort and chronic fatigue.

Women Compete in Garson Test

Displaying smooth proficiency in St. John Ambulance work, women of the Garson nursing division took part in a First Aid competition to determine their local team championship and also to decide who would enter the lists against Sudbury in the annual test for the Dr. R. M. Mitchell Trophy.

Winning team, coached by Bob McCauley, was the one pictured here, left to right: Mrs. Bob McCauley, Mrs. Cecil Smerdon, Mrs. T. J. Birney, and G. Telford, while shift time-keeper was Mrs. V. Kaattri Brown, Lillian Davis, and Lila Conroy. Dr. H. M. Mitchell was on hand to present the district championship trophies to the winners on behalf of the Brigade judge. The event was T. M. Garson, who chairs the special committee in charge of junior curling. Secretary-treasurer and his assistant are Tom Birney and Mills Austin. Members of the executive are R. Bell, R. Hendry, F. Matte, F. H. Clarke, G. Henry, H. Munro, E. G. Stoneham, Dr. C. R. Ferguson, J. Hudson, and H. J. Mutz.

IT ALL DEPENDS

A gossip is a person who talks to you about others; a bore is one who talks to you about himself; a brilliant conversationalist is one who talks to you about yourself.

C. W. "SAM" NUTE

Shortly before his death last May, C. W. "Sam" Nute, ardent Copper Cliff curler and past president of the Northern Ontario Curling Association, expressed his intention of putting up a trophy to stimulate interest in curling among the young boys of the town. His wish has been carried out with the presentation to the curling club last month of the C. W. Nute Memorial Cup, and it's a beauty.

All boys in Copper Cliff in secondary school or up to 19 years of age may take part in the competition for the Nute Cup. No fee will be charged them, and brooms and stones will be supplied. They will be allowed use of the ice from 4:30 to 6:00 o'clock some afternoons, and also on week-ends at times to be arranged. Oldsters will be on hand to instruct them in the fine points of the game.

Sponsorship of the junior group, and the resumption of curling schedules for men on shift, are features of what looks like a big year for Copper Cliff Curling Club. President A. Godfrey expects a hefty increase in last year's membership of 130, particularly when the town's new housing project is completed. If the weatherman is agreeable, curling will be underway by Dec. 15.

Vice-president of the club is Jack Duncan, who chairs the special committee in charge of junior curling. Secretary-treasurer and his assistant are Tom Birney and Mills Austin. Members of the executive are R. Bell, R. Hendry, F. Matte, F. H. Clarke, G. Henry, H. Munro, E. G. Stoneham, Dr. C. R. Ferguson, J. Hudson, and H. J. Mutz. The ring committee is composed of John Garrow, D. Finlayson, and H. Hyland. The competition committee has G. M. Ferguson, M. Austin, T. J. Birney, and O. Telford, while shift curling will be in charge of F. Matte, R. Hendry, S. Spratt, and O. Telford.

Gossip is a person who talks to you about others; a bore is one who talks to you about himself; a brilliant conversationalist is one who talks to you about yourself.

If one or more of these conditions present a sincere attempt should be made to minimize and slow down.

The important thing to remember is that you cannot do at 40 what you once did at 20. Your heart is like a rubber band that no longer has all its former elasticity. If you stretch it too far something has to give.

Exercise Sensibly

There must be a balance between rest and exercise. At least 56 hours of sleep a week is required. When you exercise avoid such effort that will cause shortness of breath and an uncomfortable feeling in the chest. Always start slowly, build up gradually, and finish in the same way. Always be sure your heart is in good condition before you even think of exercising. Always be sure your heart is in good condition before you even think of exercising.

Careful Diet

Care with your diet is essential. Not only is a well balanced diet important but so are the size of the meals and the manner in which you eat them. Large meals eaten in a hurry place a heavy strain on the heart and if you are really looking for trouble. If a person is at all inclined to overweight, fats, sweets and starches should be limited.

No man is wholly independent. To some extent in some capacity, either large or small, he must depend on others.

Mrs. G. Gregg, Mrs. Ted Brankley, and Mrs. T. J. Birney, and G. Telford, while shift time-keeper was Sudbury entry, Mrs. Morin's lineup had to concede defeat for 1947 by a margin of only four points. Captained by Mrs. Pearl Klein, the Sudbury squad was comprised of Ethel Brown, Lillian Davis, and Lila Conroy. Dr. W. J. Bell of Toronto, provincial commander of the Brigade judge the final contest.

Garson had won the Mitchell Trophy for the district championship two years in a row but, competing in the finals against the Sudbury entry, Mrs. Morin's lineup had to concede defeat for 1947 by a margin of only four points. Captained by Mrs. Pearl Klein, the Sudbury squad was comprised of Ethel Brown, Lillian Davis, and Lila Conroy. Dr. W. J. Bell of Toronto, provincial commander of the Brigade judge the final contest.

Gossip is a person who talks to you about others; a bore is one who talks to you about himself; a brilliant conversationalist is one who talks to you about yourself.
YOUNG THESPIANS DRAW LAUGHS WITH WELL-DIRECTED COMEDY

Gales of hearty laughter from the audience rewarded the cast which presented a one-act play, "The Patched Coat," at the annual commencement exercises of Copper Cliff High School, under the clever direction of Miss Gertrude Wilson.

Behind-Scenes Workers

In the above picture layout are scenes prior to the final curtain call. The group in the first photo is composed of the behind-the-scenes workers without whose aid no play could be a success: standing, Shirley Kamp, Phyllis Hobden, Miss O. Wilson, Gino Pollesel, and Derno Minardi; sitting, Vilma Lahti, Dorothy Sinclair, and Joan Stoddart.

Three of the handsome male members of the cast are seen in No. 2 in a pre-curtain huddle: Bill Sleaver, Charlie Tuttle, and Louis Core. Not pictured, Jim Lee.

Margaret Mowat, in No. 3, is about to receive from Shirley Kamp the excellent make-up effort which transformed her into Grandma Hamilton.

In No. 4 are Fay Young, Ann Morrow, and Margaret Sauve, pretty young co-eds who took the parts of the Hamilton girls, Gladys, Effie, and Maybelle.

No. 5 shows Joy Meeks, who played Dinah, the colored maid, gazing woefully into a hand mirror as Vilma Lahti starts to mask her with the inevitable blackface.

Triple-Threat Scholar

In the long list of presentations made during the commencement exercises outstanding were those to brilliant Helen Martel, the valedictorian, who is now attending University of Toronto. She received the Inco award of $30 for attaining the highest standing in Grade 11, the Robert Simpson scholarship of $100 for proficiency, and the Dominion-provincial scholarship of $500 for her scholastic record.

Two other Dominion-provincial scholarship winners, now attending Normal School at North Bay, were Edith Salo and Ruth Watson, who received $250 each.

Rounding out the entertainment side of the program were much enjoyed selections by the girls' glee club, singing in four-part harmony.

They were expertly conducted by Miss Mary O'Sullivan, with J. Dunn as accompanist.

Pardon Us If Our Slip Was Showing!

To The Editor:

The Copper Cliff cribbage team wishes to draw attention to a misstatement of fact appearing in your last issue. It was reported there that the Refinery cribbage team had beaten the Copper Cliff cribbage team in three straight encounters. Those familiar with the two teams would automatically discount the story because of its inherent improbability.

For the benefit of others we wish to correct the record by stating that of the three encounters the Copper Cliff team won the first two and the Refinery team was permitted to take the third by a small margin.

Publication of this letter will alleviate the embarrassment of the Refinery team for having been pictured in an impossible light.

--Copper Cliff Cribbage Team.

Ed. Note: While admitting an unfortunate error in reporting, as far as the standing of the two cribbage teams was concerned at the actual time of publication, we cannot and will not be censured for our great mystic power to divine the course of events before they come to pass. About four days after we received this letter, the Refinery cribbage team walloped the Copper Cliff cribbage team—but good! Your crib, Citizen Zurbrigg.

MAN, BOY, AND DOG

The happy character in this snapshot is Archie Dagg, who works underground at Frood Mine. In the crook of one arm he has his husky, 4-month-old son Brian, and in the other arm he has the family bulldog, Tim. Another reason he's smiling is because his wife was holding the camera. Everything was oke with Archie right then.

The whole universe is a parable which hides God from the unworthy, while it reveals him to the devout.

--Philip Vollmer, Ph.D.
One Side of Muck Pile In a Garson Stope....

SLUSHER HOISTS SAVE BACKS AND BOOST MUCKING SPEED

A slusher hoist, back-saving replacement for the old mucking shovel, and concrete flooring, still in the experimental stage as a replacement for timber, are the features illustrated in the two pictures on this page. The opposite page shows operations in a typical cut-and-fill stope at Garson Mine.

The big muck pile in the background of the above picture is ore which has been broken down from the roof of the stope by drilling and blasting. The miner with the long scaling bar is completing the standard safety precaution of testing the uncut section of the roof for loose. The expanse of flooring is ready for mucking operations, after which it will be buried beneath tons of fill as mining progresses.

The size of the cut-and-fill stope depends on the size of the orebody at the particular point of operation, but averages about 25 ft. wide by 150 ft. long. The mining procedure is to take a full cut from the roof of the stope, mucking out the ore with the slusher after each drilling round is blasted. Without a solid flooring in the stope it would be impossible to remove all the fines, or small particles of ore, which usually contain higher metal values. When the full cut from the roof has been mined, the chute is raised to the next floor with the timber framework seen in the right background of the above photo, and the manway and supply compartment is extended. Then the stope is filled to about half its height with waste material, a new flooring is laid, and the cutting and mucking cycle is commenced again.

The picture on the next page, taken from the opposite side of the muck pile, completes the view of the stope midway through a cut. The miner with the long scaling bar is completing the standard safety precaution of testing the uncut section of the roof for loose. The expanse of flooring is ready for mucking operations, after which it will be buried beneath tons of fill as mining progresses.

FAST BADMINTON LOOP

Eight teams are hot-footing it after the Nickel Belt Badminton League title this season, one more than last year. Competition is already at concert pitch. Two of last season's entries, CYO and Creighton, have withdrawn, but St. Louis Club, "Y," and Falconbridge have entered for the 1947 season. Sudbury Inco Club and Copper Cliff made up the eight-team loop.

Re-election of Vern Tupling as president and Stella Crawford as secretary-treasurer, and naming of Ovide Gauthier to succeed Walter Wilson as vice-president, filled out the league's slate of officers.
and Here’s Other Side; Note Concrete Floor

Falconbridge Takes Opener

Back in the Nickel Belt hockey wars again after an absence of five seasons, a Falconbridge team swept to triumph in the season’s curtain raiser at Stanley Stadium, the MacAskill Cup series. Two third-period goals from the stick of Jerry Seguin gave the Combines a 5-4 victory over Sudbury Wolves in the final game.

Wolves had eliminated Sacred Heart College 7-5 and Falconbridge had taken the measure of Copper Cliff Redmen 2-0.

Picture shows Duncan Finlayson, president of Copper Cliff Branch of the Canadian Legion, presenting the MacAskill Cup at the end of the final match to Gord Harley, the North Bay boy who captains the Falconbridge entry. The Legion realized a tidy sum from the gate of the series for its welfare work.

Better-Balanced League

Plenty of new faces and a better-balanced league than last year are inducements which are already turning out the customers in gratifying numbers. There was no big fat edge for any team in the MacAskill series.

and the dopesters figure it to be that way all season. Looking a long way ahead to playoff time, indications are that the Nickel Belt’s senior entry in the NOHA will have a tough time getting by the Sault, which has gone all-out to build a real team this year, whereas the local junior entry will probably meet its thorniest opposition in the North.

A favorite pastime of the railbirds these nights is toying with the prospect of how far last year’s Copper Cliff Redmen would go this season if they had remained together.

The way the Cliff kids are starring in junior ranks down south, the feeling is that nothing could have stopped them from the Eastern Canada title at least in 1948. Playing with Guelph, Yacker Flynn and Tatter McClellan are among the top scorers in the Junior OHA.

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Junior Badminton League at Copper Cliff

All Inco community halls report greatly increased badminton activity this season, but at no point is this more evident than at Copper Cliff, where Steward Owen McDermott has organized 50 junior players into a five-team league which is tops for keen interest and sizzling competition. Playing after school, Saturdays, and the odd evening during the week, the budding stars are developing fast under their coach's enthusiastic supervision.

Pictured here is the turnout at a typical Saturday morning session: front row, Betty Mash, Phyllis Hobden, Margaret Mowat, Fay Young, Dorothy Sinclair, Margaret Sauve, Joan Stoddart, Maureen Pappin, Lois McNiel, Isabel Boyle; middle row, Amy Wulff, Marilyn Gillespie, Connie Norman, Marilyn Beech, Jean Mash, Doreen MacKinnon; back row, Bill Yeo, Jack Cullen, Darrell Shields, John Birney, Barry Price, Derio Nicoli, Bill Coo, Kornel Sharko, Gino Pollesel, Adelchi Bulfon.

Other badminton activity at Copper Cliff Community Hall includes entries in both the Church and Nickel Belt leagues, as well as a thriving house league in which the four teams are captained by DeSoto, Stephenson, Wilson, and McDermott. They sure are batting that bird around in the smelter town these nights.

TECH TAKES RUGBY TITLE

For the first time in 15 years the Northern Ontario senior rugby title and the Poupore Cup came to Sudbury when the Tech team mothered Timmins High and Vocational School 42-5 in the final at Queen's Athletic Field. It was the ninth win in 10 games for the powerful victors, and the first defeat in nine starts for the losers.

This was Sudbury Tech's lineup:

Sudbury Tech—Flying wing, Dickie; halves, Rapisky, Makarinsky and York; quarter, Puro; snap, Borisich; insides, Reipas and Duncan; middles, Pella and Sutinen; outsides, Benhomme and Czomos; subs, Geoffrey, Cecile, Depatie, Gereghty, McVittie, Rubic, Hogle, Burns, Wolfred, Kalilo, Christakos, Woitowich.

They Keep General Office Spic

Gleaming woodwork and shining floors greet the General Office staff at Copper Cliff when it troops in to work each morning. Members of the "silent service" which is responsible for the spic and span appearance of the big building are seen here: left to right, John Livingstone, dean of the janitor corps with 17 years on the job; Sid Anderson, who worked for 12 years in the plant before joining the janitor crew six years ago; Paul Jansson, the celebrated cross-country ski champion, who has just returned from a three-month trip to Finland to visit his aged mother and who says Canada looks better than ever to him; Alma Puppato; Angelo Delmul, who has been with the janitor corps for 14 years. Seated is Isabel Martin. Other members of the efficient, hard-working crew are Yolanda Zillio and Mary Rinaldo.
FINEST EQUIPMENT FOR LAB.
AT COPPER CLIFF HOSPITAL

As a result of the Company's policy of furnishing every department at Copper Cliff Hospital with the most modern equipment available, the institution has what is recognized as one of the finest medical laboratories in Canada for a hospital of its size.

Top picture shows the immaculately clean lab., which is equipped to handle blood counts of all descriptions, all types of medical analysis, and blood chemistry for the detection of some 20 abnormal values which may occur in the blood. In connection with blood chemistry, a particularly interesting piece of equipment is the photo-electric colorimeter, which measures the density of the blood color to aid in determining any unusual condition.

The lab., maintains a “walking” blood bank—a list of men of all blood types who are working in the plant and are available on a few moments’ notice to give transfusions.

Operating one of the lab’s high-powered binocular microscopes in the second picture is the technician, Bob Paton, who first started at Copper Cliff Hospital in the spring of 1938, and returned last January by popular request after serving almost five years in the Navy part of the time on the aircraft carrier HMS Puncher. Bob is proud as a peacock of his lab., and won’t even let anyone else “scrub the deck” for him.

He was married in 1941 to Miss Anna Kraul of London, who was a nurse-in-training when the persuasive Scot appeared on the scene. They have two kiddies—Bob Jr., 3½, and Jane Ann, one year; they live in Copper Cliff.

All men are not born with genius, but every man can acquire purpose, and purpose is the backbone and marrow of genius.

—Bulwer.
The reorganization of the Nickel Belt Junior baseball league, after a lapse of several years, was a feather in the cap of its supporters and a big boon to a bunch of smart young senior prospects. Frood took the title this year, defeating Coniston three games to one in the playoffs, and here's the lineup that did the trick: back row, left to right, Eldon Carmichael, Johnnie Luptak, Johnny Barbeau, Bud Hail, Floyd Johnson, Norm Flowerday (assistant coach), and Ed Fortier; front row, Bernard Kaiftes, Don Souliere, Toby Leipala, Cleo Lalonde (mascot), Freddie Stevens (coach), Henry Boyd, and Ed Lacosta. Absent, Art Hughes.

The Christmas theme will predominate in the second program of the Little Symphony Concert series to be given at the Copper Cliff Club on Sunday evening, Dec. 21. An impressive array of talent has been booked by the series impresario, Roy C. Barnes, to provide a memorable evening in the spirit of the Yuletide season.

Combined choirs of three Copper Cliff churches, St. Stanislaus Roman Catholic, St. John's Anglican, and Copper Cliff United, will blend their voices in Christmas anthems under the leadership of Mrs. E. E. Lambert. The Little Symphony Orchestra, with Michael Moore of Sudbury as guest conductor, will play special arrangements of Christmas music. The audience will join at various stages of the program in singing Christmas carols.

A gifted Creighton couple, Mr. and Mrs. Grant Boland, will be vocal soloists; Mrs. Boland is a soprano and her husband a baritone. Edward Kneeshaw, L.R.S.M. of Copper Cliff, will play two piano selections. Rachmaninoff's Prelude in C Sharp Minor and the Hungarian Rhapsody by Liszt, and Archie Canapini, the well-known Sudbury violinist, will also be a guest artist. A string quartet from the orchestra will be composed of A. G. Bell and Mike Shamley, violins, Rev. P. Bain, viola, and Erza Lemke, cello, and will be accompanied at the piano by Miss Naomi Perras.

The program will be announced by Arnold Ross, chairman of the entertainment committee of the Copper Cliff Club, and will commence at 8.45 p.m. A capacity audience is expected.

Great ability without discretion comes almost invariably to a tragic end.

FROOD JUNIORS ARE CHAMPS

BARBARA SILVER
A STAR PERFORMER

WOTTA MUG!

Following in the footsteps of her athletic pappy, Art Silver of the Mines Dept., Barbara Silver distinguished herself this year by turning in the outstanding performance at Creighton Mine Public School's track and field meet. She won all possible points in the events for her age group.

Other champs declared at the end of a highly successful day's competition were:

Boys: 6 and 7 years, Frank Monastiti; 8, 9, 10 years, Walter Softich; 11, 12, 13 years, Tom Stefanko; 14 and over, Harry Pentney.

Girls: 6 and 7 years, Barbara Silver; 8, 9, 10 years, Bertha Zionis; 11, 12, 13 years, Seba Stephanos; 14 and over, Sophie Kuzma.

The gladiators were divided into two groups for team competition on the day's events, and the Blues took the Whites into camp with 63 points to 56.