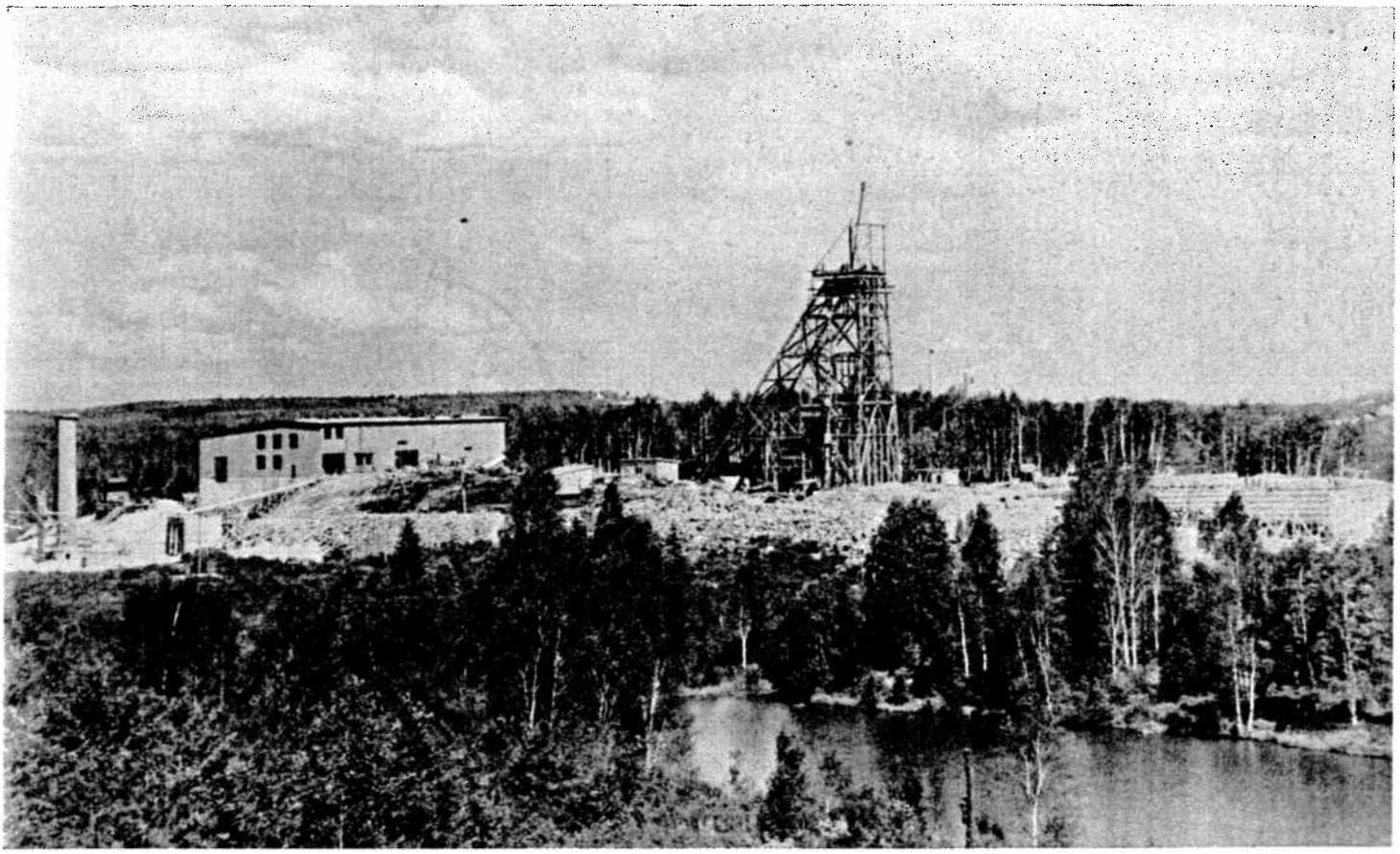
Within The

INCO TRIANGLE

VOLUME 3 AUGUST, 1939 NUMBER 5



Will Use Permanent Equipment For Sinking New Shaft at Garson

With the shaft collar completed and the all-steel headframe now in the course of erection, rapid progress is being made in construction of International Nickel Company's new mining plant at Garson.

Various surface buildings will be completed by fall, and it is expected that sinking of the new shaft to an initial depth of 2,240 feet, will commence about October 1st. The general construction program is unique in that the permanent mine buildings and equipment will be utilized in shaft sinking, thus eliminating the temporary structures usually erected.

Garson will have a 100 per cent. increase in production when the new plant is placed in operation, which will probably be early in January of 1942.

The orebody was originally discovered on April 30, 1891, when John Cryderman, prospecting in the midst of a tract of standing pine, discovered a large showing of gossan on the south portions of lots 4 and 5 in the third concession of Garson township. It was not until January 28, 1895, however, that the Department of Mines granted a lease to Cryderman and his partner, Wm. Mayhew. The mine, first known as the Cryderman but afterwards as the Garson, passed into possession of the Mond Nickel Company, and came under International Nickel Company control with the merger of Mond and INCO in 1929. In July of 1932, when the general depression greatly reduced the demand for nickel and copper, the Garson mine was closed down. Production recommenced in December, 1936, and has been maintained steadily since.

All buildings at the new mining plant will be steel and fireproof construction, conforming to standards at all International Nickel Company plants.

The hoist room and compressor house will be 154 feet long by 80 feet wide, with a height of 22 feet, and will be of steel with eight-inch tile walls. It will house two compressors and two Nordberg hoists; the man cage hoist, which will be used during shaft sinking, will have a drum 10 feet in diameter with a six and one-half-foot face, servicing to 20 level with a capacity of 45 men; the skip hoist will hoist from the loading pocket below 20 level, its drum being 14 feet in diameter with an eight-foot face and its capacity eight tons. Also under this roof will be the transformer equipment, both 60 and 25-cycle.

The headframe, when completed, will measure 102 feet from yard level to sheaves, will have all-steel members, and corrugated iron sheeting.

Each end of the new changehouse will have two storeys, the extra space to accommodate offices and a Safety lecture room. It will be 137½ feet long and 84 feet wide, and will be built of steel and eight-inch tile walls.

Dimensions of the various shops, which will be constructed of structural steel with six-inch tile walls, will be: Electrical shop, 30 by 60 feet; steel shop, 50 by 60 feet; plate shop, 35 by 60 feet; machine shop, 40 by 60 feet; carpenter shop, 40 by 60 feet.

Service lamp equipment will be provided in the lamproom and clockroom, which will be 60 by 40 feet. The warehouse, to consist of a general warehouse 40 by 40 feet and a heavy storage room 40 by 50 feet, will adjoin the clockroom. The heating plant, in which will be installed one boiler with provisions for a second, will be 35 by 48 feet.

Prize Retrievers

Unusual in Canada are curly retrievers such as those owned by Malcolm Barber of Garson, who last year won first prize in this class at the Canadian National Exhibition in Toronto with Pedro, the proud pappy seen at the right behind the row of hungry pups. The mother, Gypi, was brought from Scotland last year. It was breakfast time at the Barber rancho when the Triangle camera came along, and the six glossy little retrievers gave a very convincing demonstration of how to make the morning milk supply vanish in the twinkling of an eye. They will be on display at the "Ex" this year along with their parents. Shown with the canine family are, (left) Mrs. Barber, and Miss Francis Morgan of Toronto, her house guest.

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Annual Exchange

One of the most enjoyable events on the High Falls calendar is the annual visit of Creighton tennis club, which this year took place July 29. Photo shows the male contingent of the two clubs prior to the matches. Feature engagement in the tennis was an exhibition between Green and Tobey of Creighton, the former having a slight advantage. Softball, fishing, swimming, delicious refreshments, and browsing around High Falls' many beauty spots completed the Saturday afternoon's program. The visitors were warm in their expressions of appreciation to Supt. and Mrs. George Hartman and the rest of their High Falls friends.

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Accounting Staff

Modesty forbids that they declare it themselves, but members of Port Colborne accounting department staff will probably have little quarrel with us if we say they assemble about as impressive a lineup of youth and beauty as we have ever had the pleasure of picturizing in these pages. The snap was made June 29, and here's the way they line up: Left to right, front row, D. M. Prettie, Alice Sidney, Dolina Godfrey, Dorothy Gallinger, Helen Godwin, E. C. Lambert; centre row, E. R. English, H. A. Houser, P. G. McCaig, J. F. Ross, George C. Beck, Wilfred Noble, J. S. Allen; back row, C. R. Howard, A. C. Saville, S. A. Augustine, A. H. Marsh, George Burns, W. A. Hicks, Jr., Bert Richardson. Absent when the shutter clicked were Madeline Matthews, a very popular member of the staff; Bertha Singer, Frank Chalmers, Jas. Elsie.

NEW TREATABLE ALLOY

"Heat treating" is a modern scientific term which means somewhat the same thing that the old-time blacksmith meant when he said "tempering." By heat treating, the strength, hardness, toughness, and other qualities of metals can be improved. Until recently, steel was one of the few alloys which could be heat treated; but science has now found methods for heat treating other alloys. For example, by adding aluminum to the nickel-copper alloy, monel, a heat treatable type of monel is obtained which can be made stronger than some grades of steel. Heat treatable forms of monel and nickel now make it possible to construct springs of these corrosion-resistant metals.

NO LOAFING HERE

Modern bakeries use mechanical dough dividers which accurately make up loaves of bread of proper size at rates up to 9,600 loaves per hour. An alloy iron of 20 per cent. nickel content is used for working parts of the dividers in order to prevent corrosion from the moist dough.

Within The INCO TRIANGLE

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EDITORIAL OFFICE COPPER CLIFF, ONT.
Don M. Dunbar, Editor

VOL. 3, NO. 5 AUGUST, 1939

Back On the Job

Nights are closing in, the weather's cooler, and before we know it there'll be frost on the pumpkin again.

We suppose you've had your turn at holidays by now. Maybe you packed up with the wife and kiddies and headed for your old home, there to renew fond acquaintances and associations and perhaps wangle a night out with the old gang. Or maybe you hiked off to camp, let your beard ramble, and spent the days yanking big fat ones from the cool depths of your favorite fishing pool. Perhaps you took a motor trip, winding up at the World's Fair and giving your personal inspection and approval to the world of tomorrow. Or perhaps you just loafed at home, rejoicing in the delightful extravagance of doing absolutely nothing and getting paid for it.

Whatever you did, we hope you enjoyed it. And we hope you've come back refreshed and full of pep, and ready to do your bit toward making 1939 another record year in INCO safety history.

Off With the Old

They're tearing down the rockhouse at the old Crean Hill mine, 18 miles from Sudbury in Denison township. The proud timbers which for years withstood the assault of pounding crushers and tons of tumbling ore now yield reluctantly to the tools of a wrecking crew.

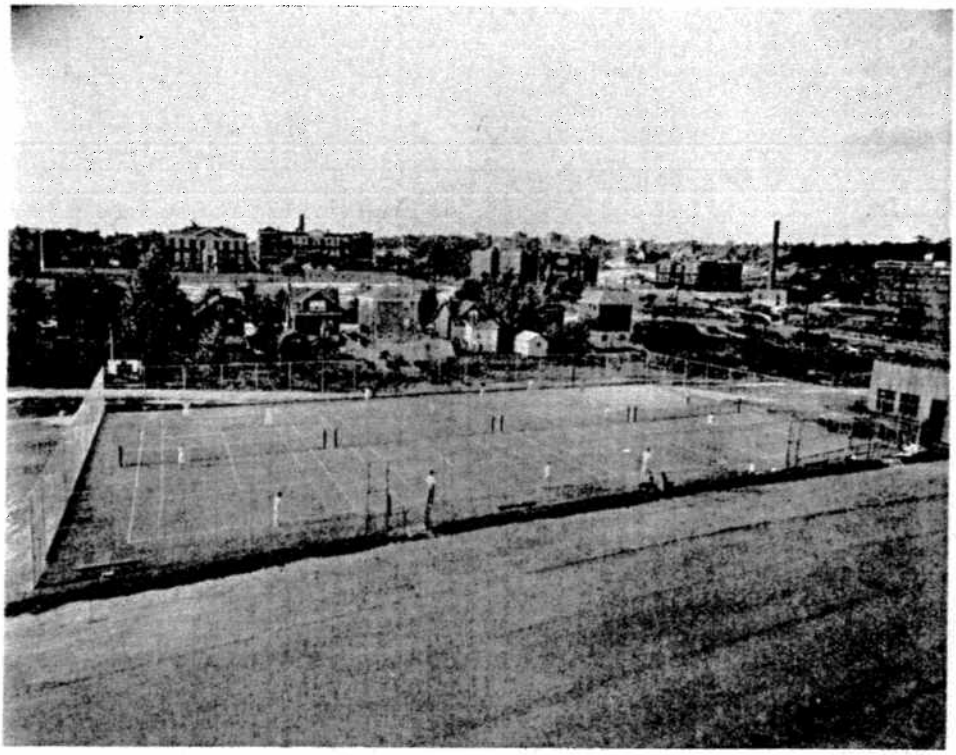
For many old-timers, news of this activity will revive nostalgic memories of the early days as the good plant, which served its purpose is removed and another chapter in the colorful history of the nickel industry is closed. Crean Hill mine was located in 1885, in all probability by the man after whom it was called, the late F. C. Crean. It was purchased by the Canadian Copper Company, but was not opened until 1905. Its ore was useful for mixing with that from Creighton, being quite silicious and containing more copper than nickel, in which respect it was the converse of the Creighton ore. It was by no means the biggest or the richest discovery of its time, and it served a comparatively short span of usefulness before being abandoned to the limbo of forgotten mines, but its 80-foot rockhouse has for years stood as a valiant, lonesome landmark of nickel's pioneer days.

As the Crean Hill plant goes down, the new Garson headframe rears toward the sky, modern construction giving it steel instead of the massive timbers of 35 years ago, and men prepare to tap still another bequest of the generous heritage held in trust within the heart of the Pre-Cambrian.

And so it goes—off with the old, on with the new, while nickel fulfills itself in many ways: on far-flung industrial and domestic fronts, where its products are welcomed as benefactors of production and progress; in manufacturing plants, where its purchases keep men at work and wheels turning; at home here, where it provides security and happiness to a big army of its own employees.

In today's swift-paced program, keyed as it is to the future and exacting in its demands on human time, energy and thought, this should nevertheless be an occasion to glance back over the trail and dwell upon those pioneer undertakings from which INCO had its start, no matter how rough or unpretentious they may have been. All honor to the old Crean Hill as it breaks up to an inglorious end beneath the wrecker's hammer, and to the other stout and faithful properties from whose workings, silenced long since, has grown the great Company of today.

Club Gets Tennis Courts



Another entertainment facility has been added to the attractions at INCO Employees Club with the construction of four fine tennis courts in the vacant area adjoining the clubhouse. Even for first-year courts they are already in remarkably good playing condition. Photo shows the new layout with a group of the Club's enthusiastic racqueteers.

CADETS TO SEE "EX"

Further evidence of the keen interest taken by the Company in their welfare was received by Copper Cliff Highland Cadet Corps with the intimation that the entire corps, about 70 strong, would be enabled to attend the Canadian National Exhibition at Toronto again this year. As an extra touch to the outing, the boys will spend a night under canvas at Niagara-on-the-Lake with the Royal Canadian Regiment, as guests of Major Phillips. They leave August 24, will return August 27.

CUTS DOWN CURSING

Designed to eliminate much of the profanity associated with the heaving of anchors by amateur crews, a lightweight monel anchor has recently been developed which is so strong that the 11-pound size will hold a boat 38 feet long. The conventional type of anchor requires one to two pounds in anchor weight for each foot of boat length. The lightness of weight of the new anchor is made possible by the design, combined with the inherent strength of the metal. The anchor can be folded for stowing when not in use.

PLATINUM ONCE SCORNED

When platinum was first discovered by Europeans in 1538, it was thought to be of no value and was called "platina," which means "little silver." The metal was found by Spaniards in what is now Colombia, South America. These explorers sent samples home to their king who was evidently a thrifty person, for he conceived the idea that, since the platinum was found with gold in the river sands, it might grow into gold if soaked a while longer in the water. Therefore he ordered that the metal be returned to the river for further "treatment."

No "Tattle-Tale Grey" in This Big Laundry's Washing

No bell tinkles when you open the door, no dreamy Oriental waits upon the counter, nor do the boys at the Smelter have to produce tickets to get delivery of its daily washing, but Copper Cliff Concentrator nevertheless is actually a laundry. It might not be the best place in the world to send your best silk shirt, and it would probably do a weird job of those sox Aunt Minnie gave you last Christmas, but there's no better spot in the country if you have a nice load of ore from which you want the dirt removed, and charges are reasonable.

As it comes from INCO mines, less than half the material contains any copper or nickel or other useful metal. The remainder is silicious rock—ordinary earth is simply silicious rock which has been through the natural process of weathering over long periods of time. Milling provides a process of accelerated weathering, and the washing out of the dirt so released.

As in any laundry, the main agency of cleansing is water, and the Concentrator uses about 1,100 gallons for every ton of ore washed. In 1939 it will use about 7,000,000,000 gallons, which is several times as much as the entire city of Sudbury will use for all its domestic and civil requirements. Only about one-third of the water used, however, is making its first trip through the plant; the remainder is reclaimed from concentrate or tailing and is used over and over again.

"Our method of washing the ore is by the froth flotation process," explains Triangle's Concentrator informant. "In the laundry, what we call froth would be called suds. Under either name, the real function is the same.

"Although we do not happen to use it," he continues, "ordinary soap is an excellent flotation reagent for the concentration of minerals, and its use nowadays is increasing in ore-dressing plants. The main reagent which we do use, called sodium xanthate, functions almost exactly as soap functions in the laundry, and, exactly as the laundry does, we use sodium silicate as a supplementary detergent. Many flotation plants use ordinary washing soda for the same purpose, although they prefer to call it soda ash, which is the same thing. About the only laundry reagent we omit is starch, and even that is an old-timer among flotation reagents. Some of the gold mills in Northern Ontario are using starch at the present time.

"In the laundry, material which has been washed must be rinsed several times. In our plant, after we have washed the ore once, we rinse it three times in what we call our cleaner cells, and after that we, like the laundry, must remove the excess water and finish with a dry product. Our thickeners and our filters serve that purpose."

And so it is evident from all this metaphorical chatter that it is no mere trick of words to say "as the largest flotation plant in the Dominion, Copper Cliff Concentrator is Canada's biggest laundry."

1 Preliminary steps to concentration are crushing and grinding, whereby the ore is broken into particles of about one-hundredth of an inch so that its various mineral particles are free of one another, and these have already been described in Triangle, Vol. 1, No. 2 and Vol. 2, No. 6. Readers may recall how, in the final stage of grinding, the particles of ore fine enough for flotation are carried by water over the overflow lip of the classifier. Every pound of ore has been broken down into more than three thousand million particles which, planted as seeds half an inch apart, would girdle the earth at the Equator.

Now the ore has completed its course of mechanical preparation and is ready for metallurgical treatment for the separation of its copper and nickel minerals from the waste material and from each other. This is accomplished by flotation.

Practically all the flotation reagents, whose purpose is now quite clear since we have built up the familiar laundry metaphor, are added to the ore either in the grinding circuit or at the head of flotation, so that thorough mixing has been attained before the ore actually enters the flotation cells. Chief among the reagents are lime, to add alkilinity; pine oil, to impart frothing power to the pulp, and xanthatees, which have the property of causing the valuable mineral particles to cling to the air bubbles which are formed when air is blown through the mixture.

2 Different types of flotation machines are used at the Concentrator. One type, the Hunt, illustrated here, differs essentially from the machines originally installed in that it has no moving parts. In the majority, however, are the MacIntosh cells, a section of which is shown in this photograph. Slanting rays of sunlight stream through

3 the mill's monitor windows on to their frothing surface. Here, in an atmosphere fragrant with the clean, fresh smell of pine oil, a metallurgical miracle quietly takes place; metal particles, welded together for centuries within the earth's crushing embrace, part company as easily and unconcernedly as the most casual acquaintances.

4 Here's a closeup picture of a pair of the MacIntosh flotation machines, empty. Each may be described as a V-shaped box 20 feet long and about four feet wide at the top, including the launders or troughs into which the concentrate overflows. Rotating slowly in the bottom of the V is a rotor nine inches in diameter, extending the full length of the machine. The rotor, supported in a bearing at each end, is made of a single piece of ordinary iron pipe through which sufficient holes have been bored to permit ready egress of air. It is covered with rubber about three-thirty-seconds of an inch thick, through which a multitude of minute holes have been punched. These holes are only about a hundredth of an inch in diameter, and there are some 200 of them in each square inch of rotor cover. Air from a battery of blowers, at two and one-half pounds pressure, is led into one end of the rotor and sprays out through these fine holes and into the ore pulp which fills the cell.

The ore pulp, now containing between two and three parts of water to one of solids, flows in at one end of the machines and out the other, through suitable open-

5 ings. It passes along the entire length of the rotor, from which a shower of fine bubbles is constantly rising. Because of the reagents which previously have been added to the pulp, a large proportion of the copper and nickel minerals have acquired the property of clinging to these bubbles. Riding them like a lift-raft, they overflow the cell sides as a bulk copper-nickel concentrate, which is conducted to additional flotation cells for further treatment, as will be explained in a moment. The worthless gangue minerals do not have the property of sticking to the bubbles, and consequently they pass out as a pulp, at the discharge end of the flotation cells, carrying along a little copper and nickel. This pulp is pumped to other flotation cells, after the addition of some further reagents, and most of the remaining copper and nickel is there recovered. The reject from this operation is pumped to the tailing pond, while the concentrate is cleaned once and sent to join the final combined nickel concentrate.

The copper and nickel minerals overflowing the first-mentioned cells as a bulk concentrate had there been separated from the gangue. The next step is to separate them from each other. To do this, the froth from the first operation is made more alkaline by the addition of a further quantity of lime, certain other reagents are added, and the temperature and the ratio of solids to water are altered. This treatment takes away from the nickel mineral its ability to stick to the bubbles. Now the product is subjected to reflotation in machines exactly similar to the first. The nickel mineral passes out at the end of the machine, while the copper mineral is carried over the side by the rising bubbles, thus effecting the desired separation. The froth concentrate from this "rinsing" operation becomes the final copper concentrate, while the tailing underflow is the chief portion of the final nickel concentrate. The two minerals are now divorced from each other for the first time since their pre-Cambrian childhood, and follow their separate ways through the remaining processes of smelting and refining.

And that's flotation, although it is apparent that it is actually almost a contradiction of terms, since the heavier constituents of the ore float and the lighter constituents sink.

One of the most amazing features of the process is the minuteness of the quantities of some of the reagents used, and the tremendous effects which these small quan-

6 tities have. Photo shows a reagent station, from which the feed is very closely regulated. For instance, in one of the circuits, three one-hundredths of a pound of xanthate is all that is required for one ton of ore. That is about one tablespoonful, and it is dissolved in four tons of water. If one should inadvertently omit that spoonful, flotation would not proceed at all (unless of course one called upon one of the several substitutes which are available). In other words, a spoonful of powder, dissolved in four tons of water, spells the difference between success and failure.

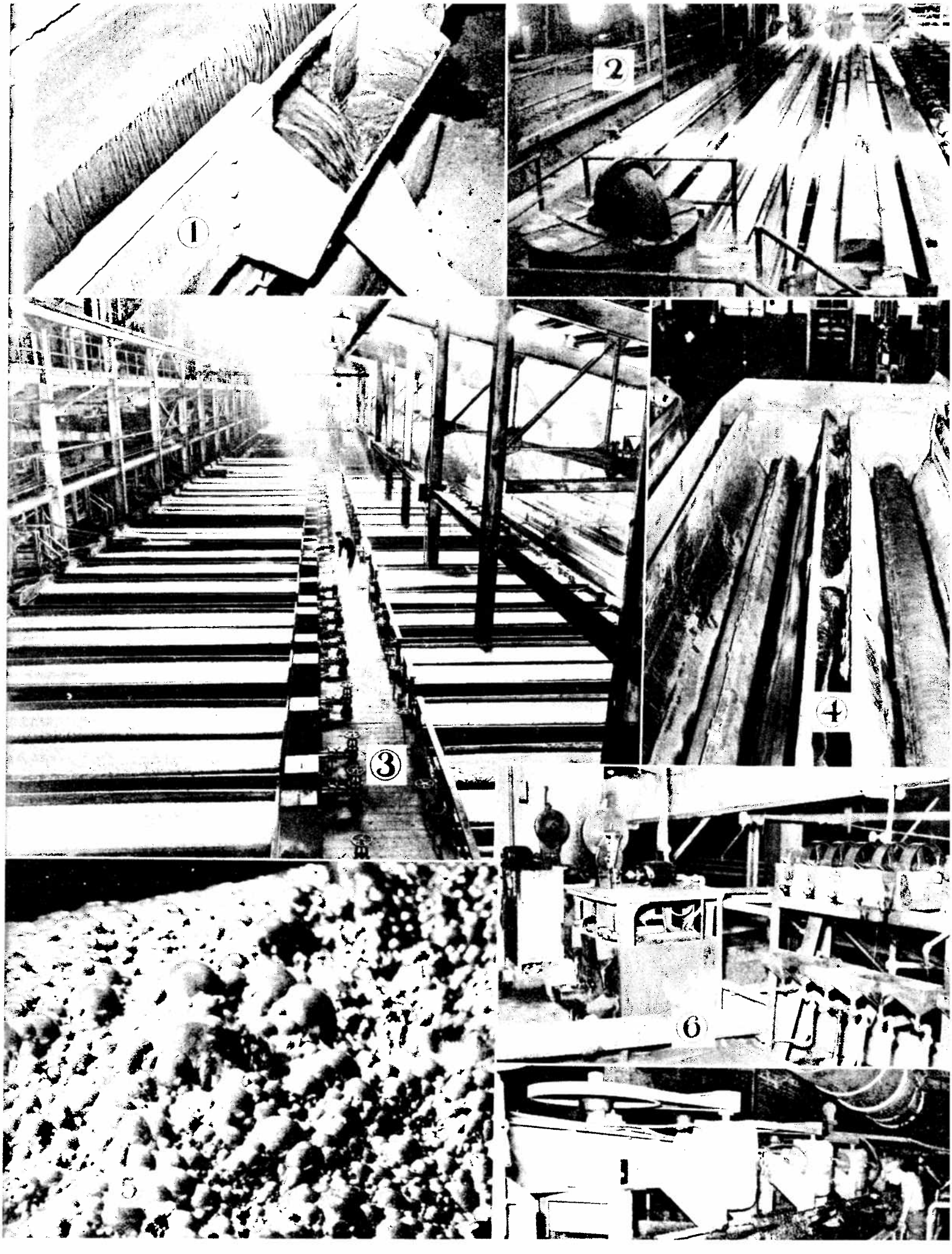
Certain of the other reagents are as delicate as xanthate. Pine oil is another with that property. Its function is to form a delicate sheath, one molecule thick, around each air bubble which passes through the flotation cells. Since 100,000 cubic feet of air is blown through flotation every minute, and the bubbles average about one-half inch in diameter, it may be calculated that about 830 square miles of bubble surface is formed every day. The consumption of pine oil is only about 100 gallons per day. Hence, every gallon covers about three and one-half square miles of surface.

However, only the reagents which spread in mono-molescular films give such high economy. The consumption of the reagents which go into true solution, such as lime, runs into considerably larger figures.

Research and experiments are constantly carried on at the Concentrator, and tests are currently being made with still another

7 type of flotation machine, the Denver, several cells of which are seen here in an experimental setup. The Denver machine differs from the MacIntosh and the Hunt in that it is equipped with impellers which beat air into the pulp, instead of having air fed to it from blowers.

Since Switzerland first adopted nickel for coinage in 1881, a total of 33 governments have issued pure nickel coins in 89 denominations and 105 designs.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Big Welfare Association Picnics Give Memorable Days to Thousands

When they purchased and equipped the big grounds at Morrison's Farm on the Soo road as a picnic rendezvous, the various INCO Welfare organizations last year took a step that has already paid them big dividends in the happiness and enjoyment of their members. The attractive spot has not only been the scene of many little family gatherings during the summer, but has also given a memorable day's outing to employees and their wives and bairns from Creighton, ORCO, Frood and Copper Cliff.

Outstanding in the smoothness of its operation and the ambitious program which was run off was the ORCO picnic, in charge of this committee: left to right, front row, W. Wickenden, E. Reynolds, A. Mallett, R. Bryce, A. Ross, H. Nelson, F. Scott, G. Johnson, J. Harrison; second row, R. McIntosh, C. Marshall, H. Thornton, W. Winters, C. Bell, B. Hunter, D. Forster, G. Hodgins, I. Keegan, C. Burlingham, H. Shoveller; back row, W. Koth, M. Shoveller, T. Moore, G. Furchener, W. Keegan, C. Mattini, A. Welblund, S. Smythe, C. Keegan, J. Bischoff, W. Wright. 1

A stretch of nice sandy beach and a big area of safe water make the grounds doubly popular with anxious parents, who can let their kiddies roam at will. These youngsters were having the time of their lives in the cooling "drink." 2

Finals of the plant horseshoe schedules were features of the ORCO picnic program. Bill Keegan and Pete Boluk, shown here with their trophies, won out in the doubles event, defeating Taylor and Leclaire for the J. C. Bischoff Cup, and Boluk repeated his 1938 triumph by trimming Martin in the showdown for the R. H. Waddington Cup, emblematic of the plant singles championship. Inset shows another very popular attraction at the ORCO picnic; Mike Cuk puts an edge on his carving knife while Nick Gazdicki keeps a juicy roast lamb turning above the hot coals in preparation for the barbecue. 3

These men ran the Copper Cliff Welfare picnic: left to right, T. Crowther, President J. Duncan, F. Shore, D. MacDonell, W. Beckett, L. Aubin, C. Brown, J. W. Duchene, J. Lamacraft. 4

A very pleasant time was had by the judges of the beauty contest at the ORCO gathering, and it would appear they made no mistake in selecting as winner of a smart travelling case, charming and eye-soothing Miss Yolande Riccuito. 5

Eyes intent on the finishing line, toes dug in for a fast getaway, these lads are all ready for the starter's word in one of the races at the Copper Cliff picnic. The young sprinter in the sailor cap definitely means business, as did those two leaders in the potato race at the Frood get-together, in the photo just to the right. The agile gent whose trunks are threatening to slip their moorings was across the finishing line first with his pomme de terre still sitting on his spoon. 6

Some of the members of Frood Welfare Association's picnic committee: left to right, E. Dickie, E. Amon, J. Whelehan, H. Gordon, J. Thompson, and President Ted Dandy. 7

Under a grove of trees these mothers and daughters take a rest during the Frood program. These shady spots, close to the water, are ideal for picnic lunches. 8

In charge at the Creighton Welfare picnic: left to right, front row, T. Belchoiski, A. Cretzman, N. Pezzetti, A. Cope, A. Darbe; back row, President Tom Starkey, B. Cayen, D. Teahan, S. Wells, H. Carriere, S. Seymour. 9

SOFTBALL HAS BANNER YEAR

Within a few days of concluding its regular schedule, Nickel Belt softball is having its best season in years. "Best game of softball I've ever seen, any place," was, for instance, the comment of one devoted follower of the sport after the ORCO-Copper Cliff match on August 8.

Tied for top spot as we go to press with 12 wins and seven losses each, ORCO and the Cliff have been jockeying for the leadership all season. The Cliff, O.A.S.A. Senior B champs last year, have been beaten by every other team in the league except ORCO, from whom they have taken four straight. Charlie Stroud of the Cliff is the league's only undefeated pitcher to date, with three wins to his credit. Charlie Marshall, of ORCO, who won the Sudbury Brewing and Malting Co. trophy last year for the loop's leading hitter, got away to a fine start this season and may repeat his triumph.

Sporting probably the best fielding team in the league, ORCO created something of a sensation this year by adding "best dressed" laurels to their record. All dolled up in very snappy blue and white satin uniforms, similar to those used by U.S.A. and Toronto Beaches clubs, they look as well as act the parts of champs.

Falconbridge this year have a particularly hard-hitting crew, and their star hurler, Archie Macauley, has had two successive two-hit games. They'll have to go their best, however, to keep the fighting Froodians out of the third slot. Garson are the hard-luck entry this year, having lost the big majority of their games by a one-run margin. Unpredictable and full of the old spirit, they are liable to come through with a win anytime, and more or less upset the dope bucket August 2 by trouncing the Cliff 4-3.

Longer base lines, 55 feet instead of 50, were adopted by the league this year, and the pitching distance was stretched to an even 40 feet. The result has been fewer errors and fewer strikeouts, and the crowds seem well pleased with the change, which is in line with the practice in senior leagues in Toronto.

Interest Keen in Inter-Plant Golf Now Scheduled for Saturday, Sept. 9

Because the original date of August 26 conflicted with a subsequently announced golfing event in which many INCO players wished to enter, the second annual Inter-Plant Golf Tournament for the R. L. Beattie trophy will be held instead on September 9.

Scene of the mashie conflict will again be the rolling fairways and velvety greens of Idylwylde Golf and Country Club, the ninth hole and attractive clubhouse of which are pictured above. Inset is Pete Nazar, captain of the ORCO team which will be defending the Beattie trophy this year. Their medal gross in 1938 of 361 for the four-man team was too good for the rest of the field, and Pete himself won individual honors for the day with a 79.

Whether or not 361 will be good enough this year is a question. Some hot golf is expected from the Port Colborne entry, which will be making its debut, and which will be selected from such redoubtable players as G. Winger, V. A. Lynden, W. J. Freeman, F. H. Lymburner, E. C. Lambert, H. P. Roe, and that canny Scot, J. C. S. Wilson. Eight teams are expected to compete, including those perennial dark horses, the Medicos.

INCO General Athletic Committee will again present attractive prizes for both the winners and the runners-up, and Chairman J. W. Gemmell has already done the shopping in a very capable manner. This year, too, there'll be a special medallist prize.

Joan Spy is Champion Babe

When the judges in the Lions Club baby contest on Dominion Day finally came around to picking the grand champion of the show, it wasn't long before they named blue-eyed Joan Oman Spy, charming chubby daughter of Mr. and Mrs. Andy Spy, as queen of the contest.

Joan had many claims to the "most perfect baby" title. Although less than 20 months old on the day she won the approval of the judges, she weighed 33 pounds and 13 ounces, had never been sick a day of her life, sported a complexion that would have made Elizabeth Arden sigh with envy, and measured well above normal on all the points these baby adjudicators check so carefully.

Joan tipped the scales at eight pounds and five ounces when she was born, November 16, 1937. The afternoon Triangle called at her home to pay its respects to the champ, she was just in the act of adding another gleaming molar to her collection of 16, but even this trying process failed to affect her gracious and good-natured disposition.

She sleeps soundly from 7.00 in the evening to between 8.00 and 9.00 next morning, takes a beauty nap from 1.00 to 2.30 in the afternoon, eats everything they'll put before her, and twists her dad around her little finger. Her chum is her dog Darkey, of uncertain origin but deep devotion, who gets mauled unmercifully and likes every bit of it.

Joan's mother was formerly Miss Alice Brason of Sault Ste. Marie. Her dad needs no introduction to football fans, particularly those at Garson, from which hectic spot he usually barely escapes with his life after a scheduled engagement. He's manager of the Frood team, has been in the district for four years.

The accompanying photos show Joan at various stages in the daily life of a champion. In (1) she enjoys a literary half hour with her mother and dad and a good book. In (2) she's up to some kind of mischief with that blanket, judging by the expression on her face. In (3) she poses with Darkey, who seems to be taking the whole affair very calmly. In (4) she's busy at her favorite hobby, barely pausing to wave a cheerful "howdy" to Triangle readers.

As gals go, Joan is a champion, but as Scots go she's an outlaw. Back in 1692, when the Master of Stair aimed to be the most powerful man in all Scotland, he is said to have forged King William's signature to an order commanding the extermination of the Macdonalds of Glencoe. The order, so the story goes, was eventually passed to Campbell of Glenlyon for execution. During the night of the massacre a serving maid snatched a Macdonald infant from its cradle and fled over tortuous paths to a clachan near the River Spey, where they were taken in by the Stewarts. The child was eventually baptised in the Spey, took the name of the river, later married a Stewart maiden and founded the Clan of Spey. The fateful law has never been repealed, however, so all Speys are outlaws and are liable to be shot on sight. The name Spy is actually Spey.

We venture to predict, however, that if any massacring Campbell ever bears down on our Joan with murderous shillelagh, he'll so quickly fall under her spell that he'll hit himself on the head by mistake and that will be all there's to it.

POPULAR FRONTS

More than half the new store fronts built in the United States last year used stainless chromium-nickel steel.

Divide $50 Prize

Divisional Safety Draws, which proved to be a very popular and successful innovation at Frood Mine last year, are being operated there again this summer. For the Safety competition in which the Draw is the award, the mine is divided into six divisions, and each division is marked for frequency of accidents of the following types during the given month: Lost time, compensation with no lost time, dressings resulting in change of occupation. In June 2600 level led all divisions with no accidents in either of the first two categories and only two in the third. Close behind came 2950-3300, which also had no accidents of the first two types and three in the third. As was the practice last year, all qualified men from the winning division were given a chance in a draw for which the Company donated $50 00 in prizes. The draw was handled by Frood Welfare Association, with Supt. F. J. Eager picked the winning tickets from the barrel in the mine yard on July 10. C. Brisbois, right, stope shoveller, picked off first money of $25.00; W. Thorburn, second from right, level boss, got the $15.00 second money, and A. King, whom the camera caught in the middle of a blink, drew the $10.00 third prize. Following the draw the three lost no time in checking up on holiday dates with "Red" Stuart in the time office, so they could put some of their surprise wealth to good purpose. Similar draws will be held for July and August.

★ ★ ★

At Military Camp

Almost 30 INCO men were among the 120 from the ranks of the Sudbury and Sault Ste. Marie Regiment who attended the annual camp at Niagara-on-the-Lake July 2nd to 8th, with Major Cressey as commanding officer. Excellent accommodation, holiday surroundings, and an absorbing program of instruction, combined to make the camp a memorable success, and INCOites were enthusiastic in the descriptions of the jaunt. They fell in for the camera as follows: Left to right, front row, Pte. Renaud, Lieut. P. Clifford, Lieut. C. Wilson, Lieut. R. C. Lane, Lieut. D. H. Forester, Lieut. J. N. Knight, Pte. Aistrop; centre row, Pte. Land, Q.M.S. Doran, Sgt. McNabb, Sgt. DeGrosellier, Sgt. McDonell, Sgt. Major Magill, Sgt. Foley, Sgt. Abbott, Sgt. McDonald, Q.M.S. Martin; back row, Pte. Harley, Pte. Bellamy, Cpl. Stevenson, Pte. Hartley, Pte. Mahon, Pte. Harley, Pte. Wilson, Cpl. Louvel, Cpl. Murphy, Pte. Thompson.

3 A machine gun regiment, the Sudbury and Sault Ste. Marie won high praise from the Camp officers for its marksmanship. Photo shows a machine gun 4 squad in action on the Camp range. And, in this third picture, two men are pointing their machine gun at the butts, getting set to knock the targets for a loop.

MIGHTY MACHINE

What is considered to be the world's largest bending press is a machine which bends steel girders and plates up to 8 inches thick and 40 feet long as though they were so much cardboard. The huge mechanism is equipped with two hydraulic rams of nickel-chromium cast iron, each weighing 23 tons. Approximately 2,000 tons of metals were used in fabricating the enormous press.

NICKEL AND X-RAY

Nickel is one of the few metals suitable for use in constructing X-ray tubes. All metal parts must retain strength at the high temperatures resulting from voltages ranging from 70,000 up to 200,000 at which the tubes operate.

Employees Club Cabaret Dances Highlight Summer Social Season

Steadily gaining in popularity until attendances are now running around the 250-couple mark, the cabaret dances at INCO Employees Club have developed into one of the most successful features since the big hub of employee activity opened a year and a half ago. Even hot summer weather has failed to dampen the enthusiasm of their patrons.

"Nice looking people" is the comment you hear in the spectators' gallery when one of the gay cabaret parties is in progress. And, indeed, a connoisseur would travel a long way to find a smarter and more colorful group of young couples than these INCOites and their friends.

Under the careful direction of Master of Ceremonies George Barnett, the floor shows which are regular attractions at the Club's dances have made decided hits with the big crowds. Recently, as an extra attraction, the Swiss Bell Ringers were booked in, and that evening's party had almost a New Year's atmosphere in the success of its entertainment.

Paul Koster's orchestra are filling the exacting musical demands of the Club's dancing devotees in very pleasing manner, and, in addition, for a half hour each dance night send their tuneful melodies to absentees over CKSO's radio hookup.

Photos on the opposite page show groups of the merrymakers at one of the bi-weekly cabaret affairs, both dancing and during the floor show. Everybody seems to be having a whale of a time, and that goes also for the young couple at top centre who slipped away for a quiet tete-a-tete in the gallery but failed to elude the Sherlock shutter.

HOT RACE IN SENIOR BALL

With 17 wins out of 21 starts to their credit, Copper Cliff are perched atop the Nickel Belt baseball heap and nobody seems to have much chance of elbowing them off, either. Coniston, next in line, have but 12 out of 19, and little short of a miracle would be required to enable them to displace the Cliff. Frood, with eight wins in 19, are safe for the third playoff slot because luckless Creighton have travelled through the season avoiding victory as a small boy avoids castor oil, and have only two wins out of 19 scheduled attempts.

For the first time in several seasons the Cliff look good for a Nickel Belt senior ball pennant. Herb Dupuis, the peppery Westerner who sometimes combines his managerial role with a turn behind the plate, seems to have injected new pep into the smelter town entry. Bill Collier, the team's star left-hander, has won six out of seven games. Four Cliff hitters, Hann, Wallace, Perigoe and Longfellow, are all hitting well over the .300 mark. Wallace, the club's leading batsman, had four for four when the Cliff took the long hop to Timmins recently and played against the crack McIntyre team. Particularly smart in the infield, the lineup can now be called a fair choice for 1939 league laurels.

Despite the departure of "High Pockets" Wilson, jack-of-all-positions, whose leave-taking was keenly felt, Coniston are right in there in the race for district honors. Standout of the club at present is Bert Plouffe, the home-grown boy who is leading the league in hitting with an average of around .429, has a great throwing arm for his outfield position, runs bases like the sheriff was after him, and, at 21 and 180 pounds, is regarded as a real pro prospect. Toe Blake is also hitting like a major-leaguer, but has more than a nodding acquaintance with the error column at his infield spot. Awrey, a strong right-hander, is carrying the major hurling responsibilities for the team and is acquitting himself well.

Hitting over .300 and flashing the best fielding form he has shown in the four years since he took up with the folks in this area, Boal is a bright spot in the Frood picture. Butterman is going well on the mound, and so is Werbowy, although the latter, for all his strikeout prowess, doesn't seem able to fathom the Cliff hickory-wielders. The team is much more prone to err than usual, and even that great infielder, Lefty Esbaugh himself, has been guilty of more than one lapse. Doug May of Toronto, ex-Oshawa and Kirkland Lake, who looked so brilliant early in the season, hasn't been kicking up any dust-storm, but the railbirds labelled him a money player after the way he went for five hits out of eight trips to the platter in the House of David fracas. They figure he'll uncover plenty when the playoff chips are down.

Creighton's showing to date of but two wins in 19 starts is hardly fair to the boys from Tom Starkey's clachan. They've dropped a lot of close decisions, and they've run into a lot of grief. Big Bill Tennant's sore arm and the slump in which Turner, their Oshawa pitching import, has been struggling, haven't exactly helped them. Price, their reliable portsider, has been carrying most of the mail. Pat Wilson, Creighton outfielder, is credited with one of the finest individual games ever seen in the district. Recently in each of three successive innings he made a perfect throw to the home plate from out in the pasture, first catching Lora cold, then knocking off Hann as he attempted to stretch the distance home, and finally chasing Wallace back to third after the Cliff second-baseman was halfway down the path.

Cliff Leading In Tennis League

With a five-team entry and a powerful collection of racquet-wielders, Nickel Belt tennis league this summer is enjoying the most successful season since its formation.

Ahead to date, with four wins and no losses in its scheduled engagements, is the Copper Cliff team. Next in line in the league standing is Creighton with three victories in five engagements. Sudbury, Garson and Coniston are the other three teams in the loop.

Wilson and Nash are two of the Cliff's outstanding performers, and the doubles combination of Flynn and Collins is another consistent point-winner. McGill and Young are teamed again this season; steady as the proverbial Gibraltar, they haven't lost a match for the club in two years. Joining Flynn on the comeback trail is Scotty Godfrey, a potent net artist 10 years ago, who has just recently taken again to the courts and will probably have his shots clicking by the time the league finals are scheduled.

Gar Green, the former Queens star, and Vern Tupling, once Atlantic seaboard champion, lead the Creighton contingent. In a recent league engagement, Green played a brilliant 6-1, 14-12 triumph over the Cliff's Wilson. As a doubles team he and Tupling can blast almost any local combination off the court.

George Von Zuban, Bert Simms, and Carl Schaeffer, all well-known figures on the badminton courts, are standouts for Sudbury. Fr. Coghlan is the Garson leader, and Ken Montgomery carries the torch for Coniston.

Accident Records Tumbling Before Surge of Safety Spirit

When the Martin Horne shift hung up a no-lost-time-accident record of 119 days (97,211 shifts) at Frood early this year, many of the men who congratulated them on their splendid achievement felt it was a mark which couldn't be beaten. As Hubert Locksley is reliably reported to have quoth: "My great grandsire drew a good bow at the battle of Hastings, but he never shot at such a mark and neither shall I."

What Hubert scorned to attempt, what even many an optimistic member of their ranks scarcely thought possible, the Jack Cullen shift accomplished.

On July 25 the Cullen men wound up a spectacular run of 122 operating days, or a total of 98,080 shifts, without a lost-time accident, and safety-minded Froodians had a brand new record to shoot at.

It all goes to show that records are made to be broken, and while nobody would for a moment deny Cullen and his shift fullest credit for their outstanding accomplishment, nevertheless they have demonstrated that no safety mark is too difficult to shoot at.

Another plant safety record has been in the making, this time at Levack. On July 31 Levack had completed 80 days (55,314 shifts) without a lost-time accident, and was still going strong. Previous best mark at this plant was terminated on October 6, 1938, when the mine concluded 52,395 shifts (113 days) with no safety department black marks against it.

All this record-breaking has a very beneficial effect on the safety showing for the entire Mining and Smelting Division. For instance, July, which is always regarded as a bad month for safety averages because experience has shown that the hot weather generally breeds carelessness among workers and leaves them more vulnerable to accidents, this year produces the remarkably low frequency of .030 accidents per-1000-shifts-worked, and equals November of 1938 as the best safety month in INCO history. July of 1938, previous best for that month, brought in a figure of .045. June, another danger month on account of the hot weather, produced .039 this year as compared with .051 in 1938.

Thus the determined campaign of the Safety Department to beat out the mid-summer accident bogey this year bears still richer fruit. And although 1938 was the best safety year INCO had ever enjoyed, 1939 is shaping up even better. Last year at this time there was a total of 99 lost-time accidents for a frequency of .066; this year the figure is 87 for .057.

Welcome Guests

Welcome visitors during their holiday trip to the North were W. A. Wegerich, a foreman in the tankhouse at Port Colborne, and his son, Paul. They arrived at Ontario Refining Co. during a session of Doug Rothacker's movie-taking, and found the plant transformed for a few hours into a miniature Hollywood. So they were really watching Rothacker and his men at work up on a gallery when this photo was taken, rather than imploring Divine guidance, as the pose might suggest. For their trip through the plant, after they had hobnobbed for a while with old friend Ralph Waddington, they were in the capable hands of "Hank" Woodruffe, on their left, and Ken Aldrich, on their right.

Entered Big Meet

Although they failed to bring home any championships, half a dozen INCO paddling enthusiasts made the trip to the Dominion meet at St. Catharines recently and more than upheld the honor of Sudbury Canoe Club against the best the country had to offer.

Entered in the senior fours was this quartet: W. S. "Bill" Beaton, O. N. Olsen, Charlie Eldridge, and Ray Scott, of whom the last three named are INCO men. They're shown here during a practice workout on Lake Ramsay in preparation for the big event. Training for the Dominion championships is no joke. Away back about the first of May the boys started getting in shape. They watch diet closely, cut out smoking, live quietly, and work out with their shell almost every night. They estimate they had at least 70 workouts prior to their St. Kitts trip.

The junior four entry from here was composed of Bill Lane, Tommy Marwood, Knox Monahan, and Harold Forster, and of their ranks the last three also are INCOites. Beaton and Scott had very tough luck in the senior tandem. They were leading by two lengths when they failed to catch the turn correctly at the quarter-mile buoy, and had to finish behind a tandem which they had previously beaten by seven lengths in a Toronto meet.

KEEP RATS HEALTHY

Rats, used for laboratory tests during various scientific experiments, are stabled in cages. These formerly were made of steel, but now are made of monel because it was found that the steel corroded, enabling the rats to chew on their bars in efforts for liberty. This introduced metal oxide into their systems with toxic results that interfered with later experiments. Monel being rust-proof, does not corrode and resists the teeth of the rodents.

GOLD FROM THE SEA

River beds have long been an important source of the world's gold supply. In order to recover the gold that has been washed out to sea through the river mouths, a special deep sea dredge has been designed for "mining" this gold at ocean depths as great as 1,000 feet. Working parts of the dredge bucket are made of chromium-nickel alloy steels in order to withstand the tremendous water pressure involved in this unique operation.

NI-RESIST FOR PRECISION

When patterns and core boxes of Ni-Resist — nickel-copper-chromium-cast iron — were substituted for those of ordinary steel in the Rochester Foundry of Symington-Gould Company, several difficulties were overcome, one of which was the tendency of the steel to rust when not in use and hence to throw the equipment off gauge when placed back in service.

Welfare Treats Boys and Girls

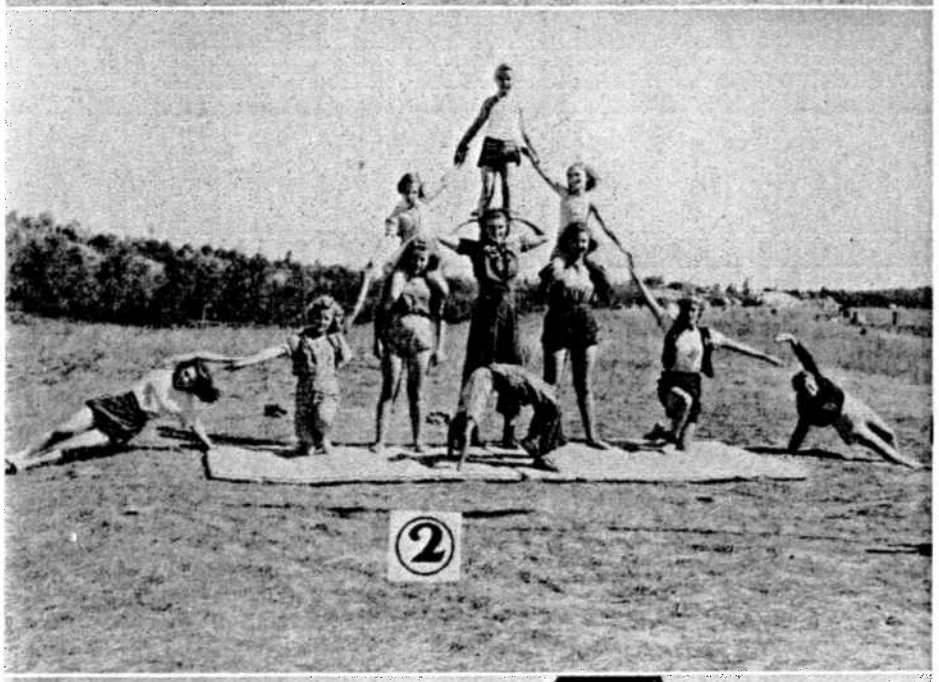
Creighton Welfare this summer won immortality with their juvenile admirers by operating two-week camps for both boys and girls.

Under the capable Sid Seymour, himself a member of the Welfare executive, some 46 boys thoroughly enjoyed their outing at the campsite adjacent to the INCO picnic grounds at Morrison's Farm. Brown as berries and already making plans for next year, the lads finished their 14-day stretch under canvas and then made way for the girls, who were fortunate in having as their mentor Miss Helen Saari.

The girls' daily program commenced with a swim at 8 30 a.m., followed by flag-raising, and then a whopping big breakfast. It was just after the morning meal that Triangle's camera visited them, which accounts for some of those highly satisfied expressions: left to right, front row, Norma McDonald, Doris Zanier, Jackie Cayen, Betty Cler, Annie Mynrich, Slava Milinkoeich, Katharine Wells, Glenys Thomas, Donalda McDonald; second row, Stella Koraluk, Peggy Cretzman, Arletta Flora, Tootsie Cayen, Christine Chmielowiec, Jessie Starkey, Helen Smith, Doreen Hogge; third row, Frances Smith, Helen Vauhkonen, Kristi Mottonen, Aileen McCormick, Gertrude Backlund, Alma Gotro, Doris Devonshire; back row, Maritta Kistonen, Ruth Mantle, Helen Saari, Dorothy Wright, Mrs. M. Davies. Only man in the camp was Tommy Davies, seated in the foreground, whose official capacity was tennis teacher.

Both sewing and P.T. were part of the regular daily schedule, and the pyramid-building group under the direction of Ruth Mantle became very proficient before the camp concluded. Photo shows them in one of their favorite formations.

Of the 27 girls in camp, these four seemed well on their way to win the special prize for the best-kept tent. Cleanliness, tidiness and adherence to schedule were important points in deciding the award. The four smiling housekeepers were, left to right, Katharine Wells, Kristi Mottonen, Helen Vauhkonen and Gertrude Backlund.



Tough on Camels

Camel drivers gesticulated wildly and their sad-eyed beasts of burden pulled up to abrupt, surprised stops recently, as more than 100 monster trucks slashed their way along the tortuous 600-mile trade route which connects the high-walled capital city of Teheran with the distant bustling port of Bandarshapour on the Persian Gulf of Iran.

This fleet of stream-lined trucks, purchased by representatives of the Societe Anonyme Centrale government transportation monopoly at Teheran, from the White Motor Company, is valued at $500,000 and represents the largest single truck order received by the company since the World War.

Hauling huge cargoes of rugs, nuts, dates and sheep-casings over the age-old route, the trucks are subjected to the below-freezing temperatures of narrow mountain passes one day, the blistering heat of drifting desert sands the next.

In accomplishing this treacherous run formerly known only to camels and their caravan drivers, the nickel alloy steels used for major parts in the great trucks, play the part of the "camel's hump." It is only by drawing on the tremendous strength and reserve powers of these nickel steel alloys that the arduous stretch of mountain, bog and desert can be conquered.

Nine Teams in Levack League

With nine teams entered in the league, softball is a major activity at Levack this summer, and although the schedule sometimes suffers when it encounters conflicting shifts, competition is keen and the standard of play compares very favorably with that elsewhere in the Nickel Belt.

Teams taking part in this summer's schedule: Dixon, Baker, McIsaac, Brown, Armstrong, Rockhouse (Mahon), Edwards, Crawley and McCracken, Shops (Ross). Levack Athletic Association sponsors the activity.

Triangle's camera recently covered a match between the Dixon lineup and Fraser Ross's Shops team. In (1) Lehman of Shops is beating out a close one at first base. Number 2 shows the Dixon aggregation, as follows: Left to right, back row, Peterson, Dixon, Blackport, Adams, Probizanske, Young; front row, Dowsett, Wysynski, Kelly. The mascot is Miss Home-Run Taylor, whose brother acted in a similar capacity for the Shops men. In (3) Wysynski has just taken a wicked cut at the old apple, as has Catcher Beckett in (4). Number 5 pictures the Shops team: Left to right, back row, Lehman, Campbell, Dusick, Cameron, McNeice, Solski; front row, Dodds, Timlin, Beckett, White, O'Brien.

Number 6 shows Timlin, the Shops hurler, just as he lets a fast one go at the plate. In (7) Peterson is beating out the throw at home base with Beckett making the catch. Number 8 finds Timlin about to slide into third while Dixon awaits the throw from shortstop.

Tennis is also flourishing this season at Levack, membership in the Club now being around the 30 mark. The court has been put in excellent condition and gets steady play in the evenings.

FOILS BANDITS

Toll money collected from vehicular traffic crossing the San Francisco-Oakland Bay Bridge in California is protected against holdups by a unique safety device. The toll of 50 cents for each of the 25,000 vehicles estimated to cross the bridge daily, is paid collectors who count and bag the money and place the bags on a special monel topped desk located in the toll captain's office. The captain seals the bags, releases a trap door in the desk top and the bags are dropped through the desk down a spiral chute into a safe 16 feet below. The safe is fitted with a rubber cushion bottom. The chute is so devised that the bags containing paper money travel downwards on the inside of the spiral while bags of coins keep to the outside of the spiral, thus controlling speed and obviating obstructions.

EXPLORE STRATOSPHERE

Determinations of temperature, pressure and relative humidity at high altitudes up to and over 60,000 feet are being made by sensitive radio meteorographs attached to sounding balloons. The meteorograph, which is fitted with platinum-iridium contacts, radios its determinations accurately from distances as great as 100 miles. The new device is said to be successful in eliminating dangerous and expensive high altitude airplane flights.

1,000,000-VOLT TUBE

The development of an alloy of nickel, iron and cobalt has made possible the construction of a 1,000,000-volt X-ray tube for use in the treatment of cancer. The radiation of the new tube is equivalent to that given out by radium valued at about $90,000,000.

Steve Tertyshnikoff

He's been underground at Creighton for several years, and prior to that he worked with construction crews, but the stamp of years of strict military training still is unmistakable on Steve Tertyshnikoff, and probably will be as long as he lives.

His introductory handshake is like something you'd encounter at the Grand Duke's Ball—a sharp click of the heels, a quick short bow from the hips, and a clasp that makes you think you've walked into a vise.

Steve, now 42, was born in Petrograd, Russia, but finished his schooling at Alexandria, his father owning a farm near there. After that he spent two years at an academy in St. Petersburg, having decided to embark on an electrical engineering career. The war finished that, though.

Steve signed up as a cadet, and because he was six feet tall and a fine looking figure of a man, he was sent to join the picked troops on the German front. By 1916 he was a captain in the Imperial Russian Army, a distinction which obviously still gives him a thrill of pride. When revolution swept the country in 1917 he joined the White Russian Army, and spent months of bitter watching as his beloved homeland foundered and smashed up on the rocks of propaganda and traitorous intrigue. Today indignation still charges his voice, and his gestures become excited sweeps of his hands as he describes those unhappy hours. Triangle's candid camera caught him so.

When the White Russian Army was finally wiped out, Steve transferred his allegiance to the British, and in 1921 was in charge of a radio station for the British army of occupation near Constantinople.

Then Canada called, and Steve embarked for a new homeland free of strife and suspicion and disillusion. In 1923 he arrived in Montreal, soon had a job with Fraser Brace Construction Co. When his firm commenced construction of the new plant at Frood in 1928, Steve came along as a rigger. The following year saw him working on construction at Copper Cliff. Liking the Nickel Belt he eventually signed on at Creighton as a shoveller. That was in 1933. Today he's a driller and very pleased indeed with his work, his employers, and his life in Canada.

"No need kick for Canada," Steve asserts firmly in declaring his allegiance to his new home. "People crazy kick for Canada." He's seen too much of the other side of things not to appreciate the freedom and the opportunities of the Dominion.

Steve is single—says he's still too young to get married.

W. H. Parker

The ranks of INCO pensioners this month welcome William Henry Parker, veteran High Falls employee who, at the age of 66, retires from active service with the Company.

When he was 15, young Bill Parker, born at Croydon, England, and educated in public school there, begged his mother to allow him to strike out for Canada and fortune. It took some coaxing, but there were some other boys of about the same age going, and finally the adventurous lad had his way.

So on July 1, 1888, he landed in Quebec and took the train for Montreal. He couldn't make much of the language people were talking around him but within a couple of days he had a job on a farm near the city, and he kept it for two years. Then the hankering for home asserted itself and he took a boat back to Croydon for a three-week holiday.

When he returned to Canada it was to take a job at the phosphate mines below Ottawa, and again he put in a two-year stretch before returning to his old home for another vacation.

Lumbering attracted him when he was back in Canada once more, and he spent the next few years working in the lumber camps of Northern Ontario in the winters and hooking up with the telephone company in the summers. In the summer of 1903, when he was working around Nairn, he happened to be the guide for two consulting engineers from Montreal who arrived to look over a prospective power site at High Falls for the Canadian Copper Company. Little did he think, as he piloted them through the dense bushland to the spot where the Spanish came cascading down over the rocks with tons of potential energy, that they were prospecting his future home. It was only three years later, however, that he signed with the Canadian Copper Company at the new High Falls plant. His first job was driving the track car which operated between the station and the plant. Then he became an oiler in the plant, and held that job for 11 years. The past 20 years he has been on the switchboard. His service totals better than 32 and one-half years as he says goodbye to the whine of the generators and the muffled roar of the water in the penstocks.

He was married in November of 1902 at Nairn, his bride coming from Pembroke. Of the six children born to them, five are living. One son, Clifford, is a maintenance electrician in the Orford building at Copper Cliff. Clifford's little daughter Joan was the winner of first prize in the annual Sudbury Lions Club baby show three years ago, to the great delight of her grandfather.

A big moose head in the Parker home is evidence of Bill Parker's liking for hunting, although he has done comparatively little of it in recent years. In the early days, he recalls, you could stand on your back doorstep at High Falls and bring down deer with your rifle, they were so plentiful. That particular moose, however, furnished him with one of the biggest thrills of his life. He and another chap had gone hunting for the first time. They spotted the moose and fired at it. The monarch of the glade apparently took unkindly to this treatment and bawled lustily. Sure it was taking after them, the two nimrods fled. It was some considerable time before they realized that the injured animal had run in the opposite direction, and when they finally crept warily up to it, it was dead.

Anticipating his retirement, Bill Parker has built himself a very cosy home on Riverside Drive in Sudbury, and will move there

with his wife this month. Before he leaves, however, High Falls people are planning an expression of the high esteem in which he and Mrs. Parker have been held during their long residence in the peaceful little town.

Although he has no particular hobby to occupy him, he doesn't expect time to hang on his hands. He likes Bob Burns on the radio, reads and re-reads Dickens and Edgar Wallace, and enjoys almost any kind of a movie as long as it isn't a Western. His health is excellent, and with zest he starts a new chapter of his life titled "Slippered Ease."

NUTS NEED ATTENTION

They're probably just nuts to you, but to industrialists, the walnuts, filberts, almonds and other varieties sold in stores throughout the country represent a highly technical food-processing technique. In preparing the nuts for market, they are first passed through monel rotating drums containing a solution which removes fuzz and dirt. They are then washed in clean water and sent through another drum which polishes the shells, after which they are discharged onto slabs of oiled wood and are dried and sacked.

CUSHIONED GLASS

Safety glass is made by sandwiching a layer of transparent plastic material between two layers of sheet glass. The plastic is washed over monel belt conveyors and processed through a series of operations designed to give maximum transparency and rubber-like elasticity. The elasticity of the plastic inter-layer cushions the shock of any impact, yet its strength is such that under a severe blow the whole glass will be torn from the frame rather than be penetrated.

Nickel Makes Television "See"

It may be some time before you and I have a television set in our living room. However, even though there is still much to be done in the development of television, public telecast programs are now being maintained on definite schedules and the rapidly-rising demand for domestic receiving sets is such that present production cannot entirely meet requirements. Television has finally become a practical reality.

Nickel has a most important part in making television a reality. The cathode ray tube which is the heart of every set—both receiving and transmitting—is a large glass tube in which is contained an intricate assembly of metal parts made of nickel. In some tubes, nickel is supplemented by non-magnetic alloys such as "K" Monel and Inconel. The television "screen" is actually the wide end of this large glass tube.

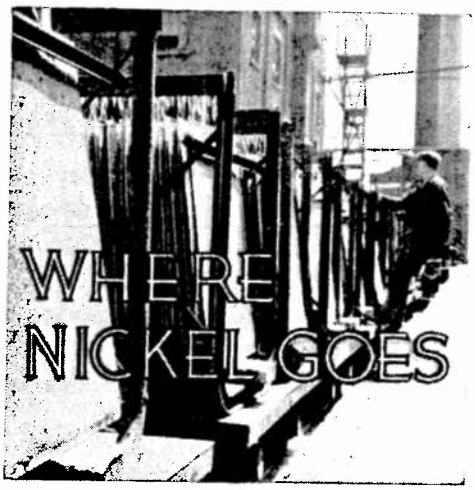
The inside face of the tube is coated with florescent materials. Telecast images are made by the stream of electrical impulses sent over the air by the trans-

mitting set. The impulses act as signals which cause the florescent coating on the inside of the receiving set tube to glow as they strike it. There is never more than a single stream of light on the screen at any given time but each stream is directed at a speed of 2½ miles per second, so fast that the human eye cannot detect when one stops and another begins. All that is apparent to the watcher is a smooth-flowing, moving picture.

In television sets, nickel is also important for auxiliary tubes in the circuits which feed the cathode ray tube. Nickel is used too for the sound tubes and for the units which synchronize sight and sound. There are from 16 to 32 tubes—often even more—in television receivers and each must perform its function faithfully in order to make possible satisfactory reception of a telecast program. The photograph above shows the testing of a receiving set and illustrates how the wide end of the cathode ray tube becomes the television "screen." The set shown here is complete except for the cabinet in which it is contained and the control knobs.

SLEUTHS FOR GASES

A new use for a precious metal is in sleuthing in mines, chemical plants and factories where there is danger of carbon monoxide contaminating the air. The precious metal detective is palladium, one of the platinum-group metals. For this purpose palladium is used in chloride form, as carbon monoxide reduces palladium chloride to metallic palladium at room temperature. The detector is so designed that, when this change occurs, it makes a black stain on an indicator, thus signalling the presence of the deadly gas.

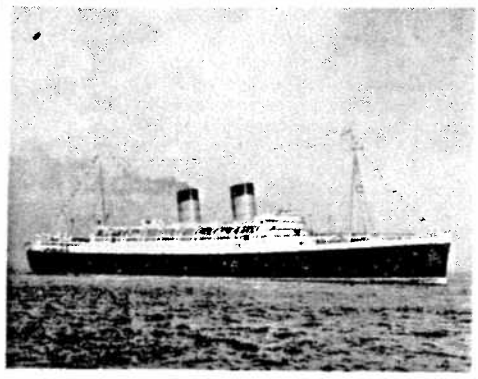


Nickel Helps Ships to "Hear"

One of the important problems of navigation for ocean-going vessels is that of determining the depth of the seas on which they are sailing. Among the many inventions of the late Guglielmo Marconi is the Marconi Echo Depth Sounder, by means of which it can be said that a ship can actually "hear" the depth of the ocean at all times.

The device operates on the principle that the velocity of sound in sea water is known to vary by not more than one to two per cent. in different parts of the world. Therefore, the depth of the ocean can be ascertained by observing the time interval between the instant of sending out a sound wave and the instant of receiving back its echo from the ocean bed.

It is by means of such apparatus that soundings are plotted graphically over several minutes or hours in order to observe any tendencies for the ocean to become shallower or deeper, and thus to be fore-



warned when the vessel is approaching land or a submerged reef. The graph, when checked against a direction-finder and charts for confirming course and position, forms a great aid to navigation.

The apparatus used for the Marconi method consists of three parts: the nickel projector or sound-sender assemblies which are located on the hull plating of the vessel, the transmitter panel or echo receiver, and the recording equipment on the bridge of the ship. The recording instrument uses a platinum-iridium stylus or pen to record on the chart a clearly-defined picture of the contour of the ocean bed. The newest ship to use the Marconi Echo Depth Sounder is the Cunard-White Star liner "Mauretania," shown above.

Inconel Helps Airplanes to "Breathe"

The high altitudes at which modern airplanes travel make it necessary to give airplane motors what amounts to "artificial respiration," since engines, like animals, plants and human beings, require definite amounts of oxygen to operate. At an altitude of 15,000 feet, for example, there is approximately 45 per cent. less oxygen than there is at sea level. It is, therefore, necessary for the plane pilot to adjust the gas mixture by supplying additional air to the carburetor artificially. Until recently the methods by which pilots judged the correctness of the fuel mixture were pretty much guesswork, as there was no single instrument to tell whether the mixture was too rich or too lean. However, a new device has been developed in the form of an accurate aero mixture indicator which analyzes the exhaust gases and shows the fuel-to-air ratio entering the carburetor at all times.

The installation consists of an indicator mounted upon the instrument panel at the pilot's controls and an analysis cell to

which a portion of the engine exhaust is carried for test. The analysis is accomplished by measuring the intensity of an electrical current passing through a chamber containing gas of known and constant conductivity and comparing it with the intensity of a current passing through a "test" chamber containing a sample of the exhaust gases of the plane. The current through the "test" chamber fluctuates with the amount of air in the mixture. It is this fluctuation which is translated on the indicator on the pilot's control board.

Nickel has become invaluable in this development, since the exhaust gases which are taken into the "test" chamber for analysis are so hot and corrosive that a special alloy is necessary for the tube through which they must pass. The alloy selected for this use is Inconel.

The photograph above shows the flight deck of the trans-Atlantic Yankee Clipper, where the engineer keeps constant check on the performance of her four 1,500-h.p. engines. The aero mixture indicator is shown by the arrow.

VERSATILE BROOM

A motorized street cleaner truck has been developed which sweeps streets clean of debris and collects it automatically. Designed to maneuver in any street, wide or narrow, the truck is constructed with broom shafts and vital machine parts of nickel alloy steels which provide the high strengths essential in lightweight designs. The unit can follow sharp curves, sweep around parked cars or hug the curb. It is also equipped with a water tank and spray to lay dust during sweeping operations.