

## INCO Teams March Into Hockey's Hall of Fame

### BRING BACK MANY LAURELS

The tumult and the shouting have died; both players and fans have turned to other things than pucks, passes, and penalties. So slips into the colorful limbo of the past the greatest season in INCO hockey history.

Frood Tigers, augmented by three players from other INCO teams, went through to win the Dominion Championship, and then topped off their campaign by capturing the World's Championship title advertised at stake in the International Series at Maple Leaf Gardens, in Toronto.

Copper Cliff Redmen marched triumphantly to the Junior Championship of Eastern Canada and went down in the Memorial Cup finals only to what has been termed "the greatest junior hockey team the game has yet produced"—Winnipeg Monarchs.

Thousands of words have been said and written in praise of these two great clubs. INCO employees are proud of them and, albeit a trifle tardy, Triangle adds its tribute.

#### TRIUMPH AND TRAGEDY

INCO fans this season took part in the longest hockey season on record—a total of six months and 13 days. It was a season packed with thrills and touched by tragedy. The impressive array of trophies brought out for presentation at Stanley Stadium the night of April 28 was proof of a Toronto sports writer's statement that here in Northern Ontario people see the best amateur hockey in the world. The simple, sincere little ceremony which preceded the presentations was the sports world's homage to the type of spirit which made these triumphs possible—that of little Steve Conick, who wanted to help win an Allan Cup, and did.

There were many highlights in the grueling playoff campaigns that will linger long in memory. Undoubtedly the most thrilling five minutes of the season for the Tigers was in the third period of the final game at (Continued on Page 7)



First winners of the new R. D. Parker Shield for the Inter-Plant First Aid Championship was the Copper Cliff team, seen here in action. Left to right, E. Lawson (captain), W. McNeice, G. Guthrie, T. Gladstone. The "patient" for the occasion was the fifth member of the team, N. Crawford.

### New Department Set Up for Employees

As a further step in the promotion of friendly relations with the employees, INCO inaugurated on April 12, 1937, a Personnel Relations Department with headquarters in the General Office building at Copper Cliff. J. W. Gemmell has been appointed Director of the Department and all matters pertaining to relations between the employees and the management will be dealt with through his Department, and will receive prompt and earnest consideration.

## Splendid Exhibition at Parker Shield Contest

At Memorial Community Hall the evening of March 25 a large audience rings the auditorium to watch the first annual Inter-Plant First Aid Contest for the new R. D. Parker Shield.

At one end of the hall are the desks of the doctors who will act as judges.

On the floor in the centre of the hall lies the "patient." As far as the problem of the evening is concerned, he was working on the railway track near the end of a steel car when the engine connected with it from the opposite direction. He was knocked down heavily and fell clear of the tracks. His right upper sleeve is blood-stained and he is lying with his left leg bent in an unnatural position. He is conscious. The scene is 50 yards from the Dry, it's 3 o'clock in the afternoon, the weather is fair and warm.

#### TWO MINUTES' STUDY

Into the hall comes a First Aid team of four men, each carefully trained in St. John's Ambulance work. A copy of the problem is handed them, and they gather in a huddle to study it.

Two minutes they get to map out their plan of action, then comes the signal and (Continued on Page 5)

## ROYAL CROWN OF PLATINUM

The hands of a Frood or Creighton miner likely helped to fashion the beautiful crown which Her Majesty Queen Elizabeth wore at the Coronation in London, May 12. Probably the material from which its mounting is made was washed down the launders of the flotation tanks in the Copper Cliff concentrator, or dropped hidden in its sludge disguise from an anode in an INCO refinery electrolytic tank.

For the first time in the history of Great Britain, the State Crown of the Queen is mounted entirely in platinum. And with Canada informally rated the world's largest producer of platinum, in the absence of recent figures from Russia, it is not too much to suppose that at least a goodly share of the 20 ounces which were used came from INCO mines and plants, since all of it came from the British Empire.

Using as the foundation the regal circlet first made for Queen Victoria and often

## Slippered Ease Greets Another Eight Veterans

Years of leisure and comfort open before eight more veterans of INCO service who have been awarded pensions under the Company's liberal retirement plan.

"I really think I'm still good for another two years of work," one of the new pensioners told Triangle. "Feel as fit as a fiddle, but even at that it's going to be pretty nice to relax and do some of the things I've always wanted to do but have never just had time for. I tell you, it's a fine thing to work for a Company that looks after its employees like INCO does. When you get along to my time of life, and find a good pension waiting for you, it's a big relief."

#### ENROLLED IN 1899

"Daddy" of the eight who are punching out for the last time is Fred Lapiere of Copper Cliff, who first enrolled with the Company on August 1, 1899. He came from Chapeau, P.Q., is now 68, and retires June 1.

Frank Stacey of Coniston, enrolled with the Mond Nickel Co. in 1909, is 71, and retires June 1. A. H. Montgomery of Copper Cliff, enrolled in May, 1901, is 62, and retired May 1. O. Lalonde of Copper Cliff, who spent many years at O'Donnell Roast Yards, enrolled in March of 1917, is 66, and retired May 1. John O'Driscoll of Frood, who has seen service at Levack and Garson, enrolled in November of 1915, is 75, and retires June 1. John Kirwan of Coniston, is also 75, and retires June 1, after enrolling in October of 1912. Jos. Brankley of Garson, retires June 1, at the age of 65, having enrolled on July 4 of 1910. Napoleon Lafrance of Coniston, enrolled in April of 1908, is 65, and retired May 1. In this issue Triangle sketches the lives of two of the group.

#### NARROW ESCAPES

Close escapes from the toils of the Grim Reaper have been a life specialty with John Kirwan of Coniston, who was born at Frudennell, in Renfrew County, November 5, 1864.

Once, as a young log driver, he fell into

the mouth of the log slide and was almost swept down. In the last split-second he was able to grab hold of a pin in the boom, and he hung on. When they finally got him out he was bruised and battered and half-drowned, and it took almost two hours to bring him around. But he suffered no after-effects.



John Kirwan

hewing down a tree. He had to wait until one of his mates rode four miles on horseback for a doctor. Yet he recovered completely.

Still another miraculous escape was his good fortune after a smelter accident in 1918, when a crane shaft broke and a ladle of molten metal was spilled. Working below it, John Kirwan had his clothes and most of his skin burned off, but he eventually emerged from hospital in just as good shape as ever.

#### A HARD WORKER

As a young lad he worked on his father's farm, but when he was 12 years old he hustled himself a job in the lumber camps, driving his team of horses and hauling square timber. It was hard work for a youngster. His first season he hauled for 63 days straight, over a nine-mile road, and the hours were from 4.00 a.m. often until as late as 9.00 at night. It was a weary young John Kirwan who tumbled into his bunk (Continued on Page 4)

### Great Activity on Spring Sports Fronts

On all INCO sports fronts is concerted activity for spring. There will likely be four teams entered in the Nickel Belt baseball league. Eight teams are probable for the Nickel Belt softball league, an increase of two over last year. Soccerites are already in training, tennis clubs are re-organizing, and golf addicts are getting the feel of their clubs again.

These be the "dog days" for sporting news, but there'll be plenty of it for the next issue of Triangle.

### Garson Men Pick Welfare Assn. Officers

Officers of Garson Mine Workers' Welfare Association, elected April 7, are as follows: President, A. Lye; Vice-President, J. Kilby; Secretary, T. Hamill; Treasurer, E. Souch. Executive Committee: R. McCauley, T. Ballyntyne, C. Logan. Board of Directors: D. Ralph, W. Benn, S. Revoire, J. Ingle, J. Manning, L. Jones, H. Fullerton. At the first general meeting of the Association April 14, the Athletic branch was organized. It is planned to hold a smoker at which the season's activities will be planned.



worn by Queen Alexandria and Queen Mary, Messrs. Garrard, Limited, the Crown Jewelers, have worked out under Queen Elizabeth's direction a design which includes four crosses-patee and four fleur-de-lys, supporting four arches and surmounted by the monde and the top cross-patee.

The two outstanding individual gems in the crown are the Koh-i-Noor diamond in the front cross-patee, and a diamond from the Lahore Treasury mounted in the top cross-patee. This latter diamond was given to Queen Victoria by the East India Company in 1851.

# TELL TRIANGLE

## Copper Cliff



Standing beside his transport plane at Soerabaya in Java is Bill Van den Belt, during the period he was flying for the Dutch Government.

## Adventure is No Stranger to Willem

In the spring, according to reliable authorities, the average young man's fancy lightly turns to thoughts of love.

Bill Van den Belt, one of the reagent boys at Copper Cliff concentrator, neither denies nor admits thoughts of love this balmy weather, but he does confess that spring-time always makes him a bit lonesome for the days he sailed the seven seas, flew the air-mail from Batavia to Soerabaya, or plunged into the jungles of Sumatra.

### BORN IN HOLLAND

Bill has been around. Born in Rotterdam, Holland, in 1904 and christened Willem, he went to high school and then to Nautical College where he qualified as ship's mate. At 19 he took to the seas in ships, most of them steamers. On just one sailing vessel was he booked, on a two-months' trip to Iceland for herring. Cramped quarters, very hard work, and his first and only attack of seasickness (memories of which still tend to pale him about the gills) made the voyage a memorable one.

Probably the best trip he ever took, Bill thinks, was on a tramp steamer, one of those little nomads of the waves which start off with no particular destination and roam from port to port picking up cargoes as they go. From Holland to Liverpool they went, and then off across the Pacific to Valparaiso in South America. Instead of the usual 14 days from Liverpool, it was a full month before the little tramp limped into the Panama Canal for repairs, cruelly battered by a terrific storm during which two of the crew of 14 were swept overboard while trying to mend a hatch. The huge wave that took them to Davey Jones locker caught Bill in its clutches too, but he managed to grab at a cable and hang on.

### 1½-YEAR VOYAGE

After sailing up and down the coast of South America peddling oranges, the tramp headed through the Magellan passage and over to South Africa, there to pick up a cargo of coal for Dutch East India. After that, with various cargoes, they made port at Amoi in China, Tokio, Batavia, and Melbourne, finally passing through the Suez canal for home after a voyage of one and a half years.

Bill's next jaunt was to Dutch East India, on a two-year contract with one of the steamship companies. Soon after he arrived there Holland's compulsory military training regulations caught up with him, and he elected to take air force instruction. At Soerabaya (Crocodile City) in Java, he learned to be a pilot, and after eight months was given a mail plane to cover the 13-hour hop from Batavia across the island of Java to Soerabaya. One night both the motors of his ship failed. He dropped distress flares and a boat in the bay below him switched on its searchlight to show him open water for a forced landing. Trying to pancake, Bill's plane nicked posts on the pier and crashed. Two were killed but Bill came out with little more than a bad shaking up.

### FRIENDLY SAVAGES

Later he flew supplies into Borneo for geological parties, and got his first contact with mining. He was also engaged in survey work from the air with a camera-equipped plane, plotting valuable oil concessions on the Beraoe River for the Dutch government. There he ran into the head-hunters described as such fiendish and ferocious gents by Gordon Sinclair. Globe-trotting Gordon puts it on a bit thick about the head-hunters, thinks Bill, who found them trustworthy and anxious to co-operate with the white man.

A favorite sport was the crocodile hunt. The hunter spots the crocs while they are resting themselves on the banks of the jungle river, and pots them before they can slip back into the water. They kick up a terrific fuss when shot, flopping and slapping around in the water. The skin finds a ready market with the Singapore Japs at about 25 Singapore dollars, or approximately \$14 Canadian.

### SHOT AT PYTHON

Returning from a crocodile hunt one night in Sumatra, Bill bagged a python. His native guide spotted the reptile coiled around the branch of a tree, ready to strike as the two

passed unwittingly below it. From 25 feet Bill shot it in the neck. It was 18 feet long, and Bill got the skin tanned in Singapore and still has it among his souvenirs. His Chinese cook made him a nifty chowder from the python meat, tossing in eggs and sharp sauces to produce a delicious concoction which tasted as if it were made with chicken.

Eventually Bill returned to his home in Holland to visit his parents for the second time in six years, then heard the call of Canada and crossed to Toronto. A saw-mill investment, from which he hoped to develop a boat-building business, went haywire and cost him most of his savings, so after one or two experiments he enrolled at University of Toronto and through his connection there landed his post at Copper Cliff. He came here in 1930. He is married, has one child.

¶ Wed: at Sudbury, April 24, Bruno Nazareno and Miss Antoinette Cassio, widely known soprano and radio star. They will reside in Copper Cliff.

¶ Born: February 7, to Mr. and Mrs. W. G. Madill, a daughter; to Mr. and Mrs. Gunnar Sundin, a son, April 27.

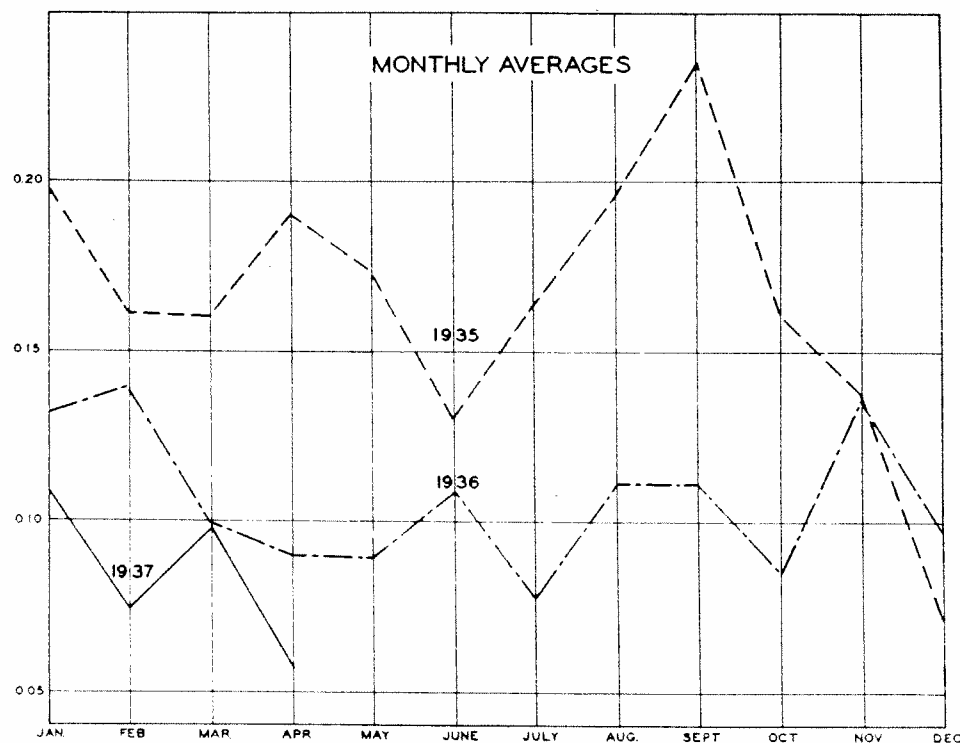
¶ Jack Kennedy's day off, March 24, was perhaps the difference between misfortune and calamity. Fire broke out in his home and while it did some damage, Jack's presence probably averted a disaster.



## Grace and Beauty Adorned Miners' Fiesta

Gasps of incredulous delight broke from the guests at the first annual Miners' Fiesta at Memorial Community Hall April 9, when these eight exquisite "filles de danse," the Nickel Nymphs, went through the graceful motions of their ballet. The girls, left to right, back row: "Twinkletoes" Trefiak, of Creighton; "Sweet Sue" Smith, of Frood; "Alice the Goon" Cole, of Copper Cliff; "Labyface" Missler, of Creighton; "Fifi" Heale, of Creighton. Front row: "Cutie" McNeil, of Copper Cliff; "Lulubelle" Heglar, of Copper Cliff; "Blondie" White, of Frood.

A full-fledged carnival in the gymnasium, a dance for which the auditorium was very artistically decorated, a tasty supper in the clubroom, and the original manner in which the mining motif was carried out, made the Fiesta a standout.



## April Sets Safety Record

While the figure has not been computed to the exact decimal point as we go to press, nevertheless it is certain that the figure for April, 1937, of accidents-per-1000-shifts-worked in INCO's Mining and Smelting Division is the lowest on record. Despite the big increase in the number of men on the payroll, employees co-operated so splendidly during April that there were less than .06 accidents per-1000-shifts-worked. Leaders in establishing this excellent mark were Coniston and Creighton Mine, which turned in perfectly clean accident sheets for April. The huge improvement over two years ago, and even over last year's fine mark, is evident in Triangle's chart, above.

## Coniston



## Many Golf Titles Held By Dan Stack

Golfing experts who watched Danny Stack wield his trusty hockey club for Coniston in last winter's Nickel Belt League may have noticed the tell-tale traces of a smooth pivot and a powerful swing. Danny is certainly no slouch as a hockey player, but his real prowess is demonstrated out on the golf links.

Coming to Coniston only last August, Danny has hardly had a chance to show his wares locally with mashie and putter, but out West he's a well-known figure on the fairways.

### OFTEN CHAMPION

He has won the Kildonan golf championship at Winnipeg three years, the Municipal Tournament at the Peg three times, was runner-up in the City and District and Manitoba Amateur tournaments, and also won a number of invitation tournaments. He was on the Manitoba golf team in 1932 and 1933, and on the Manitoba inter-club championship team in 1933-34.

He has the record of having shot what is believed to be the lowest score ever recorded in Canada in tournament play, a 63 and a 68 for 36 holes—131. He has held the West Kootenay Open and also the Nelson Golf and Country Club championships out in B.C., and last year reached the quarter finals of the Pacific Northwest Golf championship at Vancouver. He holds the course records of the Trail and Rossland Golf and Country Club (64), the Nelson Golf and Country Club (64), and the Kimberley Golf and Country Club (65).

### HAS 20 TROPHIES

Danny has been playing golf since he was 15. Prior to that he walloped dandelion heads with his dad's prize cane. To date he has won an imposing collection of 20 trophies, besides silverware, watches, etc. He comes

from a famous Canadian sporting family. His father, Jack Stack, was in his day a great speed-skater and ball player, and his brother Frank of Frood Mine, needs no introduction to Triangle readers who know of his international speed-skating triumphs.

¶ Born: March 20, to Mr. and Mrs. H. V. Conlon, a daughter, Sheila Ann.

¶ More than 70 new books have been ordered for the Public Library, and are expected to be on the shelves shortly, according to the chairman, F. Harvie. Library hours have been altered as follows: Mondays and Wednesdays, 7.00 p.m. to 9.00 p.m.; Fridays, 3.00 p.m. to 4.30 p.m.

## Refinery

¶ Born: To Mr. and Mrs. J. I. Mason, on April 5th, a son, Bernard Walter.—To Mr. and Mrs. J. W. Este, on April 7th, a son, William Alexander.—To Mr. and Mrs. H. Burton, on March 23rd, a son, Arthur. (This promising young "Millwright" weighed 13½ pounds and was 25½ inches tall at birth).

¶ "Billy" Bell, young Orco machinist and flying enthusiast has recently been successful in receiving his private pilot's license.

¶ Fred Jennings, Leo Fletcher, Alex Singbush, and Wes Hart, Orco puck chasers, attended one of the Memorial Cup games at Toronto and renewed acquaintances with Western friends on the visiting Monarch team.

¶ G. A. McFarlane played genial host to the Office-Lab. interplant hockey team at Booth's Tea Room on the evening of April 3rd. After partaking of a delicious chicken dinner, members adjourned to the Frood Hotel Bowling Alleys to complete a very enjoyable evening.

¶ The Shops and Power interplant hockey team walked away with the silverware for another season by defeating the Casting-Yard combine 5 to 3.

¶ The O.R.C. Athletic Association executive for the past season were returned for another term of office for the period 1937-38. The new executive held their first meeting on April 14th to formulate plans for intensive interplant sporting activities. Officers are as follows: F. Benard, Honorary President; G. A. McFarlane, Honorary Vice-President; R. H. Waddington, President; J. C. Bischoff, Vice-President; J. A. Grimes, Secretary-Treasurer; M. Chomysyn, Representing Tank House; F. Sheridan, Representing Silver Refinery, Acid Plant and Selenium Plant; H. Kurtz, Representing Mechanical; H. Shoveller, Representing Yard and Transp.; G. Penner, Representing Casting; G. Furchner, Representing Laboratory; J. Moss, Representing Staff.

## Creighton



## Wood-Working His Hobby, Made a Lathe

When he came to Creighton his name was Wojciech Szmyndzurski, but it wasn't long until practical fellow-workers had reduced those difficult syllables to just Albert Smith, and Albert Smith it has remained.

Born in Poland 37 years ago, Albert worked as a boy and young man in wood-working shops and became very clever at the trade. Coming to Canada in 1927 he went straight to Creighton Mine, landing there on May 17 and immediately rustling up a job. Since then he has been a mucker, a chute puller, and a machine helper, and now he's a machine runner.

In 1932 he took two or three days to excavate a small basement under his house, and then in his spare time built a little workshop down there, complete with a lathe, every bit of which he made himself.

On his lathe, at which Triangle's photo shows him busy, he has fashioned many pieces of fine furniture for his own home or for friends. He has no desire to go back to his old trade, being perfectly satisfied with his work in the mine, but he likes to be able to enjoy his hobby whenever he feels like it.

### RECORD SIZE MOLD

One of the largest molds on record for producing commercial shapes in synthetic plastics was recently made of nickel molybdenum steel. It weighs 1680 pounds and is used in the manufacture of radio cabinets.





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## Who Else?

From the various Company plants comes news of the organization by the men of Welfare Associations.

Garson Mine Workers' Welfare Association is taking considerable initiative in getting sports activities under way, and is planning to have a smoker soon. Frood Mine Welfare Association has already held a couple of very successful smokers, at the second of which a first-class boxing card was presented. Copper Cliff Welfare Association has also staged a largely attended smoker, at which fellows from the mill and smelter provided entertainment and revealed a wide range of fine talent. At each of these affairs there was some peppy community singing and much of the good-natured kidding that men like together. Lunches were served, and at one of the parties we were informed by an unimpeachable authority that no less than 1,000 doughnuts disappeared as if by magic. You saw men saying hello to old friends or meeting new ones. You heard them "talking shop" or else exchanging personal gossip. You didn't need to be any psychist to know that they were all thoroughly enjoying themselves.

Beneath the splendid fraternal possibilities of the Welfare Association lie deeper ambitions which affect every employee. The Association is designed, we are told, to promote the general welfare of its members, to foster athletic activities, to guard against unlawful or other radical influences, and to engender further a feeling of good-will between employees and employer.

Triangle admires the quiet, sensible way that employees in the various camps have gone about organizing these Welfare Associations. There is much they can do for each other by seeking a closer relationship with their employer, by protecting themselves from insidious influences which would disrupt their jobs and their security in life, and by putting their heads together for the common weal.

The men of INCO want to do their own thinking about their own affairs. And who is better qualified for the job?

## Salute!

There are on the Company payrolls today 120 men who have each served more than 35 years with INCO.

Perhaps men like Fred Lapierre or Alec Montgomery did not plant discovery posts in the early days, or blaze trails of financial daring as did some of the other "old originals." Their part in the building of the nickel industry has not been the kind that makes headlines, but behind the scenes they have spent their years in steady and loyal service to their Company.

Eight of the veterans are retiring with this issue,—eight more of the legion of INCO pioneers who went through the lean days helping nurture an industry from small beginnings to great stature. It is a heritage that they leave behind them, and a job well done. And it is a fine thing that their service is rewarded,—that their Company gives gladly and generously to ensure them comfort and happiness in the years of leisure before them.

This security for the future they have had a part in building, not only for themselves but also for the rest of us. They turn over to us a tradition of confidence between employer and employee. They step into a retirement rich in retrospect.

Congratulations, old timers, and thanks!

## Aerial Views of INCO—No. 3—Levack Mine



Nestled at the base of one of the huge hills of what is known in the Nickel District as the "northern range," INCO's Levack Mine is a picturesque sight from the air. Predominating in the photo are the rock-house and headframe, the latter 112 feet high but still overshadowed by the hill behind it. After a disastrous fire they were rebuilt in 1930, but the depression forestalled their being placed in operation until INCO announced early in March that Levack would be re-opened. In the immediate foreground are the carpenter and steel shops; at left centre is the office and warehouse; the three centre buildings are the hoist house, changehouse, and compressor house; to the right are the machine and locomotive shops. A curve of Moose Creek can be seen in the immediate foreground. Full-scale production from the 1,047-ft. shaft is expected to commence some time this month. About 30 miles northwest of Sudbury, and slightly more than a mile from the mine, the village of Levack is built on a sand plain beside the Onaping River. The surrounding country is ruggedly beautiful, and abounds in excellent fishing waters. Four miles from the village are High Falls, dropping a total of about 100 ft., and seven miles away are Onaping Falls with a total drop of about 200 ft. There will be approximately 450 INCO employees at Levack when full production is reached.

## NICKEL . . . AND ITS USES

### NICKEL AND OIL

. . . Ever realize how valuable is Oil to Civilization?  
. . . Now see what Nickel Means to Oil. . .

If you wanted to make a pretty broad statement with a grand ring to it, you might say, "When nickel came to the oil industry, civilization was given a new lease on life." The catch would be that you would have a hard time proving that you were safely within the bounds of truth, and you would probably have to admit that maybe you had gone a bit too far. Nevertheless, there is a lot of truth in the idea behind the statement, and with a little thought you could show how nickel has done a great deal to prolong the life of an industry which is absolutely necessary to the kind of civilization we have today.

First of all, it would not be hard to prove that we could not get along very well without petroleum and the products which are derived from it, for "black gold" is much more useful than yellow gold. Take your automobile for example—gasoline makes it go, and lubricating oils and greases keep it from going to pieces in a hurry. The same is true of the millions of automobiles, trucks and buses all over the world, and it is also true of a large proportion of the tractors.

### OIL IS ESSENTIAL

Take the Diesel engine, which drives ships, trains and tractors—they use oil as a fuel and a lubricant, as do the locomotives and ships which burn oil instead of coal to make steam. Take any kind of machinery you can think of, and you will find that without oil it could not operate. That means that practically all sources of power, except the muscles of men and animals, need oil to function. In addition many people use oil for heating their homes and cooking their foods, and many use it for light.

Finally, there are dozens of less obvious uses for oil, ranging from medicinal products to bases for such chemicals as carboric acid which is a principal ingredient in the most important group of plastics, as the last article in this series pointed out.

That ought to be enough to prove that modern civilization must have petroleum. So next you would have to show how nickel has aided the oil industry.

### SUPPLY IS ASSURED

About fifteen years ago geologists used to prophesy that the oil supply of the world was going to run out in twenty or thirty years. But today the world is using more oil than ever, and the prospects for a continued supply are better than they were when the scientists were making those gloomy forecasts. One of the reasons for this is, of course, the discovery of oil fields which were unknown at that time. But perhaps even more important are new methods of drilling wells which have been made possible largely by new materials for making equipment. These new materials are mostly alloys, and in many of the most important applications nickel is a vital component. Thus, with oil wells going down as much as two miles and operating under extremely severe conditions, nickel is on the job helping to make such things possible.

### 4,000 TO 10,000 FEET

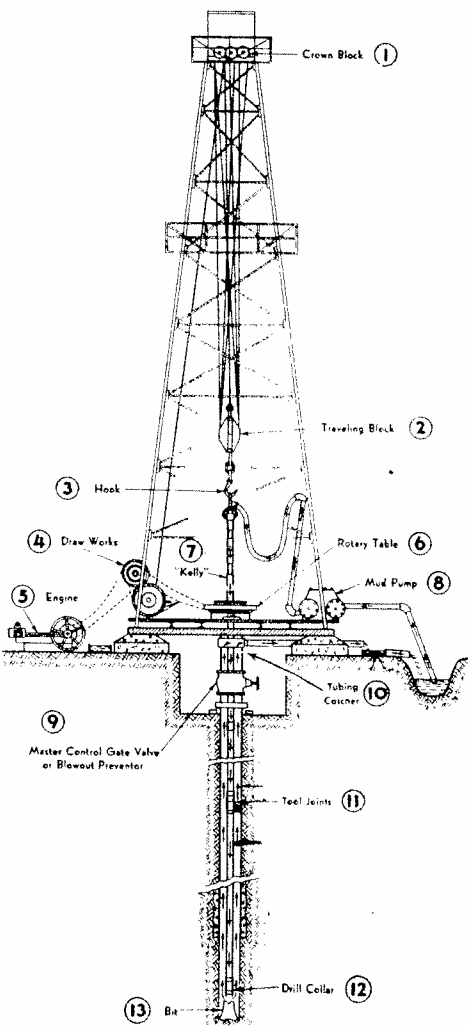
Getting oil out of the ground is a real feat today, and it demands the best in

materials to assure efficient operation. Back in 1859, the first oil well brought in at Titusville, Penn., reached down only 69 feet. The general run of wells being drilled today are from 4,000 to 11,000 feet deep. The best way to realize how nickel contributes strength, toughness and other necessary qualities to oil well drilling equipment is to trace the drilling of a well and note how nickel enters every part which is subjected to strains, shocks or severe wear.

The first step in sinking a well is to erect a derrick, which is one of those tapering metal frameworks so typical of the oil fields. The derrick simply holds the operating parts in place; in other words, it is something like a huge hand holding a tremendous brace and bit, for the drilling of an oil well operates on exactly the same principle as boring a hole in a slab of wood.

### FOLLOW THE DIAGRAM

Now, referring to the diagram accompanying this article, start at the top with the crown block (No. 1). This is nothing



more or less than a sort of pulley, over which the steel ropes which support the great weight of the drilling members pass. In other words it has to support a bar of steel perhaps 60 feet long, enough pipe to reach from the surface of the ground to the bottom of the well and the bit itself. The weight of these parts may total 100 tons, so the crown block has to be very strong and rigid. Hence it is made of cast nickel steel.

Dropping down the chart, we find the travelling block (No. 2), another pulley, which has the same kind of a job as the crown block, and the hook (No. 3), which is like a finger holding up that 100-ton weight. Both of these are made of heat treated nickel steels.

Next is the "Kelly" bar (No. 7), which is exactly like the square section at the top of a bit. It is a hollow bar which may be 60 feet long or less and is always square in section so that the rotary table can grip it and spin it. It turns about 100 revolutions per minute and transmits its turning motion through the piping below to the bit at the bottom of the well. To make sure that the kelly will be strong enough to do this job without twisting out of shape and to prevent the steel in it from getting tired and quitting, the material chosen is steel alloyed with nickel and chromium.

### A TERRIFIC STRAIN

As the well goes down sections of pipe about 40 feet long are attached to the kelly, between it and the bit. This explains why the kelly must be so long, for it must sink through the rotary table as the well gets deeper. When it has gone down its full length, it is pulled up to permit the insertion of another length of pipe. Each length of pipe is secured with tool joints (No. 11 on the chart), which must carry the strain between the sections of pipe as they revolve. To do this without failing, they are made of nickel-chromium steel.

At the bottom of the line of piping is a drill collar (No. 12), which acts as a connecting link between the piping and the bit. It is hollow forging, about 40 to 60 feet long, and it must not only be strong and rigid but it must be very accurately made to assure a long, straight hole. It is also made of nickel-chromium steel. At the very bottom, where the work is being done, we find both bits and reamers. The bits bore the hole downwards, and the reamers cut out the sides so that the hole will be round and sufficiently wide.

Naturally these take a real beating, cutting through hard rock, gravel, sand and the like, so they must be made of a material which combines strength, hardness, and resistance to torsion, impact and abrasion. Nickel alloy steels are used for this reason.

The power which makes the kelly and, hence, the bit revolve is supplied from an engine (No. 5 on the chart), which has cast nickel chromium in its crossheads and other parts that must be especially strong. The mechanism which raises and lowers the drill line so that new bits or new sections of pipe may be put in, is called a "draw works" (No. 4). It has sprockets and other cast parts made of nickel-chromium steel, and its break bands are made of nickel-molybdenum steel. The rotary table (No. 6), which spins the kelly, is constructed with nickel-chromium steel for its important parts.

As the bit grinds into the rock at the bottom of the well, it naturally churns up a lot of debris—sand, rock splinters and the like, which must be removed. This is done by pumping mud down through the kelly and the pipe line so that it will pick up the debris and carry it to the surface in the space between the pipe line and the casing which forms the wall of the well shaft. The pump which forces this mud down (No. 8 on the chart) is constructed with nickel-chromium steel castings which give strength and long life.

### 3,000 LBS. PRESSURE

When the pool of oil is reached, oil and gas are frequently sent to the surface by the natural pressure existing in the pool. To prevent waste, the well is equipped with a master control gate valve or "blowout preventor" (No. 9), which can shut off the flow. This must stand pressures as high as two or three thousand pounds per square inch and must be strong, tough and pressure-tight. It is made of cast nickel-chromium steel which provides the necessary qualities.

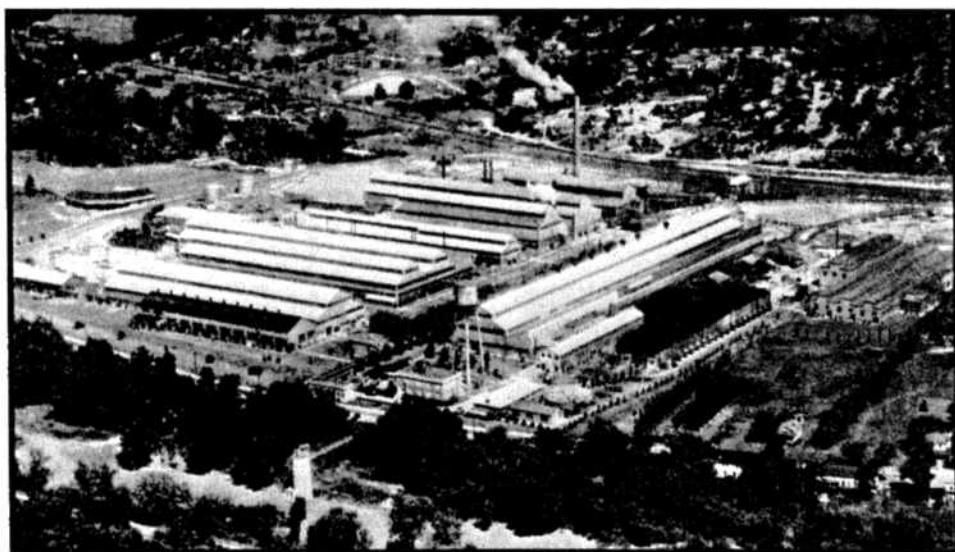
Thus oil wells are drilled. The next problem is to get the oil out of the pool to the surface of the ground. Sometimes this is easy, for the oil is pushed up by natural pressure. In such cases a so-called Christmas-tree valve is attached to the top of the shaft to control the flow or shut it off. It is called a Christmas-tree valve because the pipes, gauges and other parts of it make a shape something like a young evergreen tree. Nickel alloy steels are used in many parts of these valves.

When pressure from below is lacking, it is necessary to pump the oil up, and the machine used is very much like the hand pumps used where running water is lacking for homes. These pumps consist of an arm, which an engine moves up and down, so that it raises and lowers a "sucker rod." The sucker rod, in turn, raises and lowers an apparatus at the bottom of a well which corresponds to the packing in the bottom of a hand water pump. The pumping unit above ground has several parts made of nickel-chromium steel. The polished rods, which connect the pump with the sucker rod, are made of nickel steel or, where corrosion is a factor, of Monel. Sucker rods and couplings are made of nickel steel.

Thus "black gold" is brought up to the surface of the earth where men can use it, and thus nickel is busy at almost every difficult part of the work. How nickel does important jobs in refining oil and preparing it for the various uses made of it, will be described in another article in this series.



## The Huntington Epic



Graphically these photos show how the madly swirling waters of the Ohio River and its tributary swept INCO's works at Huntington, West Virginia. The top picture was taken late in 1934. The lower one was snapped by the aerial photographer from almost the same spot on January 27, 1937. Despite the devastation wrought by the sweeping waters, INCO's Huntington employees and management co-operated to restore order from chaos in astonishingly short time, as the accompanying article relates.

## HEROIC EFFORTS WHEN FLOODS SWEEP INCO MILL

Within two days after the swollen waters of the Ohio River and its tributary Guyan—for nine days from January 23rd to February 1st they buried the Huntington Works in a flood whose peak reached 9 feet above the mill floors—had receded from the plant grounds, the shipping department had resumed its shipments.

On the 34th day after operations were suspended in the emergency, the plant reported normal operating conditions.

This despite the fact that open hearth furnaces and calciners all had to be rebuilt, 80 motors thoroughly reconditioned and all equipment—including the heavy rolling mills—taken down and piece by piece thoroughly dried, cleaned of every bit of mud and grit and then reassembled.

### HEROIC ACHIEVEMENT

Only heroic efforts on the part of plant employees and exceptional foresight on the part of the operating management made this achievement possible in face of one of the worst disasters of this kind which has occurred in the history of the nation.

The rising waters first began to menace the plant on January 21st. On January 22nd production was halted and all employees mobilized to carry out precautionary measures. These included the jacking up of all motors and movable equipment and the lifting of warehouse stocks six feet off the ground.

During the fifteen years in which the Huntington Works have been operating annual floods have only once menaced operations, and then the waters before did not do more than enter the grounds.

By morning of January 23rd the water stood 53 feet above the normal average level of the Guyan River at that point where it flows by the plant. Wood floors in the hot sheet mills floated off. The grounds were entirely awash. For four days the waters continued to mount, reaching the maximum height of 9.65 feet above the floor at 11:00 A.M., January 27th. At 4:00 P.M. that afternoon the flood began to drop slowly. At 3:00 P.M. on January 29th the water was still 7 feet deep in the plant.

### EMPLOYEES AIDED

Rehabilitation and reconditioning measures had been started before the flood stopped rising. So had activities to relieve distress and discomfort among employees. Constant communication was maintained with New York headquarters by means of teletype. The machine at the Huntington end was moved from the plant to the home of A. S. Shoffstall, Plant General Manager, on higher ground. Company officials by means of this equipment immediately authorized

the payment of a full week's wages to all employees on its payroll, thus making up for time lost while the plant was under water. The Company contributed \$10,000.00 to the Huntington Red Cross. Medical and other attention was provided.

By the time the water had reached its full flood stage everything had been made ready for starting rehabilitation. Expert engineers from the staff of companies who had installed equipment were already on the scene. New linings for the open hearth furnaces and calciners had been ordered for delivery as soon as railroad service to Huntington was resumed. So had other replacement supplies and equipment.

### AQUATIC CLEAN-UP

Employees in boats and on rafts began cleaning up as far as possible while the flood was receding. By the time it had left the grounds a corps of experts were on the job dismantling, cleaning and drying motors. New materials were ordered and a mobile motor generator set borrowed. Replacements arrived on the first trains to get through.

By February 4th an average of 650 men were working at day and 210 at night on reconditioning plant and equipment.

By February 5th the hammer shop and several other departments began operating. The first reconditioned open hearth furnace was fired on February 6th. Two days later the calcining furnaces were beginning to operate. On February 15th the 24-inch mill—the first of the mills to resume—went into service again. From then on department after department began to swing into production, first on a restricted and then on a full schedule. By February 25th the full speed signal had been given all the way down the line and Huntington was operating at full capacity.

### MONEL FOR HOSPITAL

One of the largest hospitals built in the United States during the past year was the Station Hospital at Fort Sam Houston. Food service, sterilizing, and clinical equipment were made of Monel. Nickel clad steel storage water heaters are also used at this army post.

### MUST STAND GAFF

Fire fighting equipment must be rugged and dependable under all sorts of conditions. To insure the strength and toughness of stressed parts of fire engines, the Ahrens-Fox Company of Cincinnati uses nickel steels for crankshaft, gears, important front and rear axle parts, and driving gears.

## Eight Veterans Retire

(Continued from Page 1)

after the evening meal, but he stuck it out. The pay was \$1.00 a day.

Until he was 18 he worked in the lumber camps, and then he went to Eganville and served three years as a blacksmith's apprentice. Then he was two years a joiner. After that he moved about considerably, as a log driver, a railwayman, etc., down through Michigan, on the North Shore, and up at Timiskaming, his trade always coming in handy. Finally he located on a farm near Haileybury, where he spent several years. When the big mining boom broke he went to Cobalt as blacksmith and carpenter, but when the strike broke there in 1912 and steady work was ruined, he had to move. A man with a family couldn't afford the idle days which strike leaders demanded, so John Kirwan pulled out for Coniston.

### GOT STEADY WORK

Arriving just as construction of the new smelter was getting underway, he liked the prospects, settled down, and has lived happily there since. He has worked in the plate shop, in the smelter, and all about the plant. For a long time he was Coniston's village smithy, although there was no spreading chestnut tree to shade him.

"I guess we'd better not say how long I spent at all the jobs I've had," he says. "It would probably add up to make me about 120 years old."

John Kirwan was married in 1895 at Prudenell, and has a family of 14, nine of whom are sons. One, Tom, is with INCO at Coniston as a brakeman.

### ALEC CONFESSES

We're going to let Alec Montgomery tell his own story. For one thing, it will lessen the danger of Triangle being jerked up on a libel charge. Here it is:

"I was born at Petawawa, about 10 miles north of Pembroke, on March 10, 1875. It was a pretty windy day, as I recall it, and many have since taken pains to point out that the effect of the weather on me that day has never yet worn off. Others claim I am like I am because my father came from the North of Scotland. Oh well.

"My first job was water boy on the railroad between North Bay and Cartier. That was the year that Corbett knocked out John L. Sullivan, and I won my first bet, 50 cents, on the fight, from the other water boy. I did so much blowing about how I could pick them that I've never won a bet since.

### OLD RIVER DRIVER

"From railroading I went lumbering for two years with J. R. and J. G. Gillis on the Ottawa River. Then I hit the trail once more for the Rainy River district, working on the Ontario and Rainy River Railroad. After that I headed down to Michipicoten, where I worked as a driller on the railroad between the Helen

Mine and Michipicoten Harbor. In the spring I went back home and started working on the passenger boat Victoria, which ran between Pembroke and Des Joachim. In the fall we hit for the tall pines once more, for J. W. Munroe on the Onaping. As a river driver I was the tops. On Sundays as a rule we had 'burling contests,' in which two men get on a log out in the water and 'burl' it until one man falls off. The man who fell off first was out. That was how I was the tops—I always fell off the log first.

"Lumber jacks at the meal table are always very quiet. No talking is allowed. You have to know the code to get anything to eat—'Pass the salve,' (butter); 'Punk,' (bread); 'Sand,' (sugar); 'Chicago chicken,' (pork).

### TO CLIFF IN 1901

"I started to work for the Ontario Smelting Works at Copper Cliff on May 3, 1901. That was a hard day. I'd been working in the woods all winter. At the O.S.W. my first job was pulling pots over to the Refinery where Matheson has his coal yard now. The hot matte and slag, with the sun shining down, didn't appeal so much to a lumber jack. However, I stuck it out for three years. Then our wooden smelter went up in smoke. The Copper Co. rented the Victoria Mine smelter and I was sent over there to work while the blast furnace smelter was being built in Copper Cliff.

"We started the fireworks going again at Copper Cliff one day in July, and that was some experience. Most of the men were green hands on blast furnace work. They didn't know whether to use a pikepole or a canhook. Eventually we found out that bars and hammers were the only things to make matte and slag run, with plenty of muscle thrown in. In those days we had working with us on the charge floor, John L. Agnew, W. Kent, E. A. Collins and D. MacAskill. On the tapping floor we had P. McDonald, H. Johnston and T. Harkins. And strong husky fellows they all were, too.

"About the hardest time we ever had was during the war, when men were scarce and we all had to hustle like the dickens. Then came the shutdown, and that was the time when the gang had to master the art of snow shovelling. Men that were men in those days were P. McDonald, D. Finlayson and Frank Taylor, with me coming along about 50 yards behind nursing a sore back.

"We had a pretty fast hockey league going, too, on the rink where the tennis courts are now. It's a long way to look back, but if I remember correctly MacAskill and McDonald were starring. We presented Donald with silver skates, and Pete was appointed professional coach for the blast furnace squad.

"At last came the big day when we were told to start up No. 3 blast furnace again, and from then on we kept getting the others going one by one. Pete was our general foreman and John Schofield was our mechanical boss. Up until 1930 we ran the blast furnaces, and in that year we started the new reverbs. I had a good many different jobs after that, on construction and one thing and another. Then I was put on the holding furnace. We were starting to make our first blister copper. Thanks to Fete, I became known as the Copper King. Another fancy name I picked up was when I went over to the Orford to study the nickel bottoms. Then I was the Nickel Expert. After I got back to the blast furnace again I became Blast Furnace Superintendent. I guess I should have gone over to the Coronation to compete with these other fellows that have long handles attached to their names.

### ALWAYS WELL USED

"I would like to say that I have always been well used by the officials of the Company and by the men who worked for me, ever since I started. I'll say they were the very best.

"There are five children in our family—I Leo and Buster in Copper Cliff, and Mannie in North Bay; Sister Caroline who is a musical instructor in Ottawa, and Helen at home.

"My hobbies have been fishing and hunting, and boys, you should just picture in your minds the big ones that got away. As an orator or politician I have never been so good, although I have always voted for the right man, as 'Dope' Acheson will tell you.

"Now I think that's enough. A saying we used to have in the lumber camps was 'Here's mud in your eye.' May you enjoy the best the world has for you, and not forget to smile when things go wrong. Good luck! —A.H.M."

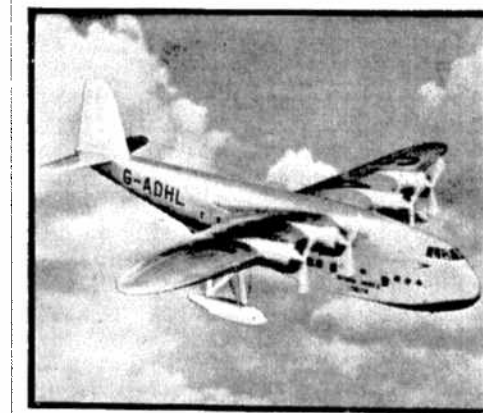
## TRANS-OCEAN FLYING BOATS

Renewed talk of arrangements for a trans-Canada air service as a potential link in an Empire route from Great Britain to the Far East draws attention to plans for a British-Canadian trans-Atlantic service to be opened in the near future. And once again Sudbury nickel demonstrates its versatility as an ally of world-progress.

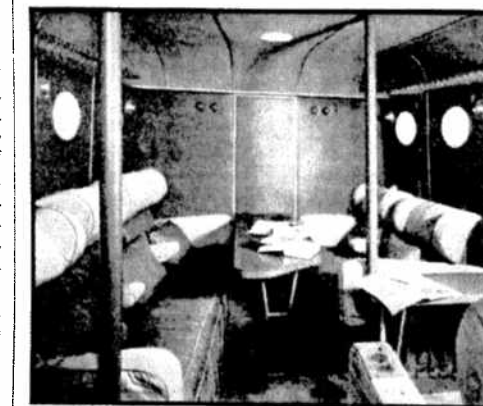
Giant flying boats are under construction for the service and some of them have been completed. The illustrations give some idea of the unusual comfort and convenience available for passengers on these liners. They accommodate 24 passengers on day stages and 16 on night journeys as well as a crew of five.

The sturdy, light construction of these flying boats is made possible by the extensive use of light alloys with a good percentage of nickel. These alloys are employed for tubes and sections and the strut ends on the main spar. Thus nickel strengthens the bonds of the British Empire.

The flying boats are designed to attain an approximate speed of 200 miles per hour. They are 88 feet long and 24 feet in height from the waterline. Fully loaded, each plane weighs nearly 18 tons.



A symbol of the New Era — one of the Imperial Airways Empire Flying Boats.



The Smoking Cabin in the new class of Empire Flying Boat now being built for Imperial Airways.



# Splendid Exhibition at Parker Shield Contest

(Continued from Page 1)

they hustle to the side of the patient—theoretically they are just coming off shift and see him lying there.

The presiding doctor, to whom their captain will address his questions, moves over with the judges.

The First Aid team's first concern is for the safety of the place in which they are working—is there any local danger from trains or other source? The answer is no.

## STEADY PEP-TALK

Then, how about the patient's condition? They learn that he is pale, cold, clammy, and that his pulse is rapid and weak. So they cover him with coats, expose the site of the hemorrhage, and one of their number dashes away to get the First Aid kit and notify the doctor. Throughout their work one of them keeps up a steady stream of encouragement to the patient—"You'll be okay in a jiffy, old man!"—"We're going to hop you over to the hospital, and wait until you see the snappy nurses they've got there!"

The team captain fires questions at the presiding doctor. Is the blood from the wound bright red and spurting? The doctor says yes. Promptly the captain diagnoses an arterial hemorrhage. He applies direct pressure and asks if the bleeding is controlled. The doctor says no. He applies digital pressure to the brachial artery, and again asks if the bleeding is controlled. The doctor this time says yes.

## REGULATES TOURNIQUET

After learning that there is no fracture, and no foreign body in the wound, he sees that the injured arm is elevated and a tourniquet is swiftly applied to the brachial artery. Frequently he tests the pulse at the patient's wrist to regulate control of the tourniquet. A dressing is applied to the wound, and the arm is placed in a sling.

Then attention is switched to the injured leg. Is there pain, loss of power, swelling, irregularity, deformity? The doctor says yes. So the captain decides it's a fracture, of the mid shaft tibia and fibula. Splints are applied, and a bandage wrapped firmly into place.

## SMOOTH TEAM WORK

The patient is carefully placed on a stretcher and carried to the First Aid room. The doctor arrives; the team captain reports to him the patient's condition, and tells what has been done. Co-operation and mutual understanding among the members of the

team have made their work smooth and efficient.

That completes the practical test. Afterward each member of the team is examined by the doctors on phases of St. John's Ambulance work, and their answers count in the team's total score.

Frood, Coniston, Creighton and Copper Cliff took part in the contest March 25. Doctors Lively, Harris, Armstrong and Johns were the judges, with Doctors McLean and Robinson substituting for Doctors Armstrong and Johns when the latter were called out. Dr. Morgan, of Sudbury, was the presiding doctor.

## COPPER CLIFF WINS

And it was an interesting test of First Aid knowledge and training. Final tabulation found the Copper Cliff squad in the lead, with Creighton second and Coniston and Frood tied for third place. Results were announced by Dr. Morgan, who offered his hearty congratulations to all the teams. G. S. Jarrett explained that the new Parker Shield had not yet arrived from the engravers, but called upon R. D. Parker to present the neat individual medals to the championship team.

Warm congratulations and a hearty handshake went to each medal-winner from Mr. Parker, who strongly commended all the teams for their interest and efforts. The value of First Aid training could not be over-estimated, he said. A man never knew when it would come in extremely handy for him, either at work or at home.

## SOON PROVES POINT

As if to demonstrate Mr. Parker's point, an incident occurred within 10 days when Tom Gladstone, one of the Copper Cliff men to which he addressed his remarks, was an eye-witness of an accident on the Coniston Road, in which a woman was knocked down by a car. Gladstone was able to administer First Aid, and have a correct diagnosis of the woman's injuries when she was taken to a doctor.

The teams taking part in the very successful contest were as follows:

**Copper Cliff:** Elliott Lawson (captain), Tom Gladstone, Wes McNeice, Gordon Guthrie, Nathan Crawford (sub).

**Creighton:** Harry Stephenson (captain), Archie Seymour, Alf Emblin, Bruce Lean, V. Lesjac (sub).

**Coniston:** Wm. McKee (captain), Wm. Evershed, Bert Patterson, Edward Albert.

**Frood:** C. Couzens (captain), L. Sliter, W. MacCoy, G. Andrew.

## INTER-DEPARTMENTAL CHAMPIONS

Prior to the Inter-Plant Contest, Inter-Departmental First Aid Competitions were conducted at Creighton, Coniston, Frood, and Copper Cliff for shields presented by Smelters Superintendent P. F. McDonald and Mines Superintendent H. J. Mutz. The victorious teams may be challenged for their shields at intervals of three months between the annual competitions.



## At Frood . . .

The Frood Mine Mutz Shield was won for the first time by the 12 to 3 Shift team. Left to right: Geo. Andrew, James MacCoy, Collin Couzens, Lee Sliter.



## At Creighton . . .

The Creighton Mine Mutz Shield was won for the first time by the No. 3 Shaft surface team. Left to right: R. Pascoe, H. Stephenson, G. Carpenter, V. Lesjac.



## At Copper Cliff . . .

The Copper Cliff Smelter McDonald Shield was won for the first time by the Converter Building team. Left to right: T. Cornthwaite, W. Trotter, E. Lawson, T. Gladstone, N. Crawford.



## At Coniston . . .

The Coniston Smelter McDonald Shield was captured for the first time by the Electrical Department team. Left to right: R. Duncan, W. McKee, L. Sabourin, W. Evershed.

# Bowman's Bronks Cop Shift Loop Championship



After travelling through the winter's schedule without a defeat, Morrow's team were booked as favorites to cop Copper Cliff Shift League laurels in the playdowns.

Ivan Bowman's boys had different ideas along that line, though, and uncovered unexpected strength to win in two straight when they tangled with Morrow's men. Railbirds who turned out for this tid-bit of the season were agreeably surprised, the brand of hockey being excellent.

The Bowmanites had to come from behind to take the second game, Morrow at one time leading 2-0. Webster scored twice to tie it up, and then Armitage put it away for Bowman late in the third period.

The Copper Cliff shift champs then went on to defeat Coniston and Refinery in a round-robin series for the Cochrane-Dunlop Trophy.

The victorious Bowman Bronchos are pictured above: Back row, left to right, Jerry Peppin, goal; Al Medlock, coach; Tom Scanlon, defence; Ken Dunsmore, defence; Ken Shore, forward; George Hutchison, defence; Bill Dinning, trainer; Jack French, goal. Front row, left to right, Sam Dice, forward; Toby Armitage, forward; Mel Edwards, forward; Fred Stevens, forward; Bill Webster, forward; Herb Montgomery, forward. The Cochrane-Dunlop Trophy is the silverware in the foreground. Ivan Bowman was not present for the picture.

## Shoemaker Must Stick to His Last

There's the old saying about the shoemaker sticking to his last, and it's not such a bad idea at that—particularly where safety precautions are concerned.

Take, for instance, the Ontario Refinery employee who was asked by a fellow-workman on the wire-bar inspection crew to take his place on the inspection conveyor for a few minutes.

The foreman was absent at the time—he wouldn't have allowed it. Although he had been transferred to the department only two days previously, and was not attached to the inspection crew, the employee in question took his friend's place.

## HAND CAUGHT

The heavy copper cakes on the conveyor are turned over for inspection with a tool called a turner, which fits over the edge of the cake and is used as a hand lever. Inexperienced, this man did not notice another cake nearby which would not allow sufficient clearance for the turner handle. As the cake turned over, his hand was caught between the handle of the turner and the next cake. He lost the end of a finger, and was lucky not to suffer more serious injury.

## WEGRICH BOYS FAMOUS PORT COLBORNE TRIPLETS

The claim of the Jones brothers in England that they were the only living adult male triplets was quickly disproved when their boast reached Port Colborne, where the Wegrich brothers are very much alive, very much adult, and very much male triplets.

## WORK IN REFINERY

Not only are the Wegrich triplets living in their 41st year, but their mother, Mrs. Edward Wegrich, a white-haired, brown-eyed lady, is also living. INCOites are particularly interested in this unusual family because two of the brothers, Bill and Jack, work in the Company's Port Colborne refinery. Bill is a foreman in the electro-nickel department; Jack is on the force of the anode department.

Their fellow-employees often get them mixed up, although Jack has been thoughtful enough to grow a full dark moustache, and if the worst ever comes to the worst, he can prove his identity by displaying a mole on the back of his neck and a birthmark on his right leg. The third triplet brother, Jim, lives in Niagara Falls, N.Y., where he is in the office of the Union Carbide Co. First-born of the three, Jim is slimmer, brushes his hair pompadour.

The first year after they were born, they wore different colored ribbons on their wrists.

Their mother is still living on the lovely Sugar Loaf farm on the shore of Lake Erie where they were born, little more than a mile out of Port Colborne.

They weighed about three pounds apiece at birth, she says. "This was out in the country. There were no nurses around, no special way of caring for them. I guess I didn't have one good night's sleep for two years, but that's nothing to talk about."

"Did they attract much interest then?" "Why, people used to drive from miles

around to see them," Mrs. Wegrich said. "I tell you, it was a rare, rare thing at that time, triplets."

"Did they all get sick together?"

"They had everything. If one got measles or mumps or chickenpox, they all got it. They had whooping cough when they were a year and two months old. Took it in the fall and whooped all winter. We certainly didn't get much sleep that winter. But that was all they had—the common sicknesses. I guess I must have done the right thing; they must have got good care," and she beamed proudly on her men sons.

The three remember many amusing incidents. "Once, when we were 18, I took Bill's girl out and she didn't know the difference," said Jack.

"And the trouble was I hadn't any idea how often he did it," said Bill, sadly.

## FOXY IMPERSONATION

The teachers got them mixed up at school. They suspect that more than once they took one another's lickings. But sometimes their strong resemblance paid big dividends, like the time Bill wanted to go to Buffalo and his father said nay. Bill was determined, and enlisted the co-operation of his brothers. When supper-time came, Jack and Jim went in on time and ate, while Bill's place stayed empty. As soon as they were finished, they went out. A minute or two later Jack entered again, sat down in Bill's place, and ate a second meal.

"And Dad didn't know the difference," said Bill, who had shuffled off to Buffalo.

In a glass washing machine, put on the market for tavern use, Monel strip is used for the revolving table on which the glasses are held. Monel's proved resistance to corrosion by caustic cleaning compounds dictated its choice.



# MINING — Past and Present

Second of a Series of Articles by K. V. LINDELL, Copper Cliff

Though it is not our intention to take you back in mining history beyond that recorded by Agricola in his guide to mining, "De Re Metallica," we do wish however to bring to your attention the almost incredible fact that the first miner, without doubt, existed early in the Stone Age and not in the Bronze and Iron Ages as one might believe. Archaeologists have found in several places—some in Belgium and France—old flint mines with evidence of the fact that primitive men had dug pits in chalk formations including layers of flint, to obtain it for their tools and weapons. There is evidence also that they dug shafts and drove lateral headings or "drifts" in order to obtain more of this precious flint. These were the first mine workings, so far known, dug out by the use of a deer horn by the first miners, in their search for fresh flint which they had apparently found to be easier to chip and fashion into various shapes than the dry flint to be found on surface. The first workings were naturally in chalk as it was soft and easily dug by the deer horn.

The discovery by man of iron and the subsequent easier digging for the metals was indeed a great advance in mining but in comparison to the methods in practice today the breaking of rock in the time of Agricola appears almost as primitive as existed in those early flint mines.

## PRIMITIVE "BLASTING"

The wood cut reproduced herewith from Agricola shows quite clearly the method used in the 16th century for breaking hard rock. The procedure was first to advance the "heading" or working place as much as possible by means of bars and hammers and then drive fan-shaped sticks of wood into whatever crevices could be found in the area which it was desired to excavate. If there were no crevices, the sticks were piled against the wall of rock and fire set to the lot. Where the mining was being done at the surface they would throw water on the rock after it had been heated, in order to hasten the shattering. This could not be done in the underground operations as the smoke and steam prohibited this procedure; mechanical means of ventilation were as yet unheard of. They had to depend almost entirely on the repeated heating and cooling of the rock to gradually disintegrate it, after which they would use one of their various bars or "gads" (gads being short bars hammered to a chisel-like point on one end), or a hammer and gad to peel away as much of the shattered rock as they could. When no more could be removed by the hammer or other tools, the heating was again repeated, and so the cycle continued.

## 5 TO 20 FT. MONTHLY

Despite the arduousness of their task they unrelentingly persisted day after day to whittle away at the rock, making such record footages in driving as five to twenty feet in one month, depending on the hardness of the ground and other factors. It is therefore a wonder that some of their underground workings and shafts attained such depths as three-hundred and eighty feet.

Contrast this method of breaking rock with the methods of today and we are certain that you will be glad that you are living

and working in the "new better days" instead of the "good old days."

To-day, the miner of hard rock is equipped with a drill, operated by air, which is in fact a hammer striking as many as 2,000 blows a minute upon the drill steel. Instead of attempting by continued blows upon the steel to break up the rock wall, his drill steel has a bit forged on one end and he proceeds to drill a series of holes in the rock at regular intervals, loads the holes with explosives and shatters the entire mass or "round" he has perforated, in one rending blast.

## THE MODERN METHOD

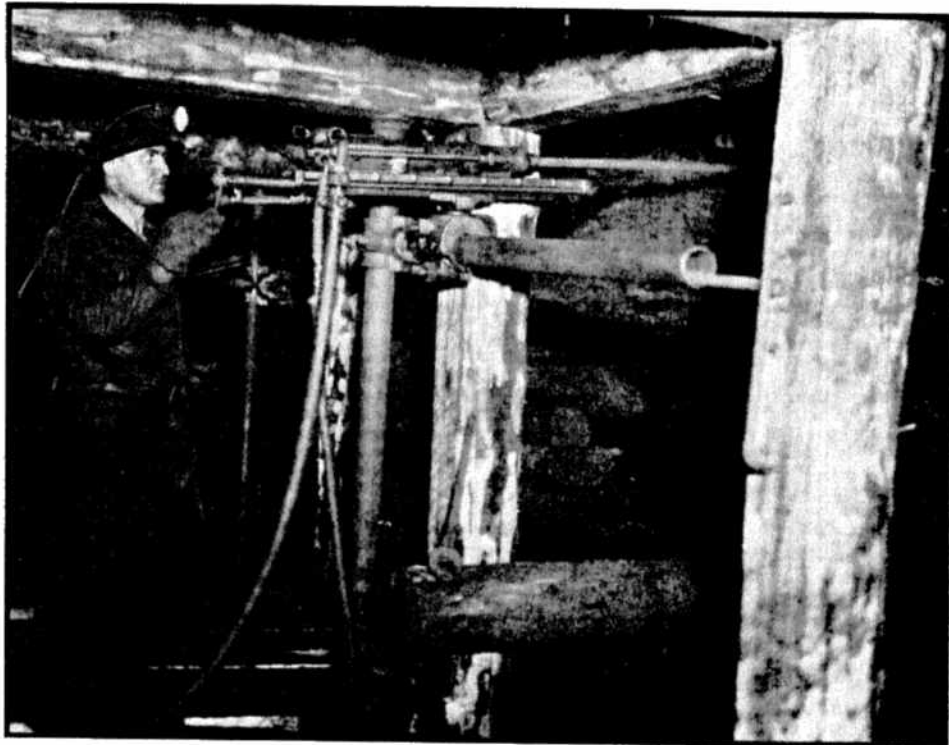
An ordinary everyday set-up of a rock drill in operation in one of the working faces at the Frood Mine is shown in one of the accompanying photographs. You see in the picture the drill mounted on the supporting columns with the drill steel inserted in place at the hammer end of the drill, in drilling position. The two hoses connected to the machine provide air for power to hammer the steel, and water which is fed through the hollow drill steel under pressure to wash away the rock cuttings made by the drill bit at the bottom of the hole being drilled, as well as to allay the dust formed by the rock cutting. The drill is mounted so as to permit its advance on a "shell" by turning the crank you see in the drill-runner's hand, as the bit penetrates the rock. As the drill hammers the steel it also rotates it automatically in order to present a new rock surface for the bit at each blow. As the ordinary machine has a feed length of only two feet, it is readily seen that as the hole progresses the steel used must be in a series of two-foot lengths, usually in sets of three, five and seven feet in order to drill a six-foot hole. Depending on the quality of the steel used and the character of the ground being drilled, one or more sets may be required to drill a hole; the number of holes required depends upon the tenacity, hardness and other characteristics of the rock.

## 4 TO 8 IN. PER MINUTE

At Frood Mine, the advance of the drill steel varies from four inches in one minute to over eight inches per minute, with the spacing of the holes varying from one foot apart to three feet. In a development heading, (i.e. a tunnel, drift or other opening driven for the purpose of reaching the ore, or for removing the ore after breaking in the production headings called "stopes") such as shown in the accompanying photograph, the average advance is about six feet per day, in a drift nine feet wide and ten feet high. Two drill runners will usually drill fourteen to sixteen holes each in one shift of eight hours, load their holes and blast after removing their equipment. Contrast this average of one-hundred and fifty feet per month against the five feet a month in 1556 under more trying conditions, excavating similarly hard rock.

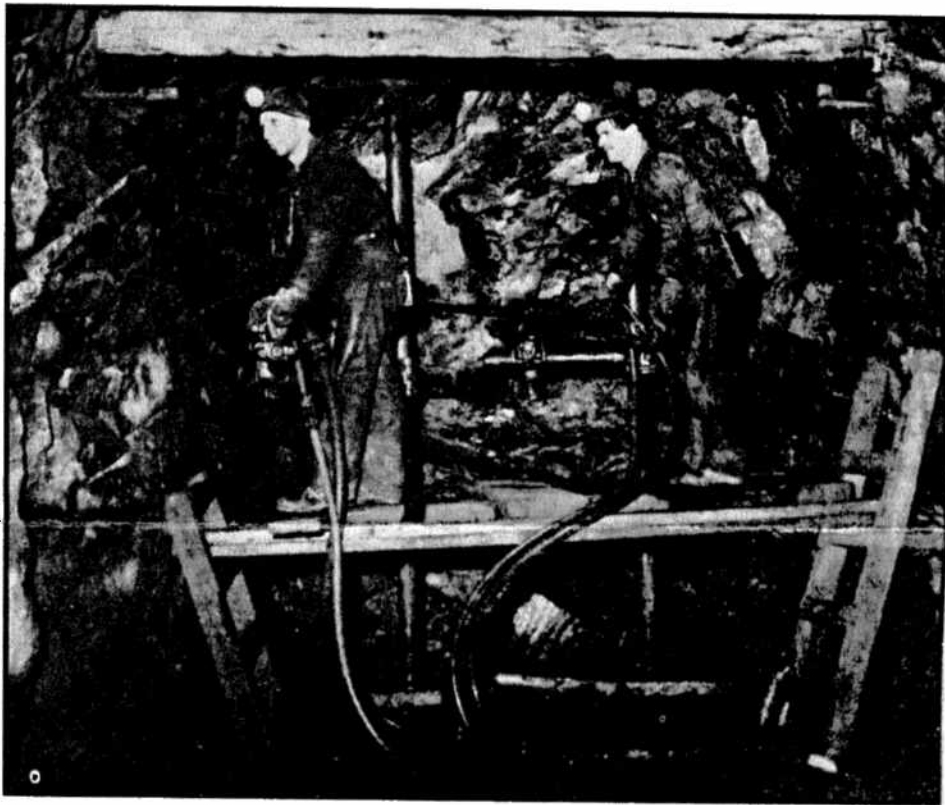
## VERY ANCIENT PRACTICE

Before leaving the subject of breaking rock it might be well to add that the use of fire-setting as an aid to mining is of very ancient origin and, Hoover tells us, "persisted in Teuton and Scandinavian mines to the close of the 19th century—270 years after



## Drilling Set-Up in Square-Set Stope

Here we see Matt Stipanovic operating a hammer drill in 48.5 stope on 2200 level at Frood Mine. The three-inch drifter with the hose supplying air for power and water for washing and allaying dust are clearly visible. The drill steel may be seen extending from the drill to the face of the ore or "breast."



## Typical Drilling Set-Up in Drift

Peter Prpich (left) and Joe Farkas are drilling in the main north drift on 1800 level at Frood Mine. The component parts of the "set-up" are: the "bar," which is the vertical column extending from floor to roof; the "arm," which is clamped to a horizontal position on the bar; the "dump," which is the clamp on the arm supporting machine and permits vertical and horizontal aligning of the drill; the "shell," which is clamped to the dump and upon which the drill is propelled forward and back by means of a screw turned by the crank in the "drill-runner's" hand. The large hose supplies air and the smaller one water for the drilling. The drillers are equipped with hard hats, hard-toe safety boots, and an electric cap lamp.



A—KINDLED LOGS. B—STICKS SHAVED DOWN FAN-SHAPED. C—TUNNEL.

## 'Way Back When . . .

This reproduction of a wood-cut from Agricola's "De Re Metallica" shows the usual method of "fire setting" for breaking ground in the 16th century. As designated by the letters, A shows the kindled logs; B shows sticks shaved down fan-shaped for driving into crevices; C shows the tunnel.

the first application of explosives to mining." The first mention of fire-setting dates back to the 2nd century B.C. and gained considerable prominence in literature 200 years after Hannibal crossed the Alps in 218 B.C. when the historian, Livy, wrote in connection with the crossing: "They set fire to it (the timber) when a wind had risen suitable to excite the fire, then when the rock was hot it was crumbled by pouring on vinegar. In this manner the cliff heated by fire was broken by iron tools, and the declivities, eased by turnings, so that not only the beasts of burden but also the elephants could be led down."

The use of vinegar is, however, without doubt a myth caused by corrupt translations which persisted due to ignorance of the writers. The use of fire-setting nevertheless continued for centuries after gunpowder was first introduced and was still in use in English mines until late in the 17th century.

## AIR HAMMER RECENT

The use of the air hammer drill is comparatively recent, being a development at the turn of the century. The use of a drill steel with a forged bit preceded it by many years and in so-called gopher mining of western United States, commonly operated by a lone prospector, the drilling is still done entirely by hammer and "hand steel." Hand steel is similar to the steel used in the hammer drill except it is usually shorter and smaller in diameter for drilling a round one to three feet in depth. In instances such as this, the miner will take from one to two or more days to drill a round. The procedure is to hold the steel and rotate it after each blow, with one hand, while striking the steel with a hammer held in the other hand. Cuttings are scraped from the bottom of the hole with a metal spoon. Progress is neces-

sarily slow by this method, but, the return from the ore broken usually suffices to sustain the miner who lives in hopes that the next round will expose a rich vein or the "mother lode."

This method is still used in some locations for excavating for building foundations in cases where the size of the job does not warrant the expenditure for modern drilling equipment.

In the next issue we will consider further the breaking of rock and the methods of handling the broken "muck."

## OCEANIC MARATHON

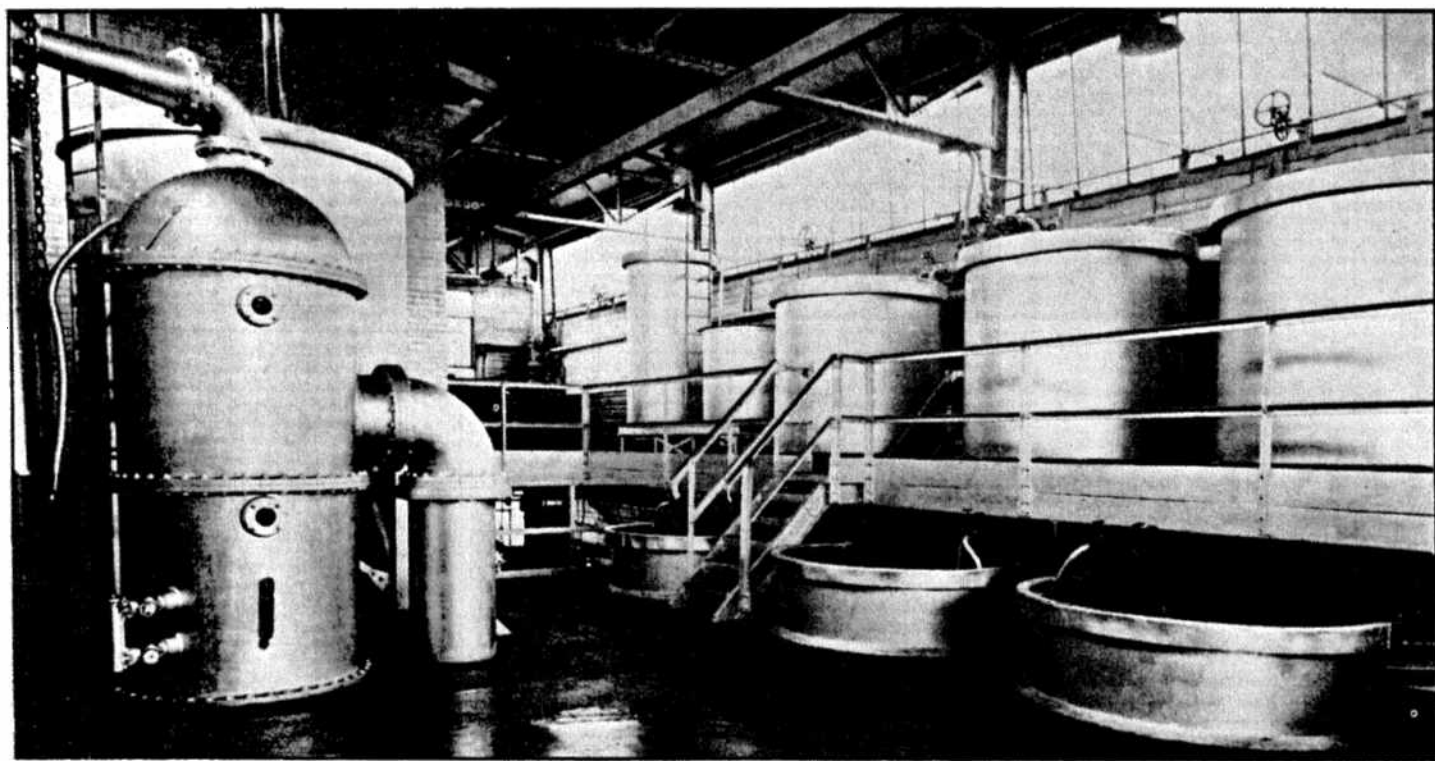
Already definitely established is the ability of Monel Metal—the copper-nickel alloy—to withstand the ravages of sea water. But even more convincing proof was produced recently when a fisherman caught a halibut which, 10 years before, had been tagged by the International Fisheries Commission with a dated Monel Metal identification tag. Although this Methuselah of the deep roamed his oceanic haunts for 3,582 days, with no time out for dry-docking, his Monel tag was in perfect condition.

## CUTTER SPINDLE VITAL

In a heavy duty precision type hand milling machine with a spindle speed range of 106 to 1050 R.P.M., recently placed on the market by the Product Machine Co. of Bridgeport, Conn., the cutter spindle is one of the most vital parts of the machine. This spindle and the various transmission and pulley shafts, are made of the "Samson" series of nickel chromium steels produced by the Carpenter Steel Company.



# Strange Elements of Many Uses Are ORC's Selenium and Tellurium



The spic and span Selenium Plant of the Ontario Refining Company, where the Silver Refinery by-product leaches are treated for the recovery of Selenium and Tellurium, versatile elements whose production and use are related in this article.

This is the final article in the series descriptive of operations at Ontario Refining Company.

Every pound of blister copper received by the Refinery contains a small amount of those strange but increasingly important elements, Selenium and Tellurium. During the process, these are separated from the copper in the Tank House cells where they enter the slimes with the Gold, Silver and Platinum metals. These slimes are treated in the Silver Refinery. During this process, as described in the previous Precious Metals Recovery article, the Selenium and Tellurium are separated from the Gold, Silver and Platinum metals by the various furnace operations. The main concentration takes place in the furnace slags, flue accretions and gas scrubber solutions. These various by-products are leached and washed, producing liquors very rich in Selenium and Tellurium. The treatment of these liquors and the production of extremely high purity Selenium and Tellurium is the function of the Selenium and Tellurium Plants.

## THE SEPARATION

The Selenium Plant storage tanks, to which these solutions are pumped, are shown in the accompanying photograph. About 150 cu. ft. of these leaches and washes are mixed in neutralizing tanks and maintained at a low temperature. The batch is made slightly acid by means of sulphuric acid and reneutralized by sodium carbonate. This operation, under careful control, brings about an almost complete precipitation of the Tellurium and base metals in the form of a sludge. The mixture is then pumped through a filter press to separate the sludge from solution which now contains only the Selenium. The sludge is transferred to the adjoining Tellurium Plant and the Selenium-rich filtrate is acidified and fed to agitators where it is gassed with sulphur dioxide for about 20 hours.

## 99.75% SELENIUM

This treatment brings about the precipitation of the Selenium. It is withdrawn from the tanks, washed and charged to a small rod mill. The ground product is again washed and dried, this time by centrifuge and finally for 20 hours in steam heated drying ovens. The Selenium is then screened and made ready for shipment to the consumers. O.R.C. production consistently runs 99.75% Selenium.

The base metal and Tellurium sludge referred to above is treated with strong caustic solution effecting a separation by preferentially dissolving the Tellurium from other metals. This treatment finally yields a pure Tellurium solution from which the oxide is precipitated by neutralization. This is dried, mixed with flour and borax and reduced in a crucible furnace to metallic Tellurium. The metal is cast into bars 99.85% Tellurium and weighing approximately 80 lbs. ready for market.

## THE "ELECTRIC EYE"

An interesting feature of both Selenium and Tellurium is the rapidity with which new and novel applications are being found in many industries. One of the most unusual, although not the most important use of Selenium is in the "Electric Eye" or photo-sensitive cell. Selenium has the unique property of conducting electricity better when illuminated than when dark and although this was known and first used in 1876 it is only recently that the field has expanded to include wide and varied applications such as burglar alarms, door openers, cigar and other product graders, counters and many others too numerous to mention.

## IN GLASS INDUSTRY

The use of Selenium in the glass industry was due principally to the desire for conservation of Manganese during the war. It was found to be a suitable substitute for Manganese in neutralizing the green in glass

due to iron oxide. The judicious addition of Selenium can produce an almost colorless glass but with increased additions various shades of pink and amber for tableware and lamp shades can be obtained. When combined with cadmium in a glass bath, cadmium selenide is formed producing ruby red glasses which find many applications for traffic signals and other red lights.

Selenium and Tellurium are very similar chemically to Sulphur and have found application in replacing this element as a vulcanizing agent in rubber. It is claimed that rubber much more resistant to abrasion can be produced if Selenium or Tellurium are added. Automobile tires, boot heels, brake linings, belting and other rubber products subjected to wear are greatly improved by the use of this type of rubber. Tellurium is also used in production of white and yellow rubbers.

## MANY OTHER USES

The production of free machining steels is another field in which Selenium and Tellurium are gaining a foothold, again replacing sulphur. Ease in drilling, tapping and threading are all features attributed to the addition of this element.

A recently developed use is the combination of Selenium with cadmium and sulphur to form a brilliant red pigment for paint manufacture.

A very important and useful property of Selenium is its ability to suppress the burning of rubber. It is claimed that as little as one pound of a selenium, cotton and rubber mixture will flame-proof a mile of ordinary cotton-covered wire.

Many of the properties cited as being peculiar to Selenium can also be accredited to Tellurium. The rubber and ceramic industries both present fields in which the application of Tellurium brings about many favorable and amazing benefits.

One of the most outstanding of recent developments has been the Tellurium Lead alloys. These are noted for enhanced

physical properties and their remarkable resistance to all concentrations and temperatures of Sulphuric Acid.

The notable increase in demand and the ever broadening field of application mark Selenium and Tellurium as very valuable constituents of the Sudbury District Copper-Nickel ores.

## Inter-Plant Bridge Series Proves Success

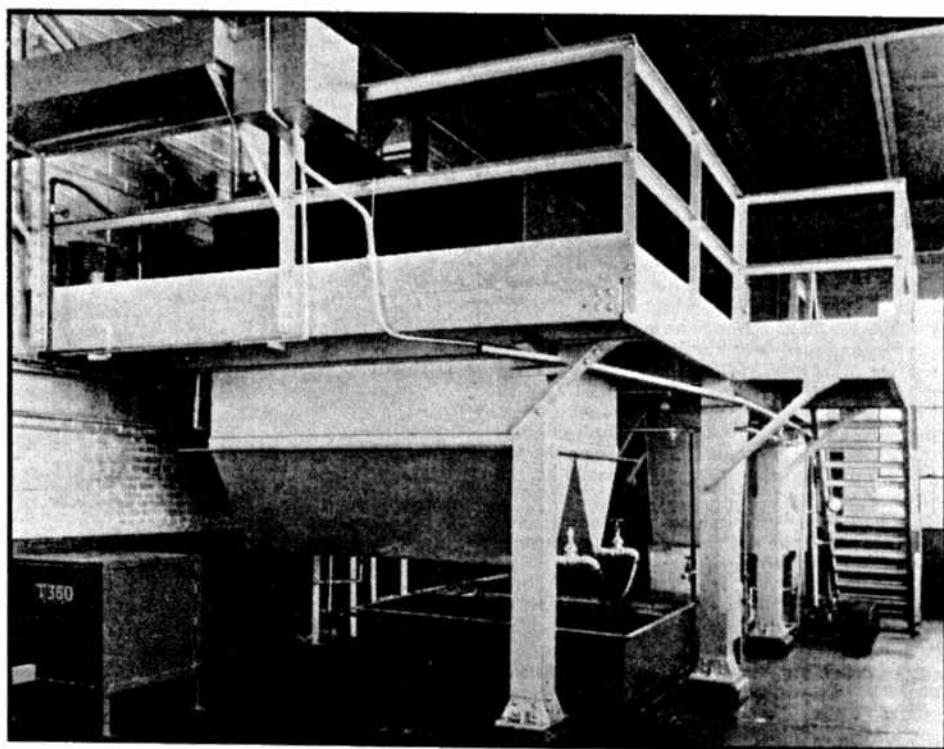
Six teams of 12 players each took part in the first semi-annual Inter-Plant Bridge Tournament which concluded May 4 at Memorial Community Hall, indicating that this new feature will prove a very popular one in the future.

First holders of the beautiful rose bowl trophy donated by E. A. Collins are the members of the Copper Cliff No. 2 team, who built up a substantial lead in the first two matches of the series and then with steady play staved off the challenges of opposing teams in the final evening's tilt.

Standing for the series: Copper Cliff No. 2, 78,860; Frood, 72,040; Outlaws, 71,590; Creighton, 69,330; Refinery, 64,910; Copper Cliff No. 1, 53,490.

The trophy will be up for competition again next fall, and all plants are expected to send strong contingents into the lists.

Individual prizes were awarded each night of the series to the two couples with high scores. Captain Bob Bell and his partner, Bob Beckett, of Copper Cliff No. 2, won the first prize two evenings in a row. The third night it was captured by George Holmes and Frazer Ross of Outlaws, who rang up the best evening's score of the series, 7,480. Second prize the first night went to Mr. and Mrs. Stradwick of Creighton; the second night to Mr. and Mrs. Bill Martin of the Outlaws; the third night to Mrs. Todd and Mrs. Reed of Frood.



## Tellurium Plant

In the tanks pictured above, the Tellurium Sludge is dissolved and reprecipitated several times in order that the final Tellurium product will be the purest available.

## BRING BACK MANY LAURELS

(Continued from Page 1)

Calgary when they were out in front for the Allan Cup. Wave on wave North Battleford Beavers' attacks surged in on them, and almost every time Bingo Kampman would get his stick on the disc, scoop it up, and flip it high and far down the ice. Back in the fight with a badly slashed ankle, Eingo probably couldn't have skated 20 feet. But he could still flip 'em, and flip 'em he did until the final gong went.

On the other hand, probably the most heartbreaking period for Tigers was in the third game of the Calgary series, when they were leading 5-3 (with two games already tucked away) and then Allen of the Beavers slipped through to rattle home two tallies and tie it up. Stunned, Tigers watched that game go to the opposition at 7-5 in overtime.

## SUCCESSFUL STRATEGY

One of the most satisfying goals Tigers scored all season was in the second game of the Calgary series, with the score tied at 2-2 at the end of the second period. In the dressing room just before the third stanza started, the strategy was mapped out. Hastie would take the rubber from the face-off, skate up and flip it past Miles on the Beaver defence. Then Chamberlain was to come storming in from the wing and take the shot. It worked perfectly. The elusive and tricky Hastie fooled Miles into thinking he was going through himself. Chamberlain, left unguarded, swooped around McIntyre, picked up Hastie's relay, and drilled it past Davis. Of course Tigers had to get a break for this play to click, but they did, and it was a sweet thing to watch.

But for sheer hockey drama in the senior campaign, Tigers look back to that second struggle with the Sailors at Port Colborne. It was Southern INCO vs. Northern INCO that night, with quarter neither given nor asked. Frood went ahead at 2-0. Sailors banged in three straight to take the lead. Frood got the equalizer. Sailors went ahead again at 4-3. Frood again equalized, then finally won at 6-4. It was a tense, nerve-racking see-saw tussle the boys will never forget. There are many who feel that had Fort Colborne won out that night, they too would have gone through to win the Allan Cup.

## HISTORIC COMEBACK

For Copper Cliff Redmen, the junior campaign produced no greater spine-tingler than the last few minutes of the first game with Winnipeg Monarchs in the Memorial Cup finals. As a matter of fact, hockey history was written in those dying seconds. With only two minutes and 21 seconds to go, and Monarchs leading 3-0, things looked hopeless for the Redmen. Then, with dramatic suddenness, came the break. Roy Heximer slipped through the defence, took a sweet pass from Walter Zuke, and scored. A few seconds later one of the Monarchs was sent to the cooler and a penalty shot awarded Copper Cliff. Heximer took it and scored. Just 42 seconds were left when Pat McReavy accepted a pass from Heximer and drove it into the nets to tie the count.

More than 10,000 fans went clean crazy with the pressure and excitement, and the lid nearly blew right off when Red Hamill breezed in and notched the winning goal in overtime, even though Redmen were short-handed at the moment. It takes finishes like that to keep the customers thronging back for more, and throng back they did. The four games between Redmen and Monarchs at the Gardens showed an average attendance of 11,500.

## BEGINNING OF END

Heartbreaking moment for Copper Cliff's Richardson Cup champions came in the fourth game with Winnipeg. Backs against the wall, the Redmen went out and played Winnipeg off their feet for more than 27 minutes. Scoring play after scoring play just failed to click. Time and again the boys were through, but the old jinx was on them. Then, when they were a player short, the Monarchs cracked in two goals, and the tide turned. That was the beginning of the end. The Copper Cliff boys went down fighting courageously, but the pace of their brilliant victory campaign in the East had taken its toll. Flynn and Silverman had peddled McReavy and Hamill to all sorts of doctors and even to Tommy Daley, Maple Leaf trainer, to see if there was anything seriously wrong with the lads. In each case the answer had been, "Nothing we can do. Those boys are just simply tired out." So it was exit for the Cliffites, but a champion's exit.

## BOON TO THE BAKER

In baking tea biscuits and cookies, some bakers spray the biscuits with cocoanut oil, which corrodes most materials and results in contamination of the product. One company which had found Monel satisfactory for miscellaneous bakery items tried it for splash pans and shields. It proved to be unaffected by the cocoanut oil.

## KEEPS YARN CLEAN

A Connecticut textile firm is using Monel sheet to line drying ovens in which spool yarns are dried after dyeing. Monel was chosen to eliminate metallic stains from the yarns. Fans and air ducts which force hot air through the yarn are also of Monel.

## STILL SATISFACTORY

Six years ago an Edinburgh brewery ran into difficulties through the rotting of wood dampers on malt kilns. Monel dampers were substituted at that time and are still in first-class condition.



# Somers Shift Safety Record is Still Soaring

Steadily soaring to new high levels as we go to press is the smelter safety record of the Somers shift, Copper Cliff nickel reverbs, which on April 30 stood at 44,328 safe shifts worked.

At midnight of March 29, the Somers shift saw their vigilant safety efforts rewarded when they bettered the record set up October 17 by Sid Smith's shift, 41,698 safe shifts. Since then they have gone on to the new all-time high of more than 44,000.

To J. K. Workman, general foreman of the reverbs, Smelter Superintendent P. F. McDonald wrote on March 30 as follows:

"It is again my extreme pleasure to comment on the excellent safety experience in the reverb department. On October 17th last, I had occasion to commend the men of Smith's shift on the creation of an outstanding safe shift record. Today's reports bear the information that while Smith's fine record has been broken, the safety supremacy of the Smelter remains with your department. The new champions are the men of

Somers' shift, who at midnight last night established the enviable record of 41,743 shifts without a lost-time accident.

"Kindly convey my congratulations to the men and shift foreman, Somers.

"You should feel justly proud of the fact that within the past year each of the three shifts in the nickel reverbs has established a safe shift total beyond anything on record for the plant. The dates and totals are as follows:

"June 10, 1935, to May 11, 1936, 34,858, Johnston's Shift.

"September 28, 1935, to October 28, 1936, 41,698, Smith's Shift.

"January 23, 1936, to March 29, 1937, 41,743, Somers' Shift."

Triangle's photograph shows the championship Somers shift a few days after they hung up their splendid record. Shift foreman Somers is seated just to the right of the crew's publicity manager, whose proud placard bears the slogan, "It wasn't so hard after all."

## Early Patents

An article from The Mond Magazine with illustrations  
by Fred Cowling, of Copper Cliff

The first real letters patent were granted by Henry VI in 1440 to John of Schiedam and his company for a process of manufacturing salt. In 1449 John Uytynam, a Flemish glazier, received a patent for the manufacture of coloured glass for church windows. Patents were, however, comparatively rare until the time of the Tudors who granted a host of monopolies, not only for inventions but also for many other purposes. Under Queen Elizabeth the practice degenerated into a veritable mischief, since Court favourites were granted monopolies for nearly every common commodity.

### CALLED A HALT

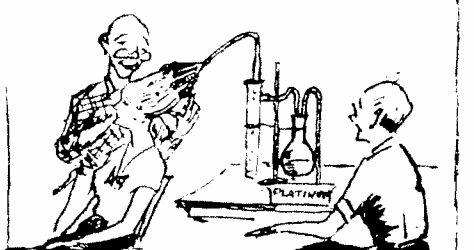
The matter came to a head in the playing cards case of Darcy v Allin. Darcy, who was Elizabeth's Lord Chamberlain, had been granted a monopoly for the manufacture of playing cards. The Courts held this monopoly and all others, except those granted for inventions, to be invalid, and the fundamentals of the present patent system were finally established with the passing of the Statute of Monopolies in 1623.

Until the early years of the present century there were no hard and fast rules as to the manner in which a patent specification should be drafted, nor was any examination made by the Patent Office to determine the novelty of the invention claimed. It is no wonder, therefore, that many strange documents found their way into the archives of the Patent Office in those free and easy days.

Praiseworthy indeed was the invention which aimed at improving the gastronomic qualities of a succulent dish, to wit, a machine for ironing the wrinkles out of tripe.

### BLONDE EXTRACT

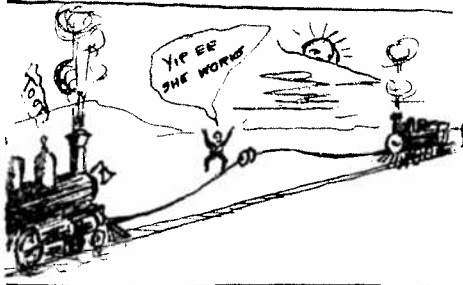
Another epoch-making invention was that of a German doctor, who in 1884 was granted Patent No. 6001 for a hair-scent-extract. This was based on the discovery that "the smell of the hair of healthy females pos-



sessing good digestion possesses energizing and animating influences." Hair cut up into small pieces was mixed with milk and sugar, extracted in alcohol and then added to food. Perhaps Copper Cliff's new research lab. might consider carrying out some tests to ascertain whether extract from a platinum blonde supplies Vitamin A.

On a rather different footing was an ingenious method for preventing collisions on

railways, which formed the subject of Patent No. 618 of 1871. The invention consisted in providing a bar projecting for a distance of half a mile in front of the engine and



operatively connected with the brake, so that on impacting with a train in front the brake was automatically applied. (Had the Research Lab. been in existence at that time, a recommendation would no doubt have been forthcoming as to a suitable nickel alloy with sufficient rigidity for the half-mile bar.)

### GOLD FROM WHEAT

A surprising invention was that protected by Patent No. 14204 of 1884, dealing with a method of getting gold from wheat. More remarkable still was the claim put forward by one gentleman that he had discovered a concoction which, when dropped in the form of a pill into a bucket of water, changed the latter into petrol. Subsequent criminal proceedings showed that, although the enterprising inventor was not very successful in converting water into petrol, he did manage to extract gold from the pockets of many credulous people.

That queer and disturbing phenomenon which has been the subject of much diligent investigation throughout the ages, and which in modern times has come to be known as sex appeal, formed in the "Naughty Nineties" the basis of Patent No. 5819 of 1897. This was granted for an elaborate mechanism designed to indicate what was euphoniously termed "animal magnetism." Space is too limited, and the discretionary powers of the Editors too sweeping, to permit a full description of the invention in this magazine.

When dealing with the grim document which constitutes the average patent specification of today, it is refreshing to come upon that of Patent No. 1861 of 1860 which deals with the purification of water with charcoal, and concludes as follows:

I have persued the matter with all my energy through eight months strengthened by the hearty and efficient co-operation of my dear wife, the support of our brother Sampson, the enthusiastic admiration of our dear friend Mr. Robert Noyes, and our brother-in-law Mr. William Neeld, the cheerful assistance of our several women, particularly Martha Heath and Betsy Jebbs, and the warm smile of an enchanted public, particularly the dear little ones who clasp

the cold sparkling crystal with both their tiny hands and lift it to their sweet little quivering lips.

### INCREASE CONSUMPTION

A quaint, if rather irrelevant, reference to domestic matters is to be found in Patent No. 1948 of 1863, in which a certain Catherine or Katy Liddle described an improved egg cooker. About the cooker itself there is nothing remarkable but the following passage from the specification is worth while reproducing:

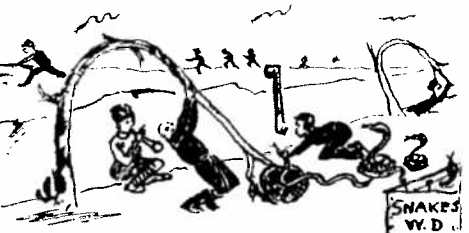
I carefully watched to see the egg done to a precise degree of doing it according to the taste of my master which generally takes not quite so much time as does the ordinary method of boiling an egg in the shell. My master considers this is a very superior method of cooking an egg. He says that it very much improves the flavour as compared with the ordinary method of boiling an egg in the shell. It is also so nice and clean looking, and you can also by it always, and at once, detect an unsound or imperfect egg. As compared with the usual method of boiling an egg, everyone admits that my method is a decided improvement. My master is at pains to show it to any friend or friends who may be visiting him, whether it be at breakfast, or at dinner, or at supper, by having an egg cooked for each friend after the manner I have described above. He likewise says that it makes the egg so light and easy to digestion, that he thinks a man might with ease eat half-a-dozen at a meal without any injurious consequences.

To Thomas Dunn of Manchester belongs the honour of having filed the largest patent specification. This was lodged in connection with his Patent No. 751 of 1862, for "Improvements in the construction of bridges, roofs, houses, and other structures" and comprises 36 pages of description and 301 sheets of drawings. It was printed at a total cost of more than £650, and formed a volume about 8 inches thick, which was sold at the price of £2 13s. 0d. a copy. The specification is very comprehensive, and includes the construction of bridges, reading rooms, floating fortifications, suspension roofs for railway stations, portable sheet-metal buildings, churches, etc. One of the many interesting proposals is the construction of elevated lattice-work footbridges with spiral staircases which were especially designed to enable pedestrians to cross the busy streets of London.

### KINDNESS TO ANIMALS

Coming to more recent times, there is described and handsomely illustrated in Patent No. 252,589, a portable sanitary equipment for domestic animals, adjusting means being provided to accommodate animals of different sizes. This would avoid a recurrence of the distressing experience of an absent-minded gentleman who one night put the cat to bed and let himself out, to return next morning badly scratched. At least that is the tale he told his wife.

Many other priceless ideas come to mind. There is the case of the man who invented a gun for shooting wasps, probably based on the erroneous impression that naphtha balls were intended to be thrown at moths. Adjustable eye protectors have been constructed for fowls, and a device has also been proposed for marking an egg simultaneously with its production, the said device being mounted upon the unhappy hen in operative association with that part from which the eggs are believed to emerge. Snake-throwers for hurling poisonous snakes



at the enemy, and a scheme for training birds to peck out the mortar between the bricks of enemy munition factories, have been devised by bellicose enthusiasts, whilst in Patent Specification No. 148,209 a scheme for reforming the world is described.

The few unusual inventions described above constitute only a small percentage of the many remarkable brain-waves which have emerged from the mental strivings of man to improve the lot of his fellows or at least his own bank balance. Many more bright thoughts never attained the prominence of a patent specification. Perpetual motion machines are still being invented, although the Patent Office now has the power to reject an invention which appears to confound any well established natural law.

There will always be the type of inventor

who can never be persuaded that his inspiration of genius is based upon an inadequate knowledge of Nature's workings. There is, for instance, the case of the man who came along with a magnificent scheme for speedy travel. If one wished to get from London to New York, all that it was necessary to do was to go up high in a balloon, stay in the air for some five hours, and the earth would then have rotated so as to bring New York below the balloon.

The Patent Office has been aptly termed the mausoleum of shattered hopes and lost illusions, and it has even been suggested that the warning "Abandon hope all ye who enter here" should be posted over the main entrance. Apart from the fact, however, that man was ever an incurable optimist, bless him, there is no doubt that a certain glamour attaches to the publicity of a patent specification. Copies are sent to libraries all over the world, so that of many an erring inventor can it truly be said, "his sins were scarlet but his patents were read."

## COMBATting THE FOREST TENT CATERPILLAR

by C. D. FERGUSON

This hungry caterpillar, which scientists have named *Malacosoma Disstria*, defoliated thousands of acres of forest in this district last year.

It caused some alarm by appearing in harmless numbers here and there in Copper Cliff and Sudbury. Then some time in July the adults in the form of moths swarmed into Town and deposited their eggs on the small twigs of shrubs and trees.

As everyone is aware, the eggs are in neatly constructed masses which completely encircle the twig and are covered by a shellac to shed the weather. Some people believe the rainy weather of this Winter may have injured the eggs, but that remains to be seen.

### PROLIFIC EGG MASS

When warm weather arrives, probably about the time the leaf buds start to burst, each egg mass should hatch anywhere from 150 to 350 caterpillars. The tiny caterpillars from each egg mass usually feed in congress and subsist on very little until the leaves on the trees have fully opened. While increasing in size they shed their skins several times.

When about six weeks old, the caterpillars, now fully grown, spin themselves a cocoon and enter the pupa stage from which they emerge as moths after a period of 10 to 14 days. The female moths mate, lay eggs during the evenings, and then die. There is one brood a year here. The caterpillars prefer to feed on the common poplar but will strip the leaves from birch and elm. When food becomes scarce they may travel in armies in search of more food.

### HAS NATURAL ENEMIES

The outbreaks of the forest tent caterpillar occur only at intervals of several years, but an outbreak may last two or three, or more years. Usually its natural enemies keep it in check. Certain small parasitic winged insects lay their eggs in the masses of the moths' eggs or, in other instances, within the body of the caterpillar or pupa, thereby causing destruction. Many birds prey upon the caterpillars. Certain bacterial diseases are known to kill many caterpillars by destroying the internal organs. One disease causes the body to become dry and rigid. Last year there were areas where one or more of these agencies caused total destruction of the caterpillars.

### MEANS OF CONTROL

Fortunately there are artificial means of control which may be used when only a few trees and shrubs are to be protected. To avoid early Summer disfigurement to their trees and shrubs, householders should take the following precautions:

1. Before warm Spring weather arrives, the egg masses may be gathered from small trees and shrubs. The destruction of 10 egg masses may destroy 2,000 caterpillars.
2. Trees and shrubs infested by the caterpillars may be jarred with a padded mallet or club and the caterpillars will drop to the ground. If a sheet is spread on the ground they may be gathered and destroyed. The tree should be banded to prevent further infestation.
3. Trees free from caterpillars, but liable to infestation from travelling armies, may be protected by fastening an 8-inch wide band of cotton batting about the trunk. It should be tied about the middle of the band and then the top half folded over to form an overhanging ledge.
4. During the evening and early morning, especially when the weather is cool, the caterpillars mass themselves on the sides of trunks and limbs. These may be killed by spraying kerosene emulsion directly on them or by crushing the masses with a stiff brush on a pole, or by some other handy object.
5. When spraying apparatus is available the young caterpillars may be killed easily by arsenical sprays. Lead arsenate in the powder form at the rate of 2 lbs. to 40 gallons of water, or about 7 or 8 teaspoonfuls to one gallon of water is recommended. If Paris Green is used, it is made up at the rate of 1 lb. of Green to 160 gallons of water and 2 lbs. of quick-lime must be added to prevent burning. In small quantities use about one teaspoonful of Paris Green and two of quick-lime to one gallon of water.