THE EDITORS SAY:

The outer cover is from a photograph of the Tropical Oil Company's Gasoline Plant at El Centro. The frame of Victorian vegetation will be novel to northern eyes. The inner covers are reproductions of scenes along Peru's great Central Highway, a road which more than meets the most spectacular any theorist could prescribe. A Peruvian scene and a condensed account of a great road building plan will be found in this issue.

LESS pretentious than the Peruvian highway project but none the less important in the eyes of its sponsors is the Monkman Pass Road which when completed will give the Peace River district a highway outlet to the Pacific. The adventures attending the first motor trip over this road are narrated in the current issue of The Review by Mrs. Grace Charters, of Grande Prairie.

STATISTICS relating to the 1938 program of oil drilling in Alberta are graphically presented on the next page and seem to us to be impressive. But even more impressive are the statistics familiar to those familiar with the difficulties and the development of a major new oil field in the Peace River district. To the geologists in the Peace River district and to the successful expansion of its market we pay tribute.

IN 1935 Imperial Oil Limited erected a monument over the grave of Abraham Geiser in Camp Hill Cemetery, Halifax, and so marked the resting place of the discoverer of the Lakeview-Lawrencetown. Lastly, while studying old records, Grace McCleod Rogers, of Antigonish, N.S., brought to light some facts relating to Dr. Geiser and so the Review is able to present in this issue a brief character sketch of a man of great martial gifts who has a secure place in Science's roll of honour.

Pictures tell a story better than words, and so The Review is always looking for photographs of interest to its readers. The Editors feel they could be more successful in this respect, however, which is another way of saying that perhaps you have or know of some photograph or a story which would be acceptable. If so, they will be glad to receive them, if desired, unmounted. Incidentally if you have negatives please send them with your prints, because, at times negatives entitle you to better results in reproduction. Also, the name and address is on the back of each print, and that is covered by cardboard in mailing.

The IMPERIAL OIL REVIEW

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SPRING, 1938

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IMPERIAL OIL LIMITED

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EDITORIAL OFFICE—56 CHURCH ST, TORONTO
### Alberta Production Figures for 1937

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<th>Month</th>
<th>Turner Valley</th>
<th>Red Creek</th>
<th>Wetaskiwin</th>
<th>Miscellaneous</th>
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<tr>
<td>January</td>
<td>155,714</td>
<td>1,028</td>
<td>1,241</td>
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<td>127,977</td>
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<td>February</td>
<td>138,804</td>
<td>837</td>
<td>874</td>
<td></td>
<td>140,515</td>
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<tr>
<td>March</td>
<td>159,916</td>
<td>1,341</td>
<td>675</td>
<td>600</td>
<td>161,912</td>
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<tr>
<td>April</td>
<td>170,150</td>
<td>1,195</td>
<td>1,353</td>
<td></td>
<td>173,650</td>
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<tr>
<td>May</td>
<td>157,072</td>
<td>1,211</td>
<td>1,114</td>
<td></td>
<td>157,997</td>
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<td>June</td>
<td>189,411</td>
<td>1,115</td>
<td>1,058</td>
<td>30</td>
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<td>July</td>
<td>203,377</td>
<td>1,249</td>
<td>1,180</td>
<td>906</td>
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<td>August</td>
<td>206,145</td>
<td>1,239</td>
<td>1,514</td>
<td></td>
<td>207,898</td>
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<td>September</td>
<td>278,552</td>
<td>1,113</td>
<td>1,236</td>
<td>153</td>
<td>281,154</td>
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<td>October</td>
<td>293,165</td>
<td>1,133</td>
<td>1,413</td>
<td>282</td>
<td>295,753</td>
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<td>November</td>
<td>235,650</td>
<td>1,150</td>
<td>830</td>
<td>1,047</td>
<td>235,677</td>
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<tr>
<td>December</td>
<td>399,570</td>
<td>1,192</td>
<td>1,431</td>
<td></td>
<td>394,993</td>
</tr>
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Total Bls. 2,707,851 in the case of Turner Valley

(Total includes Naphtha and Crude Oil)

---

### Turner Valley Petroleum Now Serves

**The Prairie Provinces**

With adequate supplies of Turner Valley crude available, new markets for products made from the Alberta crude were opened up during the past year. Successful efforts of the transporting, refining and distributing agencies in thus affording a market for Turner Valley crude, resulted in the displacement of Montana crude in Imperial Oil’s Calgary and Regina refineries and in the displacement in Manitoba of products made at Sarnia by products made from Turner Valley crude on the Prairies.

(Continued on Page 4)
This development was a very remarkable one for such a short period of time and is attributed to the cooperative spirit which prevailed among all parties concerned. The big increase in production came in the fall when crops had been harvested and most of the threshing had been done and consequently the Prairie demand for products was at a low point. Of necessity proration of production was introduced in September because of the potential flow of the wells exceeded the capacity of the available market to consume petroleum products. Proration is an experience common to all important oil fields; and in the oil industry the only alternative to an equitable sharing of the available market among all producers is a chaotic condition such as was experienced some years ago in East Texas and which resulted in heavy losses to all interests and disaster to many.

The proof record of the year was that Alberta produced 2,796,908 barrels of naptha and crude oil, an increase of 1,675,060 barrels over 1936, and that this production was taken care of without disturbance and at a price conducive to the steady development of the field while the consumer over the greater part of the Prairies enjoyed the benefits of lower prices for light petroleum products.

Turner Valley accounted entirely for the increased production and indeed, resulted in a decreased production in other small fields in Alberta. The production at Red Coulee declined 4,147 barrels, at Wanwrench 1,168 barrels and at Skiff, 310 barrels.

Total crude oil production in Turner Valley was 2,797,221 barrels, derived largely from the following wells completed during the year: B. & R. Royalties No. 1, Brown Oil Corp. Nos. 1 and 2, Cammell No. 1, Davis Petroleum No. 2, Firestone Petroleum No. 1, Four Star Petroleum No. 1, Granville Oils No. 1, Model-Spooner-Reward No. 1, Monarch Royalties No. 1, National Petroleum No. 1, Richland Oils No. 3, Royal Canadian Oils No. 1, Royal Crest No. 1, Prairie Royalties No. 1, Share Royalties No. 1, Sterling Pacific Nos. 4, 5 and 6, Sunset Oils No. 1, Three Point Petroleum No. 1, Westflank Oils Nos. 1 and 3 and Westside Oils No. 1. All of these wells are in the south end of the Valley and in addition, Mercurio No. 3 and Newfold Royalties No. 1 were completed as naptha producers.

Only two of the wells drilled to completion in 1937 failed to get production. These were Dalhouse No. 8 and Premium-Miller No. 1. Dalhouse No. 8, which was located near the centre of the west flank, reached the limestone at 6,170 feet and drilled to 6,901 feet. Premium-Miller, at the north end of the Valley, was abandoned at 7,600 feet after passing through the Home sands several times but failing to reach the limestone, probably because of a crooked hole.

At the beginning of the year 16 wells were drilling in the Turner Valley and six which had made footage in 1936 were shut down. The accompanying map shows location of wells in the south end of the Valley.

---

**PATHFINDERS OF THE PEACE**

by GERTRUDE CHARTERS

Grande Prairie, Alta.

---

**WITH TRUE PIONEERING SPIRIT, RESIDENTS OF THE PEACE RIVER COUNTRY FORGE A 132-MILE LINK WITH THE BRITISH COLUMBIA ROAD SYSTEM.**

ROUND NOON on September 20th, 1937, a two-ton truck, complete with seven-foot-six-grain box, stood beside the Imperial gas pumps of a garage in the village of Beaver Lodge in the Peace River country. A party of seven women and ten men were busily piling in bed-rolls, grab-boxes, cameras and a reserve supply of gasoline. It was a hot day, more like summer than fall. Some of the party, with extra coats and sweaters on their arms, wondered if they were being foolish to take so many warm clothes. The younger members of the party however couldn’t be bothered with extras when they were only going sixty miles and spending one night out. They forgot to take into consideration that those sixty miles led into the mountains!

But there was no mistaking the excitement of all of them. They were embarking, like the pathfinders of old, on an adventure into the unknown. True, the road was there, such as it was, but so far no motor-vehicle had traversed it to its end at Stony Lake. They were prepared for a bit of jogging for this was no government road. It had been financed entirely by the people of the Peace River country at a cost of less than $2,000.

To most of us road building means heavy tractors, powerful rollers and diggers and the expenditure of
huge sums of government money. Vaguely we remember, perhaps, that 'in the beginning' were the Indian trails, followed later by traders and trappers and finally by settlers who widened the trails for their wagons and tractors and made a pioneer road. But that was all long ago in history.

Yet here was a history-making road being built today, in true pioneer style—by hand—a trap road. Not a little road nor a cut-off but a hundred and thirty-two miles of road blazed through a mountain range to bring the people of the Peace River country seven hundred miles nearer to the Pacific.

In the winter of 1922, Alexander Monkman went trapping in the mountains south-west of Rino Grande. Operating a fur trading post at Lake Saskatoon, back in '98, Mr. Monkman had later moved and taken up farming near the same place. He had seen the country change from a stamping ground for scattered bands of Indians and buffalo to become a great agricultural district. But low prices and the long roundabout route to market by way of Edmonton had made farming a losing proposition for many years. So this undaunted pioneer turned his hand to trapping, awaiting the day when the long-promised Pacific coast outlet would bring the Peace River country into its own. He took grub enough to last him all winter and so pushed south (father and farther west). When he found himself on the Narruk River in British Columbia he knew that he had come through an unknown pass in the mountains. So easy and gradual had been his ascent that he was certain he had discovered the solution of the problem facing the Peace country—a feasible and direct route to the Pacific. A later reconnaissance party showed the height of land to be 3,550 feet, not much higher than the city of Calgary.

So great was the faith of other pioneers in Monkman's Pass that they formed the Monkman Pass Highway Association in October, 1936, to build the road themselves! It was like an old-fashioned 'Bee', all the neighbors getting together to do a piece of work. And what a piece! Those who couldn't actually chop, saw and dig the road, (for besides Mr. Monkman, many of the men donated their time and energy) contributed cash, grub, equipment or whatever they could. The equipment was the familiar tools of the pioneer—axes, saws, picks, etc. There was no expensive machinery. By June, 1937, a tireless executive had collected sufficient funds to have a crew of twenty men cutting trail into the foothills under the direction of Alex. Monkman himself who is 67 years old.

How the spirit of Alexander Monkman must have glowed! For here were kindred spirits, led by another Alexander, whose sole ambition, even as his had been, was to find the easiest and most feasible route to the Pacific from the Peace. True, Monkman had been confined to the long and tortuous waterways and when he wintered near what is now the town of Peace River in 1792-93, he could not foresee the age of motor transportation. But he undoubtedly adored the age of fur to an inland empire trading its produce at ports along the Pacific. His letters and diaries were filled with enthused comments on the mildness of the climate, and stories of the great open plains abounding in game. Now pioneers were cutting a road through a pass which would bring his old 'Fort of Forks' (Peace River) in a direct line with Vancouver.

Then the road passed over mountains, necessitating the construction of 'fortresses'.

With emerald canopies on the mists of the climate, and stories of the great open plains abounding in game. Now pioneers were cutting a road through a pass which would bring his old 'Fort of Forks' (Peace River) in a direct line with Vancouver.

The Truck bumped merrily along a good road from Beaver Lodge to Rino Grande. Here at the beginning of the foothills was the last outpost of civilization, a general store, postoffice, church, hall, and of course, a garage. Everything was checked again. Besides the 15 gallons of gas in the truck tank, two tins, one containing 8 gallons and one containing 5, were stored in the box. This was thought to be plenty for a sixty mile trip that would only last two days. Grab boxes were full but a few extras were bought to eat along the way.

In less than half an hour we had passed the last sign of settlement and were on the newly cut Monkman road. Following the old pack trail in most places, it had been cut eight feet wide through a dense growth of small spruce for about two miles, then through mixed scrub and timber on a gravelly soil. This gravelly soil is found for almost the entire road bed to Stony Lake, there being very little top soil, which makes for easy and economical construction. Again we bump over a road cut through heavy spruce, but with the stumps still in place. What an enormous amount of work to cut through these stands with simple tools! We stopped at the site of Camp 2 for lunch. Here the boys had squared a large tree and on it they had

S P R I N G N U M B E R , 1 9 3 8
written the camp bulletin; little anecdotes of the crew, the work, the weather. Most camps had such bulletins and all were easy to read.

The going became slower and rougher as we went. Much of the road was through dense timber and the truck-box did its own blazing on many a tree along "Jackpine Avenue." But the stump logs, just had to be gotten over somehow. If the first try failed, the truck, with a roar of power, went over the top next time, while we went to the bottom! Sometimes, in spite of the best efforts of the very capable driver, the truck jammed onto some trees along the winding road. Then the men turned out with axes and added their bit to the road building.

Sometimes we rattled over a stretch of carriageway with mud and brush, but these were few. Over some of the small ravines or little streams pole bridges had been built where necessary. But none of the streams the entire way had steep banks. The low banks were a surprise to all of us for the streams and rivers south and east of the Grande Prairie country are famous for their high banks.

About fifteen miles from Rio Grande we crossed the boundary line into British Columbia. This is marked by a monument with a concrete base and metal pedestal. These boundary monuments are placed a mile apart all the way from Washington to the territory of Alaska; no mean feat, considering the topography. We crossed the forks of the Red Willow river by simply fording the stream. It was low and had a solid gravel bottom. Here was a trapper's house, known as Kruger's Flats, a well built log cabin, several mule pens, a stable and corral, all set in a fine level meadow.

At the camp site here the crew had written, on a sanded surface, the following lines:

"The height by great men reached and kept
Were not attained by sudden flight
But they, while their companions slept,
Were toiling upward in the night."

Some hours later we had cause to recall these lines.

HEADING DOWN from Liberty Heights we crossed a little stream without any bridge. There were many of them along the route. The banks were low, as mentioned previously, but the dual wheels becoming wet in crossing, the truck often slipped and balked going up the opposite bank. Usually we all tumbled out and left the truck to do the work unhampered by our weight. If this

stony Lake, halfway between Rio Grande and Monkman Pass, marked the end of the 8-foot road cut in the summer of 1937. "Our was the first motor vehicle to stand on the shores of Stony Lake." It was not enough, a stout rope was tied to the bumper and all hands pulled. It was tugging for an engine to some purpose and never failed.

We were now in the down area. Years before a great forest fire had raged in this district. As far as the eye could see were fallen trees, criss-crossed to a depth of six feet in places and whitened by the weathering of

(Continued on Page 32)

ABRAHAM GESNER
- Surgeon, Geologist, Naturalist, and Discoverer of Kerosene Oil.

By GRACE McLEOD ROGERS,
Ambert, N.S.

Dr. Abraham Gesner was descended from a family of Swiss origin, many members of which, in Germany, Switzerland, and in Holland, were distinguished savants. His grandfather, Nicholas Hendrick Gesner, came over with his family from Europe to New York some years before the outbreak of the American Revolutionary War, acquired a large estate, and amassed much wealth. Throughout the hostilities of the Rebellion his twin sons, Abraham and Henry, fought with the British forces, and in consequence of their adherence to the Thorne, lost all their American property. They were exiled with many other Royalists to Nova Scotia, where they were given asylums and allotments of land. Abraham took up a grant in the Annapolis Royal district, and Henry at Cornwallis, these sections being situated at opposite ends of a long fertile valley lying between the North and the South Mountain ranges.

Among Henry's twelve children was Abraham, born May 3rd, 1797. In the rural districts of Nova Scotia, opportunities for education were then scanty, but with a splendid determination, young Abraham decided upon a scholastic career and seized every available opportunity for instruction.

His parents, fostering his ambitions, gave him voyages to South America and the West Indies, to increase his general knowledge; arranging later for him to proceed to England for further study. There he soon fitted himself for entrance at London Medical School, studying under Sir Astley Cooper, and the celebrated Abernethy.

It is remembered of him while there that he was noted for his own earnest application, forewearing all phases of pleasure in order to pursue his medical investigations. He was also noted for a deep sense of duty when any physical mystery became a subject of speculation, his own answer to it, and ultimate reason, being always "God made it so." That phrase came to be known as Gesner's formula, and was habitually used among the students, the tradition of it enduring long after his departure.

At expiration of his Medical course he returned to his native place, practising his profession there, and marrying Sophia, a daughter of Dr. Isaac Webster of Kentville, N.S.

Along with the practice of medicine he interested himself deeply in the study of geology, of which he had acquired knowledge during his attendance at English Schools, and in so he was appointed in 1834 to carry out an intensive survey of the minerals of Nova Scotia. He subsequently published a volume relating his explorations and findings. Soon after he was appointed to the post of Provincial Geologist for New Brunswick, and resided there during the term required for his scientific inspection of that province. His investigations and observations were embodied in several voluminous statistical reports. He also wrote, in pleasant discursive style, a book upon "Natural Resources," and another volume entitled "Notes for Incoming Emigrants."

While upon these expeditions of survey, he collected valuable and interesting specimens of minerals, plants, and birds and animal life, arranging them all in form of an exhibit now housed in the splendid museum of Saint John City. The collection is especially valued, even to

(Continued on Page 28)
Highways in Peru

- With a Coastline of 1,100 Miles Peru Until Recently Has Been Without Highway Connections Between the North, the South and the Interior. This is Rapidly Being Overcome by a New Road Programme.

- Many difficult construction problems were encountered and solved in building Peru's new highway.

In December 1936, General Benavides, President of the Republic of Peru, announced to the country over the radio the decision of his Government to launch immediately a three-year programme of road improvement and construction involving an expenditure of fifty million soles, (approximately $12,000,000, Canadian currency).

Specifically the plans cover reconstruction of 5,500 kilometers, construction of 2,044 kilometers of new roads, and asphalt paving of 1,054 kilometers. The paving is to be done entirely with a special type of asphalt produced at the International Petroleum Company's refinery at Talara.

This project is being financed out of proceeds of the Gasoline Fiscal Tax.

Prior to the announcement of the new project the Government cancelled all road tolls throughout the country. Until that time travel on the few roads which offered any degree of motoring comfort had been restricted by numerous toll charges. Within a few months some 31,000 men were at work on the roads.

The Peruvian Government has carefully studied the subjects of roads and their influence on the development of the country.

The importance of this project will be understood when it is realized that Peru, with a coastline of 1,100 miles, has no longitudinal system of communication between the north, central and southern districts other than by water. Such railways as exist simply connect seaports with towns located a few miles in the interior. The two principal railways are the Central, which connects Lima and Callao with the mining centres at Cerro de Pasco and Oroya up in the mountains, and the Southern Railway.

Imperial Oil Review

Spring Number, 1938
which connects the port of Mollendo with Puno, the western terminal on Lake Titicaca. This line passes through Arequipa, which is the largest city in southern Peru.

Many districts have remained in a state of whole or partial isolation because of the great difficulties encountered in developing country-wide facilities for travel.

The Government plans a longitudinal road along the coast from north to the south and with feeder ties to the important towns in the interior. President Benavides foresees great benefits to the country as a whole. The new road system will provide rapid and comfortable means of communication between the capital and many of the districts which have been practically isolated in the past, and in addition it is expected that a substantial tourist trade will be developed.

For tourists Peru offers magnificent scenery, particularly in the mountainous districts through which the Central Highway runs. Starting from sea level at Callao the road winds through rocky gorges and over difficult passes for 200 kilometers, reaching an altitude of 16,000 feet at Abancay. The construction problems encountered and solved in building this road are a credit to the Government engineers. A full appreciation of the nature of the country through which it passes is afforded by the fact that the Central Railway, which follows the same route, passes through 68 tunnels, crosses 58 bridges and encounters 22 zig-zags from Lima to Oroya. This road is now complete and the next largest section is the road between Lima and Pisco, a distance of over 800 kilometers.

* The natives of Peru, the llama is a useful means of transporting merchandise and farm produce. Looking somewhat like a cross between a camel and a sheep, these sturdy animals are to be seen everywhere. Like the camel, the llama can go for days without food or water. If overloaded it will refuse to move until released of some of its burden.

* The first section of Peru's new Central Highway has been completed. Most of the 125 miles had to be cut into sides of the mountains. A typical piece of road is shown above.

* (Left) The new highway follows the same route as the Central Railway which passes through 68 tunnels, crosses 58 bridges and encounters 22 zig-zags on its way through the mountains.
The speed of the presses, for instance. Experienced newspapermen themselves draw in their breath when they learn that normal capacity is 120,000 per hour, or 2,000 per minute, and that should the need arise this rate can be stepped up to 2,500 copies a minute.

The speed of the organization that feeds the presses and handles their production: obviously, the entire chain of activity must be geared to the same swift pace. Two minutes only are required for the journey of the page-formes from the composing room through the stereotyping process where they leave their impression on semi-circular plates which in turn are placed on the giant presses. Folding, bundling and sorting of the completed newspapers is accomplished with identical velocity. In little more time than it would take to walk from the composing room through the stereotyping and press room, upstairs to the mailing room and out the door to where the long line of Globe and Mail trucks are waiting for their load of news, a metropolitan newspaper is born.

**WANG** would have been puzzled by the number of gadgets and devices for controlling all this complicated mechanism. How, for example, could the ink supply be regulated by the mere push of a button? How could all these rollers be lubricated by pushing another button? Or how were the rolls of paper joined to one another, automatically, while the presses were running at top speed?

But if we were to let Wang get started asking questions, there would be no stopping him. So perhaps we had better ignore him for a while and begin again at the beginning.

When Toronto's two morning newspapers, the Globe and the Mail and Empire, amalgamated to form the Globe and Mail, President and Publisher C. George McCallagh decided that the new newspaper columns rated a new building in keeping with its position.

And so the William H. Wright Building, named after Mr. McCallagh's rich miner backer, came into being at the northeast corner of King and York Streets. At the time of writing, only the press, stereotyping and mailing rooms of the partially-completed $2,000,000 structure are occupied. Some time in the spring it is

**(Continued on Page 34)**
PICTURE DIAGRAM OF A
ROTARY DRILLING RIG

1. Crown Block
2. Travelling Block
3. Hook
4. Swivel
5. Drill Pipe
6-7. Rotary Table
8-9. Steam Hoist for Raising and Lowering Drill Pipe
10. Automatic Drill Feed
11. Core Barrel for Removing Rock Specimens from Bottom of Hole
12. Drilling Mud Hose
13. Auxiliary Air Chest
14. Pipe Carrying Drilling Mud to Drill Pipe
15. Slush Pump for Foaming Drilling Fluid Down Drill Pipe to Bottom of Hole
16. Stand-by Slush Pump
17. Mud Strainer
18-19. Steam Boiler Pumps
20-21. Steam Boilers
22. Live Steam Line to Derrick Machinery
23. Return Steam Line

IMAGERY COURTESY OIL WELL SUPPLY CO.

ROTARY DRILLING

- Improved Technique Has Made It Possible to Recover Oil From Depths that Could Not Have Been Reached A Few Years Ago.

By H. W. Palkowsky
Petroleum Engineer, International Petroleum Co., Ltd.

While the facts concerning the introduction of the rotary for the purpose of drilling oil wells are somewhat obscure, it appears that this system was first successfully used in the Gulf coast fields of Texas about 1906. For many years its application was limited to unconsolidated formations which have and cave, and consequently baffles such much the cable tool driller. During the past ten or fifteen years, however, many of the early handicaps of the rotary method have been overcome so that its use today is almost universal.

The essential factors comprising a rotary drilling rig are the derrick, draw-works, rotary table, drill stem and bit, power plant and the mud-laden fluid. Discussion here of these various parts must necessarily be limited to their salient points.

Beginning at the top, so to speak, we have a pyramid shaped structure known as the derrick situated directly over the well and which serves as a pulling support. Present day drilling derricks are substantially built structures made of steel and capable of withstanding up to 1,000,000 pounds pull. For deep well drilling the usual height of the derrick is 136 feet.

The draw-works unit or boosting drum needs little description beyond stating its primary purpose which is that of raising or lowering the pipe to which the drilling bit is attached. Rotation of the drill pipe during the progress of drilling is provided by means of a rotary table. The prime movers used for driving the draw-works and rotary machine are generally steam engines and the source power is a more or less conventional steam generating plant.

In the early days of shallow drilling the generation of steam was most unconventional and the average oilfield boiler delivered something like 50 horse power at pressures less than 100 lbs. per square inch. As deep well drilling necessitated the use of heavier and more efficient rotary equipment, a compensatory improvement in steam generation was effected both as to capacity and
fuel economy. At the present time oil-fired boilers capable of delivering steam at 500 to 350 lbs. are available.

The drilled pipe is employed in individual drilling purposes, viz., that of suspending the bit and also providing a passageway for the circulating fluid as it travels to the bottom of the hole. The common sizes of drill pipe are 6 inches in diameter with individual joints from 27 to 50 feet in length. In order to save time while changing bits, a derrick truck is provided so that the drill pipe in stands consisting of four joints each and these are known as ‘fourbits.’

Approximately eighty feet above the derrick floor is a pleated standing pipe, based on which the derrick man works. The derrick-man’s duties are to unfold and snap the separators from which the long stands of drill pipe are suspended during the intervals of running in or coming out of the hole.

Probably the most important as well as the cost interesting feature in rotary drilling is the mud-laden fluid which circulates through the drill stem and the bit, picking up the cuttings and then sealing off and stabilizing the walls of the hole on its return to the surface. In the simplest drilling operations the primary functions of the mud stream are to cool the bit and to remove the cuttings from the bottom of the hole. In such cases the driller makes his own mud as drilling progresses. This mud consists of water mixed with various proportions of clay or shale.

However, as drilling problems become more complex, the quality of the circulating fluid must be altered to suit particular conditions and to fulfill various requirements, some of which demand contrary characteristics of the mud fluid. In addition to the removal of cuttings, the mud fluid must be of such a nature that when circulated within the hole is stopped it will hold the cuttings in suspension but yet allow these same cuttings to settle out in properly arranged surface pits.

Again in areas where porous sands are penetrated, the circulating fluid must be capable of depositing a plaster coating on the wall that will prevent the formation of suction without mud or water, and yet not build up a thickness sufficient to cause undue restrictions of drill pipe or bit in the hole. In order to accomplish this the weight of the mud fluid must be sufficient to offset the pressure of any fluid or gas contained within the formation.

A second extremely important function of drilling mud is to protect the walls of the hole so that casing need not be set until the productive oil and gas sands are reached, reducing the risk of their collapse. This steel pipe or casing is always cemented just above the producing zone and enables the operator to control the well as regards production and pressure. The cost of casing, which is a major item of drilling expense, is highly desirable to limit the number of long casing strings to one wherever possible.

It may be surmised from the foregoing that the solution of the many diverse mud problems is not accom-

plished by haphazard nor random guesswork on the part of the drilling crews. In many fields a systematic routine of mud testing is employed in individual drilling purposes, and this is supplemented by laboratory control. The work is supervised by an expert technician, and where the slightest deviation from the proper uniformity and consistency are not powerfully for making a suitable drilling mud, the desired quality is obtained by chemical treatment.

Probably the most important, in the rotary drilling technique has received greater study on the part of manufacturers and operators during recent years than that of bit performance. The first type of rotary equipment was the fly-bit or drag bit and this bit is still widely used for drilling comparatively soft and semi-consolidated formations. It was, however, a difficult problem to maintain a good cutting edge on this type of bit until the development of a suitable hard facing material known as tungsten carbide. The application of this material to the cutting edge of the tool really made the fly-bit a successful rotary bit as judged by present standards. The extreme hardness of the tungsten carbide is a plus factor, and its resistance to abrasion and crushing have made such a bit possible. This is made by metalurgy the original drag type bit, has been made adaptable to practically all formations except the hardest brittle rocks and sands, and slow progress can even be made in these. In softer formations many of these bits drill over 7,000 feet of hole before needing replacement of hard-facing material. The importance of this tungsten carbide inserts on bit life, cutting action, and straight hole can hardly be over emphasized. It was the biggest single development in hole making over a period of years.

The diameter of a well is an important factor in drilling and good judgment must be exercised in deciding upon the initial diameter, particularly if the project is an exploratory one. Geological conditions and the probable depth to be attained are the determining influence. Where troublesome strata are encountered several strings of casing may be necessary with a resulting reduction in the diameter of each succeeding string. If these factors are not correctly weighed beforehand, an impracticality small diameter may be prematurely reached thus necessitating the abandonment of the well without attaining the desired depth. The common sizes of hole in rotary drilling are 10 and 12 inch.

ANY discussion on drilling, however brief, would be incomplete without giving the reader some idea of the weights, densities, and capacities of the fluids. There are roughly three general sizes of rotary rigs built today, light, medium, and heavy. The one most commonly used is the medium rig, in which the capacity is considered to be sufficient for drilling wells around 3,000 to 6,000 feet in depth. The machinery and equipment, but without a complete open route outfit of this type, will weigh approximately 200 tons and cost about $50,000. The size and cost of the drill pipe used depends upon the casing program and the manner of completing the well. The common sizes of drill pipe are 4, 5, and 6 inch. A 5,000-foot string of 6 inch drill pipe weighs about 150,000 lbs. and this is the chief factor for determining the capacities of such units as the engine, draw-works, and other hoisting equipment.

Not many years ago it was considered an outstanding achievement to have successfully drilled a well a mile in depth. At that time a few far-sighted individuals predicted probable depths of around 10,000 feet in the dim future. Not only has this become an accomplished fact but the records today have considerably surpassed this figure. As this is being written the deepest well in the world continues drilling at a depth of 13,820 feet.

In the state of California, while no production has yet been reported, the mere fact of having reached this depth and the successful landing of over 11,000 feet of 7 inch casing will rate as the high mark of drilling performance.

The factors which have chiefly contributed to the increased capacity of rotary drilling rigs are: heavy duty machinery, high pressure steam, and high grade steels and alloy steel which are used in the manufacture of the various materials such as drill pipe, casing, bits, etc. What depths oil wells may eventually reach is, of course, a hazardous conjecture, but it does seem probable that the final limits imposed will be more a matter of economics in the cost of producing oil than a lack of drilling technique.

First Unit of a Peruvian-Built Fleet

A small but important unit was added to International Petroleum Company's marine equipment when a new cargo lighter was launched in the waters of Talara Bay early this year. The traditional ceremony, involving the necessary bottle of champagne, was performed by Mr. E. C. C. Berry, visiting Vice President of Imperial Oil Limited; the new craft, hitherto known as "Estimante 361," Appropriation 2272" was christened briefly "Lightner No. 12." She is 120 feet long, has a beam of 30 feet and a cargo capacity of 300 tons. Several prominent members of the Talara staff were present, among them being Mr. Arthur Iddings, General Manager, Mr. R. H. Ebbets, Marine Superintendent, and Mr. Blake Rapley, Chief Engineer. Captain Narvaez, Port Captain at Talara, and Mr. Ruo Fry, high Government Official, also saw the launching.

"No. 12" is practically identical with her sister craft Lighter Nos. 8, 9, 10, and 11, but while these were built in British yards, and ferried across the Atlantic and down the Pacific coast loaded to the stout sides of an ocean-going tug, the new lighter was constructed on the shores of Talara Bay, from imported steel it is true, but from the efforts of Peruvian workmen and under the direction of Julian Esclamado, chief Peruvian builder.

Though she is the first piece of floating equipment constructed at Talara, "No. 12" rides the water as staunchly as her foreign-built sisters, and when time has away her pristine newness, will be indistinguishable from them.

A second similar lighter is in course of construction and will be launched shortly. The masts of department heads are exercised as to whether it will be safe or advisable to name her "No. 13."
OIL SOLVES ANOTHER PROBLEM

Tobacco is not pickled. But “potted”—plucked leaf by leaf over a period of weeks—is the leaves ripe.

CHARLIE WILLIAMS lives on the seventh con-
cession of South Walsingham township in Norfolk county, Ontario. He is a farmer, distinguishable from his bonny-handed fellows who till the soil, only in the degree of his prosperity. Charlie Williams drives a big car, goes to Florida sometimes in the winter, and expects to send his 16-year-old son Jack away to college.

This is a strange state of affairs for a farmer, but the explanation goes beyond that. Charlie Williams is a tobacco grower. He grows the kind of tobacco you smoke, too. That twenty-five cent package in your pocket right now is composed almost entirely of tobacco grown on farms like Charlie Williams’, down in South Walsingham. During the past ten years more and more Canadian leaf has been cropping up in Canadian cigarettes, and no one knows that the American leaf which formerly was used almost one hundred percent, is negligible.

The story of tobacco in Canada is an interesting one. Fifteen years ago there wasn’t enough flue-cured tobacco produced here to provide cigarettes for a town of five thousand population for six months. Today Canada is producing at a rate sufficient to take care of all her tobacco needs with enough left over to build up an ever-increasing market in Great Britain. Most of this tobacco comes from the counties of Norfolk, Elgin, Oxford and Essex, but the tobacco-producing area is growing each year in agricultural experts discover soils elsewhere which are adaptable to the successful cultivation of the weed. In 1923 twenty acres were planted to flue-cured tobacco on a farm at Lynelock, a hamlet about fifteen miles west of Simece. Prior to that the crop had been grown on a very small scale in which has been known as the “Old Belt” in Essex county. But it was in 1923 that tobacco, as a real industry, got its start in Canada. By 1927, so successful had the original experiments been, that 7,500 acres were under cultivation. Today the total is 50,500 acres with a production in 1937 of around 56 million pounds. The Canadian manufacturer in a single year can use only 32 million pounds; the surplus goes to Great Britain where it competes successfully with the United States product, as well as with tobacco from other Empire countries. Canada is developing a market in itself to the fine quality of the leaf produced here.

During its swaddling-clothes period the tobacco industry had more than its share of tribulations. Sudden large increases in acreage as farmers saw their neighbors reaping what seemed like a huge income from growing the weed, brought the old law of supply and demand into action. Prices, which had been high when Canada was producing but a few million pounds each year, began to drop ominously when the production went up to fifteen and twenty million pounds.

few years ago the industry actually reached the point where producers were losing money on their crops. The remedy for this state of affairs was found in a unique buyers-sellers organization patterned after the now inoperative Natural Products Marketing Act, an organization which by a coincidence, is headed by the same man who was chairman of the Dominion Marketing Board, Prof. Archie Leitch. In the Tobacco Marketing Association growers and buyers have an organization which represents both. The buyers select their representatives and the growers select theirs through their own associations and the scheme, in operation for the past three years, has brought order where chaos formerly reigned.

At the start of the season the farmers are told how much tobacco the buyers expect to need. The acreage is "budgeted" to provide as much tobacco as can be sold without creating a surplus which would depress prices below the cost of production. Each grower is notified regarding the acreage which he may plant to tobacco, and is granted "rights" to grow this much—but no more. After the crop is harvested growers and buyers meet again to discuss price. It is inevitable that this should provide the big bone of contention, but in three years the system has been extremely successful. A minimum average price is agreed upon for the entire crop. Buyers then write each farm and the sale is negotiated with the individual farmer on the basis of what his crop, good or poor, is worth. An idea of how this works out can be gleaned from the 1936 crop when the guaranteed minimum was $25 cents per pound, but the average actually paid was 29.2 cents.

As for the farmer, despite risks from hail, wind, drought, excessive moisture and many other hazards, he usually has a profitable crop to show for his year’s work. One authority has estimated the actual cost of production at $1 per acre, but this figure was arrived at some years ago when conditions were vastly different than they are today. However, the cost—and this is a highly debatable point among tobacco men—varies, as it does, from year to year—and probably in the neighborhood of from $200 to $225 per acre. Actual cash revenue from the 1937 crop will average about $340 per acre, so the tobacco farmer has a handsome return to show for his investment.

As a crop, tobacco requires intensive cultivation and a tremendous amount of hand labor. Before the leaves of the plant commence to ripen, the top of the plant is broken off, this operation being known as "topping." Sixteen or twenty of the most promising leaves are left to develop to maturity. Prior to 1926 the method of harvesting was to cut the stalk near the ground, but it was found that as the leaves start ripening first at the bottom of the plant, the lower leaves frequently become overripe while the top leaves, or tips, were still unripe. Introduction of the pruning method which consists of picking each leaf as it ripens, brought about an improvement in the quality of the Canadian crop.

After the Marketing Association was instituted, a system of grading was set up, under which the grade prices of the leaf varied from twelve to twenty cents per pound. This system brought home to the growers the necessity of greater care and efficiency in handling their tobacco. They quickly learned that the leaf had to be handled and cured with utmost care if a good price was to be realized.

BURLEY tobacco is left in the fields to cure, but the Virginia, sun-cured variety must go to the kiln. The梗ed leaves are placed from the stalk, and leaves from different "grades" or ages, are stacked one upon the other in the kiln, with the梗ed leaves on top, and are incinerated at a fire of 1400 degrees Fahrenheit. The heat is kept up about 14 hours, and the leaves are then hung in the kiln for another 48 hours. The leaves, with their leaves on long stems, hang from the walls of the kiln which is opened the top of the kiln to a "canner," who passes them through a skinned rolls. The top leaves are removed, and the top leaves are removed, and the leaves are then placed in a "curing" machine.
In years to come the development of the tobacco industry will undoubtedly be influenced to a great extent by the use of oil in the curing of the crop. Plume-cured tobacco differs from other farm products in that it is not ready for the market when brought in from the field. Each leaf is tied with others on a stick about three feet long. Then the sticks are hung in a kiln for curing. Kilns are perhaps the most noticeable feature of the tobacco country in that every tobacco farm has several of them, buildings about 22 by 24 feet and 16 feet high, each capable of holding between 1,000 and 1,600 sticks. Curing is accomplished by raising the temperature of the kiln to a point where moisture from the tobacco is evaporated. In the average kiln, between six and eight thousand pounds of water will be driven off during the process. This amounts to eighty percent of the weight of the leaf when it is brought in from the field. The curing process requires from three to four and one-half days and is the deciding factor in the ultimate value of the crop. No crop, regardless of its field quality, can command a good price if it is improperly cured. This is as true in baking a cake: no pastry maker's skill can overcome an error in the oven.

The Victorian Tobacco Plantations, Ltd., who own and operate a number of farms in the New Belt, had done considerable experimenting and investigating in curing methods. Realizing that the supply of wood for fuel was rapidly being exhausted, necessitating the discovery of a cheap, readily available substitute, and further being cognizant of the need of more dependable curing methods, the company introduced on their farms a new system of curing which employed oil as fuel. The tests which they made gave such convincing proof of the advantages of oil heat that patents were obtained and a company, Tobac Curing Systems Ltd., was incorporated. This company secured the services of Charles S. Mallert, a Canadian engineer, to work on perfecting the system. The company also had for consultation purposes several other Canadian and American engineers who had had wide experience in heating and ventilating, especially in connection with oil-burning equipment. The Oil-Tobac System, as the new equipment and process was called, was introduced to the tobacco growers of southwestern Ontario in 1937 and during the season between 1,500 and 2,000 kilns of tobacco were cured by the Oil-Tobac method.

This was the first major change in the handling of tobacco in more than two hundred years. Formerly each kiln contained a crude furnace to which was attached a complicated series of pipes which circulated heat throughout the kiln. The furnaces, fuelled with coal or wood, required the constant attention of the curer who was expected to maintain a vigil, virtually sleepless, for more than 72 hours over each kiln under his care. Then there was the danger of fire, and insurance rates climbed as more and more of the lightly constructed kilns went up in smoke with their valuable contents.

The Oil-Tobac System consists of a series of burners, numbering between 28 and 40, depending upon the size of the kiln. These are mounted in sections under a canopy of galvanized iron. No flue pipes are employed, and the flow of oil is governed by an easily adjusted control valve.

Farmers who used the oil system of curing last season found that it provided a solution to their most difficult problem. The quality of the cured leaf was at

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** CANADA'S No. 1 TRACTOR FARM 

** WITHOUT PETROLEUM products, no project like Haig Farm, pictured on these pages, could exist. Land is cleared, timber is hewed, fields are levelled and sown and harvested; produce is moved, elevators are filled, light is generated, drainage is controlled—all by gasoline and oil-powered machinery.

Eastern Canada's biggest farm and Canada's biggest mixed-farming project, 7,700 acres in extent, is the creation of two physician brothers, Drs. J. Gordon and Edwin L. Hagmeier, of Preston Springs, Ont. It is run like a clinic. Every day's work is scheduled six months in advance, sowing dates are set in February, every piece of machinery must be housed at night, a machine-shop with lathes, drills and welding equipment is maintained to meet breakdowns.

In the depression following the Napoleonic wars a project to settle hungry Britons on a vast tract of land along the shore of Lake Huron was initiated by the

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GANG SEEDING. Four drills hitched abreast, and overlapping in the manner so that no land is missed, do Haig Farmowing. Land was first levelled so that slight hollows would not cause seed to remain on the surface, to blow away with the first wind. Drilling in this way covers a swath 80 feet wide. Imperial Oils are used in all Haig Farm operations.

ALL GRAIN grown on Haig Farm is harvested by combines. There are six of these machines. Crops include wheat, barley, oats, peas, beans, buckwheat, timothy and clover.

LARGE SCALE FARMING. A thousand acres lie behind this gang of double-drums, hauled by a Diesel tractor which does the work of a dozen teams of horses.

BIG AREAS NEEDED. To operate successfully and economically on the scale of Haig Farm, short turns are out of question. Tractors haul 60 to 80 feet of equipment in one swath. Here is part of one of several fields.

PEAS FROM THE POD. Peas are harvested and threshed in one operation, and hauled in trucks, right from the fields to the railroad siding.

No. 1 TRACTOR FARM (Cont. from Page 23)

Canada Company but, able, enterprising and untried as he was, John Galt, the resident head of the company, could not carry the plan through to success and so until 1936 the land that is now Eastern Canada’s largest farm remained unsettled. Dr. Gordon Hagmeier had a hunting lodge there and the luxuriance of the weeds that grew about it set a train of thought going in his head—“I never grew anything before, but land that could grow big weeds could grow big crops.” So he bought the land from the English owners and put 14 men to work on jobs that had not previously existed. Six combines, six tractors, trucks, a planing mill and other equipment were set to work during the first year and about 3,000 acres cultivated.

Mechanized farming on the scale of this 7,700 acre farm is “big business,” and entails a large consumption of petroleum products.

THE BUSH looks mighty impressive, but it is rapidly disappearing, at 40 acres a day, as the powerful Diesel with its hydraulic ram goes to work knocking over trees and shoving them into piles.

SIXTY FEET of double drums. In one hitch, linked together by equipment produced in the farm’s own machine shop, a 60-foot-wide gang of harvesters is hauled behind one giant Caterpillar tractor during ground-breaking season.

EVERYBODY EATS WELL at Haig Farm. Among the animal life which flourishes here are the beagles which make up Dr. Hagmeier’s famous kennels, said to be one of the finest on the continent.
OUTBOARDING IN POLAR SEAS

By A. I. DALRYMPLE

EVERY FEW MONTHS the boys who read the sport pages are treated to a story about some young dare-devil who has decided to go to sea in a canoe, or a barrel, or even a motley contraption of his own design. His picture appears in the papers along with interviews giving his ideal on adventure. Presently the article reveals that he isn’t making any contribution to anything in particular. He enjoys his brief moment in the spotlight of publicity, and is soon forgotten.

But there are many good young men, young men and daring men, who every summer go to sea in canoes and other small craft. They know the truth of heavy seas. They understand the peril of shell and reef, and they take their chance with the big waves and the sudden squalls. More than that, they have a definite purpose in life; and they do their work alone and unaided. Seldom does the world hear of their exploits.

They are the trappers, prospectors, traders, missionaries and explorers, who toil the great lake land of Northern Canada. They journey over these highways and when it is time to go, they just push off into the wilderness and “live off the land and water” until their task is accomplished.

They are the successors of the voyageurs of early Canadian times; of the adventurers of the old fur brigades, trail blazers in a new empire, who sang as they dipped their paddles; and whose songs breathed the romance of conquest of the hinterland.

The followers of those who handled the birch-bark craft and the sturdy York Boats, and the same grade stretches of water sweeping toward the Northern sea. In some parts of the Far Away they continue to wear the colorful native clothing—the beaded moccasins and the fringed canoe wind-breakers, but they do not sing as they push down the river and head into the open sea. These are the men of a new age—the goodbye age.

Their music is the song of the outboard. Now-a-days the tune of the motor may be heard right across the so-called silent spaces.

Science has given the men of the Barrier efficient machines and gas and oil designed for quick and reliable action. The slogan, “Step on it!” is just as real and just as important as Hudson Bay or the ballistic of Lake Superior. In the West, the process is even more pronounced.

So, every summer and autumn, we find the men of Lounsbery Land, paddling their canoes at the “end of steel” for journeys up the Great. They are working against time, for the supplies must be stored into the Far North before “young ice” forms in the bays and lakes.

These men sail right into Hudson Bay, a great arm of the North Atlantic, and beat the floor like they forge over earthward. They push their way through the ice pans, and skirt the towering bergs, while they take the most of the long hours of daylight.

The low-lying, sand-bounded coast of Hudson Bay provides little in the way of safe anchorage, and when the tide is out, the bulldozer-tipped tale of drifts far out to set. Often the canoeists are well out of sight of land as the bergs themselves in its trail and moving craft while they fill the outboard tank. Then there is a turning again as the engine runs with ease, and the canoe is straightened out, and headed North again.

In a single voyage up the West Main, a canoe man may run into half a dozen lands of weather in a day. A start may be made in dead calm under sail of almost tropical intensity, a wave would push right down to his underwear of it wasn’t for the flies. An hour later, running through the flies, you find yourself puffing on the peaks, and trying to get your back against the prevailing wind from the North West. Then too, sudden freezing has a habit of driving out of the land-lands, to settle down on the water; a snowdrift, a gray pall that locks out visibility. And so, in the semi-darkness of high noon, the canoe man clutches down, and waits the cold vapors off the ice bergs, and listens to the screaming cloud.
A B R A H A M  G E S N E R

(Continued from Page 9)

this day, for being notably set up in attitudes of natural appearance. The specimens were prepared in the attic of his home, some Mexican Indians, who had been his guides during his travels, assisting in the work.

After completion of his work in New Brunswick, Dr. Gesner returned to Carouwilla, taking up residence in the old homestead, engaging in some medical practice, but also delving deeply into applied scientific study, particularly with reference to electricity. In this field he foresaw the dynamo and the electric motor driven by a voltaic battery and he also experimented with a machine to wind insulation on wire much in the manner that is now used.

In 1852 he removed to Halifax, meeting there Lord DunRodonald, then Admiral of the B. N. A. Station, who was the original discoverer of illuminating gas; and Dr. Gesner now threw himself with intense fervor onto a new channel of experimentation. With DunRodonald he examined the asphaltum of the pitch lake of Trinidad, and extracted from it a crude burning oil for lamps.

Continuing this line of research Gesner later extracted an illuminating oil from coal, and other bituminous substances. At that period, carboline, a mixture of alcohol spirits of turpentine and whale oils, was the most readily available lighting fluid.

In the manufacture of the oil from coal and bituminous matter, a waxy substance called parafax was produced, designated at first as "Wax-oil." From the Greek word "Karos-wax," and "calor-oil." From this the term "Kerosene" was derived, but it was later shortened to "Kerosene," and under that name was patented in 1854 in the United States. Dr. Gesner established in New York two manufactures of kerosene, thus laying the foundation of the use of petroleum for illuminating purposes which was the genesis of the modern petroleum industry.

Pursuing his experiments in this field, he wrote and published in 1861 a work entitled "Coal, Petroleum and Other Distilled Oils." He later returned to Halifax where he resided until his death in 1866.

One of his sons, writing of him for a New Brunswick journal, said that his father was a devout Christian, and strict adherent of his church faith, yet a lover of good company, a teller of racy tales; and over and above his wide scientific knowledge, all the humanities of everyday life touched his heart and engaged his interest.

My grandfather, who when a young man accompanied Dr. Gesner upon one of his early Nova Scotian expeditions, remembered his appearance: a picturesque figure, his well built frame clad in stout sheepskin buckskins, leather breeches, a short top coat, knapsack upon his back, ready to climb precipitous mountain pass, or
to thread his way through trackless forest or along dangerous coast-line—riding a tall black horse wherever road or bridle path made such travelling possible.

But just as though he was in scientific realms, Dr. Gesner never forgot his early choice of occupation, nor suffered the use of it entirely to lapse. Always in his knapsack, with rare of geological specimens, was a small kit of finest surgical instruments, with some patent remedies; and many a sufferer, in lonely cabins along Dr. Gesner's routes, was helped or healed by his freely professed skill.

When his black horse could no longer follow the trail, he would leave him in care of the last booshoulder, tarrying with them over night, perhaps, before continuing his way afoot. He would bring to the pioneers stirring news of the world of action from which they were so remote, advice as to the best crops for the newly turned virgin soil; descriptions of wonderful inventions of science. He would play for them on a flute which he carried always with him, sing gay ballads or solemn hymns, and pray with them at night. This radiance of knowledge and of good cheer that he made to shine in their lonely surroundings is remembered and told of him down the generations since.

He lies buried in Camp Hill Cemetery at Halifax Imperial Oil Limited, in 1935, commemorated the genius of this illustrious native son, by erecting a monument to his memory. The granite shaft bears the following inscription:

Abraham Gesner, M.D., F.G.S., Geologist, born at Carouwilla, N.S., May 2nd, 1797; died at Halifax, April 29th, 1866. His inventions in the Geology and Mineralogy of Nova Scotia, 1836, was one of the earliest works dealing with these subjects in this Province, and about 1852 he was the American inventor of the process of kerosene oil.

OUTBOARDING

(Continued from Page 27)

The day-long bivouac of the out-board is still singing in his ears, but there's no song on his lips. But there is music in the air. On entering the post, the traveller finds the trader sitting next to the dial. "Listen," he says, looking up. "Listen. . . . some old Canadian boat songs from Montreal tonight. . . ."

"Painted as it is. . . ."
"Our voices keep score, and our eyes keep score. . . ."
"In the woods on those dark days. . . ."
"We'll sing at St. Anne's next parting hymn. . . ."
"The rapids are near, and the daylight's past. . . ."

The music fades.

"Good song," muses the cabaretman. "I have an out-too. . . ."
"But I'm glad I didn't have to use it. If I had to, I wouldn't be here now."

W H E R E  T H E  S N O W  I S

70 FEET DEEP!

• Modern Diesel Tractors Defy Winter in the Mining Country North of Prince Rupert.

By A. G. RIX

IMPERIAL OIL LIMITED, PRINCE RUPERT, B.C.

S P R I N G  N U M B E R , 1 9 3 0

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This mine has been in continuous production since 1918, and up to date has paid out in dividends the sum of $20,000,000. It is at an elevation of nearly two thousand feet, and is linked with the town of Stewart by a road which follows the bend of the Salmon River, and hugs the sides of the mountains for a distance of thirteen miles. Traffic is maintained over this road throughout the year, although the snowfall at the mine is approximately twenty feet. The large part of the mine’s supplies, including diesel fuel and lubricating oils, is taken in by a tramway eleven miles long, which also carries the ore to the bins on the waterfront.

Six miles beyond the Premier is the Big Missouri mine, which is being developed by the Consolidated Mining and Smelting Co., Ltd. An interesting feature of this mine is that owing to the very heavy snowfall, which sometimes reaches seventy feet a year, it was decided to build their mill underground. At time of writing they are blasting out a great chamber in the rock for the mill.

The elevation of the Big Missouri mine is around three thousand feet, but the road to these mines begins at sea level. Terrific grades are encountered on the way to the scene of these operations.

Both of the mines mentioned are diesel powered, and are regularly supplied with their requirements of Imperial Diesel fuel oil and Imperial Marvelube oils. At the Premier Mine power house there is an installation of three 650 H.P. Fairbanks-Morse Diesel engines, totaling 1950 H.P., which have been continuously lubricated with Marvelube oils, with every degree of satisfaction. At other points in their operations they have a further 900 H.P.

For a number of years the Portland Canal region has been a centre of interest in the mining world, and the two mines mentioned are the largest concerns in the district, but there are also numerous smaller companies which are doing their share in the development of the highly mineralized area. The heavy snowfall and the steep grades present difficult problems but these have been overcome by the Crawford Transfer Company of Stewart who operate a fleet of seven trucks. Caterpillar tractors, equipped with bull-dozers, clear the road for the trucks which, like the tractors, are powered by Imperial Oil products.

The emphasis is also playing its part in the development of this country. Charles Elliott is fattening in tons of supplies from Stewart to the Unuk Lake country and other sections of this district, where considerable development is going on. Products for these flights are supplied by Imperial Oil Limited.

Another method of transportation, which is employed at the Georgia River Mine, operated on the Portland Canal by the Gold Levers Limited, is pack horses. These are owned by the Crawford Transfer Company and are used to freight in supplies of all kinds to the mine which is situated some nine miles from tide water. The mill has a capacity of from 25 to 50 tons, and all the diesel fuel oil and Imperial Marvelube oils are carried in by the horses in ten gallon kegs.

Peter W. Gordon Retires

Peter W. Gordon, divisional marketing manager for Western Ontario, and one of the Company’s ablest and best liked officials, has retired under the provisions of the Imperial Oil annuities plan. His decision has caused widespread regret which is tempered, however, by the thought that after 35 years of devoted service he is entitled to a respite and also by the fact that the benefits of his long experience and sound judgment will continue to be available to the Company.

Mr. Gordon’s retirement became effective March 15th and on March 18th he was signally honoured when some forty leaders in the business, industrial and community life of Hamilton gathered to pay tribute to him and presented him with a noble sterling silver tray suitably inscribed. The affection and esteem in which he is held was appropriately expressed by a friend of many years’ standing, Stuart C. Lee, and in his reply Mr. Gordon took his bowers back to the pioneering days on the Prairies when to cover his territory required continuous travelling for a period of three months, and related his friends with some amusing anecdotes concerning the building up of the great distributing system which has ever since assured a dependable supply of petroleum products throughout the West.

Mr. Gordon is a native of Prince Edward Island and took his Master’s degree in Economics at Acadia University. He first entered newspaper work and served with the Saint John Sun and the Winnipeg Tribune. In 1903 he was employed by Imperial Oil as a salesman and his territory extended from Swift Current to the Okanagan Valley and also took in the Kootenays.

His enterprising work commanded head office attention and in 1909 he was made manager at Calgary with jurisdiction over Southern Alberta. In 1917 he was transferred to Saskatoon in charge of Northern Saskatchewan activities and in 1919 was brought to Toronto to take charge of marketing in Western Ontario. In 1921 the Western Ontario divisional marketing office was moved to Hamilton and Mr. Gordon has since been a resident of that city. His activities in community life, his personal charm and friendliness have made him one of Hamilton’s best known and most esteemed citizens.

Russell T. Kelley, who was toastmaster at the dinner tendered by Mr. Gordon’s friends, read a letter from C. Harrison Smith, president of Imperial Oil Ltd., who was unavoidably absent. Mr. Smith expressed the regret of the officers and directors of the Company at Mr. Gordon’s decision to retire, and paid a high tribute to his sterling qualities.

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PATHFINDERS

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the years. Through this, the young spruce showed, clean and green, but as yet not large enough to clothe the wasted scene in beauty. However this area will make for very economical road construction although removing the deadfall was a easy task.

It was in this deadfall area that some careless campers, visiting the work camps in July, left a spark that started a forest fire. It was not discovered until it had made a good start and the work crew had to spend two precious days bringing it under control. Afterwards they posted many clever fire warnings as they went along. A wide cleared area with outcroppings of rock which we traversed for ten miles was known as the Plains of Abraham. No, the men had not removed rocks either! To sit on the hurricane deck of a truck as it balances precariously on a rock or a stump and then down with a sickening bump was one of the most constant joys of the trip. At times impossible to keep ahead of the truck, we walked far enough.

The sun set, the mountains chill was penetrating but our destination lay beyond the high hills standing so-sheet-off-black and the moon came out, full and benign, silvering the far away peaks. The truck lights were dim, the trail obscure and we were facing the steepest climb of the trip. So we all got out and walked up and over the hill. A hill was at the bottom so we decided to make camp. It was ten o'clock. We had come fifty miles in eight hours.

Cheerful campers, fragrant coffee and bacon, and then into our bed rolls. The discomforts of the journey were soon forgotten as we relaxed in "Moonlight Canyon".

Next morning the driver began to realize that his precious "Imperial" reserves were running low. A few miles on we came to a cache of gas, brought out by the Association for just such an emergency, so that worry was ended. The ten miles to Stony Lake, while not steep, had had very little work done on it in the way of removing stumps or stones. So we walked as much as we could and left the truck to take its bumps alone. And for the first time in history the hills and valleys were being conquered by gaz!

Finally, as we topped a rise, we saw the lake. About two miles long and a mile wide, Stony Lake nestles at the foot of high hills with snow-capped mountain peaks reflected in its clear surface.

Across an arm of the lake, over which we wound at rafted with our grub boxes, was Kruger's second cabin. Here he catches fish in summer to feed his mink throughout the year. Picturesquely situated in a thick grove of pine and decorated with antlers, the cabin looked very inviting, especially as we knew it contained food. Our supplies were getting low and we were a hungry bunch. Hot cakes, biscuits and stew disposed of, we were ready to thrill to our accomplish-

ICE BOUND

- Halifax-bound Newfoundland Manager Held Prisoner by Frozen Atlantic.

IMPERIAL OILS Manager for Newfoundland, D.S. L. Patterson, was a couple of days late for the meeting of the Company's divisional managers in Toronto in March, but brought with him photographic evidence that this was due to circumstances beyond his control.

Setting out from St. John's aboard the steamship Caribou, Mr. Patterson expected to land at Halifax two days later. Instead of this he had a nine-day journy on the frozen Atlantic. So heavy was the ice that the ship rested on it at times as she might rest if stranded on a beach, and in order to while away the time the passengers went down the side and walked about on the ice as shown in the accompanying photographs.

- (Right) A view of St. John's harbour in the grip of Newfoundland winter. (Below) Her fighting days over, this old British Man-of-War is now used as a salt supply depot.

- John Lynchart, Chief Clerk of the Staverton offices of Imperial Oil Limited has joined the ranks of the Company's secretaries after 22 years of continuous service. A native of Bellist, he entered the Company's service at Winnipeg and was appointed Chief Clerk at Staverton in 1912. He was honored by his associates at a dinner in the Beeston Hotel and was presented with a travelling case, club bag and trunk.

SPRING NUMBER, 1936
Practically all of the machinery in the William H. Wright building is brand new—a fact which saved a lot of trouble in making the transfer from old to new quarters. Investment in this equipment totals nearly three-quarters of a million dollars and the job of keeping all the wheels turning smoothly is one of major importance, leaving James Harrison, mechanical superintendent of the paper, little time for playing squash in the tepid new squash courts.

Assisting Mr. Harrison in his job of keeping everything running at peak efficiency are five Imperial Oil lubricants. As is the custom in lubricating important equipment of this kind, a very careful survey of all machinery was made by Imperial Oil lubrication engineers, in order that the correct oils and greases might be selected to give best results under the operating conditions to be met in each case.

Many of the bearings, gears and other moving parts of the giant presses are lubricated by unit circulation systems supplying oil through small pipes from central oil reservoirs. For this service an oil of high lubricating quality and stability is required. Imperial D.H.O. Oil alone was chosen for this important job, and Imperial Bayonne Oil was selected to keep the many high-speed oil lubricated roller bearings revolving smoothly.

The grease-lubricated ball bearings of electric motors, including the air compression motors for the tube carriers that run from department to department, is lube.

There is no comparison between working conditions in the new press room and in the old. In fact, Globe and Mail presses probably still wake up and think their new home is all comfortable and gives them a chance to relax as the best-lighted press room in America. It is completely air-conditioned. And—perhaps the most unique feature of all—it does not vibrate like a ship at sea. The Globe and Mail presses rent on 2½ inches of cokk and are completely insulated from the rest of the building.

PERUVIAN GIRL ATHLETES WIN HONORS

IN THE Fall of 1937 an athletic meet was held at Talara under the auspices of the International Petroleum Company for girls from Talara and Negritos. So successful was this that the Peruvian inspector of physical education suggested that athletics be further stimulated by sending the athletes to compete in the Campeonato Femenino to be held by the Federacion Peruana de Atletismo on November 15th and 16th in Lima. This suggestion, and the invitation given by the Federacion, were accepted and eight girls athletes from Talara and Negritos reached Lima in November accompanied by the Principal of School Section No. 2, Srta. Enriqueta Guerra and Srta. Graciela Torres, teacher of Physical Education.

At the airport the girls were met by the President of the Federacion Peruana de Atletismo, Commander Alejandro Bastante and his wife, representatives of International Petroleum Company and others.

A comparison was made between the team from the North, as these were the first girls athletes to come from the provinces to Lima. Of the six national records broken in the meet, two were set by the girls from the petroleum zone and they won second place among the eight teams competing.

Following the Campeonato Femenino came the Athletic Carnival which was attended by all the girls athletes, including those from Talara-Negritos. In this Carnival the northern girls were outstanding, coming highest in the unofficial scoring. Their success in both these affairs was very popular in Lima and much credit was given to their coaching and, by the girls themselves, to International Petroleum Company for making it possible for them to visit the capital and take part in the games.

At present the girls are being coached by the principal of the school in Lima. The girls hope to visit the United States again but are not sure of the possibilities of such a trip. A large number of them are in college and they plan to have a career in education.

OIL SOLVES PROBLEM

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least equal to, and in many instances, actually the superior of tobacco cured by the old method. The curing period was appreciably shortened and the color of the leaf improved.

The principal advantage, however, lay in the ease with which the carrier could provide a steady, uniform flow of heat to all parts of the kiln, and the ease with which this heat could be regulated to suit the vagaries of the weather.

To provide growers with the necessary oil supplies, Imperial Oil Limited assisted in the inauguration of a delivery system which made it possible for the farmers to have the special oil delivered to their premises by track. Each kiln of tobacco, during the first fall season in which oil was used for curing purposes, required an average of from 100 to 115 gallons of oil.

The Charlie Williams mentioned earlier is one of the newer generation of Canadian farmers. He is receptive to new ideas and was one of the first to realize the advantages of new curing equipment after it was made available to him. Today, on his farm, he has discarded the inefficient and outdated methods of the past. To neighbors who ask him about his susceptibility to what they like to call "newfangled apparatus, Charlie Williams has one reply, his bank balance. He cured his tobacco crop with oil; did a better and a quicker job, and what is more important to him, got a better price. Yet with all his astuteness, he hasn't given a thought to the fact that he owes the bulk of his success to modern science. Sharks, he hasn't got time. He's going to Florida this winter.

IMPENIAL OIL REVIEW

SPRING NUMBER, 1938
INDUSTRIAL COUNCILS, 1938

By J. R. Simpson

In these days when industrial relations are the subject of such general interest, the management and workers of Imperial Oil Limited can look back 25 years to the time when the Company’s Industrial Council Plan was inaugurated under the direction of the late Hon. W. J. Hanna then president of Imperial Oil Limited.

At that time, “industrial relations” was a relatively new phrase.

The Imperial Oil plan was brought forth as a means of establishing and maintaining among all ranks of the Company’s service a mutual understanding and goodwill. It was not intended as a substitute for anything. It was not in lieu of fair wages and good working conditions and indeed could not function successfully without them. The Industrial Council is primarily a medium for the exchange of views between management and workers, a forum in which matters of common interest can be frankly discussed, an assembly to which every worker has recourse if he feels his interests are not receiving the consideration to which they are entitled.

The Industrial Council Plan is a guarantee that every worker regardless of rank, race, creed or other lawful affiliations will be dealt with on the same basis as applies to any other worker. A full recognition of the Industrial Council’s function in this connection is essential to their

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continued successful operation. The plan should be a constant reminder to the individual worker that in the eyes of management he is more than a number on a timeskeeper's record; that his wellbeing and interests are of concern to the management and may readily be brought to the attention of the management through the medium especially established for that purpose which is the Industrial Council.

In the early days ownership and management of industry were largely identical. They were closely in contact with the employees. Then ownership began to spread and industrial units to expand until in time the owners and the workers were in many cases far removed from each other and management was an intermediary between them. As industry continued to grow the contacts between management and the individual employee became less constant and more impersonal and with that loss of close contact came an opportunity for misunderstanding.

In the case of Imperial Oil Limited the management did not want to lose contact with the worker and so the Industrial Council was developed as a definite and personal link between the two. The Councils comprise representatives both of management and labor. The originators of the plan recognized what has generally become recognized in recent years: that minor misunderstandings are fertile sources of major disagreements; that such misunderstandings are not likely to occur where there is opportunity for free discussion and where every worker has access to management to air any actual or fancied grievance.

During the past year many meetings of the Industrial Councils were held and a large volume of business was expeditiously closed at these meetings. To the members of the Councils thanks are due for their helpful and active interest.

ANNUITIES AND BENEFITS

The Annuities and Benefits Committee reports that during the year 1937 there were 718 cases of sickness involving 17,316 lost days of labor for which the Company provided sickness benefits. There were 57 employees placed on pension during the year. The deaths of 28 widows and 27 employees are regretfully noted. Death benefits and group insurance were payable in the cases of all deceased employees. Industrial accidents numbered 109; an encouraging reduction of 44 below the number for 1936.

IMPERIAL OIL TANKERS FIRST IN WELLAND CANAL

Three Imperial Oil inland tankers were the first vessels to be locked through the Welland Ship Canal and so inaugurated the 1938 season of navigation in that important waterway which links Lakes Erie and Ontario. First vessel to enter the canal was the "Wind-solite" and she was closely followed by the "Locolite" and the "Kayolite." In the above photograph the ships are shown in Lock #8 of the Welland Canal at Port Colborne, Ont., which is the longest canal lock in the world.