Imperial Oil

**REVIEW**

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IN THIS ISSUE:

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1948 Review</td>
</tr>
<tr>
<td>1949</td>
</tr>
<tr>
<td>Redwater Branches Out</td>
</tr>
<tr>
<td>Behind the Big Clocks</td>
</tr>
<tr>
<td>International Petroleum: Its Story</td>
</tr>
<tr>
<td>The Conquest of Atlantic No. 3</td>
</tr>
<tr>
<td>Ambassadors of the Flow</td>
</tr>
<tr>
<td>Muskeg Joins the Casualty List</td>
</tr>
<tr>
<td>Schools in the Sky</td>
</tr>
<tr>
<td>Brightening the Blackouts</td>
</tr>
</tbody>
</table>

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**ON THE COVER:**

Ottawa's Peace Tower in a winter setting is on our front cover. It rose from the ruins when fire destroyed the Dominion Parliament building in 1916. Its big clock is a familiar landmark in the Canadian capital and the Tower is considered one of the finest examples of Gothic architecture in the country.

On the left is the Imperial Sarnia, largest tanker to ply the Great Lakes under Canadian registry, making her first voyage on choppy Lake Superior.

LOOKING BACK on 1948, one of the outstanding events in the oil industry was the reduction in prices of petroleum products in Alberta and Saskatchewan which took place early in December.

The reduction in prices is significant enough in itself, especially during an inflation. But the price cut has additional meaning, since it ties together and fulfills the efforts of many years.

The price cut in petroleum would not have been possible, for example, if it had not been for the years of search that led to Leduc and Redwater. It would not have been possible except for the information and experience obtained from the discouraging sequence of dry holes (see article page 31) that bedevilled the oil seeker for decades. Nor could the price of oil have come down in Alberta if the oil seekers had not been supported by the builders of refineries, pipe lines and all the other equipment that is as essential as the oil itself.

The price cut also serves to mark the transition of Alberta from an oil-deficit, importing area to an exporting, surplus area. The price cut serves as an economic force pressing the oil outwards to wider markets, in somewhat the same way as pipe lines and tank cars move it outwards in the physical sense.

In a still broader sense, the price change in Alberta and Saskatchewan marks a triumph for the free price system. From 1939, there had been an increasing demand for petroleum with the inevitable trend toward higher prices. Regrettably though higher costs and prices may have been, they are beginning to bear fruit, of which the Alberta price reduction is one of the first evidences.

This is what anyone trained in traditional free economies would have expected. The only argument against such a process is that high prices are alleged by some to put products beyond the reach of the average pocket. As far as petroleum products are concerned, the facts show there is no validity to this argument. Here are the figures for average manufacturing wages and salaries in Canada, in 1920 at the height of the Postwar inflation, in 1929 and in the fall of 1948. Against them are shown the prices of gasoline in central Canada:

<table>
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<tr>
<th>Year</th>
<th>Weekly Wage</th>
<th>Gasoline Price</th>
<th>Salaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1920</td>
<td>$23.00</td>
<td>40¢/gal</td>
<td>$15.00</td>
</tr>
<tr>
<td>1929</td>
<td>$25.11</td>
<td>40¢/gal</td>
<td>$20.41</td>
</tr>
<tr>
<td>1948</td>
<td>$41.47</td>
<td>27¢/gal</td>
<td>$39.00</td>
</tr>
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</table>

These figures show that the average wage or salary would buy 50.9 gallons of gasoline in 1920, 118.5 gallons in 1929 and 153.6 gallons in 1948. In terms of weekly work, the price of gasoline has been cut 23 per cent, since 1929, 67 per cent. since 1939.

If allowance were made for the shortened work week (60 hours was common in 1920) or for the improved quality of to-day’s gasoline, the comparison would become still more favorable.
1948 in Review

The events of the past year in the oil industry have had far-reaching effects that will benefit Canada as a whole.

Last summer a Toronto man visiting Edmonton was surprised to see men wearing steel helmets and carrying lunch pails lined up at the bus stops every morning in the heart of the city. They were drillers, on their way to the oil fields.

"They were taken for granted, just like factory workers or business men anywhere else in Canada," the visitor remarked afterwards. "The drillers now are a part of daily life in Edmonton, the sign that it has become an oil city and that Alberta is becoming established as the Texas of Canada. The West is getting used to the fact that oil has changed the future of all Canada!"

There are many other signs of the great expansion that took place in all branches of the Canadian oil industry in 1948. Imperial Oil had a major share in that expansion because the Company continued to search for oil, drilled new wells, helped to develop established fields, laid new pipe lines, built new ships, increased refining capacities and added new marketing equipment.

Among the visible results are the derricks and producing wells in the Leduc and Woodbend fields that have already changed the oil economy of the western provinces. At Redwater, 1948's most important wildcat well led to the discovery of another major oil field. At Edmonton Imperial's new refinery began last summer to manufacture oil products from Alberta crude. At Montreal East Canada's first fluid catalytic cracking unit is in operation to increase the quality and quantity of oil products. Elsewhere in the Dominion there are many other completed projects proving that 1948 was a year of record development, achieved through the combined efforts of men and women working in all the varied phases of the oil industry.

The effects of this development are beginning to be strikingly apparent. Where 1948 began with the possibility that shortages of oil products might become serious, the supply was maintained through the year although the Canadian demand increased eight percent beyond the record figure of 1947.

Because of the developments in the west, Canadian crude began to displace crude formerly brought in from the U.S. Prairie refineries are now assured of adequate supplies of domestic crude, permitting price reductions which are now being passed on to the consumer (see editorial, page 1). Another result is the substantial saving of U.S. currency formerly spent on imported crude.

As an illustration, in 1947 Imperial's Regina refinery processed 46 kinds of crude, most of which were brought from the U.S. Last year the list was reduced to 26 and the refinery soon will use Alberta oil almost exclusively. This will save transportation costs and enable more efficient operation because units can be set to handle a single kind of crude instead of many crudes with varied properties.

The year's achievements both in eastern and western Canada have required intensive work, vast amounts of materials and the investment of large sums of capital. It has been a year of fundamental changes that will affect Canada's economy for many years to come.

Western Canada approached oil self-sufficiency as a result of the development of Leduc and the bright indications of future production at Redwater, 1948's most important new discovery. Canadian crude oil filled tank cars like these which formerly were used to import U.S. oil bought with Canada's scarce U.S. funds. The new flow of Canadian oil permitted a reduction in the prices of petroleum products in Alberta and Saskatchewan.
On the "Trail of '48" early in the year heavy transports carried equipment from the dismantled Whitehorse refinery down the Alaska highway to be reassembled at Edmonton as part of Imperial's new plant.

Imperial's intensive exploration program was continued through 1948. Six field parties like this pack-train outfit (above) spent months in lonely areas of western Canada seeking data that might help to find new oil fields.

To be sure that high standards of quality were being maintained, Imperial's chemists tested products throughout the year. They also continued research to find improved refining methods and develop new products.

Canada's first fluid catalytic cracking unit (above) went into production in August at Imperial's Montreal East refinery. It is part of a large program to increase refinery capacities and to meet rising quality needs.

1948 set a new Canadian drilling record. Drilling crews put down many new wells to develop Leduc-Woodbend and to explore untested areas of western Canada. Further drilling proceeded in southwestern Ontario.

Redwater No. 1 well (above) was brought in by Imperial in the late summer and is the discovery well of another sizable Canadian oil field. The discovery was a result of the Company's long and costly oil search.

The output of Sarnia refinery—largest in the British Empire—has been increased twice since the end of World War II. Last year its capacity reached 53,000 barrels a day to help meet the growing demand for products.

Calgary refinery successfully met two unusual supply situations last year: a rush for oil products brought about by a late spring; and an emergency demand from the British Columbia areas isolated by floods.
**In the emergency** of last spring's floods in B.C., Imperial dealers and agents helped with flood control and rescue work in the stricken areas. This picture was taken at Abbotsford and shows the conditions on the highways.

**Fuel for the planes** of Operation Attache was supplied by Manitoba Sales division. It was Canada's greatest aerial search and rescued these men who had been lost in September while on a special mission in the north.

**Canadians developed** a new interest in the oil industry following the discoveries in the west. Crowds at the Canadian National Exhibition at Toronto gathered to watch a drilling rig brought from Alberta by Imperial Oil.

**Because well-trained employees** are needed just as much as materials and equipment, Imperial inaugurated its first Company-wide supervisory training course. Shown above is one of the first groups in session at Calgary.

**Three new lake tankers**, built at Collingwood, joined Imperial Oil's fleet in 1948. Miss Beverly Hewetson, daughter of H. H. Hewetson, president of Imperial, is shown as she christened the new Imperial Sarnia.

**On the Great Lakes last year** the Imperial Collingwood (above) Imperial London and Imperial Sarnia all began their careers. In addition, Imperial acquired two big "T-2" type ocean tankers to bring oil to Canada.

**Imperial required** more capital to develop the western discoveries and to modernize equipment. Sale of its interest in International Petroleum Ltd. (head office above) provided $85,000,000 for these purposes.

**By adding 17 miles of pipe** to the eight-mile Nisku line, the Leduc field and the Edmonton refinery were linked in October. Oil now flows to the refinery through the extension (shown here under construction).
... and 1949 in Prospect

ECONOMY EXPECT there will be further increases in Canadian consumption of petroleum products during 1949 and in the following years. The Dominion now consumes petroleum at the rate of more than 250,000 barrels a day and it is estimated that this rate will reach more than 350,000 barrels a day before 1955. This would be about 10 barrels—or 369 gallons—per capita per year.

To meet this demand, oil industry facilities must continue to expand on a nation-wide basis. The present level of exploration for new oil fields must be maintained. Ways and means must be found to increase the production, transportation and refining of Alberta crude. Canadian crude and its products must find their most effective markets.

Canada still imports 87 per cent of her oil. If she could depend less upon foreign sources the national economy would greatly benefit. But, although Leduc, Woodbend and Redwater represent large reserves, they are not by means adequate for all of Canada's needs. It has been estimated production from these fields will exceed 70,000 barrels a day, far short of the consumption anticipated by 1955.

To achieve oil self-sufficiency, the Dominion must find reserves of some three to five billion barrels which would mean perhaps 18 new fields as large as Leduc or Redwater. The new fields, however, must be located in areas where transportation and other facilities permit competitive production and distribution.

Large reserves also must be proven or blocked out to justify heavy investments in pipe lines and new refineries. By providing less costly transportation pipe lines can make Alberta crude competitive over a wider area. However, it is obvious that the proven reserves must come first because no one can spend the many millions of dollars necessary without being sure there is sufficient oil at the source to pay back the investments over a period of years.

As more and more wells come into production in Alberta there may be a period when new wells will not add to the total daily crude output. This situation might come about while additional refining facilities were being constructed, existing markets were being expanded, new markets were being developed or while lower cost transportation facilities were being built. The maximum use of the oil would then depend on a solution of these problems.

As for Imperial's plans, H. H. Hewston, president of the company, has announced that Imperial will spend more than $30,000,000 in Alberta in expansion and production during 1949.

The development of the Leduc, Woodbend and Redwater fields will proceed as fast as materials, equipment and labor are available. Further increases in the capacity of Imperial's prairie refineries are contemplated to make maximum use of crude from the new fields to meet prairie requirements. In view of this program it is planned to increase Edmonton refinery capacity from 6,000 barrels a day to 11,000 barrels as quickly as possible.

Among other projects, engineering work is in progress on construction of a $6,500,000 gas gathering system, compressor station and gasoline plant in the Leduc field. It will be equipped to handle 24 million cubic feet of gas daily and will recover propane, butane and natural gasoline. Sufficient equipment has been ordered to allow the refinery gas not required for field operations or distribution for domestic and commercial uses to be returned to the oil reservoir.

Construction of a 16-inch pipe line from Nisku to Regina, to be completed in 1949, is projected at a cost of approximately $30,000,000. This 335 mile line will move oil from Leduc and Redwater nearer to new markets and, as production increases, extend the possibilities of export.

Other Company projects are in progress or in prospect to add to facilities elsewhere in Canada. The progressive expansion of equipment required for transportation, refining and marketing will continue. Particularly notable is the construction of a 228,000 barrel super-tanker now nearing completion at shipyards at Chester, Pa. The new ship will be launched in the spring to add to Imperial's ocean-going fleet.

If sufficient supplies of steel and other materials can be obtained, the oil industry in Canada may establish 1949 as another year of record expansion. The problems are many and complex but as they are solved the Dominion's industrial potential will increase because oil and its products will become available in the quantities required for fuel, lubrication and power in the future. 

Redwater Branches Out

The discovery of a major new Canadian oil field near Redwater, a quiet hamlet serving a farming community some 40 miles northeast of Edmonton, is now confirmed by the results of three wells spaced over nine miles. Little is known about the width of the field as yet but further drilling by Imperial Oil and other operators soon may give part of the answer.

After the initial well came into production the company began drilling four additional wells to evaluate the discovery. Two of the new wells failed to produce but the other two have been successful, establishing Redwater as a field and proving that Redwater No. 1, the original discovery, was not an isolated producer.

Three of the new wells were drilled on reservations obtained from the Crown and were spaced according to the regulations that govern drilling on land where mineral rights are held by the province. This meant that the new wells must be put down at least four and a half miles away from Redwater No. 1. Accordingly Redwater No. 2 was drilled about five miles due north; No. 3 about four and a half miles south-east; and No. 4 four and a half miles north-west.

Redwater No. 5 was drilled on property where the mineral rights are privately owned. It is located some two miles west and half a mile south of No. 1. Redwater No. 2 had disappointing results. It was drilled to a total depth of 4,060 feet and was abandoned early in November when it became apparent that the formation which produced oil at Redwater No. 1 some 3,000 feet below the surface did not occur at this location.

Redwater No. 4 found the oil zone on November 10 but the hole was drilled over a thousand feet deeper to test lower formations. It was then plugged back to the oil zone and production tests started during the third week in December.

Meanwhile No. 3 well found the oil zone on December 15. The well has been deepened and additional tests are being carried out. The remaining well, No. 5, had found only a few feet of slightly porous rock at the time of this writing and oil did not appear to be present in commercial quantities.

The location of the three producers (Nos. 1, 3 and 4) in a line over nine miles long has begun to give dimension to the new field. Successful wells have been brought in by other operators two to three miles west and a mile north of Imperial Redwater No. 1. At the time of writing they are Anglo-Home Redwater Nos. 1 and 2 and Pacific Sunray and Princess Redwater Nos. 1.

Redwater has been hailed in some quarters as the "greatest oil field ever found in Canada." It is certain that large-scale drilling operations will be conducted throughout the area during 1949.

Redwater is producing a good quality crude. The petroleum engineer below is testing production from one of the new wells.
Behind the Big Clocks

Day and night throughout the year, the big clocks of Canada—from Halifax’s venerable Old Town Clock perched on the side of Citadel Hill, to Vancouver’s modern timepiece in the new city hall—do their work without exciting much public attention. As a rule it’s only when a clock has a little trouble that anyone stops to wonder whose job it is to keep the mechanism in order.

Most of the men who tend the big timepieces climb endless stairs in draughty towers to reach their charges. Windings, oiling, and checking. Often parts cannot be obtained for the older clocks and new parts must be made to order. Some of the new electrically-operated clocks require little attention, but the older weight-operated works are in the majority and need constant care.

W. J. (Bill) Watton is one Canadian who makes a life’s work of looking after big clocks. His work is typical. His biggest single job is tending the massive time-keepers in the 900-foot city hall tower of his home city, Toronto.

The big clock stands aloof, high above the impatience which flows along Bay and Queen streets. Its four faces are each 21 1/2 feet in diameter and 10-foot minute hands and six-foot hour hands indicate the time. At night (except when there are power shortages) 480 forty-watt bulbs illuminate the four dials.

On the hour the clock speaks with all the authority of its largest bell—11,048 pounds in weight—which is struck by a 500-pound hammer set in motion by the clockwork’s two “quarter bells” weighs 3,339 and 1,994 pounds. Made in England, the clock was installed in 1909.

Every six days, Bill Watton climbs the hundreds of steps inside the tower to start his work of winding and checking the clock mechanism.

Winding the clock really means hoisting three different sets of weights, one of which operates the clockworks, onto the big hour-bell striking gear and onto the quarter-bell striking mechanism. In winding Bill uses an electric motor to hold the weights, but in bygone years they were raised by hand—a lengthy, hard and tedious job.

A 2,130-pound weight activates the hour bell mechanism. Another 1,750-pound weight rings the chiming or quarter bells and one of 1,050 pounds operates the clockworks which are encased in a big glass case as protection against dirt.

After winding, oiling and checking the mechanism, Bill goes to the floor below where the three bells hang. “The big bell has been moved three times,” he will explain to a visitor as he points to two deeply-worn bellows in its side. A third bellow is beginning to appear where the 900-pound hammer now strikes. Bill runs a practiced eye over the cables and levers which move the bell hammers. If he finds them all in order, his work is done and he will start down the long stairway back to the ground.

Twelve Toronto clocks depend on Bill’s wrist watch for their correct time. In turn he sets his watch by a radio time signal. Although the city hall clock must be wound every sixteen days, the others need only once-a-week winding. Those are in St. James Cathedral and in fire halls and police stations.

The oil industry gives Bill an assist by providing lubricants which keep the heavier parts of his clocks in good working order and protect them from the effects of weather and dust. The clocks themselves help to keep the city running “on time.”

Vancouver’s city hall clock is illuminated by neon lighting.

Almost every city has a clock that is a favorite meeting place. In Vancouver “Meet me under the clock” means this sidewalk clock at the corner of Granville and Georgia Sts.

The clock on Citadel Hill, Halifax, is one of Canada’s oldest.
International Petroleum:
ITS NEW STATUS AND PAST ACHIEVEMENTS

The Company will continue to supply South American oil for Canada although it is no longer an Imperial Oil subsidiary.

In recent months International Petroleum Co. Ltd. ceased to be a subsidiary of Imperial Oil. The change in the association of the two companies emphasizes the importance of the new discoveries of oil within Canadian borders and also draws attention to the major part played by International in supplying South American oil for the Dominion.

The change has, of course, not been made without regret and many nostalgic memories on the part of Imperial Oil men who can look back on so many years of friendly relations with the folks of International Petroleum—both in Canada and in South America. But these regrets are tempered by the knowledge that the human links are not being broken. Imperial will still buy oil from International Petroleum and Canadians will still have the benefit of two-way trade with the nations of South America.

The reason for the change is simply that Imperial requires capital to develop the new oil fields of Alberta and to meet other Company needs in Canada. From the sale of its holdings in International, Imperial has realized $80,000,000—a large part of which will be spent on the equipment needed to produce, refine, transport and market the oil which is being obtained in increasing volume in western Canada.

It is expected that the future earnings of the Company's ventures in the new fields will more than offset the revenue obtained from its former holdings in International. The new investments are helping to make Canada less dependent on foreign supplies. Agreement to continue required supplies from South America are an essential part of the transaction.

With Imperial as the parent company for 34 years, the two enterprises had been linked together in a close association which now will continue in a different form. At the beginning of the association International's activities were concentrated in Peru, but they have since spread to Colombia. In both countries International is concerned with exploration, production, transportation and refining, and with marketing petroleum and its products. In addition, International has an agreement with the Mene Grande Oil Company involving 25 per cent of Mene Grande's production in Venezuela.

Marketing activities are confined to Peru and Colombia, and about half of the crude produced is required to supply domestic markets in these countries. The rest of the crude or products is sold in world markets. A subsidiary, the Andian National Corporation, operates a pipe line from El Centro, Colombia, to Cartagena, 305 miles distant.

The sale, with proceeds to be used for Canadian development, recalls the year of International's founding. Back in 1914, the Imperial Oil Co. Ltd., as it was then known, was afflicted with growing pains. Its manufacturing facilities were expanding;
assuring for the Dominion an independent and accessible source of supply and "Inter Pete" was born.

Looking at a world oil map of today the uninitiated might be inclined to wonder why the International Petroleum Co., Ltd., chose Peru as the seat of its activities and not one or other of the vastly richer, in an oil sense, South American republics. But in 1914 Peru was the only sizeable oil producing country on that continent; Argentina was contributing only a few thousand barrels annually, while it was not until three years later that Venezuela started the spectacular rush which has placed her second among the nations in oil production.

Peru entered the production column in 1884 and, when International Petroleum came on the scene, was valued for around 2,000,000 barrels annually, no mean achievement in those days.

But the petroleum industry of Peru goes much further back than the era of statistics! When the Spanish Crown reached over the uncharted seas to establish a colonial empire, the all-conquering Don found the Peruvian Inca dabbling in oil. With true paternalism they created these "huas pites" - a government monopoly, and so they remained until the wars of liberation sent the Spaniards packing.

Modern oil development in Peru may be considered to have had its genesis in 1935 when Don Genaro Holguero acquired the Hacienda La Brea y Parina and induced an American engineer, Henry Meiggs, to invest some money in development. Another expatriated American, Edward Fowkes, was engaged to drill shallow wells, an art he had brought from his native Titusville in Pennsylvania, and a small refinery was put into operation.

Unfortunately for the enterprise Peru and Chile decided to make war and operations were, of necessity, suspended.

Don Genaro, however, was persistent and, when peace returned, he succeeded in interesting H. W. C. Twaddle in the development of the Estate.

This Mr. Twaddle is worth a mention. He was the son of a Scot who studied medicine in Edinburgh.

School is school the world over. These boys at Lomas rural school find that mastery of the fields it requires intense application as shown in their concentrated facial expressions.
served in the British Army and, after a sojourn in Quebec, took up residence in Pennsylvania. There he dealt in cottonseed and sperm oil and, after the drilling of the Drake Well, specialized in building refineries. Returning to England he later entered into a contract to drill wells for the Russian government at Baku.

"H.W.G." followed in his father's footsteps for, after finishing his education at Harvard and Cambridge, he joined his sire in the employment of the Czar. From there he gravitated to Egypt and it was as a result of his contributions to scientific journals, while engaged as export petroleum manager for the Egyptian government, that he attracted the attention of Don Gasaro Helguero and was induced to take an interest in and eventually purchase La Brea y Parinas and its oil possibilities.

Tweddle, with the caution attributed to his ancestry, took no untoward chances. He commissioned his father to go to Peru, observe the land and make a deal with the Don, while he, before leaving England, secured the financial support of William Ruswick, forming a partnership known as "The London & Pacific Petroleum Co., Ltd." to operate the property under a 99 year lease.

Thus fortified he arrived in Peru in 1888 accompanied by three drillers and two refinery experts from Pennsylvania.

It is hardly within the scope of this review to trace the progress of Tweddle's enterprise step by step. That it was successful may be judged from the fact that, when International Petroleum entered the picture, The London & Pacific, in conjunction with "The Lagunaos Oil Co.," which operated a part of the estate inland from seashore, had drilled around 800 wells, 545 of which were in production, and had extracted 8,462,932 barrels of oil from the field. The major portion of the output was treated in the

Talara skimming plant and the product shipped to San Francisco as crude benzine, with fuel oil as a secondary product. "The West Coast Fuel Oil Company" attended to the marketing.

Apparently the very success of their undertaking convinced Tweddle and his associates that they had a tiger by the tail and that only an immense expenditure of money and labor, an expenditure which they were not in a position to guarantee, could adequately develop the latent possibilities of the field.

This paved the way for International Petroleum, which was incorporated in Canada in 1914 as a subsidiary of Imperial Oil.

La Brea y Parinas estate is situated in the westerly extremity of the South American continent and in the northwestern coastal area of Peru. The terrain consists of salt flats and sand dunes, the only vegetation being found in the deep gulles, or quebradas, carved out of the loosely consolidated surface by the
The La Brea discovery well shown here still produces oil. It was brought in during the 1870's by digging, not by drilling. The heavy oil it produced was used for cementing ships' seams.

torrential rains which occur about twice in a generation. The climate is influenced by cold sea currents from the Antarctic and is neither too hot nor too cold, this particular area lacking the tropical aspects which prevail both to the north and south.

The geology of the estate might be likened to a huge anticline, which, at some time in the dim past, had collapsed in ruines, leaving a hodge-podge of separate blocks bounded by "faults" or fractures in the strata, and tipped and tilted at various angles. The result is that the oil possibilities of each "listed block" must be explored and developed as a separate problem.

International spared no effort to unravel the complex geology of the estate. Dr. T. O. Bosworth made a preliminary survey in 1916 and the geological department made a modest beginning in 1920. As the years went by the department grew in number and in the scope of its investigations; specialists in various phases of geology not only worked out the problems governing the occurrence of oil but, in so doing, made a valuable contribution to scientific knowledge. Geophysical methods of exploration were utilized and the benefit of these intensive researches was apparent in the gradual expansion of the productive area.

The success which has attended development may be gauged from a few random statistics.

Of the estate's entire area there are roughly 347,000 acres considered to consist of strata suitable for oil occurrence and latest available figures indicate that a total of 18,340 acres has been developed. At the close of 1947 there were 2,443 producing wells in the field, together with 634 abandoned producers and 736 dry holes; a total of 3,803 wells drilled of which only 19 per cent were unsuccessful.

Production had aggregated 286,739,856 barrels; the peak year being 1956 with 16,129,480 barrels. The year 1929 saw the maximum drilling activity with 203 completions, of which 177 were productive and 28 abandoned; 1947 set a new footage record with 345,237 feet of drilling.

Coincident with operations in the field plans were carried out to bring the maximum of efficiency into every phase of the Company's endeavours.

Refining facilities were completely modernized and refining capacity largely increased. Cracking coils were introduced in 1957 to augment motor fuel output. The plant now has a capacity of 30,000 barrels daily.

The port of Talara was transformed by the addition of a concrete mole and accommodation provided for tankers of 15,000 tons; larger vessels are served by a 14-inch, mile-long sea line. Immense storage tanks with a capacity of over a million barrels ring the port.

In 1922 the first of a series of oilfield gasoline plants was put into commission to strip off gas before diverting it to its several uses. Six such plants are now operating and add considerably to the production columns.

International Petroleum was a pioneer in gas-lift and repressurizing with results which have been extremely beneficial. The Company enjoys the privilege of unit operation in the field, a condition which is essential for success in any repressuring scheme.

In the field of economics the expanding importance of its oil industry has meant much to Peru. New world markets have been opened for Peruvian raw material and now its exports of petroleum exceed in value its exports of copper. Its internal trade and commerce have been revolutionized by a ready and inexpensive fuel supply for industry, lubricants for its manufacturers and gasoline for its motive power.
Immensely areas of its hinterland have been opened up by asphalt-covered highways which link the inland cities with the seaports to the advantage of both. Now oil has conquered the air, spurring the ocean and opening new vistas of prosperity.

Through the years of steady expansion the oil industry has contributed a substantial and dependable quota to the national exchequer, helping materially to finance altruistic schemes for the welfare and benefit of the Peruvian people and assuring them of a fair share of this natural resource with which a bountiful providence has endowed their land.

Such material benefits are not merely fortuitous but are the logical outcome of the foresight which International Petroleum has devoted to the systematic and economic development of La Bres y Partas in accordance with a well-ordered policy, backed by the latest refinements of invention and science and subsidized by adequate capital.

With Peruvian operations well underway, International next turned to Colombia. There the company operates through a subsidiary, Tropical Oil Company, which was acquired in 1929. This company operates a property known as the de Mares Concession, which is 260 miles up the Magdalena river, and covers an area of about 2,061 square miles.

After the acquisition a drilling campaign was begun. Initial progress was slow, as roads had to be run through hilly jungle country, and camps and shires built. By 1923, 561 wells had been drilled, and 545 of them were producers. At the end of 1947, 919 wells were producing 34,000 barrels of crude a day.

During 1921 crude production averaged 162 barrels a day and output was increased with continuing development until production reached a peak of 55,846 barrels a day in 1929, placing Colombia eighth among the world’s oil producing nations by Tropical’s production alone.

In 1922 a refinery was built at Barranca Bermeja to serve the needs of Colombia, and the average daily crude run then was 545 barrels a day. This figure has increased steadily, and the refinery now has a capacity of 20,000 to 24,000 barrels per day. Built stations were built along the Magdalena river, and distribution made by Tropical’s own fleet of steamers and river barges.

In 1928 the Andian National Corporation, another subsidiary of International Petroleum, put into operation a complete pipe line system to transport the de Mares crude and bunker fuel to the seaboard at Cartagena. This line carried about 28,000 barrels a day in 1947.

At Cartagena Imperial tankers load crude for its long journey to refineries at Halifax or Montreal, or it may be landed at Bayway, N.J., and run through the U.S. network of pipe lines to the refinery at Sierra. Through its agreement with the Mene Grande Oil Company in Venezuela, International last year obtained 47,500 barrels of crude oil a day. International maintains executive offices in Caracas, and accounting offices in Maracibo.
The destinies of the Company have rested in the capable hands of only three presidents since its inception. G. Harrison Smith, the original chief executive, was succeeded on his retirement by the late R. V. LeBauer, and since Mr. LeBauer’s death in 1945 the president has been L. P. Mainzer.

More figures do not begin to tell the story of what International has accomplished; behind the statistics lies an epic of modern industry.

The huts of a scant population of fishermen at Talara have given place to orderly streets of ideal homes, centred around churches, schools, hospitals, clubs, cinemas, fresh markets and stores. A network of pipe lines gathers oil from every part of the developed field, for delivery to the grotesque monsters of steel and iron and copper in which crude is tortured into surrendering its precious components. The clang and clatter of machine shops mingle with excited shouts from playing fields and pure, sweet water comes from distant rivers to provide refreshment and prevent disease.

All this means that individuals and families have been taken from tasks providing but a precarious livelihood and given the opportunity of becoming skilled workers in remunerative channels of employment. Their children have been educated and brought into touch with modern ways of living and trends of thought. Epidemic diseases, at one time all too common, have been curbed. In this extreme corner of Peru there has been established a nucleus of progress which cannot but have a far-reaching effect on national advancement.

In Colombia as in Peru living conditions have undergone a constant improvement. Road and rail provide transport through the jungle; an adequate water supply has been installed; churches, schools, a cinema, and a well-equipped hospital have been built at El Centro where the improved conditions are reflected in the decline in the malaria rate. Infections dropped from 845 per thousand in 1928 to 20 per thousand in 1932, and the rate has dropped to even lower levels in recent years.

While all these developments have brought many benefits to South American countries, Canada has benefited as well. South American oil, brought northward to the Dominion, has given Canadians fuel and power and lubrication for their homes, industries and transport. It has aided the war effort and it will continue to provide a source for the petroleum which is vital to modern living conditions.

An air view of the International Petroleum Company’s plant at Talara, Peru. An oil tanker may be seen at anchor in the harbor.
THE CONQUEST
OF ATLANTIC NO. 3

It wasn't Imperial's well, but Imperial men helped to win 1948's most spectacular oil battle.

The bright aura of a sunny Labor Day in Edmonton was beginning to fade as evening approached and many Edmonton people were about to begin supper after a pleasant holiday. Suddenly a column of billowing black and white smoke with flame at its base sprang up on the southern horizon. Word spread through the oil-wise city that "Atlantic's on fire!"

The giant pillar of smoke remained over the Leduc oil field for almost two-and-a-half days. At times it resembled the huge mushroom in the sky that follows an atomic bomb explosion. Gradually it dwindled to steamy wisps and then disappeared. The fire at the wild Atlantic well had been killed by the stubborn efforts of oil men.

Atlantic No. 3 well gave Canada its most unusual and in many respects most spectacular fire of 1948, burning an estimated $250,000 worth of oil a day.

On the evening of the outbreak the flames could be seen from 16 miles away, and the neighboring highways began choked with automobiles as thousands drove out to take a closer look at the spectacle. Radio commentators filled the air with their descriptions of the blaze and newspapers across Canada rushed pictures and stories into print.

The fire directed more attention to the oil fields of Alberta than any other recent development. People who had read about, but not paid much attention to the discovery of a 200,000,000 barrel field at Leduc now said: "That's a big fire. It must be a big oil field," and as one observer remarked, "The fire certainly put Alberta oil on the map."

However in spite of all the newspaper, magazine and radio stories, one mistaken belief remains fairly common. It is that the wild Atlantic well belonged to Imperial Oil Ltd.

Atlantic No. 3 belongs to the Atlantic Oil Co. It does not belong to Imperial Oil.

The mistaken belief may arise because Imperial's name is so closely associated with Leduc. Many people do not realize that although Imperial discovered the field there are 38 other companies—of which the Atlantic Oil Co. is one—now active at Leduc.

Imperial's association with Atlantic No. 3 was simply a case of lending a helping hand at the request of the Alberta Petroleum and Natural Gas Conservation Board. The Company lent men and equipment to help fight the long battle that finally brought the well wild under control.

The fire is only the middle of Atlantic's colorful story. The flames broke out when oil men had success almost within their grasp after months of driving, round-the-clock work to kill the wild well. The beginning was in March when the well blew out of control; and the end did not come until November when cement finally concluded Atlantic's turbulent career.

The well was on the John Rebus farm, one mile northeast of the Leduc discovery well. The Atlantic Company began drilling there in mid-January and the new well came in on March 8th as a gusher, out of control and spaying gas-driven oil.

Gushers are a rarity today because of modern drilling methods that control the pressures which help bring oil to the earth’s surface and so help to conserve oil reserves. Just what happened to Atlantic No. 3 is still a matter of conjecture but the effects were spectacular right from the beginning.

The well spouted some 10,000 barrels of oil and 50 million cubic feet of natural gas in a great dirty brown column reaching 150 feet in the air. The snow-covered fields were splattered with an oil-film over a wide area around the well head; the ground shook and from the well came a steady, high-pitched roar.

Atlantic was on the rampage.
The drillers began the attempt to control the well by pumping heavy mud down the hole to choke the flow of oil. Several hundred tons of mud went down, and after 36 hours the flow was shut off. Atlantic was under control at least temporarily. Large volumes of mud, cement, and other materials were pumped down the well in an endeavour to "kill" the pressure of the gas in the hole. But these efforts were not successful and a new trouble soon developed. The high pressure in the formation, 5,267 feet below forced gas through the fissured rock and up to the surface at several points around the well. By early May surface craters had multiplied from a few to hundreds. Oil began to gather in pools over a 40-acre area. Oil workers drove themselves day and night in the attempt to check the outburst and the Alberta Conservation Board brought in Myron M. Kinley, an expert on fires and blowouts in oil wells, from Texas to direct the battle.

In the next weeks concentrated attempts were made to kill No. 3 by working through the original well head. It was planned to set off explosives 2,000 or 3,000 feet below ground that would cave in the hole and seal it but this was unsuccessful because of the plugged drill pipe. A mixture of feathers, sawdust, cottonseed hulls, redwood shavings, mud and 10,000 bags of cement was pumped down without any results. The high pressure the drillers felt it but the footer vanished without a trace.

By May 7th the wild well was affecting the operations of the entire Leduc field. The oil flowing through hundreds of craters in a 10-acre area mounted as high as 15,000 barrels a day. Most Leduc wells voluntarily closed down so that the Imperial Pipe Line Co. line to Nisku could be used to carry off the oil being salvaged from sumps and pits around Atlantic.

Five days later it was estimated that the earth dike around the well were holding 75,000 barrels of oil, spread over 40 acres. The 10 acres west and north of Atlantic were a green-black cauldron in which 20-to-50 foot geyser spouted oil, gas and mud.

The area became a public menace and on May 14th Ian McKinney, Chairman of the Conservation Board, announced that the Alberta Government had taken over the Leduc field and formally ordered all 61 producing wells shut down to permit all the facilities of the pipe line to be used in removing the oil from the Atlantic pits.

The wild well was producing great volumes of natural gas, estimated at 50 million to 100 million cubic feet a day and aircraft were forbidden to fly over Leduc lest the gas be ignited. The oil lake was a definite fire hazard and a four-square mile area was barricaded and policed to keep the public from the danger zone.

W. G. "Whitie" Seaton, head of the Imperial Pipe Line Co. was in action making full use of the Nisku line. The Canadian National and Canadian Pacific railways gave their co-operation and started all available tank cars rolling toward the railhead at Nisku.

The pipe line could pump 30,000 barrels a day to the railhead but loading facilities could handle only 7,500 barrels. Within a few days this was raised to 12,000 barrels and the oil lake began to drain.

Welding crews from all parts of the field worked on pipe lines joining Atlantic No. 3 to Leduc No. 1 and No. 2 producing wells. Soon giant pumps were forcing some of the wild oil down through these two wells to the reservoir formation a mile below the surface. The pipe line handled the balance of the oil and tank cars moved it to refineries all over the west.

Meanwhile the Conservation Board asked Imperial for the services of Vincent J. L. "Tip" Moroney, operations manager for the Company's western producing department, so that he could direct the fight against the rogue well.

Atlantic No. 3 well come in out of control last March and during its wild career produced an estimated one and a quarter million barrels of oil and 50 to 100 million cubic feet of gas. Lefl is in the derrick in the early days of the well's career to use any Company man or facilities he needed and he recruited a group of key men. Among them was Charlie Visser, Imperial's drilling superintendent who is considered to be one of the best drillers in Canada. Other companies co-operated fully, contributing personnel, equipment and advice.

The two relief wells were to be drilled straight down for a considerable distance and then gradually deflected to the angle which would reach the area where Atlantic No. 3 entered the producing formation.

It was no simple task. In theory, a well goes straight down. In practice, most of them wander

Gas kept burning through fences, draining up the pools at oil and used that formed over a 40-acre area around the well.
The black smoke showed dozens of gray as steam appeared where oil and gas had gushed. That was on Wednesday afternoon. Early next morning the well gave signs of losing its character. It appeared to be producing the wild well to the east.

A few days later the south relief well completed. Work was done, and a few days later the well was finished. It was not completed until November 15 - a difficult task, done without fireworks and with little recognition. For most Canadians believed that the well had been killed off completely when the fire was extinguished.

In six months and a day Atlantic No. 3 produced an estimated 1,250,000 barrels of oil, but most of it was recovered from the pits or pumped back into the formation. The loss in natural gas can only be guessed, but it is believed that between 39 and 100 million cubic feet daily escaped into the air. The lowest of these figures would give a total of approximately seven billion cubic feet during the time the well was uncontrollable.

In six months and a day Atlantic No. 3 became the second greatest producing well Canada has yet had. The greatest is the nine-year-old Home Oil Millerville No. 2, at the north end of Turner Valley, which gave up 4,450,000 barrels in the nine years and still is producing 4,000 barrels a month.

Besides publicity the Leduc field, the wild well contributed valuable reservoir information to the production engineers. There was comparatively little loss of oil, no loss of life and the fire advertised the field as nothing less spectacular could have done. These features helped to offset the damage done by the rampaging well — but oil men who worked day and night for the long months needed to stabilize Atlantic No. 3 don’t want to see another egos well as long as they live.

Rambler directed every available tank car to Walk to carry off the huge volumes of oil produced by the wild Atlantic No. 3.

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Rambler directed every available tank car to Walk to carry off the huge volumes of oil produced by the wild Atlantic No. 3.
Ambassadors of the Plow

Championship teams from the International Plowing Match are Visiting Britain

Two 1948 championship teams of plowmen, winners at last year’s International Plowing Match at Lindsay, Ont., sailed in mid-January for a month’s tour of the British Isles. They will compete in British plowing matches and also will study old country methods of agriculture and visit many places of historical interest.

Rhys Bacher of Hagersville and Robert Timbers of Stouffville, Eego Tractor Club winners, went aboard as guests of Imperial Oil. Alvin Mark of Cameron and Wilbert McFaddin of Milnsbank, the successful contestants in the Trans-Atlantic class for horse-drawn jointer plows, were sponsored on the trip by the Salada Tea Co. Elliott Moses, of Oshawa, a director of the Ontario Plowman’s Association, accompanied the two teams as coach-manager.

For several years Imperial and Salada have awarded all-expenses-paid trip to Britain to the winners in special classes at the International Plowing Matches. At the Lindsay match, competition was particularly keen, the plowing was of an exceptional high caliber and over 40,000 people turned out to watch the last day’s events.

There were 27 entrants in the final match of the Eego Champion Class. They included “Eego Champions Special” winners who had competed in Ontario Plowman’s Association branch matches held earlier in Ontario as well as plowmen from other provinces.

Both of the Eego winners had won prizes at previous county and international matches. Rhys Bacher, the gold medalist, is 28 years old; Bob Timbers, the silver medalist, is 21. Timbers is a nephew of Fred Timbers, one of the 1946 Eego champions while Wilbert McFaddin, the Salada silver medalist, is a brother of Glen McFaddin who went to Britain last year as an Eego champion.

At Lindsay a team from Northern Ireland competed for the first time in an International Plowing Match held in Canada. All three members of the team, Bob Erwin and Tom Reid who are tractor plowman, and James Morrow, a horse plowman, were prize winners. With them were John Hart, chairman of the Northern Ireland Plowing Association, and Peter Fitzpatrick, public relations representative.

The Irish plowmen were entertained widely in Ontario and a celebration in their honor was held at the Renfrew county match by the Indians of the Six Nations.

The interchange of plowmen is a project which has long been planned by the Canadian and Irish associations. Arrangements made in 1939 were cancelled by the outbreak of war and the plans could not be carried out until last year when Canadian teams competed at Saintes Field, County Down. At Lindsay, the Irish visitors completed the interchange and now another set of Canadian teams are in Britain to compete in matches there.

O N OCTOBER 18 the order to cease drilling was issued — Muskeg No. 1 well, in the Alberta foothills was to be abandoned. For 555 days the drills had fought the hard rock to reach a depth of more than two miles without finding a trace of oil. The project had cost more than $1,496,000.

The drilling crews lost no time in pulling and stacking the 90-foot stands of drill pipe and began dismantling the tall rig. High-powered tractors and trucks were on hand and the heavy equipment was rumbling out of the tortuous road to the railway siding at Entrance. The heavy winter’s snow now hides the site of “Operation Muskeg”, the costliest single oil seeking venture undertaken in Canada.

“Operation Muskeg” centered around a 10-acre clearing cut out of the Alberta wilderness. On a western Canada map the location may be found by tracing the C.N.R. line west from Edmonton for 150 miles to the tiny hamlet of Entrance. From this point a road constructed for the oil seeking venture now winds north to cross four rivers and across smaller streams. Like an Indian pony trail it skirts dark stands of spruce and pine and the dank muskeg

JANUARY • 1949

from which the area takes its name. At times the road reaches an elevation of 5,000 feet, then dips again into deep valleys, continuing on until it reaches the deserted clearing at 4,149 feet which is the end of its 70-mile course.

Because of the large sums of money involved the Muskeg well was a joint enterprise. Five oil companies, Gulf, Imperial, McGill-Frontenac, Shell and Socony-Vacuum, put up the “grub stake” and construction of the road began in the fall of 1946.

Road construction is an exacting science under the best of conditions and conditions here were decidedly not of the best—they presented problem after problem. The muskeg did not confine itself to the valleys between the mountainous hills; it was encountered on the sides of high, steep slopes which had to be by-passed, and on the gentle grades where road building should have been easy. In places it was necessary to blast rock to get around precipitous hillsidees. Great boulders sometimes barred the way. Autumn rains and early snow falls soaked into the land and the tractors, earth movers and gravel
tracks churned it into masses of gumbo. Timed and
again the road building equipment bogged down.
When frost gripped the land and the muskeg froze,
work proceeded faster on the solid ground. Trees
were cut to bridge the creeks and rivers in advance
of the charging bulldozers which pushed uplandings and
underbrush to one side. The winter darkness de-
scomed earlier with each passing day and tractors
and other heavy equipment were fitted with lights.
Men worked in temperatures that went to 30
degrees below zero.
By Christmas the huge drilling equipment began
to be moved along the road from the railway siding
to the well site. It was transported in loads as heavy
as 38 tons. The road stood the test but it had cost
more than $473,000.
In April 1947 Muskeh No. 1 well was spudded in.
For a year and a half, the rotary drill ground its
way into the earth—sometimes it made depth rapid-
ly and at other times it bowed down at a snail’s pace
through strata of rock as unyielding as steel. In all,
792 drilling bits, about 20 times the number re-
quired for drilling a well in the Leduc field, were used.
Not once did the drills bring up anything that
indicated oil was near at hand.
The dream of finding a new oil field, or even an
isolated producing well, began to fade as the drill
perforated the 10,000-foot zone. On the 599th day of
operations the work came to its disappointing end.
Having reached a depth of 10,796 feet—more than
two miles—without a trace of oil, Muskeh was de-
dclared a failure. The drilling alone had cost more
than $1,125,090.
The well was drilled because a long program of
exploration had indicated that the Muskeg antitline
(an inverted saucer-shaped area below the surface)
might contain oil. The antitline was first noted and
mapped by oil geologists in 1917. It was more in-
tensively mapped and geologized at intervals during
1942 and 1944.
The Muskeg antitline is one of several similar
structures reported in the northern foothills. Among
others were Coalmuir, Braza and Stolberg, all of
which have been drilled in recent years by Imperial
or other companies. Coalmuir went down to 12,905
feet; Braza to 11,889 feet; Stolberg to 13,747 feet.
The total cost of drilling these three wells was
$2,073,623, and the only results were some non-
commercial showings of oil and gas.
Lethbridge, Braza and Stolberg, Muskeg is
another dry hole although it cost more than any of
its predecessors. The five partners in the Muskeg
venture share the cost but the operation cannot be
regarded as a total loss because it provided valuable
geological data that will be of use in the future.
These large investments in the search for oil were
undertaken before the Leduc field was established
as a major producer of petroleum. Leduc and other
discoveries have changed the picture but at that
time Canada’s oil supply was in an extremely doubt-
some position. Coupled with a steadily increasing
demand for oil products were the facts that our
domestic production of crude was decreasing and
that the United States, the source of a major part of
our imported oil, might not be able to supply our
requirements.
It is up to Canada to exert every effort to find new
supplies within the boundaries of the Dominion.
Muskeg was one part of that effort. Leduc, which
was successful, was another. If Leduc had proved up
sooner it is likely the “Operation” would have been
ennobled for later exploration particularly because
of the shortages of steel, equipment and technical
personnel, and of the remote area involved. But oil
discoveries are unpredictable, unscheduled and only
follow the patient testing of improved districts.
Even if Muskeg had struck oil the partners would
have been confronted by a multi-million dollar
problem—a problem which emphasizes the invest-
ment the oil industry must make in searching for oil.
To begin with, it would have been necessary to
determine whether there was enough oil in Muskeg
to pay its way out. To get the answer it would have
been necessary to drill from 10 to 15 wells. That
would have cost about $10,000,000, so the No. 3
well revealed, Muskeg is a particularly deep, tough
and costly formation to drill.
Assuming that a field of 20,000 acres had been
proven by the step-out drilling, it is a possible oil
field could be satisfactorily produced by spacing one
well to 200 acres, and bringing in about 100 develop-
improvements. They might be put down, experts believe,
for a total of $60,000,000 with an additional $8,500,000
for camp sites and facilities, auxiliary equipment
and road improvement.
The next aspect of the problem would be the job
of moving the oil out. Truck and rail transportation
would be impractical economically. Pipe line would
be the logical and most economic method.
The oil might be piped 200 miles to Nauka (gather-
ing point for the Leduc field production) where part
of it would flow on to Regina and across the U.S.
border through a pipe line now projected because
of the Leduc and other discoveries. Petroleum econ-
omists estimate that to earn even a small return in
the field it would be necessary to move approximately
10,000 barrels daily to market in this manner.
A pipe line from Muskeg to Nauka would cost ap-
proximately $11,400,000.
On the other hand, if the oil were moved to Verna-
JANUARY 1949
33
This lonely snowcapped trail and a detached well site are the
only remaining evidence of the costly operation left in the
area, but the venture furnished some valuable geological data.
Schools in the Sky

Skilled fliers are being trained through the Royal Canadian Flying Clubs Association

Place or war, Canada needs trained aviators. One way we meet the need is through the training programs of the R.C.A.F. and the air lines. Another way is that particularly useful in peacetime, when many of us can’t give up civilian jobs, is through the Royal Canadian Flying Clubs Association.

After its wartime career with the British Commonwealth Air Training Plan, the Association—consisting of 45 community flying clubs across Canada—has re-established itself on a peacetime basis.

The objectives of the Association are “to stimulate interest in aviation generally, to cause the construction of airports and to provide facilities for the training of flying personnel.”

In the first year after the war, 35 association clubs had re-established themselves sufficiently to resume the flying training of civilians. In that period they flew a total of 30,000 hours. By 1947, the number of clubs had grown to 45 and flew a total of 36,725 hours. Last year the clubs had a further increased membership and flew 25 per cent. more hours than in 1947.

Also during 1948, 224 selected air cadets, members of squadrons sponsored by the Air Cadet League of Canada, received a month’s training at 31 associations clubs. This constituted a concentrated course in aeronautics which included 60 hours ground school instruction in airmanship, navigation, and meteorology. During the course each cadet flew a total of 17 hours.

But the work of the association clubs does not end with flying training. Under their sponsorship, glider pilots were organized into clubs and formed the Soaring Association of Canada. Recently, the Royal Canadian Flying Clubs Association helped model aircraft clubs in many parts of the country to organize the Model Aeronautics Association of Canada and to set up rules and regulations governing their operations.

For more than 21 years clubs of the R.C.F.C.A. have been serving the cause of Canadian aviation. Many of Canada’s achievements in the international sphere of aeronautics have been accomplished by graduates of association clubs. The development of commercial aviation in this country, the success of the British Commonwealth Air Training Plan, and the wartime accomplishments of the R.C.A.F. and the Fleet Air Arm of the R.N. and R.C.N. were all helped by the Association.

The Association began in 1929 when all the community flying clubs organized to co-ordinate their activities. They chose the name Canadian Flying Clubs Association and in 1944, in recognition of their war service, the King authorized the addition of “Royal”.

Backed by its record of achievement the R.C.F.C.A. is today preparing a new generation to handle modern aircraft. In 1947 after a lapse of eight years, the Association revived the Webster Memorial Trophy competitions to select the best amateur pilot in Canada. Flying contests were staged across Canada with the finals held in Ottawa in September, 1947. The winner of the trophy was Charles Wilson of the Aero Club of British Columbia, Vancouver, and the runner-up was a former member of the Women’s Division of the R.C.A.F., Miss Mollie Beal of the Ottawa Flying Club. The 1948 finals were held in Calgary and the winner was J. Blackburn of Edmonton.

The Webster trophy symbolizes the goal of every civilian flying club in Canada. These clubs may be said to have their origins in World War 1, when Canadians proved their skill in the air.

Following the 1918 armistice, because of the large number of trained aviators, Canada had more than enough pilots to meet the demands of commercial aviation as it then existed.

But seven years later, in 1926, the situation had altered. Aviation had forged ahead but the supply of trained pilots in Canada had dwindled. Many who had won “wings” during the 1914-18 war had taken up peacetime callings and nothing had been done to train replacements.

In Great Britain, at that time, a movement had developed known as the “Flying Clubs”. It consisted of a number of “schools” organized as flying clubs for the flying training of civilians. Those clubs were supported by enlightened British citizens and some received government subsidies.

The Canadian government, recognizing the lack of trained pilots, aero engineers and mechanics in this country, also realized that aviation was making such rapid advances that men must be trained at once. The government decided that the best way to meet the situation was to sponsor a plan of organizing community civilian flying clubs in Canada, similar to those in Great Britain.

The organization of these clubs required that the community setting up a club must pledge itself to provide a flying instructor, an air engineer, a licensed airframe and hangar accommodation. In return, the government was prepared to issue each club

Here a pilot instructs and student flyer of the Calgary Flying Club are ready to take-off after the mechanic swivels the “propel”

General school instruction is an important phase of flying training. This instructor is demonstrating the operation of an aero engine

JANUARY • 1949

IMPERIAL OIL REVIEW

34

36
During this period Canadian commercial air lines hired most of the club-trained pilots and some engineers. Trans-Canada Air Lines was formed in 1937 and at least 40 per cent of the pilots engaged at that time and during its early operational years were graduates of community flying clubs.

But one has to turn to the history of World War II to appreciate the full worth of the clubs. The role played by the R.C.P.C.A., both directly and indirectly, in that conflict was a proud one.

During 1938 more than 399 amateur pilots—trained at community flying clubs in Canada—crossed the Atlantic Ocean, some in the holds of cattle boats and some in first-class cabins and joined the R.A.F. Many of them teamed up with pilots who had been similarly trained in the United Kingdom. When war with Germany broke out and the Luftwaffe attacked the British Isles those pilots helped to save the Mother Country.

On this side of the Atlantic and following close on Canada’s declaration of war in September, 1939, the flying clubs through their Association offered their experience, facilities and personnel to the government. The offer was readily accepted and the clubs were given the task of organizing and operating 22 Elementary Flying Training Schools, or E.F.T.S., under the British Commonwealth Air Training Plan.

At these schools airmen of the British Commonwealth were given an eight to 10 weeks’ course in elementary flying instruction, including Link Trainer instruction and some night flying. Upon graduation these airmen were promoted in rank and proceeded to Service Flying Training Schools for instruction in heavier single-engine and twin engine aircraft and advanced flying. Graduation from the E.F.T.S. was followed by further promotion and posting to the operational squadrons throughout the world.

It has been said that had it not been for the flying clubs of Canada the inauguration of the British Commonwealth Air Training Plan would have been delayed for several months, and this at a period when time was vital.

From the spring of 1940 to the late fall of 1944, 41,000 students completed E.F.T.S. training.

On the administrative side these community flying club-operated E.F.T.S.’s also made a noteworthy record. They had been originally financed by the raising of public funds in the community where the club operated. The investors were paid five per cent on their money, but due to efficient management the schools were able to redeem the subscribed capital out of accumulated surplus in 1941.

As a result the agreement with the Crown was re-written. The schools were placed on a non-profit basis and they voluntarily agreed to surrender all of their surplus earnings in excess of $3,000 per annum. This amount was to be retained for the benefit of the sponsoring club at the end of the war.

In recognition of the voluntary surrender of these savings, the Government promised to provide the clubs with certain buildings and equipment which had been set up during the war. These were to be for use in the post-war years.

When the British Commonwealth Air Training Plan ended and the first reimbursement was made it was discovered that the community flying club-operated E.F.T.S.’s had returned to the Crown a total of over $40,000.

The return by individual clubs to postwar time operation has been a gradual process but there were many problems arising from the transition. To aid in the work of rehabilitation, Imperial Oil Ltd. in 1946 presented the Association with a Cosnas Cessna aircraft. The aircraft has been of value in assisting the secretary-manager and officers of the R.C.P.C.A. in maintaining a constant liaison with member clubs.

Recently the government announced that the 1944 $100 grant to the clubs for each association pupil qualifying will be resumed in 1949. Each qualifying pupil will also receive an individual grant of $800 and any qualified male pupil who joins the R.C.A.F. will receive an additional $100. While membership in the clubs at present is high, it is felt that this extra source of revenue will enable the clubs to train a still larger number of pupils and at lower cost to the individual.

In connection with this part of the Association’s post-war work, D. K. Yeovil, M.B.E. of Calgary, president of the R.C.P.C.A. stated recently: “Canada, at this date, has a great number of pilots but many of those who were trained in the last war have already adopted other careers. It will not be long before World War II trained pilots will be too old to serve as combat pilots should another war develop. The Royal Canadian Flying Clubs Association feels that the present is none too soon to turn its attention to the training of a new group of young men whose services could be called upon by commercial aviation or by the R.C.A.F."

"It is felt that if a national emergency were again to arise the Government would wish to call upon the flying clubs to assist in the training program as they did in 1939," Mr. Yeovil stated. "It is important, therefore, that these clubs should not be permitted to pass out of existence.”

Courses held each year at R.C.P.C.A. clubs for selected air cadets have a perfect safety record. Those Ottawa (Kanata) Squadrons air cadets are discussing their training experiences.
Brightening the blackouts

Products of the oil industry help out in the emergency of hydro power shortage

Hence, as the wise man is fond of telling us, after something has happened, has a way of repenting itself. We had a nice example of their trait in recent months. This winter the people of Ontario were turned again to petroleum for light, rather than sit in the dark during the daily interruptions which were a part of the Ontario Hydro-Electric system's battle against the shortage of hydro-electric power.

The power difficulties have more than local significance; first because of the national importance of Ontario's power-starved industry; second because some other areas faced with the threat of similar hydro-electric shortages may benefit from Ontario's experience.

At first, Ontario had some difficulty returning to petroleum because there were spot shortages of candles, lamps and certain types of oil-electric generating equipment. When the first evening power cut was announced in Toronto and the neighboring areas, housewives started the grease and candle stores and by closing time there wasn't a candle to be had for love or money.

One short-sighted gift shop sold all the candles in the place, even the expensive, fancy ones, forgetting to keep any back for use in the store. When the power cut-off came at seven o'clock in the evening the storekeepers had to shut up shop until the power came on again some 40 minutes later. These procrastination diffused from their neighbors' only to that it need not have happened to them. All over town, that first night, stores caught without emergency lighting had to close their doors.

Modern candles are made from paraffin wax, a petroleum derivative, and to meet the sudden demand candle makers extended their working hours and took on additional staff. Candle wax simply and easily sells but it seems to be evident that they do not give enough light for normal evening activities.

It may have been this fact that drawn as many observers to their telephones during the first evening blackouts. The telephone company received a record number of calls during the out and out, and authorities suggested that people might find better things to do with their darkened boxes than to use up telephone switchboards. In any case, the telephone system did not work under darkness on its battery because it was, relieved from the power shortage. This is to say nothing of the shocks which were bared while poring for an insufficient telephone.

The second day of the evening-cut-off saw the runs on oil lamps reach gold rush proportions. Naturally the buyers of oil lamps have a choice of three or four different varieties. There is the old-fashioned lamp with wick and chimney. Then there are the improved types of oil lamps which makes use of a mantle and give a much brighter light.

The week-type can be bought for a little as $1.80—the mantle types begin at around $3.95. Since many people were desperate to buy anything that would give light, prices were to them of little account.

(Photograph of a family gathered around a reading lamp, reading, with the caption: "This theatre's lights used their brightness in the blackest to power output from gasoline driven generators. Emergency lighting equipment was installed in many business buildings.

Electrician Flo Symonds (above) is working on the field of the theatre's gasoline driven generators. A diesel-powered plant is being installed to be ready for future emergencies.)
Some with time to choose preferred the mantle type of lamp despite its higher price. The mantle models give a clear, white light of up to 500 candlepower, roughly equal to a 250 watt electric bulb, and the least of them are rated at 60 candlepower.

There appeared to be some customer preference for the kerosene lamp over the saffran or white gas model, though both types are perfectly safe, a fact which lamp salesmen occasionally demonstrate by light-heartedly throwing them about the salesroom—a practice not generally recommended.

So much for lamps and the ordinary citizen in his home—but the needs of industry, merchants and public buildings could not be met so easily.

Southern Ontario's power problem is aggravated by the fact that it is the only considerable area in the part of the world which still uses 25 cycle current. It is difficult enough to secure 60 cycle generating equipment at short notice, and 25 cycle equipment is even scarcer.

Diedel-operated generators have been installed fairly widely for use in heavy industry and on a more limited scale in smaller applications. This has enabled many plants to return to peak production and still conserve hydro. Diesel oil supplies are not abundant but the situation is better than it was early in 1946.

Foresight by the Maple Leaf Gardens in installing diesel equipment before the power shortage enabled sports and other events to be conducted there on schedule when the emergency developed. Hockey fans across Canada heard the Imperial Oil broadcasts of the games as usual and without interruption.

Most theatres have plans for emergency lighting equipment. The new Odeon, Toronto, installed a 60 kilowatt diesel plant to operate its house lights, signs, and through a rectifier, its projector area. It is expected that the entire Famous Players chain will be equipped with diesel-electric plants.

Many hospitals have diesel or steam plants capable of supplying operating rooms, some elevators, and similar vital points with sufficient electricity to keep them going if they should be subject to sudden power cut-offs. Others rely on separate hydro feeders to supply them. With the hospitals the problem is again that of obtaining 25 cycle generating equipment at short notice.

Some office buildings and hotels are already equipped with steam or diesel-electric plants but most are not so fortunate. Operating elevators is one of the important problems, as anyone who has faced a climb of 10 or so flights has found out for himself. Most elevators operate either on direct current or on 25 cycle alternating current and in either case there is the problem of where to obtain suitable generators.

Some factories are on private feeder lines and by keeping within the power quota set by the Hydro, they managed to carry on without cut-offs. Others, which shared power lines with residential districts subject to cut-offs, simply ceased operations. Despite the power shortages, in season racing fans may be able to watch the horses even at night if the Long Branch track carries out its plans. The track has two 50 kilowatt diesel-electric generators and is entirely independent of the Hydro. The plant delivers so much power that there are plans afoot for night racing by floodlight in the near future.

Merchants were handicapped not only by the actual interruptions in power but also by the power rationing in effect at all times which forced them to reduce their interior and window lighting and cut off their electric signs.

Some establishments found that their sales fell off sharply when they darkened their premises and particularly their windows.

The most practical solution for the smaller merchant's lighting problem during a hydro emergency seems to be the motor-generator set in which the motor is operated either by a bottled gas such as Esatane or by illuminating gas from the mains. One of the firms supplying this equipment installed it in hairdressing parlors, used-car lots, restaurants, taverns, a funeral director's, a bowling alley, and every sort of retail establishment.

By the end of November there were 31 Esatane-fuelled installations in the Toronto area. No further orders for the equipment can be filled because of a shortage of steel.

In all these ways, the oil industry, which lighted the homes of our grandparents, helps in the power shortage to light our buildings, sometimes directly through candles and oil lamps, sometimes by supplying the fuel to operate motor-generator sets. Some of the merchants who have installed their own power plants say they will retain them as stand-by equipment even when unlimited hydro-electric power is again available, so it looks as though oil is back in the light and power business to stay.

Esatane, Imperial's name for propane gas, runs this plant which produces three kilowatts of 60 cycle power to light a Toronto store. Further orders for this equipment cannot be filled because of a shortage of steel cylinders for the gas.
The driller (left) and cathead man (right) are experts in their field. They are shown here during a drilling operation at Black Diamond, Turner Valley, Alta.