The Imperial Oil Review

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IN THIS ISSUE

Petroleum for Posterity ........................................ 3
The Reinstatement Plan ........................................ 7
Tanker Triumph .................................................. 8
Victory Barrels .................................................. 9
Chemical Institute .............................................. 13
G. Harrison Smith Retires ..................................... 15
Communication Centre ......................................... 16
Industrial Council .............................................. 17
Appointments .................................................... 18
Personalities ..................................................... 20
The Helicopter .................................................. 22
Mobile X-Rays .................................................. 23

ON THE COVER...

The Winner—General Honny Duncan Graham Crear, C.B., D.S.O., 57 years of age, was born in Hamilton, Ontario. He is a lifelong soldier, a graduate of Royal Military College, Kingston, and following service throughout World War I was extensively groomed for a top military job by England’s War Colleges and Britain’s General Staff. With many soldiers, he has a considerable reputation as strategist. General Crear, hard-headed and capable, is stern, austere and just. He and General Montgomery are close friends. In July the Canadian commander was admitted to the high British Order of the Companion of Honour.

President, IMPERIAL OIL LIMITED

POSTWAR PLANS

It is generally recognized that a high level of employment is an essential requirement for a prosperous post-war Canada and for the well being of all those participating in the Canadian economy. Three things are considered necessary to obtain this objective: 1. A wide, active domestic market; 2. Large outlays of private and corporate savings to expand industrial plants and to build new plants together with substantial government expenditures on capital equipment such as schools, hospitals, parks, playgrounds, irrigation, reforestation and other public projects; 3. Flushing export and import trades.

Our Company proposes to take its full share in meeting these requirements by pursuing its established policy of continuous improvement of product quality at prices consistent with dependable service and wage levels. Large projects for plant improvement and technological developments requiring heavy capital expenditures already are underway. Operations in South America appear capable of further expansion and we trust these will play a part in maintaining active foreign trade.

Care for the welfare of the employee is not only right but is in the interests of Company, shareholders and public alike. Those problems of fullest possible post-war employment have been under the most serious consideration over a long period of time. On page 7 of this issue of the Review is an outline of the Reinstatement Plan of the Company—a plan designed to show the Company’s appreciation of the sacrifices made by its employees who enlisted in the Armed Forces.

The Canadian government has indicated that while it proposes to take extensive measures to ensure post-war prosperity it still considers that a great part of the effort must be made by business itself—that is by producers, labor, management and investors.

These, working together in a spirit of good-will engendered by mutual regard for each other duties and rights, can accomplish a great part of the task of post-war reconstruction and rehabilitation. I believe our shareholders, management and workers are all aware of this and will do their full share to maintain a prosperous Canada through and beyond this challenging period of readjustment.

Teacher, IMPERIAL OIL LIMITED
THE FALLACY OF PROPHECY

In 1914 an eminent authority estimated that the U.S. had 6 billion barrels of oil left.

But between 1915 and 1944 the States produced 25.6 billion barrels.

In 1921 an eminent authority estimated that the U.S. had 9 billion barrels of oil left.

But between 1922 and 1944 the States produced 23 billion barrels.

In 1925 an eminent authority estimated that the U.S. had 5 billion barrels of oil left.

But between 1926 and 1944 the States produced 20.23 billion barrels.

In 1934 an eminent authority estimated that the U.S. had 1.5 billion barrels of oil left.

This is practically gone for between 1935 and 1944 the States produced 12.25 billion barrels.

(Canada's proven reserves are estimated at 33.5 million barrels. The total world proven reserves are estimated at 517.5 million barrels.)

BUT Today, in the U.S.A. there are 20 billion barrels of PROVEN reserves

PE TROLEUM FOR POSTERITY

IT MAY be somewhat difficult to realize that a substance which enters so vitally into practically every phase of human existence and enterprise was an unknown quantity in the boyhood of nonagenarians who are still more or less spry.

For the first well was drilled for petroleum in 1859 and, in these past eighty-six years, there has been an ever-growing stream of this precious fluid persistently finding its way into every ramifications of modern civilization. Industry depends on it; transportation relies on it; science has harnessed it to many varied, though sometimes obscure uses and, as a climax, it has been a determining factor in the greatest Armageddon of history.

It is not our purpose, at this time, to trace the development of the oil industry from the cradle, but rather to endeavour to estimate how far it has travelled along the road to the grave, for petroleum is a wasting commodity and man has already utilized some 18 billion barrels for his convenience and comfort.

Broadly speaking oil is recovered only from sedimentary rocks and the areas of the earth's surface which comprise this type of strata are relatively well known. Tracing back the antecedents of these sedimentaries, it is possible, from fossil and lithological evidence, to determine which beds were deposited coincidently and under comparable climatic conditions and, if these conditions were conducive to the formation of oil and gas deposits in one instance, it is logical to assume that Mother Nature ruled to a pattern and that the miracle of petroleum was not entirely promiscuous.

All sedimentary rocks are not petroliferous and, perhaps merely to emphasize nature's feminine premonitory, strata which produce oil at one locality may be barren at a location not very far removed; that is why we speak of the "search" for oil. This search has resulted in the drilling of many thousands of wells, some of which produced lavishly, some moderately and some not at all.

After eighty years of oil hunting, now extended over the four divisions of the globe, the oil geologists and engineers have, from these basic considerations, established a yard-stick by which to measure the ultimate world-wide yield of petroleum. They assume that a specified minimum percentage of all sedimentary rocks will be oil-bearing; they assume that a certain proportion of all wells will be productive and they assume an average rate of recovery from every successful well. Add these assumptions together, allow a margin for error and you have an estimate of the oil reserves of the world, which may be broken down into countries, fields, or even individual properties.

That this is no mere crystal gazing or wishful thinking is evidenced by the fact that a company developing a particular field, can with great certainty arrive at an estimate of its ultimate production and predicate its operations accordingly.

The application of this formula to world-wide oil reserves should do much to allay the doubts and fears...
Oil is found in many places—in the path of old glaciers, in the beds of productive seas and, as seen, below the surface of a lake. Photograph shows the field in Western Venezuela, where deposits are cut out far out in Lake Maracaibo.

of those who are perhaps influenced by prophets of gloom who forecast the early demise of the petroleum industry from malnutrition. These harbingers of woe, like the poor, are always with us, but past experience has demonstrated that it only requires a very definite improvement as to the life-span of our oil reserves, to have some new field come roaring in to confound the experts and, in most cases, the greatest of the population of the authority, the more optimistic has been the refutation of his premises. It has to be remembered, however, that petroleum technology is a progressive science which has made tremendous advances in the past twenty years and many things which are commonplace to the oil economist of today, were but seen through a glass darkly by the seers of yesterday.

What Are “Reserves”?  

It may be desirable to arrive at an understanding of what the word “reserve” actually implies and the usual acceptance is to refer it to oil in the ground which is recoverable by present known methods of drilling and recovery together with oil in storage. The word is usually qualified by the adjectives “proven,” “semi-proven” or “probable.” Proven reserves are those contained in areas where intensive drilling has demonstrated the presence and capabilities of certain well-defined producing horizons and where relatively uniform geologic conditions indicate the extent of the pool. Semi-proven reserves would include areas under development or where it is not yet known whether or not oil exists. Probable reserves would be considered in areas where, by one method or another, the sub-surface geology has been interpreted as being analogous to productive areas not too far distant.

Connecting a section of the drilling apparatus. Speedily these sondes are added to the depth of the well increases.

Turning to the United States, the most drilled country in the world, for an illustration of this reserve theory in practice, we find that the American Petroleum Institute (A.P.I.), estimated U.S. proved oil reserves as amounting to 20,453,541,000 barrels at the close of 1944, an increase of slightly more than 390 million barrels over the previous year. Of this increase roughly 1.5 billion barrels was provided by the extension of producing pools and redivision of previously undeveloped areas. Two billion was represented by new discoveries. In the same period, 1,078,421,000 barrels was withdrawn from reserves, that being the U.S. 1944 production, leaving the net gain as stated.

The United States then has a proven reserve of approximately two and a half years production at its present level but, in the last five years, these reserves have not been appreciated at the same rate as they were in the decade immediately preceding fortunately and the State reserve position is not considered seriously endangered. The reason is not so much a lack of oil, as a lack of men and material to find it for, during the war years, exploratory drilling has been drastically curtailed. Despite this, in 1944, with the discovery of oil in Alabama, twenty-six of the forty-eight States were oil-producing, and Louisiana and Mississippi, which are relatively new producers, led in the discovery column.

The Crucial Test  
The States’ provable reserves are contained in many areas and localities “where every prospect pleases” and only the opportunity to develop is awaited. Geologists or geophysicists may have been over the ground; oil-drilling may have been done; the presence and attitude of all blessing strata may be a demonstrable fact, but the crucial test of the drill has still to be faced and, pending that, they cannot be considered first line reserves, although their probable value should not be discounted. The A.P.I. cautiously states that “oil that may be present in unknown prospects in regions believed to be generally favorable” and those would constitute “prospective” reserves. Sedimentary rocks cover about 900 million acres of the States’ surface and very many of these acres are still unsearched in the oil search. When conditions permit a renewal of drilling on a nation-wide scale, such prospects will not be allowed to lie fallow and although dry holes may be numerous, the oil industry has more successes than failures to its credit and will track the elusive oil to its ultimate source.

We can add to those prospective reserves the oil that will accrue from the application of secondary methods of recovery in fields where such methods have not yet been practiced; greater efficiency in these secondary methods will mean of a large percentage being taken from the sands, and from improved techniques which will enable deeper drilling a more profitable venture.

A further U.S. reserve is Alaska, where oil has only been discovered in a few localities and a considerable area of sediments extends to strike as yet unexplored. In this region, 2,000,000 square miles (a 50 mile side) a 50 mile side by one mile deep area, was assumed of world leadership for many years to come.

Oil in Plentiful  

This picture of the United States finds a replica in practically every oil producing country in the world. In all of these development has been retarded and exploratory drilling restricted by war conditions and military operations. For many years all these reserves have accumulated, usually by the extension of proven fields and few large new pools have been discovered. In every producing country, exploration has been confined to areas which have not yet entered that charred circle, those areas of sedimentary origins, more or less vast, which, merely a few years back, were wilderness to the frontiersman, but today are forests of petroleum wells. We wish it were possible to present an analysis of the present situation in each of these countries and in each we are assured of a reserve of approximately 30 million barrels in the North West Territories.

The Dominion’s latest reserves also include the Athabaska tar sands, from which the extraction and utilization of oil (as well as a few other substances) is now commercially possible. Recognized as one of the greatest surface manifestations of petroleum in the world, the ultimate yield from this source is meanwhile a matter of speculation, on which experimental operations will presumably supply an answer.

The area covered by sedimentary oils in the Eastern Mediterranean is more than double that of the Western counterpart. Fast sections of the Soviet Union have yet to come within the purview of the oil-seeker and, as Spain controls area west of the other side of the world, she should assuredly play an important role in the oil economy of the future.

The Near East  
The basic areas of the Near East consist of the O.C.R. (the oil containing region) and the exploratory wells already drilled constitute their productivity. (Continued on page 53)
THE REINSTATEMENT PLAN

Reinstatement of war veterans on a basis that goes beyond legal requirements and ensures that returning employees will receive every possible advantage from their services in the armed forces, was announced by R. V. LeSueur, president, at the annual general meeting of Imperial Oil shareholders. Nearly 2,000 of the Company’s 11,000 employees in Canada are affected.

Expressing the company’s appreciation of sacrifices made by personnel who joined the services, Mr. LeSueur said that while the company had given each enlisting worker, who at the outbreak of war had one or more years of service a bonus of a month’s pay and had continuously made up the difference between service pay and the rate of earnings at enlistment, the company must further demonstrate its faith in the future, and its appreciation of the sacrifices made by a broad, sympathetic and helpful policy towards those returning to civilian occupation.

The five main points of this program deal with (1) reinstatement; (2) rehabilitation of those physically handicapped; (3) readjustment training and educational opportunities where necessary or desired; (4) retention as far as possible of employees, engaged during the war, and (5) provision for other post-war employment, particularly for young people who left school to join the forces.

A booklet describing the plan is being distributed to company personnel who have been or are in the services and to the company management for guidance. Personnel officers of the company will assist all Imperial Oil veterans in their adjustment to civilian work and in their understanding of the benefits provided under the government program for the rehabilitation of veterans.

It was pointed out that the serviceman who can resume his former job, with accrued service credits and promotions, presents no great problem. For others who have acquired special training, trades or education in the services and especially those temporarily or permanently incapacitated, each case will be handled on its individual merits with a view to making the most beneficial provision for the veteran.

One of the clauses of the reinstatement plan provides that within two months of reinstatement all veterans should be interviewed and their reactions to their new positions obtained. Where adjustment is exceptionally difficult, more training or transfer will be carefully considered and it may be necessary even to make several transfers in certain cases.

Mr. LeSueur said that Imperial Oil’s reinstatement plan has social and economic significance in that it harmonizes with the general status and responsibility of business in the life of the community and country. This, he said, could be expected from a company where over half the employees are shareholders and one which, in its 64-year history, never has had a strike or other serious labor conflict.

SEEEN AT THE ANNUAL MEETING

Top left—J. A. Kev, ranked by Henry Hewson, Vice-president of Imperial Oil and Vice-president of C. A. Evans, calls the Annual Meeting.

Top right—Chairman and President of Imperial Oil Limited, R. V. LeSueur, shakes hands with Dave Rapp, veteran employee. Standing at Mr. LeSueur’s left is Henry Hewson.

Center—R. V. LeSueur, E. E. Daughnese, Dean Bradley, General Superintendent of Service Refinery, and Imperial Oil’s new Director F. C. Mechin examine a new wash fountain.

Lower left—F. C. Mechin chats with Harold “Slim” Jackson, machine shop. Mechin has direct charge of Personnel Relations, one of the most important departments in post-war plans.

Lower right—In the tour of the refinery, President LeSueur meets as many members of the staff as possible. Here he is talking to Wallace Johnson. On the left is E. E. Daughnese.

THE Annual Report showed that Imperial Oil’s profit for 1944 was $16,192,870 or 60.05 cents per share. The total assets of the Company were $189,799,967 and the working capital $74,702,544. This strong liquid position provides for rehabilitations change-over to peace and the Company’s various development programmes. For its petroleum products in 1944 the Company received from its customers an average price of just over 13 cents per gallon. Of this raw materials took 7 cents, manufacture processing 3·1 cents, freight 1·7 cents, distributing and selling just over 1 cent and taxes 1·17 cents. The average cost per gallon to the Company was 12·34 cents and the average profit, 78 cents—or just under 34 of a cent per gallon.
PETROLEUM PRODUCTS PLAYED A VITAL PART IN THE VICTORY OVER GERMANY AND MILLIONS OF BARRELS WERE INDISPENSABLE IN MAINTAINING SUPPLIES TO FIGHTING UNITS ALL OVER THE WORLD.

ON Thursday, February 22, of this year the drum manufacturing department at Sarnia refinery finished its two-millionth oil barrel.

In the oil industry men are sentimental about things like that. The war was gaining momentum toward a victorious climax in Europe and there was no time to celebrate the occasion. However, the two millionth barrel did not roll down the "finished" ramp to be filled in the barrel house with other drums. It was duly marked and set beside another barrel turned out in August 1940 that was the millionth since the present steel drum manufacturing plant went into operation on May 29, 1944.

That night a few old timers like Jim Fleet, who has been with the company for some forty years and is foreman of the barrel wash department at No. 2 refinery, walked round by the old barrel wash plant just to look at a time-darkened, wooden-staved hopper that hangs from the corner. That was the first oil barrel made in Sarnia, way back in 1899.

Oil barrels are important. Oil and grease and gasoline have kept the machines of war moving for more than five years and the wheels of industry turning at stepped-up speed at home. Barrels—drums and kegs—are the containers in which these and a number of essential petroleum products are shipped. It takes a lot of them to keep things going.

Demand exceeds supply

Even with severe limitations imposed by war shortages and standardization that have cut the number of container types used by Imperial from 502 in 1938 to 104 types today, the plant still is turning out 11 different types of drums, each one painted a distinctive color combination to indicate its quality and contents.

Of course the plant could have made far more than a million oil barrels between August 1940 and February 1945, but the acute steel shortage and consequent government quotas have limited production greatly. The plant has a capacity varying from 325 to 1200 barrels a day according to the type, size and weight. Lighter weight steel is used than before the war.

Even the intensive campaign conducted by the Marketing Department through district and resident managers, agents and radio broadcasters to get customers to return drums for refilling as speedily as possible was not enough to keep up with demand, so the refinery decided to mark the millionth barrel.

In addition to trained crew members, many tankers and merchant ships were supplied with selected gus-crews from the 'navies.' These ratings are thusing a new type Hotchkiss.
possible has not kept the reconditioning department supplied with enough old drums to meet the demand. A few of the oldest barrels, made of heavy black steel, have been in service for more than 20 years, but for the most part until war shortages developed, it was considered more economical to discard severely damaged drums than to recondition them. Today a serious situation exists as a result of the drum shortage.

Back in the old days of wooden barrels, the Sarnia barrel yard where empties are brought in by boat, rail and truck, often was stocked with 40, or 50 thousand barrels, waiting their turn to be filled. Today this storage lot at the north end of the plant is almost empty.

Reconditioning

Reconditioning of a bent and battered oil barrel is an operation worth watching. After being tested for possible explosive gas residues the used drums are examined for leaks with compressed air and soapy water. Leaks are marked with white paint to guide steamers and welders later on. Drums that have contained heavy, viscous oil are pro-streamed and all are put through the Peroro cleaning unit. This, in operation for a year and a half, is an amazing machine that removes every vestige of dirt and oil with a high pressure stream of cold water followed by a caustic soda bath and switches on an electric light to signal completion of the operation. Rust is removed by a barrel tumbling machine and then the drum is turned over to the welders, a majority of whom are women, who mend the leaks. Most wonderful of all is the destoning machine that removes crimps, bends, dents and even accordian folds of damage by application of air and water pressure to the inside of the barrel. Many tests are made to make sure the barrels now are leak-proof before they are sent aloft to be painted and turned out looking fresh as new.

Construction of a modern steel oil drum is an impressive job. Forty-five gallon and 10 gallon drums, 100 lb. grease drums and headless asphalt drums, these last, lime coated on the inside, are made at Sarnia. Steel for the barrels arrives at the plant in sheets cut to the approximate size. This is sheared off in a machine to exact size of the container required. Then it is rolled into the shape of a barrel, and passed on to men and girls for welding of the seams. A flange machine turns and rolls the edges, top and bottom, and another called an "expander" puts two grooves into the barrel near each end to give it rigidity and make two rolling hoops to facilitate handling.

Meanwhile the barrel heads are being cut and embossed with the words "Property of Imperial Oil Limited" and flanges with screw tops for filling are inserted. After the heads are attached by another machine, the barrels are water tested for leaks and rewedged if any have developed in the seams by the various operations. Then they go upstair for painting. Some of them are to be shipped to other refineries and may be stored for some time before filling are "fogged" on the inside by an ingenious nozzle machine rigged up by Fred Lapham who is in charge of barrel construction. This coats the inside of the barrel with a thin film of oil to prevent rust.

Paint work

Not so long ago oil barrels were painted at the plant with two twelve-inch brushes tapped together. Three hand revolutions painted the drum. Now the

A BARREL IS BORN

Steel is run through one of the shearing machines in the plant. Steel used is a high grade product which must stand rough handling.

Cut to exact length the ends are joined by welding. When completed the barrel appears to be seamless and is stronger at the join than at any other surface point.

In this machine steel ridges are formed in the casing of the barrel. This adds 50 percent to its durability and considerably to its appearance.

Barrels, packed tight in small open freight cars, being emptied at an Australian airforce base field fueling trucks. These barrels hold 35 imperial gallons and it takes from ten to 30 of them to fill the tanks of a fighter or bombing plane.

Most work on barrels is by machine. Here more ridges are incorporated into the surface of the barrel. Safety screens protect workers from moving parts.

The barrel in this photograph is numbered 1,000,000. Since this picture was taken in the second year of the war another million barrels have been made in Sarnia plant.

A gigantic press for stamping out and plates for barrels. When the barrel is painted, these will bear the Company's insignia.
job is done with astonishing speed with spray guns as a machine turns the barrel. Galvanized drums with a bright red band are for naptha. Blue distinguishes kerosene and other refining oils. Black with yellow ends or "chamois heads" are for lubricating and industrial oils. Contracts with customers demand that certain products be designated by certain colors. These, of course, are wartime conservation colors. Final step in the job is the stencilling which is done neatly and quickly by women workers, who letter appropriate legends on the barrel heads with paint gun and stencil.

Then the finished barrels roll down the ramp and are taken to the barrel house where Mayor W. C. Hipple of Stirling is the foreman in charge of filling operations. Post war plans for conveyors and present impressive meter fillers which control predetermined gallowage are a story in themselves. More than 100 tanks on the roof of the building store the products with which the barrels are filled.

Barrels for solid asphalt are simpler. They need only one bead because the asphalt which is poured in at a high temperature cools, solidifies, is "topped" and shipped in a solid cylinder. When ready for use, H. A. Macdonald, day foreman at the asphalt plant, explained, the seam of the drum is split and the lime-coated metal is peeled away like the skin of an orange.

This is a story about barrels and there really is no place in it to describe a machine operated by girls that will fill 92 one-quarter food style cans per minute with motor oil. However, barrels comprise only II of the 104 types of package now being filled at Barmia which will increase in number as soon as war restrictions permit.

From all of which it will be clear that the package supervisors, Col. Sam Stalcy, and Clyde E. Paton along with foreman Robert E. Laws, have no small job on their hands every day.

Barrels, drums and other containers total 104 types. They are all alike and many different shapes according to the kind of product they are destined to transport. Packaging is costly.

THE CHEMICAL INSTITUTE OF CANADA
L'INSTITUT DE CHIMIE DU CANADA

WRITING of the First Annual Meeting of the Chemical Institute of Canada, held in Quebec early in June, the authoritative publication CANADIAN CHEMISTRY AND PROCESS ENGINEERS 1943: "Every country or group has the same kind of assets, namely materials, labour, money and ideas. They may have them in varying amounts and qualities; but the advancement with which they apply their resources in scientific balance has much to do with the resultant national economy and the welfare of the individual."

How science is to be applied to the resources of Canada and its postwar problems was the concern of the several hundred members of the Chemical Institute who assembled at the Chateau Frontenac. Out of the deliberations came some improvements in techniques of research, new methods and interchanges of ideas that will tend to promote both national economy and individual welfare.

In the Letters Patent issued by the Under Secretary of State to the Institute the following are listed as the principal aims of the society: ... (ii) To maintain all branches of the Professions of Chemistry or of Chemical Engineering in their proper status among other learned and scientific professionals;... (iv) To promote the public by gathering together a body of Chemists and Chemical Engineers who may be consulted with confidence;... (v) To look after and promote the well-being and interests of Chemists and Chemical Engineers by having registration bureaux, social centers, employment bureaux, secretaries and mediums for the acquisition and interchange of scientific experience and knowledge, clearing houses of Chemical Engineering knowledge, including libraries and bureaux, and other means;... (vii) To petition Parliament in the interest of Chemists and Chemical Engineers.

The Chemical Institute of Canada, whose First Annual Meeting has been concluded so successfully, is an outgrowth and development of the old Society of Chemical Industry formed in 1842, the Canadian Institute of Chemistry and the Canadian Chemical Association, organized respectively in 1921 and 1936. A year ago, members of those three important bodies voted overwhelmingly to unite in one single group to serve better the interests of all chemists and chemical engineers in Canada, the January lst, 1943, the new Chemical Institute of Canada was in operation.

Membership is open to all persons interested in any branch of chemistry of chemical engineering, with the proper qualifications, non-professional or student status. Grades in these classes vary according to attainment or degree of participation desired by the member. The professional classes of membership are open to students, professional members and fellows; the non-professional class includes affiliates and co-operating members. Fees are graduated according to status and grade—freen students at $2 per year to the maximum $10 per year for top grading.

In Quebec City

After two days of conferences during which more than thirty papers on technical subjects were given, the Chemical Institute of Canada closed its proceedings in Quebec with a research Symposium on Wednesday, June 8th, 1943. In this Symposium, sponsored by Imperial Oil, ten additional papers were delivered, including those of the guest speaker, Mr. E. T. Balderston, treasurer of the American Chemical Society and Mr. R. V. LeSueur, president, Imperial Oil Limited, who was host to the delegates attending the conference.

Among the speakers of the Symposium were—
Dr. H. B. Spalding (Chairman), Ontario Research Foundation; Dr. Alexander King, British Commonwealth Scientific Mission; Dr. C. I. Macdonald, National Research Council; Dr. J. M. Sweeney, Dominion Department of Agriculture; Dr. E. G. Strobel, Chief Research Chemist, Imperial Oil Limited; Dr. D. L. Thomas, McGill University; Dr. Harold G. Fox, K.C., President Council, whose paper was read by Mr. W. W. Rutherford.

In the course of his remarks Mr. LeSueur said: "Industry has a very great interest in research, not only in its own research departments and laboratories, but I think Industry must go beyond that and should give its support and encouragement to fundamental research, especially to university. As Dean Macdonald said, the government bodies, Federal and Provincial, have a big burden to carry and will have for many years, and I doubt if they will ever be relieved of it. Our universities, as Professor Thomson said, are performing two functions. (Continued on page 12)
G. HARRISON SMITH RETIRES

G. HARRISON SMITH, for nearly half a century a leading figure in the world petroleum industry, has retired as chairman of the Board of Imperial Oil Limited.

In 1889, when he had finished public and high school in his birthplace, Brooklyn, Harry Smith began work as a five-dollar-a-week office boy with the Standard Oil Company, New York. Later he became shipping clerk and at the end of his twenty-first year, a bookkeeper at nine dollars a week. Then he went to Mr. Pratt, head of the company, to tell him that he wished to be a bookkeeper or a Broadway cable car man but never a bookkeeper for the rest of his life.

This, with Harry Smith's record, registered with Mr. Pratt and the ambitious young man was given a chance in the export sales department. At thirty-one, he was head of the department for Standard Oil, New Jersey, vice-president of the West India Oil Company and of the Standard Oil Company of Brazil.

In 1934, Mr. Smith came to Toronto as vice-president of Imperial Oil Limited. He headed inter-continental Petroleum, first as vice-president in 1939, then as president from 1937. In 1939 he became president of Imperial Oil. In the meantime, he had been called to the directorate of the Royal Bank of Canada, and Standard Oil, New Jersey.

Last year he became chairman of the Board of both Imperial Oil and International Petroleum.

During the farewell ceremonies to Mr. Smith, Eugene Robson, president of Standard Oil, (N.J.), gave some figures to illustrate the progress of Imperial Oil. When Mr. Smith took over in 1914, the company and its subsidiaries had no production; in 1944 they produced 100,000 barrels of crude oil daily. The refinery runs at that time were 5000 barrels a day; in 1944 they were 155,000. In 1914, there were one refinery and in 1944 there were nine. The number of employees increased from 3000 to 35,000, working in Canada and South America. During this period, Imperial Oil's fleet of tankers increased in number from four to a total of 55,250 dead weight tons, to eighteen tankers of 52,000 dead weight tons.

Gifford Harrison Smith is a big man—a solid six-foot with a capable and taciturn mind. A colleague says of him: "Harry . . . has the ability to select, lead and inspire other men. He has tremendous mental and physical strength; I have never known him to be tired." Another associate writes: "Because of his size he never became widely known to employees but any who had the good fortune to meet him would remember Mr. Smith as a man who combined great vigor with leonine, swift thinking and a genuine—although sometimes almost a whimsical—aptitude for life."

Mr. Smith is a member of the Board of the Canadian Geographic Society and is an authority on birds. As a sportsman he has played a fair game of golf, and is a notable breeder and racer of fine horses. For a time Mr. Smith was an active philatelist and gathered an extensive collection of the postage stamps of the world. In his home he has a select group of paintings and two Dutch masters hung in his office atop 56 Church Street. In these close years, Mr. Smith has given up the same kind of enthusiasm and energy that he has exhibited throughout his business life.

Into retirement Mr. Smith carries with him the high esteem of all who worked with him and furnished once again an example of how energy, judgement and common-sense can succeed in the most democratic of all industries.
DEPENDENCE ON INDUSTRIAL COUNCILS

IN AN address to members of the Industrial Council of the Ontario Marketing Division recently R. V. Lefthour, president of Imperial Oil, outlined the Company's policies on employee-management relations as developed through Industrial Councils and set forth four essential requirements for their continued success. The President pointed out that Industrial Councils were established in Imperial Oil Limited over a quarter of a century ago with two main objectives: one a human objective and the other a financial.

The human objective is the provision of all possible social and economic advantages for the employees, an objective which necessarily is in the minds of all executives who have a proper sense of their responsibilities. More specifically these advantages are adequate wages, good working conditions, and the fostering of the employees' happiness and contentment through welfare plans etc. The utilization objective is the maximization of the company in a sound position. Good employee relations are good business, and good business requires a sound financial condition. A company must be financially strong to provide for its employees and to care for the interests of its shareholders and customers.

Mr. Lefthour said: "A large part of the progress and efficient operation of Imperial Oil is due to the co-operation of employees and management through our Industrial Councils."

R. V. Lefthour: "A large part of the progress and efficient operation of Imperial Oil is due to the co-operation of employees and management through our Industrial Councils."

The four principles which Mr. Lefthour and should govern the Councils in discharging their duties and which continue and expand the accepted operation of the Councils are:

1. Proper Representation.

Delegates elected to a Council should be completely and continually in touch with the employees they represent.

2. Full Expression.

Elected delegates should never hesitate to express fully the thoughts, ideas and wishes of the employees they represent. Fear and doubt should not hinder the presentation of a subject for discussion or prevent full disclosure of all phases of a subject under discussion.

3. All the Facts.

Elected and selected delegates should ensure that all the facts bearing on a subject are brought before them, if necessary by means of committees appointed by them or such means as may be indicated. It is elementary that decisions based on a partial knowledge of the pertinent facts are seldom sound. A little more time for ascertaining all the facts before attempting to reach a conclusion will almost always prove to be time well spent.


When all the facts have been obtained these should be evaluated by a reasonable, co-operative approach without personal bias, and a decision based on full consideration of all the facts should be reached. In this way good judgment and reason will produce the best possible results and ensure a full measure of all the advantages that the Industrial Councils can provide.

COMMUNICATION CENTRE

OVER THE DECK OF A BEAR POTTER FLOW THE
cabled reports and instructions that link
IMPERIAL OIL LIMITED INTO ONE UNIT OF SERVICE
to the public.

MABEL POTTER has a job that reaches out to
d far corners of the world. She is working the

Mabel Potter. For 23 years Miss Potter has been the
importance of the cable she is using. "We live in a

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APPOINTMENTS TO THE BOARD, SUMMER, 1945

DR. OLIVER BAKER HOPKINS

Director of Imperial Oil Limited

Dr. Oliver Baker Hopkins, who was appointed a Vice-President of Imperial Oil in 1944 was born in Virginia fifty-eight years ago. The new Director received his University education at Johns Hopkins, obtaining his Bachelor of Arts degree in 1908 and his degree of Ph. D. in 1912. For many years he was a state and federal geologist and member of the United States Geological Survey. He joined Imperial Oil in 1919 at the beginning of its exploratory operations in Alberta and the Northwest Territories and was in charge of a geological party operating from the Athabaska to the Peace River. In 1920 he went to Colombia to evaluate the DelAreo area which was subsequently acquired by International Petroleum, and on his return to Canada in 1921 was appointed chief geologist of Imperial Oil. In 1938 Dr. Hopkins was elected to the directorate of International Petroleum Ltd. In his occasional spare time Dr. Hopkins is a great golfer and is fond, too, of shooting and hunting.

FREDERICK C. MECHIN

Director of Imperial Oil Limited

Frederick C. Mechin is a native of Claremont, Ontario. After five years experience in surveying, accounting and teaching he entered the class of Engineering and Applied Science at the University of Toronto in 1910, graduating with honours four years later. Joining Imperial Oil in 1916, he was Assistant Engineer during the construction of Montreal Refinery and Engineer-in-charge of the construction of Halifax Refinery. During World War I Mr. Mechin served overseas as assistant civil engineer to the British Admiralty, being concerned with oil pipe line work. Returning, Mr. Mechin went back to Halifax for the reconstruction of the plant, and then to Montreal to take charge of Montreal East, a post he held until coming to Toronto in September, 1944, to become Assistant to the President on Employee Relations. During World War II, he has been Consultant on Petroleum and Director for Protection of Petroleum Reserves. Now, his considerable experience will be devoted to questions concerning management and the 12,000 members of the Company.

CECIL E. CARSON

Director of Imperial Oil Limited

Cecil E. Carson was born and brought up in the city of Montreal. There he received his early education and from McGill University earned his degree, in 1922, as Bachelor of Science in Chemical Engineering. A year after graduation he joined Montreal East Refinery of Imperial Oil as laboratory assistant. His capabilities soon were demonstrated and in 1929 he was appointed assistant to the refinery superintendent. Four years later Mr. Carson went to Western Canada to take charge of Imperial’s refinery at Regina. He next step was to the contiguously expanding operations in Sarnia where, from 1934 to 1944, he was general superintendent. Last year he became general manager of Imperial refineries from coast-to-coast in the Dominion of Canada. In view of the Company’s plans for greatly increased activities, concerning general manufacturing expansion in the time immediately ahead, Mr. Carson’s appointment to the Board of Directors followed logically.

JOHN RIGSBY WHITE

Director of Imperial Oil Limited

John Rigsby White, comes from London, Ontario, birthplace of Imperial Oil, where he attended public and high school. At the University of Toronto he took part in many sports, particularly rugby, and graduated as a Bachelor of Applied Science in 1931. He joined Imperial Oil Limited, Sarnia, in 1933 as draughtsman and engineer. Four years later he was assigned to Standard Oil, New Jersey, for special studies and training. In 1938 Mr. White was transferred to Standard Oil of Venezuela, where he worked in various capacities and became vice-president and director of that company in 1942. Two years later he returned to Standard Oil, New Jersey, to join the production department and shortly after, in July 1944, was appointed economic co-ordinator of Imperial Oil with headquarters in Toronto. Imperial’s youngest director plays golf, badminton and takes part in other sports.
PERSONALITIES

L. T. MacNaughton Appointed Superintendent at Ioco
Formerly assistant manager at Montreal Refinery, L. T. MacNaughton has been appointed superintendent of Ioco Refinery. Born in Mitchell, Ontario, "Leo" MacNaughton received his public and secondary school education in London, Ontario. From the University of Toronto he graduated as a Bachelor of Applied Science in Mechanical Engineering in 1921. He joined Imperial Oil Limited in 1922 and his entire business career has been spent with the Company. In 1929 he was transferred to Colombia as refinery engineer at Barranquilla. In 1935 he returned to Canada as assistant manager at Montreal Refinery. In 1937 Mr. MacNaughton returned to Canada as assistant manager at Montreal Refinery.

H. M. Powell Appointed Manager of Newfoundland Division
Effective June 1, Mr. H. M. Powell, who for some time has been special representative of General Sales Department in Ottawa, becomes Manager, Newfoundland Division, with headquarters in St. John's, N.S.
Mr. Powell joined the Company in Halifax in 1907, and five years later moved to the Montreal office. In 1917 he became Chief Clerk of the combined Eastern and Western Ontario Divisions. Following terms at Regina and Hamilton he was transferred to the Quebec Division and held the position of Co-Ordinator until early in the war.
Mr. A. T. Roblin takes over Mr. Powell's post at Ottawa.

Professor R. P. Frey Joins Imperial Oil Ltd.
Professor R. P. Frey, for many years with the agricultural engineering department of the University of Saskatchewan, has joined the Company and will be responsible for propagating and making available to farmers information that will aid them in their operations. Throughout his career as an educator, Professor Frey, by means of the university, the press and radio, had contributed materially to the welfare of western farmers. He is commanding officer of No. 6 (R) Infantry Brigade Workshop, R.C.E.M.E. Professor Frey takes a prominent part in the religious life in his community and is an elder of Knox United Church, Saskatoon.

T. H. Longley Presented with 40-Year Service Button
Mr. Longley was born in Sarnia and educated in Sarnia public school. His first job in 1905 was as boy in the Bollermakers Department at Sarnia Refinery, where later he became a straucher. On the early days of the Refinery before the first World War, Mr. Longley is a first-hand authority and has many tales of interest to tell. He was transferred to Ioco on the West Coast in 1914 as Bollermaker Foreman, a position which he still holds. Mr. Longley cultivates about 6 acres of land at his home near the refinery, grows vegetables for his own table and devotes much of his spare time to hunting.

IN THE NEWS

C. G. Chivers Presented with 40-Year Service Button
Mr. Chivers was born in St. Thomas, Ontario and received his education at the public school of Wyoming in the same province. From school in 1905 he started as Bollermakers' helper at the Sarnia Refinery, later being transferred to the Task Car Building Department. He has had very general experience as a candlemaker, electrician and pipetter. In 1915 he was transferred to Ioco, British Columbia, and for 25 years was Foreman Treater at the Refinery and for the past 7 years has been operator at Continous Naphtha Treating Plant and Clay Plant. Outside his work and home, his interests centre around lawn bowling and fishing.

John Kirby Presented with 40-Year Service Button
John Kirby was born in Yorkshire, England, in 1890 and came to Sarnia in 1922. His father operated a wholesale and retail oil business and after leaving school, Mr. Kirby joined him in this enterprise. He claims that they bought the first barrel of oil produced at the Sarnia Refinery. He joined Imperial Oil in 1908, but a few years passed before he was occupied on full-time work. Mr. Kirby is a great baseball enthusiast and has managed several local teams in which many young players have been developed. He was superannuated in April of this year and was the first accountant to receive a cheque from Flower and Pension Fund Society.

R. M. Fidgeon Presented with 40-Year Service Button
Roy Fidgeon was born at St. John, N.B. and educated in the public and high schools there. In 1905 he joined Imperial Oil's Lubricating Department in Winnipeg. He became superintendent of Task Wagons and later general salesman for the Prairie Provinces. In 1906 he became sales manager at Vancouver and in 1914 returned to his birthplace as division manager. Since then he has served in management posts at Halifax and Hamilton and is now division manager of the Sales Department for British Columbia. Mr. Fidgeon likes to get out of doors and shoot, fish, or play golf.

J. R. Clarke Retires
Mr. J. R. Clarke, Secretary-Treasurer of the International Petroleum Company, Limited, retired at the conclusion of the Meeting of the Board of Directors held on the 4th June, 1945.

Mr. Clarke was born in London, England, and first became connected with the Peruvian petroleum industry in 1908 when he joined Lotos Oilfields Limited. In November 1914 he started with Internaciona Petroleum. Arriving in Toronto that same year, he was appointed Treasurer and Assistant Secretary of the Company. He later became Secretary of the Company.

Mr. Clarke also handled the sale of the Company's Peruvian products in the export market.
A typical trailer X-ray clinic; the property of the Provincial Department of Health, Alberta. The staff from left to right—N. Nelson, Technician; B. Coughlin, Nurse; T. Knott and B. Wightmanworth, encompass.

Muriel Jean McComb, training secretary Edna Boyko before a portable X-ray machine in Canada. This is the only way early T.B. can be detected accurately.

THE MOBILE X-RAY UNIT

LATEST WEAPON IN THE T.B. FIGHT. TUBERCULOSIS, OR T.B., IS ONE OF THE MOST FEARED AND FATAL DISEASES. IN THE EARLY STAGES DETECTION IS RELATIVELY EASY AND CURE NEARLY CERTAIN

SINCE the outbreak of war, as many Canadians have died of tuberculosis, or T.B., as from enemy action. 37,000 Canadians have been killed up to May 1945 against more than 70,000 deaths attributable to T.B. for the same period. The figures for each province, shown in table below for the year 1945, are taken from the records of the Canadian Tuberculosis Association and represent the number of deaths per 100,000 of population:

<table>
<thead>
<tr>
<th>Province</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quebec</td>
<td>82.1</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>82.7</td>
</tr>
<tr>
<td>British Columbia</td>
<td>68.0</td>
</tr>
<tr>
<td>Manitoba</td>
<td>59.9</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>48.2</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>46.2</td>
</tr>
<tr>
<td>Alberta</td>
<td>37.1</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>23.7</td>
</tr>
<tr>
<td>Ontario</td>
<td>26.4</td>
</tr>
</tbody>
</table>

T.B. hits without warning. There are no signs of early T.B. and when general signs are to be observed, i.e. loss of weight, loss of appetite, coughing, etc., the individual is in an advanced stage. In the early stages, T.B. can be detected by x-ray only. It is well to remember that T.B. is not hereditary but a communicable disease that is transmitted from person to person.

Young women in the age group 14-23 and middle-aged men are most susceptible but any person can become infected. When resistance is low and a person is unable to withstand the attack of the T.B. germ the result is active disease. Lack of proper food, insufficient rest, overwork, fear, worry, excessive strain are the contributing factors. A strong body, good health habits and sound medical care can help to build a powerful resistance. The greatest element in the control of T.B. is early diagnosis and prompt treatment.

To detect the disease in its earliest stages, Canada is preparing a new offensive in the form of mobile x-ray units. A new development in x-ray technique, the miniature film, has made it possible to x-ray thousands at modern cost. Any markings in the chest will show up in the x-ray film. The results obtained from x-raying army recruits has been the greatest contribution to the anti-T.B. campaign.

Alberta has two units which are operated and staffed by the provincial department of public health. In 1944, approximately 30,000 persons were x-rayed in the province and during the summer a mobile unit will be in Cardston to x-ray the Indians of the vicinity. The procedure followed in Alberta for mass surveys has proved efficient and satisfactory. As each person is x-rayed, a card is set up. If signs of T.B. or any other ailment of the chest are noted, the individual's physician is notified. If there are no signs of T.B., the individual does not receive any advice and the name is good news. 

Owen Sound's Imperial Oil Ltd., Owen Sound, were x-rayed in 1945, through service of mobile unit presented above. Members of staff from left to right are N. Nelson, Technician; B. Coughlin, nurse; T. Knott, Assistant Technician; B. Wightman, Secretary, Dolphin Health Unit.

THE HELICOPTER

THE HELICOPTER FLIES FORWARD, BACKWARD, STRAIGHT UP AND STRAIGHT DOWN. PERHAPS MOST USEFULLY OF ALL—IT HOVERS. MANUFACTURERS SEE ITS POSSIBILITIES AS EVERYMAN'S AIRPLANE OF THE FUTURE. COST AND UPKEEP ARE LOW AND THE SAFETY FACTOR IS HIGH.

HIGHLY specialized helicopters for the army may cost up to $30,000 or more. Two-seaters for civilians today run at $5,000. After the war, manufacturers expect to get the price down around $2,000—a price that will put the curious looking skycrabs within the reach of thousands.

Though it can rise vertically from the ground, the helicopter should have a piece of prepared soil about 90 feet square for landings. More complicated than the conventional aeroplane, it still needs simplification and improvements before it becomes generally useful.

It promises to be advantageous to many inspection jobs—pipe lines, railways, checking forests. Ranchers may use helicopters for round-ups, visiting and counting herds. Vessels at sea, ice patrols and rescue ships may find them invaluable. Bus lines and department stores already have applied for licences to operate helicopters as passenger carriers and for deliveries to distant points.

Owen Sound's Imperial Oil Ltd., Owen Sound, were x-rayed in 1945, through service of mobile unit presented above. Members of staff from left to right are N. Nelson, Technician; B. Coughlin, nurse; T. Knott, Assistant Technician; B. Wightman, Secretary, Dolphin Health Unit.
RICHARD BROWN

Many friends made during his 47 years of service with Imperial Oil Limited are mourning the death of Richard Brown. Mr. Brown was born in Ennisdale Township, Lambton County, and in 1886 his family moved to Sarnia. His association with Imperial Oil began in 1887 and his first job was on the construction of the storage tanks at Sarnia Refinery. From 1898 to 1936 he was employed as an operator on various process units and then appointed Weigh-Master in which capacity he served until his retirement, October 1st, 1944.

J. F. MARRETT

J. F. (Frank) Marrett, assistant manager of the traffic department of Imperial Oil Ltd., died in June after a long illness. Mr. Marrett, who was in his 53rd year was a native of Cork, Eire. In his early years he served his apprenticeship in transportation in the old country and came to Canada in 1913. He was employed in the freight offices of the Grand Trunk railway at Sarnia until 1915 when he entered the service of Imperial Oil. He lived in Toronto since 1919.

Mr. Marrett served overseas in the last war and was a captain in the Irish regiment of Toronto. He is survived by his widow, the former Vida Schnor of Port Huron, Mich.

The Chemical Institute of Canada

First, they are training scientists who are being used in Industry, and also they are getting results in fundamental research. Therefore, I think it is the part of Industry, insofar as they are capable of doing so, to support and encourage fundamental research in our universities. I do not know just how that is going to be done. I agree that instead of the haphazard methods of the past we must evolve some system to help the universities. That will have to be worked out, keeping in mind that there is a limit to what Industry can do; and also a method has to be arranged so that all industries participate. That, I think, is one of our problems and I think Industry would be sympathetic to some plan which can work out a more systematic help and encouragement for fundamental research.”

Petroleum for Posterity

Kirkuk field of Iraq is proved along a length of 60 miles; in Iran, on a concession extending for 300 miles, comparatively few wells have already established production in excess of 350,000 barrels daily; in Bahrain, Saudi-Arabia, Kuwait and Egypt war and the lack of transportation facilities have hindered more extensive progress. Temporarily out of circulation owing to Japanese occupation and devastation, the Netherlands East Indies, which in pre-war years produced around 67 million barrels annually, and Burma with its 9 million barrels, will require extensive rehabilitation before they again become production factors, but in these areas, together with the untapped stretches of China, British India and Australia, lie many promising basin structures which will undoubtedly reward attention.

The world oil situation might then be summed up in this way. Although a tremendous amount of petroleum has already been extracted from the developed areas of the earth’s sedimentary basins, these areas still contain proven reserves of considerable dimensions and are capable of expansion by improved secondary methods of recovery.

Areas, greater in extent than the already developed fields and comprising rock formations demonstra-
ted elsewhere as being bituminous, have still to be explored and, by application of the law of averages, are expected to contain reserves sufficient to meet an expanding world demand for many years.

There is one other and important consideration. Long before there is any indication that the world’s petroleum resources are in danger of exhaustion, the industry will have marshaled its synthetic reserves. There are vast accumulations of natural gas, and pressures for their utilization are long past the experimental stage; there are colossal deposits of coal and shale from which the extraction of oil is not merely a laboratory demonstration, but a commercial accomplishment. Any appreciable increase in crude prices, such as would be occasioned by an impending shortage, would immediately be met by development of such synthetic processes, which would at first augment and could, if the necessity arose, eventually replace the natural flow of oil.

So we envisage a world of the future in which petroleum, perhaps in new and diverse forms, will play an increasingly important role; we are sanguine as to the availability of adequate sources of supply to meet the needs of generations yet unborn; we are equally confident that the petroleum industry can and will ensure that the vast and complicated industrial mechanism, which oil has done so much to bring into being, will not grind to a standstill for lack of power and lubrication.
When barrels go to war they are scattered to the four corners of the earth. They are carried by truck, by hand, by mule, donkey, camel and dog team and floated ashore on a thousand beaches. After they have been emptied often they are used for whatever purpose is at hand. Soldiers and civilians make them into wash tubs, water conveyors, rain catchers, shower tanks, stoves and a hundred other things.

Now barrels are urgently needed to convey Petroleum products to the West to supply machines for the harvest. To help secure these vital barrels let all citizens and officials see that barrels and oil drums are returned to the Companies that issued them. In war, and in peace too, barrels are ammunition.