Since Turner Valley made its first important contribution to Canada's oil output, the oil industry has risked and lost millions of dollars on the theory that this could not be merely an oasis in an otherwise barren range of foothills.

The same rock formations which produce in the Turner Valley stretch for miles both north and south of that prolific field. The same convolutions of mountain building cast these rocks into structures comparable to that of the Valley. Logically it seemed but a matter of time till other fields would be found.

Yet, after twenty years, Turner Valley remains as an isolated foothills phenomenon.

Tests at Wildcat Hills, Jumping Pound, Brazeau, Coalspur, Stolberg and elsewhere have added to our knowledge of foothills geology, but have not added one barrel to Canada's oil.

The high costs of excessively deep drilling, particularly in isolated areas, would necessitate almost abnormal production to repay development even if oil was found. Think of Operation Muskie and the necessity for building a 70 mile road to the site as a preliminary.

Yet oil is so vital a commodity to Canada that these risks must be taken and Canada's oil industry will continue to take them.

In Leduc going to propound a similar riddle to Turner Valley?

Again we have a field which, in its initial stages, holds out as great a promise. Again we have an extended area in which, from all visible evidence, comparative geologic conditions exist. Again we have the conviction expressed that Leduc cannot be the only spot where oil accumulation has taken place in the Devonian. Again we have the oil industry ready to risk its effort and its capital on the assumption that it is only a matter of time till Leduc will be duplicated.

But already the warning signals are flying!

Two recent tests have failed to get production on the east side of the Leduc pool, suggesting a definite limit to development in that direction.

Two Imperial Oil tests have been abandoned, one some 20 miles east of Leduc and the other 18 miles north of Edmonton.

Apparently the Devonian is not going to give up its oil without a struggle; the search is still unending!
A CROSSt he Dominion, fuel oil users are asking, “Will there be a shortage?” “When can I install an oil burner?” “Can I get oil for my space heater?”

To thousands of Canadians, these are very personal problems, involving comfort or cold in their homes. Imperial Oil's answer is that the Company expects to be able to look after its existing customers; but it is not accepting any new heating oil accounts and has discontinued the sale of furnace fuel burners. Months ago, President H. H. Hewson warned prospective fuel oil users to assure themselves of a definite oil contract before installing oil-burning heaters.

What caused the situation?

The tight supply situation in Canada reflects an unprecedented demand for oil products in the western hemisphere. The situation has been made more acute by the general shortage of fuel for the war and equipment shortages still are limiting increased output. About 1,150,000 barrels a year are needed to engineer and construct modern refining units.

The increase in Canadian demand for middle distillates including kerosene, stove oil, diesel fuel and domestic furnace fuel, are indicated by these figures:

- Using 1939 sales as a basis (index 100) the 1945 index was 141.8 for the industry and 171.7 for Imperial Oil. Last year the indices had risen to 190 for the industry and 218.5 for the Company. It is estimated that this year the index will be 283 for the industry and 339 for Imperial.
- Again using 1939 equals 100 as an index for the amount of crude oil processed, Imperial refineries in 1945 had a crude run of 146. In 1946 it was 154.6 and this year it is expected to be 168. Material shortages and attendant construction limitations have kept refinery runs down to moderate increases, but Imperial’s imports have increased more than fivefold. On the 1939 basis, the index for imports stood at 115 in 1945 and 157.6 in 1946, but this year it is expected to reach the phenomenal high figure of 548; that is, for every barrel of finished product imported by the Company in 1939, nearly 8½ barrels have been or will be imported before 1947 ends.

These figures are a measure of the vast increase in demand and a measure of the achievement of the industry in meeting it. They show that the industry generally will this year supply 2.83 barrels of middle distillates for every barrel supplied in 1939 and that Imperial is bearing an even greater share of the load—3.3 barrels for every one barrel sold eight years ago. In short, the Company is supplying 250 per cent. more fuel oil and related products than in 1939.

There is no precedent for the increased demand for heating oils. All over Canada homes, offices and factories are turning to oil for fuel.

Why can’t the oil industry supply the demand?

Shortages of material were and are an important factor. Max W. Ball, director of the Oil and Gas Division of the U.S. Interior Department, blames the steel shortage.

"The industry at no time and in no sense has laid down on its job," he told the Commerce Committee last summer. It is, he added, "trying to do its 1947 job with every little more than it has." The industry has shown itself ready and anxious to expand. It is doing wonders with what it has. The trouble is that it’s in a steel strait-jacket.

The steel shortage has meant that plans for increased tank storage facilities, new refinery units, new tank ships and tank cars have been seriously hampered. After the shortage eases, time will be needed to build all the required facilities for storage and transport—even with unlimited steel supplies.

The steel shortage has also affected the oil fields, where casing and tubing are in short supply. New developments at Leduc, Lloydminster and elsewhere have increased the demand and the shortage is expected to be felt at least for the rest of this year.

"What is the future outlook?"

Eugene Holman, president of the Standard Oil Co. (New Jersey), summed up the situation thus: "Supplies of both crude oil and products will remain tight but not critically so for at least 12 or 16 months. This is not due to a shortage of crude oil reserves but to the fact that the industry has been unable to eliminate the number of new wells, provide the transportation and build the new facilities necessary quickly enough to produce and handle present record demands for oil. I do not believe that the situation is or will become critical in the sense of affecting our national welfare. We may have spot or temporary shortages which may cause inconvenience . . . but there will be no real hardship."

The situation in the United States is closely related to that in Canada, for much of the crude oil used in the Dominion comes from United States sources, and the balance from South America. Canada produces less than 10 per cent. of her own oil supply.

To help provide oil for Canada, Imperial Oil is importing more crude from Venezuela and running it through a pipe line from New York to the refinery at Sarnia; the Company is building steel tankage for an additional 140,000,000 gallons, principally in Quebec, Ontario and British Columbia; it is building three new lake tankers at Collingwood and it has already acquired five ocean-going tankers in addition to chartering extra ships to increase the supply of crude; it is operating 6,000 more tank cars than in 1939 to carry crude oil and its products; the Company announced recently that it had acquired the Whitehorse refinery for re-erection at Edmonton where it will process Leduc crude. This will save about 18 months as against building a new plant.

The present tight situation is a temporary, not a permanent one. Expansion programs now planned or in progress will restore the industry’s usual margin of supply over demand, but at present the oil industry must go all-out to manufacture products and store them against the record needs of the coming winter. All available facilities, even though antiquated and expensive, must be used to serve the Dominion. Imperial is doing everything possible to balance supply with demand.
Tankers on the Ways

Three all-Canadian ships are being built to add to Imperial's lake fleet

With one new tanker launched last month and the hulls of two others under construction, Imperial Oil Ltd. can look forward to increased lake shipping facilities in 1946. The $3,200,000 shipbuilding program when completed will help the company deal with the urgent transportation problems that have accompanied the unprecedented demand for petroleum products in Canada.

All three new tankers are being built at the Ontario ship construction port of Collingwood and the first launched has been christened the S.S. Imperial Collingwood. A sister ship is to be called the S.S. Imperial London and her hull, begun June 12, is near completion. The third ship is to take the name S.S. Imperial Sarnia and will be the largest tanker on the Great Lakes sailing under the Canadian flag.

The Imperial Collingwood and the Imperial London each will have a maximum capacity of 24,000 barrels and the Sarnia will be able to carry 55,000 barrels. Thus if all three were to start on a trip at the same time, together they could transport 1,635,000 gallons (503,000 barrels) of products or enough gasoline to run an average car 72,000,000 miles.

Specifications for the new tankers are drawn up by Imperial's own marine department. They are sent to Collingwood and the ship starts off from blueprint stage in the shipyard drafting room.

Contracts for the ships were awarded to the Collingwood Shipyards in 1946 but because of shortages of steel and other materials construction could not get under way until this year when the keel of the Imperial Collingwood was laid on May 19th.

In the shipyards massive shears cut steel like butter. Huge furnaces generating heat of 1,700 to 2,000° F. disgorge hot red-hot beams and plates to be sledge-hammered into shape. The clang of steel on steel is the symphony of shipbuilding.

The effort of hundreds of workmen go into the construction of tankers like the Imperial Collingwood, which was christened in September by Miss Mildred C. Smith of Sarnia, an employee of the company for 30 years. Miss Smith's name was chosen by draw from among 53 Ontario women employees each with 20 or more years service with the company.

The tankers are built according to specifications drawn up by Imperial's own marine department. They are sent to the shipyard drafting room staff who start off the new vessels in the blueprint stage.

In the mold loft which looks like a huge low-ceilinged gymnasium the full scale plan of the ship is laid on the floor for detailed study. Wood templates and molds are prepared to conform to the design.

Solid oak furniture for the vessels is made in the shipyard joiners' room. This is precise work because bolts, wardrobes and other pieces must be built to fit the ship's contours.

(Continued on page 6)
The templates are applied to steel as a tailor uses a pattern. The steel plates are then cut to size in the plate shop to form shell or bulkheads.

Welding is required only for parts of the stern and prow which are both riveted and welded. The cost is all welded. All welded ships are about 10 per cent. lighter and five to seven per cent. stronger than the old-time all riveted vessels. About 230 plates go into the shell and 420 more into all bulkheads, decks and other parts. Deck plates are assembled and welded in panels as a prefabricated unit which is hoisted into position by cranes.

It requires about three months to fit out an average tanker after launching. Furnishings for Imperial ships is made largely of solid oak in the cabinet shop in the shipyard.

In the pattern shop wooden forms of such things as manifolds, graving and deck fittings are made so that the molders can make metal castings in the shipyard foundry.

In the machine shop pieces of equipment like the tail shaft and the five-and-a-half ton solid bronze propellers are prepared for efficient performance. The Imperial Collingwood’s propeller is 12½ feet in diameter; the Imperial Star’s is 16 feet and weighs nine tons. (Each tanker is also provided with a spare propeller of the same dimensions.)

The Imperial Collingwood and her sister ship both are canal-vessels of 2,900 deadweight tons, with a length of 236 feet, width of 43.6 feet and depth of 18 feet. In canal operations they can carry 22,000 barrels and their full capacity when operating on the upper lakes is 24,000 barrels. The larger Imperial Star is 6,000 D.W.T. with dimensions of 290 feet by 53 feet by 26 feet.

The first two tankers will be driven by Canadian Vickers Scottum Unflow steam engines, developing 1,300 indicated horsepower and making nine knots. The Imperial Star will have Inglis-built geared steam turbines of 2,900 shaft horsepower to drive a single screw at a service speed of 12 knots.

The first two ships will have crests of 23 each. The Imperial Star carries twice the cargo, can be efficiently manned by 38.

These three new tankers will join Imperial’s present fleet of thirteen lake and coastal ships and seven ocean tankers. They represent an important section of the Company’s post-war marine construction program.

From this couple, assembling a small fleet, since the metal is poured into forms to make castings for the hundreds of pieces of machinery needed in Great Lakes service.

T. S. Johnston and Capt. W. R. Steel, who christened the “Imperial Collingwood”

Bobby Cochrane’s trailer is wired, but electricity is not always available. Here she uses an old stove in her tiny kitchen.

Housewife on Wheels

An English bride finds a trailer home in Western Canada’s oil fields

“A LIFE on wheels” is the way Mrs. Gordon “Bobbie” Cochrane, British war bride from Guildford, Surrey, describes her first year in Canada.

In the months after she had travelled across the ocean to be with her Canadian husband, Bobbie visited one small town after another in the sedimentary areas of Saskatchewan and Alberta.

The sedimentary areas, she discovered, are where there are deposits from the earth’s ancient seas, and these deposits may contain oil. This affects her life because her husband works with Imperial’s exploration department. In the current search for oil in Canada he has seen a lot of territory.

Rather than live alone in a town or city, on her arrival Bobbie—in spite of stories she had heard about the harseness wall of cacti and the antics of grizzlies—took a firm grip on the butterflies in her stomach and said: “Let’s buy a trailer.”

Thus Mrs. Cochrane first saw the west from a seven-by-fours on wheels. She says she loves the life and is mightily glad she did it. She hosted the mail of the cacti, all right, but she didn’t mind a bit—not too much anyway. She is a blonde girl with fair English skin, a big smile and an efficient enthusiasm about pioneering.

The Cochrane now live at Leduc, Alberta, where Gordon may be kept busy for quite a long time in Canada’s near oil field. But before reaching Leduc they moved from place to place as required by his work with a drilling crew.

Choosing a new homestead every few weeks, Gordon found, was a bit of a responsibility. Once he thought they had obtained a perfect location—quiet, central, protected—behind a hotel. Just when everything was unloaded and it was too late to move before he went to work on the night shift—the bore parted opened.
"Thar was hootin' and hollerin'," Bobbie remarks, dryly.

"Yes," says Gordon, "And she wouldn't let me go to work without locking her in. Then I worried myself sick all night thinking what would happen if the danged trailer caught fire."

Because of the trailer's many conveniences, life wasn't too difficult. They had their radio, electrical kitchen equipment and many other aids to comfort, all very compact and well-organized. But to make the equipment work they had to plug in to current and sometimes they could get electricity and sometimes they couldn't.

"In one town they only turned it on regularly from 8 p.m. until sometime after midnight," Bobbie explains, "But they did use it when they wanted to weld up at the garage so we just left our radio on and if they did turn on the power for a while we knew about it."

According to Gordon, the chief inconvenience was carrying water. "Sometimes a quarter of a mile, he says sourly, "For washings, for cooking, for dishes, for baths... in pots, a quarter of a mile..."

Gordon, who is from Hanna, Alberta, enlisted in 1940 with the Royal Canadian Corps of Signals and met Bobbie at a dance when he was stationed in England near Guildford. They were married in December, 1942, and in spite of the housing shortage, were lucky enough to find a flat where they lived for almost a year until Gordon was sent to Italy. He also served in Holland and Germany with the 7th Anti-Tank Regiment, and returned to Canada in 1945 where Bobbie joined him six months later.

Until she came to Canada, Bobbie had never been much farther than 40 miles from Guildford. To 'do her bit' in the war she worked as a ticket-taker on buses running out of Guildford. She saw great deal of the surrounding countryside but never got more than a couple or three hours' run from home.

"Sunny southern Alberta is something of a contrast to sunny southern England," she says. "In Guildford we have a 17th century clock of which we are very proud, a famous ruined castle, and ancient cobbled streets. It was a great change for me when I went to the foothills oil country where everything is wild and new!"

Perhaps the most delightful story the Cochranes tell is about gophers, the small rodents that live in burrows in the western prairies.

"I'd heard of them from Canadian lads during the war, but nobody ever bothered to tell me they are a small animal," Bobbie explains. "I always had an idea a gopher was a bird. Then we came to Alberta and one day we were driving along when somebody pointed at one and said 'There's a gopher.'"

"Imagine my surprise! It wasn't like a bird at all—it was like a rabbit! I've seen a lot of them since then," the young wife concludes.

The Cochranes' trailer, seven by 24 feet in size, usually is parked in some vacant lot on the outskirts of a prairie town, as closely as possible to the place where Gordon is working. During their first year on wheels, Gordon worked with a drilling rig, which also is portable. The derrick can be folded over the truck and the whole rig can be driven to a new location.

Bobbie learned a lot about oil as she followed her husband during their year of trailer life. Here she and Gordon exchange a joke with members of the crew.
A Company nurse is administering a hypodermic injection to a secretary as an inoculation against smallpox. Hay Fever and similar vaccinations are very successful disease preventives.

When you get something in your eye, you cannot do your work well. This magnifying glass aids the doctor in the first-aid clinic to remove the irritant with a minimum of discomfort.

In emergency illness and voluntary check-ups, a cardiograph shows how one's heart ticks. This employee doesn't believe in taking chances; he wants to know the facts about his health.

ACTION—FOR HEALTH

Full-time doctors and nurses and additional clinical equipment are provided as Imperial adopts an expanded medical program to help employees.

ONE day when Noah was building the Ark—for inland and long before the rains started—the ridicule of his neighbors became irritating. Noah suddenly stopped work, and, resting himself on a convenient portion of the unfinished ship, narrated the following:

"Once upon a time there was a man who owned an house, the roof whereof was defective and in rainy weather would allow the water to trickle in. A neighbor said unto him: 'My good friend, why dost thou not repair thy house?' The householder replied: "That is indeed a foolish question for canst thou not see that when it is not raining the roof does not need repairing, and whilst it is raining it cannot be fixed!'"

Dr. J. Austin Evans, recently retired medical director of Imperial Oil, used this story 20 years ago to illustrate the attitude of most people toward their health. But, in the two decades since, there has been a great change. Where few people, then, ever thought of seeing a doctor except when they were seriously ill, now almost everyone knows the value of periodic medical check-ups and many men and women are prepared to visit a doctor as regularly as they visit a dentist.

Recognizing this changed attitude to preventive and constructive medicine, Imperial has decided to extend its existing medical services in the Company to provide further medical assistance for employees. The Company attaches great importance to the health and welfare of the individual in the successful and economic functioning of the organization.

Plans have been drawn up, some of which have been fulfilled already in eastern Canada, to provide up-to-date clinical facilities and increase the Company's medical and nursing staff, especially at points where the larger numbers of employees are located.

Free medical examinations "on request" for employees are an essential part of the new plans. The examinations will be on a voluntary basis—when the employee wants them—and the results will be a confidential matter between the employee and the Company doctor.

The examinations will be for "check-ups" or preliminary diagnosis and cases that require treatment.

Restoration equipment helps in reviving suppuration cases quickly. Dr. E. A. Slichter, staff physician at the Company's Toronto health centre, is seen treating an emergency patient.
will be referred to the individual’s own physician. The system is intended to supplement the role of the family doctor, not to replace his work, and is expected to be of great assistance to the general medical profession.

Early recognition by the Company physician of the symptoms of an illness, and treatment by the individual’s own private doctor, will help to prevent serious development of disease.

Imperial’s original medical program was developed during the past 28 years under Dr. Evans. Applicants for employment with the Company have had medical examinations so that they could be placed in jobs suited to their physical condition. Principles of first aid, sanitation and industrial hygiene have received constant emphasis at all centers of Company operations and extensive facilities were provided long ago for the treatment of accident cases and other emergencies. The Company developed its Sickmen’s and Accident Benefit Plan and the Hospitalization and Surgical Benefits Plan to protect the worker and his dependents in times of illness.

Few of these measures, however, were directly in the field of preventive and constructive medicine, and instead were designed to take care of emergencies when they arose and to provide safe working conditions throughout the business. The program was organized through a medical section operating under the department of employee relations. Doctors were available for emergencies but their association with the Company (except at Norman Wells) was on a part-time or fee basis.

The decision to expand the medical program was reached in 1945 and as a preliminary major step the medical staff has been reorganized as a separate department of the Company, reporting to Imperial’s board of directors through F. C. Mechin as contact director.

Imperial called in Dr. Russell George Birrell, recognized as an international authority on industrial medicine, to collaborate with Dr. Evans and set up the new medical program.

During 1946 Dr. Birrell made a survey of Imperial’s health services and plant conditions at the Sarnia, Montreal East, and Halifax refineries, and at marine and marketing depots in eastern Canada and Newfoundland. At present he is conducting a survey in western Canada, to include Regina, Calgary and four refineries and Imperial sales and producing installations in the prairie provinces.

In his surveys Dr. Birrell meets Imperial employees in all fields of work and in many locations. He obtains the opinions of the various groups about services they would like to have available. He observes general hygiene and sanitary conditions in the plants, and consults Company medical examiners.

To discover how Imperial’s plan can be best adapted to suit each individual community, Dr. Birrell visits local public health groups, compensation board representatives in each province, other government agencies, private and industrial clinics and university doctors and professors who are interested in industrial medicine. He has received excellent cooperation from them.

As a result of the survey in eastern Canada, recommendations have been prepared for the over-all expanded program that will bring it in line with modern trends in industrial medicine and the demands of present day standards of public health service. Facilities are being co-ordinated as quickly as space can be obtained for office requirements.

Dr. Evans reached the Company’s retirement age this year and the appointment of a chief medical officer is pending. Duties of the chief medical officer will be to supervise the development of the new plant at Imperial’s centres of operations across Canada, continuing the work started by Dr. Evans and Dr. Birrell.

Full-time Company physicians have been appointed for Toronto head office and Sarnia refinery. It has been recommended that all refiners should have at least one full-time nurse and one is at work now at Imperoyal, Halifax, four at Sarnia, and two at Toronto. It is contemplated that other full-time doctors and nurses will be appointed as the expanded program develops.

The refinery at Norman Wells, which because of its isolated location in the Northwest Territories is in a special category with special needs, has a doctor, two nurses, and a first-aid man on full-time work.

Alterations have been completed at the health centre in Toronto and Sarnia making them miniature hospitals which will be models for other Company plants. Each has a floor space of about 1,900 square feet. The Toronto centre is located in the Wellington building section of the Company’s executive offices at King and Church streets. It now has offices for the chief medical officer and the Toronto staff doctor; examining rooms; clinics for first-aid and for separate treatment of men and women; a store room; laboratory; rest-rooms; waiting and clerical rooms; and X-ray facilities.

Before the changes Sarnia had two first-aid clinics. Additional space was recently allotted adjoining the existing first-aid room to No. 1 plant to provide offices for the refinery doctor, for clerical work, first-aid, special treatment, laboratory, rest-rooms and shower, and dressing and examining rooms. Sarnia also has a fully-equipped ambulance.

The major phases of the expanded program will be conducted in these health centres. Pre-placement examinations will be continued for all applicants for employment, and will now include chest X-ray. Employees will be encouraged to visit the centres regularly for complete health inventories. Arrangements will be made in other areas so that employees may be examined. These periodic inventories will be on a voluntary basis for almost all workers and will be compulsory only for those who hold jobs in which ill-health might affect safety.

First-aid and other treatment for accidents and emergencies will, of course, continue at the clinics. It is hoped that employees taken ill at work will report to the medical department before going home and again on their return to work so that steps may be taken to facilitate adequate care and where possible assist in readjustment and rehabilitation in co-operation with the family physician.

Complete records of each individual will be kept but they will remain confidential. Information concerning the nature of an illness will be given to the family doctor upon the request of the employee. Information given to management will be a report of physical limitations so that the employee may be placed more suitably in cases where his condition creates a hazard for himself or fellow workers when he attempts to perform his normal duties.

Finally, the augmented medical department will be able to give increased assistance to management in improving general conditions and solving specific health problems at the various Company locations. With an adequately staffed and equipped medical department many health problems can be corrected, or if met in the early stage they can be entirely eliminated or greatly alleviated so that they do not become real problems for employees.

Imperial believes that “Bad health is a luxury no person or company can afford.”
Purpose of Industrial Medicine:

One morning at the height of the Florida citrus season a man burst into a Tampa physician’s office and announced to the attendant nurse that he wanted to see the doctor right away.

When ushered in, the man breathlessly told the physician he couldn’t eat, couldn’t sleep, and couldn’t do his work properly.

“You see, I’m an orange assembler,” the man said, alternately biting his lip, shifting in his chair, and twisting his handkerchief. “The oranges come down a long chute and my job is to take the large ones and put them in a box at the right, the small ones in another box at my left, and the medium ones in a third box in the middle.

“All day long these oranges are rolling down and along, Doctor, and I have to sort them. Decision! Decision! I can’t stand it any longer!” he exclaimed.

This is an exaggerated example of what doctors would call industrial neurosis—where something about a man’s job is affecting his health and his peace of mind. Few, if any, actual cases are as ludicrous as this one, but the stress and strain of modern living does cause physical upsets among both men and women that can be prevented through proper medical consultation. Such consultations are a part, though only a part, of the services provided by a balanced program of industrial medicine.

A man in good health—both physical and mental—does good work and enjoys life. The general purpose of industrial medicine is to solve the health problems of the individual so that he may fill his job to the best of his ability with profit to himself and to his employers.

An effective industrial health program seeks to maintain and improve the well-being of the employee, insuring that he is able to perform his duties without harassing himself or endangering his fellow workers. It stimulates his interest in hygiene and in accident and sickness prevention and helps to prolong his life span so that he may live to a happy old age in retirement on company pension.

To be successful, a medical program in industry must have the co-operation of the employee. When visits to the company doctor are voluntary little can be accomplished unless the worker takes advantage of the services offered. Regular calls at the medical centre by all personnel permit practical achievement in preventive and constructive medicine.

Preventive medicine deals with the measures necessary to prevent disease and to control its spread when it does develop. Constructive medicine is concerned with the improvement of general health standards to create a resistance to illness and over-strain.

Through the periodic "health inventory" of employees the company doctor can detect illness or other troubles in their early stages and recommend treatment by the individual’s own family physician. It is obvious that an employee benefits through improved health. Feeling at a peak, he finds his work easier and he enjoys his leisure and family life more. He is able to co-operate more fully with other employees and to receive their co-operation. In some cases, the introduction of industrial medicine has increased life expectancy 25 per cent.

Industry benefits from a medical program because the maintenance of good health among employees results in increased efficiency, a reduction in absenteeism, fewer accidents, lower compensation insurance premiums, and less labor turnover. The health type of employee is attracted to a company that has an established medical program and good health helps adjustment to difficult jobs.

Thus the doctor’s role in industry has greatly broadened. No longer is he called only in cases of emergency where there is an accident or acute illness. No longer is he required to help with the health factors of industrial occupations and ready to evaluate the pressing physical and mental problems of many men and women. Perhaps his most important function is to conduct a continuous campaign of health education in industry.

Imperial recognizes that its working personnel represents a resource that is just as important as the natural resource of petroleum or the physical resource of refineries and equipment. But the Company places the dignity and worth of the individual above his value as an economic unit and looks upon employees as humans, not statistics.

Accordingly, while the Company believes that the establishment of its expanded medical program is a step in accordance with sound business economics, it expects that the most important result of the new program will be a still further improvement in the field of human relationships.

Imperial’s Men of Medicine:

The general plans for Imperial’s expanded medical program are the result of the work of two highly trained specialists in industrial medicine. To help place the plans in operation several additions to the Company’s medical staff have already been announced and others are pending.

Canadian-born Dr. Russell George Birell was called from New York to survey Imperial’s health requirements in collaboration with Dr. Austin Evans who had built the foundation for the Company’s medical system.
In 1928 he became a Company doctor with International Petroleum Ltd. at Talara, Peru. After a year in South America he returned to be a medical consultant for the oil industry at Elizabeth, N.J. He is a Fellow of the American Medical Association and the American Association of Industrial Physicians and Surgeons, and also a member of the Ontario College of Physicians and Surgeons.

Dr. Gordon A. Sinclair, O.B.E., is the newly appointed staff physician for Imperial’s Toronto health centre. A 1926 medical graduate of the University of Toronto, he spent 12 years in general practice in southern Ontario until he enlisted with the Royal Canadian Army Medical Corps, in September, 1919. He served in England, Italy, Holland, and north-west Europe. Among the many posts he held was senior Canadian medical officer in the Italian theatre. He was mentioned in dispatches on the front line and later was made an Officer of the Order of the British Empire. He was a brigadier when he left the army in January, 1946.

Dr. Sinclair came to Imperial last July. Besides his many other qualifications, he is certified as a specialist in internal medicine by the Royal College of Physicians of Canada. Working with him in the Company’s Toronto health centre are two registered nurses, Miss Ethel Molony and Miss Avis Ridley, both of whom served overseas.

Appointment of Dr. Douglas R. Warren as full-time staff physician at Sarnia refinery also came this year. Born in London, Ont., in 1916, Dr. Warren graduated from the University of Toronto in 1941. During his college years, 1937-41, he was also superintendent of Ontario highway first aid posts for the St. John’s Ambulance Association. He interned at Toronto General Hospital before joining the R.C.A.M.C., in which he served until 1943 as major. After the war he studied public health at the University of Toronto school of hygiene and was medical director of the Brandon, Man., health unit before joining Imperial last March. Assisting Dr. Warren at Sarnia refinery, are four registered nurses, Mrs. M. A. McRae, Miss Mary Parkinson and Miss Marjorie Ratliff.

Dr. Robert J. Dolany, 28, was appointed last January to be in charge of Imperial’s medical services at far-off Norman Wells in the Northwest Territories. Born in Ottawa, he graduated from the University of Toronto in 1944 and served in the R.C.A.M.C. until July 1946 as captain. He did general practice in Toronto before going to Norman Wells last February. Dr. Dolany is also district medical officer of health in the Norman area.

Helping him at Norman refinery are two registered nurses, Mrs. Mildred E. Cormack and Dr. Dolany’s wife, Mrs. Lavina E. Dolany, and a first aid man, Arthur H. Stewart, who was a staff sergeant in the medical corps during the war.

At Montreal Refinery, Dr. Edward St. Jean is on part-time duty assisted by a full-time first aid man, Eric Towards. Examinations at Cote St. Paul marketing depot are conducted by a physician on a fee basis, an arrangement in effect at several other Company points.

As loco refinery near Vancouver, Dr. R. Meff is on part-time duty. At other refineries (Regina, Calgary and Imperial) resident practitioners are called in to conduct medical examinations and for emergency treatment. This system is followed in the Turner Valley producing field where a full-time first aid instructor also is at work. Mrs. Phyllis M. Stevens is full-time Company nurse at Imperial Oil. Upon completion of Dr. Borel’s western survey further medical services are planned on a population basis.

Protection for the Family:

MOST Canadian families know through experience the anxieties that develop when Father, or Mother, or one of the children is taken ill. In many situations nothing can be done to combat incurable diseases; in others, treatment and care bring the bright hope of eventual cure. But in all cases, one form or another of anxiety can be removed—the worry about the heavy bills that accompany sickness.

Imperial employees and their families have been protected by insurance plans that provide financial help when the emergencies of illness or accident arise. The Company’s Disability Benefits Plan and Hospitalization and Surgical Benefits Plan were created as a major phase of Imperial’s original medical program. They will continue to provide security for the employees and their dependents, along with the new program of industrial medicine.

Under the Disability Benefits Plan employees who have to leave work because of illness or injury receive weekly wages or salaries for periods up to a maximum of one year, depending on the length of the employee’s service with the Company. Special benefits supplement any allowances provided by Workmen’s Compensation when an employee is injured at work. Family plans also are made when injuries result from accidents off the job. The entire cost of this plan is borne by the Company.

The Hospitalization and Surgical Benefits Plan is a further protection against financial hardships caused by the illness of an employee and it extends to cover sickness or accident in his family. The Plan was introduced by Imperial in 1944 and is in the form of insurance to which the employee and the Company both contribute. The benefits were increased last January 1st to meet higher hospital costs but the employee’s contribution was not raised.

The Plan now pays hospital expenses for an employee and dependents for a maximum of 40 days at the rate of up to $4.00 a day. There is an additional allowance of $40 for special hospital services such as operating room and anaesthetic charges. Surgical benefits paid depend on the nature of the operation and range from $5.00 for minor surgery to $530 for more serious operations. Maternity costs are included in this plan.

For this protection the employees contribute 40 cents a month, if single. The married man pays up to $1.60 a month for coverage of himself, his wife, and his children, depending on the size of his family. Special coverage is provided for Saskatchewan employees to co-ordinate with benefits provided by the Saskatchewan Hospitalization Act.

Membership in the plan is compulsory, but a majority of Imperial employees have joined. To keep the plan operating, the Company makes a larger contribution than the employees.

These measures are part of the many provisions which Imperial makes for the security of its employees. These plans are a substantial help to families in time of trouble.
Industrial Doctor

Dr. J. Austin Evans, specialist in the health problems of the oil industry, laid the foundations for Imperial's medical department. His career has also included adventures around the world as a ship's doctor and special service in two wars.

One of the pioneers of industrial medicine in Canada, Dr. J. Austin Evans, M.A., M.D., retired last July from his position as medical director of Imperial Oil in which he served for nearly 28 years. Hundreds upon hundreds of Imperial employees have passed through his hands. During his quarter-century of experience with Imperial personnel, Dr. Evans has given wise counsel and invaluable assistance in the extension of the Company's medical services.

Tall, broad-shouldered, witty, studious and very much of a "going concern", Dr. Evans, now 65, has no intention of resting on his laurels. An example of his energy is the fact that he became so interested in industrial medicine that he went back to university in his fifties and took a Master of Arts degree in psychology and philosophy.

Dr. Evans has been a student all his life but not of the book-wormish type. On the contrary, his life to date has been one of action (and he plans to keep it that way). Joseph Austin Evans was born in Toronto of Irish parentage on July 28, 1882. He received his early education in Toronto and Halifax and obtained his Bachelor of Medicine degree in 1907 at the University of Toronto. He was attracted to the sea in 1909 after interne work in Ontario Hospitals at New Toronto, Hamilton and Kingston.

For the next three years he sailed into every major port on the Seven Seas as a ship's surgeon in the British Mercantile Marine. He saw revolutions in Peru, Brazil and Portugal.

He witnessed a naval bombardment of Rio de Janeiro during a political "dispute". In Lima, he and the ship's purser ducked into a doorway to get clear of a bunch of "wild men" running up the street shooting off revolvers.

"Revolutions in those days and that's over 30 years ago were just normal procedure", says Dr. Evans.

Dr. Evans made a particular study of tropical diseases. He obtained first hand knowledge of yellow fever in Santos and other parts of the Sao Paulo district of Brazil, where a whole mountain was later moved into a swamp to change a death trap into a health resort. He saw the ravages of rat-engendered bubonic plague in Peru and malaria on the west coast of Africa around Sierra Leone.

He fought an epidemic of cholera aboard ship in the Red Sea among Mohammedan passengers making the hajj or pilgrimage to Mecca. "That is the only thing that has ever frightened me," he reminisces. "Haji believe that if they die on their pilgrimage they will go straight to heaven. So they all wanted to die and resented being treated."

When a sister ship went aground off Cape Palmas in the Negro republic of Liberia, natives tried to loot her. Young Dr. Evans, with a big colored engineer named King George and a helmsman named Jim Crow helped to scatter the mob in light boats.

The adventurous young surgeon came off Scott free from all these revolutions, plagues and shore exploits except for an attack of dysentery which invalided him to Egypt during World War I.

Dr. Evans studied abdominal surgery and gynaecology at the Hôpital Broussais in Paris in 1910 under the eminent European professor, Dr. Samuel Poirier, whom he met returning from Buenos Aires on a mission for the French government. The following year he continued further post-graduate work at Meath Hospital and Coombe Hospital, Dublin.

Returning to Canada in 1912 he became a staff member for Ontario Hospitals and later was appointed associate physician at Toronto Western Hospital. He then established a private practice and also worked with the Canadian Northern Railway.

In World War I he served in the Royal Army Medical Corps as captain with the Mediterranean Expeditionary Forces at Salonica, Gallipoli and Macedonia. He regrets he was too young for the South African War but served in the Halifax garrison when only 16.

In World War II he conducted research work with the University of Toronto psychology department investigating conditions peculiar to flying in the R.C.A.F. Much of his research was in French which he reads as easily as English. He also knows Spanish and is an avid reader of mediaval Latin philosophy.

Dr. Evans is such an enthusiastic etymologist (an expert on the origin and derivation of words) that he learned Greek simply to be able to trace the history of certain words.

When he returned to Canada after World War I he resumed private practice and in 1919 became associated with Imperial Oil on a fee basis. From 1921 until 1947 he was on a part-time basis, devoting his morning hours to the Company, his afternoons and evenings to private practice and study.

His appointment with Imperial was the beginning of the Company's medical department. He devel-
Dr. Evans has written scores of well-received treatises for medical and industrial publications. The Doctor is very active in veterans' welfare work. He is chairman of the R.C.R. Veterans' Association, medical officer and a governor of the Canadian Corps of Commissionaires.

Dr. Evans and his wife have lived in Toronto for 20 years. Mrs. Evans was a Nursing Sister during World War I.

Their son, Richard A. Evans, 29, served five years during the last war. He is now in Fort William, Ont., as a mechanical engineer concerned with the design, manufacture and testing of the new type of trolley bus.

Dr. Evans has a somewhat Churchillian attitude toward life in his belief that it should be lived to the full enthusiastically, energetically and adventurously but with sensible moderation and foresight for future health and happiness. Thousands of Imperial employees like this young veteran passed through Dr. Evans' hands at pre-placement medical examinations.

Imperial Scholarships Awarded

Ten bright young men and women, sons and daughters of Company employees from coast to coast in Canada, have been awarded Imperial Oil undergraduate scholarships to aid the university careers they have planned. The scholarships, each valued at $500, annually, may be held for four years and were awarded on an area basis.

The winners are:

Maritime provinces and Newfoundland: Marjorie J. Dee, Halifax.
Quebec: Kathleen Bitman, Verdun; and Martha Winifred Lamic, Montreal.
Ontario: Arnold Joseph Reed, Toronto; and Robert Brock Thompson, Sarnia.
Manitoba: Aileen Munroe McClements, East Kildonan.
Saskatchewan: Stellas Mildred Cvetkoff, Regina.
Alberta, Yukon and Northwest Territories: David McIvor Fawcett, Edmonton; and Helen Jeanne Fotheringham, Calgary.
British Columbia: David Daniel Kristmanson, Prince Rupert.

In each case, members of the Board of Awards were unanimous in their choice of scholarship winners. Dr. R. W. Boyle, chairman, expressed the Board's pleasure at the high caliber of scholarship displayed by the applicants generally. Dr. Boyle is the director of the division of physics and electrical engineering, National Research Council; other members of the Board of Awards are Dean J. J. O'Neill, McGill University; E. Holt Gurnsey, Ontario Research Foundation; Dr. Leon Lortie, University of Montreal; and Dr. E. P. Fethersonburgh, University of Manitoba.

Marjorie Dee is a daughter of John L. Dee, stock supervisor in the marketing department at Halifax. She is a graduate of St. Patrick's High School and plans to study social service work at Mount St. Vincent College.

Martha Winifred Lamic is a graduate of Hochelaga Convent who plans to take an arts course at Marigranopolis College in Montreal. Her father, Maurice Lamic, is employed in the transfer pump house at Montreal Esso refinery. Kathleen Ettman, a daughter of Alexander Ettman, of the general office staff in Montreal, graduated this year from Verdun high school. She plans an arts course, specializing in mathematics, at McGill University.

A. J. Raed's father, Cecil J. Reed, is in the general sales office with Imperial in Toronto. His son is a graduate of Malvern Collegiate who plans to take chemical engineering at the University of Toronto. Robert Brock Thompson is a son of H. B. Thompson, engineering department at Sarnia refinery. A graduate of Sarnia Collegiate Institute, he plans to study chemistry and medicine at Western University.

Aileen McClements, daughter of Samuel H. McClements, of Winnipeg credit dept., graduated from East Kildonan Collegiate this year and plans a commerce course at the University of Manitoba.

Stellas Mildred Cvetkoff is a graduate of Central Collegiate Institute, Regina, and plans to study medicine at the University of Saskatchewan. Her father is Mikoal Milivoj Cvetkoff, mechanical department, Regina.

D. M. Fawcett is a son of Harry S. Fawcett, of the marketing department at Edmonton. He is a graduate of Garneau high school and proposes taking an honor course in chemistry at the University of Alberta. Helen Jeanne Fotheringham graduated from St. Hilda's School for Girls this year and plans to study architecture at the University of Toronto. She is a daughter of D. T. Fotheringham, Calgary refinery.

D. D. Kristmanson son of Dan Kristmanson, of the marketing department, Prince Rupert, graduated from Booth Memorial High School; he plans to study engineering at the University of British Columbia.

Imperial also awards fellowships to University students to encourage post-graduate scientific research. Unlike the scholarships, the fellowships are not restricted to children or wards of Company employees or auxiliants, but are open to qualified graduates of any recognized Canadian university.
**North Point Light**

The Morrissey family keeps the lighthouse that guides ships safely past the dangerous reef off the northern tip of Prince Edward Island.

**NORTH POINT** lighthouse stands 80 feet above the high tide mark where the northernmost tip of Prince Edward Island thrusts out into the Gulf of St. Lawrence. By day the white octagonal wood tower stands out sharply against the Island's green and by night the powerful light, flashing every seven seconds, may be seen 14 miles distant in clear weather.

The light at North Point was established in 1866 and the present building dates from 1875. The light shines out over North Point reef, which runs offshore for a mile and a half, its outer end marked by a whistling buoy. The Morrissey family has kept the light for the past eight years.

The powerful light burns kerosene, and its flashes are produced by three metal reflectors which were brought from France when the light was established. The turning apparatus floats on mercury and is activated by a clockwork mechanism which must be wound once during the summer and twice during longer winter nights.

Assistant lighthousekeeper Everett Morrissey and his sister Lillian look out over the Gulf of St. Lawrence. Over them towers North Point Light, at the northeastern tip of Prince Edward Island.

**Looking southward from the top of the lighthouse, these red sandstone cliffs contrast with the Island's green fields**

**At nightfall, Everett lights up. The lamp burns a mixture of kerosene and air under pressure, and gives an intense light**

**Proper lubrication keeps the mechanism working faultlessly. Here Everett uses a light-grade Imperial oil on the clockwork**

**Lighthouses usually are spotless, but reflectors take special care. Here Lillian carefully shines the smooth metal surface**

From atop the light, Everett scans the Gulf with binoculars for shipping; then notes their sailing in the lighthouse log.
Crops for "R" Months

Research following a disastrous plague that affected marine life has resulted in scientific oyster farming.

In the Maritimes, oyster farming started in the Malpeque Bay area of Prince Edward Island in the 1930's. Its start was a consequence of disaster, for this area which produced 53,000 barrels as a natural harvest in its heyday had been so hard hit by an oyster disease that the commercial fishery was wiped out. Dying oysters were first noticed in 1915 and heavy losses occurred the following year. By 1925 almost all of the oysters in the Malpeque-Cacumpeque region had been destroyed. Fishing became unprofitable, because so few oysters were left.

Malpeque Bay oysters had enjoyed an international reputation for many years and some start had been made on an oyster culture program there with the blessing of the provincial government before the 1915 epidemic. Thus the area seemed an ideal place to conduct a large-scale attempt at rehabilitation of the oyster industry. The then Biological Board of Canada (now the Fisheries Research Board of Canada) in 1928 commissioned Dr. A. W. Needle to undertake the work.

Dr. Needle was engaged in this task from 1928 to 1941, and in these years the present Prince Edward Island Biological Station at Ellerslie was built and became the centre of oyster research. An old boat-house was used as a headquarters until the present building was erected. Dr. Needle was assisted from the start by his wife, Dr. A. H. Needle, a ranking biologist in her own right. They enlisted the support of the former big oyster growers and were helped by various seasonal assistants and by the co-operation of the department of fisheries, but there was much hard and rough work before the present success. It was first necessary to study the biology of the oyster itself and to find the answer to several puzzles. They were: Why did disease kill 80 to 95 per cent of the oysters but not 100 per cent? Was it because five or 10 per cent had not been exposed to the disease or had they survived the exposure? If the survivors had possessed an immunity could it be passed on to their descendants and would it persist?

Research into these problems has not yet been completed but it early yielded two facts of fundamental importance: the survivors of the epidemic did possess an immunity and they could pass it on through many generations of descendants. The problem of re-population then became one of expanding this tiny fraction of the original population to reasonable size again.

Oyster culture methods from all over the world were studied and tested and new techniques particularly suitable to the Malpeque Bay area were devised. The grooves were induced to conduct large-scale trials and all this work had prospered so well that by 1946 production had risen to 7,000 barrels annually which is considered close to the maximum under present conditions.

Dr. Needle went to direct the Atlantic Biological Station at St. Andrews, N.B., in 1941 with jurisdiction over most fisheries research in the Maritimes. He was succeeded by Dr. C. J. Kershaw who directed the activities of the Prince Edward Island Biological Station until the summer of 1946. The present director is H. R. Logie, M.A., who was appointed on his return from overseas service.

The fundamental problems of oyster population recovery have long been solved but there are many questions of refinement of techniques which still require intensive investigation. Further, the station performs many routine services for the industry.

These services are based on the life history of the particular species, Ostrea virginica, which grows in Maritimes province waters. The oyster begins to spawn in early summer, when the water temperature has been above 45 degrees Fahrenheit for several days. The mature oyster develops a milky layer just under the surface of most of the body. In a large female this layer has been estimated to contain some 500,000,000 eggs and male oysters produce even greater numbers of sperm.

When they are ejected, the eggs are about 1/500th of an inch in diameter, almost spherical, and have no means of moving. The sperm, 10,000ths of an inch in diameter, have a thread-like tail for swimming. Although an oyster normally produces only sperm or eggs in any one season, it may change its sex from
Once fertilized, the egg develops in a few hours into a small larva which can swim by vibrating hairs on its body. The shell starts to grow until the oyster resembles a clam about 1.506 inches long. The free-swimming period lasts three to 3.5 weeks and during this time mortality is high. Some larvae are eaten, some survive and only a few attain the stage at which they settle. At this time the larva is about 1.750 of an inch long—barely visible to the naked eye.

When the larva settles, it crawls on a "foot" which projects from the shell and finally cement itself to an underwater object by the more curved half of the shell. The newly-settled larvae are known to the oyster farmer as "spat" and he has special means of catching them on "collectors." Knowing when the larvae will settle is important, for the oyster farmer has no wish to raise other forms of marine life which would settle with equal abundance on his collectors. To avoid this, the water is sampled daily in a funnel mode of belting silk through the water to collect oyster larvae and the catch is examined under a microscope. Marine biologists are able to predict within a day the oyster's settling time.

The scientists at Ellerslie have found that concrete-coated egg crate fillers make the most practical collectors. Four to six of these fillers are bound together with galvanized wire netting and the "bundle" is dipped in concrete and dried slowly. When the larvae are ready to settle, these bundles are put into the water. They may be hung from any float or bagging, but at Ellerslie the biologists have devised a float supported by two barrels which holds 72 bundles.

This year, the biological station set out 4,000 of these bundles to collect chicken "seed." A number of spat required for research is retained and the remainder sold at cost to oyster growers on a basis of greatest need. The number of oysters settling on any egg-crate filler may be as high as 5,000, but it varies considerably and the average is 1,000.

To keep the collectors, when the winter, they are stacked on board floors which are sunk on the set bottom deep enough to avoid damage by ice. Spat are separated from the collectors in the following spring by a device which acts as a threshing machine. The collectors break up readily and few of the tiny oysters — by now about the size of a man's thumbnail — are damaged.

At the start of the second summer, the little oysters are easy victims for their sea enemies and may be annihilated by silt. Hence, they are reared in floating trays. In the trays they are safe also from their arch-enemy, the starfish. Tray rearing also helps to grow oysters of better shape. The trays are shallow, wire-bottomed containers, with a wooden cover and one tray 12 feet long and four feet wide can hold 10,000 spat.

The oysters are disturbed three or four times during the summer so they will not grow together. These are the "seedlings" which the oyster farmer sows the next spring. He sows them on firm bottom, so that they will not sink into mud and grow long, or even be smothered. They must not be over-crowded and they must grow up in salty water with a sufficient supply of food to attain the "round," deeply cupped shape and salty flavour of the prime oyster. An oyster may pass as much as a barrel of water a day through its shells when feeding on microscopic marine life.

It usually takes a further two or three years for these two-inch oysters to grow to marketable size without sacrificing quality. Growth is slower in cooler and deeper water, but flavour is better.

Where oyster beds are exposed at low tide, the system are fished by hand. When under water, they are caught by rakes or by oyster tongs. The rakes may handle up to 40 feet long, according to the depth of the bed to be fished. The tongs are more efficient for farm, level bottoms. They are essentially two rakes fastened together so that the teeth meet and keep up the oysters from the bottom by a scissors action. Handles longer than 18 feet are not common.

Oysters are also fished with dredges — large rakes which are backed with bags and towed along the bottom by rope or chain. They are used in deeper water where tongs become ineffective.

The oysters fished by any means fall into four groups: 1. the top three "fancy" shells, well-rounded, deeply cupped which sells for about $20 a barrel. Less perfect specimens are "choice" shells, and bring about $18. "Standard" shells cost $12 to $13, "sub-standard" sell for $5 to $6 where they are marketable at all. Ungrounded oysters bring $9 to $10 a barrel at present prices.

A barrel of oysters must be shaken down three times before being shipped, and if properly shaken, a barrel of fancy shape will contain 500 to 600 oysters; choice, 450 to 500 and standard, about 400. Hence, the cost of the better oysters is about the same as that of inferior grades, for there are more of the better variety in the barrel.

It is in old misconceptions that oysters are poisonous during May, June, July and August — the months without "R." Actually they are clean and not very tasty, for they are preparing to spawn or spawing, but are not poisonous. Later they fatten and are at their best in October and November. During the winter they remain dormant.

All farmers must combat pests, and the oyster farmer is no exception. The starfish is his most deadly enemy. This five-pointed foe attacks the oyster by clasping it in its arms and then emitting a chemical which dissolves the shell edge. The chemical then seeps into the shells and paralyses the muscle which closes them. The oyster has no muscle to open its shells, but there is a rubbery substance in the hinge which automatically causes it to open when the muscle is relaxed. Once the shells open, it is easy for the stomach in the oyster to enter and dines. When the meal is complete, the stomach is withdrawn and the starfish seeks new prey.

Heavy infestations of starfish are controlled by nepo-ing oyster beds with cotton waste which enforces the spiny surfaces of the starfish, or by spreading quicklime over the beds from a boat fitted with a device resembling a manual sprayer. The lime kills the starfish but does not affect the oyster.

Larssen enemies of the oyster are snails. These are called oyster drills, from their habit of boring near round holes in the shell with a file-like "tongue." Large smooth shells called whelks also drill oyster shells; clams attack small spot; boring sponges live on the shells and blister worms get into the shells of living oysters. In addition, the oyster must compete for food and living space with the mussel, which when abundant crowds the oyster and produces distortion, thinness and even death.

Another serious enemy of the oyster farmer is the shipworm — not because it attacks the oyster, but because it bores into the wood of trestles, trusses, boats and any untreated wood in the water. The shipworm enters the wood through a pin-sized hole, and in a few weeks may destroy the usefulness of equipment. Fishermen have stepped into an apparently sound boat only to have their feet go through the bottom. The Ellerslie engineers are now testing the effects of the shipworm on a mixture of tar and copper oxide dissolved in kerosene or stove oil. The mixture is applied by a brush or by dipping and the cost is better when applied hot. Equipment should be repainted each year.

The oil industry's contribution to oyster farming is in supplying the kerosene or stove oil for the black tar-copper oxide mixture which combats the shipworm. It also supplies fuel and lubricants for the power boats used by oyster growers.

Imperial dealer T. H. McCullum, at Ellerslie, has a personal interest in oyster farming in addition to supplying petroleum products to the area. He is a sea farmer as well, with nine acres of oysters under cultivation.
Pellets for Peace

A major industry that made chemicals for bombs in wartime now produces a fertilizer from natural gas and nitrogen which helps grow food from European soil

Canada, a mere youngster among nations, is today contributing a transfusion of vigor to the impoverished soils of old world countries so that they may fill their granaries and nourish their hungry.

The story of how this is being done sounds as much like a fairy tale as some of the famous legends from Europe's ancient lore. Natural gas from the depths of the earth and nitrogen from thin air are the raw materials that under the chemist's magic touch provide a solid substance which makes barren earth richly productive. This substance is made in a six-million dollar chemical set that stands just beyond the city limits of Calgary.

Even as the plowshare was beaten from the sword, so in this plant nitrogen fertilizer is the metamorphosis of what was once a vital wartime chemical.

The plant was built swiftly in the early days of the war to manufacture ammonium nitrate. This product was a constituent of "Amatol" which was to fill many a shell, depth charge and bomb for the liberation of Europe. Today essentially the same ammonium nitrate, now in a much different form, is being sown in these lands to increase the yields of precious seed grains in a war against starvation.

It was a Canadian company, the Consolidated Mining and Smelting Co. of Canada, Ltd., which built, staffed and operated this plant for the government. They have since purchased it and it is now known as the Alberta Nitrogen department of their Chemicals and Fertilizers division.

It was the first plant of its kind on the continent, and many of its processes were developed in it for the first time. One of these was the successful adaptation of the product to a form in which it could be easily used as fertilizer. Perhaps the sincerest compliment to the Canadian engineers who built it is that several U.S. plants were later modeled after it, and many of their technical personnel were trained in it.

Ammonium nitrate was, at the beginning of the war, a vital war chemical; England's production was largely concentrated in one huge plant which was a likely target for German bombers.

But the British plant survived almost untouched, other ammonium nitrate plants got into production, new explosives were invented, and after a brief but highly important contribution to the munitions program the Calgary plant faced what appeared to be an end to its usefulness.

However ammonium nitrate, a great destroyer in war, is also a great builder in peace because of the plant food value of nitrates. If nitrates to replenish the impoverished lands of Europe and Asia could be produced in an acceptable form, UNRRA and its successors would be grateful for the entire production.

An engineer with a hammer, nail and a tomato can solved this problem, but perhaps that incident should come in proper sequence in a description of modern industrial chemistry at work.

No magician's storehouse ever held a greater variety of magic props than this huge plant, which breathes in two invisible gasses—air and natural gas—and disgorges trainloads of substantial products useful to mankind. The plant, largely concentrated in a corner of a 310-acre site, is a maze of towers, tanks and rugged buildings where pipes, valves and gauges abound. Some of the pipes are thick and have been bored like a gun barrel to withstand tremendous pressure; some are insulated against extreme heat, and some are thickly coated with frost. There are huge electric motors and compressors.

There is a half-mile-long canal supplied by the Bow River, from which the plant draws its water—half as much again as is used by all other consumers in the city of Calgary. The water is purified with chlorine and the plant uses more chlorine than the entire city of Montreal. It needs more electricity than all other users in Calgary combined. And in three days it uses as much natural gas as Calgary does for all purposes in one day.

It is with natural gas that the plant's processes begin. This is the contribution of the oil industry, and the supply of natural gas in nearby Turner Valley was one of the reasons for the location of the new industry in southern Alberta. In the first of four main operations hydrogen and nitrogen, both containing impurities, are separately produced.

To produce hydrogen, steam and natural gas are mixed in the presence of a catalyst. (A catalyst is something which assists a chemical reaction without being affected itself.) To produce the nitrogen, air—which consists largely of nitrogen and oxygen—
Covering 210 acres, the nitrogen fertilizer plant uses as much natural gas in three days as the rest of Calgary in one day.

is burned with natural gas. The natural gas burns out the oxygen, leaving impure nitrogen.

The second operation produces ammonia from the hydrogen and nitrogen. The two gases are mixed in the ratio of three parts of hydrogen to one of nitrogen and compressed under a pressure of 5,000 pounds per square inch. During compression the impurities are removed. One of the products of purification is carbon dioxide, water or the type used in soft drinks, but no use is made of it.

Under this tremendous pressure the mixed gases get some rough treatment. They are passed over another catalyst, which changes them to combine to make ammonia; and they also go through an elaborate series of heat exchangers, coolers, condensers, separators, filters and circulators.

The third operation produces nitric acid from ammonia and air. In this operation practically all the equipment used is of stainless steel.

The liquid ammonia is vaporized, mixed under pressure with preheated air, and fed to converters. At high temperature it is burned over a catalyst of platinum gauze; this produces a vapor which, when purified and absorbed in water, makes nitric acid.

The fourth and final operation produces the fertilizer which enriches the soil. Nitric acid and gaseous ammonia are mixed in a neutralizer. This produces great heat and a highly concentrated solution of ammonium nitrate.

In the early history of these plants this solution was crystallized. In this form it had a tendency, when stored, to absorb moisture from the air and cake into a solid block—with the result bags of stored ammonium nitrate were soon dubbed "tombs" around the plant. This property of caking into a solid mass had for years prevented use of this valuable nitrogen product as a fertilizer.

The problem of how to make ammonium nitrate usable as fertilizer was solved one day when a plant engineer punched a lot of small holes in the bottom of a tomato can, climbed up a hoistway with a breaker of hot ammonium nitrate and poured it into the can. As the drops showered down they solidified into little white pellets about the size of buckshot—an excellent form for fertilizer.

There was still the difficulty of caking. A small prehistoric sea animal, which obligingly left its tiny shell on the floor of oceans millions of years ago, solved this problem. The shell is now mined and sold as "distomaceous earth." A dusting of this prevented the pellets from caking.

Now a tower has been built in which the hot ammonium nitrate solution showers down from the top, hitting the bottom like a small hailstorm. Endless belts carry it to a hot air dryer; after further drying the pellets are dusted, bagged, labelled and shipped to Europe and China.

In this development, Canadian chemical engineers, using air and the versatile hydrocarbons of natural gas, have written a twentieth-century version of how to beat the sword into a plowshare.

One of the complex panels in the gas purification section is shown here. The delicate instruments and close supervision ensure the control necessary for high production maintenance.

Bugging the product is the last step in the complicated process of making nitrogen fertilizer. In bags like these the product is shipped to Europe and Asia to enrich barren soil.
Viceregal Visit

ON A RECENT tour of the Canadian northwest, Canada’s Governor General, Viscount Alexander, visited Imperial Oil wells in the new Leduc field, Alberta, and Norman Wells field, Northwest Territories. Lady Alexander accompanied her husband with their three children as far as the Yukon.

Viscount Alexander is well aware of the importance of oil to the national economy. Oil fields played a vital role in his World War II military campaigns and he also recognizes that the development of petroleum resources is a peacetime necessity for Canada.

At Norman Wells, in addition to inspecting well sites, the Governor General enjoyed some excellent fishing in Canada’s northern waters and discussed old times with returned veterans. One of the highlights of his trip, was the all-Arctic dinner prepared in his honour. The menu featured caribou and reindeer steaks with fresh vegetables from the Company’s garden.

The picture below shows Lady Alexander looking on while the Governor General and Walker L. Taylor, Imperial’s western production manager, examine a drilling bit used at Imperial Leduc No. 6.
Who Owns the Oil?

Provincial governments hold the mineral rights for most of the land in the Canadian west although some private ownership remains because of long ago grants.

The truth is that in addition to the super-fortunate few, there are the fortunate many who will benefit at Ledue. Other farmers who own their mineral rights will receive substantial royalties and rents as the oil is produced; the community as a whole is profiting through the new industry; nearby Edmonton has suddenly become an oil city; the province of Alberta will receive additional revenues; the prairies have gained a new source of vital needed petroleum products; and Ledue eventually may make an important contribution to the Canadian economy.

All these things will be a matter of relatively gradual development. The overnight wealth of the few landowners resulted because they owned the mineral rights on their properties and capitalized on speculation accompanying an oil boom. Luck smiled on them as she does on the few who hold winning tickets in a sweepstake.

The ownership of mineral rights is a complicated subject with an interesting history. In Canada's early days a man who bought land or obtained a grant from the Crown gained possession of the land and of everything on or under it. Thus in the settled parts of the Maritimes, Quebec and Ontario, proprietary owners often own the land and the "mineral rights"—the right to the materials that lie beneath the surface.

As time passed, however, governments began to reserve mineral rights when making land grants to individuals, and subsequently mineral rights passed from the federal to the provincial governments. Much of the widespread settlement which led to the development of western Canada came after the Dominion had established its reservation of mineral rights. As a result individual owners of mineral rights sometimes have to rent the land and their lands are usually parts of large tracts originally granted by the Crown in very early days to the Hudson's Bay Co., the railway companies, and others.

Quicks of private rights

Many things can happen to privately owned mineral rights when, over the years, parcels of land pass through the hands of a succession of purchasers. When a man wants to buy a farm he is chiefly interested in the land itself and the crops it will produce, not in who owns the mineral rights beneath. In some cases, the owner who possesses both surface and mineral rights may sell the surface but reserve for himself the mineral rights, a fact not always drawn to the attention of the purchaser nor considered important by him at the time. Thus the surface may belong to one man and the mineral rights to another.

Private ownership of mineral rights has been reduced in some areas when rights which once were included in land titles have reverted to the Crown because owners have failed to pay the comparatively recent mineral taxes imposed by the provinces. An oil company which decides to explore for oil in an untaxed area must expect to find situations like these and many more when it seeks to begin operations. In western Canada it must negotiate with any private owners of mineral rights concerned and more often with the province which holds the bulk of the rights.

The first step would probably be to secure a "reservation" under the act governing mineral resources. Under Alberta legislation this would cover all rights at the disposition of the Crown within a designated area. The company undertakes to carry out geological or geophysical surveys, core drilling or other investigations necessary to determine the possibilities of the area. and all reports and data obtained are to be available to the province.

Many operations halted at the exploratory stage because the data obtained are not sufficiently encouraging to warrant the heavy expenditure that would be required for drilling. If, after exploration, the company decides to drill, it naturally seeks to safeguard its operations by surrounding the location with a block of leases.

The mineral rights are held by the province in the lease and are drawn up according to general regulations defined by the government. The company agrees to pay rental for the surface areas and mineral rights involved in its operations; there is an obligation to begin drilling within a stipulated period; and the province reserves for itself a royalty of approximately one-eighth of all oil produced.

The area, of course, may include properties where the mineral rights are privately owned and at the stage where plans have been made to drill a "wildcat," or exploratory, well, the oil company offers the private owner the same leasing terms as are in effect for the Crown-owned rights; that is, an annual rental for the area of oil and mineral leases involved and a royalty of one-eighth of all oil produced.

The owner is inclined to congratulate himself that he is getting a little ready money as rental and there is the possibility, as the oil army song has it, of "pie in the sky, by and by." Without putting up any stake at all, if oil is found he stands to profit by his eighth and the company will safeguard his interest because it has obligations that will see to it that his oil will not be drained away by wells on adjacent properties.

If the oil company drills a dry hole its investment of time, money and labor is a total loss, but all the landowner loses is his rosy dream of comparatively easy affluence. The Canadian west is dotted with dry holes; Ledue is a happy exception.

When the well is a success the landowner's lease begins to pay off. If the well is producing approximately 100 barrels a day and the oil sells at $2.00 a barrel he receives a return of between $9,000 or $10,000 a year. Provincial well-spacing regulations permit the drilling of four wells to a quarter section of land and thus the farm-owner's royalties could increase to $40,000 a year or more, depending on his holdings. These payments, in amounts that vary according to the well's performance, continue for as many years as oil is produced from the property.

About "overnight" fortunes

An oil strike brings a new situation with conditions that make the "overnight" fortune possible for a few landowners. Pioneer drilling concentrates on a small area surrounded, of course, by the usual protective leasing. But when a new well comes in, interest skyrockets to include the full width and breadth of entire districts.

Operators who formerly stood aloof now clamor to get on board the band wagon. They are after acreage "close in" to the discovery well and, because the discovery well has greatly reduced the element of risk, they can afford to offer better prices. This is where luck reaches out to some property holders. The discovereraddock can lease all the lands above a newly found oil structure and with the scramble for acreage prices soar and oil rights miles distant from the discovery well suddenly become very valuable. Thus fortunes are made by some landowners and also by speculators who have bought leases and sold them again at a handsome profit.
The community, as well as the individual who owns the oil Lease when an oil field is discovered, at Ledee, roads have been built, and many buildings have been erected. Streets have been named and signs are affixed to the homes.

The fortunes may go to some "hold-out" men who refused to sell their leases. When the exploration well was being drilled, it might have been thought that the holdout's "smarts" or "courage" made him a fortune. Actually, the men who refuse to sell their leases for a Pioneer oil field may not start in the way of progress but, in their own way too. Oil companies do not control the drilling of wells, unless leases are obtained on negotiable terms. If the demands of a holdout prevent drilling, only the lessee can determine if oil lies under the surface — no one, besides, has the right to have the land.

The holdout who makes a sudden fortune does so because a producing well has "come on." His neighbors are willing to invest large amounts because oil has been found nearby. The holdout probably congratulates himself and says: "Look how smart I am! See how much money I have than the man who signed the first lease?"

The holdout has forgotten what would have happened if the pioneer well had reached in a dry hole. The drills would move away from the district because no oil had been found, but the holdout's local would remain untouched because he had prevented drilling there. And under the surface the oil fields may be undiscovered, unproductive, and certainly not paying royalties to the landowner.

Canada is oil-hungry and able to supply only 19 per cent of her petroleum needs from domestic territory. Thus, all exploration needs encourage and the holdout who, by making exorbitant leasing demands, blocks a drilling operation may be interfering with the development of natural resources that are badly needed by the nation.

The large financial risk involved in exploration is an important factor affecting leases. A pioneering company scheme $50,000 in surveys and $150,000 in drilling before a well is completed, and most without wells are dry. When Ledee No. 1, as it is called, there was nothing to make it any more attractive or promising than hundreds of other tests which were unsuccessful and some of which were extremely expensive.

Imperial, as the pioneers at Ledee, hope and expect to make money from the new field of course, but the Company and the stockholders have spent $200,000 on exploration in the west, and a long time will elapse before this large investment can be recovered.

Detractors who come into action after a discovery well has been drilled have no exploratory expenses. They are prepared to bid to high figures if they can obtain attractive acreages. Some of the bidding is an inevitable development but some of it may be based on speculation, market expectations rather than on oil-bearing possibilities of the field.

The Ledee field has already brought benefits to the area. The oil workers and their families have required accommodation; they have new customers, with money to spend; local residents have found employment handling materials and in construction work; visitors have been attracted to the vicinity.

Rocks to the well locations will become permanent improvements with the oil derricks and towers provided to their construction and maintenance. Permanent construction of warehouses and facilities for shipping the oil will add to increased property values and help nurture tax revenue.

The royalty cheque, going regularly to the fortunate recipients, will increase the spending power of the community and the revenue derived by the government from this source again will lighten the burden on the taxpayers.

Sites for drilling are based under restrictions which safeguard the crops, the roads and the installations of the owner or tenant. Royalties are designed to compensate liberally for the use of the land and there is an arbitration board to act impartially in event of disagreement.

Every barrel of petroleum produced will displace a barrel of foreign oil (which, incidentally, we are mighty glad to put under present conditions) brought at considerable cost to the people of this country. Given a sufficient number of barrels, millions of barrels in fact, the cost of petroleum will ultimately be reduced by this saving in transportation, together with the import's refining will receive from a larger and more accessible supply of crude.

Reduced the farmer's power costs and his production costs are also lowered; reduced production costs in a basic industry, such as farming, and the entire nation will ultimately benefit. The "easy money" which flows in the wake of a flowing well may raise the headlines and attract attention to the extra-horny fer, but it is the oil itself which will bring lasting benefits to the men of

Edmonton-Bound

The Whitehorse refinery will travel down the Alaska Highway to process oil from the new Ledee field.

Edmonton will have one of the world's most travelled oil refineries to process crude oil from the new Ledee field. The plant, at Whitehorse, Alaska, was moved from various parts of the United States during the war. Now, bought by Imperial Oil, it will be dismantled and moved again, down the Alaska highway for 500 miles to Dawson Creek, B.C., where it will re-equipment in railway cars for the 1,300-mile journey to Edmonton.

It is expected in operation about the end of 1948, to process 4,000 to 6,000 barrels of Ledee crude daily.

"Purchase of the Whitehorse plant will save approximately 25 months in the time that would be required to build a completely new refinery at Edmonton," said W. E. Condon, director of charge of manufacturing.

"The price paid for the Whitehorse plant is $1,000,000 paid by the time it is erected at Edmonton, the cost will have been six or seven times this amount, which would normally be sufficient for a new plant.

"Selling this is the time saved which means an earlier benefit for the surrounding area and a general advantage by conserving foreign exchange because the cost of producing an oil refinery displays an imported barrel which must be paid for in U.S. funds.

The refinery units already are ready for difficult travel. Part of the crude oil unit and most of the tanks and other refinery apparatus are ready for shipment at Corpus Christi, Texas, the holm from a paper plant at Hamilton, Ont., the turbinub and generator from a 1,000-ton unit at Philadelphia, Pennsylvania. The other parts were obtained from 2,500 suppliers throughout the United States and the refinery was assembled early in 1944.

The plant was built to supply Alaska with gasoline for military uses when there was the threat of a Japanese invasion. It was part of the tremendous undertaking called Carvel Arctic for Canadian Oil -- which resulted in construction of 2,000 miles of the Alaska Highway and laying 1,500 miles of pipe line.

The Edmonton-Bound pipe line connects Imperial's oil field at Neuman Wells, on the Mackenzie River, with the Whitehorse refinery and transport tunnel from Whitehorse to Fort Nelson, Dawson Creek, and Watson Lake. The project covered an undeveloped area as large as the United States. More than 1,200,000 men worked to complete the undertaking in 20 months.

The refinery was begun in a clearing on the Lewis River just before Whitehorse in April 1943 and was in operation less than a year.

Soon it will be starting its return journey from the north, to be put into service as a supplier of petroleum products to the Canadian territorial

Imperial Oil Review

October 1947
Prairie Farm Meeting

Information about the care and efficient uses of machinery is provided by Imperial’s farm service department.

THOUSANDS of farmers in Canada’s prairie provinces to date have attended Imperial Oil farm meetings conducted by the Company’s farm service department. The purpose of these meetings is to acquaint the farmers with the most efficient uses of machinery and of petroleum products on the farm. The meetings are helping them to operate economically and obtain better returns for their labor.

The meetings have become educational and social events for many farm families, providing entertainment, instruction and discussion of general agricultural problems. Motion pictures are shown. Talks by competent agricultural technicians are heard; helpful hints are given on how to lengthen the life of farm equipment; the proper uses of fuels and lubricants are discussed; safety measures on the farm are outlined. General topics include such matters as soil and moisture conservation. After the formal talks the farmers discuss their individual problems with one of Imperial’s farm service engineers—the Company has three on the prairies.

The meetings have proved increasingly popular in the two years since they were introduced. Attendance of 300 persons is not uncommon. Student matinees are also conducted for young people.

“Tractor clinics” are held, too, to give detailed and technical information. Manitoba had an August series of meetings this year and the fall series in Alberta and Saskatchewan will begin at the end of this month. Last year 177 meetings were held on the prairies. Remote settlements are included in the program and as part of the 1947 spring series 12 farm meetings were held in the Peace River country 348 miles north of Edmonton.

Service is the keynote of all the meetings. A major part of Imperial’s business in the west is with the farmer. As he prospers so does the Company. Thus Imperial is interested in helping keep the costs of agricultural operations down, in making machinery last longer and, because of the present tight supply situation, in conserving the use of petroleum products.

A typical Imperial Oil farm meeting was the one held at Gibbons, Alta. P. S. D. Gibbons who runs a 580-acre farm reads the notice

Above, a community hall like this at Gibbons, Alberta, farm: meetings are held in many sections of western Canada. Below, Mr. and Mrs. Gibbons attend the meeting with their friends. Mr. Gibbons' parents settled in the area in 1897.
Prairie farm meetings have become social as well as educational events for many farm families, providing entertainment, instruction and discussion of agricultural problems. Here adults and children are seen enjoying refreshments usually served.

Part of the entertainment at the farm meetings is the lucky draw for door prizes. Here M. M. Williamson, Imperial’s district supervisor, holds a box for the young man to pick the winners.

Surrounded by petroleum products essential for the operation of power farm machinery, Mr. Williamson acts as chairman of the meeting, conducts the program and introduces the speakers.

IN PRACTICE

Meet day, Mr. Gibbena puts the knowledge and advice he received at the meeting into practice. Mr. Gibbena came from Coldwater, Ont., fifty years ago with his parents. The farm is now operated under his father. Several Gibbena families live in the area including his nephew, F. Gibbena, Imperial Oil agent and host at the farm meeting. His eldest son, Bill, is married and lives on his own land.

Farmers gain much from the opportunity to discuss their own particular farm problems with technical experts after the formal part of the meeting has been completed. C. S. Marke, Imperial’s farm service engineer in Alberta (facing camera) answers a query.
Employer-Employee Representatives

Marine Department

Pictures of the joint council representatives from Imperial's marine department as elected last spring and of the newly-formed building maintenance joint council appear on the following page. The presentation supplements the photographs of joint councils elected earlier throughout the Company and published in the April issue of the Review.

The joint council system of employee representation has proved increasingly effective in maintaining personal contacts between employees and management ever since the first Imperial Oil council was organized in December, 1918. By midsummer this year there were 73 joint councils in the Company and the number is increasing.

Every year those employees represented by the councils elect their delegates by secret ballot. The Company appoints an equal number of delegates and the combined body becomes the joint council which gives full democratic representation to the employees.

S.S. "Imperial Edmonton"—From left to right: D. Benning, J. Morris, L. Locke, Capt. J. Harding (Chairman), G. Richards, D. Macomber

S.S. "Imperial Toronto"—J. Middleton, A. Nelsen, V. Saka, Capt. T. V. Ferm (Chairman), A. Greener, H. Ballantyne, S. D. MacIntosh

S.S. "Imperial Quebec"—E. Richards, M. MacMillan, Capt. E. F. Stry (Chairman), W. D. Carroll, J. N. Hunter, A. C. Brown

M.S. "Imperial Halifax"—X. Hirtle, D. Burke, Capt. I. Vickens (Chairman), F. Kezel, E. McCormick

M.S. "Imperial Regina"—L. Coates, R. Spangle, Capt. D. E. Fournier (Chairman), L. Cassawaich, T. Roberts

M.S. "Imperial Winnipeg"—I. E. Garreau, J. C. Matthews, Capt. G. V. Thomas (Chairman), N. Sperry, G. E. Zwick

M.S. "Imperial Victoria"—A. A. Cantas, K. Foulstone, Capt. A. A. Mosiae (Chairman), F. Barnstead, D. Thompson

Ocean Fleet
Personalities in the News

T. S. Johnston Appointed Assistant to Vice-President (Supply and Transportation)

T. S. Johnston, who has been appointed assistant to the vice-president (supply and transportation) was, until recently, manager of Imperial’s marine department. Born in Sultana, Mr. Johnston began his marine opera-
tions career when he joined the Standard Shipping Co. in 1938. In 1941 he became assistant manager of the Lago Oil and Transport Co., and the following year was loaned to the Standard Vacuum Co. as assistant man-
age of their marine operations. In 1944 Mr. Johnston went to South America to study equipment on the Magdalena River in Colombia. Re-
turning to Canada in 1945 he was appointed assistant manager of the marine department, becoming manager a year later.

Captain W. R. Smeltzer Heads Marine Department

Captain W. R. Smeltzer succeeds T. S. Johnston as manager of the marine department. Captain Smeltzer went to sea as an ordinary seaman at the age of 16 in a square-rigger. During the last war he was torpedoed in the English Channel. He joined Imperial in 1917 and became a master a year later. In 1929 he was transferred to Taliara, Peru as marine superin-
tendent. In 1934 he became manager of the marine department’s operations division and last year was appointed assistant manager.

F. G. Cottle Appointed Supply Department Manager

F. G. Cottle has been appointed manager of the company’s new supply department. The department has been created by the division of the former supply and economics department, of which Mr. Cottle has been manager since 1945, into two separate departments. Born in Calgary, he was ad-
mitt ed to the Alberta Institute of Chartered Accountants in 1939. After experience with several industrial companies he joined Alberta’s audit de-
partment and later worked successively with the province’s Board of Public Utility Commissioners and Petroleum and Natural Gas Conservation Board. In 1941 he became executive assistant to the Oil Controller for Canada and later was made deputy oil administrator of the Watertown Potypes and Trade Board. He joined Imperial in 1945.

W. O. Twain Named Manager Coordination and Economics Department

W. O. Twain has been appointed manager of the newly formed co-ordination and economics department. Born in Galt he received his early edu-
cation in Stenins and graduated from the University of Toronto in 1933 with a bachelor of commerce (hon.) degree. The same year he joined Im-
perial at Sultana starting on a training program through the various refinery departments. He spent two years with the technical and research depart-
ment and five years with the manufacturing technical commission. He moved to Toronto in the spring of 1943 and was assistant manager of the supply and economics department until his recent appointment.

J. W. Hamilton Appointed Assistant General Counsel

John W. Hamilton, recently appointed assistant general counsel for Im-
perial Oil, was born in Picton, Ont. He is a graduate of the Royal Military College at Kingston and of Osgoode Hall, Toronto. After a year in private practice, Mr. Hamilton joined the Company’s legal department in 1938 as assistant solicitor. In 1939 he joined the Royal Canadian Naval Volunteers. Reserve and held the rank of lieutenant-commander when he left the ser-
vice. He returned to Imperial in 1945 as a solicitor.

S. R. Stevens Appointed Manager Crude Oil Department (Western)

S. R. Stevens, formerly manager of Imperial’s Alberta marketing division, has been appointed manager of the crude oil department. He will be in charge of purchases and sales of Alberta crude and will continue as chair-
man of the Company’s Alberta committee which co-ordinates producing, piping, manufacturing and marketing, each of which is managed separ-
ately. Mr. Stevens joined the Company in 1919 as a salesman in Saskat-
cheswan and became assistant to the manager of the south Alberta division in 1923. When north and south Alberta divisions were merged in 1937 he went to Edmonton as Alberta manager. He also directed marketing activi-
ties in the Northeast Territories and the northeast section of British Columbia.

D. J. Avison Succedes S. R. Stevens

Donald J. Avison, formerly manager of the Saskatchewan marketing divi-
sion, succeeds Mr. Stevens in Alberta. He joined Imperial at Winnipeg in 1912 and was transferred to Edmonton that year. In 1914 he enlisted in the 31st (Alta.) Battalion and won the D.C.M. and M.M. for distinguished overseas service. In 1919 he returned to Imperial as a salesman in the Peace River district and six years later went to Calgary. He became assistant manager at Edmonton in 1928 and in 1934 went to Regina as manager for southern Saskatchewan. He became Saskatchewan manager in 1937.

J. E. Akitt Named Manager Saskatchewan Marketing Division

J. E. Akitt, formerly western manager of farm fuel promotion, follows Mr.
Aivion as Saskatchewan manager. A First Great War veteran, he joined the Company in 1935 as a salesman in Saskat-
cheswan.

In 1931 he was transferred to Edmonton and later to the general sales department in Toronto. He became Saskatchewan sales manager in 1944 and western manager of farm fuels in 1944.

L. J. Issor Receives 40-Year Service Button

Louis John Issor, chief accountant at Imperial’s refinery, received his 40-
year service button in June. He joined the Halifax marketing department in 1906 and 10 years later became chief accountant of refineries at Sarnia. When Imperial refinery was started in 1917 he requested and was allowed his transfer back to Sarnia where he was born.

Mr. Issor has been mayor of Dartmouth for nine years, the longest term any mayor of the town has served. He takes an active part in many com-
munity organizations and has been chairman of the Dartmouth Ferry Commission for the past 10 years.

C. R. Barnes Retires at Imparoyal

Charles Russell Barnes retired as chief electrician at Imparoyal refinery this summer after 40 years of Company service. He was born at Peterbrough, Ont., and educated in Sarnia, where he joined Imperial in 1906. After five years with the electrical department there, he went to Regina as foreman electrician during the construction of the refinery. He was transferred to Halifax as chief electrician in 1917.

He comes from an Imperial family, for his father, Sam Barnes, worked at Sarnia refinery and retired on Company pension; his father-in-law was chief electrician at Sarnia refinery; his uncle was boilermaker foreman, and his son, Clifford Raymond, now has 13 years’ service with International Petroleum.
Personalities in the News (Continued from page 47)

L. D. Fraser Appointed
Manager Fuel and Burner Sales Department
Lorne Donald Fraser, recently appointed manager of the fuel and burner sales department of Imperial Oil, joined the Company in 1928. After several promotions in the accounting department at Montreal he became assistant resident manager at Ottawa in 1940 and manager the following year. In 1942 he was assigned to general sales on special duty and after three years became assistant manager of the department he now heads. He was appointed assistant secretary of the Company last year.

R. D. Murray Becomes Imperial’s Assistant Secretary
Robert D. Murray has been appointed assistant secretary of the Company. He is a former member of Canada’s Davis cup tennis team and a native of Montreal where he received degrees in arts and law from McGill University.

From 1938 until he joined the army in 1941, Mr. Murray was in accounting and personnel work at Montreal. His army career took him into action in Europe and the Pacific and after demobilization he was appointed legal assistant to the manager at Montreal. He succeeds L. D. Fraser as assistant secretary.

Portrait of a Girl Geologist

The young woman in the picture on the opposite page is at work testing formations in the Rocky Mountains. She is Diane Loranger who, as the Montreal Standard said in a recent story, “has proved herself in a man’s field.”

In 1943 Diane was the first girl science student to graduate in geology at the University of Manitoba. Today, at 28, she holds a responsible position with Imperial Oil and has gained a place of respect among the geological profession in western Canada.

Diane has worked as a field geologist, as a resident geologist at the site of drilling wells, and upon interpretive work in a central office. She has specialized in the study of microscopic fossils, and is known to the profession as a micropalaeontologist—or foraminiferologist.

In spite of her mere 125 pounds, her diminutive five feet five, her hazel-brown eyes and girlish dark brown hair, she has undertaken jobs that require exceptional strength and endurance. A vigorous sportswoman, she also holds a private pilot’s license and belongs to two flying clubs.

A list of her club affiliations and other activities indicates that she puts into practice her belief that a full and useful life is a happy one. She is an active member of the Big Sisters organization in Calgary; she is an enthusiastic worker with the Eeso Club; she belongs to the Alberta Association of Petroleum Geologists, the Royalite Bowling club, the University of Manitoba Science Alumni Association, the Foothills Tennis club, a women’s geology club, the Calgary Ski club, a riding club, and various skating, swimming and assorted athletic clubs.

Typical of her self-reliant approach to life was her action when she encountered persistent mechanical trouble with a recently-purchased second hand car. She simply took a mechanic’s course and now does her own repair work.

Miss Loranger has shirked none of the tasks assigned to male geologists and as a member of a field geological party has walked as much as fourteen miles in a day. Her special study of fossils has enabled her to achieve a supervisory position in Imperial’s subsurface laboratory and she is enthusiastic about her work. She is also enthusiastic about the future of the oil industry in western Canada. Her knowledge of microfossils and the formations in which they occurred are a valuable asset and will be needed in the continued search for new fields and new sources of oil.
Imperial's ocean tankers carry much-needed crude oil from South American fields to the Company's Canadian refineries. This is "S.S. Imperial Quebec".