An Industrial Transition

The list of shareholders of Imperial Oil Limited contains the names of almost three thousand employees who jointly own a very considerable proportion of the stock. A preliminary report of the Co-Operative Investment Trust for the fiscal year ended April 14 last shows the number of employees-shareholders at 2,950. Practically every second man or woman in the organization is a partner in the enterprise and the percentage of employees who are members of the firm is constantly increasing. So too is the proportion of wages saved. Employees are exercising thrift in many directions, such as in creating homes, in supplementing the free insurance policies of the company by the purchase of additional insurance, in investment in Government bonds, and in addition to everything else, fifty per cent of the employees are saving from their wages to acquire Imperial Oil stock over eight thousand dollars a month, or almost a million dollars a year.

As the company adds fifty cents to every dollar saved for this purpose by the employees it will be seen that the stock is passing into the hands of these employees at the rate of a million and a half dollars annually. Thus with the liberal annuity and insurance plans upon which all employees of one or more years' service rank, considerable provision is being made against the future.

The price at which stock of the company will be sold to employees during the current fiscal year will be $96 per share as set forth in the following communication:

"To the Trustees of The Co-Operative Investment Trust, Toronto.

Dear Sirs:--

I beg to enclose the following extract from the minutes of the meeting of the directors of Imperial Oil Limited today:

RESOLVED: That as a special incentive to a concerted effort to increase the business of the company, and for the purpose of encouraging the fullest possible participation in the benefits of the Co-Operative Investment Trust by employees, the price at which stock of the company will be sold to the Co-Operative Investment Trust for the benefit of members of the organization and under regulations of the Trust will remain at $96 per share for the fiscal period beginning April 15, 1921.

Very truly yours,

(Signed) C. G. Stittman.
President.

In a recent letter, a former president of Imperial Oil Limited, and one who has ever the true interests of the worker at heart, made this striking comment upon industrial transitions such as are described above:

"As usual in times like the present, remedies for the relief of industrial ills are appearing in great profusion, but I can think of no better avenue through which a lasting harmony in industry can be established than in the elimination of the division between capital and labor by merging the two in a common proprietorship and a common reward."

Far Flung Activities

Chance has brought the geographical extremes of Imperial activities into close association in this number. There are tales of romance and adventure in Colombia and Peru, and the thrilling story of Donald McKinnon's lonely trip up the trail from Fort Norman to civilization. Thus what is being done in far away regions to provide the petroleum as yet lacking in our own country is portrayed in these pages, and the dusky Peruvian belle on the front cover seems naturally to link arms with the north Canadian woodsman on the back.

Few people outside of the circle of Review readers have any appreciation of the extent of these Canadian ventures in the far north, and below the equator, nor are they aware of the Canadian colonies, Canadian hospitals, Canadian teachers and Canadian schools, and the great engineering works directed and manned by Canadians, which exist in Peru and Colombia. Nor do they know much about the drifts which are pouring incessantly from the international boundary to the Arctic Circle in the search for a domestic source of supply — the most costly, the most comprehensive development of a Canadian resource ever undertaken in this country without Government assistance. In the forty years since it was founded by Canadians at Petrolia, Imperial Oil Limited has become one of the largest employers of labor, the largest customer of Canadian railroads and of Canadian industry generally, one of the largest payers of taxes, and, with its great steamers plying both oceans, one of the greatest factors for the extension of Canadian trade to foreign lands.

The Peruvian Award

Paris press cables announce the judicial ratification of the understanding reached by the Government of Peru and the International Petroleum Co. upon certain legally undetermined points relating to the International's holdings in that country. The satisfactory outcome of the discussions which have been in progress for some time between the President and Cabinet of Peru and the representatives of the company, which definitely and permanently establishes the status of the company in Peru, will give a further impetus to the development of the company's operations in that country. The international's production of crude in Peru is now running at the rate of 12,000 barrels per day and one of the results of the decision just announced will probably be to materially increase this production.

That the settlement is embodied in the award of an international tribunal not only ensures its effect but is also a guarantee that the rights of both parties have been respected.

The press cable from Paris recalled the events relating to the award as follows:

"Associated Press.

Paris, April 24 — The arbitral tribunal, consisting of Dr. F. Oesing, president of the French Federal Court; Sir Robert Borden, former Canadian Premier; and Varden E. Vreeland, Peruvian attaché at The Hague, has just made its award in Peru concerning the Petroleum property in Peru, known as "La Brea y Partas," now leased to The London Pacific Petroleum Company, Limited. The controversy chiefly concerned questions of law, as the facts were not materially disputed.

"During March the Government of Peru and the directors of the company reached an amicable settlement. The area of the property and the title of the company were agreed upon, and on the basis of a mining tax payable to Peru, settled for a period of fifty years, and the rate of export duty on petroleum and products to be fixed by legislation for twenty years. The company, in consideration of these dispositions, agreed to pay a substantial sum to Peru.

"The solution of the questions in dispute were considered equitable and just from the standpoint of the Government and the company. The company expressed sincere appreciation of the spirit in which the Peruvian Government and Congress approached the questions with a view to amicable adjustment, which is now embodied in the award of the arbitral tribunal." — Mail and Empire.

The case was prepared for Sir Robert Borden by Mr. R. V. Le Sueur, M.P.; Counsel for the company, and Mr. C. C. Robins, whose admirable and able conduct of the negotiations leading up to the award received a large measure of assistance from Mr. W. P. Jenner and Mr. A. Fleming of the Peruvian administrative staff.
The Ancient and Modern Oil Wells of Peru

This is to be a story of Peru, of its age-old treasure of petroleum, and of the many strange peoples who from the earliest page of history have struggled with their own circumstances and after their own fashion to avail themselves of that treasure, of how they have passed on and have been succeeded by another race and even another civilization, and so on down the years until it is of ourselves, and of our own pursuit of the treasure, that the story tells.

Even in this matter-of-fact day a land of mysticism and romance, Peru is richest of all the new world communities in the pageantry of its past. Back as far as our eyes can reach, against the dawn of things as we know them, we see the shadowy forms of the early Incas, but beyond the shadow there was a path which gave way to the Incas, as they gave way to the Spanish Don, whose decadence in turn permitted the triumph of Petroleum.

With every vestige of its recorded history permeated with allusions to the substance which we now know as petroleum, such additional information as we have concerning Peru's past is built upon the evidences of primitive petroleum workings which still exist. The first known use of pitch, or brea as it was known under Spanish domination, was in rendering non-poisonous the earthenware jars which the Incas, in the absence of prohibition, used as receptacles for fermented liquors. One may point a moral from the circumstance that the same substance which lined the flowing bowl also served to preserve the meanness of those who drank. The pitch advertised itself, by its odor, to the covetousness of the early Spanish explorers, and we find Joseph Acosta, the Spanish Jesuit author who was first a missionary and afterwards a ruler in Peru, writing somewhere about 1580 of his acquaintance with what are now the principal petroleum fields of South America:

"As we came navigating for New Spain along the coast of Peru the pilot showed me the island called Lobos, where there is a spring or well of pitch or cove. The said pilot, an excellent man in his profession, told me that he had come navigating here many times and sometimes so far out at sea that he could not see land, but he knew by the odor of the bitumen where he was with as much certainty as if he could see land, so strong is the odor given off."

Another Spanish explorer, Fray Reginaldo de Lizaraga, records the use of the pitch as an aid to navigation:

"Referring to Point Santa Elena," he writes, "there is not far from here a spring, from which flows a liquid-like pitch in small quantities, which is utilized by vessels instead of pitch (brea) as we did with ours, because when it began leaking we put into the Bay of Caraquez, rounding Cape Pasajo eight leagues beyond Manta, from where we sent the long boat with some sailors to that point for the pitch (brea), which is called covey, and when it arrived the vessel was discharged and cleansed and painted and caulked with the brea that had been boiled down to thicken it, so that sailing from there we navigated without so much danger."

With the fabled riches of the land of the Incas as a spur, the Spaniards pursued their exploration of its resources, and finally took it for their own, although in many ways they had little to offer in the way of a better civilization. What they wrested from the ancient Indian owners was a country rich in possibilities, with a shore line extending for some 1,920 miles along the west coast of South America, and a topography which included three distinct features—mountain, desert, and jungle. If we except a small field around Lake Titicaca (which along with the other places mentioned here will be found on the accompanying map) in the southern extremity of Peru, we find that the oil industry had its inception, grew and flourished under desert conditions, and the producing fields of to-day are confined to a comparatively small area on the northern coast, an area which does not materially differ from that described in the earliest historical references.

In what was formerly the estate of Mancora, between the sea coast and the chain of La Brea mountains, there exist quite numerous outcrops of petroleum, where the oil-bearing strata either appear at the surface or where earth fractures allow the petroleum to filter from below to the surface where the lighter portion evaporates, leaving the heavier and more permanent residue to slowly oxidize. Of these springs, that known as "La Brea" is the most famous. This is at the base of the mountain range and there are large outcrops of petroleum, mud springs and discharges of gas.

In remote days pits sometimes several hundred feet long were dug till they reached salt water; the petroleum was slowly discharged from the rocks and, floating on the water, lost its volatile contents and thickened. Periodically it was skimmed off and taken to the "horcas" or ovens which were a series of earthenware pots set over a slow fire; in these the thick oil slowly evaporated till the right constituency was obtained, when it was allowed to solidify. There was always a certain residue left in the earthenware pots, and this accumulated until they became useless. At La Brea there may still be seen a stockade—in places ten feet high—consisting of tens of thousands of these discarded earthenware vessels.
After the conquest of Peru by the Spanish, the Incas' internal trade networks were left without ownership or control, and the rule of the Incas having been communistic and their vassals having no proprietary rights, the Royal Treasury of Spain realized on these fruits of victory in 1629. Captain Martin Alonso Gramaino and his wife, Maria Ramírez de Arellano, gained possession of the estate named Mancora, which included all the area now being developed by the International Petroleum Company, Limited, one of the companies operating in Peru. The fair Maria was not content with one matrimonial venture, because in later records she appears as the mate of Capt. Juan Benito de las Heras, who safeguards the home of his bride by purchasing at public auction, the estate of his predecessor, the boundaries of which are described as follows:

"From Amotape to Tumbes and from the springs to the sea. These barren and unoccupied lands which belonged to the king, consisting of the valleys of Parina, Pata, Mogollon, Quebrada Ancha, Mancora, etc., and extend from the mountains to the sea."

The only value attached to this estate was the grazing facilities, and Benito had no claim to the mineral rights, these belonging, do facts, to the Crown of Spain. This is borne out by the fact that after his death the Bethlehemite fathers, a nursing community, to whom the estate had passed, requested permission to work the beard deposits and were refused, because that privilege was reserved the Crown of Spain. There is no doubt that these deposits constituted a continuous source of revenue under Spanish as well as line rule. The earliest positive information regarding their operation is contained in a document filed before the public notary in Piura, Don A. R. de Lete in 1702, which says:

"Before me, the notary and witnesses appeared, Maj. Manuel Urdiplata and Capt. M. C. de la Pampa, and stated that tommorow that to-day at noon in the Public Square, at the gates of the Cabildo of this city there was sold at auction to them for 180 pesos of eight reals all the springs of copo or sweet pitch which have been discovered or which may be discovered in the future from the mountains of Tucum and Cerro Prieto, which run from the town and river of Amotape to the town of Tumbes, and in breadth from the seashore thirty leagues inland toward the mountains."

This document fixes the boundaries of "La Mina de Brea," or pitch mine, since we know it was attached to the last sale of La Mina de Brea in 1810 made to Cristóbal de la Cruz, who states in his letters that he and his forefathers had worked these mines from time immemorial.

Due to the attachment of this deed of the beard monopoly of the year 1702 to the last sale of the same made by the Spanish Crown in 1810, it is evident that during this period of 108 years no change was made in its limitations, and documentary evidence shows that Cristóbal de la Cruz, the last purchaser of the beard monopoly under the Spanish rule, continued to work the "pitch mine" as his forefathers had done before him, until the revolutionary war.

The work of the pioneers in modern development remains largely wrapped in mystery, but some interesting relics of their activities have been preserved. At La Brea there is a hand-dug well, four feet square and thirty feet deep, with a wooden floor and wooden struts. Also a large hand-dug tunnel 300 feet long and 40 feet wide, which was used to bring the crude oil from the wells to the surface. The wells are lined with wooden pipes and filled with wooden plugs. The only water available was from the seashore, where there were springs, and from the wells which were deep and stagnant and contained a great deal of salt.

In 1850 the Peruvian Syndicate drilled a dry hole to a depth of 1,000 feet at La Cruz, but greater success attended the efforts of the Nefcy Company, who found oil at a spot between Zorritos and La Cruz in a well 820 feet deep. The Mancora Syndicate drilled two wells in 1891-92 at Lorchal, a short distance inland from Zorritos, but although promising indications were met with, these wells were abandoned owing to engineering obstacles.

The Lobitos Oilfields, Ltd., the well-known British company, acquired in 1908 the properties of the Peruvian Petroleum Syndicate, Ltd., and continues the development of this field, a large number of productive wells.

The active development of the Negritos field seems to have been commenced by a Peruvian firm in 1874, who are on record as having drilled three wells without success of Mr. Fonken. It is said that one of them "spotted" at 60 feet, while another flowed 400 barrels a day for an exact total of 130 feet. With such results it is not surprising that further attention was paid to this area, and in 1888 Dr. H. W. Magruder, with the backing of the Helguera family, formed the hacienda La Mina Brea and Parrinas with extensive explorations, and the London & Pacific Petroleum Co., R. C. Company, was formed with the assistance of Mr. Wm. Keswick, an English capitalist, who is still identified with the development of the field.

Our information regarding the early doings of the London & Pacific Petroleum Company is rather fragmentary, no records of the first seven wells drilled being available. Well No. 8, however, we know to have been completed in 1909. It went to a depth of 545 feet and it is still a fair producer. The Lagunitas Oil Company completed its first well in November, 1909, with an initial production of fifty-five barrels per day. It is still good for some five barrels per day. The West Coast Oil Fuel Company, a marketing concern with stations along the Chilean coast, was also identified with the field, and, along the two last-mentioned companies (The London & Pacific Petroleum Company and The Lagunitos Oil Company), eventually took its place under the banner of "International Petroleum Company, Limited," incorporated in Canada in 1914.

As previously mentioned, the first well of these amalgamated interests was drilled in 1899. Since then approximately 1,406 wells have been drilled, 849 of which are producing, while 45 are now in process of drilling. Production has steadily increased, until in 1920 this company alone produced 1,903,331 barrels, no inconsiderable part of Peru's total output.

More than ordinarily colorful is the story of operations carried on in the vicinity of Paipa, and not far distant from the holdings of Dr. Tweedie, by Edward L. Doheny, one of the most picturesque and powerful figures in American petroleum history. Mr. Doheny's Peruvian venture, which constitutes but a brief chapter in his busy and eventful life, really began in an experiment with a discarded locomotive of the Santa Fe Railroad in Los Angeles. In 1894 he was developing the possibilities of petroleum oil as locomotive fuel and a switch engine was taken out of the scrap heap for the purposes of the test. A man named Brito, who had seen oil in a generator motive power in Peru, introduced the idea of the burner to Mr. Doheny and Mr. Prescott, and when it worked it was so successful that it was patented, and is still in use.

Mr. Booth's accounts of the Peruvian oil possibilities resulted in the formation of a small association to acquire petroleum lands there, and upon behalf of the syndicate, Lieutenant Baker, since Brigadier-General, secured some
areas near Paita from General Thorntonlyke, a resident American well known in Peru. A standard drilling rig of the dimensions possible at that time was shipped to Peru, and after great difficulties was lightened off the vessel in Talara Bay. Mr. Doheny went himself to Peru, and employing George Owens, a driller, and Howard Slocum, at that time a tool dresser, initiated the drilling of three wells. He did not wait for their completion, however, but returning to California found that his development there had resulted in a larger production than was required for the then existing market, and also that the lower grade of California oil, in the absence of a market for gasoline, was more applicable to the demand of those days than the Peruvian crude. He therefore discontinued his active interest in oils.

Mr. Doheny's experiences there, exploring the desert hills or surveying the coast by canoe, were not much different from his pioneer adventures in other fields. He encountered all the obstacles of the primitive means of transport and operation, and his activities were further hampered by the internal condition of the country. Of the other operations which were contemporary with his, Mr. Doheny has told the writer:

"At the time that we were engaged in drilling these wells, Grace & Company had two steamers taking crude naphtha from Peru to California, where it was sold at various ports of call, such as San Diego, San Francisco, and Portland, and there used in the manufacture of, and for the enrichment of coal gas. One steamer was destroyed by fire off the Peruvian coast. The other was

In comparison with the United States which, according to the latest figures available—those of the United States Geological Survey—in 1920 produced 66.8 per cent of the world's petroleum with Mexico, which contributed 23.5 per cent, or with Russia supplying 36.6 per cent. Peru with its quota of 0.4 per cent. may appear like a pigmy amongst giants.

But the Peruvians, however, from the colossal totals provided by the recognized aristrocracy of the producing countries, the following figures of production over a term of years are not without significance in bringing home the increasing importance of Peru's growing contribution:

<table>
<thead>
<tr>
<th>Year</th>
<th>Production in Barrels</th>
</tr>
</thead>
<tbody>
<tr>
<td>1906</td>
<td>3,200,000</td>
</tr>
<tr>
<td>1910</td>
<td>3,583,010</td>
</tr>
<tr>
<td>1912</td>
<td>3,751,143</td>
</tr>
<tr>
<td>1914</td>
<td>3,977,602</td>
</tr>
<tr>
<td>1918</td>
<td>2,558,945</td>
</tr>
<tr>
<td>1919</td>
<td>2,536,102</td>
</tr>
<tr>
<td>1920</td>
<td>2,568,743</td>
</tr>
<tr>
<td>1921</td>
<td>2,816,649</td>
</tr>
<tr>
<td>1922 (estimated)</td>
<td>3,750,000</td>
</tr>
</tbody>
</table>

Peruvian oil is, in general, of high quality with an asphaltic base, but containing more than 20 per cent. of benzene. Its specific gravity is around 84. The crude varies in different parts of the field, as, for instance, in the case of Negroitos, where, on account of the character of the "cover" the petroleum has been better preserved than at Zorritos and contains more of its volatile constituents. The Zorritos oil, however, yields more kerosene.

The reader may have already gleaned from this narrative that the production of petroleum in Peru has tested every quality of the pioneers as well as every resource of the practical oil man. Necessities of industry and even of life had to be created. Manufacturing centers there were non-existent, railways dreamed of, while the backward state of the inhabitants may be judged from the fact that the fishermen from the scattered coastal villages still put out to sea in frail rafts of balsa wood, as did their forefathers in the days when Pizarro landed at Tumbes.

Overshadowing all other handicaps was the soil and climate, interminable deserts, and the lack of water, and its ever-shifting sands which drift over railways, cover railways, clog machinery, and wear out instruments, tires, boots and tents. No place this for the indolent or the faint-hearted, and we owe much to the pioneers, who, through difficulties, hardships and disappointments, labored to build up an industry which now ranks as perhaps the most valuable asset of the country.

Laboring under desert conditions, the first essential was water supply. Up to the year 1905 this was obtained from wells in the Panama valley, where brackish water was pumped by windmills, and carried by mules to the centers of activity in that area.

In the year mentioned, an evaporating plant was built at Negroitos, but tremendous difficulties were encountered in trying to circumvent the heavy surf along the coast. Various methods were adopted, tunnels were run out past the breakers, shore wells were sunk, and a pier 800 feet long was built in 1907, only to be destroyed the next year. The plant has now been added to and still carries on, and a new development, along the most modern lines, assures a steady supply from the waters of the River Chira, twenty-four miles distant.

Where in days past but a few scattered dwellings of a primitive nature defied the laws of sanitation and mocked at the law of gravity, we now see the flourishing towns of Talara and Negroitos, each with a population of around 4,000.

At the former there is operated by the Inter- American Oil Company a refinery capable of running 7,000 barrels of crude per day, an extensive system of pipe lines bringing the oil from the producing centers. Mighty storage tanks with a capacity of nearly one million barrels are also to be seen, but Talara's chief pride is in her harbor. This, with its large concrete mole, is one of the finest harbors on the west coast of South America, and large ships can now be loaded or discharged safely, easily and quickly.

Until practically the last decade the patient and patient-sea, indomitable devils, were the only medium of land transportation. Now, however, all is changed. There are modern grade-separated railways which form a network throughout the producing fields; the ubiquitous Ford trolley cars newly built roads and new and modern methods, pene- trates where roads are not yet; tractors haul their stupendous loads over desert sand or stony plains that former forces which science and invention have brought to the aid of man are harnessed to the chariot of industry.

The development of the country's petroleum resources, the country has reaped the benefit of enlightened industrial relationships, modernization of business, liberal education of both native and foreign elements, and medical and surgical skill. The engineering companies had not only to build up an industry but also a community, molding a mixed race of Spanish, Indian, Aymara and Negro, into a body of willing and clever workmen, skilled in the arts and crafts of the modern industrial world. In all of this they have enjoyed the support and cordial cooperation of the Peruvian government and people.

Human nature being as it is, it goes without saying that this enterprise has not been carried through without at times a certain amount of friction. In 1910, with Peru and Ecuador on the verge of war a large number of undesirable settlers were deported by the latter country and found their way into the various camps. Thereafter, in a manner of their kind, they proceeded to agitate and labor troubles resorted. A still house and the club at Negroitos were badly damaged, work was at a standstill, and it was not until 1917 that the last of the trouble had died out.

Much water has flowed under the bridges since the lince duddled with his beara, or Joseph Acosta came a-navigating along the coasts of a new land. But the spirit of man remains the same, and the uncomprehensible lince or the haughty Don have no greater claim to admiration than the adventurous spirits who planted the banner of petroleum in one more corner of the globe and have erected to themselves as monuments the lofty derricks.

* * *

Drilling Rigs Busy in the West

At the first sign of spring, the various drilling camps of the company in Western Canada sprang into activity and operations at all locations are now well under way. These structures being drilled this season present favorable geological indications which promise results will be attained before the snow flies again.

The principal scenes of drilling operations are at Muddy Lake, Sask., depth about 2000 feet; Consul, Sask., near the Montana boundary, depth about 2750 feet, and the following in Alberta: Royalite No. 3, near Okotoks, 2500 feet; Willow Creek, 2500 feet; Misty Hills, 2100 feet; Fabayan, 1725 feet; Consul, in the foothills west of Edmonton, 150 feet, and Peace Cope, 1750 feet.

In addition to these operations, the crews at Fort Norman will put in an active season and much interest attaches to these far away operations.
To Fetch a Pail of Water

Important economies both direct and indirect and increased production are resulting from the recent completion of a water supply system for the operations at Negritos and Talara. Negritos and Talara are situated on the arid seacoast of northern Peru, where the dry season lasts twelve months of the year. The most recent rainy year was 1892. This absence of rainfall makes the coastal plain a sandy desert, devoid of vegetation, and gives to the towering mountain peaks and their supporting foothills a barren and most forbidding aspect. The climate, though not as hot as that of most equatorial lands, is uniformly warm.

Herefore all fresh water used in the oil fields and about the refinery has been procured by distillation of sea-water, salt water being used for as many purposes as possible. The Chira River, the only available source of supply, is a large stream lying two to three miles south of the southern boundary of the company's estate of Paraiso and La Brea, and emptying into the Pacific Ocean some twenty-five miles south of Negritos, the headquarters of the drilling and production departments. The river rises far back in the Andes, where the rainfall is much more copious than that received by the land along the sea-coast.

The greatest difficulty confronting the development of the scheme was that of transporta-

The sandy desert which stretches from Negritos to the river and across which the pipe line was to be laid and over which all materials had to be hauled, presented a most formidable obstacle. In Peru, when a native wishes to transport a load too heavy for his wife's head, he puts it on the back of a donkey, and what he takes then can always be packed in bundles weighing not much more than one hundred and fifty pounds—the usual capacity of the "bale." Mark Twain said that the donkeys in Palestine were "docile but opinionated," and this applies with equal force to the burros of Peru. They are assuredly docile and they never complain of a load if they can stagger under it. Sometimes only a head and four tiny feet will protrude from under the burden and they will patiently plod over the desert between two long planks which are lashed to their backs, one end dragging on the ground and the other bobbing over their heads. But they were not equal to the transport of the heavy material required, and the only other animal in Peru appearing in large numbers and thoroughly domesticated, of which it is to be regretted no practical use is made, is the llama. If all the fleas could have been induced to pull together one could almost see those twenty foot lengths of eight-inch pipe go hopping into place across the desert. But, as the burros were too small and as the fleas were too individualistic, the International engineer had to haul his loads across the desert with prosaic motor-trucks—not the ordinary motor trucks, to be sure, but big ones with power on all four wheels.

Equipment and material were discharged from steamers in Talara Bay and hauled thence by the company's railroad to the southern railroad head, which during the progress of the work was extended to a point about eight miles south of Negritos. All the material used at the pumping and filtration plant, amounting to many thousands of tons, was hauled a distance of twelve to fifteen miles by motor truck, except the concrete sand, which was procured on the site, and the gravel which was hauled about three miles. Of eight-inch pipe alone there were hauled over a thousand tons, an average truck-load weighing over six miles. The average truck-load weighed from two to two and one-half tons and the heaviest pieces hauled were the last 400 of the large pumping engines, each weighing 9,000 pounds.

The going was extremely hard, being for the most part over the wind-swept sand of the desert where practically each trip means the breaking of a new trail through the drift-filled flats. Except for temperature and the salinity of the sand for snow the conditions were much like those met with in Aachen in the north.

Looking across the river from West—water tank—intake canal in foreground.

The site selected for the pumping station, which includes the filtration plant, was a pretty grove of arboles trees on the high bank of the river. When the rough and frond brush was cleared away to make room for the various structures, the red-backed lizards dragged their bright green tails through the dust in search of safer homes. But the many hued birds made merry in the tree tops throughout the clamor of the build-

ers and still defy the noisy exhaust of the en-
gines.

The population of the watershed is compara-
tively scant and its civilization decidedly primi-
tive. The likelihood of pollution of the water, even from the villages along the river banks, is slight at present because of the absence of sewage systems which might discharge directly into the stream. Nevertheless, a filtration plant has been included in order to eliminate all danger from waterborne diseases.

An intake canal, approximately 1200 feet long, was constructed across the lowlands lying be-

T a89 water's edge and the pumping plant which stands on the higher ground. The water flows through this canal from the river to a concrete section well where a screen removes the coarsest substances that may be brought in with the water, and is then picked up by the low lift pumps and delivered to the sedimentation basin. On its way to the latter site, where the water receives a dose of alum solution whose duty it is to hasten the precipitation of rough suspended matter in the "raw" water and to form a gelatinous coat-

ing on the surface of the filter sand for the more rapid removal of color, finely divided suspended matter, and bacteria from the settled water. After passing through the sedimentation basin the water is delivered by gravity to two concrete filter beds of the so-called mechanical type. Here it passes downward through the successive layers of sand and graded gravel, leaving the foreign matter behind, and then to the filter-
ed water basin where it is chlorinated. After going through a purifying process the water is now perfectly harmless and is ready to be supplied to Negritos and Talara by the high pressure pumps. The pumping main is an eight inch pipe twenty-two miles long, from which smaller lines branch off to the various points of consumption and to the storage tanks which are erected on the neighboring hills. The entire plant was designed by Mr. G. L. Watters, Hydraulic Engineer, and constructed under his supervision.

The system is now in operation and the Chira River water is being used for all purposes at the Talara, Negritos, Lagunitos, La Brea and all the drilling camps in the field, the more remote of which is in the Quebrada Mogollon, a distance of over twenty miles from the main drilling camp at Negritos.

The condensing plants both at Negritos and Talara, which have been used for condensing the sea water for general use, are shut down, the cost of operating these plants formerly being a quar-
ter of a million dollars annually.

As a result of the completion of this water system a more extensive drilling campaign is now possible. At the present time there are forty-five string of tools in operation, and it is with the intent to enlarge the scope of these op-
erations.

Transferred to Peru

Mr. George Sheppard, D.Sc., member of the Geological staff of Imperial Oil Limited, has been transferred to Peru.

Mr. Sheppard has been engaged in geologi-

cal work in Western Canada for the past three years. During that time he has trav-

elled over a great part of that vast country which lies between Peace River and the International boundary, and has favored Re-

view readers with many interesting stories about the West.

We look forward to future contributions from Mr. Sheppard after he has established him-

self in Peru.
Two days up from Guayaquil our boat, the "Manavi," stood off the little town of Manta, Ecuador, and we looked for the "Manali," the youngest and smallest of the great "Lute Flot," to meet us. In a few minutes we saw her rounding the point of Jaramijio Bay and soon we were introduced to Mr. "Billy" Light, the Governor of Jaramijio. This genial Englishman treated us most cordially, but was unable to hide entirely his dismay at the discovery that a member of the opposite sex was to invade his completely masculine camp. Mr. George Rawlings, the superintendent-driller of the Kena- doran camp, who had accompanied us from Ne- gritos, telegraphed Mr. Light of the coming visitors but there was some mistake in transmission so the hurried truth burst upon the Governor without warning. However, he rallied gallantly and there after he and the camp as a whole suffered this feminine invasion with every appearance of equanimity, and perhaps even a little pleasure.

Another and very important member of the camp had also come to meet us. This was Mr. Light's friend "Piper." Piper is the largest dog we ever saw, and the most intelligent and best man- nered. He understands English and S pan i s h equally well, and obeys a low spoken command with dignity. Piper never sniffs at food from the hand—he waits until he is perfectly sure that the tempting bit is intended for him, and not merely en route to the mouth of the bolder; then he gently and poisefully takes it. A splendid watch-dog, he has a very keen distinc- tion between a "gringo" and a native. At the least unusual sound he is up and looking about, so of course he is very valuable as a guard around camp. But he especially impresses one with his lovable- ness. We should like to write more about Piper but really feel that we should get on to the camp.

After a farewell visit to the Captain of the "Manavi" we got aboard the "Manali" and start- ed for our camp, Jaramijio, which is about seven miles from Manta, in a bay protected on almost all sides from the open sea. The air was deliciously cool, it was so early in the morning that the clouds had not yet faded before the sun. The forty-five min- utes it took to round the point and have camp passed all too quickly. From far out at sea the camp, with the high derrick towering over it, is visible, and at times the light of the derrick gives just enough tall bamboo poles, send their rays many miles. Behind the camp is a low mountain range, with a high peak (Monte Cristo, 6000 ft.) with not yet reached. The camp was seen as we came around the bend from Manta, the blue and sparkling bay with its curling white breakers, the house on a rise of ground and the mountains behind—a most ideal place. As Mr. Rawlings said, "it's too good a place to fail in!"

There are no piers in this part of the world, so we landed by means of a native dug-out canoe. The first time one does this one clings to the sides and looks fearfully behind for breakers, but the natives are quite skillful and it is only occasionally that one gets a ducking. This particular landing was accom- plished without mishap, giving us a false sense of safety. In fact, the next night when we went into Manta to see a movie, a fine large wave came up and sat in our lap as we were landing. The truly deciding part of the affair, however, was the movie was called off on account of rain. It seems that the roof was a fair-weather roof.

It is difficult not to burst into a flood of superlatives about the camp. There is a comfortable, well-built house on a bluff 100 feet high directly overlooking the bay and ocean. The wide verandah catches the breeze from every side. It is always cool; every day the sun shines gloriously from a blue sky, and the gentle break of the waves on the beach below soothes one to sleep at night. At this season, March, the trees are bright green and full of gayly-colored birds which dart about like streaks of red, green or yellow. Just 57° south of the equator, it is incredible to find such an invigorating climate.

Mr. Light, who has the true home-making inst- int, although a bachelor, started some time ago a poultry yard, garden and flock of goats, and now there are chickens, turkeys, ducks and even pigeons, all with split-bamboo houses and cement water- troughs, as modern as one would find at home. There is an electric light plant, a water-condensing plant, and last but not least, a good cook and Gre- gorio, the diminutive but highly efficient house-boy. Survey of the property was started in Feb- ruary, 1918, by Dr. T. O. Winross, Mr. Light and Mr. Gordon Kid. The location for the well was made by Dr. Bowser, and in the spring of 1919 Mr. Light started to clear the land. Material was very slow in coming; in November of that year it was appearing gradually. The well was opened in April, 1920, with a large celebration, Mr. Light be- ing master of ceremonies. The village band and much beer added to the gaiety of the occasion, which was quite a "hosa" for the people of the country. After dear auspicious beginning, they were drilled fifteen feet when they were obliged to shut down for several months on account of the lack of material.

The difficulties of locating caused serious delay; a "beach" raging in the raft, loaded with 77 joints of 5" pipe, was overturned in a rough sea and because of the deep water was never recovered. Since then there has been 1500 feet of drilling and waiting for material, which seems to be the customary vicious circle of the oil-driller. Still, the company (No. 1) has now been drilled to about 1400 feet, with no success, and it is to be abandoned. Another well will be drilled on another location thousands of miles away.

Ten miles back from the camp is Montegrosa, a village taking its name from the mountain, where

(Continued on Page 25)
### Who's Who in South America

As from time to time enquiries are received by the editor of the Review as to Canadians and former residents of the British Isles now in the organization of the International Petroleum Company in Peru and Colombia, the following list is published of respective members of our communities in these countries.

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
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<th>Office Address</th>
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<tbody>
<tr>
<td>W. M. Pierce</td>
<td></td>
<td>Drilling Dept. Engaged from Northwest Co.</td>
<td>P.O. address, Negritos.</td>
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<tr>
<td>J. K. Coller</td>
<td></td>
<td>Geologist Engaged from Imperial Oil Ltd.</td>
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<tr>
<td>W. R. Harper</td>
<td></td>
<td>Drilling Dept. Engaged from Imperial Oil Ltd.</td>
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<td>H. R. Halsey</td>
<td></td>
<td>Nurse Engaged from Newmarket.</td>
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<td>R. Wimmer</td>
<td></td>
<td>Machinery Engaged from Imperial Oil Ltd.</td>
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<td>A. L. Bigger</td>
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<td>Ass. Refinery Dept. Engaged from Imperial Oil Ltd.</td>
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<tr>
<td>P. R. Young</td>
<td></td>
<td>Machinist Engaged from South America.</td>
<td>P.O. address, Negritos.</td>
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<td>R. K. Pflumser</td>
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<td>G. M. Palmer</td>
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<td>Electrician Engaged from Imperial Oil Ltd.</td>
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<td>B. W. Taylor</td>
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<td>J. McLean</td>
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<td>G. E. Corwin</td>
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<td>E. G. Walkin</td>
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### Production Department, Peru

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<td>Bailey G. L.</td>
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<td>Brady W. G.</td>
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<td>Ackler, L. F.</td>
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<td>Bigger, A.</td>
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<td>Blacklock, J. R.</td>
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<td>Bly, A. C.</td>
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<td>Crepp, A. N. P.</td>
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<td>Dewar, A.</td>
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The Courier from Norman

(See Illustration on Back Cover Page)

The group that sat in the Waterways train that afternoon of the 24th of March last consisted of three commercial travellers who were making their first visit to the alleged fringe of civilization at Fort McMurray, and a rather small and not by any means effective watch had just reached the supposed civilization at the end of steel, but approaching in the opposite way.

The travelling men were well-groomed and looked as though it had been their good fortune for some little time to enjoy what the boys in the west call good eats. The little man was well enough turned out and he certainly looked healthy; but there was no obsequity on his bosom to indicate that he had enjoyed the opportunity to pile on adipose alongside the radiator of a sleeping car.

The travelling men were suffering hardships.

They had come on this jerk-line railway all the way from Edmonton, 300 miles in the dead of winter. The conversation among them ran something like this: "Did you ever see anything like this service?" or "Is the pay-eyed limit!" Wonder who is supposed to look after the heating arrangements in this car? Say, wouldn't that hotel in Fort McMurray give you the Willy's? Well, I thought I was going to die when they handed me that bath; it was cold. I'll bet a dollar bill it has a hole in a doughnut that this darned old carvan's not making ten miles an hour." And the travellers gazed disconsolately out the window at the vistas of snow that stretched on and away toward the north to a point beyond the limit of imagination. To hear them they were certainly roughing it in the far north.

The little man with the bronze complexion said not a word. Surely these were real hardships by the commercial men did not seem to stir up in him any synchronizing emotion. On the contrary, he leaned back in the corner with the confidence that what could be regarded as nothing short of an attempt to register enjoyment of luxury, satisfaction, report. And after a while he drew from his pocket a little feather-covered memorandum book and, turning to page nineteen, he perused:

"Wednesday, March 22nd—Got up at 4 a.m. Temperature about 42 below. Cooked breakfast—poached eggs, hash, porridge. Tired out. Packed up and started on by train. Passed a group of snowshoers. The snow was several inches deep in the brush and the men were well equipped for the journey. The train was an old one and we had to pay a small fee to enter."

That was all it said. Just 112 miles in 40 below, without sleep or stop. The writer had to catch the train. The rather laconic record was a two-days' diary of the last end of the trip of the despach bearer from the Imperial camp, Bear Ranger, Lake McMurray, after reaching the Farmer-Murray River; a sort of cross-section filed from the traveller of one who had just emerged from the real outside to the civilization as to be enjoyed at Fort McMurray and this side thereof. It was illustrative of the kind of travelling that had been endured as compared with the kind of travelling that the raconteur was now enjoying.

The little man was Rockefeller, height, 5 feet, seven inches, weight 125 pounds, age, not stated, but old enough to vote even before the war, returned now, and present day long distance roustabout for the Imperial Oil.

Ronald MacKinnon has been many years in the farthest north. He knows the waterways and the railways and the rivers. In 1920, after coming from France, he went north with the Great Slave Lake party and spent the summer there, returning in the autumn of that year. In 1921 he went in again ahead of the main Imperial party to look after the forwarding of supplies and the preparations for the main outfit which was to come down on the first boat. By previous arrangement, he was the winter over to direct the affairs of the outfit and oversee the doings and proceedings at the winter camp of the company in the Fort Norman country.

Leaving Bear Island on January 20th with a team of five dogs, and dressed in the Eskimo equipment of caravans and trappers, with skins, snowshoes and snowshoes, he set out for the south. 1,420 miles away, accompanied for the first part of the journey by a mail runner returning from Grigol. The going was bad and the weather was cold. The mail was delayed almost to the tremendous mutinization called for by the low temperature and strenuous physical exertion. The snowshoes froze and the mail was abandoned. And there is the ever-present resentment of the company that has yet to find a solution for the problem. At the time the Imperial Oil manager had reached Fort Norman, which is just 50 miles above the camp, his feet were blistered and his hands, forever Northern travellers consider normal for the first few days.

But a day's rest, and on February 1st they were again on the road. This time the party was enlarged.

There were two officers of the Royal North West Mounted police, and an Indian runner accompanying. The party was thoroughly equipped. The officers were all well dressed and no one could tell that they were going on the trail themselves. Their equipment was as good as any the party was equipped with. The trap was rounded up and everything was ready. The party was on its way.

A savoy new added fragrance to the bosom of the surroundings. The grumble of the snowshoe was but a faint noise in the vast expanse of the land. They were moving swiftly and very quietly and they were not too far from the edge of the Canadas. The men were all well groomed and looked as though they had just come out of the world of civilization.

"And we might as well go on to the next page.
The alleged crazy man had had a partner. The partner had found the isolation of a trappers’ life too much for the nerves and had hit the trail for Wigley. Arriving there, he realized that no timber (as they would do to justify his desertion of his partner in the dead of winter. So probably heaving it unlikely that the officers would travel in such weather, he thought to arrange a few weeks’ respite and the hospitality of the Royal Mounted by graphic recital of the story that his partner had gone crazy. The laugh came when No. 2, who had been visiting for the day, was asked why he had fled back to the cabin.

“Why, to get my snowshoes,” was the reply.

The incident will find a niche in the traditions of the north as one illustrating just what the northern winter will do to the nerves. Those who go north of 60 will do well to leave their “goat” back at railhead.

The night was spent in the trapper’s cabin in a general exchange of news and gossip. The next train would pick up whatever items were dropped and carry them on. This is the “ossacinas telegraph” of the north, sometimes incredibly swift and unbelievably accurate. The accommodations were comfortable, but no means spacious. Tin came to spread the bed-rods, the stove to be turned side-ways and wedged into the corner to give all room to lie down. They build for utility, not for grandeur, in the north.

Just below this cabin, there is one of the strange freaks of the northern winter. For five miles, from that point where the Blackwater, a river from the east about one hundred feet wide, joins the mighty Mackenzie the big river is open for five or six miles. A tempestuary of fifty miles below and the whole country in the grip of old Boreas, it is surely a strange sight to see the water flowing and the fog the gasoline. This plant, which is so ever-winter. The explanation awaits the scientist.

A recital of all the incidents of Ronald MacKinnon’s twelve hundred mile trip, made at an average rate of 20 miles a day, would use much more than the allotted space. But there are a couple of days’ record that cannot be omitted if the intent is to convey an idea of what travel in the lower latitudes during winter months consists.

In explanation, it should be mentioned that every traveller tries to follow a snow-shoe trail wherever one can be found. It offers “bottom” for the feet, which is much better than plunging about in the flowery snow. But once has been a drifting, the following is by no means easy. When the sun shines, the snow-shoe tracks are plain, like the finger prints that little Rollo draws on mother’s window. But let the sun go behind a cloud and it is as though the pane had been soaped. There is only a dull and lifeless white, in which the traveller feels his way along with his feet. Unless one knows where the trail lies, a misstep is as good as a mile.

Here is the little excerpt from the diary:


“Monday, March 24th—Had fairly good sleep but was not much good for nothing breaks fast. Managed to negotiate cup of tea. Away at 6. Oil glide essentially an idea sheen. We are at. Still cloudy with occasional showers. We are not going to leave until late at no fault. Struck out old trail near the lake, and then, at 3 p.m. at Indian shack half mile from where we took to the lake. This is certainly the life.

And the commercial men, playing rowdy in the smoker, were saying: “Ain’t it the limit, having to put up with accommodations like this? I’m gonna quit the booming road.”

Making Gasoline from Gas

A hole in the ground, the relic of an unsuccessful attempt to find oil, thirty-five miles south of Calgary, which last night and day for years has been belching forth a great volume of natural gas to waste itself upon the winds of the foothills, has at last been turned to the service of man. Instead of the incessant fruitless drain upon the subterranean gas tank, the flow which comes from the bowels of the earth now does double duty. First it is drained of its gasoline content and then, with none of its qualities as a fuel impaired, it is piped to Calgary and to the households of that city it proved a boon during the past winter. How this Imperial Oil operation came about is here related.

The Turner Valley oil and gas field gained international note in May, 1914, when oil was discovered at a depth of 2718 feet in Dungan No. 1 well, which was being drilled by the Calgary Petroleum Products Co., Ltd. The oil was of an unusually high quality, being 62° gravity Beams and containing 90% gasoline. Instances have been cited where it was used in automobile engines just as it came from the well.

The resultant “boom” brought to Calgary the usual horde of speculators and promoters of dubious character and they reaped the usual rich harvest from their stock-selling schemes, but aside from their activities, many legitimate concern entered the field and their efforts from that time up to the present resulted in the drilling of about 15 wells within the limits of the Turner Valley field and about 25 wells in the neighboring parts of Alberta, but, unfortunately, only a few of these have found oil and then only in very small quantities.

The Calgary Petroleum Products Co., Ltd., which was incorporated in 1912, and its successor, Calgary Petroleum Products Ltd., formed in 1914, played an important part in the development of the field from the very beginning. When it was found that the oil discovered in well No. 1 was soon exhausted, the well was continued to a depth of 3924 feet, where a very small quantity of oil of a slightly heavier grade was encountered.
The Deepest Hole in Canada

June, 1922

The Imperial Oil Review

THE SCORE BY TONES.

Nob. 3. 1390 tons. 1390 tons. 16,000 tons.
Nob. 2. 1370 tons. 1370 tons. 16,000 tons.
Nob. 1. 1350 tons. 1350 tons. 16,000 tons.
Nob. 4. 1340 tons. 1340 tons. 16,000 tons.
Nob. 5. 1320 tons. 1320 tons. 16,000 tons.

Nob. Total Weight: 6900 tons. 6900 tons. 80,000 tons.

By the time the boys got around to where they were tending for a pool with a one-hundred-and-twenty-three-thousand-pound string, you can take it from me that nobody wanted to know any too closely just how much six-inch would hang together, because we all thought we had pressed the limit pretty hard already, if we had not actually passed the theoretical breaking point.

Words to that effect, were what W. S. Applegate, Western Superintend, had to say of the final operations at Twin Butte No. 2, in the Pincher Creek area, where a new deep record for Canada has just been hung up by Imperial Oil Limited, driller.

When the drills ceased pounding, the hole had attained a depth of 4500 feet, surpassing in depth, all other holes in the Dominion, and by many hundred feet, all other comparatively deep holes save one. The single exception which at all approaches the Imperial hole in depth is the Record well at Okotoks, where a Calgary company attained something over 4200 feet, and this performance is made doubly remarkable by the fact that while it stood for some months as the Canadian deep record it was drilled by use of a "star rig," the theoretical performance of which was about 1700 feet.

There have been deeper holes drilled on the North American continent than the Imperial's Twin Butte No. 2, but all handicaps considered, none more remarkable.

In the first place, the well was located at a point 24 miles south of the railway station, making it necessary to keep on hand a great number of spare parts, contingent against accident, and, of course, requiring a 48 mile round trip, whenever the odd part that nobody thought would go out of kilter did go. This isolation caused a certain slowness of progress, through excess of caution lest they be caught short for something no one had thought necessary, and which they therefore did not have.

The ground itself was bad. The Dominion government geologists plot that part of the country, "The Disturbed Area," they err on the side of over-conservation. The fact is, Paul Bunyan must have tilted the country up on edge and hit it with a club. At any rate, the drillers found that they had dealings with every puzzle of desolation and perversity of stratification to be found in the book—and then some.

Even the climate is none too kind in these parts. The Chinook that the immigration literature tells about comes sighing through the mountain passes, laden with the silent caress of the Staggype, and in midwinter its coming is welcome, although in summer it dries the skin to parchment and shrivels the very milk of human kindness in the white man's breast. Then there is another wind that rips through the hills every once in a while of which the immigration literature saith naught; and which, and unmentioned visitant would just about send an Eskimo scurrying for Herschel Island in search of an equable climate. Between the two, the necessary keeps "jazzing" up and down, winter and summer, in a way to leave the driller for ever in doubt whether it is asbestos gloves and R.V.D.'s or a coon coat and some canned heat that he needs for the tower. And so the operations, which were commenced on August 1st, 1920, were continued until completion, March 25th, 1922.

Very only minor interruptions and no serious mishaps were met during the entire progress of the work, a tribute alike to the equipment and the crew.

The equipment was a heavy duty California Standard with a Clark gas engine. This latter feature of the equipment has been one constant source of debate among drillers since it was introduced in the Alberta field. The hole is the deepest in Canada and the gas engine did it, so right there is sufficient proof of its efficiency. Most of the drillers admitted that for straight drilling or underreaming it has anything else known to the science.

A Visit to Jaramijo Camp

(Continued from Page 33)

Mr. Light has already assembled the capacity of oil-father in this church. From our short but intimate acquaintance, we should not have thought Mr. Light so philanthropic, but we were evidently entirely mistaken in his character and did him a great injustice, for we were informed that upon one occasion he was escorted from camp by the most important members of the town, presented with a dusky godmother in a white silk gown, and taken to the church. His blessing was much appreciated, also his financial assistance, so much so that he has twice been oil-father in the same church.

We spent two very happy weeks at Camp Jaramijo and left with much regret. The bathing there is the finest to be found anywhere, with a smooth sandy beach, gentle breakers, and water always warm. Mr. Light and all the boys were the kindest of hosts and did everything to make us comfortable. We feel that it would be an invincible oversight not to mention the part they have taken in this delightful spot, so we are looking forward to going back again soon to find a big oil field at Monta.

Making Gasoline from Gas

(Continued from Page 31)

their main line at Okotoks, but despite the unfavorable weather—it was around 20 below zero part of the time—the Imperial construction crew, under the direction of Mr. J. H. McIvor and Mr. S. G. Comis had the compressing machinery in operation on the afternoon of December 31 and the Gas Company's field head, by Mr. H. R. Pearson, had the pipe line ready, so that delivery of gas was commenced on time.

The compressing plant contains six large compressors which reduce the gas to 170 lbs. pressure and force it through the gasoline extraction plant and then to the storage tank. The extraction plant is of the absorption type and the process consists of the gas coming in contact with an oil of about 34 degrees B. and 100. This absorbs the gasoline from the gas and the gasoline is later recovered from the oil by distillation. The decrease in volume of the gas in this process is almost negligible and the heating value of the gas is practically the same as it was before the gasoline was extracted.

Apart from the value of the gasoline thus obtained, its extraction reduces the difficulties connected with pipe-line operation. If the gasoline is not removed from the gas before it enters the line it has a tendency to condense and not be in the pipe line comings, resulting in leakage.

The compression and absorption plants have been working very satisfactorily and the addition of approximately 2,500,000 c.f. per day to the gas supply was very welcome to the people of Calgary during the cold weather.

The Drilling Crew.
The Imperial Oil Review

June, 1922

The Campaign in Colombia

Imperial Oil Limited being the head of the frying pan, etc. et seq., the Interna-
tional Petrochemical Company, Ltd., adding another branch to the geologic tree by acquiring, in
1919, an interest in the Tropical Oil Company which was engaged in developing a concession in the
export business at Barrancas-Bermeja, originally granted to Roberto De Maris, a Colombian, by
the government of that country.

The campaign of 1921 was at Barrancas-Bermeja, four hundred miles from the sea-coast, on
the banks of the mighty Magdalena River; one of its tributaries, the Colorado, the first drilling
was undertaken.

By the end of 1918 three wells had been brought in.

It is not our intention at this time to enter into a full report of what is being done in
the developing field, suffice it to say that an army of men are engaged on the multifarious tasks
which the exploitation of virgin oil territory entails.

Geologists are laying bare the secrets of Mother Earth and tracing the promising structures by
all the powers with which science and deductive reason have endowed them. Engineers are laying
out wagon roads, building bridges, constructing railways, and have run a pipe-line from the wells
to Barrancas-Bermeja.

At this latter place large storage tanks have been erected and a refinery is in full operation, which
will revolutionize transportation on the inland waterways and railroads by substituting oil for
wood as fuel.

Permanent camps have been built; tons of mater-
ial have been transported by rail, boat, truck,
tractor and mule, from the coast to the centers of
activity; offices have been established at Cartagena,
Barranquilla and Medellin for the transaction of
a growing volume of executive business; a never-
resting movement to combat the diseases peculiar to the country, whilst the need for clean-
liness and sanitation is being brought home to the native population.

Last, but not least, and to give the clue to this
ant-like activity, are the derricks of the drillers
reared amid the smouldering stumps of the jungle in
clearings painfully hewn out from amongst the
dense growth of trailing creepers, exuberant
flora and blanketing undergrowth.

Including the three original wells of the "Trop-
ical," there are ten locations at which the produc-
tivity of the territory is being tested, and, should
the results justify it, a pipeline will ultimately
extend its way from this property to the sea-coast, a
gigantic undertaking with far-reaching commercial
possibilities.

Having thus generalized regarding Colombia, we may relate one particular incident in the
history of the field which shows a glamour around the
wonder-driller and invests his daily routine with
the thrill of adventure. We refer to the fire at Well
No. 3.

One cannot but marvel at the matter-of-fact, diagnosis-severe fire that had already
ignited at the entrance to the noisiness of the mishap. Indiscutibly we recall, on reading these reports, the
time-honoured sentiment of Saratoga Bridge, or the
strain and sternness of epoch-making struggles were
in progress, invariably bore the legend "No news of
importance."

Well No. 3 is evidently a "bad actor," and has
had a previous experience with fire, as during the
early drilling the rig at this location was burned
down. Besides this, she refuses to yield her oil in
the approved manner, part of the production com-
ing from between the casing and being taken care
by means of two 2-inch connections, the main hole
being fitted with a collar.

Periodically one of these 2-inch valves is opened
up and the oil allowed to flow into the sump pit,
where it is pumped to the tanks at the drilling
d Wells to be used as fuel.

On the morning of the 11th of March at 8.45, Mr. E. B. Frasche opened up the valve and
the oil commenced to flow into the sump. At 8.15 there
was an explosion and immediately the derrick was
wrapped in flames. Scouring personal risk, Mr.
Frasche dashed into the blazing pile and succeeded
in closing the valve, barely escaping the whole
catastrophe. He was injured, but managed to
reach the ground in a tangle mass of flaming timbers, breaking the connections and
allowing the gas and oil flowing to add fuel to the conflagration. Desperate efforts,
at grave peril, were put forth by members of the
staff to control the oil and by a determined
valve, being directed on the main valve in an attempt
to prevent the major production from being involved,
but these were unavailing and by evening this valve
had burned off. Then "the fire was in the air"—liter-
ally as well as figuratively. Every four or five
hours the well would flow, sending a column of
blazing oil, gas and smoke 400 feet into the air. Our
philosophy and experience admits that "an early
sight is quite impressive," and who shall say hi?

As nothing could be done to stay the principal
blaze until the timbers had burned out and fire-fighting
resources had been marshalled, efforts were centered on extinguishing the gas, which had
sprung up all around, vegetation was cut
down, to spread as much of the burning gas as
could be contained.

Greatly handicapped by lack of water, the
tire fighters waged a strenuous battle against heavy odds,
and it was not until noon of the ninth day
that they were able to command a sufficiency of
water to dampen the flames. After this a substantial cut was made into the burning well and, choosing a moment
when there was a temporary halt in the conflagra-
tion, one last determined assault was made. Behind
a barrage of water and hissing streams the "foreign-
ers" went over the top, gradually drawing nearer
to the well, whilst natives followed after, throwing
earth on the burning and boiling pools of oil. By
three in the afternoon success had crowned the
efforts of the heroic battle and the main blaze
was extinguished after continuing its devouring
care for nine and a half days. The small fires in the
vicinity were then attended to and by evening all
danger of a new outbreak was past.

The material losses were heavy, the derrick,
rig-iron, 300 feet of drilling cable and 3,000 feet
of casing were being destroyed. The casing collar
at the well head was badly burned up and the top
joint had to be replaced and clamped down to pre-
vent oil flowing from the main hole. As no
connections could be made, a temporary vacuum was
dug into the sump pit to carry the oil flowing from
during the casing and the work of changing the top joint and making new connections gone
on with.

This work was attended by no small measure
of danger, owing to the large amount of gas around
the well-site, and a strict guard was kept both day
and night by members of the "foreign" staff in case
of untoward happenings.

It is only natural that we should wish to know
something of the causes of this disaster, and these
are clearly set out in the official communiques and
in the official tone. The intense humidity of the
atmosphere usually prevailing in this field, causes
the tar sands in the well to become almost
very low over the ground, and the absence of any
break tends to give the non-inflammable zone over a
large area. In this part of the country the natives,
without exception, are invertebrate smokers, and it
is a common sight at all hours of the day to see both
men and women smoking cigars. (Page Mrs.
Grundy?)

The conflagration of gas-laden air and smoke
may be held chiefly responsible for the damage.

After opening up the well Mr. Frasche
went down to the sump and devoted his energies to

Driving, natives out of the danger zone. A complete
and extensive view of the surroundings is impossible owing to the dense jungle and, just
as Mr. Frasche was made aware of something
looking out by hearing the explosion, he observed a native
run out of the vegetation and up the "Antillean"
road. Sending a man in pursuit he, as already
narrated, rushed to the derrick and risked his life to
save the native. The native was captured by
his face almost burned off, his body seriously burned
and suffering the greatest agony. Although given immediate medical attention, he is not expected to live,
and whilst unable to give an account of how he
came by his injuries, there is little doubt but that
he was the cause, as well as the unfortunate victim,
of the blaze.

Evidently a "Safety First" campaign is overdue along the Magdalena, and a serious problem
confronts our staff there in preventing similar occur-
cences. At Well No. 6, where the ignition of gas,
the drillers are driven to the verge of insani-
ty by natives who persist in smoking in and around the
derrick despite remonstrance, and one can easily
imagine that a native who ignores the "remon-
strance" of the average driller is qualified to com-
pete with Balzac's (a.

The official correspondent feels it incumbent
on him to conclude his report with words of high
praise.

"We would like to mention," he says, "that our
Mr. Frasche has rendered great courage and worked
almost to the point of exhaustion in his efforts to
assist in fighting the fire. Other members of the
foreign staff found her sturdy efforts, and the great
risk which was not generally realized, and in this
connection we would also mention Messrs. Miller
and West. Unfortunately, Mr. Frasche lost his voice
through gas on the lungs, but it is hoped he will
soon recover."

We feel sure that every employee of Imperial Oil
Ltd. will heartily endorse the last sentence and extend to Mr. Frasche the congratulations, expres-
sion, congratulation and hope for a speedy return to
health.
Mr. Joseph P. Rogers, a Director of the Company, and for many years actively associated with the oil industry in Ontario, passed away at his late residence, 11 Lamport Avenue, Toronto, on Friday, the 28th of April, 1922. Mr. Rogers was a son of the late Samuel and Abeba Rogers, and was born on a farm near Newmarket, York County, Ontario, on October 17th, 1846, where part of his early days were spent. He attended Newmarket High School and Earlham College, Indiana, where he completed his education and returned to his father's home and moved with his father's family to Toronto in the year 1876. He was first employed in the coal firm which his father and his uncle, the late Mr. Elias Rogers, had just organized in Toronto. Two years later, in 1878, his father having withdrawn from this firm, began to lay the foundation of the oil business which was subsequently to be such a large factor in making Toronto the centre of the marketing end of the Canadian oil industry, and which was known at this time as Samuel Rogers, Queen City Oil Works. In 1885 Mr. Samuel Rogers took into partnership his two sons, Mr. Joseph P. Rogers and Mr. A. S. Rogers. At that time the business was known under the firm name of Samuel Rogers & Company until the year 1896 when other important interests were associated and the business was thereafter known as the Queen City Oil Company Limited, Mr. Samuel Rogers being President and Mr. Joseph P. Rogers, one of the Directors, and Manager of the Lubricating Sales Department. Mr. Samuel Rogers died in 1903 and thereafter the responsibility of the business rested upon the two sons, Mr. A. S. Rogers and Mr. Joseph P. Rogers. In January, 1912, the Queen City Oil Company business in Ontario was transferred to Imperial Oil Limited, and became thereafter the Queen City division of Imperial Oil Limited, now the Toronto and Western Division. Mr. Joseph P. Rogers continued after the transfer as Manager of the Lubricating Sales Department, also having careful oversight of the Toronto works, with the employes of which he was thoroughly familiar on intimate terms of association and friendship.

It is worthy of note that Mr. F. J. Walling, recently elected to the Board of the Company, was a pupil of Mr. Rogers in the marketing department, and throughout and long and intimate connection with Mr. Rogers held his high regard and esteem.

Mr. Rogers retired from active business in 1914, remaining, however, a member of the Board of Directors, and continued as such until his death.

Throughout his whole life he was active in church and social interests.

He was married in 1887 to Jessie Carlyle, a daughter of the late David Carlyle, Toronto, who survives him. He leaves two sons, Samuel Rogers, Bartleto, and David P. Rogers, and two daughters, Marjory and Jessie.

Resolution of Imperial Oil Board of Directors:

That the members of this Board desire to express to Mrs. J. P. Rogers and Family their deep sense of personal loss in the death of Mr. J. P. Rogers, who was an historic figure in the petroleum industry of Canada, who assisted in laying the foundation of a great business, and who for a long time was associated with Imperial Oil, Limited, as a Director has been invaluable in the counsel of the Company. Although he did not actively participate in the administration of the Company's affairs, his wise knowledge, long experience and sound judgment were always available to the Directors, and to them proved of constant assistance.

The members of the employees of Imperial Oil, Limited, and especially that of the Canada Oil Company, who are so much of the Board feel that in surviving his untimely death they are joined by men of high and wise position throughout the service who, by their, recall many examples of his high character and his kindly heart.
THE PIONEERING SPIRIT

The pioneering spirit which does not pause for obstacles and is not turned from its goal by risk or hardship illuminates every page of Canadian history. It is, therefore, by right of heritage that the pioneering spirit reveals itself in our day to day adventures.

The deepest hole ever drilled in Canada in the quest of oil at Pincher Creek; the farthest north well at Fort Norman; the deepest hole drilled in the search for oil in South America, near Negritos, Peru; the drilling rigs at work in the tangled jungles of the Magdalena Valley, Colombia; the other drilling operations now going forward in remote sections of our own west—these are a few of the many samples of the pioneering spirit in the Imperial Oil organization.

Ronald MacKinnon, Imperial Oil dispatch bearer, after a journey of 1,250 miles from the Imperial Oil camp near Fort Norman. He traversed the last 112 miles without sleep or stop.