The Republic of Colombia forms the northwest corner of South America, and is connected through the Isthmus of Panama with Mexico and North America. The country, as a whole, is composed largely of mountains; the Andes, which form the backbone of South America, divides near its southern border to form three different series of ranges, the Eastern, Western and Central Andes. These high rugged ranges, make travel and transportation in an east-west direction difficult and expensive, and this lack of communication has greatly hampered the development of the country.

The main artery of communication is the Magdalena river which is navigable for 800 miles or more; its mouth, however, is closed by a great sandbar so that incoming cargo must be unloaded at Cartagena or Barranquilla and transported by railroad to the river.

Almost the whole of Colombia lies between the equator and latitude 10 degrees north, and the climate is dependent largely upon altitude. The lowlands have a typical tropical climate and except in the coastal area east of Barranquilla are covered with dense vegetation. The concession operated by the Tropical Oil company is situated about 360 miles inland from the coast, a few miles east of the river port of Barranca-Bermeja.

The altitude at Barranca and the neighboring country runs from 400 to 600 feet above sea level, and the climate is consequently tropical. The rainy seasons are fairly well defined and occur from October to mid-December, and from mid-April to mid-June. The rain fall is heavy, averaging 100 inches a year.

Up to 1922, Colombia was an importer of petroleum but today the output of the local fields is far in excess of the country's needs as is evidenced by the following figures:

1920 Imported........63,750 bbls.
1921 Produced........66,680 bbls.
1922 Produced........323,596 bbls.
1923 Produced........424,876 bbls.
1924 Produced........444,743 bbls.
1925 Produced........1,006,707 bbls.
1926 Produced........643,560 bbls.

It is seen that the discovery of oil is a comparatively recent development, dating from 1918, when the Tropical Oil company brought in its first well on the De Mares concession. This concession embraces an area of approximately 1,319,344 acres (2061 square miles) and has a length north and south of 72 miles, stretching along the Magdalena and Carara rivers, and an average width of 30 miles. El Centro, the main camp, lies approximately 17 miles southeast of Barranca-Bermeja which is on the River Magdalena, 344 miles by boat from Barranquilla.

The concession was granted to Sr. Roberto de Mares in 1905 by the Colombian government, and in 1916 the Tropical Oil company was formed for the purpose of exploring the property. In 1917 and 1918 three producing wells were drilled, with encouraging results. In 1920 the International Petroleum Company Ltd. by an exchange of stock, took over the Tropical Oil company and since then development has been rapid and successful.

The development of an oil property in the interior of Colombia is beset with many physical problems not commonly found in North America. In the first place there is the difficulty of moving large quantities of field material up a shallow tropical river, where in certain sections navigation is rendered difficult by the ever shifting sand bars, especially in the dry seasons when the water level is at its lowest.

From the company's unloading point at Barranca-Bermeja to the main camp in the field is approximately 17 miles (28 kilometers). In its preliminary operations the Tropical Oil company resorted to canoes for transportation. With the increase of activity, the river traffic was supplemented by a one-meter gauge railroad, though the road is still maintained in constant use. The rolling stock consists of two steam locomotives, one 40 ton and one 25 ton, burning fuel oil, and two gasoline locomotives; 10 ton box cars, 10 and 20 ton flat cars, refrigerator cars, tank cars, etc.

*An article contributed to the National Petroleum News.
and passenger cars. Owing to the heavy rain season already mentioned, proper drainage of the road bed at all times necessitates fairly high embankments. Per- mussion watercourses, using cor- rugated iron culverts and concrete bridges, are required; no timber construction being feasible on account of the de- c a y of such structures from the attack of white ants. For railroad ties principal sources are Can and Comino hardwood hills have been used; these were laid in 1923 and 1924 and so far seem to have resisted insect attacks fairly well. A metre gauge steam shovel takes care of slides and necessary repair work caused by these.

The surface conditions of the greater part of the concession being exceedingly rough and hilly, it has been found necessary to build a system of roads to reach all drilling locations. Main roads run principally north and south with laterals where required. As in the case of the railroad, the heavy rainfall requires a special design of roads. It has been found that the roads built on rolling grades from three to five per cent, with a 20-inch crown and a road bed width of 26 feet are the most economical to maintain.

No road metalling or gravelling has been done on the roads are kept well crowned and oiled. This practice has proved satisfactory on the majority of the roads where the surface is a red sandy clay, which absorbs the road oil well. Trouble during the rainy season is met with where the surface is almost a pure clay that will not take the road oil in any quantity. Timber construction of bridges has been abandoned, and spans of I-beams on concrete substructures high. It may be, that to anyone who is not familiar with tropical vegetation, the question of clearing may not appear of paramount im- portance. It should be remembered that even in a good location, camp site, tank site, sub-pump station etc., requires, the clearing of the dense tropical undergrowth before grading can begin.

There are three main camps on the concession, at Barranca-Ber- muda on the River Magdalena, at El Centro near the centre of the drill- ing activities, and at Infantas the original field camp, situated at the southern end of the Infantus oilfield on the Colorado river. At Barranca there is a 1,000 barrel refinery, construction shops, power plant, ice plant, tank farm, hospital and a school for chil- dren of the workers of the staff. Good roads have been built throughout this camp, and for the use of its staff the company has provided a club house with bowling alleys, billiard room etc., with tennis courts, swimming pool and a base- ball field.

There is a hospital at Barranca, taking care of both the workmen and the staff, in the years 1921 and 1924 the medical staff reduced the percentage of cases of hookworm among the workmen from 42.3 per cent. to 25 per cent. The preva- lence of hookworm was due largely to the habit of the natives of going barefoot. Since the Tropical Oil company has been operating in the country, practically all of its employees have been taught to respect footwear, and theimportance of wearing shoes.

There are two schools, one at Barranca and one at El Centro, pre- sided over by North American teachers; and at Barranca there is a resident chaplain, maintained at the joint ex- pense of the com- pany and the staff.

El Centro is a comparatively new camp situated in a central position to take care of field de- velopment. At the time it is propos- ed that this camp will have its own camp and recreation facilities as at Barranca. Infantas, the old main field camp, is no longer occupied by such drillers as are working in that region.

In the early stages of develop- ment, native quarters consisted of pole shacks, thatched, with mud floors. The company engineers in conjunction with the medical department, have designed a well ventilated sanitary house for work- men which is now in use throughout the concession. These are wooden frame buildings, with corrugated iron roofs, containing special ven- tilating features, fully screened with insect proof doors. Wooden buildings are usually elevated on concrete piers, with corrugated iron roofs, surrounded by an oil trow to protect them from attacks by white ants. All quarters are under the constant supervision of the sanitary de- partment, and staff quarters are partly frame buildings and partly brick. The company operates its own brickyard plant which turns out a good quality brick, and a hollow tile. The policy eventu- ally will be to construct all future permanent buildings and any re- placements from this brick.

In addition to the main camps, there are two outlying staff camps and 18 workmen's camps. Each of these is in charge of a captain who is directly responsible to the town manager at El Centro for the discipline and cleanliness of the houses.

The company maintains a res- taurant at each of the three main camps for its foreign staff. Married employees purchase their require- ments through the company's commis- sary department. In regard to the feeding of the workmen, kitchens have been built in all the camps. These are occupied by boarding house keepers who agree to furnish substantial meals to the workmen at a fixed rate. In order that the meals should be kept up to standard, where possible, competition among the boarding house keepers has been encouraged. Another vital factor in feeding the workmen is that the type of food consumed varies very much in different parts of Colombia, so that it is neces- sary to provide boarding houses capable of catering for men from different parts.

Labor is recruited from all races throughout the country, but un- til recently has been largely of the transient type; it is hoped and that with the im- provements and living conditions provided by the company that the pay roll will present a more per- manent appearance.

Drilling is in progress on four structures on the concession, In- fantas, La Cira, Colorado and San Luis. The loca- tion of these structures are on the ac- cess road. The rotary system is almost entirely in use now, only a few cable tool outfits being retained for special work. A shal- low sand on the La Cira struc- ture is taken care of by Star drilling machines. Wells in the Infanta structure are completed at an average depth of 2100 feet. Experience gained during the past six years by the drilling and geo- logical departments, has made it pos- sible to predict with an exceptional degree of accuracy at what depth production can be expected, and with few exceptions wells are completed with one string of casing cemented on top of the sand, and a short liner protecting the produc- ing formation; a factor is then set on so that the well will produce under back pres- sure through a thin. To date all wells producing are flowing; this is due in part to the company’s policy since the beginning of operations, of conserving the gas energy in the formation as far as possible.

It is gratifying to note that to- day with a daily production of
Barranca the water supply is taken care of by three water wells. Producing wells are grouped in stations, each station averaging six wells—at each station there are electrically driven pumps, obtaining their power from a central power station at El Centro. This power plant has a capacity of 4,000 kilowatts and consists of four 1250 K.V.A. at 80 power factor, 2300 volt, three phase, 60 cycle generators, directly connected to 1000 kilowatt, 3600 revolutions per minute, single stage steam turbines, operating on 225 pounds steam pressure. Steam generating equipment consists of a 500 horse power water tube boiler.
WE FEEL that the glorious Fall weather we are enjoying, in Eastern Canada at least, is ample excuse for introducing the subject of Picnics at this late date.

Our brethren of the SASKATOON DIVISION inform us that the employees, with their wives, sweethearts and families, bade them to Beaver Creek for their annual celebration, the weather conditions being ideal.

Sports of various sorts were held, the hits being the Football and Baseball games between the Office and Warehouse. The latter proved their skill as societries, winning by the only goal scored, but the former was a great comeback at Baseball and brought 15 runs over the plate to their opponents 5. So well did they shape up that they threaten to go on a 'sacramental' course next season.

Ample refreshment was provided for all and the Committee will be offered to the Review GRATIS!

A STRIKING TRIBUTE to Imperial Oil products was offered yesterday when a line of cars, launched an attack on Eric Lago, the Review's messenger, and relieved him of a valise containing "Imperial Candles".

Will the newspapers write this up as a daring after-dark-light robbery?

THE REVIEW regrets that pressure upon its space has prevented the publication of a number of contributions in this issue. We are happy to note this revived interest in our House Organ and invite any employee or friend of the Company to write to us regarding matters of interest to the Sales Industry in general and Imperial Oil in particular.

In our last issue we told of Imperial Oil’s educational activity amongst the youth of Neco South.

Learning recognizes no bounds, whether of race, creed or country, and our company fulfils its self-imposed obligations to children of its employees with cheerful impartiality, whether they live, move and have their being under the Northern Lights or the Southern Cross.

Mrs. Landy, formerly a teacher in Negritos, presents to us a vivid picture of International Petroleum's schools in Peru.

In various parts of Peru and even beyond its confines, to act as an educational beacon which will have a far-reaching effect on the progress, mental and moral, of the community at large.

Our educational machinery at Negritos is composed of three units, the Perevan, Ango-Perevan and Gringo schools, which accommodate fifty to one hundred boys and girls. The majority of these attend the seven Perevan schools at which the aggregate attendance is some 200 students under 25 teachers including the Headmaster and Superintendent.

The course of study follows the lines laid down by "The Educational Commission" which, at the request of the Peruvian Government, came from the United States for the express purpose of drafting a curriculum suited to the present day needs of the nation.

The studies are along the same general lines as are prescribed for Canadian provincial schools, equivalent age, particular stress being very properly, laid on national history and the mythology in which the country is so rich.

The school buildings are of frame construction, airty and as rigidly hygienic as circumstances will permit. The Company provides free text books, and the teaching appliances, such as maps, globes, natural history, etc., and have the most exacting teacher could wish for.

All these Perevan schools are visited periodically by Sr. Ricardo Lago, our Ango-Spanish correspondent, whose duty it is to maintain strict adherence to the system laid down by the educational authorities and we are happy to say that the relations between the "powers that be"...
assert that they are fitted to take their place with the product of any graded school, whether in Peru, Canada, United States or Great Britain.

Several children have, since 1923, left us to pursue their higher education at High Schools or Colleges in various parts of the world and we follow their progress with interest and pride.

From the Principal of the University of King's College, Toronto, where Robert Dunlop is a pupil; from Alina College, St. Thomas, Ontario, where Margaret Brace is studying; from St. Bride's School, Edinburgh, Scotland, which houses Ann Fraser; from Granville College, South Hampton, England, where Kathleen and Dorothy Bailey are pupils; from Mounton College, Toronto, in which Dorothy Braybrook is domiciled; from Trinity College, Port Hope, Ontario, the academic home of Harry Croft; and from Simeone High School, Ontario, where Marion Waddell is a scholar, comes the reassuring intel- ligence that all of those mentioned are well fitted to take their place with pupils from other parts of learning-where so ever situated, and that the ground they have received in our schools puts them on a par with their fellow students.

Such reports are encouraging to our teachers and are sufficient to convince parents that their children are not being handicapped by lack of training up to high school age.

We do not confine ourselves, however, by resting on the laurels of those who have passed through our schools as we have many promising pupils coming forward.

At the close of our last term James Golding was awarded the gold medal and Agnes Braybrook the silver medal for general excellence whilst many promotion were made effective, and it may safely be said that the examination papers showed, in many cases, more than average ability. The pupils take a great pride in their work and the teacher, Miss O. E. Sinclair, takes a great pride in her pupils.

In conclusion we feel that a word of appreciation is due to the Company, and to the management in the Peruvian field, for the whole-hearted support that is accorded to every project directed towards the welfare of the children and we feel assured that the bread they are thus casting upon the waters is a sound investment.

PROMOTED

FRANCIS EDWARD HOLBROOK has been promoted to the Assistant Secretary-Treasurership of International Petroleum Company, Ltd., filling the vacancy created by the lamented death of Mr. J. R. Polley. He has had over 11 years' service with Imperial and its subsidiaries, starting his business career in that "Hub of the Universe", Petroleum, in April, 1896. Mr. Holbrook migrated to Sarnia in December, 1899, and in the same month of 1912 was transferred to Port William, where he remained for two and a half years.

In May, 1915, International Petroleum claimed his allegiance as its first assistant chief accountant at Negritos, working under, and cementing the bonds of friendship with the man he is now called upon to succeed.

In January, 1921, "Frank" came to the province and the many friends he has made at headquarters join with the Review in congratulating him upon his preferment and wishing him many years of happy usefulness in his new post.

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"MAPS"
By J. Nessim

When the lease-pedlars drop in on a prospect of acreage "right on the Dryhole structure"; when the long, bare-haired home owners of the abandoned "Fallen Archer"; or when the oil-scout wires that he is on the trawl of a seepage at "the rush"; the constable com-
mand from the Boardroom is-"Show me this on the map"

It may be that some of us recall, without pleasure, the days when we stood, pointer in hand, before a varnished representation of some little known part of the earth. When the nature of its activ-
ities is considered, the Oil industry is a high-tech business. It is so well acquainted with the map of their par-
cular city.

The oil industry, however, has gone in for a very orgy of map utilization, which is understandable-
but one is always left to wonder when the nature of its activ-
ities is considered, in Impressive.

Oil, keeping pace with all that is essential to well-ordered business, is no exception to the general rule that, where Oil is, there shall be the mastered art of map-
making.

According to Apollonius of Rhodes, the Egyptian maps of Cosich (a col-
very which dates from 150 B.C.) possessed maps engraved on tablets, handed down to them from an earlier period. These are defined, with considerable accuracy, the known limits of land and water, and the positions of roads and towns, while the Egyptian river maps, prepared under the direction of Sesostris in the 12th dynasty, appear to show considerable proficiency in methods of observing and recording.

The ancient Babylonians did much for cartography by origi-
nating the idea of dividing the spherical earth into the 12 signs of the Zodiac and also, more specifically, by generating the system of numbers that the ancients led to the custom of separating the circle into 360 degrees of 60 min-
utes each, with the minutes subdivided into 60 seconds.

Over 150 B.C. Heracleus intro-
duced this Babylonian system of numeration to Greece and suggested the use of the ancient astronomical determinations of latitudes and longitudes as the only true basis for checking dis-
tance and direction.

These suggestions were carried out by Mecenas Trench who, in his work was subsequently corrected by Claudia Prolemy, the doyen of early surveyors, about the 2nd cen-
tury AD. In a map of the world, it is generally considered to mark the most comprehensive summary of geographical information prior to the 16th century.

During the Middle Ages, maps were con-
structed without parallel. The outlines were very im-
perfection, the cartography being largely based on the work of the ancients, and the cartography was based on the work of the ancients, and the cartographers were to invent the compass, and a form of compass-map, or nautical map, which appeared and was used extensively by Mediterranean navigators.

With the advent of the age of discovery cartography revived and improve-
ted, leading the way to the present, the map-makers having used a variety of charts, mostly of the Mediterranean region, were to invent the compass, and a form of compass-map, or nautical chart, which appeared and was used extensively by Mediterranean navigators.

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ted, leading the way to the present, the map-makers having used a variety of charts, mostly of the Mediterranean region, were to invent the compass, and a form of compass-map, or nautical chart, which appeared and was used extensively by Mediterranean navigators.
had no large commercial map-making firm from which we could reach.

Then again Imperial Oil does not make maps for sale and, whilst our product must be the essence of accuracy, there is little need for such highly artistic finish, as is demanded of an atlas or Government publication. Such maps, engraved on copper or reproduced by intricate processes of photography, are printed by the thousand, whilst our demand for a particular map may not exceed half-a-dozen copies.

Commercial map-makers can devote years if necessary to the compilation of an atlas or even of an individual map. In the Oil Industry "Speed" is the essence of the contract, for company directors, to quote a popular song, "Wants what they want, when they want it."

By a process of careful selection our Geological Department has now a draughting staff which combines the necessary knowledge of surveying with the ability to "plot" with speed and accuracy, and our methods of reproduction have been revolutionized to give the maximum of efficient service. Our early efforts at map printing were accomplished with the aid of an old-fashioned, upright Blueprint machine, one of those cylindrical affairs in which the tracing to be copied is held in place by a roller-blind and the arc-lamp wends its downward way in a series of spasmodic jerks.

This was a slow and unsatisfactory process, principally because of the necessity for washing the blue or blue-line prints and the resulting shrinkage of the paper which altered the "scale" of the maps and destroyed, to a large extent, their usefulness. This consideration did not apply to engineering or architectural plans, where measurements are usually given in figures, but, as geological maps formed the bulk of our output, some other method of reproduction was sought for which would give us a "true-to-scale" print.

Eventually we "discovered" the Lithoprint process. We say "discovered" advisedly as there was no such installation in Eastern Canada, although the C.P.R. had a similar equipment in the West.

Having satisfied ourselves that "lithoprints" would meet our needs we "took a chance" and had the equipment installed. It was a great relief, in view of the expenditure involved, to find that we could "make it tick" and Imperial Oil maps are now a source of envy to all and sundry wherever displayed.

The Lithoprint equipment consists of a two-sided zinc table with a water cooling system between the plates. A gelatine-like com-

compion is melted in an electric boiler and poured evenly on the zinc plate, the table being tilted in the process and the surplus composition drained off. When the plate has "set" or hardened sufficiently a "transfer" (which is, in effect, a blueprint on specially prepared paper) is rubbed down leaving an etching which readily "inks up." Given a good impression quite a number of prints can be taken off, and it is considered that for any number under 100 this method is cheaper than lithography.

"Lithoprints" are absolutely true to scale and can be made on paper, linen, tracing-cloth or card, a feature which

had it been our lot to use in the past. The drawing is perfectly permanent and our reproductions have been used without any difficulty whatever.

The Lithoprint process has developed to the point where it is now in daily use in our office, and we are considering extending its use to other purposes, especially for the "in house" department where it can be used to advantage. We have found it a great aid to our work, and we believe that it will prove a valuable asset to the industry in general.

A great improvement has also been effected in our geological maps, coloured to show the different formations, as we use for these prints paper suitable for water-erosion and the concomitant draughtsman can now point to his work with pride instead of feeling that the colour effect had been ruined by the shortcomings of Blue-line or Vandyke paper. Probably he agrees with the poet that "A thing of beauty is a joy forever" and it needs no psychologist to determine the stimulating effect this will have on his subsequent work.

Our next departure was the introduction of a "Photocell" camera. There is a suggestion of the "Black Art" about this equipment as the original to be dealt with is simply laid on the "copy-board" and, after the operator has turned sundry cranks
and levers (and, on occasion, repeated certain mystic words when things don’t go right), the photographic print emerges from the bowels of the machine complete except for washing.

No photographic plates are employed, the print being made directly on paper, and the copy is a "negative" of the original, black and white being reversed.

The print may be either an enlargement or reduction of the subject and our camera handles prints up to 18\" x 22\".

It was not long before the multitudinous uses of the "photostats" were appreciated by other departments, our operator is kept busy grinding out copies of freight-bills, cancelled cheques, leases, contracts, plans, maps and all manner of documents of which facsimiles are necessary. The "photostat" has certainly come to stay.

The additional space allotted to us on the opening of the new offices allowed of our speeding up our blueprinting by installing a "continuous" machine. This is a tremendous advance on the old upright type, as the tracings and blueprint paper are fed into the revolving cylinder and four arc-lamps are employed for the exposure instead of one.

Most of our blueprinting is for other departments, the Advertising, Architectural and Engineering business being our mainstay.

At the same time we provided adequate facilities for washing the various prints, separate tanks being desirable on account of the different chemicals employed in blueprinting and photostating. All prints, after washing, are effectually and speedily dried by electrical equipment.

By the aid of photography we are effecting great economies in time and material as, when a large number of a certain class of print is called for, we make blue-line prints from photographic films. A well furnished dark room forms part of our new quarters.

Our records show that, during the year 1926, we made in the neighborhood of 14,300 prints, either by photostat, blueprint or linotype methods, with the first mentioned predominating. We calculate that, on the year’s operations, we showed a minimum saving of $2,000,000 as compared with commercial prices, and, in addition, the various departments had the advantage of greater promptitude in filling orders and the security of having confidential maps and documents kept within the office.

Having assumed the dimensions of a "public utility" we, of the Geological Department, feel that the Company’s outlay for reproduction equipment is a sound investment and places Imperial Oil in the proud position of being "null secundus" in the sphere of industrial map-making.

OBITUARY

MRS. HOLMES, wife of Mr. G. F. Holmes, one of our drillers in Peru, passed away in Toronto on October 22nd, after a painful illness borne with cheerfulness and fortitude.

Mrs. Holmes was, for a time, resident in Peru until failing health demanded that she return home, and the many friends she made in that field unite in offering their sympathy to the bereaved husband.

It is expected that Mr. Holmes will return to Peru shortly.

MR. ALEXANDER SLOAN, a popular tank wagon driver in our Calgary division, died on September 22nd.

Serving overseas with the Canadian forces he was twice gassed and this contributed to his untimely death from heart trouble.

Mr. Sloan was born in Belfast and had been resident in Calgary, Alberta since 1907, with the exception of the war years.

He is survived by his wife and young son, to whom the Review extends the sincere condolences of his fellow employees.

MR. FRED. A. ENGLAND, Superintendent in the West Toronto Plant of the Company, who died suddenly on October 18th, had been an employee since August, 1918.

During his service with us he made a wide circle of friends, and was interested in all our social and athletic activities, being keen eight-in-pin bowler and a tower of strength on the baseball field in his younger days.

The sorrow of his young widow will be shared by every reader of the Review.

In the heavy draft single class "Tiga," another Imperial representative, also took "premier" honors, winning the smaller cup illustrated.

These horses were greys, but our black team was not so successful, as, owing to one of the horse’s feet being treated, we were only able to get a fifth position in that particular class.

These were at least 600 horses in the parade, which was witnessed by throngs of people as it passed along Sherbrooke Street, and the most favorable comments were heard regarding our entry.

Our drivers, to whom much credit is due for the gallant appearance of their chariots, were the recipients of individual prizes, and it was generally conceded that our chariots teams had, in the words of the old song, "earned their little bit of corn."
"ILKA MICKLE MAKS A MUCKLE"

THE above title is not a college yell, neither is it an inscription from the tomb of King Tut.

It is merely a proverb in the Scottish language dealing with the national characteristic of Thrift and conveying the thought that mighty oaks from little acorns spring up, and that a thrifty individual, if he has it, "take care of the pannies and the pounds will take care of themselves."

In May of 1925 the participants in the first Imperial Oil Investment Trust received the Stock Certificates. At that time our Company stock was selling at around $11.00 per share, and our graph, which is based on average monthly quotations from that date to September of this year, shows the gradual appreciation of the share value over a period of 29 months.

Now our Company is in no wise responsible for the vagaries of the stock market; the bulls and the bears carry on their operations without reference to our wishes and sometimes for motives that are difficult to fathom.

Quite recently Mr. C. O. Stillman issued a statement in which he deprecated the rapid rise of Imperial Oil shares, there being no development in the Company's operations, and no anticipation of any change in the Company's status which would justify such a pronounced movement, especially in view of the general situation in the oil industry at the moment.

Being "investors" and not "speculators" those of us who were fortunately able to put our stock certificates in a safety deposit box can look upon the market fluctuations without undue excitement or dismay, noting with satisfaction that what we laid aside for the proverbial "rainy day" is gradually assuming dimensions which might conceivably tide us over a weekend downpour.

The basic idea behind the Investment Trust was, and is, Thrift, a term which may best be described as cautious saving for cautious spending, quite a different thing from miserly hoarding. Many of us joined the Trust with a definite object in view and, month by month, laid aside our surplus earnings towards that end, which was possible of attainment on the conclusion of the first Trust.

If we spent our accumulated savings wisely and well we need have no regrets and, once having experienced the advantages of systematic thrifing, we will in all probability, like the hero of Dickens, come back for more.

It requires no "high pressure salesman" to convince Imperial Oil employees of the benefits of the Investment Trust, but any who still hesitate to practise self-denial, or those who are comparative newcomers to the organization, should study our graph and, to use the jargon of the street, get in on the ground floor of a gilt-edged proposition.

For, as says the proverb, "Ilka mickle mak a muckle."

ON THURSDAY, July 21st, 1927, at Toronto, to Imperial Oil, Limited, a son, by adoption."

And it might be added with perfect truth that both parent and child are doing well.

The Galena Signal Oil Company of Canada, Limited; this new addition to the Imperial family, has for many years specialized in the compounding and sale of lubricants for the railroad trade, obtaining their base stocks and greases from our Company.

Their plant, of which we show a picture, is situated on Royal Avenue, Toronto, with admirable railroad facilities, and no change is contemplated in the method or place of manufacture, although, at some future date, it may be necessary to extend the accommodation, as it is expected that a greater share of railroad business for Galena products will be obtained through the larger operations and connections of Imperial Oil.

Outside of a change in the Directors the personnel of the Galena comes into the Imperial circle intact. There are a score of employees at the plant under the care of Mr. W. L. Kelton, whose portrait appears in circle above, and Mr. C. McNair, with headquarters in Montreal, is in charge of the Sales.

The Review extends a hearty welcome to all those recruits to the Imperial banner, feeling assured that, as time goes on, they will be able to appreciate the many advantages which accrue to all of our Company's employees.

Mr. C. McNair

The ancient Hebrews were scattered over the face of the earth and so are the modern pedestrians.
**The Refining of Crude Oil**

**By C. D. Dean—Technical Engineer on Processes, Imperial Oil Limited**

In our September issue Mr. Dean, after discussing the general aspects of the Petroleum Industry, presented to us the ideals of process engineering. This article will illustrate the principles of the cracking process in detail, which was the subject of his previous paper.

The paraffine distillate contains the waxes or at least most of them, and before it is ready for finishing the wax must be removed. Present day practice involves the cooling by refrigeration of the whole distillate to be treated, for example, at, say, 30°C. This process is usually done in plate or shell and tube heat exchangers. The wax crystallizes out and allows the oil to drip through. The crude oil is fed through chilling machines, which are large vessels of long pipes in which the oil is cooled and then passed into the finishing distillation column. The oil is then sent to the finishing tower base, where it is filtered through Florida Clay to eliminate the coloring matter and some of the free acid. The oil is then delivered to the Refining Works, where it is moulded into cans and other shapes for consumption.

The oil from the wax process is delivered to the Receiving Department, where it is distilled in a vacuum to eliminate the remaining sulfur compounds and other impurities. The oil is then sent to the finishing tower, where it is further refined to remove any remaining impurities, and then blended with other oils to be delivered for use.

The refining process is a complex and important part of the petroleum industry. The products that are obtained from crude oil are used in a variety of applications, from transportation fuels to lubricants and industrial chemicals. The refining process is critical in ensuring that these products meet the necessary quality standards.

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**Continuous Crude Still**

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oils are now valued, very largely on the basis of their gasoline and lubricating oil content. It was quite natural to expect that with a knowledge of the fact that crude oil can be cracked at atmospheric pressures in a Coking Still, an effort would be made to see what advantage would lie with distillation under pressure. Several patents in this direction were secured very early when the demand for gasoline showed evidence of exceeding the supply, and there are a few that are being commercially used on a large scale by refineries in the United States and Canada.

Most successful cracking apparatus today carries on operations in what is known as the liquid phase, i.e., the liquid is subjected to high temperatures which crack certain fractions. Two general types of apparatus to do this are in general use, namely: apparatus in which the light fractions are withdrawn from the oil body as produced and apparatus from which the light fractions are not removed from the zone of the furnace. In the first type of apparatus refluxing is possible and the cracking can be carried on with an increasing temperature rise in the oil body until the production of coke compels cessation of the process. In the second type of apparatus the production of the light fractions cannot be controlled, and the temperature rise is limited by the cracking and compels recycling to get proper yields.

The principle on which any cracking depends is that oils suffer a redistribution of molecular structure when raised to their critical temperatures and the heavier fractions have critical temperatures lower than those for the lighter fractions. These Stills use a gas or fuel oil of 30 to 35 gravity, as charging stock which contains comparatively heavy fractions, having little or no lubricating properties and which would ordinarily reach the market as fuel oils. Approximately 50 per cent. of 50 gravity distillate is taken off overhead and the bottoms are about 22 to 26 gravity. There is a loss of about 3½ per cent. in operation which is nearly all gas.

The fuel consumption is about 5½ of the charge of liquid fuel and the fixed gas produced is around eleven cubic feet of still gas, which will average probably about a hundred thousand feet per 1000 barrels per day, is usually burned in the refinery, although instances in the United States are not rare where it is sold to gas companies direct as enrichment for water gas, etc. In refineries a very elaborate system of exhausters and gas lines is installed to dispose of it, and when the production is large with wide fluctuations in the rates of production, as sometimes occur, gasometers are used to prevent loss.

The still gas is usually found to have a heating value from 1000 B.T.U.'s per cu. ft. to as high as 1800 B.T.U.'s per cu. ft., depending on the amount of gasoline vapor carried. Modern practice now calls for absorbers to extract the vapors from the gas which is usually done by forcing the gas, after cooling, under low pressure towers in which a menstruum of gas oil or any other similar heavy oil, the initial boiling point of which is considerably higher than the final boiling point of the absorbed naphtha can be—trickling. It is ordinarily found that the menstruum will absorb about 10 to 11 per cent. of its volume as naphtha and a gas that will yield one imperial gallon per 1000 cu. ft. is considered to pay for the extraction. The menstruum with entrapped naphtha is steam stripped. The recovered naphtha after treatment is mixed with the current production of naphtha. On steam stilling, it is found that a loss of about 5 per cent. of the volume of the menstruum occurs, i.e., this amount goes overhead with the naphtha.

(To be concluded)
"CANADA,
the heart and soul of
Canada, the possibilities of Canada, is a reef of
precious metal so vast in extent
that no man living can chart it, so rich that no man can
value it.

"The deeper you go the more
astonished you become at the
wealth, material wealth and
wealth of character you find
there, and the effect on one
who leaves Canada is a feeling
that here at any rate is a great
country worthily fulfilling a
very great destiny."

EDWARD
Prince of Wales