Keep Confidence in Canada High . . . page 2
That's the prime target for Canadians if the growth of this country is to be assured—by J. R. White

I'll Take The Side Roads . . . page 4
A veteran "dun-peek", weary of bumper-to-bumper driving on byways, tells of the delights of travel on back roads—by Aldo Lechich

111 St. Clair West . . . page 9
Imperial's 1,100 executive-office employees are now enjoying their modern, new offices in mid-town Toronto—by Pierre de Bonnard

Mural . . . page 13
It took six months for R. York Wilson to turn 45 gallons of paint into Canada's largest mural—by Michael Jacot

Management Changes . . . page 17
Night Watch at Halifax . . . page 18
Imperial's refinery on the eastern seaboard never sleeps

World Oil—I Its Supply and Demand . . . page 20
It's not enough for oil men to find and recover oil. They have to cope with world-wide transportation problems—by Hal Tennant

The Town That Moved . . . page 25
Asbestos miners of Thetford Mines, P.Q., had to give up their homesites or their livelihood. They chose the former—by Michael Shalton

Photo Credits: Stuff (Inside front cover, P.9-13, 16, 18-19); Walter Carr (P.14, 15), House of Lee (P.23-29); B & I Photography (P.27, 28).

Cover artist Tom Hodgson, until recently, made Toronto Island his home: his early painting was done in a marine background. Since 1946 when he graduated from the Ontario College of Art he has exhibited in every major show in Canada and won several awards and medals. He is a member of the recently-formed Painters 11—a group of young Canadian artists with an approach to art that is bringing them international recognition.

A Justifiable Increase

In common with every other branch of Canadian business, the oil industry has been affected by steadily rising costs of operations. For instance, the cost of finding and developing oil fields has gone up. Imperial has to pay, on the average, 20 to 25 percent more for oil-field equipment, materials and supplies than it paid in 1953. The cost of building and operating refineries to provide motor fuels for advanced high-compression engines has increased and salaries and wages in all branches of the company's operations have risen.

Despite these increased costs, crude and product prices have been maintained at a level below those of other essential commodities. Until last January there was no general rise in the price of Canadian crude oil. On the contrary, the Canadian price was reduced twice in the 1953-1957 period, by a total of 16 cents a barrel.

This was due to the increasing premium on the Canadian dollar which had the effect of lowering the cost of competitive foreign crude oils which were selling in the Canadian market.

Last January, following an increase averaging 25 cents a barrel in the U.S. and Venezuela, Canadian crude prices were raised 18 cents, or approximately seven percent. This brought Canadian crude prices in line competitively with foreign crude. Even after this increase of 18 cents a barrel, the Canadian price is only two cents—less than one cent—more than in 1953.

Product prices do not reflect entirely the Canadian crude prices because Quebec and the Atlantic provinces still use imported crudes. Nevertheless, gasoline prices on the east coast today are only one cent higher at the wholesale level than they were in 1953. On the west coast they are almost one cent lower and the average increase of gasoline prices for all Canada is less than one percent above the 1953 level.
Canada's future depends on greater investment of skills and money.

To attract both we must

Keep Confidence In Canada High

by J. R. White

FOUR months ago, the Canadian oil industry celebrated the 10th anniversary of the discovery by Imperial of oil at Leduc, about 15 miles southwest of Edmonton, Alta. This discovery turned out to be the biggest oil field found in Canada up to that time, and proved to be the inspiration for an industry-wide exploration program which has since discovered many other oil fields, some of them larger than Leduc. These discoveries permit Canada to produce enough oil to fill nearly 70 percent of its requirements.

Anniversaries are usually occasions to recount with pride what has been accomplished since the natal day. And the Canadian oil industry has every reason to feel proud and to be optimistic about its accomplishments over the past 10 years. But sometimes in the telling of what has happened, the facts of how it happened and what was necessary to bring about the results get overlooked. Perhaps even more important is what will be required to bring about similar accomplishments over the next decade.

Let's look first at what was required to develop the Leduc discovery and the western crude oil industry.

The first need was money—and lots of it.

Imperial had some $30 million in cash at the end of the war, and felt quite comfortable about its financial position. In no time that $30 million went out the window, and was followed by our shareholdings in International Petroleum Co. Ltd., in Royalite Oil Co. Ltd., and in some other outside companies. Beyond this, we found we had to borrow $100 million and issue more than four million shares to raise additional funds.

I do not want to overstate the point to imply that these funds were not backed by productive assets to the fullest extent; or that we wouldn't be delighted to make another discovery so big that 10 years from now we would be still deeper in the red.

No, the important aspect of the debts that we and the other members of the industry incurred is that we were able to raise the necessary funds. Up to a point, the extent to which you are able to go into debt or attract additional capital is a reflection of public confidence in your industry and the public's valuation of what you intend to produce.

In fact, the funds we sold our shares in our South American crude producing company, International Petroleum, the economist's word for this is "reinvestment." But reinvestment in its original sense meant bringing people—not just dollars—back to their native land. And there has been a great deal of reinvestment in its original form going on. Instead of leaving for foreign fields to learn the oil trade, Canadians are coming home to practise it. In most cases, the Canadians have come back from abroad not because there is no scope for their talents in foreign countries, but because equal or better opportunities have opened up at home.

In some cases, however, the Canadian oil industry is benefiting from the work of people who were not permitted to practise their trade abroad. Communist Hungary, for example, first imprisoned, then expelled its foreign oil men. Others of those who have built the western Canadian oil development might have been developing crude oil in Egypt—if it were not for the restrictive laws that made that country unattractive to oil men.

And so it has gone. Western Canada has not only benefited from the advantages of our home economic conditions and prospects, but has benefited from the push of countries where nationalism has restricted progress and opportunity.

Besides the reinvestment of people and dollars, there was the importation of men and capital. Many visitors to western Canada are surprised that such a large percentage of Canada's oil personnel is native born, that we have not needed to bring in a great many more specialists from the United States and other countries. The most obvious answer is that the imports who have come to western Canada are few in number because they are high in quality. Because of this and, of course, the large number of trained or trainable Canadians, the imported talent used in the Canadian oil development has been kept to a small—but effective—proportion of the total.

In addition to the importation of people there was the importation of capital and capital equipment. I don't think there were any more examples of capital imports than when, in 1948, the United States and Canada signed the agreement allowing the United States companies to work in the province. That was capital importation in the physical sense, in a big way and in a big hurry.

Of course, the importation of capital into the west from other parts of Canada and from abroad has gone a lot farther than that. The total investment in the Canadian oil industry since the discovery of Leduc is now around $4 billion, and even that does not include the capital for some of the new industrial developments—such as chemical plants—allied to, but not a part of, the oil industry.

From 1947 on, industry projects for refinery expansion, together with programs for expansion and renovation of marketing facilities, had to be shelved temporarily to leave room in the budget for the enormous appetite for money of the western crude oil development. The pace of development was certainly rapid enough. In four years the initial discovery had developed sufficiently to provide the basis for a complete refinery system and a line pipe to the Great Lakes—a spectacular speed record.

Some of this speed was the direct result of the form of government regulations and the manner in which those regulations were administered.

The oil industry is dedicated to free enterprise. No aspect of modern industry shows more clearly the need for multiple judgment, for bringing many competing minds to bear on the development of resources than the production of oil industry. The spectacle of oil being found in areas which have been combed over repeatedly by other prospectors is a common-place. But it is only a commonplace where the ground rules are intelligently drawn up and applied. And, by and large, that is the industry's position by reason of the oil regulations developed in western Canada.

What has free enterprise, operating within the framework of these regulations, accomplished?

Without recounting all the figures on the growth and development that have taken place in western Canada since 1947, we can safely say that an industry exists there that did not exist then, that other industries have developed alongside of it—some feeding it, others fed by it—and that still others are growing out of the general upswing in western prospects and prosperity.

We can say also that a new and more balanced economy has developed in western Canada; an economy that is more resistant to depressions, more productive of opportunity.

This leaves two important questions: Why did all this develop? How can we ensure that it will continue to develop?

The answer to the first one is easy on the surface but very complex underneath. This development took place because people and dollars were willing to come here and do the job of finding oil and developing it. It took place because people and dollars had confidence. They had confidence that western Canada would be a safe place to live and work in for the next 20 to 30 years at least. They are right.

Now, in the face of existing realities, that doesn't seem a very startling thing. Who wouldn't be willing to work or invest in western Canada? But the point is it could have been otherwise. As I mentioned there are many in the Canadian industry who might have been plying their trade in some other land—if they and their bankers did not have much a greater confidence in this country.

The fact of the matter is that for the great bulk of the world this act of faith which, in Canada, is an everyday matter, does not take place. Instead, investment capital has largely been squeezed out of taxation or in gifts from abroad. The difference between an "underdeveloped" country and our own, can largely be measured in terms of the confidence with which they are viewed by potential immigrants or potential investors.

If so I were assigned the task of prescribing the appropriate program for the next 10 years in Canada, I would set as the prime goal the maintenance of confidence. Keep Canada the sort of place that people and money want to come to, that they have confidence in, and Canadians won't have many worries about economic progress. Is there any danger that this objective won't be achieved? Is there a danger that confidence in Canada will deteriorate?

Such a danger always exists and must always be recognised, especially in times of prosperity. After all, the sort of freedom and prosperity we enjoy have so far been achieved by only a small fraction of the world's people and over a small period of the world's history. Chronologically and geographically, freedom in politics and economics is the exception, not the rule. In short, eternal vigilance is still the price.

But what, specifically, should we be vigilant about, or against?

Perhaps the principal potential enemy today is the danger of excessive regulation, the introduction of control or compulsory systems without sufficient investigation of the need for them, of the practicability of their objectives, or the availability of personnel competent to do the job. The fact that certain types of regulations are imposed in other countries is not necessarily a good reason why they should be imposed here. In most cases it is proof to the contrary.

Not only do we need vigilance against the introduction of unnecessary regulation; we should be guard against also the perpetuation of regulations and regulatory bodies that have outlived their usefulness. It seems to me to be in the interest of all concerned that all unnecessary restrictions—which means all unnecessary barriers and mental hazards to the potential investor—should be removed. Only then can Canada—and its oil industry—really fulfill its destiny in the 20th century.

This article is based on a speech given by Mr. White in Edmonton at a dinner sponsored by the Canadian Petroleum Association connecting with the 10th anniversary of the discovery of the Leduc oil field. Mr. White is president of Imperial Oil.
As highways become summer nightmares, more Canadians are discovering the delights of the country’s back roads. This veteran “shun-piker” scorns the throughways and says:

**I’ll Take the Side Roads**

by ADELAIDE LEITCH

Driving along a gravel road in Newfoundland some years back, my husband and I overtook an elderly fisherman. He considered our offered lift, then climbed aboard with obvious misgivings and the brief, startling announcement that he’d never ridden in a car before.

He said he had seen “wonderful few cars, by’er!” As we roared along at 35 mph, he sat rigidly upright on the front seat, hands clutched on his knees, eyes riveted on the road ahead.

“I ‘know, by’er,” he said at last, without turning his head, “when ye’ve driven along like this, there’s nothing much you can do—except drive!”

Many motorists all over Canada, trapped on our increasingly crowded highways, are beginning to feel exactly the same way: that there’s nothing much they can do any more—except drive. Although it usually gets him to his destination in the shortest possible time, driving on a modern, multi-laned highway too often leaves the motorist in a frazzled, evil-tempered condition. Many such highways have little room for the motorist-in-a-hurry, and no room at all for the happy dawdler—which usually means anyone attempting to travel at less than the prescribed 60 mph limit in Alberta, Manitoba and Quebec, or less than 50 mph on most other open highways.

Because of the whiz-bang aspects of super-highway travel, a new cult of Canadian motorists has lately sprung up and is growing every year. They are the side-rovers—the motorists who deliberately get off the beaten path and onto the backroads that may lead anywhere—or nowhere at all.

The attitude of this cult—to which my husband and I happen to belong—was pretty well summed up last summer by an ambitious westerner who, along with his wife, towed a house trailer from the Pacific to the Lakehead by the all-Canada route, instead of using the super highways south of the border.

“We just wanted to take our time and see the country before it was killed with highway signs and hot dog stands,” he said.

For much the same reason, other side-rovers will eagerly take to even more remote routes. Besides the unhampered view of the countryside, they like the sense of adventure they get from exploring back roads, the quiet, helpful courtesy that characterizes most residents of such regions, and the unusual landmarks which they often discover accidentally. For it isn’t from the main highways that you can see such sights as a landed-locked anchor, a giant life-like head carved by hand from a stump, or a church financed by a poker game. A confirmed side-roader will tell you experiences like these are worth the risk of getting lost, winding up on a dead-end road, or having a mechanical breakdown miles from the nearest service station.

And for those who prefer what highway map-makers refer to, somewhat euphemistically, as second-class and third-class roads, there are plenty to choose from in Canada.

Of Canada’s 590,000 miles of road, only about 33,000 are paved, leaving about 160,000 with gravel surface and some 330,000 with good, old-fashioned earth.

Driving habits and manners are quite different on these back roads from what are customary on the highways. An experienced side-roader will always touch his hat to the farmer who pulls his car into the grass to let him cross a narrow bridge first. And since bumper-to-bumper driving is normally unknown, the veteran side-roader has learned to beware of the local driver who may turn into his private lane with nary a sign nor signal, simply because he doesn’t expect anyone to be dangerously close behind him.

Usually, side-road people are as kind and thoughtful as the young farmer who once brought over his tractor to give us a free tow out of the too-soft gravel on a too-rural road. On another occasion an entire dance hall in Newfoundland turned out to help us change a flat tire after dark. The multiple assistance almost prevented us from getting the tire on at all—but the spirit was there.
Only occasionally does some wily back road reader take advantage of the city man's inexperience. One farmer who lived near a riding academy outside Toronto always "happened" to be in a nearby field with a team of horses whenever a car got stuck in the muddy roadway leading to the stables. And he was always willing to haul a car out of the mud—for a $3 fee. Members of the academy forked over a good many $5 bills before they discovered the farmer was using a bucket to keep one pot-hole well watered.

In spite of such hazards side-road-reading can be a lot of fun whether the trip happens to extend over several weeks, or only part of a single day.

Whether they are setting out on a short trip or a long one, experienced side-roaders always travel equipped for all emergencies. Emergency equipment in winter should include a shovel, a pail or bag of sand and a set of chains. In spring, a few old sacks or some small boards can be worth their weight in gold, for providing traction in a muddy rut. A first aid kit belongs in your car whether or not you're a side-roader, and for any kind of trip it's wise to check your tire-changing tools and make sure the space is well filled. But for side-reading, these precautions are even more important, for there's no service station under that speeding clin 20 miles from nowhere—and that's where you'll get a flat.

Since you'll seldom find a cafe on a side road at a time when you want to eat, it's a good idea to carry a permanently stocked picnic hamper. A simple one, stocked for two people, would contain plastic plates, cups, cutlery, a small pairing knife, can opener, salt and pepper shakers with spill-proof tops, napkins, a small jar for butter or cheese, and a plastic wrapper for dirty dishes. With these items along, it's simple to stop at a general store and pick up the "makings" of a do-it-yourself lunch.

Once you've tried a bit of side-reading you'll find yourself less and less inclined to do much planning of the actual trip. You'll find you've caught the itch to explore on route. Then you'll have to rely on your own sense of direction to keep from getting lost.

On bright days it's simple just to keep checking the sun. If you have to head in a westerly direction to get from point A to point B, you can cruise around side roads as you please and still come out approximately where you want, as long as you remember the sun sets in the west.

But for side-reading in any kind of weather, it pays to carry one of the small car compasses that are available at little cost in any auto accessory store.

With a little practice, though, you can learn to "read" a side road the way an Indian reads a trail. A well-travelled road is bound to be going somewhere and will usually connect with main traffic routes. But grass that is beginning to sprout in the middle of the tracks says "Beware!" If your road seems to be petering out and you're debating about turning back, watch for tire marks to see which way the farmers turn when they come out of their lanes. The direction they turn will show you the way to the nearest town. The same rule-of-thumb is a useful guide at any intersection.

Telephone lines are also handy guides. They, too, follow well-travelled routes. One almost infallible sign is the rural mail box. If you see several of them, you can be almost positive the road will take you somewhere, for Her Majesty's mail carriers don't like crossing their steps from a dead end. On a road without mail boxes, you may still be all right, but you are taking a greater chance of ending up in somebody's "back forty."

A motorist who likes variety will often side-road one way, turnspike the other. Then it pays to make sure the wind is blowing from you to the other side of the back road. That way you will avoid being lost in a dust cloud when you meet a car.

Even if you intend your first long side-reading expedition to take you half way across Canada—or farther—you'll find there are plenty of interesting secondary routes to choose from. And none of them will involve you in the impromptu but hectic stock car races that go on regularly on such speedways as Ontario’s Queen Elizabeth Way and Highway 401. Last year, 401, which by-passes Toronto on the northern outskirts of the city proper, was carrying 44,000 vehicles a day—an average of one every two seconds around the clock. The Queen Elizabeth, linking Toronto with Hamilton, Niagara Falls and other parts of southwestern Ontario, was almost as busy, with more than 40,000 vehicles a day.

Some drivers, avoiding these speedways as they would a radar trap, have created situations like the one on Ontario’s No. 17 highway. No. 17, when completed, will be the main stem of the Trans-Canada Highway north of Lake Superior. By then it will probably be something of a speedway itself. Meanwhile it lies in two unconnected pieces, with a gap in the middle. One stretch runs from Sault Ste. Marie to the Aroga River, the other from the paper town of Marathon to Port Arthur. Yet a surprising number of motorists, many of them U.S. refugees, are driving the completed portions as fast as they can, knowing full well they'll have to turn back at a dead end.

On the back road, a stop at a service station provides more than automotive service and a washroom. Stop at a service station in almost any out-of-the-way village and the attendant (who probably lives in the red brick house alongside) will likely provide an impromptu lecture on the history of the locale, the latest gossip and a description of the best eating place in these parts. He may not remember to clean your windshield, and the public washroom may be a small wooden building with a half moon over the door, but his interest in you as a person will be in direct proportion to your distance from the nearest major highway.

My husband, Barry Nenno, who is an artist, was looking for subjects around Georgian Bay once, when he stopped in a general store for a bottle of pop. Before he was half through his bottle of pop, the storekeeper had found out his name and business and had offered, in return, the intelligence that a rival artist had passed through just two days before. He told where the other man had painted, what he had painted, and what the local populace thought of the job. It looked like he was painting Joe's crick—but goll, it sure didn't look like Joe's crick when it was done.

General stores like that one—with a meat counter, dry goods, magazines, ollskins, nutmeg graters, frozen foods, whole cheeses and perhaps a selection of horse blankets—are a fast-vanishing kind of Canadienne that you now find only on the back roads.

Each back road has its own unique attractions. "Woodenhead" is the reward of the driver who deserts the most-traveled routes of the British Columbia interior and follows the Big Bend highway through the region that once attracted many fur traders and gold prospectors. "Woodenhead," top-hatted and stary-eyed, is a huge head that suddenly confronts you from the edge of the road at a tiny settlement called Boat Encampment. The giant carving, produced by a young road builder...
who found himself with plenty of time on his hands, bears a printed warning: "Don't be wooden-headed. Drive carefully. You'll live to enjoy the scenery."

A stranded anchor has been "discovered" by many a motorist who has deserted No. 11 highway, from Toronto to Barrie, in favor of the route through Holland Landing. The anchor, far from water, sits incongruously in a small park. Intended for a warship being built in Penetanguishene during the War of 1812, it was hauled by oxen from Kingston. But the war ended before the anchor reached its destination. The oxen drivers threw their hats into the air, tossed off a bottle or two of home brew, dumped the anchor where they happened to be—at Holland Landing—and went home.

Another of our favorite off-beat trips is the alternate route to Sault Ste. Marie, via Bruce peninsula and the ferry to Mani- toulin Island—the largest fresh water island in the world. Only for the last lap of the trip do you need to use a main highway—along the busy north shore. It's even possible to take an alternate to the alternate, traveling the side roads of the peninsulas. This route is even more scenic. What's more, it offers a view of a church that was built by a poker game. When the people of Cape Chin started to build their small, hand-built Anglican Church, they were long on enthusiasm but short on funds. Some American sport fishermen were so impressed with the villagers' desire for a church—that they donated a sizable pot from their all-night poker game. The people of Cape Chin accepted the money with gratitude but were always a little red-faced about its source.

Quebec has a delightful and little-known back lane route to the Gaspé. Complete with fishing villages, pulp boats and wild raspberries as big as grapes, it's the road along the north shore of the St. Lawrence River—the Côte Nord of Quebec. The road still has its dust and its bumps, but they won't be there much longer. Soon the road will lead all the way to Seven Islands, instead of stopping at the paper town of Baie Comeau. At Comeau, as well as several other places along the way from Comeau to Quebec City, the motorist can cross to the southern shore of the St. Lawrence by ferry and continue on around the Gaspé.

On expeditions like these you're likely to become sentimentally attached to the homey signs that announce, "Fresh Strawberries," "Beware the Bull," or even the delightfully candied, "We have WORMS."

The most explicit sign we've seen bluntly offered this vital piece of road information:

**NO THROUGH TRAFFIC**

**NO BRIDGE**

The most printed argument I ever heard for side-reading came, not from a side-reading motorist, but from a Scottish lass on her first—and perhaps her only—visit to Canada. Accustomed to roaming along the picturesque roads of the highlands, she took one look at one of the long, straight highways of eastern Canada and exclaimed, "Och, but you've some ugly rrrrrroads over here!"

I've often wished she had stayed a little longer than she did—long enough to discover the joys of side-reading in Canada, and to see the many wonderful—and sometimes weird—sights that most speed-happy motorists never see.

---

**111 ST. CLAIR WEST**

After five years of planning and building, Imperial Oil in mid-April moved into new executive offices by PIERRE DE BOINOD

Hundreds of feet below lies the city. To the east, Toronto ends in the cliffs of Scarborough; to the west in the rivers and valleys of Port Credit; to the north with the hills of Richmond Hill and Thornhill and to the south with the shores of Lake Ontario. Far out over the lake the haze from Niagara Falls hangs like a cloud over the water.

Such is the view from the glassed-in observation areas on the roof of Imperial's new executive office building at 111 St. Clair Avenue West in midtown Toronto. It is a view of the city without parallel, short of hiring a helicopter. The tail—285 feet, 19 stories—slender-looking building stands atop a 500-foot equipment and its roof, the highest observation point in the city, is almost 800 feet above sea level. From this vantage point, the face of metropolitan Toronto is spread below like an animated map.

It took 300 tons of steel to move the roof equipment from downtown offices

Some of the buildings—seen in all—were more than 100 years old.
Three miles to the southeast, on King and Church streets, in the heart of the traffic-clogged downtown area, can be seen the former executive offices. By the time the move came to the new St. Clair building last April, these offices—some of which are more than 100 years old—were almost bursting at the seams with 1,100 employees. In fact, executive office departments were scattered under seven different roofs and, in some cases, in different parts of the city. The work of these departments will be more effectively performed now that they are all together under one roof.

The new building combines simplicity with efficiency. It has been called one of the most advanced in Canada, architecturally and structurally. It is the largest all-welded steel-frame building in the world—it took 5,000 tons of structural steel—and even while under construction was visited by people from many countries, including architects, engineers, industrial designers, artists and movie makers.

A group of Russian architects toured it, and later a delegation of Poles. One of them remarked, "A look around this building alone has made our trip to Canada worthwhile."

The rectangular building—at ground level it is 246 by 88 feet—is built on the core plan. In such a plan all offices are built around a central core (containing such services as elevators, meeting rooms, vaults, etc.) so that in most cases one wall of each office is an outside wall. This provides the majority of offices with window space and natural light. The four-by-seven-foot windows are double-glazed and between the two sheets of glass hang Venetian blinds. The windows are hinged to swing inward to allow the outside panes to be cleaned from inside the building. The exterior glass is heat-resistant and tinted pale green. The 100,000 square feet of glass used for the building's 1,500 windows would provide windows for 650 six-room houses.

The windows, framed in aluminum, are set into an exterior of granite and limestone which seems to absorb and reflect the rays of the sun, changing color as the sun moves on its course. At sunset the outside of the building takes on a pink mother-of-pearl glow; in the early morning it seems to have a greenshine tint.

The observation deck offers the highest lookout point in the city.

Wood cover around the elevators was applied like wallpaper, then painted and varnished.

The cafeteria on the eighth floor can seat 400 and serve 900 hot and cold meals a day.

Technically, the structure is one of the best-equipped offices in the world. Some of its features—such as the office temperature control—have been termed revolutionary. Electric and electronic equipment works with robot-like efficiency making elevators and communication systems do everything but talk.

The elevator equipment is perhaps the most automatic of all. Eight passenger elevators, with combined shafts over half a mile long, travel at 800 feet a minute. Their electronic controls give them an almost human quality. In the rush hours they automatically move to wherever they are needed. In slack periods they automatically place themselves at different floors diagonally across the building, so that every call can be taken care of with a minimum of waiting.

A similar electronically-controlled device distributes mail.
throughout the building. Mail is sorted in the basement and then placed in plastic baskets on the concealed conveyor which runs vertically through each floor. In the basement the dispatch of the mail baskets drills the floor of the lobby to which the mail is destined. It rises through the building at 75 feet a minute and at the correct floor is ejected onto a receiving platform. A light on the receptionist’s desk signals its arrival at its destination.

 Urgent messages and telegrams are carried through the building by a pneumatic pressure tube system, such as is used in some newspaper offices. Oral communication within and without the building is handled by 900 telephones, each of which is equipped with a mechanism which will allow the phones to be converted to “video phones” when these are perfected and ready for use.

 Another advance feature is the air-conditioning system. Every minute 117,000 cubic feet of outside air is introduced into the system. It is mixed with air already circulating in the offices and passed through electronic and mechanical filters to remove all dust particles. This mixture of old and new air is then treated so that no matter what the humidity outside, the moisture of the air inside will be constant. Then the air is circulated by centrifugal fans at a rate of 313,000 cubic feet a minute.

 The second step in air conditioning—cooling or heating the air—is carried on in the basement by two large refrigeration units and three furnaces. The refrigeration units are a bartender’s dream and can freeze 40,000 ice cubes a minute. They chill water which passes in pipes through the building. In winter, water is heated and passed through the same pipes which run through the ceiling and under the window of every room. A special platter covers them. This acts as a cooling or heating radiator.

 Another method of cooling is through a series of tubes around the lighting fixtures. If the lights raise the temperature above the ideal (about 72 degrees) a thermostat in the wall opens and allows chilled water to run through ceiling pipes around the lights. This offsets the heat generated by the high-intensity fluorescent lights. When the temperature drops, the chilled water is cut off. This complex heat control system uses over 13 miles of copper piping.

 The inside decor, the fittings and the large windows give the building a bright, spacious atmosphere. Pleasant pastel colors have been used throughout. In the hallways is a new type of plastic wall-covering. It is a fabric which washes well, and looks like expensive wallpaper. In the office vinyl plastic paints have been used. Wood veneer on the walls around the elevators was applied like wallpaper, then painted and varnished.

 Colorful decorations are also used in the large employee cafeteria on the eighth floor which has murals by the late Oscar Cahen, O.S.A. It can seat 400 at a time and serve 900 meals a day. The cafeteria is a necessity because 1,100 extra customers a day would put an impossible strain on nearby restaurants.

 Another striking decoration is the mural in the ground floor foyer, by the Canadian artist, York Wilson, R.C.A., O.S.A. It depicts in semi-abstract form, the story of oil. In the board room is a third mural by Sydney H. Watson, R.C.A., O.S.A., principal of the Ontario College of Art in Toronto. Mr. Watson’s wall design shows, in stylized form, Canada’s natural resources and basic industries in their geographical locations.

 Keith Duckworth, an Imperial staff architect, who has worked with the contractors, Pigott Construction Co., and the architects, Mathers and Haldenby, ever since the first plans were drawn up, says, “Modern buildings recently have been criticized for their lack of permanency. It has been said that people are only building for a generation or two and that 200 years from now few will be left standing. We have built to last. In 200 years, the air conditioning will be out-of-date, and the elevators old-fashioned, but the building should still be standing—and, we hope, in use.”

 When Canadian artist York Wilson started the largest mural in Canada at Imperial Oil’s new building on St. Chir Avenue in Toronto, the foyer in which it was to go was just a wind-swept area. Concrete mixers, mechanical saws, welders’ torches and an assortment of other building equipment were going full blast.

 As Wilson began to apply his colors to the two panels, each 32 by 21 feet, machines stopped and saws dropped. Looking at the large colored sketch Wilson had made, the workmen expressed their feelings in no uncertain terms. One said it reminded him of a nightmare he once had in the army. Others politely turned their backs. Not one said he liked it.

 Wilson wasn’t put out. The design, which has been described as a refreshing mixture of abstract and actuality, takes some time to assimilate. He waited patiently. The same workmen worked beside him for the next six months. Then one day one man came to him and said, “You know, I think you really have something there!” It was the beginning. Within weeks the crew, almost to a man, had expressed more than passing interest in the project and some even took their families up to see the giant painting on a weekend. One man liked it so much he wrote an essay explaining it.

 Wilson was more than pleased. He felt this proved what he had always maintained: that an ambitious work of art, if it is good, and no matter how unusual, will eventually win the approval of the general public.

 At first sight the mural is strange. One fascinating aspect of it is that people are affected by it in many ways. Any one description of it would likely be inaccurate. Wilson describes it this way: “It depicts the story of oil from its beginning, millions of years ago, when oil was forming below the surface of the earth. The left panel shows the early period as a rocky landscape set in a weird prehistoric atmosphere; a flowing oil well symbolizes the discovery of oil.”

 “A beam of light carries over to the right panel, where a large hand holds a cluster of molecules. This symbol of man rearranging molecular clusters is surrounded by the result of his scientific achievements. These are achievements in the
development of transportation—particularly in the air—industry, science and the arts. They show the effect of oil and its products on our present-day mode of living.

Wilson adds, "The most startling thing about the story of oil is the business of breaking down the molecules (in refining processes) and reshaping them to make literally thousands of products. I see it as one of the most significant developments of modern times, and have tried to show it as such."

It took three years to plan and design the painting. When Imperial started work on the new building, the company engaged Cleave Horne, another Canadian artist, as art consultant for the building. He chose Wilson to decorate the foyer. The late Oscar Cahen, Danish-born artist who was killed in a traffic accident near Toronto last year, was also commissioned. He had the task of the murals in the staff cafeteria, which he completed shortly before his death. Sydney H. Watson, principal of the Ontario College of Art in Toronto, was commissioned to paint the murals in the board room.

Wilson first made countless drawings and studies. He toyed with the idea of the development of transport, Canadian industry, and Canadian resources, and finally hit upon what he calls the "molecule idea" as being of greatest interest.

Eighteen months later, the composition was approved in sketch form. Wilson next had to make sure that the wall surface on which the painting was to be done would be permanent and wouldn't crack. Several samples of roughened, specially-prepared cements were offered him. He chose one to which paint adhered strongly.

Next he had to find paints that would provide the greatest permanency. The answer came from a new medium, vinyl acetate. Wilson used this to mix with dry pigments. Vinyl, a product of crude oil, has many advantages over other paints. It is as permanent as possible. It dries on the surface in three minutes, and completely within a few hours. To make sure of a perfect surface, Wilson took one other precaution. He covered the whole area with a vinyl undercoat. It took 14 gallons.

The biggest problem was to get the design from his final sketches, which measured about eight feet by five feet, to the wall. Wilson decided to project the design onto the wall and trace it. Eight color slides were used and the outline traced in. Then the great task of actual painting began. Starting at the top and working down, to eliminate spalling areas already painted, Wilson and his assistants worked on. Weeks passed.

As the mural took shape, Wilson endured (and enjoyed) more pungent comments from his co-laborers in the foyer. Some are unprintable, others most penetrating. Wilson jetted many of them down. One man asked, "Will any one know what it is when it's finished?" Another said, "The black dot (the sun-like tip of the oil well) is an eye seeing into the future." But before long, more rewarding comments came. "It may turn out pretty good—it's beginning to make a little more sense now," said one stonemason.

People passing in the street—the mural can be seen through the glass-fronted foyer—began stopping. Visitors came inside to see. Wilson says he must have stopped at least 50 times to explain it to interested
D. A. (Don) Campbell has been appointed assistant division manager of Quebec Marketing. He has been sales manager for Manitoba during the past three years and succeeds R. D. Murray who is on a special assignment. A native of the Niagara peninsula, Mr. Campbell is a graduate in commerce from Queen's University and in law from Osgoode Hall. He joined Imperial in 1948 as assistant to the manager—legal, of the Ontario marketing division. Two years later he became resident manager of the Toronto area, and, later, was acting district manager for a short time. Following a year as merchandise co-ordinator at Leaside, he served as district manager at Hamilton and, later, at London, prior to his transfer to Winnipeg in late 1953.

E. L. (Ed) Baillie, for more than eight years manager of the Newfoundland marketing division, has been transferred to Ottawa as co-ordinator of government sales. His appointment followed the retirement of D. H. Piper who had 43 years' service in the marketing department. A former professor of engineering on the staff of St. Francis Xavier University, Antigonish, N.S., Mr. Baillie joined Imperial in 1930 as an asphalt engineer. During the last war he worked with the United States Navy on asphalt production for the Argentia, Nfld., airport. Later he became Maritime industrial sales manager and, in 1945, district manager for Nova Scotia. He moved to Newfoundland in 1948.

M. A. (Mac) McArthur has succeeded Mr. Baillie as manager of Newfoundland marketing division. This is not new territory to Mr. McArthur. During the last war he supervised wartime fuel operations at Newfoundland airports and was also resident manager at Argentia and Goose Bay airports. Since then he has served at New Glasgow and Halifax, N.S., and Saint John, N.B. Until his recent appointment, he was operations manager of Montreal marketing division. A native of Toronto, Mr. McArthur attended the University of Western Ontario, joining Imperial in 1933 in London. He held various positions in Ontario marketing division before going to Newfoundland in 1941.

B. H. (Ben) Sherwood has been appointed management assistant in the manufacturing department. He has been with Imperial since 1935 when he joined the mechanical department of Calgary refinery. In 1943 he was loaned to the St. Clair Processing Corp., in Sarnia to aid the wartime production of synthetic rubber. He returned to Imperial in 1947 as maintenance engineer at Esso refinery and shortly afterwards became mechanical superintendent at Edmonton refinery. In 1950 he moved to the engineering division at Sarnia and was chief mechanical engineer when transferred to his present duties.

H. F. (Hugh) Wheaton, formerly plant superintendent of Regina refinery, has been appointed manager of Winnipeg refinery to succeed W. A. Murray who resigned from the company to become director and general manager of Largo Oil and Transport Co. Ltd., Aruba, N.W.I. Born at Copper Cliff, Ont., Mr. Wheaton graduated from the University of Toronto in chemical engineering in 1933 and joined Imperial Oil as a laboratory assistant at Sarnia. During the next 10 years he held various positions, including chief operations engineer of the engineering division. In 1953 he transferred to Regina refinery and remained there until his current move to Winnipeg.
NIGHT WATCH AT HALIFAX

While the port of Halifax sleeps, Imperial's refinery on the Dartmouth shore of the harbor continues operations throughout the night. In the brightly-illuminated operations house, the nerve centre of the refinery, three men watch and supervise the progress of the crude oil through the refinery. The interior walls of the control house are panelled with multi-colored diagrams and symbols of the refinery's processing units. The panels are a maze of dials, buttons and lights which report the temperatures, pressures and rates of flow of the oil being processed. From them the operators can tell at a glance if everything is working on schedule. Halifax refinery is now Imperial's third largest. It was re-opened last fall after an 18-month $30 million reconstruction program which equipped it with the most modern refining units. It has a capacity of 42,000 barrels a day and it serves the Atlantic provinces of Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland (including Labrador).
Oil is seldom found where it is needed.
Here's how oil men solve this problem

by HAL TENNANT

After half a century of auto development, it almost seemed in western Europe last winter that the faithful horse was having the last laugh.

Feeling the effects of the oil shortage caused by the blockade of the Suez Canal, one British laundry operator left his fleet of trucks in the garage and sent his drivers on their rounds in old horse-drawn delivery wagons. Horses also went back to work in other parts of Europe, and bicycles and electrically-driven vehicles enjoyed sudden popularity. Meanwhile many industrialists had to use a lot of ingenuity to prevent shutdowns. One company in France, for instance, hired a fleet of old coal-fired locomotives to pump steam heat into factories normally heated by oil.

These incidents and many others dramatized Europe's dependence on a steady flow of oil from the Middle East; they also reminded the world of one of the basic economic facts of modern industrial life: oil is seldom found in the areas where it is needed most.

It is needed most in heavily industrialized areas where living standards are highest. But it is found in its greatest abundance in the Middle East, in lands where people are only now breaking away from centuries-old living habits and acquiring modern living standards.

Writers have tried to describe the oil resources of the Middle East with adjectives like "vast", "huge", "rich", and "enormous". But all such descriptions have one weakness in common. They are distal understatements. The fact is that about half-a-dozen little countries around the 600-mile-long Persian Gulf contain about 70 percent of all the free world's known oil reserves. Since the Soviet Union and its satellites are self-sufficient in oil and are not large potential suppliers to the rest of the world, their resources are excluded from this and all subsequent calculations. Describing the Middle East's known oil deposits calls for the use of numbers so large—more than 140 billion barrels, or about five trillion Imperial gallons—that they are almost meaningless.

The nation which is credited by present estimates with the world's largest known oil deposits is the sheikdom of Kuwait, at the head of the Persian Gulf. Kuwait is a little patch of desert, smaller than Prince Edward Island, with about 200,000 inhabitants. Until oil was found there about 20 years ago, Kuwait was noteworthy only for pearl fishing and international smuggling. Today it is probably, acre for acre, the world's most valuable piece of real estate. Beneath its parched sand dunes lie proven oil reserves of 50 billion barrels. Three of Kuwait's neighbors hold most of the remainder of the Middle East's known reserves. They are Saudi Arabia, 40 billion barrels; Iran, 30 billion and Iraq, 22 billion.

These resources have all been discovered and developed by interests outside the Middle East. The oil industry's investment there has a nominal value of $3 billion. U.S. companies share the biggest percentage of output—57 percent, followed by British companies, 29 percent, and British-Dutch interests with eight percent. Companies of various other nationalities own the remaining seven percent. Except for Iran (where the industry is nationalized and is operated for the government by a consortium of foreign companies) the governments of the Middle East's big oil-producing nations do not participate directly in the industry. But, without investing any money or assuming any risk, they collect royalties and other direct payments which in most cases amount to half the profits from production. Each of the four largest oil-producing nations takes in between $200 million and $300 million annually in direct payments.
WORLD OIL MOVEMENTS

BEFORE THE SUEZ CRISIS last fall most of Europe's oil supplies were carried through the Canal, or by pipe line, to the eastern Mediterranean. Volumes of oil are shown in barrels per day.

AFTER THE SUEZ CRISIS large quantities of Middle East oil (shown in barrels per day) went around the long Cape route. But to prevent a critical fuel shortage in Europe, western hemisphere resources were rushed in.

from the industry. Their economies are bolstered further by the large sums paid as wages to local employees and as fees to local contractors and suppliers. In tiny Kuwait, oil royalties alone amount to about $260 million a year—or more than $1,300 for every man, woman and child in the sheikdom.

When both pipe lines to the eastern Mediterranean coast are operating, about one-quarter of Middle East production is carried through them a day and is subject to charges imposed by the countries through which it passes.

Westerners familiar with the Middle East have often warned that it is a serious mistake to think of the area as a single bloc, for they have different forms of governments, different languages, differing cultural backgrounds, and are not even united religiously. The Moslems are split into several sects, and Iran, for instance, has a population made up of two Moslem sects, plus Zoroastrians, Bahais, Armenian Christians and others.

In any broad consideration of the world's oil supply however, it is reasonable to describe the Middle East as a single unit and to compare its resources with those of nations in other parts of the world. In such comparisons, the United States, even with its thousands of oil fields, ranks a poor second. It has reserves of 33 billion barrels—less than a quarter of Middle East reserves, or about 16 percent of the free world's total. Venezuela, with some 13 billion barrels of reserves—about six percent—ranks third. All other nations in the world, including Canada (with three billion barrels), are, by comparison, simply also-rans.

But in many countries there is a great difference between the amount of oil known to be in the ground, and the amount being extracted for use. In oil production, the United States is far out in front. In 1956 it was producing at an average rate of 7,150,000 barrels a day, or almost twice as much as the Middle East. Collectively, the nations of the Middle East (Bahrain, Egypt, Iran, Iraq, Israel, Kuwait, Neutral Zone, Qatar and Saudi Arabia) ranked second, with a pre-crisis production of almost four million barrels a day. Venezuela was third, with a daily production of two and one-half million barrels. Canada, in fourth place, was producing 470,000 barrels daily and outpacing all the nations of the Far East (405,000) and those of Europe and Africa (235,000).

The United States is also the world's No. 1 consumer of oil, using more than 8,750,000 barrels a day, and Canada ranks second, at 720,000 barrels. Together they consume more than 60 percent of all the 15,500,000 barrels used each day by the free world. As thirsty as they are for oil, both the U.S. and Canada nevertheless manage to provide large proportions of their own needs. The United States provides, on balance, all but about one-eighth of its own daily oil needs, and Canada all but about three-eighths.

While neither nation has cause to be complacent about its position as an oil producer, both can feel a certain sense of security in knowing that, regardless of conflicts in other parts of the world, they will continue to have access to large supplies of oil produced from within their own borders.

Few nations in western Europe can nurture such a comforting
thought. Collectively they are able to produce less than one-eighth of the almost three million barrels of oil they normally need each day. Some have no known oil deposits whatever and little hope of ever finding any. In a typical month last year, for instance, they were fewer than 200 wells being drilled in all of western Europe, compared with about 5,000 being drilled in the U.S.

At the opposite end of the production-consumption scale lie the nations of the Middle East. During the last few months of normal operations in 1956, Middle East oil production, at nearly four million barrels a day, was about 10 times as much as the producing nations needed for their own use. They produced the rest, and more than half these exports normally went to western Europe, which the Middle East firmly established as the world's foremost oil-exporting area, and western Europe in need of the biggest supply of imported oil, the continuing problem, even in peaceful times, is largely one of transportation.

Once the Suez Canal was closed, tankers hauling oil to Europe from the Persian Gulf were obliged to take the long route around the Cape of Good Hope. A tanker bound for Britain from the Persian Gulf was faced with a voyage of 11,100 nautical miles, instead of a customary 6,200. For a typical tanker the extra distance meant running time was increased from 19 to 32 days. The round trip on the Cape route thus took nearly four weeks longer than on the Suez route.

By continuing crude movements at capacity, the Middle East's two major pipe line systems might have avoided further aggravation of the European dilemma, if circumstances had been different. Both systems were designed as short-cut routes for carrying crude from the Persian Gulf overland to the eastern shore of the Mediterranean, thereby, in effect, bypassing the Suez Canal. Unfortunately, however, the larger of the two systems, the Iraq Pipe Line, was sabotaged in Syria and all through the peak of last winter's crisis was out of commission. The other, Trans Arabian Pipe Line (or "Tapline") continued to work at capacity on condition that no oil moving through it be shipped to Britain or France.

(Partly because of the Syrian government's attitude, oil companies are talking of new pipe lines to bypass potentially unfriendly countries and thus reduce the political risk to continuity of operations.)

Of course there were other possible sources of supply for Europe, and every feasible one was used. As early as July, 1956, when the Canal was nationalized, at least one large U.S. oil company had foresaw the possibility of disruption in the normal supply lines and had worked out an emergency plan. The plan included extensive rerouting of tankers, the searching of western hemispheres markets for any surpluses of crude oil and products, the stepping up of Venezuelan production, and the use of some rather unorthodox transportation schemes for moving more crude from inland oil fields to coastal ports for shipment to Europe. By the end of November—within the first month of the crisis—this company had begun to supply the major portion of the crude oil normally carried into Europe and was sending significant amounts of products as well. In December, the U.S. government approved programs drawn up earlier by the Middle East Emergency Committee, a group of 16 U.S. oil companies, most of which were already in the business of supplying Europe with oil.

The government's approval meant that the companies could go ahead and co-operate in emergency measures which several of them were already undertaking individually. The net result of the MEFC measures was that over the entire winter, Europe got an over-all average of about 90 percent of its normal oil needs. The remaining deficiency was still felt, but it didn't cause the painful pinch that might have been expected from the greatest fuel shortage in Europe's history. The MEFC measures would undoubtedly have given Europe all the oil it needed, except for one inextricable problem: there simply weren't enough tankers in the world to do the job.

The ideal solution, of course, was to build more tankers. But construction takes time, and most shipyards were already booked up several years ahead. Anyway, the tanker of tomorrow never solves the shipping problem of today. So in spite of all the efforts of oil men who foresaw the possibility of the Suez crisis and undertook every feasible emergency measure, there was no complete short-term solution to the oil supply problem. As a result, Europe experienced an uneasy winter.

Even the most optimistic experts on world shipping can't foresee any large surplus of tanker capacity in the immediate years ahead. If the world demand for oil continues to rise according to even the most conservative forecasts, and if normal supply lines keep getting longer, as they have been doing, shipyards throughout the world will have all they can do just to keep up with the demand for tankers.

Since World War II, the trend has been towards building tankers of ever-increasing size. The era of the super-tanker began just a few years ago with a class of 26,000-ton tankers. This was about 10,000 tons larger than the standard wartime T-2 tanker which could carry about 115,000 barrels of crude oil. Right now, about half the 900-odd tankers under construction or on order throughout the world exceed 10,000 tons. The present free world commercial tanker fleet consists of about 2,300-odd vessels with a total capacity of more than 40 million deadweight tons, or nearly three billion barrels.

One U.S. shipyard has orders for two 100,000-ton tankers, and each of these will be able to carry nearly six times as much oil as the T-2. The big tankers make oil transportation cheaper, but they are too big for many harbors and waterways and must discharge part of their cargos to smaller vessels in deep water, or else make an entire trip with less than full capacity—as many large tankers were doing in the Suez Canal before it was closed. Even partially loaded, most tankers could carry oil through the Suez for less cost per barrel than to carry a full load around the Cape. But the larger the tanker the narrower the gap between the Suez-route price and the Cape-route price, until a point is reached—with vessels of 80,000 tons and up—where the Cape route is actually cheaper.

However, the Suez Canal appears to be in no danger of being made obsolete by a preponderance of super-supertankers. One reason is that it costs a tremendous amount to provide the big vessels with proper unloading facilities. To save enlarging an entire port, a group of U.S. companies considered laying a submarine pipe line into which tankers arriving at the east coast could discharge their oil cargoes from far offshore. But the cost of one such line, along with its storage tanks ashore, was estimated at $30 million.

But whatever the trend in oil transportation, much of it is certain to be geared to Middle East production. Oil experts differ widely in their opinions of the Middle East's oil potential, but even the most conservative of them concede that the area will yield at least twice as much oil as the 140 billion barrels known to be there. With resources like these, the Middle East will, in the years ahead, loom up as a bigger factor than ever in the world oil picture.
Thetford Mines, P.Q. faced a crisis when a large supply of asbestos was found under the town. To save the mines, the townspeople moved their homes

by Michael Sheldon

You realize that something out of the ordinary has happened to Thetford Mines when you drive into town, coming, say, from Montreal about 150 miles to the west. You pass open pit mines and mountains of rock tailings; a sure sign you are in asbestos country. A few miles further and you strike the attractive residential outskirts of Thetford itself. But the town seems to come to an end before it's really begun, and you drive out over a broad highway skirting another large mining development. Then, quite suddenly, you find yourself in Thetford again; in its business heart. It seems a queer way to build a community, but Thetford Mines wasn't always like this.

Twenty thousand people live in the town, one of the two main Canadian asbestos industry centres for the past 75 years. Thetford was literally built on asbestos. The original parishes, streets and homes established near the first mines, spread out on top of the ore body. And, as the mines expanded, the huge open pit edges right up to the town sidewalks, the back windows of frame houses came to overlook their deep, rocky slopes.

A few years ago it became clear that Thetford Mines was threatening to strangle the industry on which its prosperity, its very existence, depended.

To free the mines of the town's strangulation, a large part of the city has been relocated, causing its strange division into two parts. Railroads and main streets have been shifted, and old homes have been moved to new surroundings. The relocation project was initiated by three mining companies, and has opened up asbestos reserves good for at least 40 years' production. It has been carried out with the full co-operation of the townspeople and civic authorities.

Thetford Mines and the four other asbestos centres in the Quebec Eastern Townships produce close to two-thirds of one of the world's most unusual minerals. Asbestos is a fibre as well as a mineral. It is a fibrous silicate of magnesium, usually green in color, although the individual fibres appear white and grey. Just how a mineral becomes transformed into fibres instead of the usual crystals is not fully known.

The asbestos fibre—which runs anywhere from a fraction of an inch to two inches in length—is remarkably strong. It is weaker than concrete, but just as strong as scoured cotton and as strong as some types of mild steel.

The word asbestos comes from the Greek and means the unburnable. Herodotus, the Greek historian, describes how the bodies of eminent men were wrapped in a crenation robe that would not burn, so their ashes might be recovered from the funeral pyre. Plutarch, another Greek writer, reports that the wicks of the eternal flames tended by the vestal virgins were made of asbestos. There is also a story of Charlemagne over- swelling the infidels by giving a great banquet and then casting the tablecloth into the fire, to withdraw it unmarked and glittering white.

Quebec, too, has its asbestos legends. One tells of a Welsh woodcutter who convinced his FrenchCanadian companions that he was in league with the devil by throwing his sacks into the fire at the end of a day's work, and pulling them out clean and ready for wear. Another deals with a creature assumed to be Old Nick himself—a tall fellow in a buffalo robe, with an icy, black moustache and beard—who appeared at a habitant farm one New Year's Eve, and asked for live coals to fill the sack which would keep him warm on his long sleigh ride to Montreal.

The industry itself in Quebec dates from the mid-1870s. Asbestos was first discovered in the Thetford Mines area but not recognized. It remained a Welshman named Evan Williams to recognize that the silty fibres apparently growing within the rock on a farm 60 miles from Thetford, were indeed asbestos. Williams tried to interest local farmers in developing the property, but without success until he met an elderly Englishman named W. H. Jeffrey, who opened the mine in a royalty basis in 1881. This was the start of the Jeffrey mine, destined to be the world's largest, around which the present town of Asbestos has grown up.

After that, development of the Quebec mines was rapid, for asbestos was even then a costly imported material, and the Canadian product soon proved itself finer than any other. Though it moved fast, the industry began in a small way. Individuals set up operations with dynamite and shovels. They cleared the earth, blasted out the rock and then cobbed it—broke up the green-verdened stone with small hammers until they could free the crystalline fibres. But as demand grew and operating costs increased, consolidation went hand in hand with expansion.

Today there are seven major producing companies in an area that measures roughly 50 by 15 miles: the largest, Canadian Johns-Manville Co. Ltd. at Asbestos is responsible for roughly 50 percent of Canadian output. The others are Niccolot Asbestos Mines Ltd. at Norbord; Quebec Asbestos Corp. at East Broughton; and four companies—Asbestos Corp. Ltd., Bell Asbestos Mines Ltd., Johnson's Co. Ltd. and Flintonite Co. of Canada Ltd.—at Thetford Mines. The relocation project has been handled by the company's own staff.

Each of these three companies had a mine in the centre of Thetford, and these mines, hemmed in by the growth of the city, began to jostle one another. Where there was only open pit mining it was possible to operate without too much difficulty, but Asbestos Corp. opened the first underground mine in 1934 and other companies followed. Today over 80 percent of Canadian asbestos is mined underground. The angle at which the caves were driven into the rock made it difficult for the companies to operate without ingiring on another's reserves. Co-operative mining seemed the solution. Geologists and other experts said that, to be effective, this had to include the expansion of operations to take in the whole deposit. To handle the project, the companies set up a joint organization called Relocations Ltd. The $6 million undertaking, which involved moving about 100 homes and places of business, was to be financed by the three companies in proportion to the new ore territory each gained.

All the land to be cleared belonged to the companies. However, they paid each resident the municipal assessment of his property plus 10 percent. They also made available a new site where he could rebuild if he wished. Each resident had the right to take his old home with him, and most of the structures could be transported without too much trouble. Eight miles of railroad track have been relaid, a new station and freight yard built, and a bypass highway constructed—with a road linking the two separated parts of the town so merchants of the commercial centre are not cut off from their customers. Last fall abandoned foundations and houses being prepared for moving stood side by side in the condemned streets. The concrete abutments of a railroad bridge that had lost its central arch were starkly above the pavement. The town has lost its grip on the mines, and the new diggings are well under way.

This is just one undertaking of an industry whose production has doubled in the past 10 years, and whose plans for the future envisage further large-scale expansion. Nearby Black Lake is the site of a $32 million project to drain the lake—from which the community takes its name—to provide another major source of asbestos.

The upper half of the lake has been dammed and the lower half is being drained. Before the one can be opened up for the giant shoals, 60 feet of black silt must be dredged away—a more difficult problem than the actual drainage. But the steel
skeleton of the mill where the rock will be crushed and processed already rises high above the lake.

Then there is the vast underground mine which John-Maxville opened in Asbestos in 1949 beneath its Jeffrey pit, and the 14-storey mill that is one of the most highly mechanized plants in Canada. This mine and mill—which cranks the rock and separates the fibre by air suction—are a far cry from the open digging and hand cabling of asbestos tradition, though these older methods continue beside the new. Open pit mining is still the most economical, and the longest, most valuable fibres are still recovered by hand.

Some 6,000 people work in the mines and mills of the Quebec asbestos industry, and the Quebec asbestos worker has come a long way from the depressed pre-war years. As construction has boomed around the world, asbestos production has risen, and wages with it. An asbestos worker, earning an average of $1.90 an hour, is now one of the top hourly paid workers in Quebec. Thetford and Asbestos each claim the highest figure for automobile in relation to population of any Canadian city—better than one to every three people. In Asbestos, which has three fine lakes in the neighborhood, there are an amazing number of speedboat fans. Roland Gilbert, a bag counter at the Beaver Mill in Thetford, is pilot and co-owner of a float-equipped Piper Pauper which he flies around the province.

Most of the workers come from local families, and often maintain the family dairy farm. Many are the sons and grandsons of the pioneers of the industry. And many have spent long careers in it. Edouard and Cedric Fillion of Thetford Mines, started out in the open pit in 1900, and have 112 years' service between them. Both, too, have long records of community service which seem typical of the asbestos communities. Cedric is a former mayor, Edouard has been president of both the sports commission and the musical union.

Love of music is a characteristic of Thetford Mines people. The Philharmonic Society is an orchestra composed entirely of miners. James Mole, the conductor, has been a musician as well as a mining company employee for 33 years—ever since nine music-lovers began practicing in the back room of a local store. In the orchestra, sons regularly follow their fathers.

Being musical is, of course, a traditional miner's quality: so is being independent. And the asbestos men live up to the tradition here too. The story is told that early this century the citizens of Black Lake rented the shack that the local railroad insisted on calling its station. The railroad refused to replace it. Arson was tried first; unsuccessfully for the shack was built on four posts, and the fire just burnt through the floor to the earth beneath. So the miners hitched the station with a rope to the back of a freight the next night, and that was the end of it.

A recent example from Asbestos is more constructive. Two years ago the curlers there decided they were tired of traveling 25 miles to the nearest rink, and decided to build one of their own. Under the direction of John MacDonald, a surface foreman, they used wood from old Jeffrey mine buildings for the construction, and in six months they'd completed the rink.

The prosperity of the Quebec asbestos region is more firmly based today than it has ever been, for the users of asbestos are increasing all the time. First among them comes the manufacture of construction materials—the siding and roofing shingles that help protect homes from fire, the insulation that keeps them cool in summer and holds in heat in winter, and a large number of products pressed out of asbestos cement, such as high-pressure water pipes. The automotive industry is also a big user—notably for brake linings and gaskets. Every car that

breaks to a sudden, safe stop is testing the quality of asbestos.

Asbestos cement is shaped into acoustical panels to quieten noisy offices, to control sound in theatres and broadcasting studios. Montreal's new Queen Elizabeth Hotel is being built on inch-thick pads of steel, lead and asbestos cement, that will serve as a cushion against the vibration of the trains passing underneath to Central Station.

There are more spectacular uses: asbestos suits for fire-fighters, which enable them to walk safely inside an oil fire that would reduce an unprotected man to ashes in minutes. Only with asbestos insulation on the flaming exhausts is it possible for men to fly jet-powered aircraft. And if men one day flies to the moon it will probably be thanks to asbestos, which provides essential protection for the control equipment of any rocket or rocketship during the intense heat required during the firing processes.

The annual production of Canadian asbestos is worth some $100 million. It provides the main industry of the Eastern Townships, accounts for 30 percent of the mineral production of Quebec and about six percent of the national mineral pro-

duction. The industry is especially important to Canada as a source of foreign currency, for 95 percent of the annual output is exported; close to 60 percent going to the United States.

Though the demand for asbestos rises steadily, Canada does not need to worry about her reserves for many years to come. It is estimated that over the next 25 years about 17 million tons will be mined annually. In Quebec there are 575 million tons of proven reserves and a further 380 million tons indicated though not yet thoroughly tested. There is a mine near Mathe-son in northern Ontario, another in B.C., and deposits have been located in Newfoundland, northern Manitoba and Saskatchewan, the Yukon and on the shores of Hudson Bay.

But the heart of the industry is in the Eastern Townships; in Asbestos and Norbestos, in Thetford Mines, Black Lake and East Broughton. Here the tailings continue to pile up, the pit amphibitaires spread out, and the miners drive further and deeper underground. They mean a good living for 6,000 men, their families and those who serve them, safer working conditions and shelter for millions throughout the world, and a valuable Canadian export.

As the citizens of Thetford walk past the mines where their homes once stood, they need no further evidence that they work in an industry with a great future. 

The Jeffrey pit at Asbestos is the world's largest

The long fibres, and the best, are extracted by hand

Eighty percent of Canadian asbestos is mined underground