the foundation of every state is the education of its youth
Split personality When he's playing the country squire at his
farm retreat north of Cobourg, Ont., writer Lloyd Lockhart plays
with his children, speaks to his friends, and is kind to animals. He
forgets his Toronto job at radio station CHUM; never thinks of the
deadlines he had to meet in 19 years of newspaper work; displays
none of the nervous symptoms of the magazine writer.

But back in town with an article on his hands, he's another man.
The other Lockhart is moody and preoccupied. Each assignment
peeks on his mind until it's finished. During the hatching period he's
such an absent-minded bridge partner that friends won't play with him.

"That first paragraph may take two days," says Lockhart. "Once
I get started, though, I'm strictly a bash-it-through type and finish in
two or three hours."

The finished product doesn't always please him though, and he's
apt to rewrite it in the middle of the night. Witness the article,
STUDENTS WHO MIND THEIR OWN BUSINESS (page 24); he delivered it to
the Imperial Oil night watchman at two a.m.

You take the high road We've never liked heights. Looking
down from the roofs of tall buildings makes us slightly giddy. Even
a fast ride in the office elevator makes us airsick. Hence we've
intention of treating places with the sky diver on pages eight and
nine, or even photographer Roy Nicholls who shot the pictures.

Nicholls, who'll try almost anything, drew the line at sky diving,
but he did follow the jumpers closely by plane. After one man jumped
the pilot yelled back, "Want to follow him down?" Always on the
lookout for a new camera angle, Nicholls eagerly agreed. The plane
dived so steeply that they passed the sky diver.

Back on the ground the sky diver came over to Nicholls with a
look of respect and said, "I'm sure glad that was you in the plane
and not me."

Anyone for paper dolls? We earnestly hope none of you are still
eating leftover Christmas cake or still trying to assemble your Christ-
mas mobile from the December Review cover. We should have warn-
ed you that mobiles, like Reeves, are not necessarily built in five
minutes. Although everybody liked the finished product, a few
readers were surprised that it took as long as an hour to put the
mobile together. The speed record rests with a fellow employee who
had the thing dangling from his light fixture in 20 minutes. We sus-
pect he cheated, though, and measured his thread beforehand. It
took 40 minutes—and we'd been experimenting with various
shapes and weights of the mobile for more than a year!

**Imperial Oil Review**

**Vol. 46 No. 1**
February 1962

Cover: Our Education Year design, by Mont-
real artist Ernst Reihl, expresses the basic of ed-
ucation: learning the alphabet, then words,
then sentences and, as the thoughts of great
men such as Disraeli (whose quotation is seen)

2 The Beer Leftover in Business
by Jack McArthur

5 Plowman Comes Home a Winner

8 What a Way to Spend a Sunday!
by Gordon Wasky

14 The Weather
by Marcus Van Sten

18 Management Changes

19 La Bonne Amélie
by Phyllis Lee Peterson

22 Big Bang at Saffield

24 Students Who Mind Their Own Business
by Lloyd Lockhart

28 Working Man's Night School
by Michael Jacot

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**EDITOR: ROBERT COLLINS**

Education: A Good Investment

It's no accident that the story of Johnny Jukes and his
classmates appears on page 28. The Jukes article is part of
our salute to Education Year in Canada. It also offers
an opportunity to explain why Imperial Oil is a vigorous
supporter of education, not only for its employees but
many others.

We're not pious about it. As a corporation, Imperial
and does justify to its shareholders its support of
education.

Johnny Jukes and the rest are improving their general
education so they can learn a trade. Obviously, it is to
the company's advantage to help them upgrade their skills, in
line with the changing nature of their jobs. But as one
Sarnia workman points out, whether or not he moves up
in the company, he has "learned a lot". He has gained
knowledge. He'll be a better citizen because of it. And a
thinking, well-informed community—an educated com-
community—is the best, and perhaps only, possible environ-
ment for business.

This is why Imperial spends hundreds of thousands of
dollars a year on education outside its immediate sphere:
capital grants to universities; grants for specific research
projects; sponsorship of teachers' exchange bursaries;
donations to the Canadian Education Association; an
extensive scholarship and fellowship program accompanied
by grants-in-aid, in some cases, to the Canadian universities
attended. Call it a very good investment, if you will.

"Educated people are the 'capital' of a developed
society," writes economist Peter F. Drucker. "When
economists talk of capital they rarely include knowledge.
Yet this is the only real capital today."
Profit is one of the greatest forces in economic progress yet few people really understand it

Samuel Gompers, Winston Churchill and owners of shares in companies have something in common—a high regard for profits.

Gompers, the great American labor leader who headed the union movement during its years of violent early growth, once said: "The greatest wrong an employer can perpetrate on his employees is to fail to make a profit." Churchill, a conservative of the old school if there ever was one, saw eye to eye with Gompers. He once commented: "It is a socialist idea that making profits is a vice. I consider the real vice is making losses." As for company shareholders, if they dislike profits, they have seriously split personalities. Profits make their shares worth money.

Whether or not you entirely agree with Gompers or Churchill; whether or not you're even a shareholder; the point is, profits aren't the exclusive property or concern of any one group. A great many people, in our society, have a stake in them.

Yet probably no single economic idea has been so maligned and misunderstood as the turning of a profit. At the one extreme are those who regard profit as immoral. At the other extreme are people who act as though profits were the highest expression of modern day morality.

Happily for the non-Communist West, the number in the latter group is declining quickly. Once profit is raised to the level of high morality, many excesses are permitted in its name. Anything becomes justified if it is profitable. This is what happened in the free-wheeling, sweat-shop days of early capitalism.

To the world's great good fortune, this has changed. The good sense of most capitalists combined with the force of circumstances (another way of saying labor legislation and labor organization) helped change it. So did the shift from personal owners to professional managers, who are responsible to many people, not merely to themselves. As a result, in countries where the profit motive is available to most of the people, there's a higher standard of living.

But talking about the goodness or wickedness of profits is like talking about the goodness or wickedness of a bulldozer or a phone booth. Profit is primarily a tool.

The profit motive provides incentive and initiative. It whets mankind's interest in making money. It helps make the economy move.

What is profit? It's easy to understand when you buy a used car for $500 and sell it for $700. You add to the $500 your costs of handling the deal, subtract the total from $700—and find your profit.

It's more complicated with big corporations. There, broadly speaking, profit is anything "left over" from a business operation. It belongs to the owners of the business, whether it's actually paid out to them or not. But this needs some explanation.

by Jack McArthur, Financial Editor, Toronto Daily Star
Start by looking at a company's total income. It may be derived from sales or investments or both. Deduct the cost of materials, rents and licenses, and the cost of labor (including the boss's salaries). Then deduct allowances needed to make up the gradual wearing out of machinery and equipment and—for certain companies—the running up of natural resources which cannot be replaced. Then there are local taxes, excise taxes, sales taxes, and interest to be paid on debts.

The amount left is the company's earning power, generally about half gone for income tax. The rest is called net profit. But this isn't all "money in the bank." It has to be used in two ways: to keep the owners sweet and the company fit.

Some of the net profit—on average, a little more than half—is retained by the company to give it a financial cushion, perhaps to expand or simply to guard against emergencies or bad luck in the future. It's in this area that profit is most misunderstood. If a company is to stay healthy (and thereby provide goods or services for the public, jobs for employees, and a return for investors) it must make a profit. It needs an accumulation of profit to finance expansion. It needs good profit prospects to get investors.

This latter point deserves special mention. It is the weight of evidence that ours is a capitalist society. Our dependence on capital investment is complete, in the sense that we live on the fruits of capital and not merely on the sweat of our brows. Without capital a company can't hope to do the job it was formed to do.

Capital isn't gold or silver or dol- lar bills. It's income put by for the future and it is on this stored income and its constructive employment that the well-being of this nation depends.

Naturally, the investors expect their capital to work for them, too. Which brings us around to the re-

mind of that aforementioned "net profit." It is paid as dividends to owners of shares in the company. If a return for the use of their money.

Although large blocks of shares may be owned by well-known stockholders, most stockholders are "little men" with middle class in-
comes. Imperial Oil, for instance, has more shareholders (44,000) than employees (32,000). Bell Telephone, the giant of Canadian communica-
tions, is owned by 170,000 people including almost 16,000 employees and Bell pensioners. The Bank of Montreal has 21,000 owners. Domini-

on Tar and Chemical probably close to 30,000.

The million or so Canadians who own common stock either share, or hope to share, in profits made by in-
dustry. But few people really recognize a profit or know how much profit is made in Canada. Surveys show that Canadians think company profits generally range 20 percent of the dollar values of sales but that only 10 percent is proper. Well, if 10 percent is proper, Canadian industry is downright proun. Last year, accord-
ing to the latest Canadian Manufac-
turers' Association survey, the aver-
age manufacturing profit was less than five percent of the sales dollar. This is the lowest figure in the sur-

vey's 13-year history. And 20 percent of the 1,000 firms covered had no profit at all.

In some industries a two percent profit on sales may be acceptable be-
cause business is dependable or the amount of money tied up in the com-
pany is low. This is true in many lines of retailing.

In others even 10 percent of sales may be chancy because of the risk of business fluctuations and of the very large amounts of money needed to pay expenses and maintain capital assets.

The oil industry—with its costly refineries, heavy exploration costs, extensive distribution networks—requires a lot of money. Look at com-

pared figures for four large publicly-
owned Canadian integrated oil com-
panies. (A company becomes inte-
grated when it explores, develops, produces, refines and distributes, rather than concentrating on just one or two of these functions.) For last year they show combined profits of about $102 million and sales of just under $1,200 million. Profits were about seven percent on sales com-
pared with more than eight percent in 1955. At the end of 1960 their assets actually exceeded sales, adding up to a breathtaking $1,749 million.

This means that even in the oil business—or in chemicals, alumini-
um and many others—must spend huge sums of money to expand. Imperial Oil has been averaging capital expenditures of $86 million annually in the past 15 years.

Imperial is in a business in which companies must run quickly just to stay where they are or, maybe, make up badly against the competition. The effort to improve—costly as it is—must go on constantly.

From one of Canada's big oil companies comes the estimate that its profits probably don't reach five per-
cent of the amount of money tied up in refining and marketing. Still another oil firm comments ruefully that its operations provided $4 for governments (in taxes, fees, etc.) for every $1 earned by the share-
holders. Taxes are so high that the level of taxes and the means of collecting them are sucking up our eco-
nomic vitality and retarding our na-
tional growth.

This is, however, an illustration of how profits good into action and also set the stage for improved living standards. Companies spend great activities of money to maintain their positions or improve them. In doing this they provide new jobs. At the same time they keep trying to raise the productivity of their employees, seeking advantage over the competi-
tion. The companies contend that such policies and efforts are successful because of their marketing and selling techniques and because of their abilities to produce and sell their goods. Taxes are paid to govern-
ments. These, combined with other taxes, allow governments to pay for things like roads, hospitalization plans and social services.

In the short run profits go to the owners of shares in dividends or, more likely, in modernization, expan-

sion and dividends. In long run, in a decent society, profit motive inspires efficiencies which benefit everyone.

The question of what profits are "too large" or "too small" is never resolved. If business is good, people invest and business will expand even if profit return is small. If taxes are bad, it may take a high rate of profit to attract investment.

The things to remember are:

Profits inspire people to invest, to expand, to improve, to adds to the economic growth. Accumulations of profit finance more expansion. "Profits" also allow for higher wages and for taxes to pay for government services which we desire in our society.

Thus profit is a force which drives us toward economic improvement. As such it's a useful one.
"I didn't like French food. Too highly seasoned and too rich."

"Margaret was thrilled. She said she had a feeling I'd win. She's only been to three plowing matches and I've won all three, so maybe she's prejudiced."

"The first day of the match, it wasn't going. After that it cleared up. The rain seemed to work the topsoil and leave the rest dry. Fair to good. I'd describe the conditions."

"I hope my son William Douglas takes up farming. He's not even walking so it's a bit early to tell."

When staff photographer Roy Nicholls and writer Michael Jacot visited Dixon, a few days after his triumphant return, they found a young man mildly besieged by the pressures of fame. He was the toast of Canada's farming world. He was feted, congratulated, admired for doing something he has done most of his adult life: plowing perfect furrows. Radio and TV stations wanted him on the air; his hometown honored him at a banquet; farm clubs wanted him as their guest; implement manufacturers wanted him to endorse their products. Like the hockey player who scores a Stanley Cup-winning goal, he had become a celebrity overnight.

But Dixon, an uncomplicated and quietly forceful man, was determined to live his life as always. A perfectionist in all his endeavors, not only plowing, he got carpenters and plumbers back to finish his new modern home. He supervised all their work and wouldn't let them lift hammer or wrench while he was in France. Although he made a creditable acceptance speech at his award dinner in France, he is anything but glib. His answers to Jacot's questions were brief, honest and matter-of-fact. He still gets up at 5:30 a.m., eats heartily and does a good day's work, six days a week and often on Sunday. He scans newspapers but finds little time for books; likes popular music but finds little time to hear it. For Bill Dixon, champion plowman, the farm and his family are his anchor. And he was very glad to be home.

"I handed my brother the golden plow when I got back and said 'hope you'll have a go.' George said 'I think this is the nearest I'll get to it.'"

"I'll spend my life on the farm. I like the work, even the long hours. There's something rewarding in being your own boss."

"I was very excited and surprised to hear I'd won. But after a while, that wears off. Now I'd just be Bill Dixon, farmer."
WHAT A WAY TO SPEND A SUNDAY!

by Gordon Wesley

photos by Roy Nicholls

If dropping through air at 120 mph appeals to you, try sky diving along with the 300 Canadians mastering this exhilarating new sport.
The best explanation of this new sport called sky diving is that it's the nearest man has come to being a bird. An accomplished sky diver jumps from a plane at a pre-selected altitude and "free falls" (without opening his parachute) for up to 60 seconds. He flies flat in the air, facing the ground, with arms and legs spread. He does turns and sweeps, loops, spirals and rolls, all under complete control. Finally, at 1,500 feet he opens his parachute to land safely.

But only a sky diver himself can really explain it, or why he does it, or how.

"It's a great feeling," says Hector Below, the trim, 28-year-old chief instructor at the Toronto Parachute Club. "You're alone up there—completely alone, with sky and earth—and suddenly you have no troubles. Everything is peaceful. Silent. You have no concept of time or distance. You forget troubles, stress, money, debts. Nothing seems to matter. You feel confident. Relaxed."

More and more Canadians are inclined to agree with him. Twenty-three clubs have been established between Vancouver and Fredericton, Territorial membership exceeds 300 and while the majority are still mastering the fundamentals, there is a solid core of qualified sky divers who include lawyers, accountants, clerks, school teachers and truck drivers. Some women who, for sheer ability, often outdo men.

"It's not a matter of bravery—if I thought that anything could go wrong, I wouldn't do it," says Ilona Berger, a petite, 24-year-old insurance company clerk, with a slim figure and windblown hair. She's a member of the Canadian championship team, probably the top woman jumper in the country and has more than 200 leaps to her credit.

Ilona started jumping in Hungary at the age of 13. There, parachuting is a state sport and costs nothing. Here at the Lake Simcoe Flying Club, 40 miles north of Toronto, she pays $2.50 or $3 a jump, depending on how high the plane goes. Her longest free fall was 36 seconds (from 10,000 feet) in Hungary; her longest in Canada, 45 seconds.

"I never worry," she says. "I've never had an accident although I did land in a tree one time."

The pros and cons of sky diving have been debated since 1919. In that year an American named Leslie Irwin jumped from a plane at 1,800 feet and, to the consternation of those below, continued descending before using his 'chute until he reached 600 feet. This was the first recorded "free fall" and it presented the daringly new concept that man could indeed perform like a bird.

Since then sky diving has achieved international status in about 20 countries, including Canada which came seventh in the 1960 world championships in Bulgaria. Canadian sky divers will next seek recognition at 1962 world championships in Orange, Mass., where a sky diving stadium is being built with seats for 50,000 spectators.

"It's strange how sky diving attracts people," says Felix Capella, 31-year-old factory production inspector, who's been jumping since 1956. "On weekends, when we do practice jumps, strangers turn up with picnic lunches and stay all day. Some are so intrigued they decide to become sky divers."

Thousands of spectators watched last year's Canadian championships in Three Rivers. They arrived in the morning, before jumping began. They were still there after dark. They sat on fences, rocks, stones and buildings and they saw 70 jumpers from nine clubs doing competitive sky diving with points for skill, technique and timing. Then Daryl Henry and Felix Capella attempted one of the most difficult acts in the sport. They jumped at 8,000 feet, came together 13 seconds later at 6,000 feet, and while descending about 120 miles per hour, passed a button from one to the other. "The way the crowd roared, it was like Maple Leaf Gardens," says Capella.

Sky diving and sport parachuting are used interchangeably—but the two procedures are vastly apart. A sport parachutist goes through the traditional routine of jumping from the plane and counting 10, then he pulls his ripcord and floats safely to the ground.

Sky divers, in contrast, must decide beforehand where they are going to land and how far they will fall in a given time, keeping in mind that their chutes should open at 2,200 feet. They know that in the first 12 seconds they will fall 1,483 feet; thereafter, at 374 feet a second or about 119 miles an hour. They must predetermine what spin or slope they intend to do during the free-fall period. Finally, they must have remedies if everything goes wrong.

"A sky diver's form is like a golfer's backswing," says Bob Hopkins, a 33-year-old diver with the Toronto Parachute Club. "One movement of the body will produce 'hooks' and 'slopes' which throw him out of control. Maybe his shoulder goes too low—or an elbow too high. Whatever it is, he either brings himself back in line or he has to pull the cord."

Members of the Toronto club use a white silk cross in the middle of a field as a target. At the designated altitude and guided by the wind drift, a diver directs his pilot to the exit point and opens the canopy. He then climbs out on the undersurface leg and jumps backward, with his spine arched, head thrown back, and arms flung wide in the best swim dive he can muster.

At 7,000 feet, her instance, a diver knows he has 30 seconds in which to complete the prescribed aerobatics before he has to pull the ripcord. At 12,500 feet he has 60 seconds. During his free fall he is supposed to keep a constant check on the stopwatch and timed altimeter attached to the reserve parachute strapped to the front of his body. Then at 2,200 feet, he releases his 'chute and tries for the target. If a Toronto club diver is lucky enough to hit the centre of the white cross, he wins a bottle of champagne. Ilona Berger (to date) has won three of these to her credit. Generally, however, they miss the prize by several yards, still a creditable performance.

To achieve this high level of proficiency, a beginner must take training from a qualified instructor. He learns all the safety rules and performs at least 75 jumps. He qualifies for an "A" licence under the Federation Internationale when he has completed 10 with a static line tripping his 'chute as he leaves the aircraft. This parachute is more closely woven than the one he'll use later and lets air pass through more slowly. He than learns how to land the ground.

With the 'chute opening automatically, the beginner cannot get into serious trouble but on his first few jumps, seconds seem like hours and many find it hard to relax. As he jumps he should count slowly: "One . . . two . . . three . . . four." Then his 'chute should open.

"On my first few jumps," reported Adams Teller, a 27-year-old group insurance supervisor, "I was so anxious to get to feel that I skipped the middle two numbers. Naturally the 'chute didn't open so I tried again, and when I was okay. Now a top jumper with 45 recorded in his log book, Teller is trying to make this year's championship teams.

At the end of 10 jumps a novice knows
he can rely on the parachute getting him safely to the ground and is not apt to panic in the air.

He then can start learning to pack his own parachute (an expert in 10 minutes; a beginner in one to two hours) and starts preparing for his first free-fall jump. A small injury is possible. If it is severe (a sprain; a serious injury means grounding for several weeks. If the offender continues to be a "pirate", he is invariably suspended.

While sky diving is still considered a sport, it has its stamp of approval. Six of the top divers at the Toronto club have been selected by Ontario civil defense authorities for training as an emergency parachute group. They will be used for rescue work and radiation detection and already are welding up on first aid procedures and learning how to use equipment for measuring radiation. Since they know how to land directly on target, they are more useful than the average parachutist who may land several miles away.

As in all sports, each diver is an individual. Some have their own special (but approved) method of packing a parachute, others use a variety of sky diving techniques. They have their favorite pilots and their favorite articles of clothing. Some dread landing in water. Others insist on jumping from a certain altitude. But, while all insist they aren't daredevils, merely enjoying a precision sport, they do betray an edge of pride.

At the Lake Simcoe Flying Club one Sunday last November, about two dozen divers or would-be divers were assembled, looking like Martians in their ankle-high boots, loose-fitting coveralls and shiny white crash helmets. They went through pre-jump calisthenics—leaning forward, bowing back, assuming the spread-eagle position they adopt in the air. Girl friends, parents and strangers looked on and to one side, strapping on his gear, jumpsmaster Hector Britt watched his charges.

"The prime quality is instinct," he says. "Some pupils are real go-getters—they read books on parachuting; they ask questions; they turn up every week and—"

Is the first jump the hardest? "No," said Hector. "It's the third—when you start thinking. The first two are just a blue.

Then for a few hours there was a constant drumming of motors with jumpers going up alone or in clusters of three—a rush while bodies spilled into the blue—landings—the repacking of the colorful blue, red or striped chutes—then the whole procedure, including calisthenics, would begin again. The cruds divers had advice or criticism for the beginners. Those on the ground often sprit to the edge of the field to help carry back the heavy equipment. Any one landing a mile or more off target had to struggle alone.

"After they climb over a few storms fences with that equipment they learn to calculate more closely," remarked Britt with a grin.

One of the beginners was Nick Broni

imski, a 38-year-old mechanic who came to Canada from Bulgaria nine years ago. Once during the war his plane had been shot down and he'd bailed out. Now he was parachuting for fun. He'd paid $50 for instruction including 10 free jumps. His dues cost another $2.00. He eagerly awaited his turn as instructor Britt checked over his equipment.

Half an hour later, after completing his first jump, he was bursting with enthusiasm.

"Did you see me come down?" he shouted to a friend. "It's great up there. You feel completely independent from the rest of the world. I didn't have time to be scared. I only wished about riding the field and not the highway."

He strapped on his helmet for a second jump. "Sky diving—that's for me," he said.

Imperial Oil Review, February 1962

Imperial Oil Review, February 1962
There are a few things you can't say for sure about the weather.

Husbands know that an early spring brings women's new hats out in full flower, just about income tax time. Clerks at the skating and hockey stick counters know that the first freeze-up brings out platoons of junior Jean Belleau. Steady rain invariably brings sunshine into the life of the umbrella manufacturer.

But the vagaries of weather are still pretty unpredictable, particularly in North America, and they cost U.S. and Canadian industry some $30 billion a year.

Unseasonable drought, rain or frost costs Canadian farmers millions of dollars in ruined crops. In southern Ontario two years ago, the forecast indicated good weather but tobacco growers lost an estimated $25 million when a sudden freeze-up left one-third of their crops blackened and decaying. One Toronto department store finds that a sudden weather change makes as much as three percent difference in daily sales. In the oil industry, such a change affects oil delivery schedules and causes an unprecedented rush on batteries and snow tires.

After a 45-inch snowstorm in Buffalo, N.Y., in 1948, which severed all rail and truck communications, two trucking firms went broke. Weather is so important to promoters of special events—such as the motor car races at Mosport, Ont., that they buy special rain insurance with firms like Lloyd's of London.

Weather even affects salesmen. Psychiatrists now say that a bright day will put a man in the proper mental attitude for good work, whereas rain sends him off to a bad start. In mental hospitals, certain patients become neurotically depressed when exposed to bad weather.

It follows that everybody tries to forecast the weather, with varying degrees of success. Last fall the CBC was shooting outdoor films. Because of a rain forecast, shooting was postponed two days, saving $20,000. A U.S. baker, using weather forecasts, reduces the number of rolls sent to the suburbs on rainy days and increases his shipment to stores near bus terminals and subways where husbands do the family shopping on the way home.

A Calgary corner druggist checks regularly with the airport weather office before ordering ice cream (which he delivers by truck to suburban children).
An Ontario gas station operator, learning last year that a storm was on the way, stocked up on anti-freeze, batteries and windshield de-icer, alerted two high school helpers to stand by and telephoned the storm warning to his customers. He cleaned up on sales.

A drug firm, preparing to package pills, stocked all its facilities for another 90 hours of humid weather, called in a weather consultant and picked a dry day for its packaging. The public weather bulletin for the Okanagan Valley, Niagara peninsula and Annapolis area, issued spring and fall frost warnings, was ignored.

Unfortunately, forecasts are accurate only for short periods. Pea growers in eastern Quebec ordered a special weather study last year, fearing an early frost. The forecast came in but the frost overtook them anyway, and ruined the crop.

A 48-hour warning in March 1961 would have saved the lives of 17 Nova Scotian fishermen. They set out from Lockeport for a three-day trip to the Emerald Bank. The official forecast said clear weather, but an unpredicted 95 m.p.h. storm was on its way. It scattered the little fleet like matchwood.

Although we have synoptic satellite pictures, meteorological balloons, stations at sea, and thousands of points around the world, it still takes skill to predict weather with more than an 85 percent accuracy over a 24-hour period. Accuracy for 48 hours drops to 70 percent. A week's forecast, according to the director of the forecast division of the Canadian Meteorological Service, P. D. McTaggart-Cowan, indicates only whether temperature and precipitation will be fair or below normal, and is from 20 to 40 percent accurate.

There are over 1,600 weather stations in Canada alone. For official meteorological office forecasts, 271 land regions. In addition there are 41 marine areas. Forty-eight-hour forecasts are issued four times a day for each land region, and three times a day for ships. Separate forecasts are given for larger cities.

In Canada the services are run by the meteorological branch of the federal Department of Transport. In addition there are three private weather firms: Weather Engineering Corporation of Canada; Montreal Weather Consultants of Montreal; and Irving-P. Kirk Associates, Calgary.
Murray Balkwill is a teacher of physical education at Dunforth Technical School in Toronto. Last spring he and his 16-year-old daughter, Marion, were faced with an old problem: her lack of practice in speaking French.

Marion likes the language. It's one of her best subjects at Lawrence Park Collegiate. But like many English-speaking teenagers in Canada, she'd had little actual contact with French-speaking Canadians. She'd had only limited experience, through a visit to a French-Canadian home the year before, arranged by Visites Interculturelles, a unique organization with the sole purpose of arranging visits between French and English high school students in Canada's two largest provinces.

"Let's ask Visites if I can do it again," Marion urged.

About the same time, 500 miles east, another father and daughter faced a similar dilemma. Jules Gagnon is a grocer and storekeeper in St. Cyrille de Wendover, a Quebec village outside the industrial city of Drummondville. His 16-year-old Lise wants to be a teacher. Taught English by the mails at the Normal School in Nicolet, Lise finds little opportunity to speak it in her French-Canadian community. Jules Gagnon read about Visites in his local newspaper and wrote to the office in Quebec City.

From these two incidents—two fathers unaware of each other but vitally aware of their children's lack of communication—sprang an exchange of summer visits: five weeks for Marion Balkwill in a French-Canadian home; five weeks for Lise Gagnon in a new world of English-speaking companions.

This was only one of the 1,200 exchanges of hospitality arranged by Visites in 1964. Youngsters move freely back and forth between Quebec and Ontario, assured of adequate supervision, gaining fluency in the other language and, occasionally, getting their eyes opened. To see the plan in actual operation I visited St. Cyrille last July when Marion Balkwill was the guest of Lise Gagnon.

St. Cyrille de Wendover is a struggling farming village of 3,500 people. Entirely French-Canadian, entirely Roman Catholic, it represents Quebec in transition. Most of its workers commute to the factories and textile mills of Drummondville less than five miles away. A few still cling to the sail. Average income is between $300 and $300 a month. Almost a "bedroom suburb" to Drummondville's rapid spread, its main street is lined with small frame houses. The single church points a silver spire skyward.

There are four streets. Jules Gagnon owns the largest, a general store. Standing outside it in blistering July sun I found two 16-year-old girls on a bench, giggling in a way immemorial as they exchanged confidences. Both wore T-shirts and shorts. Marion Balkwill is blonde. Were they sisters? Had I got the wrong address?

Then one furbished for a word and the other supplied it. I discovered Lise was the taller—gray-eyed, a little shyer than blue-eyed Marion. Both chattering, they led me up outside stairs to the Gagnon home over the store. I'd come just in time, they said. Marion's parents had arrived by car this morning to drive them back to Toronto. She'd spent five weeks with Lise. Now it was Lise's turn to be guest.
Gagnon farm 12 miles away, on the banks of the Rivière St. François. Here they swam, picked berries and basked in the sun.

Madame Gagnon played hostess to teenage cook-outs and gave Marion a surprise party on her 16th birthday, complete to home-baked cake and candles. Evenings were never dull. The young people of the village gathered at the Gagnon store, at St. Cyrille’s only soda fountain or at more glamorous doings in nearby Drummondville. Marion was introduced to the French-Canadian “tomboy”; a church money-raiser enthralling by a traveling fun-fair with merry-go-round, bingo, games of chance.

“People in St. Cyrille couldn’t do enough for me,” Marion reflected. “They invited me to their homes and dances at the parish hall. Lise and I were supposed to be home by midnight but once we were late. Mr. Gagnon came and got us.”

“There was a hula hoop that night,” Jules Gagnon chuckled. “Girls are all the same. When they have fun they forget the clock.”

The fourth and fifth weeks gave Marion some fluency and vocabulary. The longer the visit, the better, she said. “What did you enjoy most?” I asked. “Helping in the Gagnon store,” she said happily. “Come and see it!”

Jules Gagnon put in a 12-hour day here. An expert on farming with a degree in agriculture (O.A.C. ’31) he also acts as inspector for the Quebec government in granting local farm loans. Jules’ big rambling store stocks just about everything. Groceries, dry goods, power tools, harness hanging from the rafters, spigoted barrels of molasses and coal oil, sacks of feed and grain—it brought back a rush of memories. Standing in fragrant brown shadows while Lise showed me the strong “tabac camus” favored by French-Canadian farmers, I felt the years fall away. How many times had I as a child, summering in a sleepy Laurentian village, gone into a store like this? How many times had I smelled a hundred wonderful smells while I contemplated the enormous purchase of a cent’s worth of candy? When I opened my eyes I found the same trembling bliss in Marion.

“Wonderful, isn’t it?” she breathed. Her father brought out luggage and packed it in the car on the dusty road. The exchange visit had begun. The two girls would spend the next month at Glen Bernard Camp in Sandridge, near North Bay, Ont. “All girls and non-demonstrational,” explained Mrs. Balkwill. “Marion’s been there before but it’ll be all new to Lise. The girls will break their necks to make sure the only French-speaking camper has fun.”

The girls would return to Toronto in late August when the Gagnons would visit the Balkwills and take a trip to Niagara Falls. A few months ago neither family knew the other existed. Through Vistes they had discovered each other, found mutual enjoyment, made plans to renew acquaintance.

When I attended Montreal high school 30 years ago, English-speaking Quebecers like myself knew French Canadians only through summering in the Laurentians. Separated by geography, language, religion, the two races existed side by side yet apart. In 1935 an unsung school teacher, J. H. Biggar, director of history at Upper Canada College, an Ontario private school, decided to do something about it. As a tentative bridge across the social chasm between the provinces, he arranged a summer vacation for two Upper Canada boys in a French-speaking home in Quebec. French-Canadian hosts were enthusiastic. The boys returned home with new understanding.

To arrange exchange visits between young people on a large scale, Vistes Interprovinciales sprang into being. Operating on a non-profit basis, its offices in Toronto and Quebec City now handle a steady stream of correspondence from interested parents and high school pupils in both provinces.

The exchange plan is simplicity itself. Care is taken to match up youngsters of the same age, with similar interests and background. Costs are nominal. The only expense to participants is transport, since they can’t reciprocate hospitality, in which case they pay modest board.

Vistes also arranges ski tours during Christmas holidays when scores of Ontario teenagers trek to Quebec City and Lac Beaulieu for a week of fun. Easter finds another rally of youngsters from both provinces at Quebec City. They join in a sugar-party, are introduced to French cuisine and visit storied stores still alive with Canada’s history.

By bringing young French and English-speaking Canadians together, Vistes Interprovinciales is wiping out old barriers. Another language becomes more than a subject in the school curriculum when learned and spoken. Another province becomes more than a place on the map when you discover its homes, and heart.

Perhaps Jules Gagnon said it best, standing in a dusty village street and watching his daughter leave for Toronto. “When I was a boy,” he said, “les Canadiennes of Quebec and les Anglais of Ontario were strangers. Now we find we’re all Canadians—but it took our children to discover la bonne unité!”
Compared to the multi-megaton nuclear blasts that rocked the world in 1961, the test explosion at the Suffield experimental station in southern Alberta was a mere firecracker. The charge was only 100 tons of TNT: 6,141 blocks, stacked somewhat like an igloo. It was nevertheless the biggest bang that neighboring ranchers and Herefords had ever heard. It blew a crater 40 feet deep and 158 feet in diameter, and the cloud towered 12,000 feet over the flat grass country north of Medicine Hat. It was part of Suffield's continuing and, for the most part, top-secret research on explosives and chemical warfare.

The blast was of particular interest to Imperial. For one thing, Dr. Jim Young, manager of the company's producing research and technical service laboratory in Calgary, was on hand as an invited observer—one of very few other than official government representatives of Canada, the U.S. and Britain.

(During World War II, Young was assigned to Suffield and came out a major in command of the chemistry division there.) Several members of the company's research staff also figured in the event. In 1960 they had built a unit to record long distance seismic effects from a smaller Suffield explosion. With a flair for improvisation that the Calgary lab has frequently demonstrated in the past (June 1961, Review) Dr. Alex Mair and Marcel Delisle this time rigged up an effective recorder, using such ingredients as an old whisky barrel, five sheets of dental rubber, embroidery rings and garden hose. The dental rubber, stretched over embroidery rings, formed efficient diaphragms.

Last summer they set up this Rube Goldberg gadget in Imperial's own testing area, just east of Calgary and some 150 miles from the blast. Of the 35 seismic recordings made of the explosion, this was the best.

**BIG BANG AT SUFFIELD**

It was only 100 tons of TNT but it blew a crater 40 feet deep and shot a cloud up to 12,000
STUDENTS WHO MIND THEIR OWN BUSINESS

BY LLOYD LOCKHART

Chi Hou Wun, 29, is a Chinese chemical engineering student from Formosa. He says, across the dinner table, "In some ways Mao Tse Tung is good for Red China. He improves the standard of living, builds roads, develops land. But it is too big a country. Old problems are solved. New problems are created."

At another table Silas Nwachukwu, 27, from Nigeria, a student in applied geophysics, gets a briefing on hockey. The players wear skates, he is told, and they carry sticks and shoot pucks. Finally, a Canadian student says, "Look, Silas, we can't explain hockey. On Saturday, we're taking you to a game."

At yet another table the topic is evolution. As arguments flare back and forth, Darlene Thickson, a student nurse from Port Hope, Ont., gestures emphatically. "Maybe science does explain everything," she says, "but somewhere, sometime, there was a first spark of life and that required religion."

These discussions—and others like them—are a daily occurrence at renovated houses in downtown Toronto. Two houses serve as communal dining halls for 130 university students. Four other houses (two for boys, two for girls) serve as residences for the students who all are members of Campus Co-operative Residences Inc., now in its 25th year as a unique and successful co-operative venture. The Varsity co-op is an independent organization, operated by and for students. Members do four hours work a week—peeling potatoes, setting tables, scrubbing pots and pans. On this one-for-all basis, they pay $445 a year for living accommodation, approximately $150-$200 lower than conventional university residences. To make things better, co-op members receive an

“We want ideas—opinions—viewpoints. That’s how we learn,” say members of Toronto’s Varsity Co-op
average dividend of $70, although half is usually voted back into the treasury. But the Varity co-op has other outstanding features. Although more than 200 colleges in the U.S. and Canada (including U.B.C. and Queen's) now offer co-op facilities to 100,000 students, even in this broad picture the Varity saga is notable.

A full-borthered co-operative has emerged which hires a year-round general manager, pays income taxes, owns considerable real estate and lists its 1962 assets at $130,000. -Student members run their own show (first-year, one vote, one vote).

-Most important, more students apply for co-op membership than can possibly be accepted. This leads to careful selection of candidates on the basis of what they have to offer. Foreign students are given priority. So do students from far-off Canadian places or those taking unusual courses. Individuality is the keynote.

In this mixing of opposites and, in the ensuing arguments and discussions, the co-op becomes more than a centre of low-cost accommodation. It becomes a university within a university and it tends to turn out a more mature college student.

"We give first consideration to students who have financial assistance but they aren't too numerous nowadays," explains Bill Strang, an engineering student and the co-op president. "Out of 153 applicants last fall, we had space for only 49 and the question we kept asking was, 'What can this student contribute?'"

The co-op executive tries to interview each prospect, Strang says. They must explain why they want to join and must seem willing to assume the responsibilities that go with membership.

"We don't want all artisans, all engineers, all Canadians or all anything," Strang says. "We'd like to have representative from every faculty and from every country, if it were possible. We want ideas — opinions — viewpoints. That's how we learn."

On this basis, the 1961-62 roster has students from rich homes and poor homes; from farm cities; from the Maritimes, the West coast, the prairies, and from Hong Kong, England, New Zealand, Germany, Jamaica, Formosa, Nigeria, India and the Philippines. They include conservatives, liberals, conformists, nonconformists, iconoclasts, odd-balls, atheists, theologians, bookworms, hell raisers, reactionaries, visionaries.

Yet, when these hand-picked individuals clump up the stairs for their noon-day meal at 403 Huron St., they look alike and talk and phone like students. They congregate in the hall or in the front parlor, thumbing through magazines or talking about the ticker tape. At this point (before eating) co-opers are quite suburban. Their chalet is routine campus talk.

"I don't understand my biology prof. He actually tries to be a bore."

"Hey, Shirley, that's quite a hair-do."

"I had three letters sitting on this table. Three letters. Who's being funny?"

Then somebody announces, "We're on" and, like a well-drilled platoon, all surge through the hall towards food counters at the far end.

The dining hall operates cafeteria-style with student servers doing out soup, meat, potatoes, vegetables and dessert. Co-operatives emerge with full trays and grab the nearest empty chair. Everybody knows everybody, it seems. Discussions are already under way.

"Last night I telephoned my people long distance," says Galen Vhig, a 28-year-old engineering student from India. "The call went through London to New Delhi and I heard my father quite clearly. He asked what I was learning in Canada and I said, 'I'm learning a lot in my classes but I'm learning still more in the house where I live.' He didn't understand this. So I said, 'I came to Canada with definite ideas — prejudices. Now I know there are no absolute rights and absolute wrongs — that's the number one problem for a student. Most important, they had overcharged, so they declared a dividend."

Another student, James McDonough, 22, a student from New York, waxes his glasses, clears his throat and announces that he spent last summer in a Mississippi jail.

"I was in New Orleans on holidays and then I was on a Freedom bus with six others, including a Negro girl," McDonough says. "We were arrested in Jackson, Miss., locked in a cell and fairly spacey. We were set to go 200 times and two months in jail.

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WORKING MAN'S NIGHT SCHOOL

by Michael Jacot

Some workers at Imperial Oil refineries are going back to school to finish grades they left years before.

Every Tuesday and Thursday at 6:35 p.m., 34 workers at Imperial’s Sarnia refinery march through the main gates into the plant carrying clip-boards, math books and English grammars. Minutes later they eagerly take their places in two classrooms on the third floor of an old red brick building where Imperial once made candles.

With pencils poised in some of the strongest hands in Sarnia, heads bent over notebooks, they start a two-hour class to improve their education. Most are in their 30s, some are well into the 40s and one is in his 50s; many have spent 10 years with the company as laborers. Yet for these very reasons, they are the most-motivated students in Sarnia.

Among them is Johnny Jukes, a quiet but tough 39-year-old English immigrant, whose grade school education was interrupted by Hitler. Like most of his classmates Jukes is swatting up on mathematics and English, trying to get grade 11 equivalent in those subjects. This will make him eligible for a trades training course—also conducted right inside the refinery.

This night school is only one facet of a vast Imperial Oil network of employee education. Hundreds in every job category are improving their trade or their general education and becoming better workmen and better citizens. At a time when labor and management everywhere are worried about the future of unskilled workers, Jukes and his management are doing something about it.

Jukes, a slim, brown-eyed athlete (cricket, hockey, track and baseball) says, “We all want to take up a trade. Some of us find this going back to school pretty hard to take. But even if we fail, we’ll gain something.”

“Discipline is near perfect,” says George Abeil, Sarnia Collegiate teacher who takes one of the evening classes. “The will to learn is in every man. Teaching is a delight.”

Don Robertson, the other teacher, a full-time employee in the refinery purchasing section, adds, “The men are so keen that whenever I pass through the shops during my daytime duties, someone stops me to ask about some problem we worked on the previous evening. Soon there’s a crowd around, asking questions.”

In charge of all training at Sarnia is ex-school teacher, Don McCaith, a graduate of McMaster University and Ontario College of Education, now with Imperial’s employee relations department. His pride in this—and in all the other courses going on at Sarnia—is obvious to even the most casual visitor to his third floor candle factory office.

“The philosophy is that Imperial needs all its men to be first class tradesmen, and keen, intelligent citizens,” he says. “After this basic educational course, they take three or four years training on the job to become qualified mechanics in a trade.”

The courses (which are now also conducted in Vancouver and Regina) were set up in 1960. Imperial urgently needed certain types of tradesmen, particularly instrument mechanics. Through the refinery’s Joint Industrial Council (on which Johnny Jukes is one of the spokesmen for the men in their negotiations with management) it was arranged that men with the necessary educational qualifications, would be eligible for trades courses. Many men applied. Some had the necessary grade 11 equivalent. Others had as little as grade four, and at first their prospects appeared hopeless.

“But we decided that everyone should have a chance to reach the grade 11 standard,” says Don McCaith. “Some of the men had been to regular night school, but somehow this hadn’t proved too satisfactory.”

In January 1961, 44 men registered for the first math and English course. Each paid $25. By the following June, 21 of them had improved their education by one grade or more and thereby qualified for a two-thirds refund of their registration fees.

Each student’s standing is measured with a year-end achievement test in math and English (multiple-choice questions, grammatical sentence structure, and some algebra). Only a few attained grade 11 standing the first year.

One of those graduates, Pete Reeve, went on to train for process assistant. This means he’ll help operate refinery units worth millions of dollars which make millions of gallons of product every week. Reeve was nearly 10 years with Imperial and anxious for a promotion but lack of schooling held him back. Now at 33, he says, “I’ve three years’ work ahead before I become a process assistant, but I’m happy. So is my wife.”

The second course started last September and 34 enrolled. Many of the first-year students were back for another try. Among them was Johnny Jukes. “Most of my education came from flying with the R.A.F. in the African desert,” grins Jukes. “My English grammar was not what you’d hear in a drawing room.”

Jukes is acknowledged as a hard worker in the group. In the evening he sits, head bent over his books, with his 14-year-old son, John, a bright grade eight student, who helps his father with homework. His Greek-born wife, Kiki, is content to sit and watch. To her, Jukes’ striving for more education is as important as his job itself. The couple, who met in Athens during the war, have learned the advantage of a second language too. On their first dates, she could only speak English and his Greek was “Greek to her.” For some weeks she thought his name was “Brummy,” a short form of Birmingham. It was a shock to learn he came from Birmingham.

Jukes is one of several Sarnia “veterans” whose education was interrupted by the war. And there are others like Charlie Baird who left school to help on the family farm. Baird, a labourer with Imperial for four years, quit school at 16. Now, at 30, he wants to improve his job prospects.

Like many of the Imperial night school team, Baird started extracurricular work at a regular local night school, but found much of the work not applicable to the mechanical trades he favors.

Now he’s almost up to the grade 11 standard. His wife, Mary, a high school graduate, is so impressed with his progress that she’s gone back to night school herself, taking lessons in dressmaking.