This issue has turned out to be loaded with literary luminaries. Leading off is Stuart Keane (How Good Are the Papers? on page 2), the publisher of The Vancouver Sun. Right now he's president of the wire service Canadian Press as well, and last February he won a National Press Club of Canada award for outstanding contribution to journalism. Keane has been in papers and magazines ever since his college days, when he worked on The Ulyssesay, the University of British Columbia's student daily. (UBC—Ulyssesay, get it?) He has worked on the Vancouver Daily Province, the Toronto Daily Star, and the Victoria Daily Times as well as the Sun. Not only that, he was a founder of the Canadian Committee of the International Press Institute, and has been a director in the Inter-American Press Association twice. He's a member of the Canada Council and a member of both the senate and board of governors of the University of British Columbia.

Harold Horwood (How Lobsters Have Much Fun? page 6) saw his first book published just last January 28. It's called Tomorrow Will Be Sunday and it's a funny, sexy, harrowing, prissy, tender, romantic, nostalgic novel about growing up in a Newfoundland outport. Horowod has written for The Review five times before and appears regularly in other Canadian magazines. He has been a Newfoundland M.P., a labor organizer, a reporter and columns for the St. John's Evening Telegram, and published his own literary magazine—Protocol—in the forbes, when he was in his 20's.

Peter Desbarats (Ira Honor, The Esso Agent on page 22) has had two books published—The State of Québec and Halibut, York and More—both of which came out last year. He's a staff writer for the Montreal Star, doing everything from election coverage to travel writing, and he's the editor of a new bi-monthly magazine called Parallel, which came out for the first time last February. He's a Canadian correspondent for the National Observer in Washington, a freelance commentator for both the CBC and CTV, a writer for Maclean's, Weekend, The Canadian Forum and an Australian magazine called Quadrant. A native Montrealer, he is the father of six girls and is 32 years old.

John Belanger (Mud, page 17) at 26 is the youngest contributor to this issue. He doesn't have his own newspaper or magazine, but he is dickering to publish a book and is on the verge of writing a syndicated newspaper column. What about? Cooking, for heaven's sake. Belanger's piece on mud is, in fact, the only magazine article he has ever written that is not about food. Belanger takes the attitude that women are lousy cooks—temi, hide-bound, unimaginative, bored—and he seems to be making a career of telling them so, in such magazines as the Star Weekly, the Canadian and Maclean's. Oddly enough, he gets more reaction from men than he does from women, in a 60/40 ratio. Last fall he did a weekly cooking broadcast for the CBC and in three months drew 2,200 letters. The perspicacity made him wonder about the state of letter-writing today; one of his correspondents commended him for raising his morale 99 per cent. Belanger can't decide whether the writer was 99 per cent bad to start with and it is now 100 per cent good, whether he was all bad and is now 90 per cent perfect, or whether he really meant to say moronic.

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After a winter like this one, you'd think everybody would welcome spring. You'd be wrong. The people who have been drilling for oil all winter in northern Alberta, shivering in everyday winter temperatures that can get as low as 67 degrees below and plodding through four feet of snow, do not welcome spring. For most of them, spring is more of an end than a beginning. It puts a stop to oil drilling by turning the frozen muskeg into glaze, and isolating the remote sites almost completely.

Yet northern Alberta and the Northwest Territories constitute one of the hottest-drilling areas in the world today. Names like Rainbow and Zama Lake make news all by themselves. Last winter there were more than a score of oil drilling rigs operating in the north, scavenging their slender steel probes deep beneath the frozen earth to find oil. In Canada last year, a record 3,801 wells were drilled. Production went up last year too, to surpass 700,000 barrels per day of crude oil and natural gas liquids, and that was a record.

Why all this new drilling, specially in such hard-to-reach places as northern Alberta? Well, demand for oil products in this energy-hungry world has been getting stronger at an average 7.5 per cent for five years. Forecasters predict demand in Canada this year will rise another five per cent over last year, when this country produced more than 300 million barrels. By 1985 the daily demand for oil will have risen from 1,125,000 barrels to 1,920,000 barrels, and the demand for natural gas will have more than doubled. To be able to satisfy this demand, Canada's oil industry is spending millions to discover, prove and bring into production new sources of oil and gas. Last year's costs about $200 million to drill —if they were put end to end they'd make a hole more than 3,000 miles deep.

But oil drills face problems for which no one has yet found a completely satisfactory solution: climate and terrain. The oil lands of northern Alberta and the Northwest Territories are muskeg country. In winter, when everything freezes solid, you can pass over muskeg. It's not easy, but it's possible. Drills do it, taking their immense rigs with them from one site to another, getting as much done as they can during the time the land is hard enough to hold them. But when spring comes to muskeg country, that's the time to be somewhere else. The land thawes, melts and dissolves into a goo that defies passage. If you've got a drilling rig in muskeg country in the summer time, you can count on it staying put; there just isn't any way to move it out.

And some rigs stay put deliberately, perhaps to complete a well whose information is more important than the cost of one rig's idleness for a season. But most rigs plan their operations to get out before spring traps them. As winter warms the crews shut down the engines, dismantle the rigs and begin the long trek out to fields with more solid footing, and roads to travel on after the well is drilled. And that is why, just about this time of year, while the buds are swelling in the south and the hardier birds are heading north, the driller kicks an eye at the pale blue sky, thinks of closing down his rig and mutters: spring, go home!
How good are the papers?

The president of The Canadian Press takes a long, good look at the state of journalism in Canada

How good is the press in Canada? 'No good at all,' say the labour leaders and the cognoscenti of the campus. 'Too good for the average reader,' says a high school teacher, after attending a journalism seminar, and adds, 'The people of this country don't really appreciate what a job their press is doing.'

In fact it is impossible to say how good it is at any given moment, because the press lives in a constant state of ferment and change. Newspapers are made by men and women; as they shine and fail, so do their papers. Thus, a paper: like the Saint John (N.B.) Telegraph-Journal—once stodgy, timid and suffused with ancient crusts—can be rejuvenated overnight by the arrival of a publisher who is young, imaginative, progressive, and eager to give his community a thorough shake by the scruff of the neck. The job of the press, simply stated, is to be a useful nuisance; as Menschel said, 'to comfort the afflicted, and afflict the comfortable.' Popularity is none of its business. One of the most frequent complaints following the recent demise of the Toronto World was that it tried to please everybody and ended up pleasing nobody.

In his valedictory speech in 1964, Lord Beaverbrook noted that no industry in the world is as heavily criticized as the newspaper business. And, he added, the lowest critic has a very simple object: Don't ever print anything about me that I wouldn't want people to read.

Nevertheless, if we scrutinize—will the ingenuity of citizens to pay for a product—is the mauchine, then the press of Canada is doing well, indeed: nowadays, already grown, is proving every day. There are today 99 daily in this country. Together, they sell, 3,370,376 copies a day, an average of about 40,000 copies. Since surveys show that the average newspaper is read by three persons, it would appear that almost every Canadian old enough to read, or literate enough, examines a Canadian daily on a regular basis.

Further, with advertising revenues in 1964 of $91 million, they far out-sell the 222 private radio stations ($63 million) and 58 private television stations (878 million). Add to this the income from newspaper circulation (another $91 million) and it will be clear that Canada's daily papers produce almost twice as much revenue as their competitors.

Maybe 'competitor' isn't a suitable word. Most sophisticated newsmen agree that television and radio have actually helped daily papers to grow by whetting readers' appetites for the full story that TV and radio can tell only with monographs or bulletins. This factor has somewhat changed the role of the daily newspaper. While it can no longer be first with the news, the press can flush out the details and provide the background information essential for a very large proportion of television and radio cannot bring to the people. For, generally, a full 15-minute newscast would take up less than two columns of a newspaper.

It appears then, if reasonable statistics mean anything, that Canadians like their daily newspapers. What of their character? If Canadian newspapers are as literate as the Manchester Guardian or as comprehensive as the New York Times, they do not run to the excesses of literature and had which characterize the press of Britain and the United States. We have in Canada so many, many newspapers and so much to say that we are actually well supplied with newspapers which can be considered as supportive of responsible officials.

'Why do you give the mayor so much space?' irate citizens demanded in one Canadian paper. 'You know he is responsible.'

'Of course he is,' replied, the editor, 'and if we quote him often enough, the voters will vote for him.' They found out, and duly rehired him.

A labor leader, speaking at a conference on unions in Canada, argued that his greatest fear was that it was too pessimistic and therefore 'too complacent.' It cannot be denied that this is a continuing daily peril. Any sensible publisher knows that, as it is in baseball, today's hero is tomorrow's goat and he is only as good as his last edition.

But labor leaders also continually charge that the press slants the news. The newsroom staffs of papers in Canada today reveal that there are the worst offenders in the country in this respect. If they took an honest look at themselves, it is not a paradox that they would realize that this is one of the main causes of their low circulation.

'You can't have the game on and the labour reporters in the past decade. A study of the high turn-over reveals a common complaint: nearly every government paper's labor officials were impossible to work with.'

'If you dislike as much as a sentence from their latest release, you're a capitalist too,' the most recent drop-out from the Steelworkers' labor beat remarked, sadly. 'He is, incidentally, a former union man and official of the Newspaper Guild.'

'If you say to them: 'Okay I've got your story, now I'm going to talk to management,' they regard you as hostile to labor. Print a few paragraphs from the other side and you're losing the news.

In other words, they believe in freedom of the press as long as it doesn't cast them in an unfavorable light. Management is wrong, because they won't talk to us.'

Most papers chew over their sins of omission and commission at daily post-mortem. The Canadian Press wire agency, a non-profit organization sustained by the newspapers, includes this topic every year in what it calls Critics Week, when the life of news is subjected to minute examination by the men who know it best—the news editors. Complaints are then aired at a series of five annual regional meetings, which CP general manager Gillis P. Penage describes as the most perfect and productive way we have devised to improve our performance.

Yet Canada is not without its journalistic titles. When the mighty Times of London was being hailed by Neville Chamberlain's journos, to Munich as a diplomatic masterpiece, John W. Dales was adding in the Winnipeg Free Press: 'What's All the Shouting About?

When Canadian journalists are thrown into direct competition with their opposite numbers from Britain and the United States, they come off remarkably well. During the war years Ross Munro (now publisher of the new weekly, The Canadian) continued to scoop the best talent in the world at Dieppe, in the landings at Stilly, and at Normandy.

When Harold Morrell of The Canadian Press was diverted from a routine junket to cover the Lee Oswald arrest in Dallas, he emerged with a clean shirt within 24 hours of his arrival at the jail.

Many divorced observers regard Duncan McPherson of the Toronto Daily Star as the best political cartoonist in the world today. The Royal Society of Arts in London, seeking a first winner of its silver medal for the best journalist in the Commonwealth, voted for Bruce Hutchinson of Victoria.

The New York publisher, Alfred A. Knopf, once remarked that Robertson Davies, the Peterborough editor and critic, was 'the best book critic in the North America.' And Nathan Cohen of Toronto, while by no means the most popular critic of the arts in Canada, at least replaces in the pleasure of spurning offers to bring his silver-shod canoe to Reach.

By any journalistic standards, international or local, The Globe and Mail of Toronto is a superior newspaper, much admired across the country. Its national and foreign coverage is perhaps the best in Canada, although The Montreal Star would have reasonable grounds for challenging the assertion. The Globe and Mail's columnists (Bruce West, Scott Young, Richard Niehaus, Donal Strachan and Herbert Whitaker) are men of wit and perception; its editorial page is not only attractive but courageous, and its general tone is one of good sense, taste, and discernment.

The Toronto Daily Star, which enjoys the top circulation in Canada (350,000), seems to me to be at the peak of its powers, and well deserving of its commanding position. The bumptious huck-and-up tactics that characterized the paper under the late, famous Harry Hindmarsh now seem, in retrospect, part of the growing-up process. What we have today is a paper in which liveliness has not been smothered, but content remains crucial; a more mature, literate, journal, full of opinions which it advances with impressive vigor.

The Telegram is like neither of the others; brash, outgoing, it must certainly be the most nonconformist paper in Canada today. But in its coverage of politics and show business, in its London
Daily Express-type makeup, it offers a lively alternative to the more ponderous, high-minded papers that make Toronto one of the most interesting newspaper cities on the continent. As the old English-Toronto papers fold, the city is left with the New York Sun and the Toronto Star as the only daily newspapers in the city. They have a combined circulation of about 190,000 copies, and are the only English-language dailies in the city. The Sun is published by the Sun News Network, which also publishes the Toronto Sun and the Edmonton Sun. The Star is published by the Ontario Media Network, which also publishes the Toronto Star and the Ottawa Citizen.

The Sun's daily circulation is about 150,000 copies, while the Star's daily circulation is about 40,000 copies. Both papers are owned by the Postmedia Network, which is also the parent company of the Vancouver Sun and the Calgary Herald. The Sun and the Star are both known for their coverage of local news, as well as their coverage of national and international news. The Sun is known for its conservative political立场, while the Star is known for its liberal political立场.

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A dog's life? You should look at the life of the lobster. If you're an average North American you own at least one pet—alas, know little about him except that he's about second among the rocks in the bottom of the sea, and tastes delicious when cooked. But not even the pet-food line compares with the perils handed to our ocean crustaceans. His chances of living to breeding age are about one in a thousand, his chance of reaching his full growth less than one in a million.

Lobsters make up for these staggering odds by the incredible number of spawners they produce. As many as 75,000 infants are released in a single batch. But the perils of the lobster life begin long before that. They start when their mother crawls into a crack between the rocks on the seabed to lay her eggs. This is no simple process. She must find a place where they will not be disturbed, then flare on her back and curl up into a ball. The eggs, emerging from an opening between the last of her five pairs of legs, are stuck to the underside of her tail by a waterproof cement which she discharges from a gland. If she is frightened or forced to move during the two hours it takes the cement to set, the eggs will fall off and die. If they survive this first encounter with the outside world, they spend a year floating about the seabed on their mother's tail flakes, taking longer to incubate than anything else. The eggs of the lobster's close relatives, the crabs and grays.

As soon as they begin to hatch, the female stands on her head and releases the larvae by waving her tail furiously through the water. The infant lobster—a wriggling, spider-like creature, quite unlike its parents—floats to the surface. And immediately it is open season on him and his 75,000 brothers and sisters. Everything from giant whales to tiny jellyfish feast on the larvae of the plankton zone in the top layer of the sea. The young lobster must swim from one to two months swimming about in this dangerous region, completely unprotected. Chances against his ever getting back to the seabed are at least a thousand to one.

During this free-swimming stage the infant lobster sheds his shell three times. He grows and changes shape with each molt until he looks like his parents, except that he is still only half an inch long. Then he drops back to the bottom, hundreds of miles from the place where he hatched, and that is the end of his wandering, though not the end of his perils.

As a growing youngster he lives in a crevice under a stone or in a thick jungle of seaweed, surrounded by hordes of crinoids. Cod, flounder, dogfish, haddock, all will eat him if they get the chance. Seals may even flip over the stones where he hides. Everything, it seems, loves lobster meat. But after at least five years, more often seven, for the lobster to grow big enough and tough enough to fight off his enemies and begin to take an interest in the affairs of the world. He goes through many molts in the process—usually two each year. Since he cannot grow inside his rigid armor, he grows in fits and starts. When ready to shed his shell, he jack-knifes himself into a sharp angle, splitting his shell across the back where the headplates meet at the tail. Then he crawls out through the slit and grows for five hours, adding 50 per cent to his weight by absorbing seawater. After this great leap forward, he grows no more for six months, but quickly acquires a new shell almost as large as its former. Over the years, remaining the same size, improves in quality, as proteins gradually replace the water until he is ready for another molt. By this process, this child of a million pounds a year, is turned into a young lobster double his size each year.

At first molting, lobsters measure seven to ten inches—their largest size. In colder waters of Newfoundland, smaller in the warmer waters of the Gulf of St. Lawrence. They can mate only when the female has just molted. The females are then approached by the fully-dressed males in a sort of courting dance that may continue for hours. Unlike their neighbors the fish (which live a puritan life of single burhodes, and mate only by correspondence) lobsters exchange an embrace that may last five minutes. The sperma is then retained alive, sometimes for a year in the female, while her eggs are fertilized and laid. In aquaria, male lobsters seem ready to mate at any time, but in the wild state few of them mate more than once or twice, in the brief period when the ladies will receive their advances. The lobster's luck might seem now to have taken a turn for the better. Able to deal with most natural enemies, he lives in a society in which he need worry only a few feet to seize the fish and shellfish which form his diet. Ordinarily, he could look forward to a relatively full and efficient life. But this is the time when the fishermen take after him, and his chances of being boiled alive or cooked under a boiler within the next twelve months are almost 100 per cent. In the words of the Department of Fisheries, "virtually the whole crop of lobsters of marketable size is harvested each year."

In woods or metal traps baited with bits of fish, usually rotten, and fitted with one-way doors, they are caught by the score of millions. Lobstering constitutes Canada's most important inshore 'fishery,' with a landed value of over twenty million dollars a year. Actually, the lobster isn't a fish at all, but an arthropod, and belongs to a large branch of the animal kingdom that includes the insects. The marine crustaceans, including the lobsters, have been described by the biologist W. F. Calman as 'the insects of the sea.' Sow bugs and sand hoppers are among the lobster's close relatives.

Until the mid-19th century few white people in North America had ever eaten a lobster, though coastal Indians had hunted them and made use of them since ancient times. They were regarded, rather, as a sort of pest which preyed on valuable food fish. No one knew who discovered the lobster's commercial value, but at the beginning of the Gay Nineties the meat was exceedingly cheap. So much so, that lobster was found in pressed form in the leading grocery stores of the time. In the Boston market at that time, the cost of lobster was about fifty cents a pound. The price of lobster fell to the rock bottom at twenty-six million pounds, despite the efforts of hattershies that were refining a billion young lobster a year.

Simple conservation measures introduced in 1932 began to restore the industry: fishermen were required to lay down under-seized lobsters. Egg-carrying females had been under protection since the 1870's, without results. Both legal size and open season varied from place to place, depending on when and where the lobsters bred. The situation was, and still is, to permit them to breed at least once, and release a batch of hatching eggs, before they go to the pot. Fisheries biologist believe that the present catch of forty to fifty million pounds can be maintained and perhaps slightly increased, provided fishermen follow the rules.

The lobster's Latin name is Homarus americanus, but he may well be regarded as distinctly Canadian, for two-thirds of the world's supply come from our Atlantic Provinces. The rise low along the east coast of the United States—so far as we are North Carolina—but since lobsters cannot tolerate warm water, most of them are concentrated in the Maritimes. We have a much vaster European lobster, and the clawless, so-called spiny lobster, which lives in warm water and even tropical waters, but these latter are not true lobsters at all, nor is the flavor of their meat anything to compare with the delicate taste of the meat of that great bug from the Canadian sea bottom.

Alive, they have no specific color. Some are dark green, some bright blue, and some have a patch of yellowish blotches on a red-brown background. All, however, turn the same color when cooked: a bright, appetizing red. The popularity of the meat is second to nothing that comes out of the sea. Even oysters are in less demand. Except for the stomach (which may contain bits of rotten fish) everything inside a lobster shell is edible. The large green digestive gland, a great favorite of gourmets, is made into a paste for sandwiches and hors d'oeuvres. The large oval-shaped ovaries of the female, bright red when cooked, are called 'coral' and eagerly sought by lobster lovers.

Since lobsters are eaten avidly by people and willing to pay high prices for them, they are pursued just as avidly by the fishermen. Unlike the berths for salmon and cod, which are shared out by means of a lottery, lobster boats line up, draped with flags and gear, until a starting gun sends them scuttling for the open sea. The stakes are high, for most of the lobsters are caught during the first few days, and on rare occasions a two-man boat has earned a thousand dollars a day on one catch of forty to fifty million pounds can be maintained and perhaps slightly increased, provided fishermen follow the rules.

A ten per cent rise in the catch is the best hope the biologists hold out, and this modestly improved handling technique. However, they have a failure. You can catch lobster in captivity easily enough, but you cannot increase the numbers that reach markets.
To boil them, get a pot large enough to take the number of lobsters you have on hand, and put in enough water to cover them. Use seawater if you can get it; if not, add two tablespoons of salt for each quart when the water starts to boil. When it's boiling good and hard, slide in the lobsters, head first, and bring the water to a boil again. Boil hard for 17 minutes for a one-pound lobster, 22 minutes for a two-pounder. How them out with tongs, nip off the ends of the claws (to let the water drain out), flip them on their backs and slit from head to tail. Flippers with strong scissors. Serve with lemon butter (four butter to one lemon, tabasco and salt to taste). To boil, split the lobster, remove the stomach (that hard, dark-green sac near the eyes) and the intestinal vein (which is attached to the stomach), brush with oil, olive oil, or melted butter, and boil for 20 to 25 minutes until the meat is a delicate brown. Be careful not to overcook. Sprinkle with salt and pepper, dot with butter and serve with the lemon butter sauce.

If you learned your arithmetic any time before 1940, you've in for a couple of minutes' hard figuring. One way is to turn $\frac{7}{8}$ into eighths, then turn it upside-down, multiply it by $\frac{3}{4}$ (you do that by cancelling out the eights and putting the 7 over on top of the 6), then turn that odd-looking $\frac{7}{16}$ into a more reasonable $\frac{7}{8}$. But ask any 12-year-old almost anywhere in Canada the same question and chances are he'll say: "Oh, it's a little more than one!"

That's the New Math. And the New Math, in case you haven't heard about it, is turning the dreariest subject in the school curricu-

lum into a game so exciting the kids today don't even think of it as learning.

It has teachers more enthusiastic than any change that has ever been made in teaching methods, and has even brought parents back to school on their own time to find out what in the world their children are talking about.

What is the New Math and why do we need it anyway?

To start with, it's not really new at all. As far as content is concerned, says the Canadian Education Association, there is very little that is new. What is different is the way it is taught. At present, the new ways are taught right across Canada, either as an authorized part of the curriculum or as experiments, depending on the province, the local board and the grade. Authorities estimate that between 10 and 15 per cent of Canadian pupils study the new methods now and that the range will rise to 50 by two years.

And the reasons we need it, says Wally Ward, principal of Steeves Township's Gordon Greylock school, is because "the whole concept of the old mathematics simply doesn't work today.

To take just one example with relevance as the space age, you cannot really learn the magic of 'Mercury' if the only geometry you have to work with is the old, cardboard-fronted 'perfect geometry' of Euclid, and the study of atomic energy is impossible without the old-dash-dot math.

Children in elementary school are usually taught by jumbling over -and- operations, but they do attack situations that were formerly studied only 50 years ago. J, F. Kissinof the Policy and Develop-

ment Council of Ontario's Department of Education, said he was startled recently to find grade four pupils happily working simultaneous equations, although they weren't using the word. Simple algebraic equations are one with more variables than there are equations; they're unsolvable, in the sense that you can't get one, final answer. -you get several; the class that worked Kissin's was working out answers to the problem $x + x = x + 1$. In one case, the value of $x$ depends on the value of $x$ you give to it. If $x = 2$, then $x = 6$; if $x = 3$, then $x = 7$, and so on.

Kissin asked the teacher if the children could do it. 'Are they?' she asked.
New Mathematics, according to Dr. George Henderson, head of the mathematics section of Imperial's systems and computer services department, is that students learn more mathematics, they learn it faster, and they learn it better.

It's not difficult to compare the old and the new methods. Mathematics, from grade one up, used to be taught by drill and rule. If you didn't remember the rule you couldn't do your sums. You repeated the same thing over and over, and hoped it would stick.

Remember the drizzly columns of figures we had to add, multiply and divide; the same old 'problems' in different guises like the hate-ball with two holes and the trains from A to B. The most serious fault of this kind of teaching was that children weren't given either the time or the incentive to think. No wonder that no other subject left so many children with a feeling of boredom, frustration and downright failure.

The new methods of teaching differ markedly. They acknowledge that children can understand mathematical concepts much earlier than we used to think possible. They teach the basic laws instead of the rules, the only way to arrive at them. They give the children the tools to check their answers rather than leaving them piecely hoping they've been correct. They use a new teaching aids such as rods of different lengths and colors; and they use number boards and other concrete materials. The result, according to the Canadian Education Association, is that teachers and children both are stimulated to a much greater interest in mathematics.

Let's translate some of these points into one of the new classroom teaching techniques. Using 'Cuisenaire rods'-colored sticks from one cm to 10 cm long-the teacher tries to teach the children what numbers are composed of. 'We'll see what we can discover about the number eight,' the teacher says. Each child picks a brown rod, eight cm long, out of a pile in the middle of the table, then assembles other rods of different colors and lengths to make rods equal in length to the brown one. Within a few minutes a typical student has discovered eight different combinations:

<table>
<thead>
<tr>
<th>Rod Color</th>
<th>Length (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown</td>
<td>8</td>
</tr>
<tr>
<td>Green</td>
<td>5</td>
</tr>
<tr>
<td>Red</td>
<td>3</td>
</tr>
<tr>
<td>Blue</td>
<td>2</td>
</tr>
<tr>
<td>Pink</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>4</td>
</tr>
<tr>
<td>Yellow</td>
<td>2</td>
</tr>
<tr>
<td>Orange</td>
<td>1</td>
</tr>
</tbody>
</table>

The teacher then fires questions at the children. "Two and how much makes right?..." "If I take three from eight how much is left?..." "How many equal parts can we get with five rods?..." "How many squares can you make from ten rods?..."

The purpose of this particular teaching aid is discovery and verification; children can see the 'inside' or factor of numbers. Using the old methods they would have to work years to learn addition, subtraction, multiplication and division; now even fractions appear in the first grade. Children barely out of kindergarten learn that the number 1, small as it seems, contains such fractions as 1/2, 1/4, 1/3 and 1/6.

The Belgian schoolmaster Georges Cuisenaire devised his rods system more than 30 years ago but they were only introduced to Canada in 1957 when his co-worker Dr. Caleb Gattegno came here at the invitation of the Canadian Teachers' Federation. Experiments with the method were so encouraging that by 1961-62 all Vancouver schools and a number of others across the country, particularly in Manitoba and Quebec, were working with them.

One of the first Vancouver teachers to conduct an experimental class using Cuisenaire rods was Mrs. Hazel McLennan, an experienced teacher who has been back upon that status as one of the most exciting periods in the 40 years she has been teaching elementary school. 'I get enthusiastic, I insist the higher the better, we try to watch and they could hardly believe what these little ones could do,' she recalls. 'I was hard put to keep a jump ahead of my students, and they knew it too. One mother told me that her son announced at dinner that two and three were factors of six. 'Factors' exceeded his older sister indignantly, 'I had Mrs. McLennan, too, in grade one and she didn't tell me anything about factors. I was unprepared. Mrs. McLennan didn't know about factors herself in those days, she's only learning about them now.'

But Cuisenaire is only one aspect of the new thinking in elementary arithmetic teaching. My son Andrew, when he was in the second grade, showed me for fun how many different ways he can express the number 16. His examples included:

- (1/7 x 56) x 2
- 96 = 12 x 8
- 10 x 16 = 16 x 10
- 12 + 10 x 10
- (1/20 x 100) + (1/10 x 100) + (1/2 x 20)

He could do these sophisticated sums because part of the new arithmetic section of the curriculum is to introduce children to basic arithmetic principles. They learn, for instance, the commutative principle, which teaches them that the order of things is not important. For example: 3 + 4 = 7, and 4 + 3 = 7. They also learn the associative principle, that is, if you have three numbers, it doesn't matter which two you add first. For example, in the sum 3 + 4 + 5 = 12, they learn that 3 + (4 + 5) = 12 and that (3 + 4) + 5 = 12. With such ingenious devices as 'number lines' they learn to jump fractions. Number lines are simply lines with numbered points on them, like rulers. Using them, children learn how to add, multiply, multiply and divide almost instantly, in fractions as well as whole numbers. They also learn to estimate what the answer will be before calculating it precisely. That's why the New Math child will answer: 'Oh, a little more than one' when you ask him to divide 3/4 by 3/4. He has been taught to recognize the relationship between eighths and quarters and to see the whole plane that 3/4 is slightly more than 3/4. Therefore, his estimated answer is 'slightly more than one.'

The difference between the old 'mechanical' and the new 'mental' approach is illustrated in these 'many problems' from W. J. Gage's What Parents Ask About Arithmetic Today:

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>John had some marbles. He gave away 7 marbles, then he had 8 marbles left. How many marbles did he have to start with?</td>
<td>In the past...</td>
</tr>
<tr>
<td>You, a third-grader, remember that the words 'gave away' are cues words that mean subtract. But subtract what? Since 8 is bigger than 7, you'd better subtract 7 from 8. Your answer is 1, and that doesn't seem to make sense.</td>
<td>New...</td>
</tr>
<tr>
<td>How many marbles does John have to start with? The story doesn't tell you, so you write an 'n' to hold a place for the unknown quantity. What happens in the story? John gave away 7 marbles, so you write that next. He has 8 marbles left, so you write 8. Now to find how many marbles he could have, you can imagine that the 7 marbles he gave away are put back with the 8 marbles he had left. You think of them as being added together.</td>
<td>Now...</td>
</tr>
</tbody>
</table>

Now you can write an equation for the whole story. 15 = 8 + 7. Another innovation is the 'number system' which helps the child to realize that all of our larger numbers are based on groupings by ones, tens, hundreds, etc. Also they can see better what happens when we 'carry' and 'borrow' in addition, subtraction, multiplication and division.

<table>
<thead>
<tr>
<th>Equation</th>
<th>Example of the new way of multiplication:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 + 4 = 11</td>
<td>Here is an example of the new way of multiplication:</td>
</tr>
<tr>
<td>2 x 2 = 4</td>
<td>2 x 2 = 4</td>
</tr>
<tr>
<td>2 x 3 = 6</td>
<td>2 x 3 = 6</td>
</tr>
<tr>
<td>2 x 4 = 8</td>
<td>2 x 4 = 8</td>
</tr>
<tr>
<td>2 x 5 = 10</td>
<td>2 x 5 = 10</td>
</tr>
</tbody>
</table>

Note: The pupil may get the right answer but without the zero that shows they have their second partial product is 2800, and not 288, most of the children don't know what they are doing really. There are many pupils, too, who don't get the right answer because they have trouble lining up their figures in the correct columns.

Now... |
| Number of 3 and 4 as 322. | |
| Number of 4 as 422. | |
| Number of 7 as 37. | |
| Number of 8 as 28. | |

Problem: Pupils may get the right answer but without the zero that shows they have their second partial product is 2800, and not 288, most of the children don't know what they are doing really. There are many pupils, too, who don't get the right answer because they have trouble lining up their figures in the correct columns.

Note: Boys and girls have little trouble with the problems but showing their final answer is the sum of 432 and 2880.
A set of texts has been available to them since 1964. Exact figures are not available, but enthusiastic teachers are aware that almost two-thirds of those girls 'I have seldom seen teachers as enthusiastic about any new developments as they are about the New Mathematics,' said E. J. Smith, assistant superintendent of the Metropolitan Board of Education’s Professional Development Branch. ‘Within five years,’ prophesied J. F. Kinlin, 'the new approach will be likely to be a part of all mathematics for girls. The new methods were at first treated to favor bright children but Dr. E. N. Ellis of the Vancouver School Board’s Research Department finds that although the bright children benefit most normally and below normal ones also benefit. The fear that children using Cuisenaire rods would come to depend on them seems to be groundless.

Children who have started learning in the old way have little difficulty when they transfer to schools teaching the New Math. They need remedial texts and extra coaching, but they seem much on the new to the methods. Those transferring out to other schools still on the older texts are thought to be ahead of the game because they know not only what they are doing but also why.

Dr. Lloyd Robinson of the Canadian Council for Research in Education feels that claims and counter claims regarding the New Math programs need to be assessed more carefully and the importance of various such studies in progress. Vancouver and Burnaby have been keeping careful statistics all along. Both Dr. Howard H. Russell of the Scarborough Board of Education in Ontario and Dr. Harry Leary of the Montreal Protestant School Board are comparing the new and the old methods at grade nine level. In Saskatchewan a study comparing Cuisenaire, Swing Through Arithmetic and traditional teaching in grades two to six is in progress. The results of these studies are expected to settle some of the doubts and debates now going on about the value of various methods of teaching mathematics. But there is one area of agreement: nobody wants to go back to the old routine and rote method of teaching mathematics.

Finally there is the problem of parents who are completely baffled by Junior's workbooks. Sympathetic school boards in British Columbia are offering night school courses in Cuisenaire that so far will enable another to do his rightful share of homework.

Every textbook in the country has a team working on New Math textbooks,' said the Canadian Education Association's H. A. Peacock. Textbook companies also contribute. W. J. Gage's 'Through the Mathematics' Road is widely taught in Canadian schools. Every province in Canada is at work in this area.

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New York Times, Toronto Star, The National Post, Ottawa Citizen, The Globe. In this year alone more than 40 textbooks and several thousand class sets have been issued. The idea is to gradually incorporate all the new methods into the curriculum. In Canada, where education is a provincial responsibility, the state of math teaching varies among provinces. Several programs are being planned to bring the students in every province to the same level.

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HOW TO PLAY DRILLING RIG

Each player rolls a pair of dice. Highest score goes first, lowest goes last. To play, each player rolls the dice to advance the number of spaces his roll indicates. Follow instructions on space you land on first. Ignore instructions on space you are instructed to go to. You must roll exact number to reach Pay Zone. Start game with the Toolpush, and continue clockwise.

- Derick Man: Go ahead one, but do not take turn.
- Take thirty feet of one.
- Broken Drill Stem: Go back to Fishing Tools and wait your turn.
- Catched Man: Go to Lend Tong Man and wait.
- You lost circulation: Go back to Mud Additives. Do not take extra turn.
- Mud Additives: Take extra turn.
- Drill Bit: Change it and go back two spaces. Do not take extra turn.
- Driller: Go ahead two spaces and wait your turn.
- Fishing Tools for retrieving ledges from: Take extra turn.
- Add Drilling Mud: Go back to Toolpush.
- Self-bolting: Go ahead five spaces and wait your turn.
- Toolpush: START HERE.
- You are ZONE! Prove you are not the Toolpush.
- Blowout: Go back to Toolpush and explain.
- Pipe Breaker: Go ahead two spaces. Do not go back to Toolpush.
- Blowout: Go back to Toolpush and explain.
- Bit Hole: Go back to Toolpush and wait your turn.

Pay Zone! Pipe Breaker and wait your turn.
WHAT MUD DOES

Mud is the lifeblood of an oil drilling rig, and the average well test as much as 17,500 gallons in its search for oil or gas. The mud helps by cooling and lubricating the drilling bit; it flushes the drilled bits of rock out of the hole (and makes them available to the geologist for analysis); seals the hole against seepage of water, and even of oil or natural gas if the hole passes through a zone where the quantities are too small for commercial production; deters up the sides of the hole to loose formation; prevents shale from crumbling away to create a big undergound caverns; and buys the weight of the drill stem. The mud is pumped down the hollow drill stem under pressure, jets out through holes in the bit, travels up the hole outside the stem, passes through a screen at the surface where the cuttings are removed, moves into a tank big enough for a backyard swimming pool, then through the pumps, up a hose, and back down the stem. And when the roughnecks are pulling the pipe to replace a worn drill bit, the mud keeps the hole from collapsing until the stem can be run in again.

By John Belanger
gradients—must is indispensable in drilling for oil.

But drilling mud is unlike any other kind; it’s a specialized and complex substance that doesn’t resemble the kind of mud you get on your shoes at all. There are different types of drilling mud but you’re close enough if you imagine a thick and creamy substance like tomato soup, usually gray in color.

Mud is used in rotary drilling. (There are two ways to drill for oil: cable-tool—which is like pounding a nail into a board; and rotary, like going through a board with an electric drill.) Mud is pumped down the drill pipe under pressure, jets out at the bit, then moves up the outside of the pipe to the surface. On the way, mud cools and lubricates the bit, carries rock cuttings to the surface, cools the sides of the hole to prevent other materials (such as water) from rushing in and helps to keep the hole from caving in. Then it’s scraped to remove cuttings and used again.

Most of the drilling mud used in Canada now is bentonite, a clay that was first found in France and Sweden in the late 18th century but got its name from its discovery point on North America’s west coast. Bentonite is found in commercial quantities on this continent in western Canada and several areas in the U.S., and Wyoming is a prime source of the stuff. There are two types of bentonite, swelling and non-swelling. And non-swelling kind is the most widely used.

A valuable feature of swelling bentonite is its ability to expand to about 30 times its dry size when water is added. This makes it highly portable in the dry state. Even so, researchers are working on a synthetic or modified bentonite that will have 70 times the swelling ability of bentonite. In the dry state, this clay can be made into a slip—cream, buff, off-white, beige, pink, brown, dark green, greenish-gray, gray—or a mixture of any of these. When dry it’s usually a cream or buff color.

Oil field firms don’t try to find their own muds; they contract out the mud for a drilling project to one of several large firms which operate in North America solely to supply mud to industry. These companies—with exploration crews that search throughout the world for suitable muds, like little boys in the wake of a rainstorm—also supply personnel to supervise the mud’s application. G. C. Carter, a geologist with a Calgary mud supply firm, has searched for mud in Nigeria, Mexico, Canada and the U.S.

"American Indians used to eat some forms of mud in treating stomach disorders," Carter said, "and they also used it as a poultice. Bentonite was used to lubricate oar-cars and farmers used to pack it in the hubcaps of early-model cars to keep the wheels greased.

Although automobile manufacturers aren’t likely to start putting mud into wheels next week, other industries in North America are taking a good long look at bentonite. And two of the biggest—the foundry and petrochemical industries—are using mud like this.

One of bentonite’s chief qualities is that it’s a good binder—it sticks other things together well. Soil bentonite uses it because it builds water and sand together nicely to the required consistency. But most finds a bigger market as a binder in pelleting, a mining process that makes table salt, unrefined sugar into small balls or pellets for easier shipping. Because it acts to draw water from the ore as well as

burton Highlands where a mud hole is maintained for this purpose. At times, as many as 12 workers and children, all wearing bathing suits, can be found in the hole—happily smearing their bodies with mud. While industrial and therapeutic uses for mud are multiplying rapidly, it still finds its widest and most sophisticated application in the oil business. In 1964 Canadian industry used 111,000 tons of bentonite and the oil industry accounted for 65,000 tons—worth $8,471,800. (Imperial alone bought $200,000 worth; that’s 6,600,000 pounds of mud—enough to make a mud pie for every child in Canada.)

Drilling mud was introduced to Canada with rotary rigs in the mid-1920s. At that time drill crews did mud for all by hand near the site, believing that any old mud would do. The stuff was simply scooped out of the ground with shovels and poured down the pipe with little regard to quality, technique or desirable properties. As wider use of rotary drilling developed, mud came into its own and its study is regarded today as a highly scientific and sophisticated aspect of oil drilling.

Mud’s so important to the oil industry that petroleum engineers call it "bat" and refer to it in their everyday language. The University of Alberta at Edmonton offers courses in mud, as do some universities in the oil-producing areas of the southeastern United States. In addition, mud-making firms offer intensive six to eight-week courses in mud and how to handle its own stuff.

Ordinary mud is used to treat mental ill- ness. John Brown, director of Waverdale, a residential treatment center for disturbed children, north of Toronto, uses mud to help children work through some psychological problems. When disturbed children smear mud on their bodies, they release positive hostility to help alleviate their problems. Waverdale operates a camp in the Hills—by-product of poly-making, is added as a thinner, for example; calcium and gyspsum to inhibit shale swelling; and oil as a lubricant. Lime-treated muds have a higher degree of fluidity and resist consolidation. In Canada and the U.S., the mud itself is worth $60 a ton. Additives can more than double the price.

One problem with drilling mud is that you lose it if you encounter a porous zone—if the mud simply flows away into the holes in the rock. When this happens some unusual additives come into play, usually seaweed or cement.

In a lost circulation situation, says a mud supplier, "you even add things like flax straw, crushed peanuts and walnuts shells—even chicken feathers. I’ve known engineers to put a ground-up telephone pole down the hole when nothing else is available." The theory is that the straw, shells, feathers or telephone pole will seal the pores in the rock and hold the mud. There are substances that can be added to make a drilling mud heavier—one of the fluid’s functions is to act as a damper to help control underground pressures.

Even oil itself is sometimes added to mud. Because it lubricates so well, it stores water and tear on the drill and keeps the bit sharp longer. What’s more, the drilling rate is increased since the drill doesn’t have to be pulled to change the bit so often. Oil in a mud also helps to free a stuck drill pipe by allowing a few inches of the drill crew to pull it out—and special oil emulsion mud is wonderful for drilling through shale. Oil reduces or eliminates the danger of shale to swell and break up, creating a cavern so large that the drillers can lose their way. The addition of oil to mud—emulsion doesn’t affect shale.

Oil muds, however, have one big drawback—their cost. For instance, they cost as much as $32 a barrel. Oil muds are sometimes necessary when entering an oil well, but they’re not the preferred choice for every drill hole (you’re looking for it) because other muds can damage some types of formations by sealing the pores of the rock so tightly the oil in the zone can’t get through. But oil muds let the crude get through easily enough.

So mud and water and your ears get aired and your shoes are covered with gumbo, don’t rage—remember this: the soap you showered with this morning probably had mud in it, the gasoline propelling your car was found with it, the drink you quaffed was filtered with it, the paper on the newspaper you bought was thickened with it and the paper in this copy of the newspaper was made of trees that couldn’t be cut down. One problem with drilling mud is that you lose it if you encounter a porous zone—if the mud simply flows away into the holes in the rock. When this happens some unusual additives come into play, usually seaweed or cement.

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That ship is not staking. It’s just the SS Imperial Collingwood, loaded right to the Plimsoll line and heading out of Toronto for a routine run on the Great Lakes with a cargo of gasoline, diesel oil and furnace oil. When she gets out on the open lake, she’s bound to run into rougher water than the waves that ripple Toronto’s harbor. Big waves can wash over that fraction of freeboard to thunder against the deckhouse in explosions of foam, but the Collingwood will steam placidly on at a steady, lady-like eight knots, and the water will just drain back into the lake. The deck that looks so perilously near the surface is called the harbor deck, and it’s not meant for promenades when the ship’s on the open lake; it’s for convenience when she’s made fast at a protected dock. The Plimsoll line is a mark to show how deeply she can be loaded with safety. The Collingwood’s as far down in the water as she ever intends to get, and it’s nothing new.

What is new to the Collingwood is the color scheme she’s sporting—red, white and blue, with a touch of gray. Until last summer, all 14 ships in Imperial’s tanker fleet had black hulls, red superstructures, buff masts, green tank tops, bits of yellow—in fact, they each had 14 different hues, and they were hard to live with; the red superstructures, for instance, soaked up the heat of the sun in summer to make the vessels uncomfortably hot. The new white shade reflects heat.

Changing a ship’s colors is something of a problem. For one thing, the old color sometimes shows through. Imperial’s crews found that the old red had a tendency to bleed through the new white paint; to keep the white from turning pink, they found they had to cover the red with aluminum paint first. Another problem is that where the new colors get worn off, the old ones beneath show through requiring an immediate touch-up. The new paint for the Collingwood cost $1,400 and, generally speaking, the job will last a year. But to keep the ships looking fresh and clean, sailors must take care of them all season with brushes and cans of touch-up. Nevertheless, the new colors with their fewer shades and fewer places where two colors meet will make the job of painting quicker and easier.

Imperial’s fleet of ships sail almost everywhere in Canada that ships normally sail to, and then some. The motor ships Imperial Navarino and Imperial Vancouver ply the Pacific coast as far north as Stewart, more than 500 miles northeast of Vancouver, at the head of the inlet called Porland Canal; the lake steamships sail the ports of the Great Lakes and frequently get as far east as Quebec, and occasionally even trade on the Atlantic coast. Atlantic coast traffic is usually handled by MS Imperial Halifax, MS Imperial Quebec and, starting this year, by the new MS Imperial Arabia, which trade to the Atlantic ports of the maritime provinces, Quebec and Newfoundland. In 1965, Imperial Quebec sailed as far north as Deception Bay in northern Quebec and Frobisher Bay on Baffin Island. In a typical year the whole fleet, from the tiny 2,577-barrel Imperial Navarino on the west coast to the 303,678-barrel ocean tanker Imperial St. Lawrence in the Atlantic, will travel 350,000 nautical miles and carry nearly four million long tons of cargo. With the new paint job, they’ll do it all more jauntily.
we were talking about Louis-Marie Forin’s 12 children and I was trying to list their names correctly in my notebook—when he yawned and said, "Let’s go for a drive in the bush."

"In the bush?" I repeated.

It was raining outside the imitation-brick one-room office. The low dirty sky looked as cold and wet as James Bay; and at that moment James Bay seemed not hundreds of miles to the north but just beyond the new CNR terminal across the muddy municipal park from Louis-Marie’s office.

"Why are we going into the bush?" I asked.

"We might see a moose," he said, "if we’re lucky."

I had gathered, at the outset of the interview, that the moose season was almost upon us. I had barely put my first question when Louis-Marie asked, "How long are you staying? Do you like to hunt moose?"

"Only a day or so. No?" I had answered.

"You don’t hunt?" he had demanded incredulously, as if I had confessed that I rarely breathed.

Louis-Marie was wearing his volunteer fireman’s jacket. He is the mayor of Senneterre, a town of 5,000 in northwestern Quebec. He’s a fairly typical "new Quebecer"—a mixture of French-Canadianois plus de famille, and aggressive contemporary capitalist. He’s president of a construction company, director of an ultra-modern lumber mill, and the local agent for Imperial Oil. He speaks the language of business and municipal administration—of industrial development, water supply, sewers, and other services. In spite of his slight difficulty with English he would probably be more at home in Selkirk, Man., or Cranbrook, B.C., than he would be in Montreal. He is one of millions of unknown Quebecois, and to me he embodies the reason why Canada, in one crisis after another, refuses to fall apart at its English-French seams. It holds together because this country is populated mainly by Louis-Marie Forins who understand each other, regardless of language, with an instinctive understanding that debating politicians and journalists often neither share nor appreciate.

We started out in Louis-Marie’s late-model car. With heaters and radio going full blast, it promised to be a reasonably comfortable observation post. We drove to the equipment yard of Cardin Construction Company on the edge of town where he switched his Pontiac for a battered pickup truck. Before we left again, he spent about 15 minutes chatting with two men who were welding something inside the abdomen of a huge mobile gravel-crusher:

"Can you take the truck just like that?" I asked.

"I’m the president," he said.

We jounced out of Senneterre and along a dirt road that snaked into the sandy green hills to the east. The clouds were gathering themselves on the tallest pines and raining all over the place. Past innumerable tiny lakes we counted, eyes peeled for moose.
A little later, in the small mess hall of the nearby camp, the men ate the way they worked—efficiently and silently. Louis-Marie explained that at one time the large paper companies forbade their men to talk at table because it wasted time. The rule has been dropped but the silence remains, partly through habit and partly because the woodcutters themselves are anxious to get back to the bush for the short afternoon's work before the light fails. There was little space for words in the flow of soup, stew, potatoes, bread, hutter, jam, fruit and sugar pies, milk, tea and coffee, cookies and cake. In less than half an hour the tables were cleared and the power saws echoed again through the bush. We picked our teeth with splitter matches while Louis-Marie swapped gossip with the camp's intelligence—the clerk, stockkeeper and head cook.

On the drive back to Senneterre, I began to type what these hills, lakes and forests meant to Louis-Marie. I have walked through gumbo fields with prairie farmers and along the Atlantic shore with Maritim- ers but there is no land-love in Canada as strong as a Quebecer's sense of possessing his own province.

There have been times when this feeling has faltered. In earlier years of this century, driven away by substandard wages and unproductive farms, thousands of French-Canadians emigrated to the factories of New England. But they left reluctantly, and the pockets of French that still survive in the eastern United States testify to their tena- cious grip on language and culture. Those who remained often looked north rather than south, particularly to the new mining and farming areas opening up near the northern Ontario border. They were en- couraged by government authorities in Que- bec and by the Church, determined that this new frontier should be French and Catholic from the beginning of settlement.

Among the pioneers in this part of Que- bec was Louis-Marie's father, J. Edmund Forth. He moved first from his home town on the Ottawa River, St. Andre-Avellin, to Amos, 320 miles north of Ottawa, where he worked in a general store. Three years later, in 1917, he trekked farther east, strolling along 55 miles of unfinished railways during the Christmas holidays to Notaaway, an Ojibway settlement of Indians and railway workers that was des- tined to become Senneterre.

J. Edmund Forth decided that the cluster of shacks alongside the unfinished roadbed was the place he would look for. That summer he beaped the family, furniture and merchandise aboard a farm wagon fitted with railway wheels and moved to Nota- way to open a store. Louis-Marie began life there that August, the first male child to be born in the settlement. He attended the local school—three rooms, no water and not much heat—as he recalls—then was sent to Collège St. Alexan- dre at Limbour, near Hull. By the time Louis-Marie graduated, J. Edmund was presiding over one of the most general stores in Quebec under the sign—Vous donne Tout Ce Que Vous Avez Besoin (If You Need It, We Got It). The store sold everything from groceries, hardware, sporting goods, seeds and building materials to a complete undertaking service. In 1935 the local Imperial Esso franchise was obtained; Louis-Marie took over the business in 1938 and today his oldest son, Santo, manages the Esso plant on the outskirts of town.

Louis-Marie talked about his family as we drove back to Senneterre. The history was interrupted from time to time as we passed certain streams and patches branching into the woods from the dirt road. Each spot we stopped at as a fishing ex- pedition or a logging trip, to an old friend, a remembered site, a piece of tackle that someone had given him. Driving through
the countryside was like travelling through Louis-Marie's life; every hill, stream and path meant something to him.

We stopped, just before reaching the town, by the small artificial lake that serves as Senneterre's reservoir. The Mayor talked out of taxis but of trees.

"You stay here, very quietly," he said, "and I'll walk to the other side and make them swing toward you." A few minutes later he whispered through the cold evening air. "Can you see them?"

"No," I whispered back. Louis-Marie looped a stone into the water.

"Over there," he said softly, pointing to a place where several shadows had moved slightly in the darkening water. From the way he peered into the water, I knew that Louis-Marie could see their gills moving slowly and their eyes staring and, in his imagination, see a lure tumbling down to them, feel his arm muscles tighten involuntarily as a fish took the hook into its mouth.

Driving into Senneterre was like ruffling through another chapter of Louis-Marie's life. A member of the town council, off and on, since 1946, Mayor since 1962, he has seen the town take on a new life in these years as a CNR railway junction was built and a nearby mountain-top levelled to accommodate a Pinetree radar station staffed by about 500 service personnel and 125 civilians. Streets have been paved, water and sewer services installed. A new lumber mill, highly automated, went into production last year with most of the shareholders and directors drawn from the township and virtually all the machinery made by a company owned and directed by French-Canadians. A 135-acre industrial park is serviced and waiting for new factories. In the meantime, the town uses it as a picnic ground.

We drove past the municipal airfield built mainly by volunteer workers using equipment donated for "display purposes" by regional suppliers. Louis-Marie insisted on showing about the rough railway of the golf course being built by the same method.

"I've got to learn how to play by the time we open it," he said, waving an imaginary club and driving an imaginary ball about 200 imaginary yards.

Before dinner there was time for a hot shower in the Sundial Motel operated by Louis-Marie's sister. Then I walked next door to the two-storey brick house which he had designed for his growing family. The fire brigade coat was replaced by a well-cut suit, and as we slipped a before-dinner scotch, Louis-Marie introduced his children, in person and through photographs displayed around the living room. There was a special place for photographs of 26-year-old Annette, now a missionary sister teaching in Africa. Sarah, the oldest son, arrived from the bulk plant, told his father briefly about the day's business and went upstairs to change. Roland and Mary and Christopher, all in their twenties, looked into the living room now and then from the kitchen where Mrs. Forlin was supervising the dinner.
EXECUTIVE APPOINTMENT

John A. Armstrong has been appointed executive vice-president of Imperial Oil Ltd.

Mr. Armstrong was born in Dauphin, Man., in 1917, the youngest in a family of two girls and two boys. He received his early schooling in Dauphin, then went to the University of Manitoba. He earned a degree in geology there in 1937, and at Queen's University he took a second degree in chemical engineering. He is married, and has three sons aged 4, 7 and 14, and lives in Toronto. Outside of business Mr. Armstrong is a director and finance committee chairman of the Vanier Institute of the Family, an organization set up in 1964 to assist groups and individuals concerned with the well-being of Canadian families, is also something of a sportsman; he golfs in the low eighties, swims, and enjoys fishing and hunting, particularly for big game.

Mr. Armstrong joined Imperial in 1942 as a geologist, interpreting seismic data in western Canada. He gained additional exploration and production experience in the U.S. and Ecuador, and returned to Calgary in 1947, the week before the famous oil discovery at Leduc. In 1951 he became exploration manager for Imperial's Edmonton district, and two years later moved to the Calgary producing headquarters. In 1955 he was appointed assistant manager of the western producing region. After a year with the producing co-ordination department of Standard Oil Company (N.J.) in New York, he became general manager of Imperial's producing department at head office in Toronto in 1960, and became a director in 1961.

other wash the dishes, and so forth."

"And we are never short of baby-sitters", Louis-Marie laughed as he fit another ele-

ment, one from the table and, grinning broadly, said to his wife, "Don't touch any-

thing. The children will clean up tonight.

The old people are going out."

Half an hour later, in the main chamber of St. Sennen's white frame town hall, Louis-Marie had switched from père de famille to accomplished politician. The town was providing cocktails for members of the local CNR Employees' Credit Union before their annual soirée d'invitation in the Legion Hall across the street. With a minimum of formality, the Mayor greeted visiting railway-

way officials, swapped jokes with neighbours and, in a short address of greeting, said that the wires graced St. Sennen that evening as if they were swallowed who had arrived from a sunnier and brighter climate. It wasn't the kind of thing any politician would dare to say in English but hittitude is one of the lower French words and Louis-

Marie turned the compliment beautifully.

The soirée moved to the Legion Hall, a converted movie theatre, and exploded on the dance floor between a bar at the en-

trance and a local orchestra on stage. By midnight I had begun to think that Stenn-

ette was the best place I had ever seen.

It was still raining the next morning when Louis-Marie and his wife walked to church at the end of a parade of Fendris. I drooped down the main street and drooped into a small cafè for a coffee before heading south. The park was still a deserted marsh and the sky was as drizzly as ever above the CNR termin-

nal. But I was in no hurry to leave. In a few hours, Louis-Marie had given me a glimpse of his St. Sennen, and I remembered him saying, "Why should I live in a big city like Montreal, where no one knows anyone? It must be dull."

PLASTIC EGG HEADS

The problem with buying eggs in pulp egg trays is that you never know whether an egg is broken till that sassy realization comes from the grocery jar. That's why American Canada company hopes to come out soon with transparent egg trays made of high-impact polyurethane plastic. Then you can inspect your eggs without opening the container. Besides, because the polyurethane trays can be fitted into each other's grooves so easily, supermarkets can stack 50 percent more eggs in the same space as they stacked pulp-wrapped eggs.

RAIN, RAIN, GO AWAY

It soon may not be necessary to flick on your car's wind-

shield wipers when you're caught in a rainstorm. A New York Research Council scientist has developed a silicate water repellent that causes water to jump off the glass. The repel-

lent looks like a black shoe polish which, when rubbed on the glass and polished, combines chemically with the glass to form a tough coating about one tenth-millimeter of an inch thick. The coating lasts weeks, sometimes months, but should be reapplied every two weeks to keep it in top condition. Scientists expect it'll find most use in aircraft, where rain on windshields makes the horizon appear at a false level.

A FACELET FOR FURNACES

Latest status symbol in the affluent society is custom-colored furnaces. Made by an Orillia, Ont., company, the furnaces are available in oil and gas models and come in 35 breath-
taking colors including reds, greens, emerald, turquoise, blue, and lilac. It's hoped the furnaces will appeal to families who want to enhance the decor of basements used as dens or game rooms. Price of a standard unit is from $275 to $350, color accounting for at least $45 of the retail cost. And for the really color-conscious buyer, the units can be bought in color combinations—for example, saddlebrown metallic sides with a sundaed beige front.

THIS PILL'S NOT FOR SWALLOWING

If you don't think gasoline can be sliced, you haven't heard about the latest dolls of a U.S. research company. They've come up with a process to enclose liquid particles in tiny cap-

ules. The capsules are then formed into bricks which cut like butter. The process involves suspending fine particles of gasoline in a coating material. Then the coating material congeals around the gasoline particles, making capsules that look like powder. The capsules are 99 percent gasoline, so they burn easily. The process reduces volatility, and makes for ease of storage, because the capsules can be sealed together like chunks of cheese. For example, gasoline—or diesel fuel—could be stored in a field, and transported by floating the bricks down a stream.

MAKING SAND DUNES ENDURABLE

Trees have started sprouting from sand dunes, thanks to a fine asphalt-like spray called Endur. Endur was developed a few years ago by a small research group, Fendris, thinking of ways of getting trees to grow on water-bearing sand dunes. They found seedlings could grow up into healthy trees if the shifting sands could be made to stay still long enough to allow a root system to take hold. Enter Endur, which is sprayed around the seedlings and holds the sand down until roots and other vegetation take over the erosion-prevention action. The process has already been used to reforest more than 3,000 acres in North Africa, and has been applied with success in test areas of India, Australia and South America.

WOMEN ON THE LOOS

Though it's a fallacy that women are worse drivers than men, if you still tremble at the thought of women drivers, then you'd better stay away from the prairie provinces—where women, according to recent survey, more than 48 percent of women 15 and over have their driving licences. B.C. figures are only slightly different, with a 45.5 percent female participation. More than 37 percent of Ontario women, and 28 percent of the women in the Maritimes, get behind the wheel. Only in Quebec are the roads reasonably clear of women—just over 20 percent get out of the kitchen and into an automobile.

THE PORTABLE PINT

No need to look for an oasis the next time you're stranded in the desert, where the still makes a contented plastic oasis in a pocket-sized package developed by the U.S. Department of Agriculture. All desert sand contains water absorbed from occasional rains. To get it out, all a strandedist has to do is dig a 12-inch hole on a yard in diameter and half a yard deep, then unroll his oasis—which consists of a plastic container, placed at the bottom of the hole, and another two-yard-square sheet of any clear plastic film. The sheet is stretched over the opening so that it forms a cone with its point just above the container. Then the old distillation pro-

cess takes over. Sunlight shines through the plastic, heats the soil underneath, causes its water into vapor which collects as water again on the plastic sheet's underside. The water drips into the container at the rate of a pint a day.

VOYAGE FROM THE BOTTOM OF THE SEA

Consider the good ship Lusbyjack, a large tanker more than a year ago in Humboldt Bay off California. Lying there 60 feet below the surface, one 350-ton section has ever since been a hazard to navigation. How to get it out of there? Easy. Salvage crews pumped 60,000 pounds of urethane foam into it, up it bobbed like a hydrogen balloon, then they just towed the whole thing away. The sea lanes are open again.