



THE ROYAL BANK OF CANADA MONTHLY LETTER

VOL. 53, No. 6

HEAD OFFICE: MONTREAL, JUNE 1972

Pioneers are Still Needed

THE FIRST EUROPEAN PIONEERS staked out their homesteads in Canada 374 years ago. On July first this year we celebrate the 105th anniversary of the day when their successors brought together their scattered hamlets and settlements into a confederated nation.

All history is the story of continuous exploration and discovery and colonization. If we are not to suffer national stagnation we need to bring to life again the pioneer spirit, encourage freedom to change and grow; be willing to entertain suggestions, and provide growing space so that every person may develop skills to the fullest extent of his ability.

Every man and woman in Canada can invent something, do something new, or do something old in a better way. There are opportunities for pioneers in industry, agriculture, education, finance, literature, music, art, technology and home making.

Everyone is to some extent a pioneer. He notices a situation wherein improvement can be made, foresees the course of events a little, pictures in his mind's eye a desirable outcome, and devises means by which he will bring about the betterment. Every generation produces people who seek after new lamps, and some are as fortunate as Aladdin.

The men and women who came into Canada in the 1500's were starting life, as it were, once more at the beginning, subsisting roughly in a land where there were none of the comforts of Europe. They fell back upon long-inactive instincts and they relearned forgotten crafts. Civilized people of anciently cultured lands, they did the labour of primitive races so that they might survive and forge ahead.

Here were pioneers from two great nations, forced by their environment and isolation to modify what they had learnt so as to fit the ruggedness of the land in which they had chosen to build their homes.

To their credit, they coped with the austere existence of the frontier, modified their thoughts and habits, and made experiment and adjustment amid the novel life of forest and prairie. They were sustained by expectation, enterprise, energy and courage, and they created a nation.

Some people think that because there is so great

evidence of progress since those days the picture is complete, but there are many unfinished jobs, incomplete inventions, unborn ideas and new problems. We need the pioneering spirit as urgently as ever.

Think of what might be

Everyone knows the saying "Necessity is the mother of invention", but in today's Canada fullness of life and not grievous necessity is the spark plug behind the production of new things and new discoveries. As H. Stafford Hatfield wrote in *The Inventor and His World* (Pelican 1948): "Fish colonised the land, bats and birds conquered the air, not because they were pushed out of the sea or off the land, but by a kind of *élan* akin to our own inventive drive."

No outside pressure or government decree will compel a person to become an explorer or an inventor or a pioneer. The desire must be within him; it is one that he can stir up. Discontent is not always a bad state of mind. It is constructive when restlessness of mind prompts a person to search for better ways of doing things.

Pioneering requires awareness of what is going on instead of the heedless inattentiveness of a rut-bound life. We are in danger of getting so set upon following a formula, upon conforming to habit, that we miss the side views.

Charles F. Kettering, Vice President of General Motors, said in a commencement address: "It is like driving through the country at night, when you don't see any of the scenery at all. There is a lot more country on the side of the road than there is on the road."

The process of inventing or pioneering starts in this way: you expand your mind so as to think of things as they might be improved by changing them, adding some good qualities to them or taking away some inferior or unnecessary parts.

Some people say that their everyday routine work limits their horizons. Technical and professional people say that their intense specialization prevents them from venturing over the parapet of their unique groove. These are not valid reasons. Anyone, whatever

his job may be, can pioneer in something, invent something, or discover something. In part time study and in leisure time work he will find antidotes to the numbing effects of necessary routine and the stress of delicate operations.

Expensive equipment is not needed. Some people get along quite well without wealth or apparatus. Aristotle was an astronomer without a telescope, a biologist without a laboratory, and yet his discoveries about natural phenomena stood up for 2,000 years.

A handbook for home mechanics is filled with information picked up by alert artisans, pieces of mechanism invented by workmen who saw easier and better ways of doing things, and plans thought of by imaginative people who made improvements in their way of living: all of these are starting places for today's creative workers and homemakers.

In business and art

All business progress is the outcome of invention and pioneering. Creative activity is what produces new methods and opens up new territory.

Industry had grown up in a helter-skelter way out of the home workshop era. Then new methods were brought into use under the heading "Scientific Management". Their pioneers were people with stop watches and slide rules. They introduced specialization, systematization and control. Now they are assisted by computers. This is not the end, because business must advance or expire.

Some corporations have departments of research and development where the creative work of a dozen skilled technicians yields a return in new or improved products. These corporations should not fail to tap the mental resources of the scores or hundreds of other men and women workers in their plants or offices whose creative ideas might be called into use.

Frederic D. Randall said in an article in *Harvard Business Review*: "The management of a sizable business today must work hard at the task of maintaining a stimulating atmosphere for creative thinking. . . . This is a key management problem. It may not be successfully side-stepped."

As in business, so in art. Every great musical composition is a triumph of pioneering, of putting an inspired thought on to lines and trying out the melody, then revising it until the thought communicates itself in music. A sculptor is a pioneer in every chisel stroke. Michelangelo said: "I had a block of marble in which was concealed that statue. The only effort involved is to take away the tiny pieces which surround it and prevent it from being seen."

Walt Whitman, one of the most important writers in the history of United States literature, glorified the pioneer in a poem: "We today's procession heading, we the route for travel clearing."

The need to explore

Why do people explore? Charles Miller, of *Can-*

nibal Caravan fame, put it this way: "It was my intention to press on to the snow line. Not that I had any particular business up there, but it is one of the rules of the exploring profession to go where you have no particular business to be."

Even when most people believed that the world ended at the horizon, there were navigators who wanted to find out if this was true. Norsemen crossed the Atlantic and settled on this continent in 1003. They spent three winters here: some writers say that the first and third winters were spent on the south shore of Chaleur Bay, New Brunswick.

The process of pioneering seems to be something like this. You get an idea that there is rich land over the hill or across the sea, or that you can make out better in your work if you change your style, or that you can invent something that will add to the comfort of your life. You explore the probabilities and possibilities to make sure that the effort will be worth while. You work out the general line to follow, using the knowledge you have, information you dig up, and the spark of the idea that came to you. You test your theory in an experiment. You refine it by getting rid of all that is not essential, and you find the answer to the key question: "Is it useful, worthwhile and practicable?"

Pioneer conditions tend to develop initiative and independence. They contribute a lot to the growth of common sense.

We do not know anything about the earliest human pioneers except that they made tools and weapons of stone, bone and ivory. No other records survive. We do know that they had intelligence, or they could not have pioneered their way into civilization as we know it. They had purpose: they made tools because of the things they might do with tools.

The trials and tribulations of Canadian pioneers have been told in many books, all of them written with a sense of satisfaction and the pride of attainment. A visit to one of the restored villages will show how the pioneer used what was at hand to make work easier and used his head to improve living conditions.

By little and little they succeeded in opening up the country. As they pushed their way westward the vastness of the prairies encouraged them in broader and more ambitious thinking which became justified by the outcome. Says Grant MacEwan in *Between the Red and the Rockies* (University of Toronto Press 1952): "The story of its conquest by one of the greatest wheat economies the world has yet known is an epic chapter in the history of civilization."

Other pioneers were explorers who made maps so that people could follow in their steps without the hardship and danger of entering unknown territory.

David Thompson was such a man. He was the first white man to descend the Columbia river from its source to its mouth; he surveyed the Nelson, Churchill and Saskatchewan rivers; he placed on the map the main routes of natural travel in a million and a quarter square miles of Canada and half a million square miles in the United States; he discovered the

Athabaska Pass, which was used for more than half a century by the traders as a route across the Rockies.

Are pioneer days over? There died only fifteen years ago a woman who disproved the idea. Mrs. George Black, daughter of an inventor, escaped the great Chicago fire; joined the gold rush, landed in Dawson City after surviving the dreaded journey over the trail through Chilkoot Pass, and set up a claim-working partnership. She married George Black, who became Commissioner of the Yukon; she was chate-laine of Government House, Dawson, for four years, and in 1935 she became the second woman elected to the Canadian Parliament. She was made a Fellow of the Royal Geographical Society and joined the distinguished company of those awarded the Order of the British Empire. Mrs. Black published two books: *My Seventy Years*, a stirring story about her pioneering life, and *Wildflowers of the Yukon*.

The moment of inspiration

The pioneer is a leader. He is first in his field in discovery and invention. He will be followed by settlers and developers and people who expand and exploit his discoveries.

Before starting to blaze a trail, does he have to sit around waiting for the "moment of inspiration"? There is something attractive about the seemingly magical way in which a great idea for something new comes suddenly into one's mind. It may occur while one is driving home from work, taking a stroll in a park, or washing the dishes.

The explanation is simple: these are activities that provide the mental relaxation which enables inspiration to break through. The subconscious has been working on a problem, it has put the pieces together, but it needs an opening through which to pass the solution to the conscious mind.

Mythologists have a way of making invention and discovery matters of "inspiration" or accident. They say, for example, that Charles Goodyear left a piece of raw rubber smeared with sulphur near a hot stove and thus discovered vulcanization. But Goodyear had made himself so completely master of everything known about rubber that no phenomenon, however small, could meet his eye without his seeing its bearing upon his problem.

Think of Sir John William Dawson, revered principal of McGill University for 38 years, a pioneer into the remote past. Digging up and chipping rocks as he criss-crossed the Gaspé Peninsula in his exploration, he found a fossilized land plant in the middle of an age of seaweed. His discovery carried back our knowledge of botany 350 million years. That meagre, venture-some growing thing, lost in the darkness of past time, came alive again in Sir John's mind because he had studied so that he recognized its significance.

Sudden illumination is evidence of conscious or unconscious prior work. Having a mind stored with knowledge, and curiosity about ways in which

knowledge can be applied, one is ready to pounce on the first chance to observe and to experiment.

Anyone seeking to become a pioneer will take care to fill his mind with what is known about the route he plans to take. We cannot learn anything except by going from the known to the unknown. We need to dig for facts about the problem, about what has been tried, and about why previous efforts failed to reach the goal. Anyone content to start at the surface of things, without laying a foundation, may find that he is building on permafrost.

Qualities needed

Some of the qualities needed in pioneering are interest, intelligence, imagination and determination.

What sparks interest? A blank space on a map is all that some people need as an urge to go there and sketch in some rivers and hills. Others may find their interest aroused by a problem, a puzzle, or something out of the ordinary. Dr. Alexander Fleming wrote in his notebook: "I was sufficiently interested in the anti-bacterial substance produced by the mold to pursue the subject." Thus came penicillin.

One needs the intelligence to probe, and to get to understand, and the skill to experiment. A pioneer has to think: he has no handbook to tell him the answers to his questions. The high delights of successful mental exploration are based upon a respect for ascertained facts and intelligence in grouping them into new forms. Piling up facts does not make us wise. We need to reason about what we have observed.

This is the time to use imagination. Your thought of something better may be a weak image in your mind. That is how great things start. Pursue your thought as far as you can. Make a note of it and of its development in your mind. Seek and find facts. Look at your notes a month later, when your subconscious has had time to work on the idea.

No one can guarantee the quick success of an idea. A pioneer learns early to be watchful and patient, not rash and impulsive. He is stubborn in his refusal to accept defeat. Like Napoleon, he will sacrifice all secondary matters to secure what he believes to be his main objective.

He is prepared to be misunderstood and to face opposition. All industrial progress has included stories of inventions whose nature was unintelligible to the ordinary mind. When people do not understand they deride out of ignorance or they oppose out of fear.

Kettering, who experienced the resistance of people to new technological devices, concluded that "everybody is naturally negative to anything outside his own experience." In Boston, in 1873, a telephone salesman was arrested because, said the authorities, "well-informed people know that it is impossible to transmit the human voice over wires."

Things to do

Look around. The pioneer has an alert movement of

the eye, open to every promise of adventure or enterprise, like a child who goes wandering in a park with his mind on what there is to see and not on himself. When the questing knight Sir Launcelot asked a damsel "Know ye in this country any adventures?" she told him "Here are adventures near at hand, if thou durst pursue them."

Look out frequently over the world of human activities with a mind attuned to attempting new things. The key to pioneering and invention is in your hand when you ask: "I wonder what would happen if . . ."

A twist suggested by the mind can turn one thing into something much more important and more widely useful. Rudolph Diesel examined the bamboo flame makers used by the natives of Samoa and developed the compression ignition engine that bears his name.

There are four things to do when you decide to break out of the rut and become a pioneer: investigate, plan, experiment, and work.

When a person sets out upon a pioneering mission he should have an understanding of things as they are, then the future cannot be wholly doubtful. He will calculate the odds closely, because it takes just as much effort to move to a site that will be unsatisfactory as to the ideal location. There are three sorts of circumstances to be thought of. You need to know what factors you can control, what factors are controlled by other people or by nature, and what factors are subject to chance.

Preparation and planning follow the birth of an idea. This means taking account of the options of action. There may be more ways than one of attaining the objective. Many explorers and pioneers have been notable for their deliberation in planning: their steady, rather than spasmodic, advances; their wisdom in providing against contingencies as far as foresight would allow.

Strategy is needed by a pioneer. He cannot leap out of the security of his accustomed way of living without having a plan of campaign. He works out the tactics later to fit circumstances. Strategy deals with the overall objectives and with the means for reaching them; tactics deals with the actual doing of the job.

Venturesome thinking must be followed by testing. Galileo, famed as the discoverer of the laws of free fall, challenged the teaching of Aristotle, twenty centuries earlier, that a heavy weight will fall faster than a lighter one. Galileo tested his belief, and proved his case by experiment: he dropped two balls of different weight from the Leaning Tower of Pisa and they hit the ground at the same moment.

To make experiments means that we stake our assumptions on investigation and research, and that we make tests and trials to gain facts from which our minds, through reasoning, may draw knowledge. We must accept the results of experiments as they come, however unexpected they may be.

Opportunity

Opportunities to pioneer are almost always controlled by the desire and determination of a man, and not by the daily work he does or the social circle in which he moves. They are created by awareness, aliveness and alertness.

Initiative, said someone, is doing the right thing without being told. The pioneer has the disposition and the power to move of himself, instead of putting off action until an adversary gives him a push or a friend smoothes his path.

One does not have to wait for an urgent need, but can find pleasure in solving problems that do not appear to have immediate significance. Apollonius studied conic sections for amusement; his theorems gave Kepler, 2,000 years later, his elliptical orbits of the planets; and all this enters into space flight today. A gambler asked Blaise Pascal in the seventeenth century for advice on a system to beat the dice, and Pascal gave birth to the theory of probability, an indispensable tool in today's biology, physics and insurance.

Creativeness

Some people hesitate to use the word "creative" to describe human inventiveness, particularly in the mechanical world. But were not Newton, Maxwell, Faraday and Kettering as creative of new things as were Renoir, Shakespeare, Bach and Beethoven? To create is not to form things out of nothing, but to put life into something.

The innovator reflects, tries out, gropes, compares and contrives, so as to gain the end which he sets before him, whether it be the composition of a musical score or the design of a new match-box. He looks creatively at the commonplace. He changed the rolling log into a wheel by adding an axle.

On their 1972 anniversary, Canadians cannot be satisfied with a hedged-in view of their future, when with a little intellectual effort they can widen their horizons.

We should dread above all things stagnation. Dr. Alfred North Whitehead wrote in *Adventures of Ideas* (Penguin 1948): "The foundation of all understanding of human life is that no static maintenance of perfection is possible. Advance or decadence are the only choices offered to mankind." And Kettering said: "There will always be a frontier where there is an open mind and a willing hand."

New knowledge and new technologies are altering environment every year. There is room for speculative, thoughtful, advancement. Everyone has the choice of many roads on which to seek what is to be.

It may be time for a new Renaissance, in which respect for the goodness bequeathed to us by Canada's first pioneers blends into the development of new things that are better.