

Changing Environment in Canada

While half of manufacturing industry is foreign-owned, Canadian firms dominate important sectors; government assistance available in making contacts

BY J.W. GREENWOOD*

Your theme is Licensing in a Changing World. I will try to outline for you some of the Canadian conditions and how they are changing, both when Canada is looked at as a market for technology transfer and as a source of technology know-how.

Before doing so, however, I must call your attention to a unique feature of the structure of Canadian industry, unique because of the exceptional degree of foreign ownership in Canadian industry. To give you some figures, taking Canadian industry as a whole, in 1972 it employed total capital assets of just over \$100 billion. Of this, almost one-third was controlled by foreigners, either directly or indirectly. In the manufacturing sector over 50% of the capital employed by Canadian factories is the subject of ultimate control outside Canada. While foreign ownership is not considered necessarily bad per se, the Canadian government has indicated that one of its fundamental economic objectives is the development of a Canadian-controlled economy that is both innovative and internationally competitive — an economy that makes full use of our human and natural resources to our economic benefit. In line with this policy, Canada has implemented the Foreign Investment Review Act, which allows the government to ensure that when foreign-owned companies purchase Canadian companies, there must be a clearly demonstrated economic benefit to Canada.

The degree of foreign ownership varies greatly between various sectors of industry. It is rather high in the following fields:

- Transportation products
- Electronics
- Electrical products
- Machinery manufacturing
- Chemical products
- Petroleum products
- Pharmaceutical products

Ownership is largely Canadian in the steel industry, food processing, agricultural equipment, construction materials, mineral extraction and processing, pulp and paper, and printing.

*Scientific Counsellor, Canadian High Commission.

Specific Industries

Let me look in a little more detail at some specific industries. Take the automotive manufacturing industry, for example, which produces about \$8 billion per year. As you may be aware, by virtue of agreement with the U.S., North America is essentially a common market for the automotive industry. The "big

From LES U.K. International Conference

three" American manufacturers plus American Motors Corporation have manufacturing plants in Canada, and a certain amount of assembly work is carried out by others such as Volvo. The remainder of the cars sold in Canada are imported from Europe and Japan. But the important point is to emphasize that there are no Canadian-owned automobile manufacturers.

In aircraft manufacturing, the two major firms, DeHavilland and Canadair, were recently purchased by the Canadian Government from their U.K. and U.S. owners, respectively. In combination, they do about \$600 million a year in business. Shipbuilding is only slightly smaller, and the major companies are four in number, two of which are Canadian and two British-owned. These are companies which could be interested in licensing agreements for components. Railway equipment again is slightly smaller, but is dominated by General Motors, with Hawker-Siddely second and Canadian-owned M.L.W. a distant third.

The electronics industry accounts for about \$6 billion a year, but is dominated by General Electric, General Telephone and Electronics, and Westinghouse, all United States-owned. On the other hand, Northern Telecom, formerly Northern Electric, is Canadian-owned and is the largest single manufacturer in this field. It has been very successful in producing highly-advanced telephone and telecommunications equipment. It has penetrated markets abroad, especially in the U.S. There are several other sectors where the picture is similar, i.e. business amounting to a few billion dollars a year, but dominated by U.S.-owned firms and to some extent European-owned firms. I think, for example, of pharmaceuticals, chemicals, petroleum, (which is owned 90% by foreign firms whose names will be familiar to all of you) and machinery, where one of the few exceptions is Canadian-owned Massey Ferguson.

What about the industry sectors dominated by Canadian companies? The largest single industry in Canada is food processing, amounting to about \$14 billion a year, but foreign ownership accounts for only a third of it. The pulp and paper industry is another large one, at \$8 billion a year, and is largely Canadian-owned,

although there are also subsidiaries of such familiar names as Reed International. Most Canadians build their homes from timber, and because the pulp and paper companies supply lumber, they make up Canada's largest construction materials business.

Mineral extracting and processing is almost entirely Canadian-owned, and iron and steel is dominated by four large Canadian companies.

The printing, publishing and allied industries are an interesting case in that they are primarily Canadian-owned. One of the firms, Moore Corporation, is the world's largest printer of business forms.

Better Markets

I have recited these basic facts because I think it is important to give you an idea of which industry sectors could be a better market for technology transfer and which would be likely sources of technology know-how.

Consider the role of a foreign subsidiary in Canada. It can adopt one of two philosophies. First, it may import some products from the parent company for sale in Canada, and in addition manufacture locally for the Canadian market products which may have been designed by themselves or by the parent company. Alternatively, and these are in the minority, the subsidiary might specialize in manufacturing one line of product for sale throughout the international market, often designed and developed by the Canadian branch.

You, as licensing executives, face a special problem when you attempt to sell technology to foreign subsidiaries in Canada because you should not only deal with the subsidiary but with the parent company simultaneously. If you represent a company which already has a subsidiary in Canada, your problem may be simplified. You probably already have a cross-licensing arrangement with the subsidiary. In any case, the parent company usually makes the decision on what products it wishes to sell internationally and what business it wants to be in. At the same time, the Canadian subsidiary must feel confident that new products or processes are suitable for the Canadian market. For these reasons, the decision is really a joint one.

If the subsidiary is on the second type, specializing in a line of products, it is probably the best market for new technology because the resulting products are sold internationally and the licensing fees would likely be higher. An example of this type is Dominion Engineering in Montreal, a subsidiary of General Electric in the U.S. It specializes in hydroelectric turbines and certain types of paper machinery. Another example is the Black and Decker Company, where the Canadian subsidiary is responsible for the hand tools sold on the international market.

There are many other examples of such companies, and you are likely to ask "How can I find out who they are?" Here I must introduce you to the Department of Industry, Trade and Commerce of the Federal Government in Canada. As you might guess, it is roughly the equivalent of the British Department of Trade and Industry, combined. Not only does it have a large headquarters operation in Ottawa, but it operates a far-flung Trade Commissioner Service with representatives in many countries throughout the world, in-

cluding a large team here in London. They would be happy to have you approach them with inquiries as to companies in Canada who would most likely be interested in innovative products or processes that you have to offer. In addition, the department which I will call ITC for short, publishes a monthly bulletin aimed at informing Canadian industry of licenses that could be available to them, and they would be happy to include your products or processes in it.

Looking at the other side of the coin — obtaining licenses from Canadian subsidiary companies — you can see that in some cases there could be difficulty in obtaining a license from a foreign-owned subsidiary in Canada. Some international marketing of licenses will be controlled by the international marketing strategy of the parent company. You may therefore be advised to approach the parent company directly.

Let me turn now to the Canadian-owned companies. The important fact to remember is, first, that the largest total sales in Canada are by Canadian-owned companies. It happens that these industry sectors are also process oriented — food processing, mineral extraction and processing, pulp and paper, printing. In these areas, neither Canada nor the rest of the world is really inventing many new products. The printed word and the paper it is on still look basically as they have for decades. No one can invent a new kind of copper or iron or nickel, and people are still eating essentially the same kind of food. (By the way, Canadian patent law requires the issuance of compulsory licenses to anyone wishing to use an invention intended for or capable of being used in the preparation of food.) The moral of this is that there is very little business in new products in these industry sectors dominated by Canadian-owned companies.

Different Question

However, the use of new processes is an entirely different question. Almost none of the Canadian-owned companies in these areas are in the business of manufacturing machinery and equipment; they tend to buy innovative equipment from abroad rather than buy a license to manufacture it in Canada. In fact, almost half of Canadian machinery is imported. What this means, therefore, is that there is an opportunity to sell process technology to Canadian-owned companies. For example, one of Canada's largest steel makers, Dominion Foundries & Steel Co., was the first in North America to use the oxygen process, which it licensed from a European company. Similarly, the Kaiser Coal Company, of British Columbia, partially owned by U.S. Kaiser and working with Mitsui of Japan, developed an hydraulic mining process for coal, and further improved it using technology obtained from the Soviet Union. This is enough, I think, to show that there is abundant opportunity to sell innovative processes to Canadian resource industries.

Innovative agricultural equipment should provide other opportunities, partly because of the importance of agriculture in Canada, and partly because one of the largest manufacturers in this field, Massey Ferguson, is Canadian.

In the construction industry, the predominant building materials are of course still wood, concrete,

and steel, but there has been increasing use of plastics in residential construction, and new materials as facings on large office buildings have become increasingly popular. With a climate like ours, new or improved types of insulation are important. Solar heating and the use of heat pumps in extreme temperature conditions would be of interest for manufacture by Canadian companies.

Canada has been a frontier country for the past 150 years, and has attracted the kind of people willing to take risks, starting with the farmers who settled on the western plains, the prospectors and mining engineers in Ontario and British Columbia, and eventually the investment bankers in Montreal and Toronto. The modern version is the large number of young Canadian entrepreneurs who have started small companies to manufacture and market innovative products, particularly machinery for the process industries I have been referring to. We already have some outstanding Canadian achievements in computerized process control. Licensing executives should therefore consider joining with these small but enterprising Canadian manufacturers either through licensing agreements or joint ventures for the manufacture of specialized equipment in Canada.

Our Department of Industry, Trade and Commerce, through its Trade Commissioners abroad, can help you identify and make contact with the appropriate Canadian companies. If the preliminary exchanges seem promising, you might then commit yourself to a trip to Canada to complete the arrangements. To give you an idea of the overall size of this market, you should know that Canada pays to foreign companies more than \$150 million a year in royalties for various types of patents, industrial designs, and technical know-how.

Finally, what about Canada as a possible source of technical know-how and inventions? Without doubt, the major technological development of all time in Canada has been the CANDU nuclear power reactor, which is a resounding technical and commercial success. By its size and nature, however, I suppose it does not lend itself to the type of licensing in which you are interested. Something similar may be true in two other areas of great activity in Canada, by reason of our geography, namely transportation and communications. We have a range of effective STOL aircraft designed and built in Canada, and were early in the use of satellites for domestic communications and for remote sensing.

But on a smaller scale, let me give you some less well known examples. In the paper industry, the chlorine dioxide process for bleaching pulp was developed in Ontario, and is now used almost world-wide. More recently, as a result of work at the University of Toronto, we have developed a pulp mill which recycles all its waste products and is therefore free of effluent; the first of these has just been completed. The Pulp and Paper Research Institute of Canada has produced many innovations over the years, but one of the most recent spectacular successes is called the papriformer. It is a high-speed method of forming paper, using less floor space, and allowing the other sections of the paper process to be speeded up. A Swedish company is manufacturing papriformers under licenses from Dominion Engineering. A Canadian company called

Chip-N-Saw, with an outlet in Denmark, sells a wide range of machinery for the lumber industry, but in particular a recently developed type of band saw which is more efficient in dealing with small diameter trees. Two of our large mining companies, Cominco and Sherritt-Gordon, have recently collaborated on a new method of copper extraction called thermal activation. It is so new that it is not yet in full-scale production, but could well be of worldwide interest. The University of British Columbia in collaboration with a company called Pacific Micro-Biocultures recently developed a fermentation process for disposing of animal waste, which is especially suited for remote areas. Recently another Canadian company developed a method of destroying cyanide from electroplating waste. These are just a few examples of innovations appearing in Canada today which might be of interest to you.

Here again, ITC can assist you in getting licenses to use this technology, through the same channels I described before, namely, the Canadian Trade Commissioners.

The Canadian Government plays several other roles in encouraging new technology in industry. One reason is necessity. In Canada, the proportion of all research and development that is carried out in government laboratories is larger than in almost any developed country in the world. The problem is to transfer this technology to industry where good use can be made of it. One attempt to do this led to a policy adopted several years ago under which any new research required by the federal government would be contracted out to industrial or similar laboratories (unless a strong case could be made for performing it in-house). As a result, nearly \$90 million worth of R&D contracts were issued last year, mostly to industry, and the program is being expanded.

Many of you are probably familiar with the government-owned corporation, Canadian Patents and Development Limited, whose role is similar in some ways to that of the National Research Development Corporation here in Britain. As their executives have been long-standing members of your society, I perhaps need only remind you that they are charged with the promotion and marketing of licenses based on patents originating from Canadian government laboratories, and to a smaller extent, Canadian universities. The subjects range from such things as new techniques for freezing eggs, to a new and unusual laser. There are many laboratories in the U.K. where I have seen highly accurate measurement instruments produced by the Canadian firm Guidline Instruments; these were developed in the National Research Council of Canada and licensed to Guidline through C.P.D.L. Each year C.P.D.L. acquires about 100 new patents available for licensing. You may be interested in knowing that there is legislation now before the Canadian Parliament to transfer responsibility for C.P.D.L. from its present close relationship with National Research Council to the Ministry of Industry, Trade and Commerce.

As your theme is "Licensing in a Changing World," it is appropriate for me to tell you now about one of the

(Please turn to Page 239)

Winds of Change Are Blowing

(Continued from Page 170)

realities.

Behind the diplomatic front is the other front, that of the real world where technology is actually transferred and not just talked about. And on that front you people are in the firing line. I suspect that more good can be done by fair play on the spot, i.e. licensing for local manufacture where at all feasible and otherwise supply at most favorable prices, than by any amount of tinkering with the Paris Convention or the UNCTAD code of conduct.

I seem to have spent most of my time talking about patents. As we all know technology transfer commonly involves licensing of both patent and trademark rights and I am constantly being told that a good trademark is commonly worth much more than a good patent. Perhaps, therefore, before I end I should say just a few words about the community trademark. There is, I sometimes feel, a tendency in this part of the world to think that all that matters about this is that we should get the CTM Office in London. Well, I certainly hope we shall do so, and I believe that the government will continue to press for that but it needs to be recognized that in some years' time we are likely to see a situation in which the basic trademark law will be the same in all EEC countries; in which it is still possible to get one-country protection; but in which the scales are weighted in favor of a community trademark in a single ownership throughout the EEC for all interstate trade in the EEC. We got down to it seriously in Brussels last week but it is early yet to predict the time scale. The European patent has taken some eight years to come to pass; we may profit from experience to get a shorter schedule for the community trademark, but the legal problems are more troublesome for the trademark than for the patent. So what should we say, five years?

Japan and Southeast Asia

(Continued from Page 174)

economies, in order to narrow this income gap and make this world a peaceful and harmonious family of nations. If such an open-door policy and preferential treatment for developing countries is not possible from the advanced industrialized countries, the only alternative may be to form a common market of ASEAN countries and set up a high duty barrier against products of non-regional origin. This would however diminish world trade to a great extent and impede the free trade system of the world.

Gentlemen, Southeast Asia is a diverse and complex paradox. It is impossible to describe it completely in a short presentation.

Sometimes, the heart of Asia is beyond the logical comprehension of western people. I would like to con-

clude my remarks with an episode which occurred in Manila, Philippines, when I was invited as a lecturer at a UNIDO meeting.

We had been discussing various restrictions imposed by developing nations on technology transfer from industrialized countries. A delegate from an industrialized country commented: "You are free to set up many difficult rules on the transfer of technology but if it is too difficult it may be detrimental to your own economy. It is just like playing tennis. You are on the other side of the net and we are playing this side. But tennis can be played only when we play it according to fair rules. If you arbitrarily change the rules to your own liking, nobody will play tennis with you. Then you will be able to draw no benefit."

There was a slight lull after this persuasive argument. But after awhile an official of the Philippine government stood up and said, "I understand your point. It is a fair and persuasive statement. But what Asia really needs is not that you play tennis on the other side of the net but you come to our side and play with us. This is the sentiment of Asia."

Changing Environment in Canada

(Continued from Page 181)

biggest changes occurring in Canada. You are probably all aware that Canada is revising its patent laws for the first time in decades. The task is proving difficult, and is taking much longer than was at first expected. As a result, the revisions may not be passed by Parliament within the next two or three years, but nevertheless, a consensus is beginning to form. Perhaps some of you have heard of the somewhat radical proposals originally put forward for discussion. You will be relieved to know that few of these will be adopted. In fact, the resulting patent law will follow very closely those in the European Common Market and will be within the terms of the European Patent Treaty. For example, patents will be issued on a first-to-file rather than the first-to-invent basis now used in Canada. The terms of patents on products or processes worked in Canada will probably be about the same as in other countries, namely about 20 years, although somewhat shorter on patents not worked in Canada. As at present, compulsory licenses will be available on all food and drug products. One of the most important provisions from your point of view as licensing executives is the requirement that all licenses would have to be registered with the Patent Office to be valid in Canada. In addition, certain periodic reports together with periodic maintenance fees would have to be made by patentees. I need not warn you, of course, that you should check these predictions against the final law when it is passed.