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REPORT ON TARIFF ITEMS  
69605-1 and 69610-1  
SCIENTIFIC & PROFESSIONAL  
INSTRUMENTS

N. Jane Teeter  
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REPORT ON TARIFF ITEMS 69605-1 and 69610-1

SCIENTIFIC AND PROFESSIONAL INSTRUMENTS

N. Jane Teeter

1. INTRODUCTION

Tariff item 69605-1 and its related item 69610-1 provide duty-free entry for a wide range of scientific apparatus, preparations and other goods imported by or for qualified users, such as religious, educational and scientific institutions and public hospitals. Over one-fifth of the trade deficit in end manufacturers (balance of merchandise trade account) has historically been and still is in high technology <sup>1/</sup>goods. Since half of these high technology goods would include commodities shipped into Canada under these items, MOSST takes an interest in the review which is currently being conducted by the Tariff Board. Imports of scientific and professional equipment in 1976 amounted to \$1.2 billion while exports amounted to \$254 million.

<sup>1/</sup>High technology is defined according to the U.S. "DOC II" definition. For further information see Bureau of International Economic Policy and Research "Alternative Measurements of Technology-Intensive Trade" Staff Economic Report, Office of Economic Research, September, 1976, OER/ER-17 U.S. Dept. of Commerce.

Although the scope of the reference includes a broad spectrum of products ranging from reproductions of works of art to orthopedic equipment, the interests of MOSST concern scientific and professional equipment.

Canadian manufacturers of scientific and professional equipment are requesting tariff protection. They feel that the large number of equipment users who are able to import under duty-free exemption make it difficult for their products to compete against imports. In particular, they object to Federal Government departments receiving duty exemption when they are not specifically mentioned in the item's enumeration of qualified users and as they are major buyers of equipment. Users of equipment in non-profit organizations argue that their work is done for worthy purposes and that a tariff on their equipment would cause financial hardship especially since there are few Canadian manufacturers of scientific and professional equipment.

2. HISTORY

Tariff item 69605-1 and its related item 69610-1 have already been dealt with at length in a report by the Tariff Board entitled "Equipment for Hospitals and Other Institutions" (Reference No. 134) in 1968. Appeals have since been made by the private sector that the wording of the tariff item is not accomplishing the purpose originally intended in granting duty relief to worthy causes.

Prior to October 1976, the wording of the item referred to duty-free entry of "preparations" and also provided for entry of equipment and apparatus of a class or kind not manufactured in Canada for use by non-profit organizations or worthy causes. Appeals arose from the private and semi-private sectors. Canadian manufacturers complained that the word "preparations" was too broad in scope and that chemical preparations and other items which were not being used in hospitals, universities etc. were being imported duty-free. Universities and hospitals objected that they could import items for use in their research work but not for use in diagnosis or teaching.

The appeals were granted and on March 31, 1977 the item was amended to read "scientific preparations"

and the scope was extended to include products imported for use in teaching and diagnosis. Sectors of the industry, however, are continuing to complain that even the amendment to "scientific preparations" leaves the item still too broad in scope.

As far as present sales tax and tariff rates are concerned, Schedule I (Appendix A) gives a listing of articles allowed exemption under Tariff items 69605-1 and 69610-1 by qualified users. Where duty and sales tax exemption are allowed on imported goods, sales tax exemption is also allowed on Canadian goods purchased by qualified users. Tariff rates for these items when imported by non-qualified users are levied according to the various classifications under which the items would normally fall.

Canada's major trading partner in scientific and professional equipment is the United States. The majority of imports come from the U.S. while most of our relatively small exports are sold in the U.S.

Although the U.S. in its Tariff Schedule 8 does provide for duty-free entry of scientific and professional equipment not manufactured in the U.S. and going to nonprofit organizations, very few goods enter the U.S. under this category since most instruments are manufactured in the U.S. Items not falling into this category are classified according to their individual nature and characteristics - for example, imports into the U.S. of electro-surgical apparatus and parts have an 18% tariff on them; electro-medical apparatus and parts thereof have 6% while many other electrical apparatus items have 10% etc.

A chief objection of the industry at present concerns the large number of equipment users who are able to import under the duty-free exemption. In particular, they object to federal government departments receiving duty exemption when they are not specifically mentioned in the items' enumeration of qualified users and as they are major buyers of equipment.

The related tariff item 69610-1 provides duty-free entry of parts for use in repair or construction of professional and scientific instruments by qualified users. There are objections to this from the standpoint of fostering industry in Canada. It appears, at present, that there are no Canadian manufacturers of parts for professional and scientific instruments. Any company wishing to assemble instruments in Canada would be discouraged by duties and sales tax which they, as non-qualified users, would have to pay, and by having to compete against completely assembled instruments which are imported exempt by qualified users. It has been estimated that approximately 60% of the Canadian market demand is supplied by duty-free imports.

The innovation of high technology products follows a fairly consistent pattern. When a new device is proven workable, it is put into small scale production with almost the entire production being sold to R&D laboratories where the possible applications of the device are established. These are generally provincially or federally funded and are allowed exemption from duty and



sales tax when the mechanical equipment purchased is of a class or kind not made in Canada. In order for a Canadian manufacturer to obtain a ruling that his product is made in Canada, he must be able to demonstrate that his product has been able to capture 10% of the Canadian market. This means that during the critical first years of production, the Canadian innovator has little protection in selling to industry and none in selling to the Federal Government (the biggest buyer in the market). In fact, Canadian tariff exemption works against him in making imports of established foreign producers exempt.

The Department of Supply and Services which does most of the goods purchasing for the Federal Government departments receives requests for purchases of specific brand name products. In so doing, the department must be able to justify its sole-source request. It is difficult for DSS to dispute these justifications given that their expertise many not be specific to certain areas. It may be that the request is for a foreign product.

There is no explicit federal "Buy Canadian" policy. However, should DSS decide to open bidding to competition, there are two general policies which may apply. One is an internal, unpublished policy informally applied and is called the "Bid Solicitation Policy". If DSS receives a request for a certain item and there is sufficient competition amongst Canadian manufacturers then the bidding is restricted to Canadian manufacturers. Sufficient competition is generally interpreted as meaning a minimum of three suppliers. Hence, this policy is not usually applicable in the field of professional and scientific equipment suppliers since there are few Canadian producers in general, and it would be highly unlikely that there would be three of one item or product. The second policy, which is the subject of a Cabinet Directive dated May 1950 and renewed in June 1965 is used in the evaluation of bids. A preference is given to the product with the highest Canadian content through a weighting formula. This policy has had a negligible effect in promoting Canadian manufacturers since the weighting premium usually works out to a very small amount. The application

of both policies has been found to be fairly arbitrary.

Canadian manufacturers of scientific and professional equipment are complaining that they are often overlooked when DSS purchases equipment and that they have difficulty in selling to foreign governments if their own government is not buying their product. Given the aforementioned purchasing information, These complaints may be quite valid in the case of sole sourcing where the specifications made by the department are so particular that only one source can be found and it is a foreign source. This problem could perhaps be somewhat alleviated if Canadian companies would request DSS to give the justification for the purchase of a foreign product when their Canadian product was available.

An article in the August 1, 1973 edition of the Globe and Mail entitled "How Ottawa Hamstrings Scientific Entrepreneurs" by Dr. David L. Atherton, of Queen's University (and formerly Ferranti-Packard Ltd., Toronto) is an example of how Federal policies are viewed by the industry (a copy of this article is reproduced as

as Appendix B to this report). Essentially the producers of scientific and professional equipment see themselves handicapped by the interrelated methods of government procurement practices and tariff regulation of 69605-1.

As a result of the Atherton article, a study was conducted by Mosaic Consultants for MOSST entitled, "The Effect of Taxes and Tariffs on Innovation in the Scientific Instrument Industry" (March, 1974). The conclusions of the study were:

1. A low level of tariff protection results in a significantly higher percentage of consumption being supplied by imports. Conversely, when tariff levels are high, much of the consumption demand is supplied by foreign owned branch plants.
2. Firms manufacturing in Canada are doubly disadvantaged. The level of domestic tariff protection is lower than for any other country. Conversely foreign tariffs are higher limiting access.
3. Free entry under tariff item 69605-1 was outweighed by a number of other tariff items. It accounted for 36 percent of duty-free imports.

4. Tariffs encouraged the establishment of foreign-owned branch plants whose activities are concentrated on the domestic market. As the level of innovative activity of foreign-owned firms is noticeably lower than for Canadian companies, tariffs can then be said to have an indirect, negative effect on innovation.
5. Product obsolescence is a major factor for initiating and/or continuing programs in scientific instruments sectors.

It is unfortunate that there is not sufficient explanation of the methodology involved to generate confidence in the conclusions drawn. The total number of firms interviewed in each case is not clear, so it is difficult to assess whether the results drawn were from a sufficiently representative sample. There seem to be discrepancies in the percentages quoted. The assumptions made in order to reach particular conclusions appear, in many instances, to be too sweeping. A letter sent by W. D. Frechette, vice-president and secretary of the Canadian Manufacturers' Association to Dr. John Orr,

Director, Industrial Science and Technology, MOSST  
(Appendix C) is also critical of the contents of the  
report.

3. INDUSTRY PROFILE

Due to the nature of the products included  
in item 69605-1, it is difficult to ascertain the number  
of firms in the industry, size of firms, barriers to  
entry or exit or to assess the institutions which derive  
benefit from free entry and the Canadian producers which  
may be adversely affected by the lack of tariff protection.  
The item (69605-1) deals with the products of many differ-  
ent firms and industries but not with all of the products  
of such industries. The item deals only with products  
which are purchased by the specified users but not with  
all of the products purchased by such industries.

An assessment of the market for goods used  
for scientific or educational purposes is also difficult  
because nearly all goods can be used for educational  
purposes. Many products of an educational or scientific  
nature also have a number of other uses and are used in  
an almost identical way by commercial establishments.

Some equipment has a scientific and hospital or medical use. Moreover, the term "scientific" appears to be used in an increasingly broad sense for empirical or applied studies not only in the physical sciences but also in social research.

The Canadian balance of merchandise trade in end manufactures reveals a deficit of \$10.3 billion in 1976 (see Appendix D, Tables 6 and 8). Approximately \$2.3 billion <sup>1/</sup> of this amount resulted from imports by technology intensive industries. Of the latter amount, the deficit in scientific and professional equipment in 1976 amounted to approximately \$1 billion (Appendix D, Tables 1, 2 and 3) or about half of the deficit in technology intensive goods.

Within the five major high technology categories of: chemicals, aircraft, machinery, electrical products, and scientific and professional equipment, 24 categories of technology intensive products reveal that the weakest areas in the balance of trade are in: synthetic rubber, and plastics, complete aircraft, computers, television, radios and phonographs, electronic and related equipment, photographic equipment and measuring, controlling and

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<sup>1/</sup> According to the Statistics Canada classification, chemicals are not included in the category of end products, therefore \$3 million is subtracted from the \$2.6 billion shown for technology intensive products in Table 8.

laboratory equipment. <sup>1/</sup>

The increase in the value of imports of scientific and professional equipment from \$360 million in 1966 to \$1.2 billion in 1976 is indicative of increased consumption demands. (See Appendix D, Table 1). With the exception of watches and clocks, and photographic equipment which are imported from Europe and parts of Asia, the bulk of imports of instruments come from the United States.

Exports have likewise increased from \$102 million to \$254 million (see Appendix D, Table 2) during the 1966-76 period indicating some increased industrial activity in Canada. It is difficult to obtain production statistics since the wide spectrum of items used by the industry falls into several general product categories the total values of which are not specifically designated to high technology. Selected data on Canadian shipments

<sup>1/</sup> Haritos, J. "Canadian International Trade - Canada's Share of World Trade", internal report, Policy Research Group, MOSST.



of scientific, professional, and related equipment in 1975 reveals shipments of close to \$1 billion, a high percentage of which consisted of chemical preparations (see Appendix D. Table 7).

According to Statistics Canada data, however, there is a sizeable and growing deficit in the balance of trade of scientific and professional equipment from \$258 million in 1966 to \$906 million in 1976 (see Table 3). A further breakdown of the classes listed into commodity items and duty levied on each in 1975 is given in Appendix D, Table 4. The summary of these, Appendix D, Table 5, reveals that 58 percent were dutiable. More specifically the bulk of navigation equipment and medical equipment entered Canada free while there was a higher percentage dutiable in the other categories. The actual amount of duty collected relative to the value of imports varied. For example, the duty collected in the categories: Other Measuring Control Lab. Equipment and Medical Ophth. Orotho. Supplies, represents 5 percent of the total values of these imports. Overall, duty collected was 6 percent of the value of imports (see Appendix D, Table 5).

Although not representative of all purchases of items imported under 69605-1 by the Federal Government, the Department of Supply and Services bought \$30 million of scientific laboratory equipment in 1976/77 and \$23 million in 1975/76. These statistics serve to emphasize that the Federal Government is a large purchaser in the scientific market. A high percentage of this equipment was from imported sources since there are very few domestic manufacturers of laboratory equipment. Purchases of medical, dental equipment and professional veterinarian equipment and supplies amounted to \$1.3 million in 1976/77 and \$2.19 million in 1975/76. Provincial and municipal governments are also large buyers of equipment on behalf of universities, schools and community requirements. Universities purchase some equipment on their own.

DSS categorizes equipment purchases by Nato Group '66. Included in the \$30 million duty-free (1976/77) DSS purchase of scientific laboratory equipment according to the Nato Classification are:

- 66-20 - Engine instruments not inclusive of aerospace or navigational equipment
- 66-30 - Chemical analysis equipment
- 66-35 - Physical property testing equipment
- 66-37 - Environmental chambers and related equipment
- 66-40 - Equipment and suppliers - glassware, filter papers, etc.
- 66-45 - Time measuring instruments
- 66-50 - Optical instruments - does not include cameras
- 66-55 - Geophysical and astronomical instruments
- 66-60 - Meteorological instruments and apparatus
- 66-65 - Hazard detecting instruments and apparatus (mainly for AECL)
- 66-70 - Scales and balances
- 66-75 - Drafting, surveying and mapping instruments
- 66-80 - Liquid and gas flow, liquid level and mechanical motion measuring instruments
- 66-85 - Pressure, temperature and humidity measuring and controlling instruments
- 66-95 - Miscellaneous

It is felt that there are also sizeable purchases of navigational equipment by DSS from companies such as Marconi, Litton, Westinghouse, etc. The value of these is not currently available.

It appears that the well-being of most high technology industries in Canada is strongly influenced by government funding/contracts (e.g. Sangamo) as opposed to tariff protection. Governments being the major purchaser of their products, the only other major markets they could look to would be outside of Canada in which case their problem is one of overcoming tariff protection

given by other countries. A high percentage of Canadian exports go to the United States.

The Federal Government is required to pay the duty prescribed when importing commodities under other tariff items.

The reasons for imposing a tariff are:

- 1) industry protection or fostering
- 2) revenue

The question naturally arises with regard to 1) industry protection, as to whether there is actually industry in Canada dependent on tariff protection for survival. It is estimated that there are very few Canadian manufacturers and those in production capture less than 10 percent of market demand for each particular product. Members of the Canadian Manufacturers Association which were interested in item 69605-1 in 1975 were: Inax Industries, Instronics, Senco Products, Leigh Instruments and Lumonics Research Limited.

Although the government does receive some revenue from the import of these goods, it presumably would receive significantly more revenue if duty were collected on all imports.

In order to have a "made in Canada" status assigned to a Canadian product, it must be proven that the product is sold to at least 10 percent of the market to gain tariff protection. Obtaining proof usually takes a minimum of 2 to 3 years. It should perhaps also be noted that some products become obsolete within 2 to 3 years of their original production particularly in the scientific field. It has been suggested by IT&C and industry that in order to overcome this, the wording of the item be changed from "when a class or kind not made in Canada" to "when not available from Canadian production". In addition it would overcome the levying of duty on imported items which have no manufactured counterpart. However, the problem of the Canadian manufacturer being unable to supply a significant portion of the market

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and the residual imported product amounts being taxed might arise. To counteract this, the requirement for a "made in Canada" ruling should be reduced to establishing that the product is actually in production and the manufacturer has the capacity to supply 10 percent of the Canadian market. This would cut approximately two years from the time now required to obtain this protection. If the product were of inferior quality to, or not as functional as the foreign counterpart, the onus would, however, be on the importer to prove the imported item significantly differed from the domestic product as to be unavailable from Canadian production.

4. SUMMARY AND CONCLUSIONS

The increasing deficit in the balance of payments, caused by the increasing value of imports is indicative of a growing demand for scientific and professional equipment which is not being met by the Canadian industry.

The original intent of tariff item 69605-1 was to reduce the operating costs of "worthy" institutions. It would seem that the chief objections to tariff ex-

emptions for this item lie in the designation of qualified users. Government purchases (except for museums, schools and hospitals as specified) for their own departments, laboratories and funded projects are receiving exemption even though they are not specifically mentioned in the list of qualified users. Instruments and equipment purchased for these departments constitute a major portion of the market for scientific and professional instruments. Imports are viewed as receiving preference through duty exemption and other non-tariff barriers such as procurement practices, over domestic products.

However, it does not appear that there are many Canadian manufacturers of scientific and professional instruments and it would seem unfair to disallow duty exemption for imported items which have no manufactured counterpart in Canada unless revenue is a major concern in exacting the tariff. This, however, does not appear to be the case. Changes in the requirements for "made in Canada" status would perhaps help to mitigate the problem.

5. RECOMMENDATIONS

The policy of MOSST is to facilitate innovation in Canada both by the expansion of research and development and by encouraging the development of Canadian products in high technology. This leads to two somewhat conflicting issues: should the researchers of non-profit organizations be allowed to keep operating costs at a minimum through duty relief and should innovative Canadian scientific products be allowed tariff protection. The resolution of this conflict may lie in the recommendations, firstly, that payment of duties be made on professional and scientific instruments by federal departments (except by the already specified institutions of public hospitals, public libraries, public museums university, college, academy, school or seminary of learning in Canada ...). This would convert government expenditures into government revenues, but in doing so, would hopefully encourage federal departments to consider domestically produced items more closely. It is notable that the government does pay the prescribed duty on foreign products which it imports under other tariff items.

Secondly, it is recommended that the wording of the item be changed from "Mechanical equipment not



otherwise enumerated in this item, when of a class or kind not made in Canada" to "Mechanical equipment not otherwise enumerated in this item, when not available from Canadian production;".

- A P P E N D I X    A -

CURRENT WORDING OF THE REFERRED TARIFF ITEMS  
(as of April 1, 1977)

Tariff item 69605-1:

Scientific apparatus (and ancillary equipment thereto), utensils and instruments, including boxes containing them;

Glassware for laboratory or scientific uses;

Maps, charts, motion picture films, filmstrips, microfilms, slides and other photographic reproductions and pictorial illustrations;

Pamphlets and magazines;

Reproductions of work of art;

Sound recordings and video tape recordings;

Stencils and cards specially designed for the preparation of library index cards;

Models, static or moving;

Animals as research or experimental subjects;

Living plants, seeds, cuttings, buds, scions, tubers, bulbs and root-stock;

Scientific preparations, including containers in which imported, for use directly in teaching, research or medical diagnosis;

Utensils, instruments and other apparatus not otherwise enumerated in the item, of a class or kind not made in Canada, for use directly in teaching or research;

Mechanical equipment not otherwise enumerated in this item, when of a class or kind not made in Canada;

Parts of all the foregoing.

All the foregoing when for the use of any society or institution incorporated or established solely for religious, educational, scientific or literary purposes, or for the encouragement of the fine arts (namely architecture, sculpture, painting, engraving and music), or for use of any public hospital, public library, public museum, university, college, academy, school or seminary of learning in Canada and not for sale or rental unless to those mentioned herein, under such regulations as the Minister may prescribe

British Prefer- ential Tariff	Most- Favoured- Nation Tariff	General Tariff
Free	Free	Free

Tariff item 69610-1:

Articles and materials for use exclusively in the manufacture of the goods enumerated in tariff item 69605-1.

<u>British Prefer- ential Tariff</u>	<u>Most- Favoured Nation Tariff</u>	<u>General Tariff</u>
Free	Free	Free

- A P P E N D I X B -

## How Ottawa Hamstrings Scientific Entrepreneurs

By DAVID L. ATHERTON

Dr. Atherton, a member of the physics department at Queen's University, was previously with Ferranti-Packard Limited's electronic division in Toronto, where he carried on research in superconductivity. The following article is reprinted from Science Forum.

**T**HE FLEDGLING Canadian scientific entrepreneur or small technical business is, as might be expected, at a disadvantage when competing in the United States with U.S. companies, but it surprises many people to learn that it is also often at a disadvantage when competing with U.S. suppliers for Canadian Government orders.

Far from protecting or aiding native innovators, as some other countries' regulations do, our tariff regulations and procurement policies actually handicap them. And unfortunately it is precisely these small new technological companies that are least able to petition effectively for more enlightened Government policies.

Many thinking Canadians are concerned that there are so few examples of high technology products developed in Canada and successful in international markets. On the basis of our investments in university education and Government research and development, the financial resources and quality of our industry, and our proximity to the world's major market for such products, one might reasonably expect Canada to be an innovative country.

### Hinder firms

The reason for our poor performance is simple. Our Government regulations and practices put Canadian firms trying to break into new fields at a large disadvantage compared to foreign firms. In some fields, such as the manufacture of medical or scientific equipment, a Canadian firm wishing to sell to its own governments can literally improve its chances of getting orders by moving out of the country. The accompanying table illustrates the normal factors involved in Government orders in Canada and the United States and shows that a firm located in the United States has a large advantage in selling to the U.S. Government, which is not surprising—but it shows further that such a firm also enjoys a substantial advantage in selling to the Cana-

dian Government, which frustrates Canadian entrepreneurs.

The major initial markets for innovative high technology products are usually R & D or medical laboratories, which in Canada are mostly funded by our federal or provincial governments.

For example, in the decade since lasers were invented, the bulk of the sales have gone to laboratories, and it is only in the past year or two that commercial markets have become significant.

Most countries have learned the importance of generating markets for new products they develop; Canada is unique in putting its innovative industries at a major disadvantage by its system of tariffs and by its purchasing policies.

### Pays more duty

Under the tariffs, the Canadian manufacturer pays more duty than his foreign competition in the major government laboratory markets and has only minimal protection in industrial markets. He finds that the federal Government has a policy of buying Canadian products where possible "on a competitive basis," which means his product must be competitive despite the advantages given to foreign firms.

In many other countries, Government purchases are normally directed to native producers. Such a policy is effective in building up native industries, but if it is practiced too vigorously it may impede the R & D effort. A mechanism is needed to balance the short-term requirements of the R & D community for equipment and the long-term objective of translating laboratory results into products that meet society's aspirations.

The simplest mechanism is to give the native product an economic advantage. The United States does this by its Buy American policy, under which federal purchases give a basic minimum 6 per cent advantage to native products. State purchasing agencies more commonly use a 10 per cent or greater differential.

The United States has other effective methods of fostering its innovative industries. Under their Small Business Administration, orders are set aside for bids for small (i.e. under 500 employees) businesses only. Furthermore, by utilizing the provisions for setting up DISC corporations, U.S. firms can

obtain what amounts to a subsidy for exporting to foreign customers such as Canadian governments.

If the United States, with its huge native markets and with so many other natural advantages, still finds it desirable to protect its innovative industries with tariffs and a variety of other procedures, can we reasonably expect Canadian innovative industries to survive without any of these incentives?

### At a disadvantage

Under tariff item 6905-1, hospitals, universities, and Government laboratories can import equipment duty free, irrespective of whether or not an equivalent product is made in Canada. Since the Canadian manufacturer usually has to import some of his materials or components, on which he pays duty and brokerage charges, he is at an absolute disadvantage in selling to his own governments.

Technically, there are duty drawback procedures that can be used in some circumstances, but these procedures appear to be designed primarily for the convenience of distributors of foreign products and are not generally economically applicable to component purchases. Imports may enjoy the additional advantage of a subsidy under the U.S. DISC (Domestic International Sales Corporation) program.

Another tariff handicap for Canadian innovators is that their new products are almost invariably ruled to be "a

class or kind not made in Canada," so equivalent equipment from foreign suppliers can be imported at a very low duty rate.

In order to obtain a ruling that his product is Made in Canada, a manufacturer must be able to demonstrate that he has been able to capture 10 per cent of the Canadian market. If his product is good, he may be able to achieve this within two or three years, and the collection of substantiating statistics and the National Revenue review procedure may take another year.

This means that during the first few critical years, the Canadian innovator has little tariff protection in selling to industry and none at all in selling to publicly funded institutions; in fact, our tariffs work against him.

The United States and other countries have no equivalents to these Canadian regulations. Canadian products are subject to the full U.S. duty regardless of the end use and may in fact be charged an extra 8 per cent if the manufacturer tries to compete by cutting his price.

### Variety of barriers

In selling to other governments, there are also a variety of non-tariff barriers, such as the U.S. "small business set-aside," that have no Canadian equivalents.

The accompanying table illustrates the situation for a scientific instrument, comparing the relative positions

of a Canadian and a U.S. manufacturer.

Canadian expenditures on R & D exceed \$1-billion a year, so the supply of materials and equipment for R & D is quite a sizeable industry.

However, there are more important reasons than improving the balance of trade for trying to make more of the products here. A Canadian research laboratory pioneering in a new field may find that instruments are not available from U.S. suppliers. In this case, the Canadian laboratory usually tries to make its own instruments, an approach that is often initially effective, but that, once the scale of the project grows, becomes increasingly cumbersome.

### Often in trouble

With no local Canadian supplier to turn to for help, such projects often flounder right at the point where they should become productive.

The innovation of high technology products follows a fairly consistent pattern. Once a new device is proven to be workable, it goes into small-scale production, with almost the entire production being sold to R & D laboratories where the possible applications of the device are established.

Computers, transistors, and integrated circuits are examples of products that initially were sold primarily to R & D establishments. In fact, it took several years before the business applications of computers produced markets comparable to the scientific applications, and even now some major computer companies sell only to the R & D market.

If Canadian companies are prevented from establishing themselves in the R & D laboratory market, they are not likely to be able to graduate to the larger commercial market.

The seriousness of the situation has been underlined by Science Council Report No. 11, Innovation in a Cold Climate, and Study Report No. 22, Innovation and the Structure of Canadian Industry. It has also been emphasized in meetings and presentations to the Government by officers and corporate members of the Canadian Association of Physicists. Little has yet been done.

A coherent, effective Buy Canadian policy is required, but in the meantime the following simple specific recommendations should be imple-

mented to reduce the handicaps to be overcome by the Canadian scientific entrepreneur.

Firstly, tariff item 6905-1, under which Government laboratories obtain duty exemptions, should be amended to exclude any federally funded purchase. Although this would only convert Government expenditures directly into Government revenues, it would mitigate the problem of duty-free competition.

Secondly, the requirements for a Made in Canada ruling should be reduced to establishing that the product is actually in production and that the manufacturer has the capacity to supply 10 per cent of the Canadian market. This would cut about two years off the time now required to obtain this protection, although it still leaves Canadian innovators in the unique position of having to develop and tool up for a new product without any tariff protection for sales made during the tool-up period.

Thirdly, the Department of Supply and Services should be instructed to seek and obtain Canadian bids on all Government requirements for which they know of any potential Canadian suppliers, and to universally apply a 10 per cent native advantage countervailing the U.S. practices. Advertisement of intended Government purchases, similar to those in the U.S. publication, Commerce Business Daily, should be required.

### Need streamlining

Fourthly, duty drawback procedures must be streamlined, particularly for small businesses. Proposals for mechanisms desired should be sought from small manufacturing businesses and several of these should be introduced swiftly as alternatives. The present procedures have been designed more for the convenience of importers than for that of native manufacturers.

Finally, as anyone who has ever taken his case to Ottawa knows, Government officials are interested and sympathetic, but almost invariably the responsibility for the questionable policy lies with another department.

Unfortunately, the scientific entrepreneur must devote most of his energies to fighting for survival under the existing rules rather than pressing his case for fairer legislation. A small-business ombudsman is needed to champion his case for fewer handicaps.

The tariff situation for a representative scientific instrument manufacturer selling to a Government R & D laboratory.

	Competing in Canada		Competing in USA	
	Made in Canada	Made in USA	Made in Canada	Made in USA
Assumed product cost	\$10,000	\$10,000	\$10,000	\$10,000
Canadian duties and broker's fees	\$ 500* (on ports)	\$ 150	\$ 500*	—
U.S. duty at typical 12½% and brokerage	—	—	\$ 1,400	—
DISC advantage	—	\$ —900	—	—
Small business set aside	—	—	no hope	win if fewer than 500 employees
Local preference	—	—	—	—
Buy Canadian 0%	—	—	—	—
Buy American 6%	—	—	\$ 700	—
<b>TOTAL</b>	<b>\$10,500</b>	<b>\$ 9,250</b>	<b>\$12,600</b>	<b>\$10,000</b>
	U.S. advantage 14%		U.S. advantage 26%	

\*Includes only those duties which are not economically recoverable.

- A P P E N D I X C -



THE CANADIAN  
MANUFACTURERS'  
ASSOCIATION

ONE YONGE STREET  
TORONTO, ONTARIO M5E 1J9  
Telephone: (416) 363-7261

June 12, 1975

Dr. John Orr  
Director, Industrial Science & Technology  
Ministry of State for Science & Technology  
270 Albert Street  
OTTAWA, Canada K1A 1A1

Dear John:

Thank you for taking the time to meet with me on a busy afternoon, and for giving me an opportunity to learn about the effect of taxes and tariffs on innovations in the scientific instrument industry.

As you know, my specific interest at this time was concerned more with the effect of tariffs on the health of the industry than on its innovative performance. A conclusion of the study would imply that these two things (health and innovative performance) are inversely correlated, but it seemed to me that the reasoning that led to such a conclusion was pretty thin.

The study paper makes repeated reference to "complete tariff protection" which, to the casual reader, implies tariff protection which effectively excludes imports. The meaning the authors attach to the phrase, however, seems to be that "complete tariff protection" exists where all imports are dutiable, regardless of the rate of duty. Thus, the industrial control equipment industry is said to have "nearly complete tariff protection" although imports supply 54% of Canadian consumption.

I can understand that problems of definition make it very difficult to generate consistent numbers and therefore I would not comment too critically on anomalies that occurred to me as I skimmed through the report. I was, however, puzzled by the statement on page 21 to the effect that (as I read it), Canadian owned producers of industrial control equipment supply more than half of domestic consumption. I had difficulty in relating this statement to the one on page xii that imports supply 54% of this market and, elsewhere, that this industry is largely foreign-owned.

More serious than this has been the oft-repeated conclusion that any form of tariff protection results in an industry which competes on price alone and is not concerned with quality or sophistication of product. I could find no line of reasoning or logic which leads to this conclusion; it is simply an assertion which eventually turns up as one of the major features of the study.

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One can understand this in the extreme case where imports are in fact prohibited and the Canadian market is supplied by one Canadian company, in other words, a complete monopoly without any form of market regulation which would lead to innovation and productivity improvement. But the fact is that in the industrial control equipment industry (the control group) despite tariffs, the industry is subject to foreign competition to the extent of more than half its Canadian market and that the Canadian producers compete amongst themselves, as well as with their foreign competitors. It may be that this industry is not highly innovative in Canada, but there is really no development of logic within the report which would substantiate the claim that the existence of tariffs has discouraged innovation.

In the body of the report there is evidence that the authors do recognize necessity as the mother of invention, but in the conclusions and in the dominant message of the report there is little to suggest recognition of the fact that it is market demand which encourages innovation and that one of the effects of tariffs is to assist Canadian producers in devoting some of their financial resources to R & D and innovation.

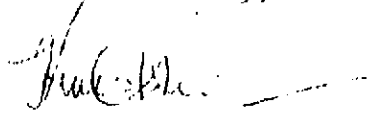
This leads me directly to the point that the market stimulus of innovation in Canada is reduced when purchasers have duty-free access to the offerings of foreign manufacturers. In particular, Tariff Item No. 69605-1 has this effect.

I would assume that the purpose of Tariff Item No. 69605-1 is to reduce the cost of research and teaching in the institutions named. Our members would argue, however, that no such purpose is served when the Tariff Item is made available to Canadian government departments and agencies.

The provision of duty-free status to government purchases negates the government's legitimate role as patron of Canadian producers and, in this case, eliminates stimulus which such government purchases should offer to Canadian manufacturers to enlarge their production and their innovative capacity.

I think it would be interesting to have some further discussions on this matter and I would welcome your comments.

Yours sincerely,



W. D. H. Frechette  
Vice-President and Secretary

b.c.c. D. Jupp ✓  
K. Whittall

- A P P E N D I X D -

Table 1: IMPORTS OF SCIENTIFIC AND PROFESSIONAL EQUIPMENT  
(000 \$ OF DOLLARS)

	1966	1967	1968	1969	1970	1971
NAVIGATION EQUIP	22,540	21,395	17,819	28,746	18,283	13,359
ELECT PROP MEAS EQUIP	22,679	24,859	32,553	36,181	35,022	35,947
MEDICAL EQUIP	34,058	41,627	45,916	52,504	38,031	41,019
OTHER MEAS CONTROL LAB EQUIP	138,323	162,819	171,170	203,930	216,858	205,793
MED OPHTH ORTHO SUPPLIES	21,648	24,771	28,287	33,284	60,482	68,774
PHOTOGRAPHIC EQUIP	102,100	133,100	133,310	155,663	165,915	187,617
WATCHES AND CLOCKS	19,431	24,763	23,486	27,851	25,949	27,907
TOTAL	360,779	433,334	452,541	538,159	560,550	581,416
	1972	1973	1974	1975	1976	1977
NAVIGATION EQUIP	11,557	15,630	12,185	18,848	22,806	23,123
ELECT PROP MEAS EQUIP	39,011	44,864	54,220	57,505	57,175	73,984
MEDICAL EQUIP	46,955	58,377	76,734	93,066	100,769	104,133
OTHER MEAS CONTROL LAB EQUIP	223,989	253,365	292,056	325,020	352,350	418,571
MED OPHTH ORTHO SUPPLIES	82,152	102,628	118,311	144,265	145,669	192,643
PHOTOGRAPHIC EQUIP	221,054	282,507	359,196	366,400	392,600	454,388
WATCHES AND CLOCKS	37,409	52,241	65,955	81,049	89,140	99,802
TOTAL	662,127	809,612	978,587	1,086,161	1,160,509	1,384,644

Source: Statistics Canada, Cat. No. 65-007

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Table 2 : EXPORTS OF SCIENTIFIC AND PROFESSIONAL EQUIPMENT  
(000 \$ OF DOLLARS)

	1966	1967	1968	1969	1970	1971
NAVIGATION EQUIP	63,290	58,909	37,321	39,815	41,886	27,654
ELECT PROP MEAS EQUIP	2,721	2,802	2,612	3,004	4,025	12,341
MEDICAL EQUIP	898	1,337	1,987	2,792	3,514	3,188
OTHER MEAS CONTROL LAB EQUIP	22,235	27,209	40,527	51,714	58,533	52,994
MED OPHTH ORTHO SUPPLIES	2,322	2,794	3,132	3,601	5,313	5,418
PHOTOGRAPHIC EQUIP	9,517	7,731	11,843	17,331	23,914	24,234
WATCHES AND CLOCKS	1,488	1,949	1,497	2,204	2,307	1,457
TOTAL	102,471	102,731	98,919	120,461	139,492	127,296
	1972	1973	1974	1975	1976	1977
NAVIGATION EQUIP	31,977	57,991	57,301	60,113	59,450	50,582
ELECT PROP MEAS EQUIP	11,844	10,450	11,376	12,144	11,501	6,806
MEDICAL EQUIP	2,532	3,061	4,548	5,074	7,231	12,768
OTHER MEAS CONTROL LAB EQUIP	60,253	58,545	61,807	84,203	93,742	110,262
MED OPHTH ORTHO SUPPLIES	5,714	8,296	12,777	16,662	20,287	27,263
PHOTOGRAPHIC EQUIP	29,464	35,113	42,114	45,542	59,832	61,627
WATCHES AND CLOCKS	1,618	2,767	2,619	2,722	1,497	1,315
TOTAL	143,410	176,224	192,741	234,460	254,050	270,523

Source: Statistics Canada, Cat. No. 65-004

Table 3 : BALANCE OF TRADE IN SCIENTIFIC AND PROFESSIONAL EQUIPMENT  
(000 \$ OF DOLLARS)

	1966	1967	1968	1969	1970	1971
NAVIGATION EQUIP	40,750	37,514	19,502	11,069	23,603	14,295
ELECT PROP MEAS EQUIP	-19,958	-22,057	-29,941	-33,177	-30,997	-23,606
MEDICAL EQUIP	-33,160	-40,290	-43,929	-49,712	-34,517	-37,831
OTHER MEAS CONTROL LAB EQUIP	-116,088	-135,610	-130,643	-152,216	-158,335	-153,799
MED OPHTH ORTHO SUPPLIES	-19,326	-21,977	-25,156	-29,683	-55,169	-63,356
PHOTOGRAPHIC EQUIP	-92,583	-125,368	-121,467	-138,332	-142,001	-163,383
WATCHES AND CLOCKS	-17,943	-22,814	-21,989	-25,647	-23,642	-26,440
TOTAL	-258,306	-330,603	-353,622	-417,698	-421,058	-454,120
	1972	1973	1974	1975	1976	1977
NAVIGATION EQUIP	29,420	42,361	45,196	49,265	36,654	27,459
ELECT PROP MEAS EQUIP	-27,167	-34,414	-42,645	-45,361	-45,674	-66,978
MEDICAL EQUIP	-44,423	-55,316	-72,186	-87,992	-93,038	-101,365
OTHER MEAS CONTROL LAB EQUIP	-163,726	-194,819	-230,259	-240,825	-258,608	-306,309
MED OPHTH ORTHO SUPPLIES	-76,438	-94,332	-105,634	-127,603	-125,382	-165,580
PHOTOGRAPHIC EQUIP	-191,590	-247,394	-317,082	-320,858	-332,768	-402,861
WATCHES AND CLOCKS	-35,793	-49,474	-63,136	-78,327	-87,643	-98,487
TOTAL	-516,717	-633,380	-785,846	-851,701	-906,459	-1,114,121

Source: Statistics Canada

Table 4: Descriptions of Items and Duty Levied on the  
Imports of Commodities of Scientific and Professional Equipment

1975

Number	\$'000		Duty Collected	Descriptions
	Free	Dutiable		
706-09	16,204	52	7	Physiological Monitoring Equip.
706-19	5,043	106	18	Electro-Medical & Surgical Equip.
706-31	17,785	51	8	Surgical Instr. of Steel & Pts.
706-39	11,078	39	6	Medical Diagnostic Instr. NES.
706-51	13,364	684	112	Dental Inst., Equip. & Pts.
706-69	2,276	223	36	Ophthalmic Equip. Apparatus & Pts.
706-79	1,919	167	26	Physiotherapy & Veterinary Inst.
706-81	4,320	341	49	Sterilizers, Autoclaves & Parts
706-83	5,975	18	3	Anesthetic Administering Equip.
706-89	12,287	1,177	195	Medical & Hospital Equip, & Pts. NES.
<b>Total</b>	<b>90,251</b>	<b>2,858</b>	<b>460</b>	<b>MEDICAL EQUIPMENT</b>
702-04	279	1,826	280	Amp, Volt, OHM/Meters/Panel-Type
702-17	1,364	5,585	728	Elec. Property Measuring Instr. & Pts.
702-18	3,222	6,326	499	Oscilloscope, Oscillograph & Access.
702-22	1,477	2,986	341	Elec. Property Recording & Instr & Pts.
702-41	1,789	3,256	328	Signal Generators & Test Oscillation
702-90	7,025	22,404	2,292	Measuring & Testing Instr. NES.
<b>Total</b>	<b>15,156</b>	<b>42,383</b>	<b>4,468</b>	<b>ELECTRIC PROPERTY MEASURING EQUIPMENT</b>
709-19 (Total)	17,823	1,040	139	NAVIGATION INST. APPARATUS AND PARTS

Table 4 continued

\$'000 1975

Number	Free	Dutiable	Duty Collected	Descriptions
703-25	1,264	3,207	454	Thermometers
703-42	14	4,209	733	Gas Meters and Parts
703-44	1,640	11,117	1,463	Flow Level Meas. Control Instr. & Pts.
703-48	594	2,309	309	Motion Rotation Meas. Cont. Instr. & Pts.
703-62	1,351	1,807	148	Meteorological Inst. Apparatus & Pts.
703-71	478	1,788	250	Thermal Measure & Control Inst. NES
703-73	707	949	116	Humidity Meas. & Control Instr.
703-75	241	5,964	843	Pressure Measuring & Control Instr.
703-77	2,217	2,170	200	PH Measuring & Gas Anal. Instr.
703-78	619	3,597	501	Process Multi-Function Control Mach.
703-79	989	4,768	575	Measuring & Controlling Instr. NES
703-95	3,502	28,337	3,950	Pts. of Meas. & Cont. Inst. NES
705-04	2,129	521	91	Laboratory Plastic Wire
705-08	8,891	725	111	Lab. Glassware Ceramic Ware & Pts. NES
705-31	1,719	1,240	104	Gas Chromatography Equip. & Access.
705-90	50,573	5,387	731	Lab. Instr. & Appar. & Pts. NES
707-08	26	2,491	323	Binoculars and Parts Except Lenses
707-10	5,569	112	17	Optical Microscopes & Pts. Exc. Lens
707-15	4,253	2,144	176	Spectrophotometer Colorimeter & Pts.
707-29	3,704	5,708	702	Optical Apparatus & Instr. & Pts. NES
708-20	43	1,020	167	Hhold & Person Weighing Scales & Pts.
708-90	5,433	8,771	1,179	Scales & Balances & Pts. NES
709-09	44,831	830	96	X-ray & Related Equip. & Pts.
709-49	3,865	12,299	1,482	Phys. Prop. Test Equip. & Pts. NES
709-90	7	602	37	Surveying Levels
709-91	3	1,836	97	Surveying Transits, Theodolites
709-93	2,515	5,462	326	Surveying Instr. & Pts. NES
709-94	20,671	1,281	157	Geophysical Miner/Prosp. Equip. & Pts.
709-95	5,499	1,026	120	Nuclear Radiation Meas. Equip. & Pts.
709-97	11,935	1,206	197	Models for Demonstration Etc. & Pts.
709-99	11,739	3,491	470	Scientific Instruments & Pts. NES
Total	197,021	126,374	16,125	OTHER MEASURING CONTROL LAB. EQUIP.

Table 4 continued

Number	\$'000			Descriptions
	Free	Dutiable	Duty Collected	
820-04	146	17,564	3,249	Wrist Watches
820-08	33	2,561	494	Watches NES
820-12	-	9,351	1,728	Watch Cases & Parts
820-15	10,254	18,185	1,792	Watch Movements
820-18	345	1,592	181	Parts of Watches NES
820-21	6	2,883	691	Electric Clocks
820-22	-	510	109	Travel Alarm Clocks
820-23	1	803	182	Alarm Clocks NES
820-25	5,463	4,110	974	Clocks NES
820-27	-	1,935	431	Clock Movements and Mechanisms
820-28	16	1,656	257	Pts. of Clocks & Clockwork Mech. NES
820-89	682	3,367	475	Special Time Recorders and Parts
Total	16,946	64,517	10,563	WATCHES AND CLOCKS



Table 4 continued

Number	\$'000			Descriptions
	Free	Dutiable	Duty Collected	
881-13	27	7,931	1,234	Bandages, Surgical Gauze, Dressings
881-20	5,300	1	-	Sutures W/O Needles, Suture Needles
881-31	7,662	38	8	Blood Handling Analysing & Supplies
881-41	2,174	258	45	Urinary & Ostomy Appl. Supplies Pts.
881-51	45,525	74	13	Catheters, Bougies, Drains & Sondes
881-71	13,377	2,027	296	Hospital Supplies, Chemical Origin
881-81	4,654	2	-	Surgical Implants
881-97	6,882	2,411	417	Disposable, Med. & Surgical Inst. NES
881-99	9,422	6,121	1,084	Medical & Surgical Supplies NES
882-04	3,807	35	3	Artificial Teeth, Dentures and Pts.
882-99	8,542	4,051	657	Dental Supplies NES
883-12	74	16,519	2,067	Spectacles and Eyeglass Frames
883-14	13	4,656	589	Sunglasses, Complete with Lenses
883-16	2	99	12	Spectacles, Eyeglasses Complete
883-19	798	2,167	274	Parts of Spectacle & Eyeglass Frames
883-99	716	8,766	1,151	Ophthalmic Goods NES
884-99	5,927	15	3	Hearing Aids and Parts
885-52	829	-	-	Artificial Limbs Prosthetic & Parts
885-54	163	314	59	Elastic Hosiery
885-71	491	1,233	123	Wheel Chairs, Invalid Chairs & Parts
885-99	2,686	726	106	Orthopaedic Appliances & Parts NES
<b>Total</b>	<b>119,071</b>	<b>57,444</b>	<b>8,141</b>	<b>MED. OPHTH ORTHO SUPPLIES</b>

Table 4 continued

Number	\$'000 1975			Descriptions
	Free	Dutiable	Duty Collected	
911-11	8,885	22,455	2,286	Cameras, Still Motion
911-18	815	4,267	421	Cameras, Motion Picture
911-39	1,539	5,100	519	Parts of Cameras, Except Lenses
911-49	4,467	6,724	807	Camera Accessories, NES
912-02	13	468	48	Projectors, Overhead Type
912-04	521	2,364	247	Projectors, Still Motion
912-08	369	4,429	453	Projectors, Motion Picture
912-19	5,437	6,295	705	Projection Apparatus & Pts. NES
915-13	54	6,519	814	Motion Picture Film, Unexposed
915-23	25,682	-	-	X-ray Film, Unexposed
915-28	50	138	17	Photographic plates, Unexposed
915-39	6,107	34,881	4,385	Unexposed Photographic Film NES
915-64	448	4,414	694	Sensitized Photocopy, Blueprt. Paper
915-69	6,826	21,236	3,068	Sensitized Photo Paper & Cloth NES
918-13	6,219	7,311	1,153	Motion Picture Film, Sold, Exposed
918-39	4,215	2,866	353	Phot. Film & Plates Sold Exposed NES
919-08	2	3,125	501	Photoflash Lamps, Bulbs
919-10	59	2,414	360	Photographic Lamps, Bulbs NES
919-39	1,602	8,717	938	Camera and Projection Lenses
919-45	15,803	2,601	385	Film Processing & Finish Equip. & Pts.
919-47	91,509	799	114	Photocopy & Similar Machines & Pts.
919-48	2,551	4,933	557	Microfilm Equip. & Pts.
919-49	1,739	28	4	Blue & Whiteprint Proc. Equip. & Pts.
919-79	2,664	17,319	2,585	Photographic Chemicals NES
919-99	2,014	7,521	1,125	Photographic Equip. & Supplies NES
<b>Total</b>	<b>189,590</b>	<b>176,924</b>	<b>22,539</b>	<b>PHOTOGRAPHIC EQUIPMENT</b>

Source: Statistics Canada, Catalogue No. 65-203, Imports Merchandise Trade

Table 5: Summary of the Value of Duties Levied on Imports  
of Commodities of Scientific and Professional Equipment, 1975

	\$'000 Total*	\$'000 Free	% Free	\$'000 Dutiable	% Dutiable	Duty Collected	Duty Collected as % of Imports
Navigation Equipment	18,863	17,823	94	1,040	6	139	1
Elect. Prop. Measuring Equipment	57,539	15,156	26	42,383	74	4,468	8
Medical Equipment	93,109	90,251	97	2,858	3	460	0.5
Other Measuring Control Lab. Equip.	323,395	197,021	61	126,374	39	16,125	5
Medical Opth. Ortho. Supplies	176,515	119,071	67	57,444	33	8,141	5
Photographic Equipment	366,514	189,590	52	176,924	48	22,539	6
Watches and Clocks	81,463	16,946	21	64,517	79	10,563	13
Total	1,117,398	645,858	58	471,540	42	62,435	6

Source: Derived from Statistics Canada Data, Cat. No. 65-203, Imports, Merchandise Trade

\* Discrepancies in these figures and those shown in Table 2 may be due to minor independent adjustments made to the figures in each publication.

TABLE 6 : CANADIAN BALANCE OF MERCHANDISE TRADE IN NON-MANUFACTURES  
AND MANUFACTURES 1971-77\*  
(\$Billion)

	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977*</u>
NON-MANUFACTURES	2.9	3.0	4.2	5.1	4.3	4.6	n.a.
MANUFACTURES	-1.0	-1.8	-2.5	-4.9	-6.3	-4.3	-3.0
Fabricated	2.7	3.0	3.9	4.2	3.9	5.9	8.1
End	-3.6	-4.8	-6.4	-9.1	-10.2	-10.3	-11.1

\* Forecast for 1977, MOSST Policy Research Group

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SOURCE: Statistics Canada

Table 7: Canadian Shipments of Scientific, Professional,  
and Related Equipment, Selected Data, 1975

Manufacturers of Pharmaceuticals and Medicines (S.I.C. 374): (a)

	<u>\$ 000's</u>
Total Shipments .....	579,840
of which:	
Bacteriological products (vaccines, etc.)	13,019
Biological products for human use	10,441
Drugs - cardio vascular and respiratory systems	62,710
Drugs - central nervous system and sense organs	85,612
Drugs - digestive and genitourinary systems	36,899
Drugs - other	134,005
Vitamins, nutriments, and hematinics	41,315
Other medicinal and pharm. products for human use	85,358

Orthopaedic and Surgical Appliance Manufacturers (S.I.C. 3913):

Total Shipments .....	12,546
of which:	
Artificial limbs	630
Braces, orthopaedic - leg and knee	135
Braces, orthopaedic - other	486
Supports - orthopaedic corsets	502
Supports - orthopaedic and surgical, other	1,276
Traction kits	62
Orthopaedic and surgical appliances, n.e.s.	3,611

Shipped by Other Industries:

S.I.C. 3911 - Scientific and professional equipment, other (b)	239,906
S.I.C. 3911 - Dental, optical, surgical and medical inst. and apparatus	23,839
S.I.C. 3914 - Ophthalmic products, excl. prescript. sales and lenses	7,240
S.I.C. 266 - Hospital beds (a)	2,296
S.I.C. 165 - Misc. containers - pharm. vials and lids, plastic (a)	1,762

(a) 1974 data.

(b) Includes: laboratory instruments, apparatus and equipment; thermometers and temperature instruments and accessories; photographic equipment and supplies (except cameras, projectors, film); navigational instruments; instruments for mechanical motion, etc.; temperature regulators and control valves and regulators.

Source: Statistics Canada.

The Tariff Board, "Exemption from Duties for Certain Institutions and Goods", Background No. 1, Table 4, October 1, 1977.

Table 8: OVERVIEW OF CANADA'S MERCHANDISE TRADE \*  
(MILLIONS OF DOLLARS)

		1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976
EXPORTS	AGRICULTURAL PRODUCTS & RAW MATERIALS	3,450.	3,462.	3,907.	3,749.	4,075.	3,920.	4,946.	5,368.	5,904.	8,167.	11,643.	12,058.	12,490.
	STANDARD-TECHNOLOGY FABRICATED MATERIALS	3,353.	3,583.	3,866.	4,085.	4,704.	4,984.	5,655.	5,571.	6,332.	7,915.	10,313.	9,451.	11,563.
	STANDARD-TECHNOLOGY END PRODUCTS (EXCL MV)	495.	534.	652.	758.	854.	1,037.	1,120.	1,122.	1,331.	1,809.	2,242.	2,644.	2,850.
	MOTOR VEHICLES & PARTS	177.	356.	1,012.	1,739.	2,672.	3,514.	3,499.	4,171.	4,718.	5,415.	5,717.	6,431.	8,168.
	TECHNOLOGY-INTENSIVE PRODUCTS	593.	566.	626.	768.	910.	953.	1,151.	1,134.	1,344.	1,487.	1,682.	1,804.	2,128.
IMPORTS	AGRICULTURAL PRODUCTS & RAW MATERIALS	1,743.	1,761.	1,812.	1,930.	2,023.	2,125.	2,263.	2,451.	2,901.	3,949.	6,533.	7,716.	7,889.
	STANDARD-TECHNOLOGY FABRICATED MATERIALS	1,624.	1,899.	2,006.	2,062.	2,156.	2,575.	2,494.	2,775.	3,158.	3,766.	5,704.	5,212.	5,383.
	STANDARD-TECHNOLOGY END PRODUCTS (EXCL MV)	2,141.	2,428.	2,748.	2,946.	3,059.	3,564.	3,564.	3,827.	4,743.	5,800.	7,682.	8,754.	9,618.
	MOTOR VEHICLES & PARTS	818.	1,125.	1,581.	2,168.	3,001.	3,546.	3,252.	4,110.	4,934.	6,081.	7,124.	8,211.	9,336.
	TECHNOLOGY-INTENSIVE PRODUCTS	944.	1,154.	1,397.	1,700.	1,860.	2,128.	2,219.	2,288.	2,731.	3,482.	4,390.	4,473.	4,739.
BALANCE	AGRICULTURAL PRODUCTS & RAW MATERIALS	1,706.	1,701.	2,095.	1,818.	2,052.	1,795.	2,683.	2,917.	3,003.	4,218.	5,111.	4,342.	4,602.
	STANDARD-TECHNOLOGY FABRICATED MATERIALS	1,729.	1,685.	1,860.	2,023.	2,547.	2,409.	3,161.	2,796.	3,173.	4,149.	4,609.	4,239.	6,180.
	STANDARD-TECHNOLOGY END PRODUCTS (EXCL MV)	-1,646.	-1,894.	-2,096.	-2,188.	-2,205.	-2,528.	-2,444.	-2,704.	-3,412.	-3,992.	-5,440.	-6,110.	-6,767.
	MOTOR VEHICLES & PARTS	-641.	-769.	-569.	-429.	-329.	-32.	247.	61.	-216.	-666.	-1,408.	-1,780.	-1,169.
	TECHNOLOGY-INTENSIVE PRODUCTS	-351.	-588.	-771.	-932.	-950.	-1,175.	-1,068.	-1,154.	-1,387.	-1,995.	-2,709.	-2,670.	-2,611.

J. Haritos, "Canadian Trade in Technology-Intensive Products", Policy Research Group, Industry Branch, MOSST, November 1977

\* Slight discrepancies in these figures and their aggregates in Table 7 are due to disaggregation of the figures according to MOSST definition of categories versus Statistics Canada definition of categories

