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## THE CANADIAN STEEL INDUSTRY

(Prepared in the Iron and Steel Division,  
Materials Branch, Department of Industry,  
Trade and Commerce, Ottawa.)

By international standards, the Canadian steel industry is small, ranking twelfth in the world and producing approximately 1.9 per cent of the total world output. However, the industry experiences an above-average growth-rate of close to 7 per cent *per annum*, compared to the world average of just over 6 per cent. Capacity figures for the Canadian steel industry are 13.5 million short tons for 1972, 15.4 million for 1973, 16.3 million for 1974, and 16.9 million for 1975. The latter are estimates based on returns from the industry concerning its intentions. Production estimates are 12.7 million short tons for 1972, 13.2 million for 1973 and 14 million for 1974. Various estimates have been made for production to 1980, and these estimates range from 18 million to 24 million short tons.

The Canadian steel industry is operating at 90 percent capacity, which is high by international standards. It is a highly efficient, dynamic, active and modern industry. Productivity is good. It is competitive in price when competing on an equal basis. The Canadian industry has been in the forefront in some of the newest steelmaking technologies: BOF practices, continuous casting, direct reduction and the new bottom-blown open-hearth process. Considerable investment is being made in expansion projects.

The industry has come a long way in a short time. From 1736, when history records forged-iron production in the St. Maurice forges in New France until the 1940s, the industry was almost non-existent. Peak annual production amounted to about one million tons. From the 1940s onward, strong demand at home and abroad encouraged a high level of growth.

The pace has increased steadily. Large iron-ore mines have been opened up, additional units of open-hearth, blast furnaces and basic-oxygen furnaces have been installed, the electric-arc furnace has been developed, new rolling-mill facilities have been added, old mills have been expanded and modernized, and the list of products obtained from steel ingots has grown steadily. The industry has become more efficient and more diversified. It has more than tripled its productive capacity within the past decade, made

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technological advances in almost every stage of operation, and developed a very satisfactory system of marketing and distribution.(1)

### Location

Describing the Canadian steel industry as stretching from coast to coast is a slight exaggeration but, in a broad sense, it is true. From east to west- there is Newfoundland Steel in St. John's and on Cape Breton Island is located the Crown Corporation Sydney Steel Corporation (Sysco), owned by the Nova Scotia government. In British Columbia is located Western Canada Steel Ltd. (Cominco Ltd.). With few exceptions, companies have tended to locate close to markets.

Other integrated mills and a majority of the smaller steelmaking firms are concentrated in Ontario and Quebec. The Steel Company of Canada Ltd. (Stelco), Dominion Foundries and Steel Ltd. (Dofasco) and the Algoma Steel Corporation (Algoma) are the three integrated mills in Ontario. These three firms account for about 80 per cent of Canadian steel production.

At Contrecoeur, Quebec, Sidbec-Dosco Ltd., with its new electric furnaces and Midland-Rose pelletized iron-ore reduction plant coming on stream, is the newest integrated steelmaker in Canada.

In addition to the six integrated facilities, there are a number of smaller steelmakers, whose plants use electric arc-furnaces and cold-scrap charges. Rounding out the industry are several facilities with only a variety of rolling-mills for finishing operations. And the industry includes one specialty producer -- Atlas Steels of Welland, Ontario. There are 47 Canadian plants with steelmaking capabilities. These range from the giant Stelco down to Quality Steel Foundries of Edmonton, Alberta, which can produce 1,000 tpy<sup>(2)</sup> for steel castings in two 1½-ton electric furnaces.

The companies are distributed unevenly among the provinces. Newfoundland Steel is the only producer in that eastern province; in Manitoba are located the Manitoba Rolling Mills of Dominion Bridge; while Saskatchewan can claim only Interprovincial Steel and Pipe Corporation.

The heaviest concentration is, of course, in the highly-industrialized province of Ontario. Most of the big ones as rated by melting capacity -- Stelco, Dofasco and Algoma -- are located there. The province also has a number of medium-size producers, including Atlas, Burlington Steel Company, and Lake Ontario Steel Company, all in the 250-300,000 tpy range.

Quebec, which contains approximately 25 per cent of Canada's population but accounts for only about 12 per cent of the country's steel

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(1) Attached as Appendix III is a table showing Canadian steelmaking capacity as of January 1, 1973.

(2) tpy = short tons a year

consumption, has a representative group of companies. In addition to Sidbec-Dosco, the Quebec steel roster includes: Canadian Steel Foundries, rated at 102,000 tpy; Canadian Steel Wheel, 160,000 tpy; Atlas 70,000; and Griffin Steel Foundries 52,500. Seven other installations can produce between 3,600 and 42,000 tpy. Quebec's rolling-mill capacity, and indeed production, exceed raw-steel production.

In Nova Scotia, Sysco dominates the steel landscape, overshadowing two small companies, and the Stelco plant at Edmonton has, at 125,000 tpy, more than twice the capacity of the other three steel-plants in Alberta.

Western Canada Steel Limited accounts for most of the steel made in British Columbia, and five smaller firms also operate in the province.

To all intents and purposes, the Canadian steel industry is local-market oriented. The vast majority of mills compete in a local market, producing a special product (rebar, rods, sheet, strip, and so on) for that market. To some extent, Stelco, Algoma and Dofasco operate similarly. However, they do market their products throughout Canada, with penetration in differing markets.(3)

#### Product orientation

Stelco's product-line covers the widest range in Canada. Although the firm does not supply rails or structurals, its product "mix" covers almost all the remainder of the spectrum. Major products included are plate, hot- and cold-rolled sheet, tinfoil, hot- and cold-rolled bars, reinforcing bars, wire and wire rods, pipes and tubing, fasteners, and forgings.

Dofasco's product-line is primarily limited to flat-rolled items and castings. Its carbon, alloy and steel castings -- up to 25,000 lbs -- include railroad-car products, steel valve-casings, and components for mining equipment. The flat-rolled line embraces hot-rolled sheet and strip, skelp, plate, floor-plate, cold-rolled sheet and strip, electrical sheets, enameling sheet, galvanized sheet and tinfoil of many types, as well as pre-painted sheets, which are produced in a plant owned jointly with Stelco.

Dofasco's concentrated effort on serving the flat-rolled market, considered the fastest-growing in Canada, puts the firm in a more recession-proof posture than some of its competitors. Its best customers in flat-rolled products are domestic and include producers of consumer durables such as automotive wholesalers and warehouses, agricultural machinery, construction, containers, machinery and tools, natural resources, appliances and utensils, other metal stampings and pressings and railway cars. Dofasco owns National Steel Car, a wholly-owned subsidiary that produces railroad cars.

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(3) Appendix I comprises a list of Canadian steel-rolling mills by province.

Located on the St. Mary's River, which connects Lakes Superior and Huron, Algoma Steel Corporation currently ranks as the No. 3 producer in the Canadian industry, but may reclaim second place when a current expansion program lifts its steel-making capacity to 4 million short tons a year early in 1973.

The most western of the "Big Three", Algoma, derives both bonuses and deficits from its geographical setting. For example, the firm probably exports a greater percentage of its production to the U.S. than either Stelco or Dofasco. It has an edge when it comes to markets in Western Canada, particularly as a supplier of plate to fabricators of large-diameter pipe. Algoma is Canada's sole producer of wide-flange beams, rolling sections up to 24 inches and welding sections up to 48 inches.

Among its facilities, Algoma operates the widest hot-strip mill in Canada, the 106-inch mill started in 1963, and the widest plate-mill, the new 166-inch mill completed late last year.

Sysco is the largest maker of railroad rails in Canada. Its rails are produced from vacuum-treated steel and can be produced to a length of 25 metres. Sysco's new rail-finishing mill, if not the most modern in the world, is one of the most modern. In addition to rails, Sysco can also supply tie-plates. Sysco is favoured by its location at tidewater, which has enabled it to secure a fair amount of export business since it began operations.

The westernmost steel-producer in Canada is Western Canada Steel Limited, a wholly-owned subsidiary of Cominco Ltd., with plants in Calgary and Vancouver. Its current capacity is 175,000 tons a year of electric-furnace steel and hot-rolled carbon bars and shapes. This company operates an electric-furnace plant and rolling-mill in Hawaii that produces 75,000 tons a year. Cominco/Western serves Western Canadian customers in the mining, milling, lumbering and construction industries with a range of steel and steel products that includes hot-rolled bar and light structural merchant-mill shapes such as channels, angles, flats, rounds, squares and reinforcing bar, as well as a wide variety of hot-forged standard, special and custom fasteners.

In Quebec, Sidbec-Dosco is making rapid strides toward joining the ranks of the integrated producers in Canada. This will occur when the company begins receiving direct reduced pellets from its Midland-Ross "Midrex" plant -- now under construction at Contrecoeur Works -- for its new electric furnaces. The expansion and modernization program will eventually raise Sidbec-Dosco's raw-steel capacity to 1.5 million tons a year by 1980.

Sidbec-Dosco makes such basic products as hot- and cold-rolled sheet, bars, wire rod, re-bars, small and intermediate shapes and skelp at two locations in Quebec. It also manufactures secondary products such as wire and wire products, fasteners, steel joists and roof-decking in Montreal and Toronto.

### Investments

The steel companies in Canada that have made substantial investments in plant and equipment recently are the Algoma Steel Corporation in Sault Ste. Marie, Ontario; Dominion Foundries and Steel Ltd. (Dofasco) and the Steel Company of Canada Ltd. (Stelco) in Hamilton, Ontario; Sidbec/Dosco Limited in Quebec; and the Sydney Steel Corporation (Sysco) in Nova Scotia. Other Canadian companies, including Atlas Steels, Interprovincial Steel and Pipe Corporation Ltd. (Ipsco), Slater Steel Industries Limited (Sivaco), and Quebec Steel Products, have also initiated expansion plans.

With the exception of the pipe and tube mills, the wire and fastener plants and the forging industry, less investment has been made relatively on expansion by the smaller manufacturers of secondary-steel products in Canada. There has been some expansion in the secondary sector during the past three years. The larger primary-steel companies have increased investment in the secondary sector to more than double their shipments of manufactured products, particularly for use in automotive parts and in structural steel. Considerable investment has been directed toward rationalization and pollution-control. The iron and steel foundries are investing heavily in pollution-abatement equipment. The steel-fabricating plants are investing in modernizing their equipment. The forging and metal-powder plants are not expanding their facilities.

Most investment has been directed to the expansion of capacity in flat-rolled products; the net result may be a capacity of 20 million ingot tons by 1980, of which ten million tons will be directed to flat-rolled products. The bulk of the investment in expansion plans for the steel industry has been concentrated in Ontario, Quebec and Nova Scotia. There has been considerable effort recently on the part of provincial authorities across Canada to encourage the establishment of a basic steel industry in particular provinces.

### Foreign investment

There is a certain amount of foreign investment in the Canadian steel industry. Two of the steel companies (Atlas and Crucible) are 100 percent foreign-owned. Atlas is 100 percent owned by Rio Algom, which is part of Britain's Rio Tinto Group. Crucible is 100 percent owned by Colt Industries of the United States. British Steel, through Stanton Pipe, has acquired 51 per cent of the stock of Slater Steel. It is estimated that foreign interests hold less than 5 per cent of Dofasco shares. Stanley Steel is a subsidiary of the Stanley Company in the U.S. and Union Drawn Steel also has U.S. ownership. Last year, Stanton Pipe, a subsidiary of the British Steel Corporation, acquired 51 percent equity in Slater Steel, which owns Burlington Steel in Hamilton, Ontario. The British Steel Corporation has also acquired, through Slater Steel, a 25 percent interest in Ipsco. While the Algoma Steel Corporation purchased the current assets of Mannesmann Tube Company Ltd. in Sault Ste. Marie, Ontario, last year and leased Mannesmann's seamless-tube plant for a term of 15 years, with an option to purchase the plant, Mannesmann of Germany still holds 25 per cent of Algoma's outstanding shares, the largest single block, and it has three of its executives on Algoma's board of directors.

The year 1972 saw, and 1973 will see, the start-up of major new facilities designed to move Stelco's Hilton Works towards an annual capacity target of six million ingot tons and to increase the company's production capability for a number of its finished products. Stelco's new coke-oven battery was completed in the fall of 1972 and the opportunity presented by the previously-mentioned re-line of their largest blast furnace has been taken to introduce some modifications in order to help satisfy the increased hot-metal requirements of the basic oxygen. The third bloom and billet mill has begun operations, a new tinning-line was completed late last year, and the company's capacity to produce bar products will be increased next year when the conversion of a rod mill to a bar mill is completed. Construction is under way on the new spiral-weld pipe mill at Welland, the steel-making plant in Contrecoeur, as well as the increase in steel-making capacity at Edmonton.

### Technology

There are, currently, three major technological developments that hold promise for the industry. One of these, the increased use of basic-oxygen furnaces, is imminent, while the others -- increased use of continuous casting and the introduction of direct-reduction steel-making -- are farther down the line. Furthermore, the addition of new and more modern facilities is expected to take place at a higher rate than during the past several years.

By the end of 1971, basic-oxygen furnaces accounted for 43.3 per cent of steel-making capacity, open-hearth capacity amounted to 34.8 per cent, while electric-arc furnaces totalled 21.9 per cent. The advantage of basic-oxygen capacity is the shorter batch-time, with a tap-to-tap span of approximately 45 minutes to one hour (as against six to eight hours for most modern open-hearth). The lower capital costs, as well as lower down-time and labour-overhead unit costs, can result in total cost savings ranging from \$2.00 to \$10.00 a ton, depending on the efficiency of the open-hearth replaced. The general Canadian experience involves savings of \$4.00 to \$5.00 a ton. Additions to basic-oxygen capacity include the new 2.8-million-ton basic-oxygen shop at Stelco, which came on stream in early 1972, and the new two-furnace shop to be added at Algoma, which will be operating in early 1973. Sydney Steel is planning the conversion of their open-hearth shop to make use of the submerged-injection process. As these facilities are changed over, presumably basic-oxygen furnaces will account for close to 65 per cent of Canadian crude-steel capacity by 1975.

The further development of direct reduction is going forward. Concast technology involves the continuous casting of molten steel from the steel-making furnaces into water-cooled moulds, where it solidifies and is then cut into semi-finished forms. Potential cost benefits include operating savings gained through circumventing the first three steps in finishing steel (ingot moulds, soaking pits and blooming or slabbing mills), lower capital costs and a significant saving in scrap loss. To date, the experience of the Canadian majors with concast is indicative of the innovative nature of the technology; there have been all of the technical, product and consumer-acceptance difficulties normally associated with technological innovation. These problems are gradually being worked out. Stelco plans to concast at

Contrecoeur, and will replace the existing casting machine at Edmonton as part of the expansion of the Edmonton works. The industry will be watching the progress of Algoma's concast facility, which is the first slab-casting unit as opposed to billet casting. It is widely agreed that, in a longer-term perspective, continuous casting is one of the keys to more efficient steel-making. Sidbec/Dosco is installing the direct-reduction process in conjunction with its expansion at Contrecoeur. Quebec Steel Products will use concast in its new facility.

Direct reduction is a relatively recent innovation in steel-making technology. The process involves grinding iron ore to a fine-particle size and compressing the particles into iron briquettes. Heating in a reducing atmosphere produces briquettes of up to 95 percent pure iron. Briquettes can be charged directly into an electric-arc furnace-coming out as steel. As yet, no integrated facility uses this process and a great number of technical difficulties have to be surmounted. Stelco is one of the pioneers in direct reduction and a member of an international consortium that has researched and developed the SL/RN (Stelco-Lurgi-Republic-National) direct-reduction process. The company has indicated that it might use this process at its Nanticoke development, although the final decision has been delayed and nothing definite has yet come out; the technology is not sufficiently advanced to proceed at present.

Again, the normal replacement and additions to facilities will be beneficial to the industry. However, the Canadian industry is, by and large, an efficient and modern grouping; thus, the impact of new additions is less noticeable from a productivity standpoint. The industry seems to feel that the findings of new efficiencies is becoming more and more difficult. High levels of spending on capital projects for anti-pollution devices involve an additional cost-burden for the industry -- if only over the short term.(4)

#### Domestic demand

The construction industry is the largest user of steel, accounting for an estimated 28 per cent - 30 per cent of domestic shipments. This total include 20 per cent to the construction industry directly and an estimated 8 per cent to 10 per cent from steel shipped to warehouses. Over the past five years, the construction industry has shown only marginal real growth. This performance is mirrored in the 3.0 percent annual growth of steel shipments to the construction industry.

Domestic shipments to the automotive and aircraft industries amount to about 11 per cent of total domestic shipments. The major automobile companies, either directly, or indirectly through auto-parts supplies, are believed to account for over 90 per cent of this total. The impetus to growth in this market goes back to 1965 with the signing of the United States/Canadian Automotive Free Trade Agreement. The success of the Agreement from the steel industry's point of view can be gauged by the 8.6 percent annual increase since 1965 in shipments to the domestic automotive industry.

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(4) Appendix IV provides a table showing trends in steel-making technology.

Pipes and tubes provide a market particularly promising for the Canadian steel industry. The promise seems greatest for pipe of the large-diameter variety, primarily for the pipeline construction required by oil and natural-gas discoveries in the Canadian North. Stelco's 140" plate-mill has a limited capacity for making steel wide enough for 42" diameter, a facility that has only recently come on stream. The progress of spiral-weld technology and the application of this technology to wide-diameter pipe is being pursued by Stelco as well as by pipe-producing companies such as Canadian Phoenix and Portable Pipe Mills. Ipsco is the only Canadian company already involved in the production and sale of spiral-weld pipe.

With the normal increments, in addition to pipeline construction related to new discoveries, growth of 7 per cent to 8 per cent for steel requirements from pipe demand seems reasonable, if not conservative. In all probability this growth will not be smooth, as the unravelling of the major projects is still unclear.

The remaining 45 per cent of demand is accounted for by 13 other end-use categories. Items such as wire and wire products should move with the construction pattern, showing growth of about 5 to 6 per cent annually. It is not unreasonable to expect steel shipments to natural-resource industries to increase at a rate of over 6 per cent. Appliances should be more in line with consumer-durables spending levels, with 5 to 6 percent annual growth-rate a reasonable projection. Containers present a more stable and dependable growth pattern, though increasing competition from aluminum and other products will probably keep the growth in tinplate in the 4 to 5 percent area. Other areas, such as railway vehicles and tracks, and agricultural equipment, will probably show slower and less dependable performance, with a likely growth of 2 to 3 per cent annually.

Some steel-industry observers have remarked that a 6 percent growth-rate for apparent steel consumption is too optimistic because of something they refer to as "market saturation". While this forecast is not more than the Canadian market growth experienced during the late Fifties and Sixties, it far exceeds the comparable American growth-rate of 3.8 per cent a year during the past 15 years. There has been a relatively conservative rate of real economic growth, and this decade is likely to see particularly heavy steel demands originating from the capital-intensive resource and energy industries.

The growth in the market for steel in Canada until about 1980, as well as the opportunities for exports, will continue to be one of the Canadian steel industry's major strengths. There is, however, an important distinction between the Canadian steel market of the future and that of the past in that most rolled-steel products are now manufactured domestically and imports are largely price-competitive. Consequently, to displace or even resist the growth of imports will be a much more difficult task than was the case in the Fifties and early Sixties.

Apparent rolled-steel consumption in Canada during 1973 is expected to increase by 7 per cent, to 10.5 million product tons. This forecast is based on Canadian real economic growth in excess of 6 per cent, an increase in current dollar non-residential construction spending of 11 per cent, a continued high level of housing starts and completions, and a levelling-off in the import penetration of the North American automobile market by Europe and Japan.

#### Foreign trade

There has been a gradual increase in Canadian steel exports over the last 20 years. The ratio of exports to total shipments rose from 4 per cent to 14 per cent during this period. The largest customer for Canadian steel is the United States; Latin America is a distant second, and relatively small amounts are exported to European countries and to Southeast Asia. While rolling-mill products constitute the bulk of industry sales, considerable amounts of pig iron are sold outside the country.

The growth of the export sector has averaged 12.8 per cent over the past five years. The United States is Canada's largest foreign market, accounting for an average of 66.4 per cent of exports since 1968, the largest part of which, an estimated 33 per cent, was accounted for by the automobile industry. Sales to other countries should continue to vary according to the needs of the Canadian industry to generate exports and the ability of their economies to absorb these. In this respect, trends are difficult to project, as conditions change very quickly. The growth prospects in non-American markets appear promising considering the currency that realignments should add to Canadian competitiveness in export markets. The large increase in Canadian capacity through 1975 should motivate Canadian producers to become more aggressive in export markets; and the excellent reputation of Canadian tin-plate and Canadian production in general in export markets gives the industry an entry into developing markets.

Steel exports are expected to grow substantially in 1973 mainly because of the small growth in 1972 but also because of the continued strengthening of the non-American and American economies. Steel imports are expected to show little increase next year but will still account for more than 14 per cent of apparent consumption. In total, rolled-steel-product shipments from Canadian mills are expected to reach a record level of 10.5 million product tons in 1973, up almost 10 per cent from the 1972 estimate.

Imports provided about 19 per cent of apparent domestic consumption in 1971. Although the Canadian steel industry has grown rapidly in recent years, its capacity has not been large enough to satisfy peak demands that occur during periods of strong growth in the economy. Steel imported into Canada fits two major classifications. One type is imports to fill capacity deficiencies in the Canadian industry; these result primarily because the limited market in Canada does not justify domestic production of certain products. The other type of capacity deficiency can occur when peak domestic demand overtakes Canadian capacity or strikes in major Canadian mills cause a shortfall.

The primary gap deficiencies have usually been in large structural shapes, wide plate, special steel products, some of the alloy steels, and odd sizes of conventional hot-rolled and cold-rolled products. Several additions to Canadian capacity have partially filled the gap. Imports of stainless and specialty steels, particularly from Japan and Sweden, are beginning to become a problem. The recent start-up of Algoma's \$70-million 166-inch plate-mill will increase domestic participation in the wide-plate and large-diameter pipe markets. Dofasco's new 56-inch cold-mill, which will stress the development of "electrical" steels, represents an additional move on behalf of Canadian producers to displace imports. While these developments are evidence, by and large, of a shrinking gap, the environment that historically has kept domestic mills out of specialty products and sizes has changed only in degree -- the Canadian market is, in most cases, still not sufficiently large. At the same time, the additional four million tons of capacity projected for the Canadian industry from 1971 to 1975 should alleviate, at least in part, added import requirements in periods of peak demand.

Foreign producers competing in Canadian markets must do so on a regional, as opposed to a national basis. With transportation costs high relative to steel's value, factors of location and geography divide Canada regionally so far as the marketing of steel is concerned.

#### Tariff and non-tariff barriers

For the most part, international trade in iron ore and raw steel is conducted free of tariffs, but the flow of trade is controlled through quota mechanisms in the U.S.A., Europe and Japan. There are protective tariffs, taxes and import restrictions on many primary and secondary steel products in various countries. Canada has no import restrictions on trade in iron and steel, and Canadian tariff is moderate.

STEEL-ROLLING MILLS IN CANADA

(by provinces)

COMPANY AND ADDRESS	LOCATION OF PLANT	PRODUCT
<u>ALBERTA</u>		
Steel Co. of Canada Limited, Edmonton Steel Works, P.O. Box 2348, Edmonton, Alberta	Edmonton, Alta.	Concrete reinforcing bars, channels, structural angles, grinding balls and rods, merchant bars, grader blades
Western Canada Steel Limited, 450 Southeast Marine Drive, Vancouver 15, B.C.	52nd St. & 26th Ave. S.E., Forest Lawn, Alberta	Concrete reinforcing bars
<u>BRITISH COLUMBIA</u>		
Western Canada Steel Limited, 450 Southeast Marine Drive, Vancouver 15, B.C.	Vancouver, B.C.	Concrete reinforcing bars, hot-rolled merchant bars and light structural shapes including channels, angles, flats, rounds, squares, grinding rods; track spikes, standard, special and custom fasteners, and forgings
<u>MANITOBA</u>		
Dominion Bridge Company Limited, Manitoba Rolling Mills Division, P.O. Box 2500, Selkirk, Manitoba	Selkirk, Man.	Steel reinforcing merchant bars, flats, rounds, squares, angles, etc.

Appendix I

COMPANY AND ADDRESS	LOCATION OF PLANT	PRODUCT
<p><u>SASKATCHEWAN</u></p> <p>Interprovincial Steel and Pipe Corp., Ltd., P.O. Box 1670, Regina, Sask.</p>	<p>Armour Siding Regina, Sask.</p>	<p>Steel plate, skelp, hot-rolled sheets and coils, steel pipe, structural tubing, oil-well casing and line pipe; large-diameter spiral-weld pipe to API specifications</p>
<p><u>NEWFOUNDLAND</u></p> <p>Newfoundland Steel (1968) Company Ltd., St. John's, Nfld</p>	<p>Octogon Pond, Newfoundland</p>	<p>Concrete reinforcing bars and merchant-mill products, grinding balls</p>
<p><u>NOVA SCOTIA</u></p> <p>Enamel &amp; Heating Products, Ltd., Sackville, N.B.</p> <p>Sydney Steel Corp., Sydney, Nova Scotia</p>	<p>Amherst, N.S. (Plant 4)</p> <p>Sydney, N.S.</p>	<p>Concrete reinforcing bars, merchant bars, wharf and machine bolts</p> <p>Blooms, billets and slabs, rails, tie plates, mine arch and reinforcing bars</p>
<p><u>ONTARIO</u></p> <p>The Algoma Steel Corporation Ltd., Steelworks Division, Sault Ste. Marie, Ont.</p>	<p>Sault Ste. Marie, Ont.</p>	<p>Blooms, billets and slabs, heavy and light rails, rail fastenings, heavy and light structurals, parallel flange beams, carbon merchant bars, tube rounds, grinding balls and rods, sheared and universal plate, reinforcing bars, hot-rolled strip and sheet,</p>

Appendix I

COMPANY AND ADDRESS	LOCATION OF PLANT	PRODUCT
<p>The Algoma Steel Corporation Ltd., (Continued)</p> <p>Atlas Steels, Division of Rio Algom Mines, Ltd.</p> <p>Burlington Steel Division of Slater Steel Industries Ltd., Sherman Avenue, North, Hamilton, Ontario</p> <p>Dominion Foundries and Steel Limited, Burlington St. East, Hamilton, Ontario</p>	<p>Welland, Ont.</p> <p>Hamilton, Ont.</p> <p>Hamilton, Ont.</p>	<p>skelp, cold-rolled strip and sheet, electrical sheet and strip</p> <p>Tool, alloy and stainless steels; bars, billets, high-speed steel, hollow and solid mining drill steel, machinery steels, aircraft steels; stainless steels: hot- and cold-rolled sheet to 72" wide and strip to 18" wide, and welded tubing, bar, wire and special forged and machined sections</p> <p>Merchant and concrete reinforcing bars, steel rounds, squares, flats, angles, channels, agricultural shapes, steel fence-posts, steel grinding balls</p> <p>Steel plate, skelp, hot-rolled sheets, coils and strip, galvanized sheets and coils and strip, cold-rolled sheets, coils and strip; electrical sheets, coils and strip; porcelain enamelling sheets, coils and strip; blue plate; electrolytic tinfoil, sheets and coils; tin-</p>

Appendix I

COMPANY AND ADDRESS	LOCATION OF PLANT	PRODUCT
<p>Dominion Foundries and Steel Limited, (Continued)</p>		<p>mill black plate, sheets and coils; pre-coated steels and castings</p>
<p>Lake Ontario Steel Company Ltd., Whitby, Ontario</p>	<p>Whitby, Ont.</p>	<p>Concrete reinforcing bars, steel rounds in straights and coils, angles, channels, forging flats, low alloy bars and grader blades</p>
<p>Stanley Steel Co. Limited, 57 Gerrard Street, Hamilton, Ontario</p>	<p>Hamilton, Ont.</p>	<p>Cold-rolled strip steel</p>
<p>The Steel Co. of Canada Limited, Hilton Works, Hamilton, Ontario</p>	<p>Hamilton, Ont.</p>	<p>Booms, billets, slabs, wire rods, hot-rolled products including carbon and alloy merchant bars, bolt, nut and spike rods, light structural shapes, railway spikes, joint bars, tie-plates, reinforcing bars, washers, etc.; ships, tank structural, sheared and universal plate; hot-rolled coils, sheet and strip; cold reduced including galvanized coils; sheet and strip; black-plate coils, sheet and strip; electrolytic tinsplate coils, sheet and strip; pre-painted sheets</p>

Appendix I

COMPANY AND ADDRESS	LOCATION OF PLANT	PRODUCT
<p><u>QUEBEC</u></p> <p>Atlas Steels, Division of Rio Algom Mines, Ltd., Welland, Ont.</p> <p>Colt Industries (Canada) Ltd., (formerly Crucible Steel of Canada Ltd.) Sorel, Quebec</p> <p>Sidbec/Dosco Ltd., 507 Place d'Armes, Montreal 126, Que.</p> <p>Dominion Steel and Coal Corporation Limited, (Controlled by Sidbec) P.O. Box 100, Contrecoeur, Que.</p> <p>Steel Co. of Canada Limited, Hamilton, Ontario</p>	<p>Tracy, Quebec</p> <p>Sorel, Quebec</p> <p>5870 St. Patrick St., Montreal 106, Quebec</p> <p>Contrecoeur, Quebec</p> <p>McMaster Works, Contrecoeur, Quebec</p>	<p>Stainless steel sheet and strip in widths up to 48"</p> <p>Stainless steel sheet and strip</p> <p>Merchant and rein- forcing bars, structural sections, hot- and cold-forged bolts, nuts, rivets, hi-strength bolts and nuts; heavy and fine high and low carbon wires, screws, steel nails; continuous butt-weld pipe and nipples.</p> <p>Merchant and rein- forcing bars in bar form and in coils, rods in coils; hot- and cold- rolled sheet and strip.</p> <p>Pipe and hollow structural tubing, merchant bar, rein- forcing bar, and light structural shapes.</p>

STEEL IN CANADA IN THE SEVENTIES

	1970	1971	1972 Projection	1973 Forecast
<u>CAPACITY (A)</u>				
Short Tons	13.7	15.0	15.2	15.4
Metric Tons	12.3	13.5	13.7	13.9
<u>PRODUCTION (A)</u>				
Short Tons	12.3	12.2	13.1	14.0
Metric Tons	11.2	11.0	11.9	12.6
<u>DOMESTIC SHIPMENTS (B)</u>				
Short Tons	7.8	8.0	8.5	10.0
Metric Tons	8.0	7.3	7.7	9.0
<u>IMPORTS (B)</u>				
Short Tons	1.3	2.0	1.8	1.8
Metric Tons	1.2	1.8	1.6	1.6
<u>EXPORTS (B)</u>				
Short Tons	1.4	1.4	1.3	1.5
Metric Tons	1.3	1.3	1.1	1.4
<u>APPARENT CONSUMPTION (C)</u>				
Short Tons	12.2	12.8	13.6	14.3
Metric Tons	11.1	11.5	12.4	12.8

NOTE: (A) The capacity and production statistics refer to ingot steel, i.e. pig iron, ferro-alloys, steel ingots and castings.

(B) These figures refer to ingots and rolled steel.

(C) Apparent consumption equals production plus imports minus exports, and hence combines A and B.

SOURCE: 1970 and 1971 figures are from Statistics Canada.  
1972 and 1973 figures are estimates based on an exchange of views with steel industry officials and consultants.

## ROLLED STEEL PRODUCTS IN CANADA IN THE SEVENTIES

	1970	1971	1971 (6 Mos.)	1972 (6 Mos.)	Percentage Change
Production of Rolled Steel (domestic shipments)					
(a) Short tons	7,756,911	8,002,584	3,928,940	4,392,538	+ 10.6%
(b) Metric tons	7,037,023	7,259,896	3,564,310	3,984,884	
Imports of Rolled Steel					
(a) Short tons	1,314,586	1,985,160	693,077	956,077	+ 37.9%
(b) Metric tons	1,192,584	1,800,925	628,755	867,347	
Exports of Rolled Steel					
(a) Short tons	1,446,086	1,399,311	801,621	673,106	- 16.1%
(b) Metric tons	1,311,880	1,269,446	727,840	610,637	
Apparent Consumption of Rolled Steel					
(a) Short tons	7,625,411	8,588,433	3,820,396	4,675,509	+ 19.0%
(b) Metric tons	6,917,727	7,791,375	3,465,840	4,241,594	
Production of Rolled Steel (ingot steel)					
(a) Short tons	12,346,132	12,169,552	6,118,581	6,651,224	+ 8.7%
(b) Metric tons	11,200,337	11,040,145	5,550,740	6,033,950	
Imports of Rolled Steel					
(a) Short tons	1,314,586	1,985,160	693,077	956,077	+ 37.9%
(b) Metric tons	1,192,584	1,800,925	628,755	867,347	
Exports of Rolled Steel					
(a) Short tons	1,446,086	1,399,311	801,621	673,106	- 16.1%
(b) Metric tons	1,311,880	1,269,446	727,226	610,637	
Apparent Consumption of Rolled Steel					
(a) Short tons	12,214,632	12,755,401	6,010,037	6,934,195	+ 15.5%
(b) Metric tons	11,081,041	11,571,624	5,452,269	6,290,660	

SOURCE: STATISTICS CANADA

CANADA - STEELMAKING CAPACITY1 January 1973

Company & Location	Short Tons
<u>Steelmaking</u>	
The Algoma Steel Corporation, Limited Sault Ste. Marie, Ontario	2,600,000
Burlington Steel Company (a division of Slater Steel Industries Ltd.) Hamilton, Ontario	225,000
Dominion Bridge Company Limited (Manitoba Rolling Mills) Selkirk, Manitoba	160,000
Dominion Foundries & Steel Limited (Dofasco) Hamilton, Ontario	2,920,850
Sidbec-Dosco Limited Montreal, Quebec	380,000
Sidbec-Dosco Limited Contrecoeur, Quebec	500,000
Enamel & Heating Products Limited Sackville, New Brunswick	24,000
Interprovincial Steel & Pipe Corporation Ltd. Regina, Saskatchewan	600,000
Lake Ontario Steel Company Limited Whitby, Ontario	300,000
Newfoundland Steel (1968) Company Ltd. St. John's, Newfoundland	40,000
The Steel Company of Canada Ltd. (Stelco) Edmonton, Alberta	128,000
The Steel Company of Canada Ltd. (Stelco) Hamilton, Ontario	5,800,000

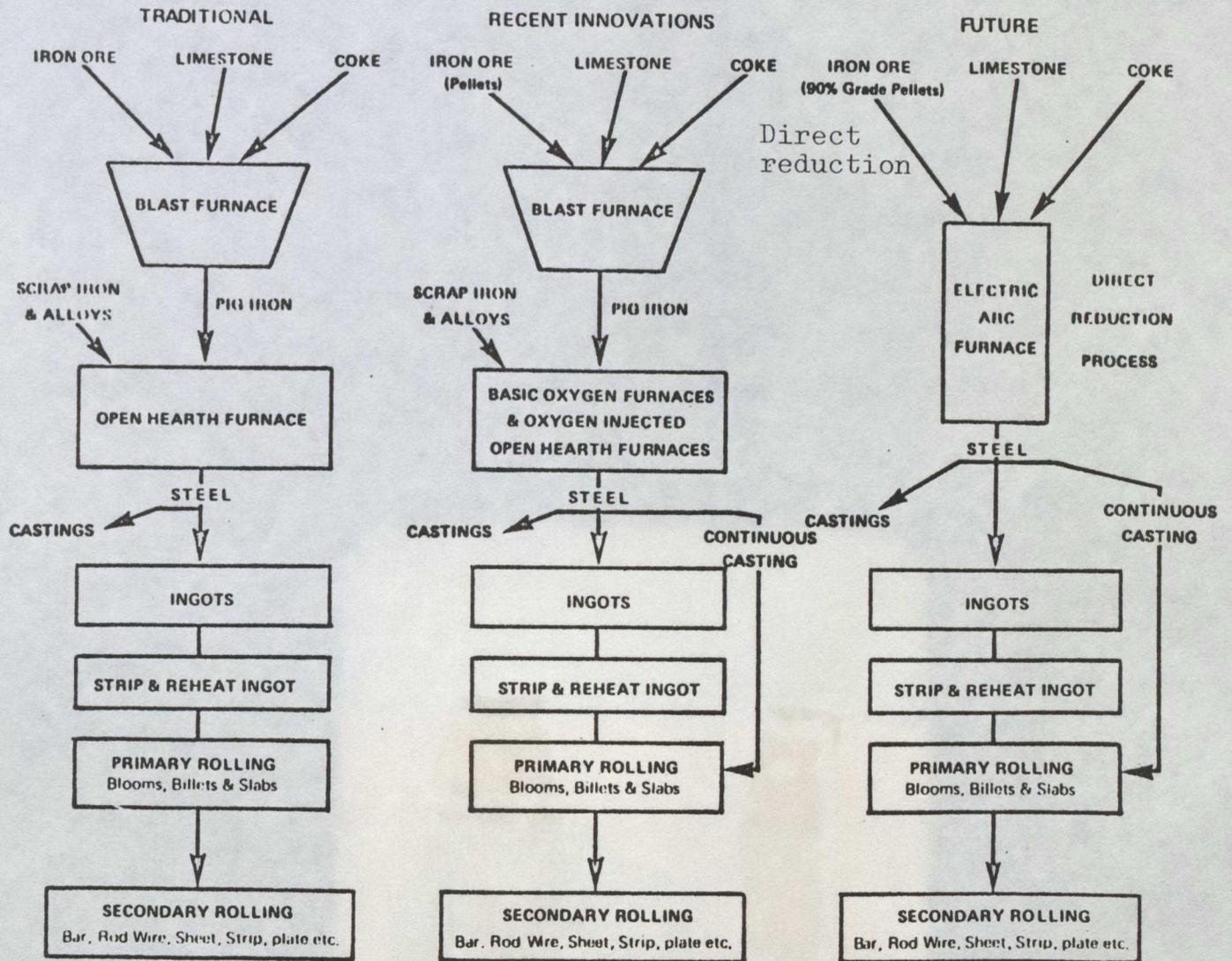
Appendix III

<u>Company &amp; Location</u>	<u>Short Tons</u>
<u>Steelmaking (continued)</u>	
Sydney Steel Corporation (Sysco) Sydney, Nova Scotia	1,100,000
Western Canada Steel Limited Calgary, Alberta	57,000
Western Canada Steel Limited Vancouver, B.C.	110,000
<u>Castings</u>	
Abex Industries of Canada Limited Joliette, Quebec	11,000
Abex Industries of Canada Limited Selkirk, Manitoba	7,000
CAE Machinery Limited Vancouver, B.C.	3,750
Canadian Steel Foundries Division (Hawker Siddeley Canada Ltd.) Montreal, Quebec	35,000
Canadian Steel Wheel Limited Montreal, Quebec	160,000
Dominion Engineering Works Limited Montreal, Quebec	15,000
Esco Limited Port Coquitlam, B.C.	9,000
Fahralloy (Wisconsin) Limited Orillia, Ontario	8,030
Griffin Steel Foundries Limited St. Hyacinthe, Quebec	52,500

Appendix III

Company & Location	Short Tons
<u>Castings (Continued)</u>	
Hudson Bay Mining & Smelting Company Ltd. Flin Flon, Manitoba	2,500
The Indiana Steel Products Co. of Canada Ltd. Kitchener, Ontario	8,500
Lynn MacLeod Metallurgy Limited Thetford Mines, Quebec	5,300
Manganese Steel Castings Limited Sherbrooke, Quebec	800
Neelon Steel Limited Sudbury, Ontario	5,000
Unitcast Division (Midland-Ross of Canada Ltd.) Sherbrooke, Quebec	3,000
Victoria Machinery Depot Company Limited Victoria, B.C.	600
Welmet Industries Limited Welland, Ontario	2,500
<u>Specialty Steel; Forgings; Pig Iron</u>	
Atlas Steels Company Welland, Ontario	200,000
Atlas Steels Company Tracy, Quebec	70,000
The Algoma Steel Corporation, Limited Port Colborne, Ontario	240,000
Crucible Steel Division (Colt Industries (Canada) Ltd.) Sorel, Quebec	40,000
Québec Iron & Titanium Corporation Sorel, Quebec	880,000
	16,720,580

# TRENDS IN STEEL MAKING TECHNOLOGY



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