

A DESCRIPTION OF BACKWARD LINKED INDUSTRIES OF
THE MANITOBA MINING INDUSTRY

by

Jill Lexier

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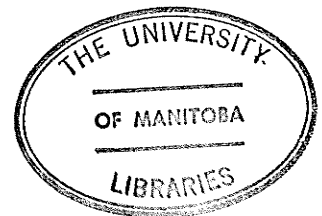
A practicum submitted to the Faculty of Graduate Studies of
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MASTER OF NATURAL RESOURCE MANAGEMENT

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ABSTRACT

Although mining is one of Manitoba's major industries, little research has been conducted to date concerning the mining industry and its relationships to the economy of Manitoba. The focus of this practicum, therefore, is directed to the study of the Manitoba mining industry and its relationship with backward linked industries. The study delineates expenditures of the Manitoba mining industry and describes the backward linked industries according to Statistics Canada Industrial Classification and geographic distribution.

Analysis shows that a Grand Total of approximately \$133,255,500 was spent by the three major Manitoba metal mining companies in 1976 towards purchases of materials, supplies, services and capital expenditures.

Manitoba Distributors account for the largest percentage of the Grand Total, with 41.34%. Since the full value of purchases from Manitoba Wholesale Traders cannot be considered to remain within the Manitoba economy this may represent a significant leakage from the province.

Less than one half of the Manitoba mining industry's purchase expenditures can be considered to be retained within the Manitoba economy. Furthermore, less than 10% of purchase expenditures can be considered to accrue to Northern Manitoba, despite the fact that it is the base of mining operations.

Wholesale trade industries, energy industries, transportation services and chemical manufacturing industries are important supply

industries to the Manitoba mining industry. Manitoba firms are represented within each of the most important supply industries.

This practicum is of interest to other researchers, provincial government planners and policy-makers, and those involved in private industry in Manitoba.

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I.

INTRODUCTION

A. Preamble

Mining is one of Manitoba's major industries. Mining activity in Manitoba began in the 1880's with the extraction of industrial materials such as salt and gypsum in the southern portion of the province. Serious prospecting for metallic minerals began before World War I and the first metal production occurred in 1917 with the production of copper ore from the Mandy Mine at Schist Lake. Within four years, ten million pounds of copper had been produced at this site. Sherritt Gordon Mines Limited started producing copper and zinc from its mine at Sherridon in 1931-32 then closed down from 1932 until 1937 when it started up again and produced until 1951, when the ore reserves were depleted. The Hudson Bay Mining and Smelting Company Limited started production of zinc and copper at Flin Flon in 1930 and has produced about 62,000,000 tons of ore since then.

The first important advances in the industry after the Second World War were in 1945 and 1946 when nickel-copper deposits at Lynn Lake were discovered. Production from these deposits was begun in 1953 by Sherritt Gordon Mines Limited. Development of Lynn Lake coincided with the closing down of the Sherridon Mine; the entire Town of Sherridon was moved by winter tractor train to Lynn Lake, more than 100 miles north. In 1949 gold production started at Snow Lake. During this same period several copper and zinc mines were opened by the Hudson Bay Mining and Smelting Company Limited in the Flin Flon area.

In 1960 two more important mining events took place: The Hudson Bay Mining and Smelting Company started a zinc mine near Snow Lake and The International Nickel Company of Canada Limited established the world's first fully-integrated nickel mining, milling, smelting, and refining operation at Thompson.

The Manitoba mining industry has been steadily growing ever since. Indeed, during the period 1960-1975 Manitoba mineral production had one of the highest growth rates in Canada - 11.8% (Energy Mines and Resources Canada, 1976: MR158). In 1976 mining represented 6.5% of the Gross Provincial Product (Verity, 1978). The total value of Manitoba mineral production in 1976 was \$511,852,365, with metal mineral production contributing \$409,125,957, approximately 80% (Verity, 1978). The 1977 (preliminary) mineral production value represents an all time high for the province.

In 1975 the Manitoba mineral industry employed 6,418 people (Statistics Canada, 1978: 26-201/1975). Average weekly earnings as of September 1976 were \$288.34, making the mining industry the second highest paying industry in Manitoba, next to construction (Department of Industry and Commerce, 1976). It is estimated that in 1976 the total amount paid out as wages and salaries to those employed by the three largest metal mining companies in Manitoba exceeded \$112,000,000.

It can be seen, therefore, that the mining industry is important to the province in that it contributes directly to incomes, employment, capital accumulation and trade flows. A less easily definable but nonetheless important factor which must also be considered is

the degree to which mining is integrated into the provincial economy. A means by which the relationships between this and other sectors of the economy can be illustrated is linkage analysis.

B. Framework of Analysis

The conceptual framework of linkage analysis is derived from A.O.Hirschman's (1958) theory of economic development. "Linkage" describes the manner in which an industry relates to its suppliers and how its output is used by other industries or purchased by consumers. Forward linkage is that proportion of an industry's output which is used as an input by other industries. Mining, therefore, is forwardly linked to smelting and refining. While an industry may be forwardly linked to a number of other industries, it is itself a purchaser of commodity inputs. The purchase of such intermediate inputs from other industries constitutes a backward linkage. The mining industry may, therefore, be backwardly linked to such industries as the chemical industry and the heavy machinery industry.

Income thus generated in backward linked industries and income from wages, salaries and dividends paid to employees and shareholders will most certainly be respent in goods and services. Similarly, part of this spending will be respent again. This process may be repeated many times until the initial expenditure by one industry has "trickled down" through the economy. These rounds of respending comprise the induced impact.

The tool for measuring the total impact, i.e., effect of linkages and the induced effect, is a multiplier. A provincial multiplier is that coefficient which, when applied to an injection of income, will give the total effect, in terms of the total income created, in the province. Obviously, the higher the proportion of income that is

resent at each successive round of expenditure, the higher the multiplier. The portion of income which is not spent in the province can be considered as a leakage from the province.

One of the most widely used techniques to describe and quantify the impact of one industry on the economy is input-output analysis, made famous by Wassily W. Leontief (1951). Input-output analysis examines the interindustry traffic in raw materials, intermediate products, and technical and financial services that necessarily precedes the delivery of finished products to final markets. Horizontal rows of an input-output table show how the output of each industry is distributed among other industries and sectors of the economy (i.e., the industry's forward linkages), while the vertical columns display how each sector obtains from the others its needed inputs and services (i.e., its backward linkages). Therefore, the output of each sector is an input in some other. An input-output table is virtually a double-entry bookkeeping account of the economy

C. Focus of the Study

While some linkage analysis and input-output modelling has been done on a national scale, comparatively little research has been conducted at the provincial level. Although there is an input-output model for Manitoba, it is highly aggregated, representing only 37 industries, and it is based on data that is almost twenty years old. There is obviously a need, therefore, for more detailed research concerning the mining industry and its relationship to the economy of Manitoba.

THE FOCUS OF THIS PRACTICUM, THEREFORE IS DIRECTED TO THE STUDY OF THE MANITOBA MINING INDUSTRY AND ITS RELATIONSHIP WITH BACKWARD LINKED INDUSTRIES. THE STUDY DELINEATES EXPENDITURES OF THE MANITOBA MINING INDUSTRY AND DESCRIBES THE BACKWARD LINKED INDUSTRIES ACCORDING TO THE STATISTICS CANADA STANDARD INDUSTRIAL CLASSIFICATION AND TO THEIR GEOGRAPHIC DISTRIBUTION.

Since metal mines account for approximately 80% of the total value of mineral production, the study is based on data collected from metal mines only. This data is considered to be representative of the entire mining industry.

Within the field of linkage study there are differing opinions as to where the mineral industry begins and ends, what sectors are merely linked to it, and which are integral parts of the industry. The definition, to some extent, becomes a compromise imposed by the realities of data availability (Saunders, 1975). Data for this study was obtained from the three largest metal mining companies currently operating in Manitoba. It is assumed that the activities of these companies serves as an indication of the behaviour of the Manitoba mining industry as

a whole. For purposes of this study, the term "mining industry" is defined as the exploration, extraction and treatment operations up to (and including) the stage of processing at which the mineral is exported from the mine location. Therefore, theoretically, the study includes certain forward linked activities, namely smelting and refining, but these are herein considered to be parts of the mining industry per se. The reason for this treatment is primarily derived from the practical difficulty of extracting data in an industry where all but one of the three major companies' output is processed in Manitoba prior to shipment.

D. Importance of the Study

This practicum is of interest to other researchers, government, and industry.

As previously mentioned, in Manitoba little study has been conducted in the field of linkage analysis and input-output modelling. This study, therefore, is valuable to other researchers because it provides a data base for further analysis and a stimulus for other studies of this nature.

The study describes the relationships between the mining industry and other sectors of the provincial economy; therefore, it is of interest to Manitoba government policy-makers and planners. Findings of the study may provide guidelines for policy directed at strengthening existing linkages and developing new linkages where leakages are found to exist. Information contained herein, coupled with other mining research may facilitate regional planning and development. Data of this nature is necessary to the development of a provincial industrial strategy.

In that the study provides a description of backward linkages in terms of geographic distribution, it is of interest to private entrepreneurs in Manitoba who currently are or in the future may wish to develop mining companies as major clients. Specifically, the study is of interest to the newly-formed Manitoba Mine Support Group, a group of Manitoba firms who currently supply goods and services to the mining industry.

The late 1960's was a period in which particularly strong concern was shown for the role of resource-related industries in the economy of Canada. Federal interest was manifested in both the Carter Commission Report (1967) and the Gray Task Force (1972). The Carter Commission represented a re-evaluation of Canadian tax structure and provincial-federal resource revenue sharing procedures. The Gray Report critically assessed the industrial structure, with special emphasis on Canadian dependence on foreign investment and Canadian vulnerability to world markets prices. The controversial Kierans Report (1973) for the Government of Manitoba outlined provincial concerns over resource revenues and the relationship between the provincial government and the resource industry. The Carter Commission, the Gray Task Force, and the Kierans Report precipitated a number of studies, produced both by government and the industry, dealing with the role of the mining industry in the Canadian economy.

A. National Level

In direct response to the Royal Commission on Taxation, Hedlin Menzies and Associates Limited prepared the Submission of Brenda Mines Ltd. to the Government of Canada (1967), which outlined the importance of mining to Canada. It was estimated that each job in mining supports six elsewhere in secondary industries. It was further suggested the "as many of Canada's undeveloped regions are unsuited to economic pursuits other than mining, mineral developments offer a unique means to induce the spread of settlement to what would otherwise be unproductive areas. In this respect, the mineral industry has made an important contribution to regional development." British Columbia and the Yukon were cited as two regions which rely heavily on mining as a generator of broader economic growth.

D.J. McCulla of the Federal Mineral Economics Research Division (1974) developed a model to study the technological interdependence of industries and to trace the propagation of demand through the economic system. A multiplier analysis was employed to quantify the relationships between the mineral sector and other sectors of the economy.

A year later, D.J. McCulla and J.E. Stahl (1975) co-authored a study of the Canadian Mineral Industry and its relations to economic development. Contrary to the Brenda Mines Ltd. submission, McCulla and Stahl found that mining (not including processing) presents a relatively low development potential when compared to other sectors of the economy. They found interindustry linkages, especially backward ones, to be low in value and few in number.

Concerned about this lack of strong backward linkages from the mining sector, the Mineral Resources Branch of the Federal Department of Energy, Mines and Resources commissioned a study of The Role of Innovation in the Mining and Mining Industries (1974). Richardson, Leenders, Coucet and Ruhlman found that, in Canada, the development and manufacture of new process technology by suppliers was inadequate to meet the needs of mining firms. The corporate strategies pursued by the majority of suppliers appeared to prevent much new technology from being diffused through the mining industry in Canada.

Small- and medium-size firms in the supply industry do not possess the technical and financial resources to carry out significant innovative activity. Furthermore, the risk in new process technology is a deterrent to the management of most small- and medium-sized companies. Large firms in the supply industry perform little research and development due to the fact that they are normally foreign-owned and therefore, rely on non-Canadian research and development laboratories. The study confirmed that process innovation is necessary in order for Canadian mining supply industries to compete successfully with international suppliers.

In 1975, the Centre for Resource Studies, Queen's University, commenced a multidisciplinary program of research in the general subject of The National Impact of Mining, with the objective of examining the nature and extent of the effects of the mining industry on the economy and other aspects of Canadian society. The Impact of the Mining Industries on the Canadian Economy by R.W. Boadway and J. M. Treddenick (1977) was the first report to arise from the program.

The study systematically traced the effects of the mining industry through the Canadian economy. Using the methodology of a 'general equilibrium comparative statics' model, the configuration and behaviour of the Canadian economy at one point in time (1966) were reproduced in considerable detail. By experimenting with the model, Boadway and Treddenick assessed the impact of the presence of the mining industry. In the first test, the industry was removed from the model, simulating an absence of the mining industry from the economy. The second test, displayed the effects of an expansion in the industry.

The study showed that if the mining industries had not existed (provided their capital had been available for reallocation of other industries) a few industries, mainly suppliers to mining, would be smaller, while all others would be larger. In this situation, the general economic welfare of Canadians was shown to be virtually unchanged. However, if the mining industries had not existed and if all or part of the mining capital had been lost, the same supplier industries would be reduced and increases in many other industries would be less than the previous case. In this situation, a reduction in general economic welfare of up to 2.3% results. Virtually identical but opposite effects arise when the expansion of mining is contemplated.

The Boadway and Treddenick study is of considerable importance in that, by means of computer modelling, it was able to simulate to complexities of the Canadian economy and to systematically test the effects of the mining industry in that economy. One of the most significant findings of the study was that the absence of mining from

the economy, assuming that mining capital is reallocated to other industries, had no adverse affect in the general economic welfare of Canadians. This conclusion is highly contingent on their assumption that all mining capital is available for complete reallocation to other sectors of the economy. This assumption may not be correct and therefore, Boadway and Treddenick may have understated the value of the mining industry. Furthermore, the researchers showed little concern for the distributional aspects of the mining industry. Historically, mining has been instrumental in regional development. Research regarding regional and provincial impacts of the mining industry, points out that the mining industry benefits some regions more than others. This was not taken into consideration by Boadway and Treddenick.

Another study in the Centre for Resource Studies series on the national impact of the mining industry in Canada was concerned specifically with The Economic Linkages of the Canadian Mining Industry. Nickel, Henley, Gillies and Saunders examined the economic impact of mining at both the national and regional level and explored the matter of further processing of mineral materials prior to export. They concluded that in a national level, the income effects generated by mining compare favourably with those of many other industries in the economy; however, over the life of the mine, it appeared that mining's income impacts are less than those for a comparable investment in manufacturing. They also point out that while mining tends to exhibit a low employment ratio, its generation of employment per increased unit of output compares well with manufacturing.

Although they found that mining may represent a significant impact upon regional economies, Nickel et al, suggest that quantification of this impact is often difficult. Provincially, mining's income impacts compare favourably with manufacturing. Furthermore, these effects are consistent for all provinces. Employment impacts however, were found to vary significantly among provinces, with Central Canada benefitting more from capital-intensive activity than the rest of Canada.

In their discussion of linkages, Nickel et al, found that the import leakage from mining is small compared to other industries, while a large percentage of Canadian mineral production is exported in a relatively unprocessed state. They went on to examine the constraints and opportunities associated with increased domestic further processing in the future.

The most recent work of McCulla and Stahl, Quantitative Impact of Minerals on Canadian Economic Development: a Partial Analysis, was published in 1977. Contrary to some of the findings of Nickel et al, the analysis of McCulla and Stahl found the backward linkages of mining to be low in value and few in number, in comparison with other major sectors. Forward linkages, as well, were found to be relatively weak due to Canada's high propensity to export ores and concentrates; this was consistent with the findings of Nickel, et al. McCulla and Stahl concluded that income and employment effects of mining are amongst the lowest of all the major sectors. Their comparison of equal investment in mining and general manufacturing showed that manufacturing generates total (production plus investment) impacts nearly three times larger.

The above discussion represents only a brief review of the research of the effects of the mining industry on the economy of Canada. A number of methodologies have been employed -- descriptive treatment, input-output analysis, multiplier determination, and the general equilibrium comparative statics computer model. All of the above studies were conducted at the national level. However, it is recognized by many researchers that certain regions of the country rely more heavily on mineral activity than other regions. Thus, a discussion of the findings of researchers in the study of the mining industry and its relation to provincial economies is necessary.

B. Provincial Level (Not including Manitoba)

One of the most extensive provincial mining studies was completed in 1968 by Price Waterhouse and Company at the request of the Mining Association of British Columbia. The purpose of the study was to provide information about the British Columbia mining industry and its effects upon the province. The results of the study presented a very favourable portrayal of the role of mining industry in British Columbia. Mining expenditures were shown to have an income effect representing 5.8% of the 1967 Gross Provincial Product. Calculations showed that the mining industry directly employed 5.2% of British Columbia's work force in 1967 and that for every worker employed directly, there were 2.9% other workers in the province supported by mining activity. The Price Waterhouse study and the aforementioned Brenda Mines submission therefore agree that the mining industry has a very significant impact upon the economy of British Columbia. The Price Waterhouse Study, however, may be criticized for failing to allow for initial leakage of spending from the provincial economy before calculation of the multiplier impact. The multipliers, therefore, are most likely overstated.

A similar provincial mining study, completed in 1975, was produced by the Office of the Economic Advisor for the Department of Natural Resources of the province of New Brunswick. The report examined the industry in the context of the provincial economic system and determined its impact on some of the major sectors and economic

variables. Results of the New Brunswick study were far less favourable than the British Columbia study results. The study found the impact of mining in New Brunswick to be less than that from manufacturing, agriculture and forestry. Economic linkages with the mining industry were found to be poorly developed.

In a report prepared for Amok Limited, InterGroup Consulting Economists Limited evaluated the net socio-economic impact of the proposed Cluff Lake Uranium Project on Northern Saskatchewan, the total Saskatchewan economy, and the overall Canadian economy. In Northern Saskatchewan, it is expected that new employment opportunities in uranium mining would provide a strong opportunity for improving socio-economic conditions, provided that the maximum number of such new employment opportunities were accessible to northern residents as opposed to transient workers from the south. The new investment and production expected from the project would create significant growth in Saskatchewan incomes and employment. As well, major economic benefits of this uranium development would flow to the Province of Saskatchewan from recycling taxes, royalties, and profits. At the national level, the Cluff Lake Project would affect Canada's balance of payments, the revenues of the Federal Government, and the nation's overall security of uranium fuel supply. The study concluded that in that the Cluff Lake Project would represent a new private sector investment that would not directly replace any other investment; it would create a new autonomous economic stimulus within Saskatchewan and Canada as a whole.

C. Manitoba Level

Based on the 1961 census data, the Manitoba Consultative Board developed a Manitoba Input-Output Table. The construction of an input-output table of Manitoba's economy was the first attempt in the Province in the field of regional interindustry analysis. The main objectives of the table were:

- "(1) to establish a basic tool of research for carrying out a more vigorous analysis of the economic potential of Manitoba;
- (2) to determine the nature and magnitude of inter-dependence between the various sectors of the Provincial economy;
- (3) to provide an advanced method of planning for private business; and
- (4) to extend and coordinate the presently available considerable amount of statistical information that could be utilized in allied fields such as manpower planning."

The model displayed the payments that each industry (e.g. mining industry) makes to the factors of production - labour, capital, land, and entrepreneurship - as remuneration in the form of wages and salaries, interest, rent and profits for their services.

The Manitoba Input-Output Table showed that \$12,122,000 was paid out as wages and salaries to employees of Manitoba's metal mining industry (Compare with the 1976 figure previously given as greater than \$112,000,000). The Table showed that metal mining is forwardly linked to the primary metal industry, the metal fabricating industry, the machinery industry, and the transportation equipment industry. The study showed that the Manitoba metal mining industry purchased \$72,846,000 of production inputs broken down as follows:

| <u>Manitoba Supply Industry</u> | <u>Value of Product</u> ((\$000)) | <u>Percent of Total</u> |
|--|--------------------------------------|-------------------------|
| Forestry | 282 | 0.4 |
| Metal Mining | 736 | 1.0 |
| Wood Products | 165 | 0.2 |
| Primary Metal | 975 | 1.3 |
| Metal Fabricating | 1,664 | 2.3 |
| Machinery | 996 | 1.4 |
| Electrical Products | 925 | 1.3 |
| Non-Metallic Mineral Products | 6 | - |
| Petroleum Products | 2,294 | 3.1 |
| Chemicals | 3,000 | 4.1 |
| Repair Construction | 604 | 0.3 |
| Electric Power | 1,964 | 2.7 |
| Trade | 5,451 | 7.5 |
| Transportation and Storage | 6,299 | 8.6 |
| Non-Competing Imports | 28 | - |
| Other Primary Inputs (i.e. Imports) | 47,457 | 65.1 |
| | <u>72,846</u> | <u>=100</u> |

It is interesting to note that the Manitoba metal mining industry imported as much as 65% of its production inputs in 1961.

An extensive report was prepared for the International Nickel Company of Canada, Limited by Hedlin Menzies and Associates Limited in 1970. The study analyzed the historical impact of resource development in Thompson, Manitoba. The report showed a favourable influence of mining in the economy of Manitoba and, in particular, in the community of Thompson. The report also pointed out, however, that the federal government and provinces other than Manitoba benefitted more from the Thompson development than did the Province of Manitoba.

Sam Chow (1977) investigated the developmental opportunities for further copper processing in Manitoba. Several domestic constraints to copper processing are identified and evaluated. The report suggested that it is necessary to take a coordinated approach to the development of mineral resources; cooperation from governments,

private industries, and consumers is required. Chow employed the concept of economic linkages, concentrating his efforts to the specific study of forward linkages.

Daniel Barchyn (1978) examined exploration expenditures of the Manitoba mining industry in order to assess the capital investment in mineral exploration in Manitoba for the period 1976-2000. He pointed out that the level of exploration expenditure in Manitoba between 1976 and 2000 will be sensitive to both the growth in economic opportunity for the production of nickel, copper and zinc, and the rate of change of the exploration/success ratio. If growth in mineral output is to continue on the historic trend, exploration expenditure will average 131.4 million dollars (1976) per five-year period between 1976 and 2000, 2.9 times greater than the average expenditure of 45.5 million dollars (1976) per five-year period over the historic period (1946-1975). If growth in mineral output is to be higher than the historic trend, exploration expenditure per five-year period will average an amount 5.1 times greater than the average five-year expenditure over the historic period. If no growth in mineral output is to occur, exploration expenditure per five-year period will be an amount 1.3 times greater than the average five-year expenditure over the historic period.

It can be seen that little research has been conducted concerning the mining industry and its relation to the economy of Manitoba. It is recognized that there is a need for such research with specific interest shown toward backward linkages. This practicum addresses this concern.

III. DATA COLLECTION AND TREATMENT

A. Data Collection

Current, detailed data necessary for the study was not obtainable through mining company reports or Statistics Canada publications. Therefore, data regarding expenditures in materials, supplies, and services were obtained directly from the three largest metal mining companies currently operating in Manitoba. As well, information regarding wages and salaries was collected for comparative purposes. Personal interviews were conducted with the purchasing supervisors for the companies; data were obtained directly from the company's vendor listings.

Information collected from these meetings included:

- supplier firm name
- supplier firm location
- type of supply or service
- use of supply or service within the mine operation
- value of the purchase for 1976 (in 1976 dollars)

The year 1976 was chosen as the year of study as it was the most recent year for which a complete set of data could be obtained. All companies agreed that there was nothing anomalous about the spending pattern of 1976 (i.e., it could be considered to be a "typical" year). It was the hope that by making a "spot check" of a single year, information regarding both operating and capital expenditures would be represented.

Data collection was limited, to a certain extent, due to a time constraint. (Length of personal interviews varied from one to four

hours.) As a result, only information regarding expenditures in excess of \$1,000 was obtained. This later caused some discrepancy between the sum of recorded expenditures and the known value of total expenditures. (See Preparation for Analysis, III, B.) Data collection was further hampered in one particular case due to the complicated method employed by one of the companies of recording vendor purchases. However, in all cases follow-up telephone calls were made in an attempt to obtain as complete a data set as possible.

Although the effort was made to obtain a complete data set, constraints on data collection, imposed by time, distance, and matters concerning confidentiality, resulted in some cases in incomplete data groupings. For example, expenditures on electric power were not available from all participating mining companies. This limitation in data collection results in a severe constraint to the entire study. Results of the study must be considered as descriptive only. Quantitative measures serve the sole purpose of ranking the supply industries as to their relative importance to the mining industry. The reader must be cautioned therefore, to regard quantitative measures as meaningful only within the context of this study.

It must be noted that value of expenditures are the purchaser value (Isard, 1960), so that, where applicable, sales tax, tariff charge and transportation costs are included. Since it is not always possible to separate and therefore, exclude these charges, they are included in the analysis as part of the expenditure value.

As aforementioned, it is assumed that the behaviour of the three major metal mining companies in Manitoba is representative of the behaviour of the Manitoba mining industry as a whole.

B. Preparation for Analysis

The first stage of preparation for analysis was the compilation of all collected data. In many cases a firm was found to supply to more than one, and sometimes all, of the three mining companies, so that a master list of supply firms to the mining industry in Manitoba was composed. The complete master list comprises over four hundred supplier firms.

Each firm was then coded for computer usage, according to name, industry, location, and function.

Firm names were coded both for computer usage and for purposes of confidentiality.

Industrial coding was based on the three-digit Statistics Canada Standard Industrial Classification. Although the classification is, in some cases, too broad for the purposes of this study, it was hoped that employing an existing classification system would facilitate the incorporation of other material with this study and the comparison of the results of this study with the findings of other researchers. Table 1 is a list of the groups and classes within the Standard Industrial Classification. (For a further description of industries, see Appendix 1).

A code of location or geographical classification was devised by the author. Distinction was made between Manitoba-based manufacturers and distributors. Information regarding this delineation was obtained from the Manitoba Trade Directory (Department of Industry and Commerce, Manitoba, 1977), and the Winnipeg and Rural Manitoba telephone directories (Manitoba Telephone System, 1977). In the

cases in which Manitoba firms both manufactured and distributed their own products, the firms were listed as Manitoba manufacturers. For the most part then, firms listed as Manitoba distributors can be considered as distributors of non-Manitoban products.

Although only the one code number (3) was assigned to other Canadian manufacturers and distributors, the distinction between manufacturers and distributors is implicit in the Standard Industrial Classification. According to the Standard Industrial Classification, 0 is the first digit of the primary industries, manufacturing industries have 1, 2 or 3 as their first digit and wholesalers (distributors) and retailers have a first digit of 6. For example, a firm manufacturing small electrical appliances would hold the classification number 331, while the distributor of the electrical appliances would hold the classification number 621. For purposes of the study, a firm was considered to be a manufacturer if it was listed as such in the Canadian Trade Index (Canadian Manufacturers Association, 1977).

Services and contractors were also classified according to location. Distinction was made between local services and contractors (i.e., located in Northern Manitoba), other Manitoba services and contractors (i.e., usually located in Winnipeg), and other Canadian services and contractors.

Only one code number was assigned to non-Canadian manufacturers, distributors, services and contractors. However, as aforementioned, distinction can be drawn through their respective Standard Industrial Classification numbers.

Table 2 describes the code of geographical classification.

Each firm was further coded according to function or use of

supply within the mining process. Information regarding this distinction was drawn from personal interviews and from the author's own knowledge of the mine process. Some materials were not used solely in a single operation (e.g., electrical wiring); these indivisible supplies were allotted a special code number (5). Table 3 describes the code of functional grouping.

As mentioned before, there was a noticeable discrepancy between the sum of expenditures according to the collected data and the known total of expenditures according to mining company accounts. This discrepancy varied from approximately 15% to 40% of expenditures. All purchasing supervisors of the mining companies agreed that this discrepancy was due to the incomplete data set resulting from the time constraint discussed in III, A. However, all purchasing supervisors suggested that approximately 80-90% of the purchases represented by this difference were supplied by Manitoba Distributors (Geographic Classification 2). Therefore, two dummy industries (Standard Industrial Classification 999) were created, one geographically coded 2 (Manitoba Distributor), representing 80% of the difference and one geographically coded 3 (other Canadian Manufacturer or Distributor), representing 20% of the difference, in order to equate the sum of expenditures with the known total of expenditures.

TABLE 1
STANDARD INDUSTRIAL CLASSIFICATION

LIST OF GROUPS AND CLASSES

| Ind. No. | Division 1 - Agriculture | Ind. No. | Division 4 - Mines (including Milling), Quarries and Oil Wells - Concluded |
|----------|--|----------|--|
| | Major Group 1 - Experimental and Institutional Farms | | Major Group 5 - Services Incidental to Mining |
| 001 | Experimental and University Farms | 096 | Contract Drilling for Petroleum |
| 003 | Institutional Farms | 098 | Other Contract Drilling |
| | | 099 | Miscellaneous Services Incidental to Mining |
| | Major Group 2 - Farms (except Experimental and Institutional Farms) | | Division 5 - Manufacturing Industries |
| 011 | Livestock and Livestock Combination Farms | | Major Group 1 - Food and Beverage Industries |
| 013 | Field Crop and Field Crop Combination Farms | 101 | Meat and Poultry Products Industries |
| 015 | Fruit and Vegetable Farms | 102 | Fish Products Industry |
| 017 | Other Crop and Livestock Combination Farms | 103 | Fruit and Vegetable Processing Industries |
| 019 | Miscellaneous Specialty Farms | 104 | Dairy Products Industry |
| | | 105 | Flour and Breakfast Cereal Products Industry |
| | Major Group 3 - Services Incidental to Agriculture | 106 | Feed Industry |
| 021 | Services Incidental to Agriculture | 107 | Bakery Products Industries |
| | | 108 | Miscellaneous Food Industries |
| | Division 2 - Forestry | 109 | Beverage Industries |
| | Major Group 1 - Logging | | Major Group 2 - Tobacco Products Industries |
| 031 | Logging | 151 | Leaf Tobacco Processors |
| | | 153 | Tobacco Products Manufacturers |
| | Major Group 2 - Forestry Services | | Major Group 3 - Rubber and Plastics Products Industries |
| 039 | Forestry Services | 162 | Rubber Products Industries |
| | | 165 | Plastics Fabricating Industry, n.e.s. |
| | Division 3 - Fishing and Trapping | | Major Group 4 - Leather Industries |
| | Major Group 1 - Fishing | 172 | Leather Tanneries |
| 041 | Fishing | 174 | Shoe Factories |
| | | 175 | Leather Glove Factories |
| | Major Group 2 - Fishery Services | 179 | Luggage, Handbag and Small Leather Goods Manufacturers |
| 045 | Fishery Services | | Major Group 5 - Textile Industries |
| | | 181 | Cotton Yarn and Cloth Mills |
| | Major Group 3 - Hunting and Trapping | 182 | Wool Yarn and Cloth Mills |
| 047 | Hunting and Trapping | 183 | Man-made Fibre, Yarn and Cloth Mills |
| | | 184 | Cordage and Twine Industry |
| | Division 4 - Mines (including Milling), Quarries and Oil Wells | 185 | Felt and Fibre Processing Mills |
| | Major Group 1 - Metal Mines | 186 | Carpet, Mat and Rug Industry |
| 051 | Placer Gold Mines | 187 | Canvas Products, and Cotton and Jute Bags Industries |
| 052 | Gold Quartz Mines | 188 | Automobile Fabric Accessories Industry |
| 057 | Uranium Mines | 189 | Miscellaneous Textile Industries |
| 058 | Iron Mines | | Major Group 6 - Knitting Mills |
| 059 | Miscellaneous Metal Mines | 231 | Hosiery Mills |
| | | 239 | Knitting Mills (except Hosiery Mills) |
| | Major Group 2 - Mineral Fuels | | Major Group 7 - Clothing Industries |
| 061 | Coal Mines | 243 | Men's Clothing Industries |
| 064 | Crude Petroleum and Natural Gas Industry | 244 | Women's Clothing Industries |
| | | 245 | Children's Clothing Industry |
| | Major Group 3 - Non-Metal Mines (except Coal Mines) | 246 | Fur Goods Industry |
| 071 | Asbestos Mines | 248 | Foundation Garment Industry |
| 072 | Peat Extraction | 249 | Miscellaneous Clothing Industries |
| 073 | Gypsum Mines | | Major Group 8 - Wood Industries |
| 079 | Miscellaneous Non-Metal Mines | 251 | Sawmills, Planing Mills and Shingle Mills |
| | | 252 | Veneer and Plywood Mills |
| | Major Group 4 - Quarries and Sand Pits | 254 | Sash, Door and Other Millwork Plants |
| 083 | Stone Quarries | 256 | Wooden Box Factories |
| 087 | Sand Pits or Quarries | 258 | Coffin and Casket Industry |
| | | 259 | Miscellaneous Wood Industries |

Division 5 - Manufacturing Industries - Continued

Major Group 9 - Furniture and Fixture Industries

- 261 Household Furniture Manufacturers
- 264 Office Furniture Manufacturers
- 266 Miscellaneous Furniture and Fixtures Manufacturers
- 268 Electric Lamp and Shade Manufacturers

Major Group 10 - Paper and Allied Industries

- 271 Pulp and Paper Mills
- 272 Asphalt Roofing Manufacturers
- 273 Paper Box and Bag Manufacturers
- 274 Miscellaneous Paper Converters

Major Group 11 - Printing, Publishing and Allied Industries

- 286 Commercial Printing
- 287 Platemaking, Typesetting and Trade Bindery Industry
- 288 Publishing Only
- 289 Publishing and Printing

Major Group 12 - Primary Metal Industries

- 291 Iron and Steel Mills
- 292 Steel Pipe and Tube Mills
- 294 Iron Foundries
- 295 Smelting and Refining
- 296 Aluminum Rolling, Casting and Extruding
- 297 Copper and Copper Alloy Rolling, Casting and Extruding
- 298 Metal Rolling, Casting and Extruding, n.e.s.

Major Group 13 - Metal Fabricating Industries (except Machinery and Transportation Equipment Industries)

- 301 Boiler and Plate Works
- 302 Fabricated Structural Metal Industry
- 303 Ornamental and Architectural Metal Industry
- 304 Metal Stamping, Pressing and Coating Industry
- 305 Wire and Wire Products Manufacturers
- 306 Hardware, Tool and Cutlery Manufacturers
- 307 Heating Equipment Manufacturers
- 308 Machine Shops
- 309 Miscellaneous Metal Fabricating Industries

Major Group 14 - Machinery Industries (except Electrical Machinery)

- 311 Agricultural Implement Industry
- 315 Miscellaneous Machinery and Equipment Manufacturers
- 316 Commercial Refrigeration and Air Conditioning Equipment Manufacturers
- 318 Office and Store Machinery Manufacturers

Major Group 15 - Transportation Equipment Industries

- 321 Aircraft and Aircraft Parts Manufacturers
- 323 Motor Vehicle Manufacturers
- 324 Truck Body and Trailer Manufacturers
- 325 Motor Vehicle Parts and Accessories Manufacturers
- 326 Railroad Rolling Stock Industry
- 327 Shipbuilding and Repair
- 328 Boatbuilding and Repair
- 329 Miscellaneous Vehicle Manufacturers

Major Group 16 - Electrical Products Industries

- 331 Manufacturers of Small Electrical Appliances
- 332 Manufacturers of Major Appliances (Electric and Non-Electric)
- 333 Manufacturers of Lighting Fixtures
- 334 Manufacturers of Household Radio and Television Receivers
- 335 Communications Equipment Manufacturers
- 336 Manufacturers of Electrical Industrial Equipment
- 338 Manufacturers of Electric Wire and Cable
- 339 Manufacturers of Miscellaneous Electrical Products

Division 5 - Manufacturing Industries - Concluded

Major Group 17 - Non-Metallic Mineral Products Industries

- 351 Clay Products Manufacturers
- 352 Cement Manufacturers
- 353 Stone Products Manufacturers
- 354 Concrete Products Manufacturers
- 355 Ready-Mix Concrete Manufacturers
- 356 Glass and Glass Products Manufacturers
- 357 Abrasives Manufacturers
- 358 Lime Manufacturers
- 359 Miscellaneous Non-Metallic Mineral Products Industries

Major Group 18 - Petroleum and Coal Products Industries

- 365 Petroleum Refineries
- 369 Miscellaneous Petroleum and Coal Products Industries

Major Group 19 - Chemical and Chemical Products Industries

- 372 Manufacturers of Mixed Fertilizers
- 373 Manufacturers of Plastics and Synthetic Resins
- 374 Manufacturers of Pharmaceuticals and Medicines
- 375 Paint and Varnish Manufacturers
- 376 Manufacturers of Soap and Cleaning Compounds
- 377 Manufacturers of Toilet Preparations
- 378 Manufacturers of Industrial Chemicals
- 379 Miscellaneous Chemical Industries

Major Group 20 - Miscellaneous Manufacturing Industries

- 391 Scientific and Professional Equipment Industries
- 392 Jewellery and Silverware Industry
- 393 Sporting Goods and Toy Industries
- 397 Signs and Displays Industry
- 399 Miscellaneous Manufacturing Industries, n.e.s.

Division 6 - Construction Industry

Major Group 1 - General Contractors

- 404 Building Construction
- 406 Highway, Bridge and Street Construction
- 409 Other Construction

Major Group 2 - Special-Trade Contractors

- 421 Special-Trade Contractors

Division 7 - Transportation, Communication and Other Utilities

Major Group 1 - Transportation

- 501 Air Transport
- 502 Services Incidental to Air Transport
- 503 Railway Transport
- 504 Water Transport
- 505 Services Incidental to Water Transport
- 506 Moving and Storage, Used Goods, Uncrated
- 507 Other Truck Transport
- 508 Bus Transport, Interurban and Rural
- 509 Urban Transit Systems
- 512 Taxicab Operations
- 515 Pipeline Transport
- 516 Highway and Bridge Maintenance
- 517 Miscellaneous Services Incidental to Transport
- 519 Other Transportation

Major Group 2 - Storage

- 524 Grain Elevators
- 527 Other Storage and Warehousing

**Division 7 - Transportation, Communication
and Other Utilities - Concluded**

Major Group 3 - Communication

- 543 Radio and Television Broadcasting
- 544 Telephone Systems
- 545 Telegraph and Cable Systems
- 548 Post Office

Major Group 4 - Electric Power, Gas and Water Utilities

- 572 Electric Power
- 574 Gas Distribution
- 576 Water Systems
- 579 Other Utilities

Division 8 - Trade

Major Group 1 - Wholesale Trade

- 602 Wholesalers of Farm Products
- 606 Wholesalers of Coal and Coke
- 608 Wholesalers of Petroleum Products
- 611 Wholesalers of Paper and Paper Products
- 612 Wholesalers of General Merchandise
- 614 Wholesalers of Food
- 615 Wholesalers of Tobacco Products
- 616 Wholesalers of Drugs and Toilet Preparations
- 617 Wholesalers of Apparel and Dry Goods
- 618 Wholesalers of Household Furniture and Furnishings
- 619 Wholesalers of Motor Vehicles and Accessories
- 621 Wholesalers of Electrical Machinery, Equipment and Supplies
- 622 Wholesalers of Farm Machinery and Equipment
- 623 Wholesalers of Machinery and Equipment, n.e.s.
- 624 Wholesalers of Hardware, Plumbing and Heating Equipment
- 625 Wholesalers of Metal and Metal Products, n.e.s.
- 626 Wholesalers of Lumber and Building Materials
- 627 Wholesalers of Scrap and Waste Materials
- 629 Wholesalers, n.e.s.

Major Group 2 - Retail Trade

- 631 Food Stores
- 642 General Merchandise Stores
- 652 Tire, Battery and Accessories Stores
- 654 Gasoline Service Stations
- 656 Motor Vehicle Dealers
- 658 Motor Vehicle Repair Shops
- 663 Shoe Stores
- 665 Men's Clothing Stores
- 667 Women's Clothing Stores
- 669 Clothing and Dry Goods Stores, n.e.s.
- 673 Hardware Stores
- 676 Household Furniture and Appliance Stores
- 678 Radio, Television and Electrical Appliance Repair Shops
- 681 Drug Stores
- 691 Book and Stationery Stores
- 692 Florists' Shops
- 694 Jewellery Stores
- 695 Watch and Jewellery Repair Shops
- 696 Liquor, Wine and Beer Stores
- 697 Tobacconists
- 699 Retail Stores, n.e.s.

Division 9 - Finance, Insurance and Real Estate

Major Group 1 - Finance Industries

- 701 Banks and Other Deposit Accepting Establishments
- 703 Other Credit Agencies
- 705 Security Brokers and Dealers (including Exchanges)
- 707 Investment and Holding Companies
- 715 Canadian Offices of Canadian-Incorporated Companies Classified as Non-Canadian

**Division 9 - Finance, Insurance
and Real Estate - Concluded**

Major Group 2 - Insurance Carriers

- 721 Insurance Carriers

Major Group 3 - Insurance Agencies and Real Estate Industry

- 735 Insurance and Real Estate Agencies
- 737 Real Estate Operators

**Division 10 - Community, Business and Personal Service
Industries**

Major Group 1 - Education and Related Services

- 801 Kindergartens and Nursery Schools
- 802 Elementary and Secondary Schools
- 803 Schools of Art and of the Performing Arts
- 804 Vocational Centers, Trade Schools and Business Colleges
- 805 Post-Secondary Non-University Educational Institutions
- 806 Universities and Colleges
- 807 Libraries, Museums and Other Repositories
- 809 Education and Related Services, n.e.s.

Major Group 2 - Health and Welfare Services

- 821 Hospitals
- 822 Related Health Care Institutions
- 823 Offices of Physicians and Surgeons
- 824 Offices of Para-medical Personnel (Practitioners)
- 825 Offices of Dentists
- 826 Diagnostic and Therapeutic Services, n.e.s.
- 827 Miscellaneous Health Services
- 828 Welfare Organizations

Major Group 3 - Religious Organizations

- 831 Religious Organizations

Major Group 4 - Amusement and Recreation Services

- 841 Motion Picture Theatres
- 842 Motion Picture Production and Distribution
- 843 Bowling Alleys and Billiard Parlours
- 844 Golf Clubs and Country Clubs
- 845 Theatrical and Other Staged Entertainment Services
- 849 Miscellaneous Amusement and Recreation Services

Major Group 5 - Services to Business Management

- 851 Employment Agencies and Personnel Suppliers
- 853 Computer Services
- 855 Security and Investigation Services
- 861 Offices of Accountants
- 862 Advertising Services
- 863 Offices of Architects
- 864 Engineering and Scientific Services
- 866 Offices of Lawyers and Notaries
- 867 Offices of Management and Business Consultants
- 869 Miscellaneous Services to Business Management

Major Group 6 - Personal Services

- 871 Shoe Repair Shops
- 872 Barber and Beauty Shops
- 873 Private Households
- 874 Laundries, Cleaners and Pressers (except Self-Service)
- 876 Self-service Laundries and Dry Cleaners
- 877 Funeral Services
- 879 Miscellaneous Personal Services

Major Group 7 - Accommodation and Food Services

- 881 Hotels and Motels
- 883 Lodging Houses and Residential Clubs
- 884 Camping Grounds and Trailer Parks
- 886 Restaurants, Caterers and Taverns

**Division 10 – Community, Business and Personal Service
Industries – Concluded**

Major Group 8 – Miscellaneous Services

891 Labour Organizations and Trade Associations
893 Photographic Services, n.e.s.
894 Automobile and Truck Rental
895 Machinery and Equipment Rental
896 Blacksmithing and Welding Shops
897 Miscellaneous Repair Shops
898 Services to Buildings and Dwellings
899 Miscellaneous Services, n.e.s.

Division 11 – Public Administration and Defence

Major Group 1 – Federal Administration

902 Defence Services
909 Other Federal Administration

**Division 11 – Public Administration
and Defence – Concluded**

Major Group 2 – Provincial Administration

931 Provincial Administration

Major Group 3 – Local Administration

951 Local Administration

Major Group 4 – Other Government Offices

991 Other Government Offices

Division 12 – Industry Unspecified or Undefined

999 Canadian-Incorporated Companies Classified as Non-
Canadian
000 Unspecified or Undefined

Source: Statistics Canada, 1970: Catalogue 12-501.

TABLE 2

CODE OF GEOGRAPHIC CLASSIFICATION

1. Manitoba Manufacturer
2. Manitoba Distributor
3. Other Canadian Manufacturer or Distributor
4. Local Service or Contractor*
5. Other Manitoba Service or Contractor
6. Other Canadian Service or Contractor
7. Non-Canadian Manufacturer, Distributor,
Service, or Contractor

*Northern Manitoba Service or Contractor

TABLE 3

CODE OF FUNCTIONAL GROUPING

1. Mine
2. Mill
3. Smelter
4. Refinery
5. Indivisible
6. Administration and Research
7. Services
8. Exploration

C. Method of Analysis

Analysis was executed by computer; the computer program employed a PL/1 language format. The analysis was performed in five stages.

1. Stage 1 - Grand Total

The sum of the values of expenditures (including those of the dummy industry) for each mining company was computed. This was necessary in order to ensure that the sum was equal to the known total according to mining company accounts. Results of this stage of the analysis are not available to the reader for reasons of confidentiality. The sums of the expenditures by each company were then added to compute a Grand Total of expenditures by the three Manitoba metal mining companies.

2. Stage 2 - Geographic Distribution

The second stage of the analysis computed the percentage of the Grand Total purchased from each of the seven geographical groups.

3. Stage 3 - Industrial Breakdown

The third stage of analysis computed the percentage of the Grand Total purchased from each of the Standard Industrial classes. A total of 106 Standard Industrial classes were represented in this analysis.

4. Stage 4 - Cross-tabulation: Industrial Breakdown and Geographic Distribution

The fourth stage of analysis represented a cross-tabulation of the results of Stages 2 and 3. Stage 4 computed the percentage

of the Grand Total purchased from each of the geographical groups of each of the Standard Industrial classes. Conversely, Stage 4 computed the percentage of the Grand Total purchased from each of the Standard Industrial classes of each of the geographical groups.

5. Stage 5 - Functional Distribution

The final stage of analysis computed the percentage of the Grand Total of expenditures represented by each of the eight mining functional groups.

For a complete technical description of the analysis, see Appendix 2.

IV. PRESENTATION AND DISCUSSION OF RESULTS

A. Grand Total

Analysis shows that a Grand Total of approximately \$133,255,500 was spent by the three Manitoba metal mining companies in 1976 towards purchases of materials, supplies, services and capital equipment. During this same period, approximately \$111,358,400 was paid out to employees of these companies as wages and salaries. Total expenditures of these mining companies for 1976 was, therefore, \$244,613,900. Much of the \$111,358,400 paid as wages and salaries can be considered to remain within the province, as employees are likely to spend most of their income locally (i.e., in Northern Manitoba). The amount of respending in Northern Manitoba may depend on the degree to which southern transient single males are employed in the mining industry.

Of the mining industry's total yearly expenditures, 54.48% is spent on purchases of materials, supplies, services and capital equipment. The degree to which this amount is retained and respent in Manitoba can be determined by examining the geographic distribution of the supply industries.

B. Geographic Distribution

Table 4 displays the results of Stage 2 of the analysis -- the determination of percentage of total purchases (i.e., Grand Total), represented by each of the seven geographical groups. Note that Manitoba Distributors account for the largest percentage of Grand Total, with 41.34%. Other Manitoba services is the second largest group, accounting for 23.38% of Grand Total. Other Canadian Manufacturers and Distributors and Manitoba Manufacturers rank third and fourth, representing 12.52% and 11.64% respectively.

If it is assumed that Manitoba distributors distribute only non-Manitoba products and the distributor retains none of the value of the purchase, then total imports to the province can be computed as follows:

| | |
|---|-------------|
| Manitoba Distributors | 41.34 |
| Other Canadian Manufacturers and Distributors | 12.52 |
| Other Canadian Services | 2.43 |
| Non-Canadian Manufacturers, Distributors and Services | <u>0.31</u> |
| | 56.60% |

Total imports to the province, then, is 56.60% of Grand Total. This value is somewhat less than the value of imports of 65.1% derived from the Manitoba Input-Output Table (1961). The discrepancy may possibly be attributed to the fact that the Manitoba Input-Output Table is based on data less detailed than the data employed here. Alternatively both studies may in fact be an adequate representation of the data of their respective study periods and the discrepancy shows that Manitoba manufacturers and services have captured an addi-

tional 8.5% of the mining industry business over the past fifteen years.

It may not, however, be entirely correct to assume that Manitoba distributors retain none of the value of the purchase. In practice the distributor is likely to retain at least a small portion of the value of the purchase, thereby contributing somewhat to the provincial economy. For example, if the distributor retains 7% of the value of the purchase, an additional 2.89% ($0.07 \times 41.34\%$) of the Grand Total can be considered to accrue to the province from the purchase of supplies from Manitoba distributors. Continuing with this example, the percentage of total mining industry purchase expenditures for 1976 which, therefore, can be considered to remain within the province is:

| | |
|-----------------------------|-------------|
| Manitoba Manufacturers | 11.64 |
| Local Services | 8.37 |
| Other Manitoba Services | 23.38 |
| 7% of Manitoba Distributors | <u>2.89</u> |
| | 46.28% |

This calculation however, assumes that the total value of purchases from Manitoba manufacturers can be considered to be retained with Manitoba. This assumption may not be entirely correct due to the fact that, for purposes of the study, a firm was considered to be a manufacturer if it was listed as such in the Manitoba Trade Directory (Department of Industry and Commerce, 1977). However, the Manitoba Trade Directory considers a company to be a "manufacturer" if any amount of value is added to the produce at a Manitoba plant (e.g., an assembler of Ontario- or American-produced front-end loader parts is considered to be a Manitoba manufacturer of front-end loaders).

For purposes of the study however, the assumption is made that the full value of purchases from Manitoba manufacturers is retained within the province, in order to be consistent with the Manitoba Input-Output Table and Department of Industry and Commerce data.

Therefore, of the total purchase expenditures of the Manitoba mining industry in 1976, approximately 46.28% (according to the 7% example), a little less than half, can be considered to be retained within the Manitoba economy. Furthermore, since most of the Manitoba manufacturers are based in Winnipeg, less than 10% of Grand Total expenditures can be considered to accrue to Northern Manitoba, despite the fact that it is the base of mining operations.

Of the remaining 53.72% representing purchases of supplies and services from outside of Manitoba, only 0.31% accounts for expenditures towards non-Canadian products and services. In this case the result may be somewhat misleading. Geographical Classification 3 represents both Canadian manufacturers and Canadian distributors. Analogous to the situation regarding Manitoba distributors, the total value of purchases from Canadian distributors cannot be considered to be retained within Canada. Interpretation of the results may be further complicated by the fact that, similar to the situation regarding Manitoba manufacturers, it may not be entirely correct to assume that the full value of purchases from Canadian manufacturers will remain within Canada.

For purposes of the study, a firm was considered to be a manufacturer if it was listed as such in the Canadian Trade Index (Canadian Manufacturers Association, 1977). However, the Canadian Trade Index considers a company to be a "manufacturer" if any amount of value is added to the product at a Canadian plant.

TABLE 4

PERCENTAGE OF GRAND TOTAL BY THE MANITOBA MINING INDUSTRY
ATTRIBUTABLE TO EACH OF THE SEVEN GEOGRAPHICAL GROUPS (1976)

| <u>Geographical Group</u> | <u>Percentage of Grand Total</u> |
|---|--------------------------------------|
| 1. Manitoban Manufacturers | 11.64 |
| 2. Manitoban Distributors | 41.34 |
| 3. Other Canadian Manufacturers and Distributors | 12.52 |
| 4. Local Services | 8.37 |
| 5. Other Manitoban Services | 23.38 |
| 6. Other Canadian Services | 2.43 |
| 7. Non-Canadian Manufacturers, Distributors and Services | 0.31 |

C. Industrial Breakdown

Table 5 displays the results of Stage 3 of the analysis—percentage of Grand Total purchased by the Manitoba mining industry from the twenty-one most important Standard Industrial Classes. Complete results of percentage of Grand Total purchased from each of the 106 Standard Industrial Classes represented can be found in Appendix 2. Only those industrial classes representing greater than 1% of total purchases are included in Table 5. The twenty-one most important industries represent 85.93% of total mining industry purchases.

The industry found to represent the greatest proportion of mining expenditures is the aforementioned dummy industry, designed to equate the sum of reported values with the known total purchase expenditure (see Preparation for Analysis III, B). It must be stressed that the dummy industry is not a separate, distinct industry. The dummy industry merely represents purchases that are less than \$1,000 and that are therefore, not specifically allocated to any one of the industries.

The second most important industry in terms of percentage of total purchase expenditures is the Wholesalers of Machinery and Equipment (not elsewhere specified). The reason for this industrial class accounting for an outstandingly high proportion of the mining industry's 1976 purchases is perhaps two-fold. Firstly, industrial class 623 is one of the most broadly defined classes within the Statistics Canada classification, encompassing business machinery, safety and fire equipment, ventilation equipment and all mine machinery. (See Class Descriptions Appendix, sic.). Therefore, the class of

Wholesalers of Machinery and Equipment (n.e.s.) includes the bulk of machinery and equipment utilized by the mining industry. A second reason for the outstandingly high value attributed to class 623 is that the price of individual items included in this class is known to be quite high. Items included in this class are probably the most expensive per item purchases made by the mining industry -- a single piece of mine machinery may cost \$1,000,000.

Of the twenty-one most important industrial classes represented six are wholesale trade industries. The sum of the percentages of total expenditures represented by Wholesale Trades is 27.05%. The full value of purchases from Manitoban and Canadian Wholesale Traders cannot be considered to remain within the economies of Manitoba and Canada respectively, as previously discussed. This may represent a significant "leak" from the provincial and federal economic systems.

As aforementioned, Electric Power, as it appears in this analysis, is an incomplete data grouping. Data regarding purchases of electric power was not available from all participating mining companies. As a result, the figure of 6.96% underestimates the importance of electric power to the mining industries.

A more accurate figure for the value of electricity purchased is \$9,820,806.39, representing 7.37% of total expenditures (Manitoba Hydro, personal communication, 1978). This figure, however, only represents the purchase of electricity in 1976 by the participating mining companies from Manitoba Hydro (i.e., Manitoba Services (5)). This figure does not represent the entire volume of electricity utilized by the mining industry as, in addition to the electricity purchased in Manitoba, electricity is produced by the mining industry and some

electricity is purchased by the mining industry from sources outside the province.

Electric Power, Petroleum Refineries, and Gas Distribution together represent 13.68% of total expenditures by the Manitoba mining industry. Energy can therefore, be seen to be one of the greatest expenses to the mining industry. The mining industry may, therefore, be particularly sensitive to energy pricing. The conclusion that the mining industry is a large consumer of energy is substantiated by Energy Mines and Resources Canada, which have devoted an entire mineral bulletin to the study of energy consumption of the mineral industry in Canada (1976). The Energy Mines and Resource Canada study was based on 1973 energy prices so that its figures cannot be compared directly with the figures included in this study since petroleum prices have increased radically since that time. Furthermore, the national study expresses energy intensity as a coefficient-value of energy consumption by type per dollar of industry output. Since this study does not include data regarding Manitoba mining industry output no such comparison can be made between energy intensity in the Manitoba mining industry and the Canadian mining industry. Nevertheless, the study does substantiate the fact that the mining industry is the most energy intensive of the major industries in Canada, accounting for 28% of total Canadian industrial consumption.

Railway Transport and Other Truck Transport together represent 9.74% of total expenditures by the mining industry. Transportation can be seen to be the most important service required by the mining industry.

Other important service industries required by the mining in-

dustry are Miscellaneous Services Incidental to Mining and the Business services provided by Investment and Holding Companies.

Miscellaneous Chemical Industries and Manufacturers of Industrial Chemicals together represent 6.27% of total purchases by the Manitoba mining industry. The chemical industry can, therefore, be seen to be perhaps the most important single manufacturing supply industry.

Other important manufacturing industries include: Iron Foundries, Cement Manufacturers, Wire and Wire Products Manufacturers, and Machine Shops. Although Statistics Canada classification scheme considers machine shops to be a manufacturing industry, it is in some cases classified by the author as a service.

The only significant primary industry which supplies the Manitoba mining industry is Sand Pits or Quarries. This is not an unexpected result since the mining industry is itself a primary industry and would therefore, be expected to draw mainly upon secondary and tertiary industries.

The sum of purchases from the twenty-one most important industrial classes is 85.95% of total 1976 expenditures by the Manitoba mining industry. The remaining 14.07% of total expenditures is distributed over some 85 other industrial classes. The mining industry draws upon a very broad and diverse supply group.



TABLE 5

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING
INDUSTRY FROM THE TWENTY-ONE MOST IMPORTANT STANDARD
INDUSTRIAL CLASSES, IN DECREASING ORDER OF
MAGNITUDE, (1976)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|--|------------------------------|--------------------------------------|
| 999 Dummy Industry * | 24,925 | 18.70 |
| 623 Wholesalers of Machinery and Equipment (N.E.S.) | 21,112 | 15.84 |
| 572 Electric Power | 9,281 | 6.96 |
| 503 Railway Transport | 9,141 | 6.86 |
| 365 Petroleum Refineries | 7,575 | 5.68 |
| 379 Miscellaneous Chemical Industries | 5,854 | 4.39 |
| 625 Wholesalers of Metal and Metal Products (N.E.S.) | 4,476 | 3.36 |
| 099 Miscellaneous Services Incidental to Mining | 4,191 | 3.16 |
| 507 Other Truck Transport | 3,833 | 2.88 |
| 621 Wholesalers of Electrical Machinery, Equipment and Supplies | 3,803 | 2.85 |
| 624 Wholesalers of Hardware, Plumbing and Heating Supplies | 3,248 | 2.44 |
| 378 Manufacturers of Industrial Chemicals | 2,499 | 1.88 |
| 294 Iron Foundries | 2,191 | 1.64 |
| 608 Wholesalers of Petroleum Products | 1,898 | 1.42 |
| 707 Investment and Holding Companies | 1,895 | 1.42 |
| 352 Cement Manufacturers | 1,521 | 1.14 |
| 619 Wholesalers of Motor Vehicles and Accessories | 1,521 | 1.13 |
| 315 Wire and Wire Products Manufacturers | 1,402 | 1.05 |
| 087 Sand Pits or Quarries | 1,401 | 1.05 |
| 308 Machine Shops | 1,392 | 1.04 |
| 574 Gas Distribution | 1,387 | 1.04 |
| | Total | <u>85.93</u> |

* Purchase not specifically allocated

D. Cross-Tabulation: Industrial Breakdown and Geographic Distribution

Since Stage 4 of the analysis is a cross-tabulation of industrial breakdown and geographic distribution, results are presented as both a further industrial breakdown by geographical group and a geographical breakdown by industrial class.

1. Industrial Breakdown by Geographical Group

Table 6 displays a further breakdown of the twenty-one most important industrial classes (Table 5) by geographical group.

It is apparent from the table that Manitoba firms are represented within each of the twenty-one most important industries. Furthermore, in all but two industries - Wholesalers of Motor Vehicles and Accessories and Wire and Wire Product Manufacturers - the majority of purchases (in monetary value) are made from Manitoba firms. If a Manitoba Wire and Wire Products Manufacturer could capture more of the mining industry business and prevent this leakage it is possible that an additional \$1,000,000 could accrue to the provincial economy yearly. Although the table shows that Manitoba firms currently supply the mining industry with 62.87% of its miscellaneous chemical needs, over \$2,000,000 worth of miscellaneous chemicals continue to be purchased from outside the province. It may be possible for a Manitoba miscellaneous chemical firm to capture more of the mining industry business and reduce this leakage. Although Manitoba distributors account for 91.05% of the Wholesale Trade, attention must be drawn to the fact that only a small portion of the value of purchases from these distributors are actually retained in Manitoba. Sales to

Manitoba distributors, therefore, should still be considered to represent a significant leakage from the provincial economy.

2. Geographical Breakdown by Industrial Class

Cross-tabulation of the data also results in a further breakdown of geographical distribution (Table 4) by industrial class. Since the emphasis of this study is on Manitoba, the accompanying tables display only those industrial classes represented by Manitoban Manufacturers, Distributors and Services. Manitoba services are further broken down into Local (Northern Manitoba) services and Other Manitoba Services. Results concerning industrial classes represented by Other Canadian Manufacturers, Distributors and Services and Non-Canadian Manufacturers, Distributors and Services are found in Appendix 2.

Table 7 displays the percentage of Grand Total purchased by the Manitoba mining industry from Manitoba manufacturers, according to Standard Industrial Class. Note that Table 7 is a further breakdown of the 11.64% attributable to Geographical Group 1 - Manitoba Manufacturers - as displayed in Table 4.

Results show that the chemical industry is the most important Manitoba supply industry with 4.29% (2.76% + 1.53%). This agrees with the Manitoba Input-Output Table results which show the chemical industry to be the most important supply industry with 4.1% of total purchase inputs. The Manitoba Input-Output Table cites the Metal Fabricating Industry as the second most important manufacturing

supply industry, with 2.3%. As aggregated in the Manitoba Input-Output Table, the Metal Fabricating Industry includes Boiler and Plate Works, the Fabricated Structural Metal Industry, the Metal Stamping, Pressing and Coating Industry, and Machine Shops which together account for somewhat less, at 0.82%, in Table 7. The Manitoba Input-Output Model results show the Machinery Industries as being another important manufacturing industry, representing 1.4% of total purchases. Table 7 however, shows the Machinery Industries (Miscellaneous Machinery and Equipment Manufacturers) as accounting for only 0.14%. The Primary Metal Industry represents 1.3% of total purchases of the Manitoba Input-Output Model. The Primary Metal Industry as aggregated in the Model includes Iron and Steel Mills, Iron Foundries, and Metal Rolling, Casting and Extruding, which together account for 2.07% of Grand Total in Table 7, a figure slightly higher than that reported in the input-output table. Table 7 shows Cement Manufacturers and Sandpits and Quarries as being important supply industries, representing 1.14% and 1.05% respectively. The Manitoba Input-Output Table, however, does not cite them as important industries.

Table 7 and the Manitoba Input-Output Table appear to be in general agreement as to the types of manufacturing supply industries which are of importance to the mining industry. It is not known however, whether the discrepancies in figures are a result of the differing data and analysis or whether they represent an actual change over the past fifteen years.

Table 8 displays the percentage of Grand Total purchased by the Manitoba Mining industry from Manitoba distributors, according to Standard Industrial Class. Note that Table 8 is a further breakdown of the 41.34% attributable to Geographical Group 2 - Manitoba Distributors - as displayed in Table 4.

Although the Dummy industry appears to be the most important distributor of supplies to the mining industry, it must be noted that the dummy industry is not a separate industry but that it constitutes smaller purchases not specifically allocated to other distributors listed in Table 8. Wholesalers of Machinery and Equipment n.e.s. is the second largest distributor, representing 14.34% of Grand Total. The reasons for this industrial class accounting for such a high proportion are, as aforementioned, that the class encompasses a wide range of commodities and that the prices of individual items included in this class are known to be quite high. Other important distributors as displayed in Table 8 are: Wholesaling of Metal and Metal Products, n.e.s., Wholesalers of Electrical Machinery, Equipment and Supplies, Wholesalers of Hardware, Plumbing, and Heating Equipment, and Wholesalers of Petroleum Products.

Total percentage of Grand Total purchased by the Manitoba mining industry from Manitoba distributors is 41.34%. As aforementioned, only a small portion of this, actually accrues to the province. If it is assumed that 7% of the purchase value accrues to Manitoba distributors, only 2.89% of Grand Total can be considered to be retained within the provincial economy as a result of purchases by the Manitoba mining industry from Manitoba distributors. The Manitoba Input-Output Table however, shows this trade margin as

Table 10 displays the percentage of Grand Total purchased by the Manitoba mining industry from Other Manitoban Services, according to Standard Industrial Class. Note that Table 10 is a further breakdown of the 23.38% attributable to Geographical Group 5 - Other Manitoba Services - as displayed in Table 4.

Results show that Electric Power is the most important service, with 6.96% of Grand Total (as aforementioned, 7.37% may be a more accurate representation). The Manitoba Input-Output Model also cites Electric Power as an important service, accounting for 2.7% of purchase expenditures. Much of the discrepancy in the results of the two studies may be attributed to the rise in price of electricity between 1961 and 1976. Table 10 shows Railway Transport as being the second most important service industry, with 6.86% of Grand Total. Transportation and Storage is also an important sector in the Manitoba Input-Output Model, representing 8.6% of purchase expenditures. The summation of all transportation services included in Tables 9 and 10 account for over 10% of Grand Total. The third and fourth most important services, portrayed in Table 10, are Petroleum Refineries and Investment and Holding Companies, representing 5.68% and 1.42% of Grand Total, respectively.

TABLE 6

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING INDUSTRY
FROM THE TWENTY-ONE MOST IMPORTANT STANDARD INDUSTRIAL
CLASSES, ACCORDING TO GEOGRAPHICAL GROUP (1976)

| <u>Standard Industrial Class</u> | <u>Geographical Group</u> | <u>Percentage of Grand Total</u> |
|---|--|--------------------------------------|
| 999 Dummy Industry | 2. Manitoban Distributors | 14.96 |
| | 3. Other Canadian Manufacturers and Distributors | 3.74 |
| 623 Wholesalers of Machinery and Equipment (n.e.s.) | 2. Manitoban Distributors | 14.43 |
| | 3. Other Canadian Distributors | 1.37 |
| | 6. Other Canadian Services | 0.01 |
| | 7. Non-Canadian Distributors and Services | 0.03 |
| 572 Electric Power | 5. Other Manitoban Services | 6.96 |
| 503 Railway Transport | 5. Other Manitoban Services | 6.86 |
| 365 Petroleum Refineries | 5. Other Manitoban Services | 5.88 |
| 379 Miscellaneous Chemical Industries | 1. Manitoban Manufacturers | 2.76 |
| | 3. Other Canadian Manufacturers | 1.63 |
| 625 Wholesalers of Metal and Metal Products (n.e.s.) | 2. Manitoban Distributors | 3.31 |
| | 3. Other Canadian Distributors | 0.05 |
| 099 Miscellaneous Services Incidental to Mining | 4. Local Services | 1.64 |
| | 6. Other Canadian Services | 1.50 |
| 507 Other Truck Transport | 4. Local Services | 1.64 |
| | 5. Other Manitoban Services | 0.49 |

TABLE 6 (Cont'd)

| <u>Standard Industrial Class</u> | <u>Geographical Group</u> | <u>Percentage of Grand Total</u> |
|---|---------------------------------|----------------------------------|
| 621 Wholesalers of Electrical Machinery, Equipment and Supplies | 2. Manitoban Distributors | 2.80 |
| | 3. Other Canadian Distributors | 0.05 |
| 624 Wholesalers of Hardware, Plumbing and Heating Supplies | 2. Manitoban Distributors | 2.25 |
| | 3. Other Canadian Distributors | 0.19 |
| 378 Manufacturers of Industrial Chemicals | 1. Manitoban Manufacturers | 1.53 |
| | 3. Other Canadian Manufacturers | 0.29 |
| 608 Wholesalers of Petroleum Products | 2. Manitoban Distributors | 1.42 |
| 294 Iron Foundries | 1. Manitoban Manufacturers | 1.51 |
| | 3. Other Canadian Manufacturers | 0.13 |
| 707 Investment and Holding Companies | 5. Other Manitoban Services | 1.42 |
| 352 Cement Manufacturers | 1. Manitoban Manufacturers | 1.14 |
| 619 Wholesalers of Motor Vehicles and Accessories | 2. Manitoban Distributors | 0.41 |
| | 3. Other Canadian Distributors | 0.72 |
| 315 Wire and Wire Products Manufacturers | 1. Manitoban Manufacturers | 0.14 |
| | 3. Other Canadian Manufacturers | 0.87 |
| | 7. Non-Canadian Manufacturers | 0.04 |
| 087 Sand Pits or Quarries | 1. Manitoban Manufacturers | 1.05 |
| 308 Machine Shops | 1. Manitoban Manufacturers | 0.46 |
| | 3. Other Canadian Manufacturers | .09 |
| | 4. Local Services | 0.49 |
| 574 Gas Distribution | 4. Local Services | 1.04 |

TABLE 7

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING INDUSTRY FROM MANITOBA MANUFACTURERS, ACCORDING TO STANDARD INDUSTRIAL CLASS, PRESENTED IN DECREASING ORDER OF MAGNITUDE (1976)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|--|--------------------------|----------------------------------|
| 379 Miscellaneous Chemical Industries | 3,681 | 2.76 |
| 378 Manufacturers of Industrial Chemicals | 2,041 | 1.53 |
| 294 Iron Foundries | 2,013 | 1.51 |
| 352 Cement Manufacturers | 1,521 | 1.14 |
| 087 Sand Pits or Quarries | 1,401 | 1.05 |
| 291 Iron and Steel Mills | 630 | 0.47 |
| 308 Machine Shops | 613 | 0.46 |
| 359 Miscellaneous Non-Metallic Mineral Products Industries | 604 | 0.45 |
| 273 Paper Box and Bag Manufacturers | 404 | 0.30 |
| 162 Rubber Products Industry | 402 | 0.30 |
| 304 Metal Stamping, Pressing and Coating Industry | 389 | 0.29 |
| 251 Sawmills, Planing Mills and Shingle Mills | 355 | 0.27 |
| 354 Concrete Products Manufacturers | 247 | 0.19 |
| 315 Miscellaneous Machinery and Equipment Manufacturers | 190 | 0.14 |
| 286 Commercial Printing | 147 | 0.11 |
| 165 Plastics Fabricating Industry (n.e.s.) | 137 | 0.10 |
| 298 Metal Rolling, Casting, and Extruding (n.e.s.) | 124 | 0.09 |
| 101 Meat and Poultry Products Industries | 105 | 0.08 |

TABLE 7 (Cont'd)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|---|------------------------------|--------------------------------------|
| 259 Miscellaneous Wood Industries | 92 | 0.07 |
| 302 Fabricated Structural Metal Industry | 88 | 0.07 |
| 338 Manufacturers of Electric Wire and Cable | 83 | 0.06 |
| 187 Canvas Products, and Cotton and Jute Bags Industries | 46 | 0.03 |
| 104 Dairy Products Industry | 34 | 0.03 |
| 336 Manufacturers of Electrical Industrial Equipment | 34 | 0.03 |
| 351 Clay Products Manufacturers | 33 | 0.02 |
| 274 Miscellaneous Paper Converters | 31 | 0.02 |
| 321 Aircraft and Aircraft Part Manufacturers | 21 | 0.02 |
| 289 Publishing and Printing | 18 | 0.01 |
| 189 Miscellaneous Textile Industries | 12 | 0.01 |
| 325 Motor Vehicle Parts and Accessories Manufacturers | 10 | 0.01 |
| 254 Sash, Door and Other Millwork Plants | 1.4 | negligible |
| 301 Boiler and Plate Works | 1.4 | negligible |
| 271 Pulp and Paper Mills | 1.3 | negligible |
| 375 Paint and Varnish Manufacturers | 1.3 | negligible |
| | | <u>11.62 Total</u> |

TABLE 8

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING INDUSTRY
FROM MANITOBA DISTRIBUTORS, ACCORDING TO STANDARD INDUSTRIAL
CLASSIFICATIONS, PRESENTED IN DECREASING ORDER OF
MAGNITUDE (1976)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|--|------------------------------|--------------------------------------|
| 999 Dummy Industry | 19,940 | 14.96 |
| 623 Wholesalers of Machinery and Equipment, n.e.s. | 19,229 | 14.43 |
| 625 Wholesalers of Metal and Metal Products, n.e.s. | 4,415 | 3.31 |
| 621 Wholesalers of Electrical Machinery, Equipment and Supplies | 3,736 | 2.80 |
| 624 Wholesalers of Hardware, Plumb- ing and Heating Equipment | 2,993 | 2.25 |
| 608 Wholesalers of Petroleum Products | 1,898 | 1.42 |
| 626 Wholesalers of Lumber and Building Materials | 746 | 0.56 |
| 629 Wholesalers, n.e.s. | 661 | 0.50 |
| 619 Wholesalers of Motor Vehicles and Accessories | 552 | 0.41 |
| 617 Wholesalers of Apparel and Dry Goods | 324 | 0.24 |
| 611 Wholesalers of Paper and Paper Products | 253 | 0.19 |
| 652 Tire, Battery and Accessories Stores | 223 | 0.17 |
| 614 Wholesalers of Food | 34 | 0.03 |
| 656 Motor Vehicle Dealers | 26 | 0.03 |
| 681 Drug Stores | 25 | 0.02 |
| 618 Wholesalers of Household Furniture and Furnishings | 11 | 0.01 |
| 673 Hardware Stores | 7 | 0.01 |
| 642 General Merchandise Stores | 1.6 | -- |
| 696 Liquor, Wine and Beer Stores | 0.2 | -- |
| | | <u>41.34</u> |

TABLE 9

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING INDUSTRY
FROM LOCAL (NORTHERN MANITOBA) SERVICES, ACCORDING TO STANDARD
INDUSTRIAL CLASS, PRESENTED IN DECREASING ORDER OF
MAGNITUDE (1976)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|---|------------------------------|--------------------------------------|
| 507 Other Truck Transport | 3, 185 | 2.39 |
| 099 Miscellaneous Services Incidental to Mining | 2,191 | 1.64 |
| 574 Gas Distribution | 1,387 | 1.04 |
| 308 Machine Shops | 658 | 0.49 |
| 898 Services to Buildings and Dwellings | 580 | 0.43 |
| 895 Machinery and Equipment Rental | 564 | 0.42 |
| 083 Stone Quarries | 499 | 0.37 |
| 886 Restaurants, Caterers, and Taverns | 419 | 0.31 |
| 409 Other Construction | 257 | 0.19 |
| 508 Bus Transport, Interurban and Rural | 249 | 0.19 |
| 501 Air Transport | 217 | 0.16 |
| 658 Motor Vehicle Repair Shops | 191 | 0.14 |
| 421 Special-Trade Contractors | 181 | 0.14 |
| 894 Automobile and Truck Rental | 152 | 0.11 |
| 404 Building Construction | 108 | 0.08 |
| 579 Other Utilities | 54 | 0.04 |
| 881 Hotels and Motels | 52 | 0.04 |
| 656 Motor Vehicle Dealers | 41 | 0.02 |
| 543 Radio and Television Broadcasting | 33 | 0.02 |
| 703 Other Credit Agencies | 32 | 0.02 |
| 737 Real Estate Operators | 25 | 0.02 |
| 517 Miscellaneous Services Incidental to Transport | 23 | 0.02 |
| 862 Advertising Services | 23 | 0.02 |

Table 9 (Cont'd)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|---------------------------------------|------------------------------|--------------------------------------|
| 098 Other Contract Drilling | 21 | 0.02 |
| 699 Retail Stores, n.e.s. | 16 | 0.01 |
| 874 Laundries, Cleaners, and Pressers | 13 | 0.01 |
| TOTAL | | <u>8.34</u> |

TABLE 10

PERCENTAGE OF GRAND TOTAL PURCHASED BY THE MANITOBA MINING INDUSTRY
FROM OTHER MANITOBAN SERVICES, ACCORDING TO STANDARD IN-
DUSTRIAL CLASS, PRESENTED IN DECREASING ORDER OF
MAGNITUDE (1976)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>Percentage of Grand Total</u> |
|---|--------------------------|----------------------------------|
| 572 Electric Power | 9,281 | 6.96 |
| 503 Railway Transport | 9,141 | 6.86 |
| 365 Petroleum Refineries | 7,575 | 5.68 |
| 707 Investment and Holding Companies | 1,895 | 1.42 |
| 735 Insurance and Real Estate Agencies | 716 | 0.54 |
| 855 Security and Investigation Services | 649 | 0.49 |
| 507 Other Truck Transport | 648 | 0.49 |
| 721 Insurance Carriers | 341 | 0.26 |
| 544 Telephone Systems | 234 | 0.18 |
| 869 Miscellaneous Services to Business Management | 143 | 0.11 |
| 658 Motor Vehicle Repair Shops | 131 | 0.10 |
| 517 Miscellaneous Services Incidental to Transport | 120 | 0.09 |
| 289 Publishing and Printing | 87 | 0.07 |
| 421 Special-Trade Contractors | 69 | 0.05 |
| 545 Telegraph and Cable Systems | 30 | 0.02 |
| 286 Commercial Printing | 29 | 0.02 |
| 894 Automobile and Truck Rental | 25 | 0.02 |
| 881 Hotels and Motels | 19 | 0.01 |
| 501 Air Transport | 14 | 0.01 |
| 508 Bus Transport, Interurban and Rural | 6 | negligible |
| 931 Provincial Administration | 6 | negligible |
| | | <u>23.38 Total</u> |

E. Functional Distribution

Table 11 displays the results of Stage 5 of the analysis. Table 11 presents the percentage of Grand Total purchase expenditures made by the Manitoba mining industry, according to Mining Functional Groups. Unlike the previous results, Table 11 does not describe the source of inputs to the mining industry, but instead, portrays the utilization of these inputs within the mining operation.

Results show that 34.38% of purchases are spent on Services to the mining industry. This figure corresponds to the summation of purchases towards Local Services, Other Manitoba Services, Other Canadian Services and Non-Canadian Services, as displayed in Table 4. Indivisible supplies represent the second most important function, representing 31.68% of purchase expenditures. As aforementioned, indivisible supplies are those materials not used solely in a single operation (e.g. electrical equipment, building materials, etc.). Table 11 shows that mining is a major functional group accounting for 24.49% of purchase expenditures. The mine is expected to be a costly operation as it employs much of the large and expensive machinery and equipment. Results show that exploration represents only 1.66% of Grand Total, or approximately \$221,000. This value is very much an underestimate of the actual exploration expenditure in the province. Much of the exploration in Manitoba is conducted by smaller firms and by subsidiaries of the major mining companies; these exploration companies are not included in this study. A more accurate estimate of exploration expenditure in Manitoba in 1975 is given by Barchyn (1978) as \$6,140,000.

Further functional breakdown of industrial class and geographic distribution is an extension of this study which may be of interest to other researchers in this field.

TABLE 11

PERCENTAGE OF GRAND TOTAL BY THE MANITOBA MINING INDUSTRY
 ACCORDING TO MINING FUNCTIONAL GROUPS

| <u>Functional Group</u> | <u>Percentage of Grand Total</u> |
|--------------------------------|--------------------------------------|
| 1. Mine | 24.49 |
| 2. Mill | 2.26 |
| 3. Smelter | 2.18 |
| 4. Refinery | 3.43 |
| 5. Indivisible * | 31.68 |
| 6. Administration and Research | 1.40 |
| 7. Services | 34.38 |
| 8. Exploration | 1.66 |

* Supplies not used solely in a single operation.

This study is of interest to other researchers, the provincial government and to private industries in Manitoba.

A. Importance to Other Researchers

The significance of this study lies basically in its methodology and provision of a data base. The methodology employed in this study can be similarly applied by other researchers, to other major industries in the province and/or to other mining industries in other provinces, for comparative purposes.

The objective of the study is primarily one of data collection and description of the supply industries of Manitoba's mining industry. This study analyzes and presents this data in one form. It may be possible for other researchers to apply other methods of analysis to this data, in order to derive additional information. For example, although the data regarding functional breakdown of purchase expenditures was collected, it was not utilized to its fullest (see Functional Distribution, IV, E). It may be possible to further disaggregate functional distribution by Standard Industrial Class and/or geographic distribution in order to determine the importance of supply industries and their location to various processes and functions of the mining industry.

Results of this study are presented as percentages of purchase expenditures of the mining industry; supply industries are ranked according to their importance to the mining industry. Alternatively, it may be of interest to examine the importance of the mining industry to the various supply industries.

An example of an analysis to determine this degree of dependence of Manitoba manufacturers on the Manitoba mining industry is displayed in Table 2. This table is based on the study results and in Statistics Canada figures. Columns 1 and 2 of Table 2 are abstracted from Table 7. Column 1 of Table 12 displays the 1976 dollar value of the purchase made by the Manitoba mining industry from the various Manitoba manufacturers according to Standard Industrial Class. In column 2, this purchase is shown as a percentage of the total purchase expenditures (Grand Total) of the Manitoba mining industry in 1976 (as in Table 7). Previously, this percentage was considered to describe the relative importance of the various supply industries to the mining industry. Column 3 displays the adjusted 1976 dollar value of total shipments or sales of goods manufactured in 1976 by each of the Manitoba manufacturing industries which supply goods to the mining industry. These figures were obtained by adjusting 1975 figures (Statistics Canada, 1975: 31-203) by the appropriate industrial price indices (Statistics Canada, 1976: 62-011) (See Appendix 3). Column 4 shows the purchase (column 1) as a percentage of the total sales of each of the Manitoba manufacturing industries (column 3). These percentages, therefore, offer some indication of the degree to which the manufacturing industries in Manitoba depend on the mining industry as a source of business.

For example, in 1976, the Manitoba mining industry purchased \$3,681,000 of goods from the Miscellaneous Chemicals Industries (379). This transaction represents 2.76% of 1976 total purchase expenditures of the mining industry, but 20.67% of 1976 total sales of the

Miscellaneous Chemical Industries. These figures suggest that although chemical expenditures represent only a minor component of mining industry expenditures, these purchases account for a major portion of chemical industry sales.

The figures in column 4, therefore, represent the strength of the linkage between supply industries and the mining industry. If the linkage is strong, the supply industry may be highly dependent on the mining industry as a purchaser of its goods and therefore, may be extremely sensitive to fluctuations in the mining industry, both its "booms" and its "busts".

This type of analysis is presented to serve as an example of further research necessary to the study of the relationship of the mining industry to the general provincial economy. It is hoped that this practicum will provide a stimulus to further research in the area.

TABLE 12

PURCHASES MADE BY THE MANITOBA MINING INDUSTRY FROM MANITOBAN
 MANUFACTURERS IN 1976 SHOWN AS A PERCENTAGE OF TOTAL MINING
 PURCHASES AND AS A PERCENTAGE OF TOTAL SUPPLY IN-
 DUSTRY SALES

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>% of Total Mining Purchases</u> | <u>1976 Total* Sales of SIC (\$'000)</u> | <u>% of Total Industry Sales</u> |
|--|------------------------------|--|--|--|
| 379 Miscellaneous Chemical Industries | 3,681 | 2.76 | 17,809 | 20.67 |
| 378 Manufacturers of Industrial Chemicals | 2,041 | 1.53 | 33,716+ | 6.05 |
| 294 Iron Foundries | 2,013 | 1.51 | X | |
| 352 Cement Manufacturers | 1,521 | 1.14 | X | |
| 087 Sand Pits or Quarries | 1,401 | 1.05 | X | |
| 291 Iron and Steel Mills | 630 | 0.47 | X | |
| 308 Machine Shops | 613 | 0.46 | 18,158 | 3.38 |
| 359 Miscellaneous non-Metallic Minerals Products Industries | 604 | 0.45 | X | |
| 273 Paper Box and Bag Manufacturers | 404 | 0.30 | 48,397 | 0.83 |
| 162 Rubber Products Industry | 402 | 0.30 | X | |
| 304 Metal Stamping, Pressing and Coating Industry | 389 | 0.29 | X | |
| 251 Sawmills, Planing Mills, and Shingle Mills | 355.4 | 0.27 | 19,562 | 1.81 |
| 354 Concrete Products Manufacturers | 247 | 0.19 | 19,934 | 1.24 |
| 315 Miscellaneous Machinery and Equipment Manufacturers | 190 | 0.14 | X | |

Table 12 (Cont'd)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>% of Total Mining Purchases</u> | <u>1976 Total* Sales of SIC (\$'000)</u> | <u>% of Total Industry Sales</u> |
|---|------------------------------|--|--|--|
| 286 Commercial Printing | 147 | 0.11 | 50,889 | 0.29 |
| 165 Plastics Fabricating Industry n.e.s. | 137 | 0.10 | X | |
| 298 Metal Rolling, Casting and Extruding n.e.s. | 124 | 0.09 | 9,719 | 1.28 |
| 101 Meat and Poultry Products Industries | 105 | 0.08 | 405,002 | 1.03 |
| 259 Miscellaneous Wood Industries | 92 | 0.07 | 3,521 | 2.61 |
| 302 Fabricated Structural Metal Industry | 88 | 0.07 | 57,983 | 0.15 |
| 338 Manufacturers of Electric Wire and Cable | 83 | 0.06 | X | |
| 187 Canvas Products and Cotton and Jute Bag Industries | 46 | 0.03 | 2,604 | 1.77 |
| 104 Dairy Products Industry | 34 | 0.03 | 92,384 | 0.04 |
| 336 Manufacturers of Electrical Industrial Equipment | 34 | 0.03 | X | |
| 351 Clay Products Manufacturers | 33 | 0.02 | X | |
| 274 Miscellaneous Paper Converters | 31 | 0.02 | 24,258 | 0.13 |
| 321 Aircraft and Aircraft Part Manufacturers | 20.5 | 0.02 | 44,744 | 0.05 |
| 289 Publishing and Printing | 18 | 0.01 | 52,953 | 0.03 |
| 189 Miscellaneous Textile Industries | 12 | 0.01 | 6,985 | 0.17 |
| 325 Motor Vehicle Parts and Accessories Manufacturers | 10 | 0.01 | 17,254 | 0.06 |

Table 12 (Cont'd)

| <u>Standard Industrial Class</u> | <u>Purchase (\$'000)</u> | <u>% of Total Mining Purchases</u> | <u>1976 Total* Sales of SIC (\$'000)</u> | <u>% of Total Industry Sales</u> |
|---|------------------------------|--|--|--|
| 254 Sash, Door and Other Millwork Plants | 1.4 | negligible | 40,809 | negligible |
| 301 Boiler and Plate Works | 1.4 | " | X | |
| 271 Pulp and Paper Mills | 1.3 | " | X | |
| 375 Paint and Varnish Manufacturers | 1.3 | " | 18,056 | negligible |

+ Data Unavailable

* See Appendix 3

B. Importance to Government Planners and Policy-Makers

Results of this practicum and of further research may have implications for provincial resource policy and industrial strategy.

If, for example, results of the type of analysis outlined previously (V, A) suggest that many Manitoba industries are highly dependent on the mining industry as a source of business, then it may be considered desirable to create a "favourable" and "attractive" climate for the growth and development of the mining industry. This viewpoint may result in the government assuming a passive role in the mining industry, manifested by tax concessions to the industry and by resource policy which does little to regulate or control mining industry movement and decision-making. Alternatively, dependence on the mining industry may justify government intervention in the case of mine slowdowns or shutdowns. From the perspective of the provincial economy, it may be in the interest of the government to ensure the retention of mining operations in the province, either by actively supporting and promoting the private sector or by taking over the operation itself.

Traditionally, the provincial government by means of loans, services, and tax concessions, has encouraged the growth and development of the mining industry in Northern Manitoba. Results of this practicum, however, point out that less than 10% of purchase expenditures of the mining industry are retained in Northern Manitoba. It does not appear, therefore, that benefits to Northerners have been commensurate with the economic activity associated with mining industry operations. Furthermore, the wealth that has accrued to the North

has not been uniformly distributed within the area, but tends to be concentrated in the urban communities, comprised mainly of immigrants to the North. A disproportionately small amount of the benefit of the mining industry appears to have accrued to the remote native communities.

This practicum accurately identifies the proportion of goods and services required by the mining industry which are imported from Southern Manitoba or from outside of the province. As well, products of the mining industry are exported from the North. The North produces goods which it does not consume and consumes goods which it does not produce. This creates a strong dependence in the South and subsequently a very vulnerable economy.

This practicum provides the data and analysis to assist government in making decisions regarding the mining industry and its role in regional development.

This practicum identifies the major import leakages from the Manitoba mining industry. The most significant leakage results from the import of machinery and equipment, metal and metal products, and hardware, plumbing and heating supplies. Although these products are currently purchased through Manitoba distributors, little of the purchase value is actually retained in the province. Other leakages are found to occur in the wire and wire products industry and in the chemical industry. A policy which would encourage import substitution in these areas may generate increased income and employment in the province and may contribute to the stabilization and diversifica-

tion of the provincial economy.

However, the fact that leakages exist does not unequivocally suggest that they should be eliminated. Government planners concerned with developing a provincial industrial strategy should address themselves to the study of the major constraints and opportunities associated with the further development of backward linkages from mining. Certainly, market size, current and proposed trade policy, industrial organization, and research and development are factors which must be given considerable attention. It may not be possible for leakages to be filled efficiently by Manitoba producers. The feasibility of development of backward linkages to the mining industry is a subject which requires further study by government planners, in conjunction with private industry.

C. Importance to Private Industry

This practicum describes the linkages between the Manitoba mining industry and Manitoba supply industries, and the existing leakages from the province. This information is of interest to private entrepreneurs who currently are, or in the future may wish to, develop mining companies as a major client. Specifically, this information is of interest to the Manitoba Mine Support Group, a group of Manitoba firms who currently supply goods and services to the mining industry.

The private sector, like government, must assess factors such as market size, trade policy, industrial organization, and research and development, before decisions regarding the establishment or expansion of mining supply operations can be made. The feasibility of capturing a greater portion of the Manitoba mining industry business requires further study by current and/or potential suppliers.

In 1971 the Manitoba Department of Industry and Commerce sponsored the ManCan '71 exhibition with the express purpose of displaying imported manufactured goods in order to enable Manitoba manufacturers to consider whether they can produce similar goods competitively. One of the participating exhibitors was the International Nickel Company Limited.

The ManCan program serves to illustrate that cooperation between industry and government is possible and, in fact, necessary to the stabilization and diversification of the provincial economy. Strengthening and developing backward linkages of the mining industry requires the coordinated efforts of government, the mining industry, and the supply industries.

Although mining is one of Manitoba's major industries, little research has been conducted to date concerning the mining industry and its relationship to the economy of Manitoba. The focus of this practicum is therefore, directed to the study of the Manitoba mining industry and its relationship with backward linked industries. The study delineates expenditures of the Manitoba mining industry and describes the backward linked industries according to Statistics Canada Industrial Classification and geographic distribution.

Analysis shows that a Grand Total of approximately \$133,255,500 was spent by the three major Manitoba metal mining companies in 1976 towards purchases of materials, supplies, services, and capital expenditures. During this same period, approximately \$111,358,400 was paid out to their employees as wages and salaries.

The second stage of the analysis disaggregates the \$133,255,500 spent in purchases, by geographical groups. Manitoba Distributors account for the largest percentage of the Grand Total, with 41.34%. Other Manitoba services (i.e., Southern Manitoba Services) is the second largest group, accounting for 23.38% of the Grand Total. Other Canadian Manufacturers and Distributors and Manitoba Manufacturers rank third and fourth, representing 12.52% and 11.64% respectively.

Less than one half of the Manitoba mining industry's purchase expenditures can be considered to be retained within the Manitoba economy. Furthermore, less than 10% of the purchase expenditures can be

considered to accrue to Northern Manitoba, despite the fact that it is the base of mining operations. If, however, salaries and wages paid are considered to be payments to intermediate inputs then a much greater portion of value of inputs can be considered to be retained within the North.

The third stage of analysis breaks down mining industry purchase expenditures by Standard Industrial Class. Of the twenty-one most important classes represented, six are wholesale trade industries. The sum of the percentages of total expenditures represented by wholesale trades is 27.05%. Since the full value of purchases from Manitoba and Canadian Wholesale Traders cannot be considered to remain within the economies of Manitoba and Canada, respectively, this may represent a significant leakage from the provincial and national economic systems. Energy industries, transportation services and chemicals manufacturing are also important supply industries.

The fourth stage of analysis is a cross-tabulation of industrial breakdown and geographic distribution. Results show that Manitoba firms are represented within each of the twenty-one most important industries. Furthermore, in all but two industries - Wholesalers of Motor Vehicles and Accessories and Wire and Wire Products Manufacturers - the majority of purchases (in monetary value) are made from Manitoba firms. The chemical industry is the most important Manitoba manufacturing supply industry. Wholesalers of Machinery and Equipment is one of the largest Manitoba distributors. Trucking is the most important Northern Manitoba service and Electric Power is the most important of the Other Manitoba Services.

The fifth stage of analysis determines the percentage of Grand Total purchase expenditures made by the Manitoba mining industry, according to Mining Functional Groups. The most important functions (i.e., representing the greatest purchase expenditures) are services to the mining industry, indivisible supplies and mining per se.

It is hoped that this practicum will provide a stimulus for further research in the area of the mining industry and its relation to the provincial economy. The practicum provides information which may be useful to government planners and policy-makers, particularly those involved in the development of a provincial industrial strategy. As well, the practicum may be of interest to private entrepreneurs who are currently or will be potentially involved in industries which supply goods and services to the Manitoba mining industry.

APPENDIX 1

DESCRIPTION OF INDUSTRIES, ACCORDING
TO STANDARD INDUSTRIAL CLASS

DIVISION 1 - AGRICULTURE

Ind.
No.

The classification of establishments engaged in agricultural activity presents certain special problems. In most cases a farm is both a place of business and a home and usually it is difficult to separate the activities of the farmer and his family in connection with the operation of the farm and the operation of the home. Farming is carried on as a part-time activity in many cases, particularly near cities and in areas where farming is associated with forestry and fishing. In addition, it is customary to classify many farms merely as "mixed" because they have no dominant activity but produce a wide range of crops and livestock products.

In some surveys such as the Census of Agriculture and current statistics of agricultural production, the reporting unit is the farm or the agricultural holding. In other cases such as the Census of Population and the Current Labour Force Survey, the reporting unit is the individual as a member of a household. The combination of household and establishment in agriculture makes the co-ordination of data from these different sources more difficult than in other lines of industry.

Many establishments engage both in agricultural activity and in some other line of business such as forestry or the operation of cabins or a motel. If the units operating these different activities are organized as separate establishments they are, of course, treated separately but in many cases the operator and his family are engaged concurrently in farming activity and the other activity, e.g. summer cabins. Thus, it may not be possible to obtain separate measures of the labour and other inputs associated with the various outputs. Some of these establishments are primarily engaged in a non-agricultural activity and, therefore, they do not form part of the industry division Agriculture. However, if it is desired to obtain data on the total of agricultural production, the agricultural production of these establishments must be included.

The industry division Agriculture includes, therefore, all land holdings primarily engaged in agricultural production. In addition it also includes establishments primarily engaged in providing services to agriculture such as animal husbandry services; horticultural services; contract sorting, grading and packing of farm produce; orchard spraying; fruit picking; harvesting and ploughing.

Special categories have been established for Institutional Farms, Experimental Farms and University Farms because these usually form part of an establishment classified to an industry other than agriculture.

The core of the industry division Agriculture consists of farms primarily engaged in agricultural production and not included in the above special categories. They are classified according to type under such headings as Livestock and Livestock Combination Farms or Field Crop and Field Crop Combination Farms. It should be noted that the term "livestock" in this connection includes cattle, poultry, hogs and sheep. Farms primarily engaged in raising horses, bees, fur-bearing animals, dogs and cats are classified in the group Miscellaneous Specialty Farms.

Major Group 1 - Experimental and Institutional Farms

001 Experimental and University Farms. - Establishments primarily engaged in operating farms for the purpose of carrying out experiments aimed at improving strains of plants, trees or livestock. Experimental farms are operated by federal or provincial governments and in addition to experiments for improving strains, they often carry on related experimental work on methods of growing, harvesting, preserving and grading agricultural products. Uni-

Ind.
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versity farms carry on many of the same activities as experimental farms and are used also in connection with instruction of students. For purposes of general industrial classification experimental and university farms are not, as a rule, separate establishments and they are, therefore, included with the government department or the institution of which they form a part. The Census of Agriculture treats these farms as separate units, however, so a class is provided for them.

003 Institutional Farms. - Farms operated in connection with an institution such as prison farms, farms operated by religious orders and farm lands on Indian reserves. Farms of this type are usually covered in an agricultural census and, therefore, the class is provided so that the census can classify these holdings. For purposes of general industrial classification, however, many institutional farms cannot be classed as separate establishments and, therefore, they are included with the institutions of which they form a part. It should be noted that farms operated by individual Indians on reserves are classed along with other farms in Major Group 2 as are farms operated by co-operative communities. Community pastures are included in this industry.

Major Group 2 - Farms (except Experimental and Institutional Farms)

011 Livestock and Livestock Combination Farms. - Farms on which 50 per cent or more of the gross revenue from the sale of farm products is derived from sales of dairy products, poultry and poultry products, cattle, hogs, or sheep, or from a combination of these livestock and livestock products. Feed lot operation is included here.

013 Field Crop and Field Crop Combination Farms. - Farms on which 50 per cent or more of the gross revenue from the sale of farm products is derived from sales of wheat; other cash grains including oil seeds and pulses; field crops such as potatoes, sugar beets, hay, forage crops, seeds, tobacco or any combination of these grains and field crops.

015 Fruit and Vegetable Farms. - Farms on which 50 per cent or more of the gross revenue from the sale of farm products is derived from sales of tree fruits, small fruits or vegetables except potatoes, or any combination of these.

017 Other Crop and Livestock Combination Farms. - Farms selling a variety of crop and livestock products in that no single product or group of products included in another class in this division accounts for as much as 50 per cent of gross revenue from the sale of farm products. It should be noted that in this and other classes in this division the revenue from a farm woodlot is considered to be part of farm revenue from agricultural products.

019 Miscellaneous Specialty Farms. - Farms on which 50 per cent or more of the gross revenue from the sale of farm products is derived from sales of one of the following specialties: horses, fur-bearing animals and furs; bees, honey and bees' wax; goats and goat milk; maple products; greenhouse and nursery products.

Major Group 3 - Services Incidental to Agriculture

021 Services Incidental to Agriculture. - Establishments primarily engaged in providing services to agriculture such as corn shelling, hay baling, and threshing services; contract sorting, grading and packing of farm products for the grower; contract crop dusting, fruit picking, grain cleaning, harvesting and ploughing; animal husbandry services such as veterinary services, poultry hatcheries, animal breeding and boarding services.

DIVISION 2 - FORESTRY

Major Group 1 - Logging

- 031 **Logging.** - Establishments primarily engaged in felling and bucking, bunching, yarding, forwarding, decking and loading of roundwood and establishments primarily engaged in the recovery of lost logs including sinkers. Establishments primarily engaged in transporting wood with specialized logging trucks and in driving, booming, sorting, rafting and towing of wood - if not licensed as public carriers - are included also, as are barking mills, engaged in producing barked or rossed pulpwood.

Major Group 2 - Forestry Services

- 039 **Forestry Services.** - Establishments primarily engaged in forestry patrol, fire inspection, fire fighting, forest nurseries, reforestation and other forestry services, whether conducted by government organizations or other organizations. Forestry consultants are classified in Industry No. 864 - Engineering and Scientific Services.

DIVISION 3 - FISHING AND TRAPPING

Major Group 1 - Fishing

- 041 **Fishing.** - Establishments primarily engaged in commercial fishing either in the ocean or inland waters. The term "establishment" includes an individual working by himself or only with members of his own family. This industry includes establishments primarily engaged in all types of fishing, including oyster fishing, seal fishing, whaling, gathering seaweed, and catching seaworms for bait.

tion services, whether operated by government departments or not.

Major Group 2 - Fishery Services

- 045 **Fishery Services.** - Establishments primarily engaged in operating fish hatcheries, fishery inspection and protec-

Major Group 3 - Hunting and Trapping

- 047 **Hunting and Trapping.** - Establishments primarily engaged in hunting and trapping wild animals for commercial purposes. The term "establishment" includes an individual working on his own account or with the assistance only of members of his own family. Establishments primarily engaged in providing guides for hunting and fishing expeditions are classified in Industry No. 879 - Miscellaneous Personal Services.

DIVISION 4 - MINES (including Milling), QUARRIES AND OIL WELLS

Major Group 1 - Metal Mines

- 051 **Placer Gold Mines.** - Establishments primarily engaged in mining gold by placer or hydraulic methods. This industry also includes the dressing and beneficiating of the ore and the production of bullion at the site of the mine.
- 052 **Gold Quartz Mines.** - Establishments primarily engaged in operating lode mines for gold. This industry also includes the dressing and beneficiating of the ore and the production of bullion at the site of the mine.
- 057 **Uranium Mines.** - Establishments primarily engaged in mining uranium or radium ores and in dressing and beneficiating such ores.
- 058 **Iron Mines.** - Establishments primarily engaged in mining iron ore and in dressing and beneficiating such ores.
- 059 **Miscellaneous Metal Mines.** - Establishments primarily engaged in mining metal ores not elsewhere classified and in dressing and beneficiating such ores. The following types of mines are included in this industry: silver, copper-gold-silver, nickel-copper, silver-cobalt, silver-lead-zinc, molybdenite, chromite, manganese, mercury, tungsten, titanium, cerium, rare earths, columbium, tantalum, antimony, magnesium and beryllium.

or natural gas from wells or from surface shales or sands. Establishments primarily engaged in recovery of the naphtha content of natural gas are also included. The products of these establishments are pentane and heavier liquids, liquefied petroleum gases such as butane, propane and butane-propane mixtures. In some cases elemental sulphur is recovered as a by-product. Establishments primarily engaged in manufacturing coal gas, when not combined with a blast furnace or chemical plant, are classified in Industry No. 369 - Miscellaneous Petroleum and Coal Products Industries; while establishments primarily engaged in distributing manufactured or natural gas to consumers through a system of mains are classified in Industry No. 574 - Gas Distribution.

Major Group 3 - Non-Metal Mines (except Coal Mines)

Major Group 2 - Mineral Fuels

- 061 **Coal Mines.** - Establishments primarily engaged in mining coal, whether anthracite, bituminous or lignite. This industry includes establishments which break, wash, grade or otherwise prepare coal for use as a fuel, whether operated by a coal-mining enterprise or on a contract basis.
- 064 **Crude Petroleum and Natural Gas Industry.** - Establishments primarily engaged in the production of petroleum

- 071 **Asbestos Mines.** - Establishments primarily engaged in mining and milling asbestos fibre.
- 072 **Peat Extraction.** - Establishments primarily engaged in recovering and processing peat.
- 073 **Gypsum Mines.** - Establishments primarily engaged in mining gypsum. Establishments primarily engaged in manufacturing gypsum products which also mine gypsum, are classified in Industry No. 359 - Miscellaneous Non-Metallic Mineral Products Industries.
- 079 **Miscellaneous Non-Metal Mines.** - Establishments primarily engaged in mining and milling non-metallic minerals not elsewhere classified. This industry includes mines such as the following: soapstone and talc, barite, diatomite, mica, ochre and iron oxide, feldspar, nepheline syenite, quartz, silica, fluorspar, salt, potash, sodium sulphate, lithia, magnesite, brucite, gem stones, pumice, volcanic dust, whiting, pozzolana, kyanite, natro-alunite, sodium carbonate, magnesium sulphate, actinolite, serpentine, strontium, graphite, phosphate, pyrite.

DIVISION 4 - MINES (Including Milling), QUARRIES AND OIL WELLS - Concluded

Major Group 4 - Quarries and Sand Pits

- 083 Stone Quarries. - Establishments primarily engaged in quarrying and crushing igneous rocks (such as granite) or sedimentary rocks (such as limestone, marble, shale, slate and sandstone). Establishments primarily engaged in cutting, shaping or finishing stone are included in Industry No. 353 - Stone Products Manufacturers.
- 087 Sand Pits or Quarries. - Establishments primarily engaged in the extraction, crushing and screening of sand and gravel from pits or quarries.

Major Group 5 - Services Incidental to Mining

- 096 Contract Drilling for Petroleum. - Establishments primarily engaged in contract drilling of wells for petroleum or gas. This industry includes contractors that specialize in "spudding in" or "drilling in" and in building, repairing and dismantling rigs and derricks.

098 Other Contract Drilling. - Establishments primarily engaged in contract diamond drilling.

099 Miscellaneous Services Incidental to Mining. - Establishments primarily engaged in providing services necessary to the operation of petroleum and gas fields, such as running, cutting and pulling casings, tubes and rods; cementing wells; shooting wells; perforating well casings; acidizing and chemically treating wells; cleaning out, bailing, and swabbing wells; and drilling water intake wells. This industry also includes establishments primarily engaged in providing services incidental to the operation of metal and non-metal mining, such as mine exploration and development work including the removal of overburden and the sinking of shafts. Old style prospecting is classified here, but geophysical surveys, gravimetric surveys and seismographic surveys are in Industry No. 864 - Engineering and Scientific Services.

DIVISION 5 - MANUFACTURING INDUSTRIES

Major Group 1 - Food and Beverage Industries

- 101 Meat and Poultry Products Industries. - Establishments primarily engaged in abattoir operations and/or in meat packing operations. Also included are establishments primarily engaged in killing, dressing, packing or canning poultry. Important products of these industries are fresh, chilled or frozen meat (including poultry meat; cured meats, smoked, pickled or dry-salted; fresh or specially sausages; canned meat preparations; animal oils and fats; tank house products such as bone meal, blood meal, feather meal, meat meal, glue stock, and dry rendered tankage.) Establishments primarily engaged in the manufacture of synthetic sausage casings are classified in Industry No. 165 - Plastics Fabricating Industry, n.e.s. Establishments primarily engaged in wholesaling of meats and meat preparations including poultry products are included in Industry No. 614 - Wholesalers of Food.
- 102 Fish Products Industry. - Establishments primarily engaged in canning, filleting, freezing, curing or otherwise processing fish, molluscs or crustaceans. Establishments primarily engaged in the production of fish meal or oil or marine animal oil, or in the harvesting and drying of marine vegetable products are also included. Establishments primarily engaged in buying and selling fresh fish, molluscs or crustaceans, and which may perform some cleaning and packing or processing of these commodities, are classified in Industry No. 614 - Wholesalers of Food, if sales are mainly at wholesale level, or Industry No. 631 - Food Stores, if sales are mainly at retail level.
- 103 Fruit and Vegetable Processing Industries. - Establishments primarily engaged in processing fruits and vegetables. Important products of this industry are: canned, frozen or otherwise preserved fruits and vegetables, vegetable and fruit juices, soups, pickles, jams, jellies, marmalades, cider, sauces and vinegars.
- 104 Dairy Products Industry. - Establishments primarily engaged in processing raw milk and cream. Important products of this industry are pasteurized packaged fluid milk and cream; cheese - natural, process, paste, spreads and curds; milk or cream - condensed, evaporated or powdered; creamery butter, butter oil and whey butter; ice cream, ice cream mix and ice cream novelties; frozen desserts such as sherbets and ices. Establishments that pasteurize and package milk are included in this industry whether or not they sell the milk at retail. Establishments primarily engaged in purchasing packaged milk for resale to consumers are classified in Industry No. 631 - Food Stores. Estab-

lishments primarily engaged in buying milk for resale to processors are classified in Industry No. 614 - Wholesalers of Food.

105 Flour and Breakfast Cereal Products Industry. - Establishments primarily engaged in milling wheat and other cereal grains into flour and meal; in blending flour; or in processing cereal grains into uncooked or cooked cereal preparations for human consumption. By-products of these activities include grain screenings and grain offal which in some cases are further processed into crushed products for livestock feed.

106 Feed Industry. - Establishments primarily engaged in producing balanced feeds and premixes or feed concentrates for poultry, hogs, cattle, fur-bearing animals, dogs and cats. The feeds contain ground or rolled grains, mill feeds, animal and vegetable proteins, minerals, essential vitamins and antibiotics. Local mixing and custom grinding of grains (feed mills) are included in this industry.

107 Bakery Products Industries. - Establishments primarily engaged in manufacturing biscuits, crackers, pretzels, and similar "dry" bakery products and/or bread, cakes, pastries and similar "perishable" bakery products. The latter type of establishment may sell its products directly to household consumers on the same premises in which manufactured or through home delivery or at separately located outlets. In all such cases the manufacturing establishment is taken to include the distribution facilities if the goods are recorded as moving through those facilities at final selling prices, i.e. no mark-up is recorded to account separately for the resources used in distribution. Establishments primarily engaged in selling purchased bakery products to customers are classified to wholesale or retail trade (Industry No. 614 - Wholesalers of Food if selling primarily to retail stores, restaurants and other non-household customers; Industry No. 631 - Food Stores if selling primarily to household consumers.) Some types of establishment primarily engaged in making a single kind of product such as doughnuts from a purchased mix and selling for consumption on or off the same premises are deemed to be restaurants and included in Industry No. 886 - Restaurants, Caterers and Taverns.

108 Miscellaneous Food Industries. - Establishments primarily engaged in manufacturing candies, chocolates, cocoa products, chewing gum and other confectionery, such as salted nuts and popcorn; cane sugar, beet sugar, invert sugar, sucrose syrup, molasses and beet-pulp;

DIVISION 5 - MANUFACTURING INDUSTRIES - Continued

vegetable oils and their by-products, such as linseed, rapeseed, soybean and coconut oil, oilcake meal and linseed meal; cooking oils and salad oils, baking powder, flavouring extracts and syrups, malt, milled rice, macaroni and spaghetti, starch and its products, jelly powders, yeast, prepared coconut, powdered eggs, frozen eggs, "health foods," peanut butter, potato chips and other food specialties not elsewhere classified. Establishments primarily engaged in roasting coffee, blending tea or grinding and packaging spices are included in this class.

- 109 **Beverage Industries.**—Establishments primarily engaged in manufacturing alcoholic beverages such as whisky, brandy, rum and gin, ale, beer, porter, stout and other malt liquors; and wines of all kinds; and establishments primarily engaged in manufacturing non-alcoholic beverages and carbonated mineral waters or concentrates and syrups for the manufacture of carbonated beverages. Establishments primarily engaged in manufacturing ethyl alcohol are classified in this industry whether or not the alcohol is ultimately used to make potable spirits, but those primarily engaged in manufacturing other alcohols such as methyl, butyl or isopropyl are classified in Industry No. 378—Manufacturers of Industrial Chemicals. Establishments primarily engaged in bottling natural spring waters are classified in Industry No. 614—Wholesalers of Food.

Major Group 2—Tobacco Products Industries

- 151 **Leaf Tobacco Processors.**—Establishments primarily engaged in final grading, re-drying and packing tobacco leaf in hogsheads. These establishments customarily store the dried tobacco in the hogsheads for a period of time which may be several years, i.e. aging the tobacco. In most cases the hogsheads of tobacco are shipped direct to the tobacco products factory (see Industry No. 153) while in other cases the tobacco is removed from the hogsheads, stemmed and made ready for further manufacture before being sent to the tobacco products factory.

- 153 **Tobacco Products Manufacturers.**—Establishments primarily engaged in manufacturing cigarettes, cigars, tobacco and snuff.

Major Group 3—Rubber and Plastics Products Industries

- 162 **Rubber Products Industries.**—Establishments primarily engaged in manufacturing rubber goods, such as rubber tires and tubes for vehicles, machinery and implements; all-rubber footwear, lumbermen's boots, unlined or flock-lined plastic galoshes, and footwear having fabric uppers and moulded rubber or plastic soles; rubberized fabrics, mechanical rubber goods, rubber flooring and rubber sundries. Also included are establishments primarily engaged in the manufacture of pressure-sensitive tapes, including cellulose. Establishments primarily engaged in producing synthetic rubber are classified in Industry No. 378—Manufacturers of Industrial Chemicals. Establishments primarily engaged in manufacturing rubberized clothing are classified in the appropriate clothing industry.

- 165 **Plastics Fabricating Industry, n.e.s.**—Establishments primarily engaged in using synthetic resins manufactured elsewhere to mould, extrude or otherwise fabricate basic shapes and forms of plastic or plastic articles which cannot conveniently be classified elsewhere, including synthetic sausage casings, plastic bottles and containers, plastic and fibreglass awnings. Many establishments included in this industry manufacture special plastic parts for automobiles, household appliances and the like. Establishments primarily engaged in manufacturing plastic articles such as toys, buttons, tooth brushes or any other article for which provision is made elsewhere in the classification should be classified to the appropriate industry. Establishments primarily engaged in manufactur-

ing such products as plastic film and sheet, extrusions or the like from resin of their own manufacture are classified in Industry No. 373—Manufacturers of Plastics and Synthetic Resins.

Major Group 4—Leather Industries

- 172 **Leather Tanneries.**—Establishments primarily engaged in tanning, currying and finishing leather of all types, such as sole and belt leather; bookbinders' leather; glove, harness, bag, strap and upholstery leather.

- 174 **Shoe Factories.**—Establishments primarily engaged in manufacturing boots, shoes, slippers, moccasins and similar footwear except rubber footwear. Establishments primarily engaged in manufacturing rubber footwear, i.e. all-rubber footwear, lumbermen's boots, unlined or flock-lined plastic galoshes, and footwear having fabric uppers and moulded rubber soles are included in Industry No. 162—Rubber Products Industries.

- 175 **Leather Glove Factories.**—Establishments primarily engaged in manufacturing gloves and mittens of leather. Establishments primarily engaged in manufacturing knit gloves and mittens are classified in Industry No. 239—Knitting Mills, (except Hosiery Mills.) Rubber gloves are manufactured by establishments classified in Industry No. 162—Rubber Products Industries. Establishments primarily engaged in manufacturing gloves of all other materials are classified in Industry No. 249—Miscellaneous Clothing Industries.

- 179 **Luggage, Handbag and Small Leather Goods Manufacturers.**—Establishments primarily engaged in manufacturing leather products and similar articles not elsewhere classified, such as luggage, handbags, "small leather goods," boot and shoe cut stock and findings of leather or of other materials. Establishments primarily engaged in manufacturing harness or saddlery, and leather belting are included.

Major Group 5—Textile Industries

- 181 **Cotton Yarn and Cloth Mills.**—Establishments primarily engaged in spinning, twisting, winding or spooling cotton yarn and in weaving fabrics wholly or mainly of cotton such as duck, sheetings, prints, towellings, bed-spread fabrics, table damask, drapery and upholstery fabrics.

- 182 **Wool Yarn and Cloth Mills.**—Establishments primarily engaged in spinning and winding yarn containing wool for sale as such, and establishments primarily engaged in weaving woollen and worsted fabrics such as suitings, coatings, dress goods and flannel; blankets and blanketings; and other woollen and worsted fabrics. Included in this industry are establishments primarily engaged in weaving paper-makers' felt of all textile materials. Mills whose chief products are knitted goods are classified in Industry No. 239—Knitting Mills (except Hosiery Mills.)

- 183 **Man-made Fibre, Yarn and Cloth Mills.**—Establishments primarily engaged in manufacturing man-made textile fibres (including glass), yarns, threads and broad woven goods. This industry includes establishments engaged in the extrusion of man-made textile filaments from purchased resins. Establishments primarily engaged in producing the basic synthetic material in such forms as liquids, chips, powders or flakes are classified in Industry No. 373—Manufacturers of Plastics and Synthetic Resins.

- 184 **Cordage and Twine Industry.**—Establishments primarily engaged in manufacturing rope, cable, cordage, net, twine and related goods from hemp, jute, cotton, paper, flax and other fibres.

DIVISION 5—MANUFACTURING INDUSTRIES—Continued

185 **Felt and Fibre Processing Mills.**—Establishments primarily engaged in manufacturing pressed felt of any fibre by means of heating, moisture and pressure; in making punched felt for rugs, cushions and other products from hair, jute, wool or other fibres, in preparing fibres for spinning (except synthetic fibres); in manufacturing batting, padding, wadding and upholstery filling; or in processing waste and recovered fibres and flock. Included are establishments primarily engaged in wool scouring, carbonizing, and combing, and in making and converting top. Establishments primarily engaged in manufacturing paper-makers' felts are classified in Industry No. 182—Wool Yarn and Cloth Mills. Establishments primarily engaged in making other woven felts are classified in the appropriate cloth industry.

186 **Carpet, Mat and Rug Industry.**—Establishments primarily engaged in manufacturing carpets and rugs of wool, cotton or synthetic materials; jute and cocoa fibre mats and matting; and rag carpets and rugs. The manufacture of rubber mats is classified in Industry No. 162—Rubber Products Industries.

187 **Canvas Products, and Cotton and Jute Bags Industries.**—Establishments primarily engaged in manufacturing awnings, tents, sails, tarpaulins, canopies and bags made from canvas, cotton, jute, burlap and other textile fabrics.

188 **Automobile Fabric Accessories Industry.**—Establishments primarily engaged in manufacturing automobile upholstery materials and body linings, automobile seat cushions and backs, seat belts and other fabric accessories.

189 **Miscellaneous Textile Industries.**—Establishments primarily engaged in the manufacture of threads for use in sewing, crocheting, darning, hand knitting, embroidering and related purposes; narrow fabrics, such as ribbons, tapes and bindings, elastic cord, lacing, elastic and non-elastic webbing, textile belting and fire hose; house furnishings, such as curtains, draperies and bedspreads; linen and jute fabrics; trimmings and Schiffli machine embroideries; bandages, gauze, surgical dressings and sanitary napkins; muff beds and other textile products not elsewhere classified. Establishments primarily engaged in dyeing, sponging and finishing of woollen and worsted, cotton, linen, silk and synthetic goods are classified in this industry.

Major Group 6—Knitting Mills

231 **Hosiery Mills.**—Establishments primarily engaged in knitting full-fashioned or seamless hosiery or panty-hose. Establishments primarily engaged in dyeing or finishing hosiery and other textile products on a custom basis are included in Industry No. 189—Miscellaneous Textile Industries.

239 **Knitting Mills (except Hosiery Mills).**—Establishments primarily engaged in manufacturing knit outerwear, underwear, gloves and other knit articles except hosiery.

Major Group 7—Clothing Industries

243 **Men's Clothing Industries.**—Establishments primarily engaged in manufacturing suits, coats, trousers, overcoats, shirts, underwear, work clothing, sheepskin-lined coats, sportswear and men's furnishings and leather clothing. Both "regular" factories and "contract" factories making men's clothing are classified in this industry.

244 **Women's Clothing Industries.**—Establishments primarily engaged in manufacturing suits, coats, dresses, skirts, blouses, household apparel, sportswear, lingerie and neckwear. Both "regular" factories and "contract"

factories making women's clothing are classified in this industry, and the industry includes establishments primarily engaged in embroidering, hemstitching and pleating for the trade.

245 **Children's Clothing Industry.**—Establishments primarily engaged in manufacturing children's and infants' clothing, including dresses, coats, snow suits and other outerwear.

246 **Fur Goods Industry.**—Establishments primarily engaged in manufacturing fur coats, other fur garments, accessories and trimmings. Establishments primarily engaged in fur dressing and dyeing are included in Industry No. 399.—Miscellaneous Manufacturing Industries, n.e.s. Establishments primarily engaged in selling purchased fur goods at retail but which also make up fur coats and other fur goods are classified in Industry No. 667—Women's Clothing Stores.

248 **Foundation Garment Industry.**—Establishments primarily engaged in manufacturing corsets, girdles, brassieres and other foundation garments.

249 **Miscellaneous Clothing Industries.**—Establishments primarily engaged in manufacturing gloves and mittens, except leather, rubber and knit; hats of straw, cloth, fur felt and wool felt, hat and cap materials and millinery; tailors' canvas fronts and belts, academic vests and gowns, theatrical costumes, and other items of apparel not elsewhere classified. Included are establishments that purchase made-up garments which they treat with a water-proofing compound. Establishments primarily engaged in manufacturing garments by cutting and sewing such materials as garment leather or water-resistant materials of any kind are classified in the appropriate clothing industry, i.e., Children's Clothing Industry, Men's Clothing Industries, or Women's Clothing Industries as the case may be. Millinery shops primarily engaged in selling purchased hats but which make up some hats are classified in Industry No. 667—Women's Clothing Stores.

Major Group 8—Wood Industries

251 **Sawmills, Planing Mills and Shingle Mills.**—Establishments primarily engaged in sawing lumber (boards, timbers, dimension stock) spoolwood, lath and other mill products such as shingles, cooperage stock and box shoo from logs or bolts; in dressing and working lumber to produce standard matched, shiplapped or patterned products. Establishments primarily engaged in manufacturing hardwood flooring and millwork products other than lumber are classified in Industry No. 254—Sash, Door and Other Millwork Plants. Pulp barking mills are included in Industry No. 031—Logging.

252 **Veneer and Plywood Mills.**—Establishments primarily engaged in producing plywood or veneer.

254 **Sash, Door and Other Millwork Plants.**—Establishments primarily engaged in manufacturing mill products such as sash, doors, window and door frames, interior woodwork, mouldings and hardwood flooring. This industry also includes establishments primarily engaged in manufacturing pre-fabricated, wood-framed buildings or pre-fabricated panels for buildings or in manufacturing laminated beams and structures. Establishments primarily engaged in producing rough, dressed or worked lumber are classified in Industry No. 251—Sawmills, Planing Mills and Shingle Mills. Establishments primarily engaged in producing plywood or veneer are classified in Industry No. 252—Veneer and Plywood Mills.

256 **Wooden Box Factories.**—Establishments primarily engaged in manufacturing wooden boxes and pallets, crates, fruit and vegetable baskets. This industry includes establishments making box shoo from sawn lumber.

DIVISION 5—MANUFACTURING INDUSTRIES—Continued

258 **Coffin and Casket Industry.**—Establishments primarily engaged in the manufacture of coffins, caskets and other morticians' supplies.

259 **Miscellaneous Wood Industries.**—Establishments primarily engaged in wood preservation; in wood turning and in manufacturing wood products not elsewhere classified, including sawdust briquettes. Principal products are beekeepers' and poultrymen's supplies, excelsior, woodenware (clothespins, washboards, stepladders, pails and tubs) sanitary woodwork and particle board. Establishments primarily engaged in manufacturing cooperage such as barrels, casks, kegs, and other containers made of staves are included in this industry. Establishments primarily engaged in manufacturing cooperage stock, but not cooperage, are classified in Industry No. 251—Sawmills, Planing Mills and Shingle Mills.

Major Group 9—Furniture and Fixture Industries

261 **Household Furniture Manufacturers.**—Establishments primarily engaged in manufacturing household furniture of all kinds and of all materials. This industry also includes upholstery, cabinet making and furniture repairing shops.

264 **Office Furniture Manufacturers.**—Establishments primarily engaged in manufacturing office furniture such as desks, chairs, tables, filing cabinets of all kinds and of all materials.

266 **Miscellaneous Furniture and Fixtures Manufacturers.**—Establishments primarily engaged in manufacturing store furniture and fixtures, public building and professional furniture and fixtures of all kinds and of all materials. This industry also includes establishments primarily engaged in manufacturing mattresses and springs. Manufacturers of stone furniture are classified in Industry No. 353—Stone Products Manufacturers.

268 **Electric Lamp and Shade Manufacturers.**—Establishments primarily engaged in manufacturing electric table and floor lamps and shades of all types and of all materials. Establishments primarily engaged in manufacturing electric fixtures are included in Industry No. 333—Manufacturers of Lighting Fixtures.

Major Group 10—Paper and Allied Industries

271 **Pulp and Paper Mills.**—This industry includes pulp mills producing chemical or mechanical woodpulp; and combined pulp and paper mills and paper mills manufacturing newsprint, book and writing papers, Kraft paper, paperboard or building and insulation board. Establishments primarily engaged in manufacturing converted paper and paperboard products are classified in Industry No. 273—Paper Box and Bag Manufacturers, or Industry No. 274—Miscellaneous Paper Converters.

272 **Asphalt Roofing Manufacturers.**—Establishments primarily engaged in manufacturing asphalt-saturated shingles and sidings, roofing felts and sheathings, smooth-surfaced and mineral-surfaced roll roofings.

273 **Paper Box and Bag Manufacturers.**—Establishments primarily engaged in manufacturing shipping boxes or cases made of corrugated or solid fibreboard; folding or set-up paper or paperboard boxes; paper bags; fibre cans; decorated and fancy covered paperboard boxes; and paper and paperboard containers not elsewhere classified. Many establishments included in this industry produce bags and other containers of synthetic materials and of metal foil.

274 **Miscellaneous Paper Converters.**—Establishments primarily engaged in coating, treating, cutting and otherwise converting paper and paperboard. Many of these establishments also use synthetic materials and metal

foil to produce articles similar to those manufactured of paper and paperboard. Important products of establishments classified in this industry are waxed paper, crepe paper, paper napkins, envelopes and stationery, gummed paper, wallpaper, paper plates and cups, mailing tubes.

Major Group 11—Printing, Publishing and Allied Industries

286 **Commercial Printing.**—Establishments primarily engaged in the production of commercial and/or job printing regardless of the printing method or process used (letterpress, including flexographic, planographic or lithographic; intaglio or gravure; stencil printing or silk screen; etc.). The following list of printed products is intended to be representative but not complete:

- newspapers, periodicals, books, maps, and all other printing done on a job or contract basis for other individuals or firms;
- printed office stationery and forms, snap-out sets (carbonized sets or carbonless reproducing sets), continuous forms, calendars, greeting cards, post cards, playing cards, wrappings, tickets, envelopes, tags, seals, labels, stamps (postage, revenue, trading, etc.), engraved stationery, bank notes, stock and bond certificates, catalogues, printed advertising matter, etc.

Establishments primarily engaged in publishing are included in Industry No. 288—Publishing Only if the publisher does not print his own publications or, in Industry No. 289—Publishing and Printing if the publisher prints his own publications.

Establishments primarily engaged in providing blueprints and such copying services are included in Industry No. 869—Miscellaneous Services to Business Management.

287 **Platemaking, Typesetting and Trade Bindery Industry.**—Establishments (trade shops) primarily engaged in providing specialized services to the printing and publishing trades, advertising agencies or others:

- the making of image bearing photographic films, plates and printers' dies of all types; doing typesetting; making binders or covers, doing hand or machine bindery work and allied post-printing converting or finishing operations.

Establishments primarily engaged in engraving jewelry are classified in Industry No. 695—Watch and Jewelry Repair Shops, and those primarily engaged in engraving on base metals for purposes other than printing are classified in Industry 392—Jewellery and Silverware Industry.

288 **Publishing Only.**—This industry includes establishments primarily engaged in publishing only and which do no printing. The term "publishing", as applied in this industry, includes publishing of books, newspapers, periodicals, almanacs, maps, guides and similar products.

289 **Publishing and Printing.**—Establishments primarily engaged in publishing and printing newspapers, periodicals, books, almanacs, maps, guides and the like. Establishments primarily engaged in printing newspapers, magazines, books, etc. for publishers are included in Industry No. 286—Commercial Printing. Establishments which publish only and do no printing are included in Industry No. 288—Publishing Only.

Major Group 12—Primary Metal Industries

291 **Iron and Steel Mills.**—Four main types of establishments are classified in this industry: (1) Establishments primarily engaged in manufacturing pig iron and ferroalloys. (2) Steel works primarily engaged in manufacturing ingots, steel castings and in continuous casting of steel.

DIVISION 5—MANUFACTURING INDUSTRIES—Continued

(3) Rolling mills primarily engaged in hot and cold rolling of steel into primary shapes. (4) Coke ovens operated in connection with blast furnaces. In some cases the blast furnace, steel mill, rolling mill and coke oven or some combination of the two or more of them are carried on as one integrated operation and the manufacturing processes may be carried on beyond the rolling mill stage.

292 **Steel Pipe and Tube Mills.**—Establishments primarily engaged in manufacturing welded and seamless steel pipe and tubing. Establishments primarily engaged in manufacturing riveted pipe are classified in Industry No. 302—Fabricated Structural Metal Industry, those primarily engaged in manufacturing cast iron pipe are included in Industry No. 294—Iron Foundries, and those primarily engaged in manufacturing metal culvert pipe are classified in Industry No. 304—Metal Stamping, Pressing and Coating Industry.

294 **Iron Foundries.**—Establishments primarily engaged in manufacturing iron castings, including cast iron pipe and fittings.

295 **Smelting and Refining.**—Establishments primarily engaged in the smelting of ores bearing non-ferrous metals and/or the refining of non-ferrous metals. In cases of establishments which conduct smelting or refining operations at the site of the mine, separate reports should be secured, if possible, for the mining and for the smelting or refining operations, except for gold mining. In the case of gold mines, production of bullion at the site of the mine is included with the mining operations in Industry No. 051—Placer Gold Mines or Industry No. 052—Gold Quartz Mines.

296 **Aluminum Rolling, Casting and Extruding.**—Establishments primarily engaged in manufacturing aluminum shapes such as bars, rods, plates, sheets and castings or in manufacturing aluminum powder. Pressure die casting of aluminum is included in Industry No. 298—Metal Rolling, Casting and Extruding, n.e.s., and the extraction of aluminum from the ore is classified in Industry No. 295—Smelting and Refining.

297 **Copper and Copper Alloy Rolling, Casting and Extruding.**—Establishments primarily engaged in manufacturing copper and copper alloy shapes such as bars, rods, plates, sheets and castings or in manufacturing bronze powder. Pressure die casting of copper alloys is included in Industry No. 298—Metal Rolling, Casting and Extruding, n.e.s., and the extraction of copper from the ore is classified in Industry No. 295—Smelting and Refining.

298 **Metal Rolling, Casting and Extruding, n.e.s.**—Establishments primarily engaged in manufacturing non-ferrous metals such as zinc, tin, lead, nickel and titanium and their alloys in shapes such as bars, rods, plates, sheets and castings. In addition, this industry includes establishments primarily engaged in pressure die casting of all non-ferrous metals and their alloys and those engaged in the recovery of non-ferrous metals from scrap.

Major Group 13—Metal Fabricating Industries (except Machinery and Transportation Equipment Industries)

301 **Boiler and Plate Works.**—Establishments primarily engaged in the manufacture of heating and power boilers, except cast iron sectional heating boilers, heavy gauge storage tanks, pressure tanks, smokestacks, plate work and similar boiler shop products.

Cast iron sectional heating boilers are classified in Industry No. 307—Heating Equipment Manufacturers.

Some establishments in this industry engage both in the fabrication of the product and its installation. In these

cases the establishment is classified on the basis of its principal activity, i.e. either fabricating or installing the product. Establishments installing mainly products of their own manufacture are considered as primarily engaged in fabrication, and are included in this industry, but those primarily engaged in erecting purchased boilers or smokestacks are included in Industry No. 409—Other Construction. Establishments primarily engaged in fabricating and erecting large storage tanks which must be assembled at the site are included in Industry No. 302—Fabricated Structural Metal Industry, and establishments primarily engaged in manufacturing sheet metal tanks are included in Industry No. 304—Metal Stamping, Pressing and Coating Industry.

302 **Fabricated Structural Metal Industry.**—Establishments primarily engaged in fabrication of heavy steel parts and similar parts of other metals and alloys for structural purposes. Products of this industry include fabricated shapes for bridges, buildings, transmission towers, large tanks and similar structures. Establishments in this industry may erect buildings, bridges, and large tanks as well as fabricate the metal parts but they are primarily engaged in fabrication. Establishments primarily engaged in the erection of buildings, bridges and large tanks from purchased metal parts are included in Industry No. 421—Special-Trade Contractors.

303 **Ornamental and Architectural Metal Industry.**—Establishments primarily engaged in manufacturing ornamental metal work, stairs and staircases, fire escapes, grilles, railings, metal windows (including hermetically sealed), doors and frames and metal partitions. Establishments included in this industry may install the products of their own manufacture but they are primarily engaged in fabrication. Establishments primarily engaged in the erection or installation of purchased fabricated metal products are included in Industry No. 421—Special-Trade Contractors.

304 **Metal Stamping, Pressing and Coating Industry.**—Establishments primarily engaged in manufacturing sheet metal products such as bottle caps, heel caps, metal lath and metal boxes. Also included are establishments primarily engaged in manufacturing pressed metal products such as kitchen utensils, hospital and similar utensils and containers. This industry also includes establishments primarily engaged in coating metal and metal products, such as vitreous enamelware, galvanizing and electro-plating except plating with precious metals (Industry 392). It also includes establishments primarily engaged in manufacturing tin cans and other tinware, and sheet metal products such as metal awnings, heating ducts, roofing and eaves trough. Establishments primarily engaged in tinsmithing and sheet metal work on construction projects are classified in Industry No. 421—Special-Trade Contractors. Establishments primarily engaged in making enamelled bathroom fixtures such as bath tubs and basins are included in Industry No. 309—Miscellaneous Metal Fabricating Industries.

305 **Wire and Wire Products Manufacturers.**—Establishments primarily engaged in drawing wire from rods and in manufacturing nails, spikes, staples, bolts, nuts, rivets, screws, washers, wire fencing, screening, wire cloth, barbed wire, tire chains, uninsulated wire rope and cable, kitchen wire goods and other wire products. Establishments primarily engaged in manufacturing insulated wire and cable are included in Industry No. 338—Manufacturers of Electric Wire and Cable.

306 **Hardware, Tool and Cutlery Manufacturers.**—Establishments primarily engaged in manufacturing edge and hand tools, cutlery and hardware. Important products of this industry are axes; chisels; dies, including extrusion moulds, and other metal-working tools; hammers, shovels, hoes, rakes, files, saws, builders' hardware, marine hard-

DIVISION 5—MANUFACTURING INDUSTRIES—Continued

ware, non-electric razors and blades, table and kitchen cutlery and a miscellaneous group of products usually known under the term "hardware" and not elsewhere classified. This industry also includes establishments primarily engaged in manufacturing bits, drills, except rock drill bits, which are classified in Industry No. 315—Miscellaneous Machinery and Equipment Manufacturers, and other cutting tools for machines or for power-driven hand tools. Establishments primarily engaged in the manufacture of sterling silver or silver-plated cutlery are classified in Industry No. 392—Jewellery and Silverware Industry, those primarily engaged in the manufacture of machine tools or of power-driven hand tools in Industry No. 315—Miscellaneous Machinery and Equipment Manufacturers, and those primarily engaged in manufacturing machinists' precision tools in Industry No. 391—Scientific and Professional Equipment Industries.

307 **Heating Equipment Manufacturers.**—Establishments primarily engaged in manufacturing commercial cooking equipment and major heating apparatus such as furnaces, oil burners, gas burners, steam and hot water heating apparatus and heating equipment, not elsewhere classified. Establishments primarily engaged in manufacturing cast iron sectional heating boilers and convection or cast iron radiators are included in this industry. Establishments primarily engaged in manufacturing domestic cooking equipment, electric and non-electric, are classified in Industry No. 332—Manufacturers of Major Appliances (Electric and Non-electric).

308 **Machine Shops.**—Machine shops primarily engaged in producing machine parts and equipment, other than complete machines, for the trade. This industry includes machine shops providing custom and repair services. Establishments primarily engaged in rebuilding or remanufacturing automotive engines, transmissions or drives are classified here. Establishments primarily engaged in rebuilding or repairing automotive generators, starter motors and alternators are classified in Industry No. 897—Miscellaneous Repair Shops. Establishments primarily engaged in rebuilding such automotive parts as fuel pumps, water pumps, brake shoes, clutches, solenoids and voltage regulators are classified in Industry No. 619—Wholesalers of Motor Vehicles and Accessories.

309 **Miscellaneous Metal Fabricating Industries.**—Establishments primarily engaged in manufacturing metal products not elsewhere classified, such as weather stripping, guns, collapsible tubes, machinery fittings, plumbers' goods (including enamelled plumbing fixtures), safes and vaults, and forgings such as chains, (except tire chains, see Industry No. 305—Wire and Wire Products Manufacturers), anchors and axles. Also included are establishments primarily engaged in fabricating bars and rods for reinforcing concrete and those primarily engaged in metal heat treating.

Major Group 14—Machinery Industries (except Electrical Machinery)

311 **Agricultural Implement Industry.**—Establishments primarily engaged in manufacturing agricultural implements such as ploughs, threshing machines, binders, fertilizing machinery, milking machines and mowing machines. The industry also includes establishments primarily engaged in manufacturing tractors. Establishments primarily engaged in manufacturing truck tractors for highway use are classified in Industry No. 323—Motor Vehicle Manufacturers. Establishments primarily engaged in manufacturing industrial tractors for handling materials in industrial plants, depots and docks are classified in Industry No. 315—Miscellaneous Machinery and Equipment Manufacturers. Establishments primarily engaged in manufacturing hand tools, such as hoes, rakes, and shovels are classified in Industry No. 306—Hardware, Tool and Cutlery Manufacturers.

315 **Miscellaneous Machinery and Equipment Manufacturers.**—Establishments primarily engaged in manufacturing machinery and equipment designed particularly for use in construction and mining operations including earth moving machinery and equipment, and earth and rock boring and drilling equipment including rock drill bits; establishments primarily engaged in manufacturing other special-industry machinery except agricultural machinery, including such products as textile machinery, pulp and paper machinery, printing machinery and food-processing machinery; establishments primarily engaged in manufacturing machinery and equipment not designed for use in any particular industry or classified elsewhere, including such products as marine engines, general-purpose engines, pumping equipment, equipment for the transmission of mechanical power, ventilating, exhaust and dust collecting equipment, conveyor systems, elevators and lifting and hoisting machinery. Establishments primarily engaged in manufacturing industrial tractors for handling materials in industrial plants, depots and docks are included here. Included also are establishments primarily engaged in manufacturing woodworking machinery and in manufacturing machine tools which are power-driven machines employing a cutting tool for work on metal. Establishments primarily engaged in manufacturing bits, drills and other cutting tools for machines or for power-driven hand tools are included in Industry No. 306—Hardware, Tool and Cutlery Manufacturers.

316 **Commercial Refrigeration and Air Conditioning Equipment Manufacturers.**—Establishments primarily engaged in manufacturing electric and non-electric commercial refrigerating equipment such as display cases, counters, and frozen food storage cabinets; and refrigeration units for installation in custom or built-in refrigeration facilities. The industry also includes establishments primarily engaged in manufacturing self-contained air conditioning units, except window type, and air conditioning equipment for installation in custom and built-in air conditioning systems.

318 **Office and Store Machinery Manufacturers.**—Establishments primarily engaged in manufacturing office and store machinery such as typewriters, cash registers, coin-operated vending machines, mechanical computing machines, and scales and balances. Establishments primarily engaged in manufacturing electronic computers, data processors and related control devices are included here.

Major Group 15—Transportation Equipment Industries

321 **Aircraft and Aircraft Parts Manufacturers.**—Establishments primarily engaged in manufacturing aeroplanes, gliders, balloons and aircraft parts, such as engines, propellers and pontoons. Aircraft repair is included in this industry, as are establishments primarily engaged in manufacturing parts for guided missiles and space vehicles. The manufacture of aeronautical instruments is classified in Industry No. 391—Scientific and Professional Equipment Industries, except for electronic navigational equipment, which is classified in Industry No. 335—Communications Equipment Manufacturers. Air-cushioned vehicles are classified in Industry No. 329—Miscellaneous Vehicle Manufacturers.

323 **Motor Vehicle Manufacturers.**—Establishments primarily engaged in manufacturing or assembling complete motor vehicles such as passenger automobiles, commercial cars and buses, trucks, and special purpose motor vehicles such as ambulances and taxicabs.

324 **Truck Body and Trailer Manufacturers.**—Establishments primarily engaged in manufacturing truck and bus bodies but not manufacturing complete trucks or buses. Included are establishments primarily engaged in manufacturing truck trailers and tractor-type bus trailers, as well as those primarily engaged in manufacturing trailers for attachment to passenger cars.

DIVISION 5 - MANUFACTURING INDUSTRIES - Continued

325 **Motor Vehicle Parts and Accessories Manufacturers.** - Establishments primarily engaged in manufacturing motor vehicle parts, except truck and bus bodies, and accessories for use on motor vehicles, such as engines, brakes, clutches, axles, gears, transmissions, wheels, frames, radiators, springs, automobile hardware, heaters, horns, and mirrors. The manufacture of tires and tubes is classified in Industry No. 162 - Rubber Products Industries, automobile glass in Industry No. 356 - Glass and Glass Products Manufacturers; automobile fabric accessories in Industry No. 188 - Automobile Fabric Accessories Industry; and batteries in Industry 339 - Manufacturers of Miscellaneous Electrical Products.

326 **Railroad Rolling Stock Industry.** - Establishments primarily engaged in building and rebuilding locomotives of any type or gauge and railroad cars (including frames and parts) for freight and passenger service.

327 **Shipbuilding and Repair.** - Establishments primarily engaged in building and repairing all types of ships of more than 5 tons displacement.

328 **Boatbuilding and Repair.** - Establishments primarily engaged in building and repairing all types of boats. This industry, for the most part, handles the smaller type of craft, such as motorboats, sailboats, rowboats, lifeboats and canoes.

329 **Miscellaneous Vehicle Manufacturers.** - Establishments primarily engaged in manufacturing transportation equipment not elsewhere classified, including snowmobiles, air-cushioned vehicles and animal-drawn vehicles including sleighs, as well as parts for any vehicles included.

Major Group 16 - Electrical Products Industries

331 **Manufacturers of Small Electrical Appliances.** - Establishments primarily engaged in manufacturing small electrical appliances such as vacuum cleaners, fans, toasters, irons and water heaters. Establishments primarily engaged in manufacturing household refrigerators and farm and home freezers; domestic cooking and heating stoves; domestic laundry equipment and sewing machines are classified in Industry No. 332 - Manufacturers of Major Appliances (Electric and Non-electric).

332 **Manufacturers of Major Appliances (Electric and Non-electric).** - Establishments primarily engaged in manufacturing household type appliances and machines such as stoves; refrigerators, home and farm freezers; window type air conditioning units; laundry equipment and sewing machines. Establishments primarily engaged in manufacturing small household electric appliances are classified in Industry No. 331 - Manufacturers of Small Electrical Appliances.

333 **Manufacturers of Lighting Fixtures.** - Establishments primarily engaged in manufacturing electric lighting fixtures. Establishments primarily engaged in manufacturing electric table and floor lamps and shades are classified in Industry No. 268 - Electric Lamp and Shade Manufacturers.

334 **Manufacturers of Household Radio and Television Receivers.** - Establishments primarily engaged in manufacturing radio and television receiving sets. The industry also includes establishments primarily engaged in manufacturing record playing, tape playing and recording equipment and parts. Establishments primarily engaged in manufacturing records, tapes and other media for recording vocal or instrumental performances are classified in Industry No. 399 - Miscellaneous Manufacturing Industries, n.e.s.

335 **Communications Equipment Manufacturers.** - Establishments primarily engaged in manufacturing radio and television transmitters, radar equipment, closed circuit television equipment, electronic navigational aids, public address apparatus, and the related parts and equipment. Included are establishments primarily engaged in manufacturing telephone and telegraph equipment and parts or electric and electronic signalling apparatus. This industry includes establishments primarily engaged in manufacturing electronic control panels and similar devices. Repair and overhaul of electronic equipment, except household equipment, is classified here.

336 **Manufacturers of Electrical Industrial Equipment.** - Establishments primarily engaged in manufacturing electric motors, generators and other electric power equipment for use in the generation, transmission and utilization of electric energy. Important products of this industry are steam turbine generator sets, motors, except railway, motor vehicle and aircraft, generators, transformers, switchgear, pole-line hardware, lightning arresters, electric welding equipment, electric meters. Establishments primarily engaged in manufacturing electric wire and cable are in Industry No. 338 - Manufacturers of Electric Wire and Cable.

338 **Manufacturers of Electric Wire and Cable.** - Establishments primarily engaged in manufacturing electric wire and cable both insulated or armoured and non-insulated. Establishments primarily engaged in manufacturing non-electric wire and wire products are included in Industry No. 305 - Wire and Wire Products Manufacturers.

339 **Manufacturers of Miscellaneous Electrical Products.** - Establishments primarily engaged in manufacturing electrical products not elsewhere classified, such as electric light bulbs and tubes (light sources) of all kinds such as incandescent filament lamps, vapour and fluorescent lamps, photoflash and photoflood lamps; wiring devices; panel-boards (distribution, lighting and residential types); low voltage switchboards; carbon or graphite electrodes; conduit and fittings. Establishments primarily engaged in manufacturing storage and primary batteries including wet and dry batteries are classified here. Establishments primarily engaged in manufacturing electronic computers, data processors and related control devices are classified in Industry No. 318 - Office and Store Machinery Manufacturers, and those primarily engaged in manufacturing lighting fixtures are classified in Industry No. 333 - Manufacturers of Lighting Fixtures.

Major Group 17 - Non-Metallic Mineral Products Industries

351 **Clay Products Manufacturers.** - Establishments primarily engaged in manufacturing clay brick; roofing, floor and wall ceramic tile; sewer pipe, and other structural clay products. Establishments primarily engaged in manufacturing clay products such as pottery, chinaware, and porcelain insulators are also included. Establishments primarily engaged in manufacturing clay refractories are included in Industry No. 359 - Miscellaneous Non-Metallic Mineral Products Industries.

352 **Cement Manufacturers.** - Establishments primarily engaged in manufacturing hydraulic cement, including Portland, natural masonry and pozzolana cements.

353 **Stone Products Manufacturers.** - Establishments primarily engaged in cutting, shaping and finishing stone for building and other purposes. Important products of this industry include monuments and tombstones, dimension stone for buildings, slate blackboards and stone furniture. Establishments that quarry stone and do some shaping and finishing are classified in Industry No. 083 - Stone Quarries. Establishments primarily engaged in buying and selling monuments and tombstones, even though they do

DIVISION 5—MANUFACTURING INDUSTRIES—Continued

some lettering and finishing, are classified in either Industry No. 629—Wholesalers, n.e.s. or Industry No. 699—Retail Stores, n.e.s.

354 **Concrete Products Manufacturers.**—Establishments primarily engaged in manufacturing concrete products such as building blocks, brick, sewer pipe, tanks, poles, septic tanks. Establishments primarily engaged in manufacturing sand-lime brick and blocks are included. Contractors engaged in concrete construction work are classified in Division 6—Construction Industry, and establishments primarily engaged in mixing and delivering ready-mix concrete are classified in Industry No. 355—Ready-Mix Concrete Manufacturers.

355 **Ready-Mix Concrete Manufacturers.**—Establishments primarily engaged in mixing and delivering ready-mix concrete.

356 **Glass and Glass Products Manufacturers.**—Establishments primarily engaged in manufacturing flat glass; plate glass; glass containers; glassware; glass ovenware; glass brick; fibrous glass products except insulation and textile fabrics; mirrors; stained, leaded and ornamented glass; glass novelties and other articles made from glass. This industry includes establishments primarily engaged in etching or painting glass or glassware. Establishments primarily engaged in manufacturing optical lenses and ophthalmic lenses are classified in Industry No. 391—Scientific and Professional Equipment Industries. Establishments primarily engaged in spinning glass yarns or weaving glass fabrics are classified in Industry No. 183—Man-made Fibre, Yarn and Cloth Mills.

357 **Abrasives Manufacturers.**—Establishments primarily engaged in manufacturing abrasive grinding wheels of emery, carborundum and other natural or artificial materials; abrasive sticks, stones, bricks, paper and cloths, and buffing and polishing wheels. This industry includes the manufacture of primary abrasive materials such as fused alumina and silicon carbide.

358 **Lime Manufacturers.**—Establishments primarily engaged in manufacturing quicklime and hydrated lime.

359 **Miscellaneous Non-Metallic Mineral Products Industries.**—Establishments primarily engaged in manufacturing miscellaneous non-metallic mineral products not elsewhere classified, such as refractories, clay and non-clay gypsum products; mineral wool products; asbestos products; mica products; expanded vermiculite; expanded perlite; roofing granules and dead-burned dolomite. Establishments primarily engaged in manufacturing petroleum and coal products are classified in Major Group 18—Petroleum and Coal Products Industries.

Major Group 18—Petroleum and Coal Products Industries

365 **Petroleum Refineries.**—Establishments primarily engaged in refining crude petroleum and in producing gasoline, fuel oils, lubricating oils, illuminating oils and other petroleum products. The industry also includes establishments primarily engaged in blending lubricating oils and greases which they have purchased.

369 **Miscellaneous Petroleum and Coal Products Industries.**—Establishments primarily engaged in manufacturing petroleum and coal products not elsewhere classified, such as briquettes, road emulsions and roofing compounds. This industry also includes coking plants operated as separate establishments and not as a subsidiary activity in iron and steel or chemical plants.

Major Group 19—Chemical and Chemical Products Industries

372 **Manufacturers of Mixed Fertilizers.**—Establishments primarily engaged in manufacturing mixed fertilizers, including custom mixing. Establishments primarily engaged in manufacturing chemicals which, in addition to their use as fertilizer materials also have other important industrial uses, e.g. ammonium nitrate, are classified in Industry No. 378—Manufacturers of Industrial Chemicals.

373 **Manufacturers of Plastics and Synthetic Resins.**—Establishments primarily engaged in manufacturing synthetic resins in such forms as powders, granules, flakes or liquids, or in compounding synthetic resins into moulding compounds. These establishments may manufacture such products as plastic film and sheet, extrusions and the like from resins of their own manufacture. Establishments primarily engaged in moulding, extruding and otherwise shaping plastics materials or articles from resins manufactured elsewhere are classified in Industry No. 165—Plastics Fabricating Industry, n.e.s. Those primarily engaged in the extrusion of synthetic textile filaments are classified in Industry No. 183—Man-made Fibre, Yarn and Cloth Mills. Establishments primarily engaged in manufacturing chemicals for use in making synthetic resins are classified in Industry No. 378—Manufacturers of Industrial Chemicals.

374 **Manufacturers of Pharmaceuticals and Medicines.**—Establishments primarily engaged in manufacturing drugs and medicines. This industry includes manufacturers of patent and proprietary medicines; veterinary medicines; vitamin products; cod liver oil; and biological products, such as antitoxins, bacterins, serums, vaccines; as well as establishments primarily engaged in manufacturing antibiotics. Establishments primarily engaged in grinding drugs and herbs are also included.

375 **Paint and Varnish Manufacturers.**—Establishments primarily engaged in manufacturing paints, varnishes, lacquers, enamels and shellac. This industry also includes establishments primarily engaged in manufacturing products such as putty, filler, oil stain, and thinner.

376 **Manufacturers of Soap and Cleaning Compounds.**—Establishments primarily engaged in manufacturing soap in any form, synthetic detergents, cleansers, washing powders and cleaning preparations, including scouring powders and hand cleansers. This industry includes establishments primarily engaged in manufacturing household laundry bleaches and blueing.

377 **Manufacturers of Toilet Preparations.**—Establishments primarily engaged in manufacturing perfumes, cosmetics, lotions, hair dressings, toothpaste and other toilet preparations.

378 **Manufacturers of Industrial Chemicals.**—Establishments primarily engaged in manufacturing basic industrial inorganic chemicals such as acids, alkalis, salts, compressed gases and other inorganic compounds or in manufacturing industrial organic chemicals by chemical processes. This industry includes establishments primarily engaged in manufacturing dry colours, pigments, white leads, lead oxides, iron oxides and titanium dioxide and in manufacturing dyes. Included also are establishments primarily engaged in manufacturing synthetic rubber, superphosphates or compressed organic gases, except petroleum gases. Establishments primarily engaged in manufacturing coke are classified in Industry No. 291—Iron and Steel Mills or Industry No. 369—Miscellaneous Petroleum and Coal Products Industries; petroleum refineries are classified in Industry No. 365—Petroleum Refineries; establishments primarily engaged in manufacturing synthetic

DIVISION 5 - MANUFACTURING INDUSTRIES - Concluded

resins are classified in Industry No. 373 - Manufacturers of Plastics and Synthetic Resins; establishments primarily engaged in manufacturing mixed fertilizers are classified in Industry No. 372 - Manufacturers of Mixed Fertilizers.

379 **Miscellaneous Chemical Industries.** - Establishments primarily engaged in manufacturing chemical products not elsewhere classified such as explosives, ammunition, insecticides, germicides, inks, matches, adhesives, polishes and dressings. This industry includes establishments primarily engaged in coal tar distillation or wood distillation. Included also are establishments primarily engaged in manufacturing deodorants and disinfectants for household, institutional or industrial use; sweeping compounds and dry cleaning preparations.

Major Group 20 - Miscellaneous Manufacturing Industries

391 **Scientific and Professional Equipment Industries.** - Establishments primarily engaged in manufacturing professional and scientific instruments, including surveyors', nautical, navigational, except electronic, and aeronautical instruments; barometers; thermometers; drafting instruments; lenses; photographic equipment and supplies; instruments for laboratory work and scientific research; surgical, dental and medical instruments; mechanical measuring instruments; and surgical and orthopaedic appliances and supplies, such as artificial limbs, arch supports, and artificial teeth and including establishments of dental mechanics (dental laboratories) making dentures, bridges, inlays and other dental restorations on specifications from dentists. This industry includes establishments manufacturing clocks, watches, chronometers and other timing instruments as well as establishments primarily engaged in assembling clocks and watches or in manufacturing watch materials and parts. Establishments primarily engaged in wholesale or retail dealing in watches, clocks, ophthalmic or orthopaedic appliances which do some assembling or lens grinding are included in Division 8 - Trade. Establishments primarily engaged in manufacturing electronic computers, data processors and related control devices are included in Industry No. 318 - Office and Store Machinery Manufacturers.

392 **Jewellery and Silverware Industry.** - Establishments primarily engaged in manufacturing articles of precious metals with or without precious stones, including articles plated with precious metals. This industry includes establishments primarily engaged in rolling precious metals or

making precious metal alloys as well as those primarily engaged in lapidary work and cutting and polishing diamonds. Establishments primarily engaged in manufacturing costume jewellery are included.

393 **Sporting Goods and Toy Industries.** - Establishments primarily engaged in manufacturing sporting and athletic goods, such as bicycles; fishing tackle; golf and tennis equipment; baseball, football and boxing equipment; skates and equipment for other sports. This industry includes establishments primarily engaged in manufacturing toys of all kinds such as tricycles, dolls, wagons, sleighs, and games.

397 **Signs and Displays Industry.** - Establishments primarily engaged in manufacturing signs and displays including electric signs and neon signs. Establishments primarily engaged in manufacturing displays of the statuary type such as mannequins or representations of parts of the body are also included. Establishments primarily engaged in sign painting and lettering are included in Industry No. 862 - Advertising Services.

399 **Miscellaneous Manufacturing Industries, n.e.s.** - Establishments primarily engaged in recording and duplicating, or in duplicating only, such articles as records, tapes, wires and other media for recording vocal or instrumental performances; in dressing and dyeing furs; and in manufacturing pianos, organs, stringed instruments, wind instruments and percussion instruments; fountain pens and parts, ball point pens, lead and mechanical pencils, crayons; carbon paper, stencil paper, inked ribbons and other typewriter supplies; jewellery cases and instrument cases; art goods, statuary, except wood, stone or concrete; feathers, plumes and artificial flowers; hair, bristles and hair goods; brooms, brushes and mops; umbrellas and canes; tobacco pipes and cigarette holders; floor tile or sheet flooring of vinyl or other synthetic resins, vinyl-asbestos, or linoleum; leatherette, oilcloth and other coated fabrics including water repellent fabrics except rubberized; buttons; beauty shop and barber shop equipment; venetian blinds; models and patterns of all materials, except extrusion moulds; rubber and metal stamps and stencils; candles; artificial ice; and many other small articles and novelties not included in other classes. Establishments primarily engaged in manufacturing radios, television sets and record, tape or similar players, are classified in Industry No. 334 - Manufacturers of Household Radio and Television Receivers. Extrusion moulds are classified in Industry No. 306 - Hardware, Tool and Cutlery Manufacturers.

DIVISION 6 - CONSTRUCTION INDUSTRY

Major Group 1 - General Contractors

This group includes general contractors primarily engaged in the construction of buildings, highways, or heavy construction such as marine installations, dams, and hydro-electric plants. Establishments that do some construction work but are primarily engaged in another activity such as utility operation, manufacturing, or mining, are classified according to their principal activity.

404 **Building Construction.** - General contractors primarily engaged in the construction of buildings including houses, farm buildings, public buildings, industrial and commercial buildings; or in building alterations and repairs. Establishments primarily engaged in speculative building are included in this industry.

406 **Highway, Bridge and Street Construction.** - General contractors primarily engaged in the construction and repair of highways, grade separations, streets, bridges, viaducts, and airports. Establishments primarily engaged in highway or street maintenance, e.g. tarring, sprinkling, filling potholes, snow removal, are included in Industry No. 516 - Highway and Bridge Maintenance.

409 **Other Construction.** - General contractors primarily engaged in the construction of such projects as water-

works, gas mains, sewers, hydro-electric plants, transmission lines, telephone lines, power canals, dams, dikes, harbours and canals (including dredging), docks and piers, other marine construction, radio towers, railway right of way and structures and other construction projects, not elsewhere classified.

Major Group 2 - Special-Trade Contractors

421 **Special-Trade Contractors.** - Special-trade contractors primarily engaged in construction work. Special-trade contractors perform only part of the work covered by a contract taken by a general contractor. In all instances a sub-contractor working on part of a project is classified in this industry as is jobbing trade work performed directly for owners. Special-trade contractors are often engaged in repair and maintenance work, done at site, on buildings of all types. However, maintenance or repair work done by maintenance staffs in the full-time employ of the establishments on whose premises the work is being done, is excluded and such maintenance employees are classified as part of the main establishment. Establishments primarily engaged in some other activity such as the fabrication of structural steel parts but which also erect the steel on the site, are classified in accordance with their principal activity. Special-trade contractors classified in this in-

DIVISION 6 - CONSTRUCTION INDUSTRY - Concluded

dusty include those engaged in bricklaying, carpentry, cement work, electrical work, lathing, plastering, stucco work, painting, decorating, plumbing, heating, air conditioning installations, roofing, sheet metal work, tiling,

marble and stone work, terrazzo work, steel erection, excavating, flooring, glazing, insulation of buildings, weather stripping, demolition of buildings, water well drilling.

DIVISION 7 - TRANSPORTATION, COMMUNICATION AND OTHER UTILITIES

Major Group 1 - Transportation

- 501 Air Transport. - Establishments primarily engaged in the transportation of passengers, freight, express or mail by air, and in operating fixed-wing aircraft or helicopters for hire with crew. Excluded from this industry are establishments primarily engaged in providing non-transportation services related to a single industry by means of aircraft, such as: contract crop dusting (Industry No. 021 - Services Incidental to Agriculture); forestry patrol, fire inspection, fire fighting (Industry No. 039 - Forestry Services); fishing inspection and protection services (Industry No. 045 - Fishery Services); construction of transmission and telephone lines, radio, television and other towers (Industry No. 409 - Other Construction); geophysical surveys, other aerial surveys and aerial photography (Industry No. 864 - Engineering and Scientific Services).
- 502 Services Incidental to Air Transport. - Establishments primarily engaged in operating and maintaining civil airports, flying schools and clubs, or facilities for servicing aircraft including inspection and maintenance while in service. Also included are establishments primarily engaged in aircraft leasing without crew or in the provision of live storage for aircraft. Establishments primarily engaged in overhauling or rebuilding aircraft or aircraft engines are included in Industry No. 321 - Aircraft and Aircraft Parts Manufacturers; establishments primarily engaged in the repair and overhaul of electronic equipment in Industry No. 335 - Communications Equipment Manufacturers and establishments primarily engaged in operating airport limousine services in Industry No. 519 - Other Transportation.
- 503 Railway Transport. - Establishments primarily engaged in the operation of railways for the transport of freight and passengers. This includes interurban railways but excludes street railways. Transportation and express services are classified in this industry along with maintenance of way and structures and establishments primarily engaged in operating railroad terminal facilities. Excluded from this industry are establishments operated by railway companies and primarily engaged in providing telegraph service (Industry No. 545 - Telegraph and Cable Systems); hotels (Industry No. 881 - Hotels and Motels); water transport (Industry No. 504 - Water Transport); and shops for the building and major overhauling of railway rolling stock (Industry No. 326 - Railroad Rolling Stock Industry). Establishments primarily engaged in railway construction are classified in Industry No. 409 - Other Construction.
- 504 Water Transport. - Establishments primarily engaged in the operation of vessels for the transportation of freight and passengers whether overseas or on inland and inter-coastal waterways. This industry also includes water transportation of a local nature, such as the operation of ferries across rivers or in harbours; the operation of lighters and other harbour vessels and marine towing and tugboat services.
- 505 Services Incidental to Water Transport. - Establishments primarily engaged in furnishing services incidental to water transport, such as the operation and maintenance of piers, docks, wharves and associated facilities for hire; stevedoring; salvaging; steamship agencies, and canals. This industry includes establishments primarily engaged in supplying pilot service. Establishments primarily engaged in operating lighthouses, or in carrying out hydrographic surveys are included in Industry No. 909 - Other Federal Administration.

- 506 Moving and Storage, Used Goods, Uncrated. - Establishments primarily engaged in packing, transporting, and storing used household goods and any ancillary services related to this function. This includes the local and long-distance movement of used household goods and the storage incidental to this activity whether it is of a long term or in-transit nature.
- 507 Other Truck Transport. - Establishments primarily engaged in the provision of local and long distance trucking, transfer and related services with the exception of those establishments engaged principally in the transportation of used uncrated goods. This industry includes contract truckers even though their equipment may be highly specialized.
- 508 Bus Transport, Interurban and Rural. - Establishments primarily engaged in operating interurban bus and coach lines. This industry also includes establishments primarily engaged in operating a central bus terminal for several bus lines.
- 509 Urban Transit Systems. - Establishments primarily engaged in furnishing urban and suburban transportation whether by electric railway, trolley coach, bus, or subway. Urban transit systems may also include ferries and any other means of transport forming part of an integrated system of urban passenger transport.
- 512 Taxicab Operations. - Establishments primarily engaged in furnishing passenger transportation by automobiles not operated on a regular route or between fixed terminals. This industry includes establishments primarily engaged in providing services for taxicab owners. These services may include telephone and radio telephone operations as well as maintenance and repair services for the members. Establishments primarily engaged in renting cars with driver and in operating limousines to airports or stations are included in Industry No. 519 - Other Transportation.
- 515 Pipeline Transport. - Establishments primarily engaged in operating pipelines for the transport of goods including crude oil, natural gas and gasoline. This industry is not restricted to establishments transporting petroleum products but it includes establishments primarily engaged in operating pipelines regardless of the commodity transported.
- 516 Highway and Bridge Maintenance. - Establishments primarily engaged in the operation and maintenance of fixed facilities for motor vehicle transportation such as highways, bridges and tunnels. Separate terminal facilities are included with the related industry such as taxicab operations, truck transport, bus transport. Establishments primarily engaged in highway and street construction and repair are classified in Industry No. 406 - Highway, Bridge and Street Construction.
- 517 Miscellaneous Services Incidental to Transport. - Establishments primarily engaged in furnishing services incidental to transportation, such as tourist agencies, forwarding, packing, crating, inspection and weighing services. Included are establishments primarily engaged in operating parking lots and garages for live storage of automobiles. Dead storage of automobiles is included in Industry No. 527 - Other Storage and Warehousing. Government travel agencies are included in Industry No. 909 - Other Federal Administration or Industry No. 931 - Provincial Administration.

DIVISION 7. TRANSPORTATION COMMUNICATION AND OTHER UTILITIES - Concluded

519 **Other Transportation.**—Establishments primarily engaged in providing transportation services not elsewhere classified. This industry includes establishments primarily engaged in operating air-cushioned vehicles; sight-seeing buses, boats or aircraft; automobiles for hire with driver, limousines to airports or stations, ambulances, school buses, and animal-drawn vehicles for the transport of passengers or freight. Establishments primarily engaged in renting automobiles or trucks without driver are included in Industry No. 894—Automobile and Truck Rental.

Major Group 2—Storage

524 **Grain Elevators.**—Establishments primarily engaged in operating country elevators or terminal elevators for the storage of grain. Country grain elevators under contract to the Canadian Wheat Board and which, therefore, do not sell grain on their own account, are included in this industry. The industry also includes establishments of the Board of Grain Commissioners primarily engaged in operating grain elevators. Establishments primarily engaged in buying and selling grain, whether operated by the Board of Grain Commissioners or not, are classified in Industry No. 602—Wholesalers of Farm Products.

527 **Other Storage and Warehousing.**—Establishments primarily engaged in operating general merchandise warehouses, cold storage or other storage facilities except the storage of used uncrated goods. Warehouses and storage facilities operated as an ancillary activity by establishments primarily engaged in another line of business are not included in this industry, but are classified according to the principal activity of the establishment concerned. Establishments primarily engaged in the transportation and storage of used uncrated goods are classified in Industry No. 506—Moving and Storage, Used Goods, Uncrated.

Major Group 3—Communication

543 **Radio and Television Broadcasting.**—Establishments primarily engaged in radio and television broadcasting and in the operation of radio and television broadcasting studios for the purpose of broadcasting programs of entertainment, news, talks and the like. This industry includes broadcasting systems such as those operated by the Canadian Broadcasting Corporation and privately owned stations and networks providing a broadcasting service similar to that of the CBC. This industry also includes establishments primarily engaged in operating closed circuit radio or television systems providing a variety of programs, such as those broadcast by the CBC, to particular subscribers. Establishments primarily engaged in broadcasting messages for a fee are included in Industry No. 545—Telegraph and Cable Systems. Establishments primarily engaged in operating closed circuit television or radio systems to provide a communication service are included in Industry No. 545—Telegraph and Cable Systems, whereas those providing such service to assist particular industrial processes are included in Industry No. 869—Miscellaneous Services to Business Management.

544 **Telephone Systems.**—Establishments, whether owned by governments or not, primarily engaged in providing telephone service which sometimes includes the construction of telephone lines. These systems often include maintenance of equipment and lines and the operation of schools for training of operators.

545 **Telegraph and Cable Systems.**—Establishments primarily engaged in transmitting messages by telegraph, cable or wireless for a fee. This industry includes establishments primarily engaged in providing teletype service, wirephoto service, or a system of co-axial cables for closed circuit communication systems.

548 **Post Office.**—Establishments primarily engaged in operating a postal service. In the main this industry contains establishments of the post office operated by the Government of Canada, but it includes also establishments (including individuals working alone) primarily engaged in carrying on one or more functions of the postal service on a contract basis, e.g. rural mail carriers or postmasters.

Major Group 4—Electric Power, Gas and Water Utilities

572 **Electric Power.**—Establishments primarily engaged in the generation, transmission and distribution of electricity, whether owned by governments or not. This industry includes establishments primarily engaged in the generation and transmission of electric power even if all or almost all of the power is used in a particular manufacturing, mining, or other plant. An establishment primarily engaged in building a hydro-electric generating station, including dams and other heavy construction work, is included in Industry No. 409—Other Construction, whether or not it is owned by a company engaged in the generation and transmission of electric power.

574 **Gas Distribution.**—Establishments primarily engaged in the distribution of natural or manufactured gas through a system of mains. Establishments included in this industry may also manufacture their own gas. The operation of natural gas wells is included in Industry No. 064—Crude Petroleum and Natural Gas Industry. Establishments primarily engaged in operating pipelines for transport of natural gas are included in Industry No. 515—Pipeline Transport.

576 **Water Systems.**—Establishments primarily engaged in the processing and distribution of water for household and other purposes. Establishments included in this industry are often known as Water Boards or Water Commissions and are often associated with local governments. This industry also includes establishments primarily engaged in distributing water for irrigation.

579 **Other Utilities.**—Establishments primarily engaged in producing and distributing steam, in garbage or sewage disposal, or in operating a utility not elsewhere classified.

DIVISION 8—TRADE

Major Group 1—Wholesale Trade

Establishments in wholesale trade are primarily engaged in buying merchandise for resale to retailers; to industrial, commercial, institutional or professional users; to other wholesalers; or in acting as agents in connection with such transactions. Sales to farmers of farm supplies and equipment such as feeds, fertilizers, seeds and machinery are considered as wholesale sales. Sales to farmers as household consumers of such items as food, clothing, and household equipment, are considered to be retail sales. Thus, establishments primarily engaged in buying for resale such commodities as office equipment, store equipment, lumber and building materials, farm

machinery and equipment, fuel oil, coal and similar products sold wholly or mainly to other business concerns, are considered to be wholesalers. In order to determine whether a particular dealer (such as a hardware dealer) is a wholesaler or retailer, it is necessary to ascertain what proportion of his sales during the appropriate period was made to customers other than household consumers.

For purposes of industrial classification, wholesale establishments are classified by kind of business according to the principal lines of commodities sold. Wholesalers are sometimes classified also by type of operation, but this classification is independent of the industrial clas-

DIVISION - 8 - TRADE - Continued

sification. Some surveys, however, cover only certain types and although they may use the standard industrial classes for this more limited coverage, the resulting data are not comparable with those based upon complete coverage. The type of operation categories are as follows:

- Wholesale Merchants
- Manufacturers' Sales Branches and Offices
- Assemblers of Primary Products
- Agents and Brokers

For a description of these types, see Appendix 2, page 50 of this manual.

602 **Wholesalers of Farm Products.**—Establishments primarily engaged in wholesale dealing in livestock, grain, raw leaf tobacco, and other farm products such as nursery stock, raw furs, hides and skins, raw wool and mohair, raw cotton, sugar, crude rubber, cocoa beans, etc. This industry includes the Canadian Wheat Board, grain brokers, and country grain elevators except those under contract to the Canadian Wheat Board. Terminal elevators and those country elevators under contract to the Canadian Wheat Board are included in Industry No. 524—Grain Elevators.

606 **Wholesalers of Coal and Coke.**—Establishments primarily engaged in dealing in coal, coke, briquettes and related fuel, whether the sales are made to business or household consumers.

608 **Wholesalers of Petroleum Products.**—Establishments primarily engaged in wholesale dealing in gasoline, lubricating oils and greases, engine distillate, and related products. Establishments primarily engaged in dealing in fuel oil and liquefied petroleum gases are classified in this industry, regardless of whether their sales are chiefly to business or household consumers.

611 **Wholesalers of Paper and Paper Products.**—Establishments primarily engaged in wholesale dealing in paper, including newsprint and paper products; stationery and stationery supplies; office and school supplies, except furniture and office machines.

612 **Wholesalers of General Merchandise.**—Establishments primarily engaged in wholesale dealing in a diversified line of merchandise of which hardware, foods, clothing, and sporting goods, toys and games tend to be the most important, but no one line is sufficiently important to constitute a primary activity.

614 **Wholesalers of Food.**—Establishments primarily engaged in wholesale dealing in a specialty line of foods, or in any combination of dairy products, poultry products, fresh fruits, fresh vegetables, groceries, meat, meat products, fish, fish products, biscuits, other bakery products, breakfast cereals, canned foods, tea, coffee, spices, cocoa, flour, sugar, confectionery, soft drinks, frozen or frosted foods, or other foods or food products.

615 **Wholesalers of Tobacco Products.**—Establishments primarily engaged in wholesale dealing in tobacco, cigars, cigarettes and other tobacco products. Wholesalers of cured tobacco are included but wholesalers of raw leaf tobacco are classified in Industry No. 602—Wholesalers of Farm Products.

616 **Wholesalers of Drugs and Toilet Preparations.**—Establishments primarily engaged in wholesale dealing in proprietary and patent medicines, pharmaceuticals, druggists' sundries, cosmetics, toiletries, toilet preparations, and toilet soap. Establishments primarily engaged in wholesale dealing in chemicals, laundry soap, detergents, and cleansers are included in Industry No. 629—Wholesalers, n.e.s.

617 **Wholesalers of Apparel and Dry Goods.**—Establishments primarily engaged in wholesale dealing in clothing, furnishings, accessories, hats, furs, footwear, dry goods, piece goods, and notions.

618 **Wholesalers of Household Furniture and Furnishings.**—Establishments primarily engaged in wholesale dealing in household furniture; carpets, rugs and other floor coverings; blankets, curtains, draperies, linens, china, crockery and glassware. Establishments primarily engaged in wholesale dealing in office and professional furniture are classified to Industry No. 623—Wholesalers of Machinery and Equipment, n.e.s.

619 **Wholesalers of Motor Vehicles and Accessories.**—Establishments primarily engaged in wholesale dealing in motor vehicles, motor vehicle accessories and parts, including tires. Included are establishments primarily engaged in wholesale dealing in garage and service station equipment. Establishments primarily engaged in rebuilding fuel pumps, water pumps, brake shoes, clutches, solenoids and voltage regulators or in servicing gasoline pumps and other service station equipment are also classified here, as are establishments primarily engaged in rebuilding, recapping, retreading or vulcanizing tires.

621 **Wholesalers of Electrical Machinery, Equipment and Supplies.**—Establishments primarily engaged in wholesale dealing in electric power equipment such as generators, transformers, electric motors and electrical instruments; household electrical appliances, equipment and accessories; radios, television sets and related equipment; wiring devices and other electrical supplies. Also included are establishments primarily engaged in wholesale dealing in electronic data processing equipment, electronic intercommunication equipment or electronic navigational devices.

622 **Wholesalers of Farm Machinery and Equipment.**—Establishments primarily engaged in wholesale dealing in new or used farm machinery, farm implements, tractors, and other farm equipment and parts. This industry includes establishments primarily engaged in selling this equipment directly to farmers as well as those selling to equipment dealers. Included are establishments primarily engaged in repair of farm machinery, implements, tractors, and the like. Garden and lawn tractors and equipment are also included here.

623 **Wholesalers of Machinery and Equipment, n.e.s.**—Establishments primarily engaged in wholesale dealing in all kinds of new and used machinery, equipment and supplies not included in other wholesale industries. Establishments classified in this industry include those primarily engaged in wholesale dealing in office equipment and furniture including office machines, commercial machinery and equipment, construction machinery and equipment, mining and oil refining machinery and equipment, industrial machinery and equipment, professional equipment and supplies, service machinery and equipment, transportation machinery, vehicles and equipment except motor vehicles, optical and ophthalmic goods, and other miscellaneous machinery, equipment and supplies not elsewhere classified. This industry includes establishments primarily engaged in the repair of business, institutional and professional furniture, equipment and machinery, except electronic equipment. Establishments primarily engaged in wholesale dealing in electronic navigational equipment, electronic intercommunication equipment, electronic data processing equipment and the like are included in Industry No. 621—Wholesalers of Electrical Machinery, Equipment and Supplies.

624 **Wholesalers of Hardware, Plumbing and Heating Equipment.**—Establishments primarily engaged in wholesale dealing in any combination of the basic lines of hardware such as builders' hardware, heavy hardware, shelf and light hardware, tools and cutlery; plumbing and non-electric heating equipment such as stoves, ranges, heaters, furnaces, gas appliances and supplies, oil burners, and plumbing fixtures. This industry includes

DIVISION 8 - TRADE - Continued

wholesalers of air conditioning equipment except those primarily engaged in handling the small window-type of air conditioning unit which are included in Industry No. 621 - Wholesalers of Electrical Machinery, Equipment and Supplies.

625 **Wholesalers of Metal and Metal Products, n.e.s.** - Establishments primarily engaged in wholesale dealing in metals and metal products not included in other wholesale industry. Establishments included here are those primarily engaged in handling products such as structural shapes and plates, bars, rods, sheet metal, wire and wire products, pipe and tubes. Included also are establishments primarily engaged in handling non-ferrous metals and metal work, as well as those primarily engaged in handling metal concentrates and ores. Establishments primarily engaged in wholesale dealing in metal machinery and equipment are classified in either Industry No. 621, Industry No. 622, or Industry No. 623; in hardware, plumbing, and heating equipment, in Industry No. 624; and in building materials, in Industry No. 626.

626 **Wholesalers of Lumber and Building Materials.** - Establishments primarily engaged in dealing in lumber, plywood, millwork, and planing mill products; metal siding, sash and doors; roofing materials; sand, gravel, brick, tile, cement and other building materials, whether their sales are chiefly to business or household consumers. Also included are establishments primarily engaged in wholesale dealing in glass, paints, varnishes, wallpaper, and other decorating supplies. Establishments primarily engaged in mixing and delivering ready-mixed concrete are included in Industry No. 355 - Ready-Mix Concrete Manufacturers.

627 **Wholesalers of Scrap and Waste Materials.** - Establishments primarily engaged in assembling, breaking up, sorting and selling all kinds of scrap, junk, and waste materials such as iron and steel scrap, other metal scrap, waste paper, rags, rubber, bottles.

629 **Wholesalers, n.e.s.** - Establishments primarily engaged in wholesale dealing in a commodity or class of commodities not elsewhere classified, such as toys, novelties, and fireworks; amusement and sporting goods, photographic equipment and supplies; alcoholic beverages; industrial chemicals, laundry soaps, detergents and cleansers; farm supplies (feeds, fertilizers, seeds), pulpwood and other forest products; musical instruments and accessories; jewellery, clocks and watches; books, periodicals and newspapers; second-hand goods except machinery and automotive equipment or scrap and waste; and other miscellaneous commodities such as leather and leather goods, cordage, twine, brushes. For purposes such as the Population Census, this industry also includes manufacturers' agents not otherwise reported, as well as jobbers, wholesalers, importers, and exporters not otherwise reported.

Major Group 2 - Retail Trade

Establishments included in retail trade are those primarily engaged in retail dealing, i.e., buying commodities for resale to the general public for personal or household consumption and in providing related services such as installation and repair. In general, retail establishments are classified by kind of business according to the principal lines of commodities sold and services provided. Processing which is incidental or subordinate to the selling activity is sometimes carried on in retail stores, e.g., tea blending or spice grinding in food stores. Ancillary units are associated with some kinds of retail establishments, e.g., warehouses or garages operated by department or chain stores.

Establishments such as farm machinery dealers and dealers in farm supplies which sell to the farmer as a

farm operator are considered to be in wholesale trade but those which sell to farmers as household consumers, e.g., food or apparel stores are included in retail trade. Similarly, lumber and building materials dealers, fuel dealers and sellers of office furniture, machines and equipment; industrial machinery; commercial and professional furniture, machinery and equipment, are classified as wholesale because they sell mainly to other businesses.

631 **Food Stores.** - Establishments primarily engaged in retail dealing in bread and other bakery products, candy and confectionery, dairy products, fresh fruits and vegetables, groceries, meats, tea, coffee, spices, health foods or other specialized food lines. The type of retail store known as a "delicatessen" is included. Establishments primarily engaged in preparing and selling food specialties (fried chicken, doughnuts, pizzas, soft ice cream and the like) for off-premises consumption are deemed to be restaurants and included in Industry No. 886, Restaurants, Caterers and Taverns. Retail bakeries included in this industry are those that sell mainly purchased goods. Bake shops which sell mainly products of their own manufacture are included in Industry No. 107 - Bakery Products Industries. Establishments primarily engaged in pasteurizing and bottling fresh milk are included in Industry No. 104 - Dairy Products Industry, even though they sell the milk at retail. Thus, the retailers of milk included in this industry are those that buy and sell pasteurized milk.

642 **General Merchandise Stores.** - Establishments primarily engaged in retail dealing in a wide range of commodities including apparel, dry goods, furniture, home furnishings and appliances, food products, hardware, etc. At least three of the main lines of apparel, hardware, and house furnishings should be carried with no one line exceeding 50 per cent of total sales. Included in this industry are stores known as department stores, variety stores, and other general line stores; in the latter group are country general stores where food is often a large item, and city general merchandise stores where no food is sold.

652 **Tire, Battery and Accessories Stores.** - Establishments primarily engaged in retail dealing in new or used tires, tubes, batteries, and other automotive parts and accessories. Some establishments included here are known as "home and auto supply stores." Installation, repair and replacement may also be done by these establishments, but establishments primarily engaged in automotive repair are classified in Industry No. 658 - Motor Vehicle Repair Shops, and establishments primarily engaged in tire retreading, recapping, rebuilding or vulcanizing are classified in Industry No. 619 - Wholesalers of Motor Vehicles and Accessories.

654 **Gasoline Service Stations.** - Establishments primarily engaged in retail dealing in gasoline, lubricating oils and greases. These establishments are sometimes known as filling stations or service stations. They may do some repair. Included are establishments primarily engaged in washing and polishing automobiles, as well as establishments primarily engaged in providing motor vehicle towing service.

656 **Motor Vehicle Dealers.** - Establishments primarily engaged in retail dealing in new and used automobiles and trucks. Such establishments usually have departments engaged in motor vehicle repair and often include service station facilities. Establishments primarily engaged in motor vehicle repair are classified in Industry No. 658 - Motor Vehicle Repair Shops; establishments primarily engaged in providing service station facilities are classified in Industry No. 654 - Gasoline Service Stations.

658 **Motor Vehicle Repair Shops.** - Establishments primarily engaged in the repair of motor vehicles; auto body work and

DIVISION 8 - TRADE - Concluded

- painting, front end alignment, frame straightening, brake repair, carburetor repair, ignition system repair or exhaust system repair. Repair shops owned and operated by concerns for their own use and not offering their services to the general public are excluded. They are classified with the main establishment. Establishments (filling stations and service stations) primarily engaged in retail dealing in gasoline and oil are classified to Industry No. 654 - Gasoline Service Stations. Establishments primarily engaged in repairing tractors and farm implements are included in Industry No. 622 - Wholesalers of Farm Machinery and Equipment.
- 663 **Shoe Stores.** - Establishments primarily engaged in retail dealing in men's, women's, children's, and infants' footwear of leather, rubber, or other materials. Establishments primarily engaged in boot and shoe repair are classified in Industry No. 871 - Shoe Repair Shops.
- 665 **Men's Clothing Stores.** - Establishments primarily engaged in retail dealing in men's and boys' overcoats, suits, work clothing, haberdashery and other apparel and furnishings. Establishments primarily engaged in custom tailoring, including tailors working alone without paid employees, are also classified here.
- 667 **Women's Clothing Stores.** - Establishments primarily engaged in retail dealing in women's coats, suits, dresses, lingerie, hosiery, millinery and other apparel and accessories. Establishments primarily engaged in dressmaking (including dressmakers who work at home or in the homes of their employers) are classified in Industry No. 879 - Miscellaneous Personal Services.
- 669 **Clothing and Dry Goods Stores, n.e.s.** - Establishments primarily engaged in retail dealing in children's clothing, a combination of men's, women's and children's clothing, i.e. family clothing stores, or dry goods, piece goods, and notions.
- 673 **Hardware Stores.** - Establishments primarily engaged in retail dealing in any combination of the basic lines of hardware, such as tools and builders' hardware. Establishments primarily engaged in retail dealing in housewares and cutlery are classified in Industry No. 676 - Household Furniture and Appliance Stores.
- 676 **Household Furniture and Appliance Stores.** - Establishments primarily engaged in retail dealing in new or used household furniture and furnishings including floor coverings, curtains and draperies; linens; china and crockery; housewares and cutlery; stoves, radios, television sets, and electrical appliances such as washing machines, refrigerators, vacuum cleaners and toasters. Antique shops are included.
- 678 **Radio, Television, and Electrical Appliance Repair Shops.** - Establishments primarily engaged in the repair of radios, television sets, and similar equipment or in repairing household electrical appliances.
- 681 **Drug Stores.** - Establishments primarily engaged in retail dealing in drugs, pharmaceuticals, toilet preparations, cosmetics, and drug sundries. Included are establishments primarily engaged in filling prescriptions, or in selling proprietary and patent medicines, as well as specialized herb stores, primarily engaged in making up and selling herbal medicines.
- 691 **Book and Stationery Stores.** - Establishments primarily engaged in retail dealing in new or used books and stationery.
- 692 **Florists' Shops.** - Establishments primarily engaged in retail dealing in plants and cut flowers. Establishments operating nurseries and greenhouses which sell mainly their own products through their own retail stores are included in Industry No. 019 - Miscellaneous Specialty Farms.
- 694 **Jewellery Stores.** - Establishments primarily engaged in retail dealing in new or used jewellery, watches and clocks. Many such establishments have a department engaged in watch, clock and jewellery repair.
- 695 **Watch and Jewellery Repair Shops.** - Establishments primarily engaged in watch, clock and jewellery repair or jewellery engraving. Many such establishments also sell some jewellery and watches.
- 696 **Liquor, Wine and Beer Stores.** - Establishments primarily engaged in retail dealing in liquor, wine and beer. Many of these establishments are government liquor stores or are stores operated by groups of wine growers or breweries. Establishments that sell liquor by the glass for consumption on the premises are classified in Industry No. 886 - Restaurants, Caterers and Taverns.
- 697 **Tobacconists.** - Establishments primarily engaged in retail dealing in tobacco, cigars and cigarettes.
- 699 **Retail Stores, n.e.s.** - Establishments primarily engaged in retail dealing in eye-glasses and related optical goods but excluding those who also do optometry work, which are included in Industry No. 824 - Offices of Paramedical Personnel (Practitioners). Included also are establishments primarily engaged in retailing such commodities as house trailers or mobile homes, prefabricated houses, art goods, souvenirs, musical instruments, motor cycles, bicycles, sporting goods, photographic supplies, luggage, leather goods, pets, magazines, newspapers, ice, second-hand merchandise, n.e.s. Included are establishments primarily engaged in repair of luggage and leather goods, fountain pen repair, musical instrument repair and bicycle repair. Pawnshops are also included. Establishments primarily engaged in retail dealing in second-hand automobiles, furniture, jewellery, books, or household appliances are included in the same industries as those dealing in these products new.

DIVISION 9 - FINANCE, INSURANCE AND REAL ESTATE

Major Group 1 - Finance Industries

- 701 **Banks and Other Deposit Accepting Establishments.** - Establishments primarily engaged in carrying on a banking business or a similar deposit accepting (savings) function. Included in this industry are the Bank of Canada, chartered banks, savings banks including the provincial savings banks, trust companies, mortgage loan companies, savings certificate companies, credit unions and caisses populaires.
- 703 **Other Credit Agencies.** - Establishments primarily engaged in extending credit to business and to consumers, except establishments in Industry No. 701. Included in this industry are export finance companies, sales finance companies, consumer loan companies, business financing companies and other credit agencies. The Industrial Development Bank and the Farm Credit Corporation are in this industry.

DIVISION 9 - FINANCE, INSURANCE AND REAL ESTATE - Concluded

705 **Security Brokers and Dealers (including Exchanges).**— Establishments primarily engaged in facilitating the exchange of securities (primarily long term certificates of ownership or indebtedness such as stocks and bonds). Included are brokers who act as agents in the exchange of securities which have been traded before but who take no title to property in the typical transaction, and dealers who buy and hold inventories of new securities until they are sold. The exchange or market at which the securities are traded is also included. Examples of establishments to be included are grain exchange, stock exchange, investment dealer, commodity futures broker, investment broker, foreign exchange establishment, security underwriter, investment analyst, investment counsellor.

707 **Investment and Holding Companies.**— Establishments primarily engaged in operating investment companies or investment trusts, mutual funds closed-end investment funds and investment syndicates; holding companies; personal corporations as defined by the Income Tax Act and other investment groups and miscellaneous financial institutions except those holding no assets.

715 **Canadian Offices of Canadian-Incorporated Companies Classified as Non-Canadian.**— This class is provided for head offices or other ancillary units maintained in Canada by companies incorporated in Canada but carrying on no appreciable operations in this country. (Financial statements and other non-Canadian data on these companies are given the code 999 in order to distinguish them from data on the Canadian economy.)¹

¹⁹⁹⁹ **Canadian-Incorporated Companies Classified as Non-Canadian.**— This class is provided for foreign business corporations and other companies incorporated in Canada whose assets and operations are almost exclusively non-Canadian. Such a company may have a small headquarters in Canada.

Major Group 2 - Insurance Carriers

721 **Insurance Carriers.**— Establishments primarily engaged in underwriting insurance contracts of all kinds.

Major Group 3 - Insurance Agencies and Real Estate Industry

735 **Insurance and Real Estate Agencies.**— Establishments primarily engaged in dealing in insurance but which do not underwrite, and establishments primarily engaged in dealing in real estate, i.e. renting, buying and selling for others, managing and appraising real estate for others. Included in this industry are establishments, such as insurance adjusters, primarily engaged in providing services to insurance companies and to policyholders as well as combined insurance and real estate dealers.

737 **Real Estate Operators.**— Establishments primarily engaged in owning and operating real estate or in developing or improving unimproved real property. Included in this industry are operators of non-residential buildings, apartment buildings, trailer sites of a "permanent" nature such as those near mines or construction projects, other dwellings, and owners of agricultural, forest, mining, railroad, public utility and other kinds of real property which are rented out to the operators. This industry includes establishments primarily engaged in sub-dividing and developing real estate. This industry does not include establishments primarily engaged in operating hotels, rooming houses, camps, trailer camps or other lodging places which are included in Industry No. 881 - Hotels and Motels, No. 883 - Lodging Houses and Residential Clubs or No. 884 - Camping Grounds and Trailer Parks.

DIVISION 10 - COMMUNITY, BUSINESS AND PERSONAL SERVICE INDUSTRIES

Major Group 1 - Education and Related Services

801 **Kindergartens and Nursery Schools.**— Establishments primarily engaged in providing beginning education for children usually between three and six years of age. Kindergartens and pre-kindergartens which are operated as part of an elementary school or school system are not separate establishments and should be included in Industry No. 802 - Elementary and Secondary Schools. Day nurseries, which provide care but not education for pre-school children are classified in Industry No. 828 - Welfare Organizations.

802 **Elementary and Secondary Schools.**— Establishments primarily engaged in providing education at the elementary and secondary school levels. This industry includes school boards or boards of education operating primary or secondary school systems as well as private, public or sectarian schools at those levels. Included also are correspondence schools primarily engaged in offering general elementary and secondary education, and schools for handicapped children. For purposes of the Population Census, the industry description "school" not otherwise defined is coded to this industry. If schools on military bases or Indian schools are separate establishments, they are included in this industry.

803 **Schools of Art and of the Performing Arts.**— Establishments primarily engaged in providing education in such fields as music, drama, dancing, and fine and applied art. Such schools as the National Drama School, the National Ballet Studio, and the Banff School of Fine Arts are classified here. Such "schools" as those teaching ballroom or popular dancing where the emphasis is on recreation rather than on education, should be classified in Industry

No. 849 - Miscellaneous Amusement and Recreation Services.

804 **Vocational Centers, Trade Schools and Business Colleges.**— Establishments primarily engaged in providing vocational education below the post-secondary level, except those operated by a board of education as part of the regular school system. Trade schools, business colleges, schools for nurses' aides and nurses' assistants, schools of barbering and beauty culture, and correspondence schools except those in Industry No. 802 - Elementary and Secondary Schools are included.

Art schools and schools of the performing arts are classified in Industry No. 803. Industrial schools, by whatever name they are known, that are corrective or reform institutions are classified in Industry No. 931 - Provincial Administration. Correspondence schools operated by provincial departments of education as separate establishments are classified in Industry No. 802. Riding academies, judo schools and other schools primarily engaged in sports instruction and physical fitness activities are classified in Industry No. 849 - Miscellaneous Amusement and Recreation Services. Diving schools are classified in Industry No. 899 - Miscellaneous Services, n.e.s.

805 **Post-Secondary Non-University Educational Institutions.**— Establishments primarily engaged in post-secondary non-university education. High school graduation is normally a requirement for admission. Diplomas or certificates may be awarded but academic degrees are not. This class includes junior and community colleges, CEGEPs (in Quebec), normal schools and teachers' colleges, bible colleges and technical institutes. Art schools and schools

DIVISION 10 - COMMUNITY, BUSINESS AND PERSONAL SERVICE INDUSTRIES - Continued

of the performing arts should be classified to Industry No. 803 - Schools of Art and of the Performing Arts.

806 **Universities and Colleges.** - Establishments primarily engaged in operating universities and degree-granting colleges requiring for admission at least high school graduation. Included in this industry are also such institutions as professional schools, theological colleges and seminaries. Included also are the Royal Military College and other service colleges.

807 **Libraries, Museums and Other Repositories.** - Establishments primarily engaged in operating libraries, museums, art galleries, archives, zoological gardens, botanical gardens, and similar repositories. This industry includes government-owned institutions such as the National museum, Public Archives, War Museum, provincial museums, municipal museums.

809 **Education and Related Services, n.e.s.** - Establishments primarily engaged in providing education or related services not elsewhere classified. Language schools, child and vocational guidance centers, and institutions for educational research should be classified here.

Major Group 2 - Health and Welfare Services

821 **Hospitals.** - Establishments (usually institutions) primarily engaged in providing medical, surgical, and/or obstetrical care for in-patients, and which are licensed or approved as hospitals by the federal and/or a provincial government. This industry includes general and allied special hospitals, psychiatric, tuberculosis, and other hospitals, but excludes institutions providing personal nursing care and accommodation only, which are included in Industry No. 822 - Related Health Care Institutions. Also excluded are institutions providing basic custodial or domiciliary care only, which are included in Industry No. 828 - Welfare Organizations.

822 **Related Health Care Institutions.** - Establishments, such as nursing homes and infirmaries, primarily engaged in providing nursing care and accommodation only for in-patients. Institutions providing basic custodial or domiciliary care only, such as homes for the aged, blind or senile, are classified in Industry No. 828 - Welfare Organizations.

823 **Offices of Physicians and Surgeons.** - Establishments of qualified and registered physicians and surgeons primarily engaged in the private practice of medicine, whether general or specialist, and whether in individual or group practice. Included are offices of psychiatrists, obstetricians, radiologists, pathologists, ophthalmologists, anaesthetists, etc. Excluded are offices of psychologists (Industry No. 824), optometrists, (Industry No. 824), opticians (Industry No. 699), osteopaths (Industry No. 824), chiropractors (Industry No. 824), and dentists (Industry No. 825).

824 **Offices of Para-medical Personnel (Practitioners).** - Establishments of qualified and registered para-medical personnel primarily engaged in rendering health and allied services whether in individual or group practice. Included are establishments of osteopaths, chiropractors, optometrists, registered nurses, midwives, practical nurses, etc. Excluded are offices of physicians and surgeons (Industry No. 823), offices of dentists (Industry No. 825), and

offices of faith healers (Industry No. 831). Also excluded are diagnostic and therapeutic services not elsewhere specified, including laboratories and clinics (Industry No. 826).

825 **Offices of Dentists.** - Establishments of qualified and registered dentists primarily engaged in the private practice of dentistry, whether in individual or group practice. Excluded are establishments of dental mechanics which are classified in Industry No. 391 - Scientific and Professional Equipment Industries.

826 **Diagnostic and Therapeutic Services, n.e.s.** - Establishments primarily engaged in rendering diagnostic and therapeutic services not elsewhere specified. This industry includes such organizations as the Victorian Order of Nurses, Red Cross Blood Transfusion Service, and St. John Ambulance, as well as laboratories (dental, medical, X-ray, etc.), providing professional analysis, diagnosis or treatment service to the medical or dental professions or to patients on prescription of a physician or dentist. Also included are group health associations except those offering health insurance to their members, which are classified in Industry No. 721 - Insurance Carriers.

827 **Miscellaneous Health Services.** - Establishments commonly referred to as voluntary health associations primarily engaged in promoting health and health services other than diagnostic and therapeutic, such as the Canadian Hospital Association, Canadian Public Health Association, National Cancer Institute, etc. Excluded are professional or trade associations such as the Canadian Medical Association and Canadian Nurses' Association which are classified in Industry No. 891 - Labour Organizations and Trade Associations. Establishments providing prepaid health insurance whose subscribers are supplied health services by independent physicians or hospitals under contract, are classified to Industry No. 721 - Insurance Carriers.

828 **Welfare Organizations.** - Establishments primarily engaged in providing basic domiciliary care only (no treatment or personal nursing care), such as homes for the aged, blind or senile, boarding houses for the aged, day nurseries, shelters, etc. Also included are voluntary welfare organizations such as the Canadian National Institute for the Blind, Canadian Welfare Council, Community Chest and United Appeal Organizations. This industry excludes custodial institutions for delinquents or criminals, i.e. corrective institutions which are included in Division 11 - Public Administration and Defence.

Major Group 3 - Religious Organizations

831 **Religious Organizations.** - Establishments primarily engaged in providing facilities for holding religious services or for the promotion of religious activities. Faith healers are included. Establishments maintained by religious organizations primarily for educational - health, charitable, publishing, or other purposes are classified according to principal activity in the appropriate industries.

Major Group 4 - Amusement and Recreation Services

841 **Motion Picture Theatres.** - Establishments primarily engaged in operating regular motion picture theatres and outdoor motion picture theatres. Also included are other motion picture exhibitors not elsewhere classified.

DIVISION 10 - COMMUNITY, BUSINESS AND PERSONAL SERVICE INDUSTRIES - Continued

- 842 **Motion Picture Production and Distribution.**—Establishments primarily engaged in the production and the distribution of motion pictures. Included are film exchanges, motion picture libraries and booking agencies as well as establishments engaged in processing and reproducing standard motion picture films.
- 843 **Bowling Alleys and Billiard Parlours.**—Establishments primarily engaged in operating bowling alleys or billiard and pool parlours. Such establishments may also sell meals, refreshments, drinks, cigars and cigarettes.
- 844 **Golf Clubs and Country Clubs.**—Establishments primarily engaged in operating golf facilities open to the public on a fee or membership basis. Secondary activities may include curling rinks, skeet-shooting facilities, dance and drink facilities, etc. Excluded are driving ranges and miniature golf courses which are included in Industry No. 849—Miscellaneous Amusement and Recreation Services.
- 845 **Theatrical and Other Staged Entertainment Services.**—Establishments primarily engaged in the production and/or presentation of theatrical and other staged entertainment. Theatre companies, opera companies, road companies, orchestras, bands and pop groups as well as own account entertainers are included in this industry.
- 849 **Miscellaneous Amusement and Recreation Services.**—Establishments primarily engaged in operating amusement parks, carnivals, circuses, fairs, and exhibitions except trade fairs. Also included are amusement concessions, dance halls, and studios, race track operations, and subsidiary services, recreational clubs, gymnasiums, athletic clubs, arenas, stadiums, and the operation of other spectator sports; professional and amateur athletic services, playgrounds, community centers, curling rinks, skating rinks, riding academies, swimming pools, boat and canoe rentals, ski facility operators, rifle ranges, driving ranges and miniature golf courses, juke box and pinball machine operators; and other amusement and recreation services not elsewhere classified. Establishments primarily engaged in renting theatres, auditoriums or halls such as dance halls and other amusement facilities are included in Industry No. 737—Real Estate Operators.
- Major Group 5—Services to Business Management**
- 851 **Employment Agencies and Personnel Suppliers.**—Establishments primarily engaged in listing employment vacancies and in selecting, referring and placing applicants in employment. Included also are establishments primarily engaged in supplying personnel temporarily or permanently on contract. Employment placement services operated by governments are included in Division 11.
- 853 **Computer Services.**—Establishments primarily engaged in providing computer facilities on a rental or time-sharing basis, and such ancillary activities as programming, planning and systems analysis, etc.
- 855 **Security and Investigation Services.**—Establishments providing personnel for detective and investigation services, patrolling, guard, armoured car, and burglar alarm services. These services are mainly for businesses, but may be offered to individuals.
- 861 **Offices of Accountants.**—Establishments primarily engaged in the provision of auditing, accounting, or book-keeping services. This industry also includes firms of chartered accountants and self-employed bookkeepers, accountants, and auditors.
- 862 **Advertising Services.**—Establishments primarily engaged in placing advertising in various types of media such as newspaper, radio, television, on a commission or fee basis; preparing and presenting outdoor poster displays and billboards; advertising on subway cars and buses; and other advertising services, such as aerial advertising, circular and handbill distribution, shopping news service, window dressing, display service. Media representatives, sign-painting shops, own account commercial artists, and direct mail and door-to-door advertising firms are also included in this industry.
- 863 **Offices of Architects.**—Establishments engaged in the planning and designing of buildings and structures, regardless of size, form, or function.
- 864 **Engineering and Scientific Services.**—Establishments primarily engaged in the provision of engineering, chemical, and metallurgical services, or in operating research laboratories. Included are individuals in private practice in professional groups such as the following: chemical engineers, chemists, civil engineers, electrical engineers, geologists, mechanical engineers, metallurgists, mining engineers, surveyors and draftsmen. This industry includes establishments primarily engaged in aerial survey work and those primarily engaged in technical operations such as seismographic surveys.
- 866 **Offices of Lawyers and Notaries.**—Establishments primarily engaged in the provision of legal services; advocates, barristers and solicitors in private practice; notaries public and patent attorneys.
- 867 **Offices of Management and Business Consultants.**—Establishments primarily engaged in providing business and management consulting services. Offices of consulting economists, personnel management consultants, actuarial consultants are classified here. Engineering and mining consultants are classified in Industry No. 864—Engineering and Scientific Services. Market research consultants are classified in Industry No. 869—Miscellaneous Services to Business Management.
- 869 **Miscellaneous Services to Business Management.**—Establishments primarily engaged in the provision of services to business management not included elsewhere. Such services include market research; interior decorating; industrial designing; dress, costume and fashion designing; statistical and economic intelligence service; stenographic, duplicating, addressing and mailing service; telephone answering service, and the services of accident prevention associations, credit bureaus, collection agencies, customs brokers, appraisers and adjusters except insurance adjusters.
- Major Group 6—Personal Services**
- 871 **Shoe Repair Shops.**—Establishments primarily engaged in repairing boots and shoes (cobbling). Establishments primarily engaged in custom shoe making are classified in Industry No. 174—Shoe Factories.
- 872 **Barber and Beauty Shops.**—Establishments primarily engaged in providing barber facilities and/or hairdressing services.
- 873 **Private Households.**—Private households which employ workers on or about the premises in activities primarily concerned with the operation of the household. Households classified in this industry may employ individuals such as cooks, maids, and butlers and outside workers such as gardeners, caretakers and other maintenance workers. Included also are private households carrying on economic activities and not classified elsewhere, for example, those having lodgers or boarders, but not primarily a lodging house, or those selling some produce but not included in the definition of a farm.
- 874 **Laundries, Cleaners, and Pressers (except Self-Service).**—Establishments primarily engaged in the provi-

DIVISION 10 - COMMUNITY, BUSINESS AND PERSONAL SERVICE INDUSTRIES - Concluded

sion of laundering service, including hand laundries, power laundries, dry cleaning, hat blocking, dyeing and cleaning, rug and carpet cleaning, valet service and repair of clothing, diaper and linen rental service, towel and coat supply service, uniform service and linen supply. Included in this industry are own account laundresses.

- 876 **Self-Service Laundries and Dry Cleaners.** - Establishments primarily engaged in the provision of coin-operated automatic laundry and/or dry cleaning facilities for the use of the public.
- 877 **Funeral Services.** - Establishments primarily engaged in the provision of undertaking services. Ambulance service and the sale of caskets and funeral accessories may be carried on as subsidiary activities. This industry includes funeral directors and morticians. Also included are establishments which operate cemeteries and crematoria.
- 879 **Miscellaneous Personal Services.** - Establishments primarily engaged in the provision of personal services not elsewhere classified. This industry includes establishments such as shoe-shine parlours or stands; health studios, reducing salons, turkish baths and massage parlours; clothing and costume rental shops; own account dressmakers and dressmaking shops; fur cleaning, repair and storage service; checkrooms and parcel rooms; dating and escort bureaus, babysitting service, and hunting, fishing and tourist guide service.

Major Group 7 - Accommodation and Food Services

- 881 **Hotels and Motels.** - Establishments primarily engaged in providing full-year and/or seasonal lodging facilities on a daily basis, whether licensed or non-licensed. Restaurants and food service may be carried on as a secondary activity. Included in this industry are motels, tourist courts and cabins, guest homes and tourist homes.
- 883 **Lodging Houses and Residential Clubs.** - Establishments primarily engaged in providing room or room and meals mainly on the basis of a period of time longer than a day. This industry includes rooming and boarding houses; lodging houses; and hotels operated by membership organizations and not open to the public such as fraternity and sorority houses, and residential clubs.
- 884 **Camping Grounds and Trailer Parks.** - Establishments primarily engaged in the operation of trailer campsites, tourist camping grounds and parks. Included in this industry are hunting, fishing, and recreation vacation camps which may provide accommodation, supplies and equipment. Dude ranches are included in this classification. Establishments primarily engaged in operating trailer sites of a "permanent" nature such as those near mines or construction projects are classified in Industry No. 737 - Real Estate Operators.
- 886 **Restaurants, Caterers and Taverns.** - Establishments primarily engaged in preparing and serving meals and/or beverages. Included are establishments primarily engaged in preparing food for consumption in or around the premises, establishments primarily engaged in catering and establishments primarily engaged in selling meals to take out (Chinese food, box lunches and the like). Establish-

ments primarily engaged in preparing and selling food specialties (fried chicken, doughnuts, pizzas, soft ice cream, and the like) for off-premises consumption are included.

Major Group 8 - Miscellaneous Services

- 891 **Labour Organizations and Trade Associations.** - Labour organizations and trade, business, professional and other membership organizations representing groups of employees, employers, trades or professions; including boards of trade, chambers of commerce, manufacturers' associations, etc.
- 893 **Photographic Services, n.e.s.** - Establishments primarily engaged in portrait and commercial photography, film developing and print processing of films. Establishments engaged in processing standard motion picture films are classified in Industry No. 842 - Motion Picture Production and Distribution.
- 894 **Automobile and Truck Rental.** - Establishments primarily engaged in the rental of passenger automobiles or trucks without drivers.
- 895 **Machinery and Equipment Rental.** - Establishments primarily engaged in the rental of machinery, equipment, furniture and fixtures.
- 896 **Blacksmithing and Welding Shops.** - Establishments primarily engaged in hand forging, blacksmithing and horse shoeing. Establishments primarily engaged in welding are included. Establishments primarily engaged in automobile repair or in farm implement repair which also do some blacksmithing or welding are classified in Industry No. 658. - Motor Vehicle Repair Shops, or Industry No. 622 - Wholesalers of Farm Machinery and Equipment.
- 897 **Miscellaneous Repair Shops.** - Establishments primarily engaged in harness repair, locksmithing, gunsmithing, lawn mower sharpening, knife and scissors sharpening, armature rewinding and electric motor repair, oil burner service and other repair activities, not elsewhere classified.
- 898 **Services to Buildings and Dwellings.** - Establishments primarily engaged in services to buildings such as window cleaning, disinfecting and exterminating services, janitorial service, floor waxing and office cleaning, chimney cleaning, etc.
- 899 **Miscellaneous Services, n.e.s.** - Establishments primarily engaged in providing services not elsewhere classified. Included are political organizations; fraternal and social organizations, such as Rotary Clubs, Kiwanis Clubs, Masonic Lodges, Knights of Columbus and Odd Fellows; community organizations such as YMCA, SPCA, Boy Scouts, Girl Guides; general services such as news clipping service, translating service, interpreting, and driving schools. Included also are auctioneers selling tangible properties belonging to others on a fee basis and self-employed individuals such as artists, inventors, journalists, naturalists, playwrights, poets, reporters, writers, etc.

DIVISION 11 - PUBLIC ADMINISTRATION AND DEFENCE

This division covers establishments primarily engaged in activities that are basically governmental in character, including defence establishments. From the viewpoint of type of economic activity, establishments engaged in such activities as enacting legislation, enforcing and administering the law, collecting public revenues, and controlling the disbursement of public funds, are

clearly governmental in character and do not belong in any other branch of economic activity. Defence services maintained primarily for the protection of the state are in the same general category. In addition, public administration as an industry contains establishments primarily engaged in serving as internal service agencies of the public service. For example, the government printing bureau; agencies

maintaining public buildings, providing char services, and recruiting and selecting government employees; government statistical bureaus, government research agencies. Government-owned establishments primarily engaged in activities assigned to other industries are classified in those industries along with similar establishments owned by non-governmental bodies. The industrial classification of an establishment does not depend upon its ownership.

Major Group 1 - Federal Administration

902 **Defence Services.** - Establishments of the Canadian Armed Forces and civilian agencies primarily engaged in providing defence services. Included in this industry are air bases, military camps and barracks, naval dockyards and the Department of National Defence. Establishments primarily engaged in civil defence activities are included in this industry. In classifying individuals in the Population Census by industry it should be noted that civilian employees of the Department of National Defence are included here.

909 **Other Federal Administration.** - Establishments of the Federal Public Service, RCMP, and government boards and agencies primarily engaged in activities associated with public administration. Establishments such as the Bank of Canada, CBC, and government agencies engaged in manufacturing, transportation, communication and health services are classified to the appropriate industries.

Major Group 2 - Provincial Administration

931 **Provincial Administration.** - Establishments of provincial governments primarily engaged in activities associated with public administration. Establishments owned or operated by provincial governments and primarily engaged in such activities as generating and distributing electric power, communication, liquor sales, health services, education services, are classified to the appropriate industries.

Major Group 3 - Local Administration

951 **Local Administration.** - Establishments primarily engaged in public administration at the local level. Included are municipal, metropolitan or regional government departments and agencies as well as county, township, village and other local government administrative agencies. The departments and agencies included in this industry are those primarily engaged in performing services that are essentially of a public administration character. Excluded are establishments engaged in transportation, communication, health services, educational services, water supply or other activities included in other industries.

Major Group 4 - Other Government Offices

991 **Other Government Offices.** - Establishments in Canada of Commonwealth or foreign governments primarily engaged in governmental service activities such as consular, diplomatic, and legation activities. Commonwealth and foreign establishments engaged in activities such as air transportation, cable and wireless service, or any other activity included in other industries are classified to the appropriate industries.

DIVISION 12 - INDUSTRY UNSPECIFIED OR UNDEFINED

000 **Unspecified or Undefined.** - This class is provided for the use of the Population Census and other surveys obtaining information from individuals. It includes those

having an activity included in the labour force but not specified in the returns with sufficient precision to be assigned to a particular industry.

Source: Statistics Canada, 1970: Catalogue 12-501.

APPENDIX 2

COMPLETE COMPUTER ANALYSIS

COMPUTER PROGRAM

```

1  BACKLNK: PROC OPTIONS(MAIN);
2  DECLARE
    (NAME CHAR(4),
    HIS FIXED BIN(31),
    SIC FIXED BIN(15),
    (G,F,COH,COS,COI) FIXED BIN(31) (450),
    EOF BIT(1) INIT('0'B),
    GEOG(7) FIXED BIN(31) INIT((7)0),
    TSIC(0:999) FIXED BIN(31) INIT((1000)0),
    FUNCTION(1:8) FIXED BIN(31) INIT((8)0),
    (TH,TS,GT) FIXED BIN(31),
    GT FLOAT(6),
    TABLE(7,0:999) FIXED BIN(31) INIT((7000)0);
3  ON ENDFILE(INN) BEGIN;
4  PUT SKIP LIST('END OF INPUT DATA');
5  PUT SKIP LIST('NUMBER OF INPUTS = ',I-1);
6  EOF='1'B;
7  END;
8  G,F,COH,COS,COI=0;
9  DO I=1 TO 1000;
10 GET FILE(INN)
    EDIT(NAME(I),SIC(I),G(I),F(I),COH(I),COS(I),COI(I))
    (COL(1),A(4),X(2),F(3),X(2),2(F(1),X(2)),3(F(8),X(2)));
11 IF EOF THEN GO TO STATS;
12 HIS(I)=COH(I) + COS(I) + COI(I);
13 GEOG(G(I))=GEOG(G(I)) + HIS(I);
14 TSIC(SIC(I)) = TSIC(SIC(I)) + HIS(I);
15 FUNCTION(F(I)) = FUNCTION(F(I)) + HIS(I);
16 TABLE(G(I),SIC(I)) = TABLE(G(I),SIC(I)) + HIS(I);
17 END;
18 STATS:
19 TH=SUM(COH);
20 TS=SUM(COS);
21 TI=SUM(COI);
22 GT=TH+TS+TI;
    PUT SKIP DATA(TH,TS,TI,GT);
23 PUT SKIP(5) LIST('GEOGRAPHY');
24 DO K=1 TO 7;
25 DIVISION=GEOG(K)/GT;
26 PUT SKIP DATA(GEOG(K),DIVISION);
27 END;
28 PUT SKIP(5) LIST('CLASSIFICATION');
29 DO K=0 TO 999;
30 IF TSIC(K) /= 0 THEN DO;
31 DIVISION=TSIC(K)/GT;
32 PUT SKIP DATA(TSIC(K),DIVISION);
33 END;
34 END;
35 PUT SKIP(5) LIST('SIC BY G (G IS THE FIRST SUBSCRIPT)');

```

PL/I CHECKOUT COMPILER BACKLNK: PROC OPTIONS(MAIN);

STMT

```

36 DO CLASSIFICATION=0 TO 999;
37 DO LOCATION=1 TO 7;
38 IF TABLE(LOCATION,CLASSIFICATION) /= 0 THEN DO;
39 DIVISION=TABLE(LOCATION,CLASSIFICATION)/GT;
40 PUT SKIP DATA(TABLE(LOCATION,CLASSIFICATION),DIVISION);
41 END;
42 END;
43 END;
44 PUT SKIP(5) LIST('FUNCTIONS');
45 DO K=1 TO 8;
46 DIVISION=FUNCTION(K)/GT;
47 PUT SKIP DATA(FUNCTION(K),DIVISION);
48 END;
49 END;

```

RESULTS

STAGE 1: GRAND TOTAL (\$)

GT= 1.33255E+08;

STAGE 2: GEOGRAPHIC DISTRIBUTION

| | <u>Purchase (\$)</u> | <u>Purchase/G.T.</u> |
|------------|----------------------|------------------------|
| GEOGRAPHY | | |
| GEOG (1) = | 15511400 | DIVISION= 1.16403E-01: |
| GEOG (2) = | 55090266 | DIVISION= 4.13419E-01: |
| GEOG (3) = | 16683904 | DIVISION= 1.25202E-01: |
| GEOG (4) = | 11154900 | DIVISION= 8.37107E-02: |
| GEOG (5) = | 31158800 | DIVISION= 2.33827E-01: |
| GEOG (6) = | 3244000 | DIVISION= 2.43442E-02: |
| GEOG (7) = | 412000 | DIVISION= 3.09181E-03: |

STAGE 3: INDUSTRIAL BREAKDOWN

Purchase (\$) Purchase/G.T.

CLASSIFICATION

| | | | |
|--------------|---------|------------|--------------|
| TSIC (0) = | 134000 | DIVISION = | 1.00558E-03: |
| TSIC (83) = | 499000 | DIVISION = | 3.74469E-03: |
| TSIC (87) = | 1401000 | DIVISION = | 1.05136E-02: |
| TSIC (98) = | 21000 | DIVISION = | 1.57592E-04: |
| TSIC (99) = | 4191100 | DIVISION = | 3.14516E-02: |
| TSIC (101) = | 105000 | DIVISION = | 7.87961E-04: |
| TSIC (104) = | 34000 | DIVISION = | 2.55149E-04: |
| TSIC (162) = | 540000 | DIVISION = | 4.05237E-03: |
| TSIC (165) = | 301000 | DIVISION = | 2.25882E-03: |
| TSIC (183) = | 56000 | DIVISION = | 4.20246E-04: |
| TSIC (185) = | 27000 | DIVISION = | 2.02618E-04: |
| TSIC (187) = | 101000 | DIVISION = | 7.57943E-04: |
| TSIC (189) = | 12000 | DIVISION = | 9.00527E-05: |
| TSIC (249) = | 13000 | DIVISION = | 9.75571E-05: |
| TSIC (251) = | 355400 | DIVISION = | 2.66706E-03: |
| TSIC (252) = | 312000 | DIVISION = | 2.34137E-03: |
| TSIC (254) = | 1400 | DIVISION = | 1.05061E-05: |
| TSIC (259) = | 92000 | DIVISION = | 6.90404E-04: |
| TSIC (271) = | 1300 | DIVISION = | 9.75571E-06: |
| TSIC (273) = | 404000 | DIVISION = | 3.03177E-03: |
| TSIC (274) = | 52000 | DIVISION = | 3.90228E-04: |
| TSIC (286) = | 176000 | DIVISION = | 1.32077E-03: |
| TSIC (289) = | 222000 | DIVISION = | 1.66597E-03: |
| TSIC (291) = | 990000 | DIVISION = | 7.42934E-03: |
| TSIC (294) = | 2191000 | DIVISION = | 1.64421E-02: |
| TSIC (296) = | 63000 | DIVISION = | 4.72776E-04: |
| TSIC (298) = | 231000 | DIVISION = | 1.73351E-03: |
| TSIC (301) = | 1400 | DIVISION = | 1.05061E-05: |
| TSIC (302) = | 136000 | DIVISION = | 1.02059E-03: |
| TSIC (303) = | 24000 | DIVISION = | 1.80105E-04: |
| TSIC (304) = | 389000 | DIVISION = | 2.91920E-03: |
| TSIC (305) = | 114000 | DIVISION = | 8.55500E-04: |
| TSIC (307) = | 21000 | DIVISION = | 1.57592E-04: |
| TSIC (308) = | 1392000 | DIVISION = | 1.04461E-02: |
| TSIC (309) = | 62000 | DIVISION = | 4.65272E-04: |
| TSIC (315) = | 1402000 | DIVISION = | 1.05211E-02: |
| TSIC (318) = | 91000 | DIVISION = | 6.82899E-04: |
| TSIC (321) = | 28500 | DIVISION = | 2.13875E-04: |
| TSIC (324) = | 133000 | DIVISION = | 9.98084E-04: |
| TSIC (325) = | 38100 | DIVISION = | 2.85917E-04: |
| TSIC (329) = | 50000 | DIVISION = | 3.75219E-04: |
| TSIC (336) = | 182000 | DIVISION = | 1.36579E-03: |
| TSIC (338) = | 83000 | DIVISION = | 6.22864E-04: |
| TSIC (351) = | 842000 | DIVISION = | 6.31869E-03: |
| TSIC (352) = | 1521000 | DIVISION = | 1.14141E-02: |
| TSIC (354) = | 247000 | DIVISION = | 1.85358E-03: |
| TSIC (359) = | 604000 | DIVISION = | 4.53265E-03: |
| TSIC (365) = | 7575000 | DIVISION = | 5.68457E-02: |
| TSIC (375) = | 1300 | DIVISION = | 9.75571E-06: |
| TSIC (378) = | 2499000 | DIVISION = | 1.87534E-02: |
| TSIC (379) = | 5854000 | DIVISION = | 4.39307E-02: |
| TSIC (391) = | 128000 | DIVISION = | 9.60562E-04: |
| TSIC (404) = | 108000 | DIVISION = | 8.10474E-04: |
| TSIC (409) = | 257000 | DIVISION = | 1.92862E-03: |
| TSIC (421) = | 250000 | DIVISION = | 1.87609E-03: |
| TSIC (501) = | 230700 | DIVISION = | 1.73126E-03: |
| TSIC (503) = | 9140800 | DIVISION = | 6.85961E-02: |
| TSIC (507) = | 3832500 | DIVISION = | 2.87605E-02: |
| TSIC (508) = | 255000 | DIVISION = | 1.91362E-03: |
| TSIC (517) = | 143000 | DIVISION = | 1.07312E-03: |

TSIC (543) = 33000
 TSIC (544) = 234000
 TSIC (545) = 30000
 TSIC (572) = 9281000
 TSIC (574) = 1387000
 TSIC (579) = 54000
 TSIC (606) = 1203000
 TSIC (608) = 1898072
 TSIC (611) = 278000
 TSIC (614) = 34000
 TSIC (617) = 324000
 TSIC (618) = 11000
 TSIC (619) = 1508300
 TSIC (621) = 3803000
 TSIC (623) = 21112320
 TSIC (624) = 3248000
 TSIC (625) = 4476400
 TSIC (626) = 746000
 TSIC (629) = 788700
 TSIC (642) = 1600
 TSIC (652) = 223100
 TSIC (656) = 66600
 TSIC (658) = 322000
 TSIC (673) = 7000
 TSIC (681) = 25000
 TSIC (696) = 158
 TSIC (699) = 16000
 TSIC (703) = 32000
 TSIC (707) = 1895000
 TSIC (721) = 832000
 TSIC (735) = 716000
 TSIC (737) = 25000
 TSIC (853) = 500000
 TSIC (855) = 649000
 TSIC (862) = 23000
 TSIC (864) = 199000

TSIC (867) = 214000
 TSIC (869) = 143000
 TSIC (874) = 13000
 TSIC (881) = 71000
 TSIC (886) = 419000
 TSIC (894) = 177000
 TSIC (895) = 564000
 TSIC (898) = 580000
 TSIC (931) = 6000
 TSIC (999) = 24924520

DIVISION= 2.47644E-04
 DIVISION= 1.75602E-03
 DIVISION= 2.25131E-04
 DIVISION= 6.96482E-02
 DIVISION= 1.04085E-02
 DIVISION= 4.05237E-04
 DIVISION= 9.02778E-03
 DIVISION= 1.42438E-02
 DIVISION= 2.08622E-03
 DIVISION= 2.55149E-04
 DIVISION= 2.43142E-03
 DIVISION= 8.25483E-05
 DIVISION= 1.13188E-02
 DIVISION= 2.85392E-02
 DIVISION= 1.58435E-01
 DIVISION= 2.43742E-02
 DIVISION= 3.35926E-02
 DIVISION= 5.59827E-03
 DIVISION= 5.91871E-03
 DIVISION= 1.20070E-05
 DIVISION= 1.67423E-03
 DIVISION= 4.99792E-04
 DIVISION= 2.41641E-03
 DIVISION= 5.25307E-05
 DIVISION= 1.87609E-04
 DIVISION= 1.18569E-06
 DIVISION= 1.20070E-04
 DIVISION= 2.40140E-04
 DIVISION= 1.42208E-02
 DIVISION= 6.24365E-03
 DIVISION= 5.37314E-03
 DIVISION= 1.87609E-04
 DIVISION= 3.75219E-03
 DIVISION= 4.87035E-03
 DIVISION= 1.72601E-04
 DIVISION= 1.49337E-03

DIVISION= 1.60594E-03
 DIVISION= 1.07312E-03
 DIVISION= 9.75571E-05
 DIVISION= 5.32811E-04
 DIVISION= 3.14434E-03
 DIVISION= 1.32827E-03
 DIVISION= 4.23247E-03
 DIVISION= 4.35254E-03
 DIVISION= 4.50263E-05
 DIVISION= 1.87043E-01

Purchase (\$)

Purchase/G.T.

SIC BY G (G IS THE FIRST SUBSCRIPT)

| | |
|-----------------|---------|
| TABLE (3,0) = | 134000 |
| TABLE (4,83) = | 499000 |
| TABLE (1,87) = | 1401000 |
| TABLE (4,98) = | 21000 |
| TABLE (4,99) = | 2191100 |
| TABLE (6,99) = | 2000000 |
| TABLE (1,101) = | 105000 |
| TABLE (1,104) = | 34000 |
| TABLE (1,162) = | 402000 |
| TABLE (3,162) = | 138000 |
| TABLE (1,165) = | 137000 |
| TABLE (3,165) = | 164000 |
| TABLE (3,183) = | 23000 |
| TABLE (7,183) = | 33000 |
| TABLE (3,185) = | 27000 |
| TABLE (1,187) = | 46000 |
| TABLE (3,187) = | 55000 |
| TABLE (1,189) = | 12000 |
| TABLE (3,249) = | 13000 |
| TABLE (1,251) = | 355400 |
| TABLE (3,252) = | 312000 |
| TABLE (1,254) = | 1400 |
| TABLE (1,259) = | 92000 |
| TABLE (1,271) = | 1300 |
| TABLE (1,273) = | 404000 |
| TABLE (1,274) = | 31000 |
| TABLE (3,274) = | 21000 |
| TABLE (1,286) = | 147000 |
| TABLE (5,286) = | 29000 |
| TABLE (1,289) = | 18000 |
| TABLE (3,289) = | 117000 |
| TABLE (5,289) = | 87000 |
| TABLE (1,291) = | 630000 |
| TABLE (3,291) = | 360000 |
| TABLE (1,294) = | 2013000 |
| TABLE (3,294) = | 178000 |
| TABLE (3,296) = | 63000 |
| TABLE (1,298) = | 124000 |
| TABLE (3,298) = | 107000 |
| TABLE (1,301) = | 1400 |
| TABLE (1,302) = | 88000 |
| TABLE (3,302) = | 48000 |
| TABLE (3,303) = | 24000 |
| TABLE (1,304) = | 389000 |
| TABLE (3,305) = | 114000 |
| TABLE (3,307) = | 21000 |
| TABLE (1,308) = | 613000 |
| TABLE (3,308) = | 121000 |
| TABLE (4,308) = | 658000 |
| TABLE (3,309) = | 62000 |
| TABLE (1,315) = | 190000 |
| TABLE (3,315) = | 1156000 |
| TABLE (7,315) = | 56000 |
| TABLE (3,318) = | 80000 |
| TABLE (7,318) = | 11000 |
| TABLE (1,321) = | 20500 |
| TABLE (3,321) = | 8000 |
| TABLE (3,324) = | 133000 |
| TABLE (1,325) = | 10100 |
| TABLE (3,325) = | 28000 |
| TABLE (7,329) = | 50000 |
| TABLE (1,336) = | 34000 |
| TABLE (3,336) = | 148000 |
| TABLE (1,338) = | 83000 |
| TABLE (1,351) = | 33000 |
| TABLE (3,351) = | 713000 |
| TABLE (7,351) = | 96000 |
| TABLE (1,352) = | 1521000 |
| TABLE (1,354) = | 247000 |
| TABLE (1,359) = | 604000 |
| TABLE (5,365) = | 7575000 |
| TABLE (1,375) = | 1300 |
| TABLE (1,378) = | 2041000 |
| TABLE (3,378) = | 382000 |
| TABLE (7,378) = | 76000 |
| TABLE (1,379) = | 3681000 |
| TABLE (3,379) = | 2173000 |

| | |
|-----------|-------------|
| DIVISION= | 1.00558E-03 |
| DIVISION= | 3.74469E-03 |
| DIVISION= | 1.05136E-02 |
| DIVISION= | 1.57592E-04 |
| DIVISION= | 1.64428E-02 |
| DIVISION= | 1.50087E-02 |
| DIVISION= | 7.87961E-04 |
| DIVISION= | 2.55149E-04 |
| DIVISION= | 3.01676E-03 |
| DIVISION= | 1.03560E-03 |
| DIVISION= | 1.02810E-03 |
| DIVISION= | 1.23072E-03 |
| DIVISION= | 1.72601E-04 |
| DIVISION= | 2.47644E-04 |
| DIVISION= | 2.02618E-04 |
| DIVISION= | 3.45201E-04 |
| DIVISION= | 4.12741E-04 |
| DIVISION= | 9.00527E-05 |
| DIVISION= | 9.75571E-05 |
| DIVISION= | 2.66706E-03 |
| DIVISION= | 2.34137E-03 |
| DIVISION= | 1.05061E-05 |
| DIVISION= | 6.90404E-04 |
| DIVISION= | 9.75571E-06 |
| DIVISION= | 3.03177E-03 |
| DIVISION= | 2.32636E-04 |
| DIVISION= | 1.57592E-04 |
| DIVISION= | 1.10314E-03 |
| DIVISION= | 2.17627E-04 |
| DIVISION= | 1.35079E-04 |
| DIVISION= | 8.78013E-04 |
| DIVISION= | 6.52882E-04 |
| DIVISION= | 4.72776E-03 |
| DIVISION= | 2.70158E-03 |
| DIVISION= | 1.51063E-02 |
| DIVISION= | 1.33578E-03 |
| DIVISION= | 4.72776E-04 |
| DIVISION= | 9.30544E-04 |
| DIVISION= | 8.02970E-04 |
| DIVISION= | 1.05061E-05 |
| DIVISION= | 6.60386E-04 |
| DIVISION= | 3.60210E-04 |
| DIVISION= | 1.80105E-04 |
| DIVISION= | 2.91920E-03 |
| DIVISION= | 8.55500E-04 |
| DIVISION= | 1.57592E-04 |
| DIVISION= | 4.60019E-03 |
| DIVISION= | 9.08031E-04 |
| DIVISION= | 4.93789E-03 |
| DIVISION= | 4.65272E-04 |
| DIVISION= | 1.42583E-03 |
| DIVISION= | 8.67507E-03 |
| DIVISION= | 4.20246E-04 |
| DIVISION= | 6.00351E-04 |
| DIVISION= | 8.25483E-05 |
| DIVISION= | 1.53840E-04 |
| DIVISION= | 6.00351E-05 |
| DIVISION= | 9.98084E-04 |
| DIVISION= | 7.57943E-05 |
| DIVISION= | 2.10123E-04 |
| DIVISION= | 3.75219E-04 |
| DIVISION= | 2.55149E-04 |
| DIVISION= | 1.11065E-03 |
| DIVISION= | 6.22864E-04 |
| DIVISION= | 2.47644E-04 |
| DIVISION= | 5.35063E-03 |
| DIVISION= | 7.20421E-04 |
| DIVISION= | 1.14141E-02 |
| DIVISION= | 1.85358E-03 |
| DIVISION= | 4.53265E-03 |
| DIVISION= | 5.68457E-02 |
| DIVISION= | 9.75571E-06 |
| DIVISION= | 1.53164E-02 |
| DIVISION= | 2.86667E-03 |
| DIVISION= | 5.70333E-04 |
| DIVISION= | 2.76236E-02 |
| DIVISION= | 1.63070E-02 |

TABLE (3,391) = 81000
 TABLE (7,391) = 47000
 TABLE (4,404) = 108000
 TABLE (4,409) = 257000
 TABLE (4,421) = 181000
 TABLE (5,421) = 69000
 TABLE (4,501) = 216700
 TABLE (5,501) = 14000
 TABLE (5,503) = 9140800
 TABLE (4,507) = 3184500
 TABLE (5,507) = 648000
 TABLE (4,508) = 249000
 TABLE (5,508) = 6000
 TABLE (4,517) = 23000
 TABLE (5,517) = 120000
 TABLE (4,543) = 33000
 TABLE (5,544) = 234000
 TABLE (5,545) = 30000
 TABLE (5,572) = 9281000
 TABLE (4,574) = 1387000
 TABLE (4,579) = 54000
 TABLE (3,606) = 1203000
 TABLE (2,608) = 1898072

DIVISION= 6.07855E-04
 DIVISION= 3.52706E-04
 DIVISION= 8.10474E-04
 DIVISION= 1.92862E-03
 DIVISION= 1.35829E-03
 DIVISION= 5.17803E-04
 DIVISION= 1.62620E-03
 DIVISION= 1.05061E-04
 DIVISION= 6.85961E-02
 DIVISION= 2.38977E-02
 DIVISION= 4.86284E-03
 DIVISION= 1.86859E-03
 DIVISION= 4.50263E-05
 DIVISION= 1.72601E-04
 DIVISION= 9.00527E-04
 DIVISION= 2.47644E-04
 DIVISION= 1.75602E-03
 DIVISION= 2.25131E-04
 DIVISION= 6.96482E-02
 DIVISION= 1.04085E-02
 DIVISION= 4.05237E-04
 DIVISION= 9.02778E-03
 DIVISION= 1.42438E-02

TABLE (2,611) = 253000
 TABLE (3,611) = 25000
 TABLE (2,614) = 34000
 TABLE (2,617) = 324000
 TABLE (2,618) = 11000
 TABLE (2,619) = 552300
 TABLE (3,619) = 956000
 TABLE (2,621) = 3736000
 TABLE (3,621) = 67000
 TABLE (2,623) = 19229320
 TABLE (3,623) = 1824000
 TABLE (6,623) = 16000
 TABLE (7,623) = 43000
 TABLE (2,624) = 2993000
 TABLE (3,624) = 255000
 TABLE (2,625) = 4415400
 TABLE (3,625) = 61000
 TABLE (2,626) = 746000
 TABLE (2,629) = 660700
 TABLE (3,629) = 128000
 TABLE (2,642) = 1600
 TABLE (2,652) = 223100
 TABLE (2,656) = 41000
 TABLE (4,656) = 25600
 TABLE (4,658) = 191000
 TABLE (5,658) = 131000
 TABLE (2,673) = 7000
 TABLE (2,681) = 25000
 TABLE (2,696) = 158
 TABLE (4,699) = 16000
 TABLE (4,703) = 32000
 TABLE (5,707) = 1895000
 TABLE (5,721) = 341000
 TABLE (6,721) = 491000
 TABLE (5,735) = 716000
 TABLE (4,737) = 25000
 TABLE (6,853) = 500000
 TABLE (5,855) = 649000
 TABLE (4,862) = 23000
 TABLE (3,864) = 176000
 TABLE (6,864) = 23000
 TABLE (6,867) = 214000
 TABLE (5,869) = 143000
 TABLE (4,874) = 13000
 TABLE (4,881) = 52000
 TABLE (5,881) = 19000
 TABLE (4,886) = 419000
 TABLE (4,894) = 152000
 TABLE (5,894) = 25000
 TABLE (4,895) = 564000
 TABLE (4,898) = 580000
 TABLE (5,931) = 6000
 TABLE (2,999) = 19939616
 TABLE (3,999) = 4984904

DIVISION= 1.89861E-03
 DIVISION= 1.87609E-04
 DIVISION= 2.55149E-04
 DIVISION= 2.43142E-03
 DIVISION= 8.25483E-05
 DIVISION= 4.14467E-03
 DIVISION= 7.17419E-03
 DIVISION= 2.80364E-02
 DIVISION= 5.02794E-04
 DIVISION= 1.44304E-01
 DIVISION= 1.36880E-02
 DIVISION= 1.20070E-04
 DIVISION= 3.22688E-04
 DIVISION= 2.24606E-02
 DIVISION= 1.91362E-03
 DIVISION= 3.31349E-02
 DIVISION= 4.57767E-04
 DIVISION= 5.59827E-03
 DIVISION= 4.95815E-03
 DIVISION= 9.60562E-04
 DIVISION= 1.20070E-05
 DIVISION= 1.67423E-03
 DIVISION= 3.07680E-04
 DIVISION= 1.92112E-04
 DIVISION= 1.43333E-03
 DIVISION= 9.83075E-04
 DIVISION= 5.25307E-05
 DIVISION= 1.87609E-04
 DIVISION= 1.18569E-06
 DIVISION= 1.20070E-04
 DIVISION= 2.40140E-04
 DIVISION= 1.42208E-02
 DIVISION= 2.55899E-03
 DIVISION= 3.68465E-03
 DIVISION= 5.37314E-03
 DIVISION= 1.87609E-04
 DIVISION= 3.75219E-03
 DIVISION= 4.87035E-03
 DIVISION= 1.72601E-04
 DIVISION= 1.32077E-03
 DIVISION= 1.72601E-04
 DIVISION= 1.60594E-03
 DIVISION= 1.07312E-03
 DIVISION= 9.75571E-05
 DIVISION= 3.90228E-04
 DIVISION= 1.42583E-04
 DIVISION= 3.14434E-03
 DIVISION= 1.14066E-03
 DIVISION= 1.87609E-04
 DIVISION= 4.23247E-03
 DIVISION= 4.35254E-03
 DIVISION= 4.50263E-05
 DIVISION= 1.49634E-01
 DIVISION= 3.74086E-02

STAGE 5: FUNCTIONAL DISTRIBUTION

| | Purchase (\$) | Purchase/G.T. |
|----------------|---------------|------------------------|
| FUNCTIONS | | |
| FUNCTION (1) = | 32628320 | DIVISION= 2.44855E-01: |
| FUNCTION (2) = | 3006000 | DIVISION= 2.25582E-02: |
| FUNCTION (3) = | 2909000 | DIVISION= 2.18302E-02: |
| FUNCTION (4) = | 4582000 | DIVISION= 3.43851E-02: |
| FUNCTION (5) = | 42219920 | DIVISION= 3.16834E-01: |
| FUNCTION (6) = | 1870258 | DIVISION= 1.40351E-02: |
| FUNCTION (7) = | 45818772 | DIVISION= 3.43842E-01: |
| FUNCTION (8) = | 221000 | DIVISION= 1.65847E-03: |

APPENDIX 3

CALCULATION OF ADJUSTED 1976 VALUE
OF SUPPLY INDUSTRY SALES USED IN TABLE 12

APPENDIX 3

| <u>Standard Industrial Class</u> | <u>% Change Industrial</u> | | |
|---|--|--------------------------------|--|
| | <u>1975 Total Sales*</u> ((\$'000)) | <u>Price Index Dec.76/75**</u> | <u>Adjusted 1976 Total Sales</u> ((\$'000)) |
| 379 Miscellaneous Chemical Industries | 17,091 | 4.2 | 17,809 |
| 378 Manufacturers of Industrial Chemicals | 32,357 | 4.2 | 33,716 |
| 294 Iron Foundries | Data Unavailable | | |
| 352 Cement Manufacturers | Data Unavailable | | |
| 087 Sand Pits or Quarries | Data Unavailable | | |
| 291 Iron and Steel Mills | Data Unavailable | | |
| 308 Machine Shops | 17,510 | 3.7 | 18,158 |
| 359 Miscellaneous non-Metallic Minerals Products Industries | Data Unavailable | | |
| 273 Paper Box and Bag Manufacturers | 46,049 | 5.1 | 48,397 |
| 162 Rubber Products Industry | Data Unavailable | | |
| 304 Metal Stamping, Pressing and Coating Industry | Data Unavailable | | |
| 251 Sawmills, Planing Mills and Shingle Mills | 17,655 | 10.8 | 19,562 |
| 354 Concrete Products Manufacturers | 18,171 | 9.7 | 19,934 |
| 315 Miscellaneous Machinery and Equipment Manufacturers | Data Unavailable | | |
| 286 Commercial Printing | 48,558 | 4.8 | 50,889 |
| 165 Plastics Fabricating Industry, n.e.s. | Data Unavailable | | |
| 298 Metal Rolling, Casting and Extruding, n.e.s. | 9,117 | 6.6 | 9,719 |
| 101 Meat and Poultry Products Industries | 401,788 | 0.8 | 405,002 |
| 259 Miscellaneous Wood Industries | 3,178 | 10.8 | 3,521 |
| 302 Fabricated Structural Metal Industry | 55,914 | 3.7 | 57,983 |

APPENDIX 3 (Cont'd)

% Change Industrial

| <u>Standard Industrial Class</u> | <u>1975 Total Sales*</u> ((\$'000)) | <u>Price Index Dec.76/75**</u> | <u>Adjusted 1976 Total Sales</u> ((\$'000)) |
|--|--|--------------------------------|--|
| 338 Manufacturers of Electric Wire and Cable | Data Unavailable | | |
| 187 Canvas Products and Cotton and Jute Bag Industries | 2,466 | 5.6 | 2,604 |
| 104 Dairy Products Industry | 91,651 | 0.8 | 92,384 |
| 336 Manufacturers of Electrical Industrial Equipment | Data Unavailable | | |
| 351 Clay Products Manufacturers | Data Unavailable | | |
| 274 Miscellaneous Paper Converters | 23,081 | 5.1 | 24,258 |
| 321 Aircraft and Aircraft Part Manufacturers | 42,613 | 5.0 | 44,744 |
| 289 Publishing and Printing | 50,528 | 4.8 | 52,953 |
| 189 Miscellaneous Textile Industries | 6,615 | 5.6 | 6,985 |
| 325 Motor Vehicle Parts and Accessories Manufacturers | 16,432 | 5.0 | 17,254 |
| 254 Sash, Door and Other Millwork Plants | 36,831 | 10.8 | 40,809 |
| 301 Boiler and Plate Works | Data Unavailable | | |
| 271 Pulp and Paper Mills | Data Unavailable | | |
| 375 Paint and Varnish Manufacturers | 17,328 | 4.2 | 18,056 |

* Source: Statistics Canada, 1975: Catalogue 31-203, Table 39

** Statistics Canada, 1975: Catalogue 62-011

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