

71st Congress }
1st Session }

SENATE COMMITTEE PRINT

MONUMENTAL GRANITE

REPORT

OF

THE UNITED STATES TARIFF COMMISSION

TO

THE PRESIDENT OF THE UNITED STATES

DIFFERENCES IN COSTS OF PRODUCTION OF MONUMENTAL
GRANITE, IN THE UNITED STATES AND IN THE PRIN-
CIPAL COMPETING COUNTRY, AS ASCERTAINED
PURSUANT TO THE PROVISIONS OF SEC-
TION 315 OF TITLE III OF THE
TARIFF ACT OF 1922



Printed for the use of the Committee on Finance

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1929

COMMITTEE ON FINANCE

REED SMOOT, Utah, *Chairman.*

JAMES E. WATSON, Indiana.

DAVID A. REED, Pennsylvania.

SAMUEL M. SHORTRIDGE, California.

WALTER E. EDGE, New Jersey.

JAMES COUZENS, Michigan.

FRANK L. GREENE, Vermont.

CHARLES S. DENEEN, Illinois.

HENRY W. KEYES, New Hampshire.

HIRAM BINGHAM, Connecticut.

FREDERIC M. SACKETT, Kentucky..

F. M. SIMMONS, North Carolina.

PAT HARRISON, Mississippi.

WILLIAM H. KING, Utah.

WALTER F. GEORGE, Georgia.

DAVID I. WALSH, Massachusetts.

ALBEN W. BARKLEY, Kentucky.

ELMER THOMAS, Oklahoma.

TOM CONNALLY, Texas.

ISAAC M. STEWART, *Clerk.*

✓

CONTENTS

1. TEXT

	Page
Letter of transmittal.....	vi
Introduction:	
Reference to files.....	1
Rates of duty.....	1
History of the investigation.....	1
Information obtained in the commission's investigation:	
Description and uses.....	2
Production in the United States.....	3
Production in foreign countries.....	5

PART I. MANUFACTURED MONUMENTAL GRANITE

United States imports and exports:	
Imports.....	9
Exports.....	9
Principal competing country.....	9
Cost of production:	
United States—	
Types of granite dies used for cost comparison.....	10
Scope of the cost investigation.....	10
Operations of manufacture.....	10
Methods of obtaining costs:	
Raw material.....	12
Direct labor costs.....	13
Costs of finishing corners.....	14
Manufacturing expense.....	15
Packing expense.....	15
Imputed interest.....	15
Selling expense.....	15
Summary of shop costs.....	15
Germany—	
Scope of the cost investigation.....	21
Methods of obtaining costs:	
Raw material.....	21
Direct labor.....	21
Manufacturing expense.....	22
Packing expense.....	22
Imputed interest.....	22
Selling expense.....	22
Summary of shop costs.....	22
Methods and conditions of marketing.....	29
Transportation:	
Ports where manufactured granite enters the United States.....	30
Costs of transportation and other charges on imported granite from Germany to principal port of importation.....	31
Domestic freight rates on manufactured monumental granite.....	33
Determination of dutiable values.....	34
Cost comparison of domestic and German polished granite dies.....	36
Domestic and imported at Philadelphia.....	36
Domestic and imported at Columbus.....	37
Conclusions:	
Views of Commissioners Marvin, Brossard, and Lowell.....	38
Views of Commissioners Dennis, Dixon, and Clark.....	42

PART II. UNMANUFACTURED MONUMENTAL GRANITE

Rate of duty:	
Scope of investigation.....	46
Domestic production.....	46
United States imports and exports:	
Imports.....	47
Exports.....	48

	Page
Principal competing country.....	48
Selling prices:	
Domestic.....	49
Foreign.....	50
Costs of production:	
United States—	
Methods of obtaining costs.....	51
Summary of costs.....	51
Sweden—	
Scope and method of cost finding.....	52
Details and summary of costs.....	52
Methods and conditions of marketing:	
Foreign product.....	54
Domestic product.....	54
Countries of origin and ports of importation.....	54
Imports at New York City.....	55
Imports at Boston.....	55
Transportation:	
Costs of transportation on unmanufactured granite from quarries in Sweden to port of importation.....	55
Cost of transportation of domestic product from quarry to New York City.....	56
Markets for domestic and imported unmanufactured granite.....	57
Comparison of weighted average costs of production of domestic and imported unfinished monumental granite:	
Method of weighting costs.....	58
Costs, including transportation, at New York City and Boston.....	58
Reasons for and against bases (1) and (2).....	59
Conclusions:	
Views of Commissioners Marvin, Brossard, and Lowell.....	61
Views of Commissioners Dennis, Dixon, and Clark.....	64
Appendix:	
Details of costs and other statistics.....	67

2. TABLES

GENERAL

No.		
1.	Domestic granite sold or used by quarries in the United States, 1916-1925.....	3
2.	Domestic granite sold or used by quarries in 1924 and 1925, by States.....	3
3.	Exports of monumental granite from Sweden.....	6
4.	Exports of monumental granite from Germany.....	7

PART I. MANUFACTURED MONUMENTAL GRANITE

5.	Imports for consumption, by countries, for specified years.....	10
6.	Summary of costs of production in the United States.....	17
7.	Summary of costs of production in Germany.....	24
8.	Imports for consumption, by customs districts and by countries, for the year 1925.....	31
9.	Weights of German polished granite dies.....	32
10.	Weights of domestic polished granite dies.....	33
11.	Transportation charges on German dies to American Atlantic port.....	33
12.	Domestic freight rates.....	33
13.	Domestic transportation charges on domestic and imported dies.....	34
14.	Average selling prices of imported German dies.....	35
15.	Comparison of United States and German costs of production for a composite polished granite die.....	36

PART II. UNMANUFACTURED MONUMENTAL GRANITE

16.	Domestic production and imports for consumption.....	48
17.	Imports, by leading countries of origin.....	49
18.	Selling prices of Swedish unmanufactured monumental granite.....	50
19.	Costs of production in the United States.....	52
20.	Costs of production in Sweden.....	53

CONTENTS

v

	Page
21. Imports for consumption from Sweden and Finland, by principal customs districts.....	55
22. Transportation costs and charges from quarries in Sweden to American Atlantic port.....	56
23. Domestic freight rates and transportation costs on unmanufactured monumental granite.....	57
24. Comparison of United States and Swedish costs of production for unmanufactured monumental granite.....	59

APPENDIX

A. Statistics of production in Barre, Vt.....	68
B. Statistics of production in Quincy, Mass.....	69
C. Statistics of production in Minnesota.....	69
D. Summary of costs of production of polished granite dies for the Wisconsin district.....	70
E. Ratios of manufacturing expense to direct labor costs, and of packing costs to total shop costs, by domestic companies and districts.....	71
F. Summary of costs of production of polished granite dies manufactured in Germany from Swedish black granite.....	72

LETTER OF TRANSMITTAL

JUNE 28, 1928.

The PRESIDENT,
The White House.

MY DEAR MR. PRESIDENT: Herewith I have the honor to transmit the report of the Tariff Commission in the investigation, for the purposes of section 315 of the tariff act of 1922, of the costs of production in the United States and in the principal competing foreign country of manufactured and unmanufactured monumental granite.

Respectfully,

THOMAS O. MARVIN, *Chairman.*

MONUMENTAL GRANITE

UNITED STATES TARIFF COMMISSION,
Washington, June 28, 1928.

To the PRESIDENT:

The United States Tariff Commission respectfully submits the following report of its investigation for the purposes of section 315 of Title III of the tariff act of 1922, of the differences in costs of production of unmanufactured and manufactured monumental granite in the United States and in the principal competing foreign country.

INTRODUCTION

Reference to files.—The documents in connection with the investigation of monumental granite are in the files of the Tariff Commission and are available to the President. They comprise the original cost data and other information and certain material of a confidential nature, the disclosure of which is forbidden by section 708 of the revenue act of 1916, the pertinent provisions of which are as follows:

Sec. 708 It shall be unlawful for any member of the United States Tariff Commission, or for any employee, agent, or clerk of said commission, or any other officer or employee of the United States, to divulge, or to make known in any manner whatever not provided for by law, to any person, the trade secrets or processes of any person, firm, copartnership, corporation, or association embraced in any examination or investigation conducted by said commission, or by order of said commission, or by order of any member thereof.

RATES OF DUTY

Monumental granite has been provided for in the last three tariff acts as follows:

Tariff act of 1922, paragraph 235: * * * granite, * * * suitable for use as monumental * * * stone, * * * not specially provided for, hewn, dressed, or polished, or otherwise manufactured, 50 per centum ad valorem; unmanufactured, or not dressed, hewn, or polished, 15 cents per cubic foot.

Tariff act of 1913, paragraph 99: * * * granite, * * * suitable for use as monumental * * * stone, * * * not specially provided for in this section, hewn, dressed, or polished, or otherwise manufactured, 25 per centum ad valorem; unmanufactured, or not dressed, hewn, or polished, 3 cents per cubic foot.

Tariff act of 1909, paragraph 114: * * * granite, * * * and all other monumental * * * stone, * * * not specially provided for in this section, hewn, dressed, or polished, or otherwise manufactured, fifty per centum ad valorem; unmanufactured, or not dressed, hewn, or polished, ten cents per cubic foot.

HISTORY OF THE INVESTIGATION

On July 24, 1925, the Tariff Commission instituted an investigation of unmanufactured and manufactured monumental and building granite for the purposes of section 315 of the tariff act of 1922. An application for an investigation looking toward an increase in the

duties had been received April 11, 1924, from the National Committee of the Granite Industries, with headquarters in Boston. Subsequent to the instituting of the investigation, the commission received on December 1, 1925, an application asking for a decrease in the rate of duty on finished monumental granite from the Verband Bayerischer Granitwerke, of Bayreuth, and on July 19, 1926, a similar application from the Granite Supply Association (Ltd.), of Aberdeen.

Field work was conducted in the United States in a number of important producing centers during September and October, 1925, and in June, 1926. The field work abroad, in Sweden, Germany, and Scotland, was conducted during November, 1925.

Public notice of the institution of the investigation was given in the usual form by posting in the Washington and New York offices of the commission and by publication in Treasury Decisions and Commerce Reports. After due public notice, as prescribed by law, a public hearing was held at the office of the commission in Washington on July 15 and on July 28 and 29, 1926, at which hearing all parties interested were given reasonable opportunity to be present to produce evidence, and to be heard with regard to the differences in costs of production, and all other data and conditions enumerated in section 315 of the tariff act of 1922, with respect to unmanufactured and manufactured monumental and building granite. Prior to the time set for the first session of the public hearing, that held on July 15, 1926, a statement of information obtained by the commission was prepared and distributed to interested parties. On the later dates of the public hearing, July 28 and 29, 1926, certain supplementary information obtained in the investigation was submitted.

The investigation was confined to unmanufactured and manufactured monumental granite, but not including building granite. It was developed by the investigation and the public hearings that there was no tariff problem with respect to granite used for building purposes.

INFORMATION OBTAINED IN THE COMMISSION'S INVESTIGATION

In the investigation of monumental granite conducted by the commission, the following information has been obtained:

DESCRIPTION AND USES

Granite is a hard, igneous rock, of such durability when exposed to the elements that it is in great demand for buildings and monuments. In general, it is a mixture of quartz, feldspar, and mica or hornblende, without any regular arrangement of crystals and with a grain varying from coarse to fine. The color runs from almost white to black and from light pink to dark red, according to the feldspar content. Rough granite suitable for the manufacture of monuments is comparatively scarce, because it must be of uniform color and texture—free from the blemishes which exist in most rough granites. Monumental granite of superior quality is generally used to make the die of a monument, especially if it is to be polished. The word "die" is the trade name for the main stone of a memorial which is usually set upon a base.

PRODUCTION IN THE UNITED STATES

Deposits of granite, especially gray granite, occur in practically all States of the Union. The best known domestic monumental granites are the light and dark gray granites of Vermont, Massachusetts, and other New England States, the pink granites of Connecticut, Rhode Island, and North Carolina, and the red granites of Minnesota, Wisconsin, and Missouri. Black monumental stone, commercially known and sold as granite, is quarried in Pennsylvania, Minnesota, Wisconsin, Colorado, Maine, New Jersey, and other States.

The amount of domestic monumental granite sold or used by quarriers in the United States is given for specified years in Table 1. The figures for quantity alone truly indicate the trend of production, because the figures for value include dressed granite finished by quarriers. In explanation of the apparent decline of the industry as indicated by the figures of quantity, it may be stated that, according to information furnished by manufacturers of monuments, in recent years the average size of monuments is smaller than formerly.

TABLE 1.—*Monumental granite: Domestic granite sold or used by quarriers in the United States for the years 1916-1925*

[Source: Mineral Resources of the United States, Pt. II.]

Year	Cubic feet	Value ¹
1916.....	3, 611, 900	\$5, 293, 210
1917.....	3, 373, 008	5, 704, 776
1918.....	3, 358, 431	6, 964, 879
1919.....	3, 658, 422	10, 143, 318
1920.....	3, 379, 880	11, 548, 268
1921.....	1, 966, 720	7, 253, 376
1922.....	2, 085, 740	7, 429, 332
1923.....	3, 947, 000	12, 398, 437
1924.....	3, 520, 530	11, 447, 196
1925.....	3, 196, 290	10, 805, 432

¹ Includes the value of dressed granite finished by quarriers.

Table 2 shows for 1924 and 1925 the sales of domestic monumental granite in the chief producing States and the ratio of the total sales by producers in each State to the total sales of domestic granite in the United States.

TABLE 2.—*Monumental granite: Domestic granite sold or used by quarriers in the United States for the years 1924 and 1925, by States*

[Source: Mineral Resources of the United States]

State	1924		1925	
	Cubic feet sold	Per cent of total	Cubic feet sold	Per cent of total
	<i>Thou-</i>		<i>sands</i>	
Vermont.....	1, 273	36. 2	1, 188	37. 2
Massachusetts.....	426	12. 1	384	12. 0
Minnesota.....	312	8. 8	261	8. 1
New Hampshire.....	164	4. 7	148	4. 6
Wisconsin.....	115	3. 3	117	3. 6
Maine.....	197	5. 6	159	4. 9
Georgia.....	138	4. 0	110	3. 4
Rhode Island.....	174	4. 9	168	5. 2
Pennsylvania.....	226	0. 8	34	1. 0
All other.....	693	19. 6	627	20. 0
Total.....	3, 518	100. 0	3, 196	100. 0

By far the largest quarrying and manufacturing district in the United States, whether measured by the quantity or value of output, is Barre, Vt., and vicinity. The stone is quarried at Barre by 8 quarry-owning producers, and consists of two varieties, light gray and dark gray. One of the quarry-operating concerns only is engaged in the manufacture of monuments, a business carried on upon the basis of purchased raw material by some 160-finishing shops, large and small, located in Barre and in the near-by towns of Montpelier and Northfield. The Barre district, as a whole, is characterized by large manufacturing establishments, using highly developed machinery. Practically all the producers of granite in Barre are wholesalers, who dispose of their production through traveling salesmen to retail dealers throughout the United States. To some extent sales are made to purchasing agents in Barre, who act for local dealers elsewhere. Extensive advertising creates a nation-wide demand for monuments made from the Barre stone. The total output of the quarries in 1923 and 1924 was 1,254,714 cubic feet and 1,127,850 cubic feet, respectively, of which about 80 per cent was manufactured in the district. Statistics of the monumental granite industry of Barre for the years 1918 to 1926 are presented in Table A in the appendix to this report.

Massachusetts.—Massachusetts ranks second to Vermont with respect to the monumental granite industry, which is chiefly centered at Quincy. The quarries, owned and operated by five concerns, produce both light and dark gray stone, and one of the quarry owners only manufactures part of the output of his quarry. Almost as much rough stock is brought into the district to be manufactured as is shipped away.

There has been, since 1920, an apparent decline in the manufacture of rough stone quarried in Quincy. This decrease is possibly accounted for, among other causes, by conditions arising through labor troubles in the district in 1921 and 1922. Subsequently, when attempts were made to operate under the open shop, there was a considerable increase in the use of foreign rough granite by local manufacturers.

Unlike Barre, there are few large finishing shops in Quincy and in all the shops, large and small, machinery is not so extensively used. Also, unlike Barre, many of the manufacturers of monuments at Quincy do a considerable retail business, selling to consumers in the metropolitan area of Boston. In the appendix are presented some detailed statistics (Table B) pertaining to the Quincy district. In 1924 the output of the district was worth \$2,476,796, of this \$541,672 being the value of the rough stock and \$1,935,124, the value added by manufacturing.

Minnesota.—Minnesota, which in 1922 ranked second in quantity of monumental granite sold, of recent years has been surpassed both by Vermont and Massachusetts. The predominating granite quarried in Minnesota is the red variety, although there is also a small quantity of gray and black produced. But little is shipped to other districts in unmanufactured form. The center of the industry is at St. Cloud, where in general the manufacturers use the product of their own quarries. Some manufacturers, however, operate exclusively with purchased raw material. The monumental granite sold or used by producers in this district was 312,170 cubic feet valued at \$1,938,839

in 1924 and 260,620 cubic feet valued at \$1,530,591 in 1925. (See Table C, p. 69, for Minnesota statistics.)

Wisconsin.—The granites produced in Wisconsin are dark red, reddish brown, dark gray, dark green, and black, the dark reds and reddish-browns being the predominating colors. The principal centers of the industry are at Wausau, in the north central part of the State, and at Montello in the south central part. The granite quarried at Wausau ranges in color from gray with a pinkish cast, through reddish brown to a brilliant red; that quarried at Montello is of a mahogany shade. The red and mahogany granites of these districts are of a high quality and usually sell at higher prices than other domestic granites. The annual sales of monumental granite in Wisconsin are approximately 150,000 cubic feet.

New Hampshire.—Concord and Milford are the two leading granite-producing centers of New Hampshire. The greater part of the granite produced in the State is used in the construction of buildings and for other uses than the manufacture of monuments. New Hampshire granite is generally light in color and is not used in the manufacture of polished dies.

Rhode Island and Connecticut.—Pink and bluish-gray granites are produced at Westerly, R. I., and at Niantic, Conn. Although monuments produced from Rhode Island and Connecticut granite are in demand on account of the fine grain and the high polish taken by the stone, the total sales are small compared with Massachusetts and Vermont. The sales in Connecticut and Rhode Island have been about 200,000 cubic feet annually in recent years.

Pennsylvania.—Very little true granite for monumental use is quarried in Pennsylvania, the greater part of the output being properly gneiss or diabase. The black, so-called granite, of the eastern part of the state, is used for monuments and competes directly with the imported Swedish black stone. The principal quarries for the black stone are at French Creek and Coopersburg in the southeastern part of the State. The average yearly sales of monumental granite produced in Pennsylvania total approximately 30,000 cubic feet.

Southeastern Atlantic States.—The quantity of monumental granite quarried in the three largest southern granite-producing States, namely, North Carolina, South Carolina, and Georgia, is relatively small but of growing importance. Light gray granite predominates in these States and is used mostly for building. Well-known deposits of this section are those at Mount Airy, N. C., and Stone Mountain, Ga.

PRODUCTION IN FOREIGN COUNTRIES

Sweden.—Sweden ranks first among European countries as a producer of monumental granite. The manufacturing branch of the industry in Sweden is much less highly developed than quarrying. Inasmuch as the quarries are situated for the most part near the coast, the cost attending export is comparatively small. Large amounts of unmanufactured stone are exported, chiefly to Germany and Scotland, where it is manufactured into monumental granite largely for export to the United States. Most of the unmanufactured stone which finds a market in the United States consists of several varieties of red granite and of a so-called black granite, commercially known by that name, although not actually a granite. The several grades

of Swedish black stone exported to the United States have perceptible differences in grain, texture, and color. The Swedish black granite and the black granite of Pennsylvania have the same general appearance.

A considerable quantity of Swedish granite is manufactured in Sweden to meet the demand in Sweden for monuments and for export to the continent. The types of monuments manufactured for the Swedish and continental trade differ greatly from those in demand in the United States, and are in fact unsalable in the United States. The exports of monuments to the United States are of types suited to the American demand and their amount is small.

Table 3 gives the data on the Swedish export trade to all countries and to the United States in recent years, both with respect to manufactured and unmanufactured granite.

TABLE 3.—*Monumental granite: Exports from Sweden to all countries and to the United States of manufactured and unmanufactured granite for specified years*

[Source: Swedish official statistics. Quantities reported in metric tons]

Year	Unmanufactured granite, exports to—			Manufactured granite (polished or ground stone), exports to—		
	All countries	United States	Ratio of exports to United States to exports to all countries	All countries	United States	Ratio of exports to United States to exports to all countries
	<i>Cubic feet</i> ¹	<i>Cubic feet</i> ¹	<i>Per cent</i>	<i>Cubic feet</i> ¹	<i>Cubic feet</i> ¹	<i>Per cent</i>
1918.....	590,744	(²)	-----	7,624	1,656	22.0
1921.....	159,686	323	0.2	4,440	1,844	30.2
1922.....	113,701	29,050	25.5	5,664	3,036	53.6
1923.....	224,476	51,009	22.7	5,604	2,400	42.8
1924.....	309,645	69,636	22.5	4,644	3,504	75.4

¹ For unmanufactured, 7 cubic feet to 1 metric ton; for manufactured, 12 cubic feet to 1 metric ton.

² Not separately reported.

Germany.—The most important German quarries producing stone, which in the form of finished monumental granite is shipped to the United States, are in Saxony and Bavaria. Very little, if any, granite produced in these districts is exported to the United States in the rough block.

Of the native German stone, which is manufactured into monuments for export to the United States, a considerable percentage consists of syenite, a crystalline granular igneous rock composed of triclinic feldspar and containing little or no quartz. This stone contains no mica and is proportionately richer in hornblende. Syenite a term usually applied to hornblende granite, is commonly and commercially known and sold in the United States as granite.

The American market on the whole prefers, with respect to German monumental products, those which have been fabricated from Swedish and Finnish granite. With lower costs of fabrication than Sweden and Scotland, German manufacturers have become, chiefly upon the basis of imported material, by far the leading exporters of manufactured monumental granite to the United States. The types of monuments chiefly in demand in the United States differ greatly from those which the German producers supply to their

own market, and to other European countries, and consequently the dies produced for the American market are not salable elsewhere, and are almost invariably manufactured to order.

Ordinarily the German producers purchase rough stock only to meet the requirements of orders received, but some of them carry on hand a considerable supply of rough stock. The sizes of the blocks comprising this stock of raw material determine for these manufacturers, in a measure, the orders they will take. The American purchases are, consequently, often distributed among a number of manufacturers. In the more important districts the American orders are usually placed by purchasing agents acting for large American wholesale distributors. As a means for meeting the considerable outlay of funds for current operating expenses, the cash payments obtainable for American shipments are often an inducement to accept United States orders at lower prices than would otherwise be obtained. The German manufacturers chiefly engaged in producing the manufactured monumental granite which is exported to the United States have installed modern machinery and are equipped to fabricate granite in any quantity for all markets.

Table 4 shows, as nearly as available statistics permit, the exports of manufactured granite of various kinds from Germany, to all countries and to the United States for certain specified years.

TABLE 4.—*Monumental granite: Exports from Germany to all countries and to the United States, of manufactured stone, including granite,¹ 1920-1925*

(Source: German official statistics. Quantities reported in metric tons)

Year	Exports to all countries	Exports to the United States
	<i>Cubic feet²</i>	<i>Cubic feet²</i>
1920.....	56,208	4,651.2
1922.....	102,402	10,593.6
1923.....	110,928	24,393.6
1924.....	79,028	16,341.6
1925.....	59,832	16,732.8

¹ Described as "stonemason's products, polished, hewn, or ground." Includes other stones beside granite such as porphyry, syenite, and marble.

² 12 cubic feet to 1 metric ton.

Finland.—All quarrying was practically discontinued in Finland during the war period, but by 1925 the quarrymen were in a position to ship large quantities of granite to other countries. The red granite of Finland is in great demand, and one type, Red Balmoral, is shipped in the form of rough blocks in appreciable quantities to the United States, and to Scotland and Germany where it is converted into finished monuments for export to America and European countries.

Imports into the United States of finished monumental granite from Finland have been, during three recent years, as follows:

	Cubic feet	Value
1924.....	3,702	\$19,573
1925.....	7,510	40,215
1926.....	12,683	77,114

Scotland.—The center of the granite industry in Scotland is Aberdeen, somewhat disadvantageously situated with respect to export trade because shipments are made from Glasgow. There is an abundant supply of native stone for domestic use, but of recent years no rough granite has been exported to the United States and but a small amount of monuments fabricated from the native stone. For the United States export trade in monuments the manufacturers procure their rough stock from Sweden and Finland; perhaps the best known class of exports is the Red Balmoral, imported from Finland and finished at Aberdeen. For some years the exports to the United States have been small and declining due to the competition of Germany, Finland, and Czechoslovakia; but through established reputation in America, a number of the finishing shops still hold a part of their American trade.

The report from this point onward presents the data respecting monumental granite segregated into two parts: Part I, dealing with manufactured granite and Part II, dealing with unmanufactured granite.

PART I

MANUFACTURED MONUMENTAL GRANITE

UNITED STATES IMPORTS AND EXPORTS

Imports.—The amount of imports of manufactured monumental granite—that is, of “granite suitable for use as monumental * * * stone, * * * hewn, dressed, or polished, or otherwise manufactured”—can not be ascertained in cubic feet for the years preceding the enactment of the tariff act of 1922. In value they amounted to about an annual average of \$152,000 during the period 1908–1916, declining to almost nothing during the last two years of the war. There was a recovery to \$108,193 in 1920, followed by a substantial increase since 1921. In 1926 the pre-war value of imports was substantially exceeded, amounting in value to \$321,183 and in quantity to 42,371 cubic feet. The statistics for imports of manufactured monumental granite may include a small proportion of stone finished for use in the construction of buildings. The dies imported are made from different varieties of granite, in numerous types and sizes, and may be finished in “rough face,” “hammered or axed,” with one or more exposed surfaces polished, or in any combination of these finishes.

An analysis of invoices of entries at the port of Philadelphia indicates that, in both volume and value, imported dies finished with all exposed surfaces polished, greatly exceed the imports of dies otherwise finished. Information obtained from domestic manufacturers and from testimony presented at the public hearing indicates that in practically all of the large producing centers in the United States 50 per cent or more of the total annual output of manufactured monumental granite consisted of dies finished with all of the exposed surfaces polished. As will be shown in more detail in the cost section of this report, polished dies of certain types and sizes representative of the industry were selected by the commission for cost comparisons in this investigation.

Exports.—Exports of granite from the United States are not separately reported by the Department of Commerce. It is known, however, that exports of manufactured domestic granite are small.

PRINCIPAL COMPETING COUNTRY

Table 5 shows by country of origin, imports of manufactured monumental granite under the tariff act of 1922. Statistics of imports by countries under prior tariff acts are not available. The statistics shown in Table 5 may include some finished monumental granite used for building, but the quantity so included is relatively small.

For the purposes of section 315, Germany is the principal competing country with respect to manufactured monumental granite.

TABLE 5.—*Monumental granite, hewn, dressed, or polished, or otherwise manufactured.¹ Imports for consumption by countries, 1922 (3 months) to 1926*

[Quantity reported in pounds, converted in this table on the basis of 12 cubic feet to 1 metric ton]

Countries	1922 ¹		1923		1924		1925		1926	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	<i>Cu. ft.</i>		<i>Cu. ft.</i>		<i>Cu. ft.</i>		<i>Cu. ft.</i>		<i>Cu. ft.</i>	
Germany.....	1, 702	\$12, 224	22, 802	\$160, 170	17, 452	\$121, 859	23, 459	\$168, 056	20, 481	\$164, 701
United Kingdom.....	2, 793	28, 568	7, 120	65, 139	12, 024	98, 175	8, 740	81, 325	4, 502	42, 506
Finland.....	80	496	1, 582	9, 637	3, 325	19, 573	6, 746	40, 215	12, 083	77, 114
Sweden.....	450	6, 044	1, 989	17, 784	5, 187	33, 001	3, 209	25, 291	2, 428	21, 578
Czechoslovakia.....			1, 722	10, 280	4, 547	24, 492	4, 918	33, 039	1, 789	11, 430
All other.....	122	2, 963	373	4, 518	829	5, 080	513	9, 128	498	4, 154
Total.....	5, 147	50, 295	35, 588	267, 478	43, 314	302, 180	47, 585	357, 054	42, 371	321, 483

¹ The statistics may include some finished granite used for building.

² Sept. 22 to Dec. 31, inclusive, 1922.

COSTS OF PRODUCTION IN THE UNITED STATES

Types of granite dies used for cost comparison.

As previously stated, the majority of imports of polished monumental granite consists of dies—the main stone of the monument—polished on all exposed surfaces, and over 50 per cent of the domestic production in the large centers is of similar polished dies. For purposes of cost comparison the commission selected three types of dies—flat top, oval top, and serpentine top—and four sizes of each type.¹ This selection of dies for cost purposes was subsequently approved, practically without dissent, by manufacturers in the important domestic districts as typical of the polished monumental granite sold in the United States. These types and sizes also constitute, according to foreign quarriers and manufacturers, the largest percentage of shipments in recent years from competing countries to the United States.

Scope of the cost investigation.

Cost data for granite dies for the year 1925 were obtained in five districts in the United States. The granites—red, gray, and black—produced and finished in these districts, are representative of the domestic industry as a whole, and are comparable with the different varieties of imported finished granite. Cost data were originally secured from 8 companies in or near Barre, the largest producing Vermont district; 5 companies in Quincy, Mass.; 6 companies in St. Cloud, Minn.; 3 companies in Wisconsin; and 2 companies in Pennsylvania. Later additional field work was carried on for the purpose of checking some elements of cost in the original figures and of obtaining additional data. This additional field work covered all of the companies from whom costs were originally obtained in Massachusetts and Minnesota, and five of the eight companies in Vermont.

Operations of manufacture.

The principal operations involved in the manufacture of polished dies, described in their usual sequence are as follows:

¹ See Table 6, p. 17.

(1) *Sawing*.—Sawing is the cutting of the rough quarry block (saw block) by means of iron band saw, or circular saws, used in conjunction with abrasive materials. In the former the iron bands are used in gangs so that a number of parallel cuts are made at one time, whereas in the latter the iron disk makes a single cut, but much more rapidly.

(2) *Lining*.—Lining consists in working the edges of the rough quarry block to dimensions, usually accomplished by the use of pneumatic chisels.

(3) *Pointing or surfacing*.—Pointing or surfacing consists of dressing the rough block approximately to the desired surfaces after the lining has been done. When surfacing is done by mallet and chisel, or by the ordinary pneumatic chisel, it is called hand pointing. When done by large machines it is called machine surfacing. In both cases the chisel or tool is guided by the workman. When surfaces are hand pointed, pointing and lining become one operation and the direct labor cost per square foot of area surfaced includes the costs of both lining and surfacing.

(4) *Polishing*.—Polishing consists of grinding with abrasives the surface of the stone to secure the required smoothness and luster. This operation may be done by hand or by machinery, and on individual stones or groups of stones. In "hand" polishing, small polishing wheels, power driven, are applied by the workman to the surface of the individual stone. In machine or "bed" polishing a number of stones are mounted in a matrix of plaster, and heavy polishing wheels are guided over the bed by the workman. Large polishing beds may contain up to 100 square feet of stone surface. In domestic plants, bed polishing is usually done on the large surfaces, and not uncommonly on all flat surfaces; in foreign plants, individual polishing machines are used for all surfaces. Oval and serpentine tops are invariably polished by individual machines.

(5) *Jointing*.—Jointing consists in chiseling by hand true dimension lines around the bottom surface of the stone in order that the monument may be set firmly on a base stone. The area within the joint lines may be surfaced roughly and suffices as long as it is slightly convex with respect to the joint lines.

(6) *Rubbing corners*.—Rubbing corners (a hand operation) consists in smoothing the sharp edges of granite dies where the polished surfaces meet. The edges left sharp and rough after the polishing always require at least to be rubbed.

(7) *Rounding corners*.—To secure a superior finish for the corners, the operation of rounding is sometimes performed. This consists in grinding and polishing either by hand or by means of power-driven machinery, and is a more expensive operation than rubbing. In domestic practice the finish of corners varies from plant to plant, and in some instances the term "rubbing" is used broadly to include "rounding."

The nature and sequence of the operations set forth above vary somewhat in different districts and in individual plants.

In the Barre, Vt., district the finishing plants are generally well-equipped with modern machinery, including saws, and, in some instances, large bed-polishing machines. In the manufacture of the types of dies under consideration the use of saws in preparing the larger surfaces of the stone for polishing results in a comparatively small direct labor cost per square foot of prepared surface. The ratio

of manufacturing expense to the direct labor cost for this stage of manufacture is materially increased where saws are used. In addition, the surfaces of the ends and flat tops of the dies are seldom "hand-pointed" in the Vermont district, the excess stone in the rough block being removed by means of large machines known as machine surfacers. The use of bed-polishing machines is also a significant factor in the relatively low direct labor costs of polishing in some of the plants in this district. The total costs in the Vermont district accordingly shows relatively low direct labor costs and correspondingly high manufacturing expense.

The methods usually employed in the Quincy, Mass., district afford a striking contrast in several important operations. Saws are not commonly used; the general practice in this district is to machine-surface the front and back faces, and to hand-point the ends and flat tops. In these two operations the direct labor cost per square foot of dressed surface is considerably greater than in the Vermont district and the manufacturing expense applicable to these operations is correspondingly lower. Moreover in the Quincy district little polishing is done in the plants of the manufacturers of the dies. With possibly two or three exceptions the finishers do not operate polishing sheds in conjunction with their other operations, but send the dressed stone to polishing plants in the district which are engaged almost exclusively in this class of work. These polishing plants grind down and polish the stone to the required dimensions, and consequently the manufacturers in Quincy do not surface the rough stone as closely to dimensions as is usual in the Vermont and Minnesota districts where the manufacturers themselves do the grinding and polishing. In the Quincy district the labor cost incidental to the surfacing operations, therefore, appears relatively low.

In the Minnesota district comparatively little sawing was done during the period covered by the investigation. It was the usual practice in this district to machine surface fronts and backs, and to hand-point ends and flat tops. All flat surfaces were commonly polished in beds, and oval and serpentine tops by means of individual polishing machines.

Methods of obtaining costs.

The domestic companies furnishing cost information to the commission, with but one exception, did not keep detailed cost records. However, from the records for their total operations the relation between direct labor as a whole and manufacturing expense as a whole, and between total selling expenses and total sales, could be determined. The methods of obtaining and calculating the costs of a granite die for the various cost elements, such as raw material, direct labor, and manufacturing expense, are given in detail below.

Raw material.—The prices paid for quarry blocks are a matter of record with the manufacturers who purchase their rough stock from independent quarriers, as is the rule in Barre and Quincy, and such prices paid were taken as the cost of raw material for such manufacturers. In the districts where manufacturers of dies quarry their own stock, the raw material cost was obtained from the quarrying records of the manufacturers.

In Barre the cost of the rough stock used in calculating costs of monumental dies for the district is the price paid to the quarriers by four manufacturing companies for dark stock dimension blocks; the

price paid by two companies for saw blocks delivered at their plants in Barre; and the price paid by two companies for saw blocks, plus transportation charges from Barre to their plants located in adjacent towns. For the Quincy district the manufacturing cost for rough stock is the price paid by manufacturers to quarriers for dark stock dimension blocks, except in one instance where a finishing plant purchases from an affiliated quarry company. For the St. Cloud, Minn., district the cost of raw material as reported by five manufacturers is the quarry cost, and by one the price paid to the quarrier. In the Wisconsin and Pennsylvania areas the manufacturers' cost for rough stock is the quarrying cost of the stone.

The cost of raw material to the manufacturers of dies, used in calculating the cost of manufacturing for the several districts has been, therefore, determined upon two distinct bases. In those districts where the industry is integrated, such as Minnesota largely and Wisconsin entirely, the cost of the raw material to the manufacturers is the cost of producing the rough stock. In the other districts where the two branches of the industry are separated, both the price paid for rough stock and the quarrying cost of rough stock are known.

Direct labor costs in general.—The determination of direct labor costs per unit of measurement for the particular operations involved in producing polished granite dies of the sizes and types selected for cost comparison was found to be exceedingly difficult. There existed in the industry no established method of determining costs of production based on actual expenditures for specific labor operations. In most plants there were practically no records available showing the direct labor per unit of measurement expended on the various operations of production, the workmen being paid by the hour with no summarization of costs for the several operations. And yet direct labor costs by operations had to be secured in order to obtain the total costs of the different types and sizes of dies to be compared.

The manufacturers of the different districts were accordingly requested to make tests covering a short period of production, to determine in the first instance the time required, and upon that basis, the wage outlay for each operation performed upon dies then being manufactured of approximately the same sizes and types as those selected for cost comparison. The reported results, upon tabulation, showed considerable variation or divergence in unit labor costs for a given operation on a given surface of the dies, as between districts and even as between plants within a district. These variations may be in part attributed to (1) differences in the working qualities of the various classes of granite, some of which are much more difficult to dress than others; (2) differences in the amount of stone that had to be removed from the several surfaces of irregular quarry blocks used to produce a finished die of a given dimension; (3) differences in plant equipment; and (4) differences in the skill and industry of individual workers in the several plants.

In the labor cost data for particular types of dies as thus obtained, there were found to be a number of inconsistencies and inaccuracies not accounted for by the variations in operation costs due to the foregoing factors. This was particularly true with respect to the ratios of the total labor cost for dressing and polishing a flat side or end of given dimensions as compared with the total labor cost of similar operations for a flat top of like dimensions and to a lesser extent for

oval and serpentine tops. These ratios as thus originally obtained often seemed to be arbitrary and based upon conventions of the industry rather than upon actually ascertained labor costs.

Field work was accordingly undertaken a second time for the especial purpose of obtaining actual labor costs in place of conventional labor costs, for the specific operations involved in the manufacture of the types and sizes of dies used for cost comparison. From the records at several of the plants considerable additional data were secured showing the labor time expended on the different operations. The unit labor costs as first obtained were not reviewed in the Wisconsin and Pennsylvania districts, nor for three companies in Vermont. Any error which may be involved in the use of the unreviewed original data from these sources would, however, affect slightly the average cost of the composite granite die for the United States as a whole. It is to be noted in this connection that any changes made, through the review, in the basic direct labor unit costs used in calculating the total costs of production of dies are of importance because manufacturing expense has been allocated to the dies as a percentage of direct labor.

Costs of finishing corners.—In obtaining costs in the domestic districts there was some uncertainty with respect to the operation of finishing the corners of the dies. The extent to which the corners were finished by the several manufacturers varied greatly, and in reporting their direct labor costs for such operations, no distinction was made by them with respect to the degree of finish. Some producers did not report direct labor costs for finishing corners because their costs were for dies having the corners merely rubbed; and the labor costs involved in this comparatively simple operation were included in the general manufacturing expense of the plant. Manufacturers in two of the important districts—Barre, Vt., and St. Cloud, Minn.—reported direct labor costs for finishing corners ranging from 11 cents to 27.5 cents per linear foot. None of the manufacturers from which cost data were obtained in the Quincy, Mass., district reported direct labor costs for this operation. The manufacturers in this district do not, as a rule, polish their own products, but send them to polishing plants in the district which specialize in this class of manufacture. Two of the five plants from which cost data were obtained polish their own stone, but they did not report direct labor costs for finishing corners.

An analysis of the direct labor costs for finishing corners reported by the various companies indicated that the rates per linear foot used by them were for operations that varied considerably; and that in some instances, the degree of finish given the corners of the dies did not correspond to the finish ordinarily given the corners by the German manufacturers.

By reason of the fact that the degree of finish given the corners of the domestic dies could not be determined from the data obtained from the manufacturers, an average cost per linear foot was used for the Vermont and for the Minnesota districts, respectively, based on the simple average of the lower rates per linear foot reported by the manufacturers in each of these two districts, upon the assumption that these rates were for operations corresponding to those used in calculating the costs of the German dies. The rate used for the Vermont district is 12.5 cents per linear foot, which is the simple

average of the rates of 11 cents and 14 cents reported by two companies. The rate of 12.5 cents per linear foot was also used in the absence of more complete data, in calculating the costs of the composite die for the two companies in the Massachusetts district which polish their own stone, but which did not report direct labor costs for finishing corners. The rate used for the Minnesota district is 17.6 cents per linear foot, which is the simple average of the rates reported by three Minnesota companies, namely, 16.5 cents, 16.8 cents, and 19.5 cents per linear foot. The average rate of 12.5 cents per linear foot was used in calculating the costs of the composite die for each of the eight companies in the Vermont district, and the average rate of 17.6 cents was used in calculating the costs of the composite die for each of the six companies in the Minnesota district, from which cost data were obtained.

Manufacturing expense.—In the several domestic die-producing districts the operating statement for 1924 of each plant visited was analyzed and the ratio of total operating expense to the total direct labor for that year, determined and expressed in the form of a percentage. To obtain the amount of manufacturing expense applicable to each particular die this percentage was applied to the direct labor cost of each type and size of die. One company in Vermont and one in Wisconsin reported manufacturing expense as kept on a departmental basis. In both the original and revised shop costs of domestic dies, however, the manufacturing expense for these two companies has been allocated to the dies by means of a calculated percentage of direct labor, in the same manner as was done for all other companies, in order that the costs for all companies might be on a uniform basis.

Manufacturing expense includes the following items: Fuel, purchased power, shop supplies, repairs and maintenance, general labor (blacksmiths, cranemen, saw attendants, and polishing bed setters), hauling and trucking, office supplies, administrative expense, taxes (other than Federal income tax), depreciation and obsolescence, and miscellaneous expense.

Packing expense.—Packing expenses have been applied to the individual dies by means of percentages based for each company on the determined ratio of total charges for packing to total shop cost.

Imputed interest.—Imputed interest has been calculated for 1924 at 6 per cent on the depreciated value of the fixed assets of each company as shown by its financial statement for that year.

Selling expenses.—Selling expenses for finished monumental granite produced in the United States have not been used in the cost comparison and they are not given in the report.

Summary of shop costs.

In Table 6 are summarized the cost data obtained by the investigation for the leading granite monument producing districts of the United States; namely, Vermont, Massachusetts, and Minnesota. A summary table (Table D) for Wisconsin is presented in the appendix of this report and one table for Pennsylvania in the confidential section.

The costs obtained in the Wisconsin and in the Pennsylvania granite-producing areas are not presented in these tables because (1) the volume of production in these districts is not sufficient to warrant their use in the simple unweighted average costs, and (2)

the dies produced in Wisconsin and Pennsylvania are in the nature of specialties and are sold at a higher price level than those produced in the three principal districts. Sales by manufacturers in the Vermont, Massachusetts, and Minnesota areas are on about the same price level, and the average price of the types and sizes of dies used for cost comparisons is considerably less than the average price for the Pennsylvania and Wisconsin areas, as indicated in the following price summary.

Average selling price of domestic polished granite dies, average of three types and four sizes, for the year 1925

Vermont.....	\$132. 05
Massachusetts.....	128. 30
Minnesota.....	124. 49
Simple average.....	128. 28
Pennsylvania.....	148. 46
Wisconsin.....	188. 72

The principal competition in the granite monument trade of the United States is in dies made from gray and red granites which are recognized as staples, and which are typical of the products of the three large domestic districts—Vermont, Massachusetts, and Minnesota. The products of these three districts are used for the purpose of a cost comparison in Table 6 because (1) they constitute the staple articles in the domestic supply of granite dies, and represent the bulk of sales; (2) they are the chief domestic sources of supply for the competitive markets reached by imported granites; and (3) they are directly competitive among themselves.

In Table 6 are shown for each of the three principal districts the average shop cost of all the plants of the district where costs were obtained, both by size of die and style of top; the average shop cost by type of top and four sizes collectively; and in the last column, the final average for the district, concentrating the detailed cost information previously given in the table. These final unweighted averages are costs for what are referred to in this report as the *composite die*. In addition are shown the imputed interest applicable to each die, and the simple average of such costs. The final tabulation in Table 6 summarizes the data for the three principal districts; the final average cost shown in this table represents the unweighted average cost of polished granite dies for the whole national industry.

TABLE 6.—Manufactured monumental granite, United States: Summary of costs of production, shop costs, and imputed interest for dies of the selected sizes and types of tops, with all exposed surfaces polished, for the year 1925

COSTS¹ FOR VERMONT

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$51.37	\$51.37	\$51.37	\$51.37	\$35.65	\$35.65	\$35.65	\$35.65	\$31.80	\$31.80	\$31.80	\$31.80
Direct labor.....	30.40	38.28	40.98	36.58	24.56	30.44	32.43	29.14	22.00	27.95	29.71	26.78
Manufacturing expense.....	61.60	64.23	68.86	61.53	42.89	50.84	54.25	49.23	33.18	46.05	49.70	44.95
Packing expense.....	1.93	2.22	2.32	2.16	1.49	1.68	1.76	1.64	1.34	1.53	1.60	1.49
Total shop cost.....	153.29	156.10	163.53	151.64	104.29	118.61	124.09	115.66	94.01	107.94	112.81	104.92
Imputed interest.....	2.25	2.62	2.74	2.53	1.72	1.98	2.07	1.92	1.57	1.81	1.89	1.76
Total shop cost including interest.....	157.54	158.72	166.27	154.17	106.01	120.59	126.16	117.58	95.58	109.75	114.70	106.68
	Average of all sizes											
Item	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"						Average of all sizes					
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$20.97	\$20.97	\$20.97	\$20.97	\$20.97	\$20.97	\$20.97	\$20.97	\$34.95	\$34.95	\$34.95	\$34.95
Direct labor.....	17.73	21.32	22.86	20.64	22.86	20.64	23.87	20.50	29.50	31.50	28.29	28.29
Manufacturing expense.....	28.75	35.54	38.17	34.49	38.17	34.49	40.50	40.32	49.32	52.74	47.52	47.52
Packing expense.....	.99	1.12	1.18	1.10	1.18	1.10	1.44	1.64	1.64	1.71	1.60	1.60
Total shop cost.....	68.44	78.95	83.18	77.20	83.18	77.20	100.76	115.41	120.90	120.90	112.36	112.36
Imputed interest.....	1.16	1.33	1.39	1.29	1.39	1.29	1.67	1.83	2.02	2.02	1.87	1.87
Total shop cost, including interest.....	70.60	80.28	84.57	78.49	84.57	78.49	102.43	117.34	122.92	122.92	114.23	114.23

¹ All costs are simple averages.

TABLE 6.—Manufactured monumental granite, United States: Summary of costs of production, shop costs, and imputed interest for dies of the selected sizes and types of tops, with all exposed surfaces polished, for the year 1925—Continued

COSTS: FOR MASSACHUSETTS

Item	Size and type of die																
	3' 6" by 1' 2" by 3' 0"			3' 0" by 1' 0" by 2' 10"			2' 8" by 1' 0" by 2' 10"			Average of all sizes							
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top				Oval top	Serpentine top	Average		
Rough stock.....	\$51.01	\$51.01	\$51.01	\$51.01	\$35.40	\$35.40	\$35.40	\$35.40	\$31.57	\$31.57	\$31.57	\$31.57	\$31.57	\$31.57	\$31.57	\$31.57	\$31.57
Direct labor.....	2.52	29.05	31.83	28.01	13.06	23.29	24.88	22.06	16.70	21.35	22.76	22.06	16.70	21.35	22.76	20.27	20.27
Manufacturing expense.....	56.33	73.74	80.97	78.41	45.40	53.00	63.30	55.56	4.85	52.81	57.58	52.81	4.85	52.81	57.58	50.75	50.75
Packing expense.....	2.26	2.71	2.88	2.62	1.40	1.64	1.73	1.59	1.67	1.86	1.97	1.59	1.67	1.86	1.97	1.80	1.80
Total shop cost.....	132.32	157.14	166.60	152.06	100.26	118.33	125.31	114.63	91.69	107.59	113.88	114.63	91.69	107.59	113.88	104.39	104.39
Imputed interest.....	1.03	1.27	1.30	1.23	8	.95	1.01	.92	.72	.85	.92	.92	.72	.85	.92	.83	.83
Total shop cost, including interest.....	133.35	158.41	168.08	153.28	101.04	119.28	126.32	115.55	92.41	108.46	114.80	115.55	92.41	108.46	114.80	105.22	105.22
	Size and type of die—Continued																
	2' 0" by 1' 0" by 2' 0"																
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average					
Rough stock.....	\$20.82	\$20.82	\$20.82	\$20.82	\$20.82	\$20.82	\$20.82	\$20.82	\$24.70	\$24.70	\$24.70	\$24.70	\$24.70	\$24.70	\$24.70	\$24.70	\$24.70
Direct labor.....	12.87	16.24	19.30	16.20	19.30	17.54	17.54	17.54	22.66	22.66	24.71	22.66	22.66	24.71	24.71	21.63	21.63
Manufacturing expense.....	32.31	39.76	45.65	39.24	45.65	53.24	53.24	44.02	56.08	56.08	61.88	56.08	56.08	61.88	61.88	53.99	53.99
Packing expense.....	1.15	1.50	1.54	1.53	1.54	1.53	1.53	1.59	1.89	1.89	2.03	1.89	1.89	2.03	2.03	1.84	1.84
Total shop cost.....	67.15	78.27	87.40	77.61	87.40	97.75	97.63	97.85	115.33	115.33	123.32	115.33	115.33	123.32	123.32	112.16	112.16
Imputed interest.....	.52	.63	.75	.63	.75	.75	.63	.76	.93	.93	1.02	.93	.93	1.02	1.02	.91	.91
Total shop cost, including interest.....	67.67	78.90	88.15	78.24	88.15	98.50	98.26	98.61	116.26	116.26	124.34	116.26	116.26	124.34	124.34	113.07	113.07

MONUMENTAL GRANITE

COSTS¹ FOR MINNESOTA

Item	Size and type of die														
	3' 6" by 1' 2" by 3' 0"			3' 0" by 1' 0" by 2' 10"			2' 8" by 1' 0" by 2' 10"			Average of all sizes					
	Flat top	Oval top	Serpentine top	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$33.34	\$33.34	\$33.34	\$23.14	\$23.14	\$23.14	\$23.14	\$20.64	\$20.64	\$20.64	\$20.64	\$20.64	\$20.64	\$20.64	\$20.64
Direct labor.....	31.07	43.53	46.83	28.43	35.22	37.59	33.08	24.64	32.46	34.57	31.56	34.57	34.57	34.57	31.56
Manufacturing expense.....	44.69	62.97	67.49	38.28	53.56	54.35	48.73	35.99	47.06	50.01	44.26	47.06	50.01	44.26	44.26
Packing expense.....	1.28	1.65	1.74	1.02	1.31	1.36	1.23	1.94	1.18	1.23	1.11	1.18	1.23	1.11	1.11
Total shop cost.....	110.38	141.54	149.40	88.87	113.23	116.44	102.18	81.91	101.34	106.45	96.56	101.34	106.45	96.56	96.56
Imputed interest.....	2.64	3.42	3.63	2.11	2.77	2.81	2.56	1.94	2.43	2.57	2.32	2.43	2.57	2.32	2.32
Total shop costs including interest.....	113.02	144.96	153.03	90.98	116.00	119.25	104.74	83.85	103.77	109.02	98.88	103.77	109.02	98.88	98.88
	Size and type of die—Continued														
	2' 0" by 1' 0" by 2' 6"														
	Flat top	Oval top	Serpentine top	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$13.61	\$13.61	\$13.61	\$13.61	\$13.61	\$13.61	\$13.61	\$22.68	\$22.68	\$22.68	\$22.68	\$22.68	\$22.68	\$22.68	\$22.68
Direct labor.....	19.53	25.27	26.86	25.27	28.89	28.89	25.42	34.13	34.13	34.46	32.00	34.13	34.46	32.00	32.00
Manufacturing expense.....	28.33	36.67	38.89	38.89	34.63	36.74	36.74	50.07	50.07	52.68	46.49	50.07	52.68	46.49	46.49
Packing expense.....	.72	.88	.93	.93	.84	.84	.99	1.25	1.25	1.23	1.19	1.25	1.23	1.19	1.19
Total shop cost.....	62.19	76.43	80.29	80.29	72.97	85.83	85.83	108.13	108.13	113.14	102.96	108.13	113.14	102.96	102.96
Imputed interest.....	1.46	1.88	1.93	1.93	1.74	1.74	2.04	2.61	2.61	2.74	2.47	2.61	2.74	2.47	2.47
Total shop costs including interest.....	63.65	78.26	82.22	82.22	74.71	87.57	87.57	110.74	110.74	115.88	104.83	110.74	115.88	104.83	104.83

¹ All costs are simple averages.
² Includes outside polishing, \$24.99.
³ Includes outside polishing, \$31.18.
⁴ Includes outside polishing, \$31.56.
⁵ Includes outside polishing, \$35.03.
⁶ Includes outside polishing, \$22.99.
⁷ Includes outside polishing, \$31.73.
⁸ Includes outside polishing, \$17.79.
⁹ Includes outside polishing, \$21.22.
¹⁰ Includes outside polishing, \$23.54.

TABLE 6.—Manufactured monumental granite, United States: Summary of costs of production, shop costs, and imputed interest for dies of the selected sizes and types of tops, with all exposed surfaces polished, for the year 1925—Continued

UNWEIGHTED AVERAGE COSTS: FOR THE VERMONT, MASSACHUSETTS, AND MINNESOTA DISTRICTS COMBINED

Item	Size and type of die															
	3' 6" by 1' 2" by 3' 0"			3' 0" by 1' 0" by 2' 10"			2' 8" by 1' 0" by 2' 10"			Average of all sizes						
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top				Oval top	Serpentine top	Average	
Rough stock.....	\$45.24	\$45.24	\$45.24	\$45.24	\$31.40	\$31.40	\$31.40	\$31.40	\$28.00	\$28.00	\$28.00	\$28.00	\$28.00	\$28.00	\$28.00	\$28.00
Direct labor.....	28.03	37.18	39.88	33.03	23.02	29.65	31.63	28.10	21.34	27.26	29.02	25.87	29.02	27.31	30.89	27.31
Manufacturing expense.....	50.91	66.98	72.44	63.44	42.09	54.13	57.30	51.17	38.58	48.82	52.43	46.82	52.43	51.83	49.33	49.33
Packing expense.....	1.82	2.19	2.31	2.11	1.50	1.54	1.62	1.49	1.28	1.52	1.60	1.47	1.60	1.59	1.69	1.54
Total shop cost.....	126.00	151.59	159.87	145.82	97.81	116.72	121.95	112.16	89.20	105.62	111.05	104.96	111.05	105.62	111.12	108.96
Imputed interest.....	1.97	2.44	2.59	2.33	1.53	1.90	1.96	1.80	1.41	1.70	1.79	1.63	1.79	1.70	1.83	1.75
Total shop cost including interest.....	127.97	154.03	162.46	148.15	99.34	118.62	123.91	113.96	90.61	107.32	112.84	106.59	112.84	107.32	112.95	110.71
Item	Size and type of die—Continued															
	2' 0" by 1' 0" by 2' 6"															
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average				
Rough stock.....	\$18.47	\$18.47	\$18.47	\$18.47	\$18.47	\$18.47	\$18.47	\$18.47	\$30.78	\$30.78	\$30.78	\$30.78	\$30.78	\$30.78	\$30.78	\$30.78
Direct labor.....	16.71	20.98	23.04	20.24	23.04	20.24	22.27	28.76	28.76	27.26	30.89	27.31	30.89	27.31	30.89	27.31
Manufacturing expense.....	30.13	37.32	40.90	36.12	40.90	36.12	40.42	51.83	51.83	55.76	55.76	49.33	55.76	51.83	49.33	49.33
Packing expense.....	.95	1.12	1.22	1.10	1.22	1.10	1.34	1.59	1.59	1.69	1.69	1.54	1.69	1.59	1.69	1.54
Total shop cost.....	66.26	77.88	83.62	75.93	83.62	75.93	94.81	112.96	112.96	119.12	119.12	108.96	119.12	112.96	119.12	108.96
Imputed interest.....	1.06	1.26	1.36	1.22	1.36	1.22	1.49	1.82	1.82	1.83	1.83	1.75	1.83	1.82	1.83	1.75
Total shop cost including interest.....	67.31	79.15	84.98	77.15	84.98	77.15	96.30	114.78	114.78	121.05	121.05	110.71	121.05	114.78	121.05	110.71

1 All costs are simple averages.

COSTS OF PRODUCTION IN THE PRINCIPAL COMPETING COUNTRY—
GERMANY**Scope of the cost investigation.**

Cost data in Germany were obtained from four finishing plants located in the Fichtelgebirge district of Bavaria, the principal granite-finishing center. Three of these plants are of moderate size and one is a fairly large organization. Moderate-sized plants are deemed to be representative of the German industry for purposes of this investigation, since they are apparently doing the bulk of the export business to the United States. The large plant visited also exports to the United States in considerable quantity and is representative in its operations.

Methods of obtaining costs.

Raw material.—The raw material costs shown in the final tabulations for Germany are for dies fabricated from three varieties of granite imported from Sweden, and from one native German stone commonly known as Spremberger syenite. With respect to rough stock, purchased in Sweden, the raw material costs shown in the tables are based on the prices paid for quarry blocks, plus the charges for laying them down at the German finishing shops. These prices are quoted by the Swedish quarry operators either f. o. b. the middle of the Baltic, or f. o. b. German Baltic ports, according to the methods of shipment. The other charges besides purchase prices included in the German raw material costs are: (1) the German import duty, (2.50 gold marks per metric ton); (2) the freight to the German plants; and (3) the cost of unloading and handling at the plants. The stone is ordinarily bought roughly dimensioned, and to the price paid there is usually added by the manufacturers of dies a certain estimated percentage to cover loss in finishing. These estimated percentages of loss, and the resulting increases in unit costs, vary somewhat with the different manufacturers, but in no case were deemed to be excessive.

The freight rate on Swedish rough stone from the German Baltic ports to the finishing plants was reported by all manufacturers to be 100 Swedish crowns per cubic meter (76 cents² per cubic foot) of roughly dimensioned stone. The actual amount of freight paid varies somewhat on different shipments, as the ratio of weight to volume is not absolutely constant. As all of the finishing plants included in this investigation are located in neighboring villages of one district, the freight from Sweden may be considered to be practically the same for all the plants.

The cost of the German syenite to the German manufacturers includes the purchase price of the stone, together with freight charges from the quarries to the manufacturers' plants and unloading charges at the plants.

Direct labor.—Wage rates in the granite manufacturing industry of the Fichtelgebirge district are highly differentiated and standardized through a piece-rate agreement between the manufacturers and the workers' organization. The rates per square meter for rough dressing are divided into seven groups, and for polishing into three groups, according to the working qualities of the stone.

It was the usual practice of the German companies to pay the published rates of the agreement. Where labor was paid in this

¹ Conversion at the average rate of exchange for the first 10 months of 1925.

manner, the labor cost records submitted by the companies were checked with the published rates, and their correctness thus assured. To a certain extent labor was paid on a time wage basis, and in such cases the labor costs per unit were calculated from the original records of the manufacturers. The unit labor costs for operations thus obtained from time wages paid, were calculated per square meter for five varieties of stone, and were then applied to the types and sizes of dies and varieties of stone used in the cost comparison.

The direct labor costs for finishing corners of the dies used in calculating the costs of the composite granite dies for each of the German plants were based on the cost of rounding corners to the extent known in the German industry as the half-glied, which represents a medium rounding operation in that country. The direct labor rates per linear foot used in calculating the cost of rounding corners were, for the four companies, respectively, 8.8 cents, 8 cents, 7.7 cents, and 8.7 cents, or an average of 8.3 cents. The rates per linear foot for this operation were calculated from data obtained from the published agreement between the manufacturers and the workers' organization, and were used upon the assumption that direct labor costs for finishing corners based on these rates were for operations corresponding to those used in calculating the costs of the domestic composite dies.

Manufacturing expense.—The usual practice of the German manufacturers in determining the manufacturing expense of particular monuments is to figure manufacturing expense as a percentage on labor, using one percentage for rough dressing and another for polishing. The higher of the two rates is applied to polishing to allow for the greater use of machinery in that operation. The details of the method of calculating manufacturing expense vary appreciably with the several firms, and it is apparent, notwithstanding the detailed nature of the calculations, that the final allowances for overhead are largely estimates. But these final allowances, as variously arrived at, are about the same for the different companies and their essential accuracy is not doubted.

Packing expense.—Packing cost for the different producers was allocated to the individual dies by means of percentages based on the ratio of total packing charges to total shop costs. These percentages were in some respects estimates, but the separate concerns reporting showed substantially the same ratio and no reason was discovered for doubting their essential validity.

Imputed interest.—Interest on investment was calculated on the amount of net depreciated fixed assets at the rate of 10 per cent. At this rate, the total imputed interest of the various concerns ranged from 2.3 per cent to 8 per cent of the total shop costs. To determine the imputed interest on each die, the percentage derived, as above, for each concern, was applied to the shop costs of the individual dies of that concern.

Selling expense.—Selling expense, if any, for finished monumental granite produced in Germany has not been used in the cost comparison.

Summary of shop costs.

In Table 7 are summarized the cost data obtained from four manufacturers in Germany for all-polished granite dies fabricated from three varieties of imported Swedish granite, namely, Bon Accord Gray, Red Swede, and Beers Red, and from one native German stone known as Spremberger syenite. In addition is shown the imputed interest applicable to these dies. The final tabulation in Table

7 summarizes the data for the above four varieties of stone. The final unweighted average in Table 7 is the calculated shop cost of the German composite die which is a simple average of the costs of the four sizes and three types of dies selected for cost comparison, fabricated from the varieties of granite mentioned above. In Table F in the appendix is shown a summarization of the cost data obtained for polished dies fabricated in Germany from Swedish black granite.

The costs of the dies fabricated from Swedish black granite were not used in calculating the cost of the composite polished die for the German industry as a whole, because (1) the dies fabricated from Bon Accord Gray, Red Swede, Beers Red, and Spremberger syenite are more directly comparable with the varieties of granite produced in Vermont, Massachusetts, and Minnesota; (2) the Swedish black granite is somewhat of a specialty, and dies made from this variety of granite sell at more than 10 per cent above the higher priced group of staple granites characterized by Bon Accord Gray and Red Swede, and 25 per cent above the average price of the dies fabricated from the other granites mentioned above. A comparison of the average prices of the types and sizes of dies for which costs were obtained, is shown in the following price summary.

Average selling price of German polished granite dies: Average of three types and four sizes for the year, 1925

Bon Accord Gray.....	\$70. 83
Red Swede.....	70. 83
Beers Red.....	54. 83
Spremberger syenite.....	54. 08
	<hr/>
Simple average.....	62. 64
Black Swede.....	78. 37

TABLE 7.—Manufactured monumental granite, Germany: Summary of costs of production, shop costs, and imputed interest for dies of the selected sizes and types of tops with all exposed surfaces polished, for the year 1925

COSTS FOR BON ACCORD GRAY

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$48.13	\$48.13	\$48.13	\$48.13	\$30.57	\$30.57	\$30.57	\$30.57	\$27.24	\$27.24	\$27.24	\$27.24
Direct labor.....	18.84	19.81	20.24	19.63	15.29	16.00	15.57	15.87	14.07	14.71	15.00	14.59
Manufacturing expense.....	27.31	28.67	29.57	28.42	22.08	23.09	23.54	22.90	20.31	21.21	21.61	21.04
Packing expense.....	4.32	4.42	4.47	4.40	3.12	3.20	3.23	3.18	2.83	2.90	2.93	2.89
Total shop cost.....	98.60	101.03	102.11	100.58	71.06	72.86	73.06	72.52	64.45	66.06	66.78	66.78
Imputed interest.....	4.20	4.31	4.34	4.28	3.01	3.09	3.12	3.08	2.73	2.79	2.83	2.79
Total shop cost including interest.....	102.80	105.34	106.45	104.86	74.07	75.95	76.78	75.60	67.19	68.86	69.61	68.54
	Average of all sizes											
	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"											
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$30.98	\$30.98	\$30.98	\$30.98
Direct labor.....	10.55	10.86	11.07	10.83	11.07	10.83	10.83	14.09	15.34	15.66	15.66	15.23
Manufacturing expense.....	14.99	15.65	15.95	15.53	15.95	15.53	15.53	21.17	22.16	22.59	22.59	21.97
Packing expense.....	2.00	2.05	2.07	2.04	2.07	2.04	2.04	3.07	3.14	3.18	3.18	3.13
Total shop cost.....	45.54	46.56	47.09	46.40	47.09	46.40	46.40	62.91	71.62	72.41	72.41	71.31
Imputed interest.....	1.52	1.57	1.59	1.56	1.59	1.56	1.56	2.97	3.04	3.07	3.07	3.06
Total shop cost including interest.....	47.46	48.53	49.08	48.36	49.08	48.36	48.36	72.88	74.66	75.48	75.48	74.34

COSTS FOR RED SWEDE

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$48.13	\$48.13	\$48.13	\$48.13	\$30.57	\$30.57	\$30.57	\$30.57	\$27.24	\$27.24	\$27.24	\$27.24
Direct labor.....	18.22	19.16	19.57	18.99	14.79	15.49	15.79	15.35	13.62	14.24	14.51	14.12
Manufacturing expense.....	27.97	29.37	30.00	29.11	22.63	23.67	24.93	23.48	20.82	21.75	22.17	21.56
Packing expense.....	4.32	4.43	4.47	4.41	3.12	3.20	3.24	3.19	2.83	2.90	2.93	2.89
Total shop cost.....	98.64	101.09	102.17	100.64	71.11	72.93	73.73	72.59	64.51	66.13	66.85	65.83
Imputed interest.....	4.20	4.30	4.35	4.28	3.01	3.09	3.12	3.07	2.73	2.80	2.83	2.79
Total shop cost including interest.....	102.84	105.39	106.52	104.92	74.12	76.02	76.85	75.66	67.24	68.93	69.68	68.62

Item	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"											
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$18.00	\$30.98	\$30.98	\$30.98	\$30.98
Direct labor.....	10.06	10.51	10.72	10.43	10.72	10.72	10.43	14.18	14.85	15.15	14.72	14.72
Manufacturing expense.....	15.36	16.05	16.35	15.92	16.35	16.35	15.92	21.70	22.71	23.16	22.53	22.53
Packing expense.....	1.99	2.05	2.07	2.04	2.07	2.07	2.04	3.06	3.15	3.18	3.13	3.13
Total shop cost.....	45.41	46.61	47.14	46.39	47.14	47.14	46.39	69.92	71.69	72.47	71.36	71.36
Imputed interest.....	1.92	1.97	1.99	1.96	1.99	1.99	1.96	2.96	3.04	3.07	3.03	3.03
Total shop cost including interest.....	47.33	48.58	49.13	48.35	49.13	49.13	48.35	72.88	74.73	75.54	74.39	74.39

All costs are simple averages.

TABLE 7.—Manufactured monumental granite, Germany: Summary of costs of production, shop costs, and imputed interest for dies of the selected sizes and types of tops with all exposed surfaces polished, for the year 1925—Continued

COSTS: FOR BEERS RED

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$34.04	\$34.04	\$34.04	\$34.04	\$23.84	\$23.84	\$23.84	\$23.84	\$21.25	\$21.25	\$21.25	\$21.25
Direct labor.....	17.82	18.52	18.92	18.35	14.30	14.97	15.26	14.84	13.76	13.76	14.02	13.65
Manufacturing expense.....	24.86	27.85	28.44	26.88	21.48	22.48	22.92	22.29	19.77	20.66	21.05	20.49
Packing expense.....	3.51	3.69	3.74	3.65	2.74	2.82	2.85	2.81	2.49	2.58	2.59	2.55
Total shop cost.....	79.53	84.10	85.14	82.92	62.36	64.11	64.87	63.78	58.27	58.23	58.91	57.94
Imputed interest.....	3.41	3.56	3.60	3.52	2.63	2.70	2.74	2.69	2.39	2.46	2.45	2.41
Total shop cost including interest.....	82.94	87.66	88.74	86.44	64.99	66.81	67.61	66.47	59.06	60.69	61.39	60.35
	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"											
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$14.04	\$14.04	\$14.04	\$14.04	\$14.04	\$14.04	\$14.04	\$14.04	\$23.29	\$23.29	\$23.29	\$23.29
Direct labor.....	9.72	10.17	10.36	10.24	10.36	10.08	10.08	13.70	14.35	14.64	14.64	14.23
Manufacturing expense.....	14.59	15.24	15.54	15.24	15.54	15.12	15.12	20.05	21.56	21.99	21.99	21.20
Packing expense.....	1.76	1.82	1.83	1.82	1.83	1.81	1.81	2.62	2.72	2.75	2.75	2.70
Total shop cost.....	40.11	41.27	41.77	41.05	41.77	41.05	41.05	59.66	61.92	62.67	62.67	61.42
Imputed interest.....	1.69	1.74	1.76	1.73	1.76	1.73	1.73	2.53	2.62	2.64	2.64	2.59
Total shop cost including interest.....	41.80	43.01	43.53	42.78	43.53	42.78	42.78	62.19	64.54	65.31	65.31	64.01

COSTS FOR SPREMBERGER SYENITE

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$34.92	\$34.92	\$34.92	\$34.92	\$24.47	\$24.47	\$24.47	\$24.47	\$21.80	\$21.80	\$21.80	\$21.80
Direct labor.....	19.52	20.53	20.97	20.34	15.54	16.57	16.91	16.44	14.58	15.24	15.54	15.12
Manufacturing expense.....	28.64	30.08	30.72	29.81	22.22	24.29	24.76	24.09	21.37	22.33	22.74	22.15
Packing expense.....	3.32	3.33	3.98	3.91	2.92	3.01	3.04	2.90	2.66	2.74	2.77	2.72
Total shop cost.....	86.00	89.46	90.59	88.98	66.45	68.36	69.18	67.90	60.41	62.11	62.85	61.79
Imputed interest.....	3.68	3.78	3.83	3.76	2.80	2.88	2.92	2.87	2.55	2.59	2.65	2.59
Total shop cost including interest.....	90.68	93.24	94.42	92.74	69.25	71.24	72.10	70.86	62.96	64.70	65.50	64.38
Average of all sizes												
Item	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"						Average of all sizes					
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$14.40	\$14.40	\$14.40	\$14.40	\$14.40	\$14.40	\$14.40	\$14.40	\$23.90	\$23.90	\$23.90	\$23.90
Direct labor.....	10.77	11.26	11.48	11.17	11.48	11.85	11.85	15.18	15.00	16.22	15.77	15.77
Manufacturing expense.....	15.78	16.49	16.80	16.36	16.80	16.36	16.36	22.28	21.30	21.76	21.10	21.10
Packing expense.....	1.89	1.94	1.97	1.93	1.97	1.93	1.93	2.82	2.90	2.94	2.89	2.89
Total shop cost.....	42.84	44.09	44.65	43.86	44.65	43.86	43.86	64.15	64.00	64.82	65.66	65.66
Imputed interest.....	1.80	1.86	1.88	1.85	1.88	1.85	1.85	2.71	2.78	2.82	2.78	2.78
Total shop cost including interest.....	44.64	45.95	46.53	45.71	46.53	45.71	45.71	66.86	66.78	67.64	68.44	68.44

1 All costs are simple averages.

TABLE 7.—Manufactured monumental granite, Germany: Summary of costs of production, shop costs, and imputed interest for dice of the selected sizes and types of tops with all exposed surfaces polished, for the year 1925—Continued

UNWEIGHTED AVERAGE COSTS: FOR BON ACCORD GRAY, RED SWEDE, BEERS RED, AND SPREMBERGER SYENITE

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 6" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$41.31	\$41.31	\$41.31	\$41.31	\$27.35	\$27.35	\$27.35	\$27.35	\$24.35	\$24.35	\$24.35	\$24.35
Direct labor.....	18.55	19.92	19.92	19.33	15.06	15.76	16.07	15.03	13.95	14.49	14.77	14.38
Manufacturing expense.....	27.07	28.99	29.61	28.15	22.35	23.38	23.84	23.19	20.57	21.49	21.89	21.31
Packing expense.....	3.99	4.12	4.15	4.09	2.98	3.05	3.09	3.04	2.70	2.77	2.81	2.76
Total shop cost.....	90.92	93.92	95.00	93.28	67.75	69.56	70.36	69.22	61.51	63.13	63.85	62.83
Imputed interest.....	3.87	3.99	4.05	3.96	2.86	2.94	2.97	2.93	2.60	2.66	2.70	2.64
Total shop cost including interest.....	94.79	97.91	99.05	97.24	70.61	72.50	73.33	72.15	64.11	65.79	66.55	65.47

Item	Average of all sizes											
	3' 0" by 1' 0" by 2' 6"				3' 0" by 1' 0" by 2' 6"				Average of all sizes			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$16.11	\$16.11	\$16.11	\$16.11	\$16.11	\$16.11	\$16.11	\$16.11	\$27.29	\$27.29	\$27.29	\$27.29
Direct labor.....	10.28	10.70	10.91	10.63	14.44	14.44	14.44	14.44	15.11	15.11	15.42	14.99
Manufacturing expense.....	15.18	15.86	16.16	15.73	21.29	21.29	21.29	21.29	22.43	22.43	22.87	22.39
Packing expense.....	1.91	1.98	1.98	1.96	1.89	1.96	1.96	1.89	2.08	2.08	2.01	2.06
Total shop cost.....	43.48	44.63	45.16	44.52	65.91	67.81	68.59	67.44	67.81	67.81	68.59	67.44
Imputed interest.....	1.83	1.89	1.91	1.88	2.79	2.87	2.90	2.85	2.87	2.87	2.90	2.85
Total shop cost including interest.....	45.31	46.52	47.07	46.30	68.70	70.68	71.49	70.29	70.68	70.68	71.49	70.29

: All cost are simple averages.

METHODS AND CONDITIONS OF MARKETING

According to information obtained from manufacturers in Germany, the granite dies exported by them to the United States are almost invariably manufactured in accordance with orders placed with them by purchasing agents of large American wholesalers who pay such agents a commission. The designs and specifications for the specific dies desired originate with the American wholesalers and are forwarded by them to their purchasing agents. These agents visit the plants of a number of manufacturers in a district from whom they obtain estimates for the various types and sizes of dies required. They act for their American principals in placing contracts for their requirements with the German manufacturers, and usually distribute their orders, or a part thereof, among a number of producers in a district. In addition to exercising their functions as purchasing agents, they examine and pass upon the finished products, and not infrequently reject dies because they do not conform to the required specifications or are considered to be unsatisfactory in quality of stone or finish.

Practically all the large producers of finished monumental granite in the Vermont and Minnesota districts are wholesalers who utilize the services of traveling representatives in selling their products direct to retail monumental dealers throughout the country. In the Vermont district, however, sales are made in some instances to jobbers or "purchasing agents" who buy for retail dealers outside the district. At least one of the larger granite quarrying concerns in the Barre district of Vermont extensively advertises its products, and manufacturers using Barre granite are benefited by an advertising program which is national in scope. To a large extent the granite manufacturers in the Massachusetts district dispose of their products through traveling salesmen who sell to retail monumental dealers, though a number of producers, including some of the larger operators, sell direct to the final purchaser.

The consumption of granite dies in the United States varies approximately with the density of population. All of the large cities therefore are important markets for granite monuments. The large centers of population, however, do not receive their supplies of monuments in equal degree from the various domestic and foreign centers of production. Freight rates upon granite monuments are an important factor in their distribution.

Finished monuments from the Barre, Vt., district are perhaps the most widely distributed of all the domestic and imported products. They are sold practically nation-wide. The sales are heaviest in the Northern and Eastern States and lightest in the South and Southwest. Quincy finished granite likewise has a wide distribution. Most of the sales are in the territory north and west of the Potomac and Ohio Rivers. St. Cloud, Minn., granite is sold largely in the North and Middle West. It penetrates as far eastward as eastern Ohio and southwest to Colorado and Kansas.

Imported granite dies have two important centers of consumption—one in Ohio and westward and the other in the Boston area. There are a number of wholesale granite dealers in Ohio who purchase the finished granite dies in Europe, principally in Germany, through foreign purchasing agents, and sell them to the retail trade in the

Ohio Valley and probably as far west as St. Louis. These imports are entered principally through the port of Philadelphia. The imports of finished monumental granite distributed in the Boston area come chiefly from Scotland, and are manufactured from rough stone obtained from Finland and Sweden.

There are other reasons than freight rates for unequal distribution in various parts of the country of granite from different sources of supply. The most important of these reasons is the color of the stone. In the north and east portions of the country light gray and dark gray granite have a decided preference among the purchasers. In portions of the same area, chiefly in centers of Jewish population, such as New York City, there is a strong demand for so-called black granite. Relatively little red granite seems to be in demand in New England. In the Mississippi and Ohio Valleys, on the other hand, red granite is in strong demand, and certain grades of it, such as mahogany red from Wisconsin, sells at a price premium over other grades.

Most of the imports of finished granite are of the red variety. The color preference west of the Alleghenies may account for the fact that much of the imported material is sold in the Ohio area.

Another reason for the strong westward movement of imported finished granite is the fact that trade-unions along the Atlantic seaboard are reported to object to lettering the imported dies. Seaboard dealers are therefore handicapped in marketing this product. This is a condition which it is understood does not prevail in the Ohio area.

The selling of finished granite by wholesale dealers in the Ohio area is peculiar to that area. The domestic producers at Barre, Quincy, and St. Cloud act as their own wholesalers for most of their product and sell it largely through traveling salesmen directly to the retail dealers. There are a few purchasing agents or brokers in the Barre district who do not manufacture the finished dies. The wholesalers in Ohio purchase principally the imported product, but it is understood that some of them also deal in domestic dies.

TRANSPORTATION

Ports where imported manufactured monumental granite enters the territory of the United States.

Granite dies, including the kinds covered by this investigation, are imported into the United States at ports of entry on both the Atlantic and Pacific seaboard and to some extent at interior ports. The Philadelphia customs district ranks first in importance with respect to this class of imports; the Massachusetts district ranks second; and New York, third. In Table 8 are shown the imports for these three customs districts for the year 1925, by principal countries of origin; imports at all ports of entry on the Pacific coast are shown as one group; and imports at all other customs districts, including those in the interior of the country, are shown as another group.

TABLE 8.—*Manufactured monumental granite: Imports for consumption, by customs districts and by foreign countries, 1925*

[Quantities reported in pounds; converted into cubic feet at the rate of 12 cubic feet per metric ton]

Customs districts	Imports from various foreign countries						Total
	Germany	United Kingdom	Finland	Czechoslovakia	Sweden	All other countries	
	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>	<i>Cubic feet</i>
Philadelphia, Pa.....	19,404	880	2,055	3,589	2,693	-----	29,891
Massachusetts.....	322	7,078	3,570	354	20	-----	11,344
New York.....	905	554	31	-----	314	892	2,196
Pacific coast districts.....	297	211	-----	-----	74	86	668
All other districts.....	2,332	318	189	1,005	106	34	3,986
Total.....	23,460	8,741	6,745	4,918	3,209	512	47,585
	Value						
Philadelphia, Pa.....	\$141,614	\$6,604	\$18,443	\$25,156	\$20,455	-----	\$212,272
Massachusetts.....	1,968	63,067	20,445	2,136	173	-----	87,846
New York.....	5,832	0,076	323	-----	3,074	\$6,599	22,804
Pacific coast districts.....	2,284	1,811	-----	-----	841	1,992	6,928
All other districts.....	16,340	2,747	984	5,747	849	537	27,204
Total.....	168,065	80,325	40,215	33,089	26,291	9,128	357,064

¹ Some building granite may be included in these figures.

A large proportion of the imports of manufactured granite entered at the Philadelphia customs district is from Germany; in 1925, approximately 19,600 cubic feet out of a total of 29,390 cubic feet, or 66.7 per cent. The imports into the Massachusetts customs district that year were chiefly from Great Britain (Scotland), and amounted to 7,078 cubic feet out of a total of 11,344 cubic feet. Imports at New York were relatively small, and for the most part from Great Britain and Germany.

From the foregoing table it appears that Philadelphia is not only the most important port of entry for manufactured monumental granite, whatever the country of origin, but also is the most important port of entry with respect to imports from Germany—the principal competing country.

Costs of transportation and other charges on imported manufactured monumental granite from Germany to the principal port of importation.

The inland freight in Germany from the four plants for which cost-of-production data were obtained to the ports of shipment has been calculated at the rate of 25 gold marks, or \$5.95 per metric ton. The average ocean freight on granite dies at the rates prevailing in 1925 was \$4 per metric ton. Other charges on such shipments included marine insurance and consular fees.

The marine insurance upon the selected dies for which cost data were obtained was calculated upon the basis of the value of the various sizes of dies. To the average value f. o. b. Hamburg of each size of die there was added 15 per cent to arrive at the value at which shipments of such dies from Germany to the United States are ordinarily insured. The insurance rate was found to be one-fourth of 1 per cent of this value. Upon this basis the insurance charge

at this rate for each of the four sizes of dies for which costs were obtained was 30 cents, 21 cents, 18 cents, and 12 cents, respectively. The simple average for the four sizes was 20 cents.

An analysis of invoices at the port of Philadelphia indicated that shipments of granite dies entered at that port averaged 10 dies per invoice. The charge for consular fee, amounting to \$2.50 per invoice consulated, was distributed to the specific dies on this basis.

The transportation charges upon manufactured monumental granite from Germany have been converted from charges per metric ton into charges per die of the selected sizes and types. As the weights of the various varieties of manufactured granite vary somewhat, the German die manufacturers calculate the average weight per cubic meter of all varieties of granite shipped to the United States at the rate of three metric tons per cubic meter, and the weight of the packing is figured at 5 per cent of the weight of the unpacked stone. In Table 9 are shown the respective weights, including the weight of packing, used in calculating on the above basis the transportation costs applicable to the selected sizes of granite dies imported from Germany.

TABLE 9.—*Monumental granite: Weights of German polished dies, including the weight of packing*

Size	Volume	Weight per cubic meter	Weight of stone	Weight of packing	Weight (packed) expressed in—		
					Metric tons	Long tons	100 pounds
	<i>Cubic meters</i>	<i>Kilos</i>	<i>Kilos</i>	<i>Kilos</i>			
3 feet 6 inches by 1 foot 2 inches by 3 feet.....	0.354	3,000	1,062	53	1.115	1.097	24.57
3 feet by 1 foot by 2 feet 10 inches.....	.248	3,000	744	37	.780	.768	17.20
2 feet 8 inches by 1 foot by 2 feet 10 inches.....	.221	3,000	663	33	.700	.689	15.43
2 feet by 1 foot by 2 feet 6 inches.....	.146	3,000	438	22	.460	.453	10.15
Composite die.....	.242	3,000	726	36	.762	.752	16.84

¹ Weight of packing calculated at 5 per cent of the weight of the stone.

The weight of the German die packed for shipment, 0.752 long ton, is slightly greater than the packed weight of the composite domestic die, which has been figured at 0.708 long ton. The domestic manufacturers calculate the average weight of the several varieties of domestic manufactured monumental granite at the rate of 12 cubic feet per long ton, or 0.0833 ton per cubic foot, unpacked. Domestic packing is lighter than the foreign, and the weight has been calculated at 2 per cent of the weight of the stone, giving an average weight for the domestic die, packed, of 0.085 long ton per cubic foot. In Table 10 are shown the weights—including the weight of packing—used in calculating the transportation costs applicable to the selected sizes of domestic dies.

TABLE 10.—*Monumental granite: Weights of domestic polished dies, including the weight of packing*

Size	Volume	Weight per cubic foot, including packing	Weight packed, expressed in—	
			Long tons	100 pounds
3 feet 6 inches by 1 foot 2 inches by 3 feet.....	Cubic feet 12¼	Long ton 0.085	1.041	23.32
3 feet by 1 foot by 2 feet 10 inches.....	8½	.085	.722	16.17
2 feet 8 inches by 1 foot by 2 feet 10 inches.....	7½	.085	.644	14.43
2 feet by 1 foot by 2 feet 6 inches.....	5	.085	.425	9.52
Composite die.....	8¼	.085	.708	15.86

† Includes weight of the packing calculated at 2 per cent of the weight of the stone.

By applying the transportation charges per metric ton to the weight per metric ton of the imported dies, packed, the specific cost of transportation per die is obtained. The results of this calculation for each of the selected sizes of the dies imported from Germany, and for the average of all, together with the charges for insurance and consular fee, are set forth in Table 11.

TABLE 11.—*Monumental granite: Transportation and other charges of specific sizes of imported dies, German plants to American Atlantic seaboard, for 1925*

Charges	Sizes of dies				
	3 feet 6 inches by 1 foot 2 inches by 3 feet	3 feet by 1 foot by 2 feet 10 inches	2 feet 8 inches by 1 foot by 2 feet 10 inches	2 feet by 1 foot by 2 feet 6 inches	Composite die—simple average, four sizes
Internal freight and transfer.....	\$6.64	\$4.64	\$4.17	\$2.74	\$4.55
Ocean freight.....	4.46	3.12	2.80	1.84	3.06
Insurance.....	.30	.21	.18	.12	.20
Consular fee.....	.25	.25	.25	.25	.25
Total transportation and other charges.....	11.65	8.22	7.40	4.95	8.06

Domestic freight rates on manufactured monumental granite.

In Table 12 are given the published freight rates on manufactured monumental granite per 100 pounds in carload shipments from and to specified points.

TABLE 12.—*Monumental granite: Domestic freight rates on manufactured monumental granite, 1925*

[Cents per 100 pounds in carload shipments]

From—	Quincy, Mass.	New York, N. Y.	Philadelphia, Pa.	Pittsburgh, Pa.	Columbus, Ohio	Chicago, Ill.	St. Louis, Mo.
Boston, Mass.....	12			28	31½	30½	42½
Quincy, Mass.....		25	32	28	31½	36½	42½
Barre, Vt.....		31	36½	28	31½	36½	42½
New York, N. Y.....	27½			34	44	56½	66
Philadelphia, Pa.....	32			32	42	54½	64
St. Peters, Pa.....		22½	15½	29½	29½	39½	45½
Coopersburg, Pa.....		22½	15½	29½	29½	39½	45½
St. Cloud, Minn.....		79½	77½	57	52	23	27½
Wausau, Wis.....		70½	68½	48	43	15½	27½
Montello, Wis.....		67	65	44½	39½	15½	27½

Conversion from transportation rates per 100 pounds to charges per die are shown in Table 13. This table shows the cost of transportation from points of shipment in the United States to certain markets for a domestic and for an imported composite die. Transportation calculations have been based on a composite die, weighing, when packed, 1,586 pounds for the domestic die and 1,684 pounds for the imported die.

TABLE 13.—*Monumental granite: Domestic transportation charges for composite granite dies from points of shipment in the United States to specified markets, 1925*

Origin of shipment	Destination			
	Philadel- phia, Pa.	Pitts- burgh, Pa.	Colum- bus, Ohio	St. Louis, Mo.
Domestic die:				
Quincy, Mass.....	\$5.08	\$4.44	\$5.00	\$4.74
Barre, Vt.....	5.79	4.44	5.00	6.74
St. Cloud, Minn.....	12.20	9.04	8.25	4.30
German die:				
Philadelphia, Pa.....		5.39	7.07	10.78

The transportation charges in the above table are unweighted. That is to say, they are calculated from the freight rates upon finished granite per 100 pounds without reference to actual quantities shipped to the various centers of consumption. It is known that large quantities of Quincy and Barre granite dies are shipped to Philadelphia, Pittsburgh, Columbus, and St. Louis; that considerable quantities of St. Cloud granite dies go to St. Louis, Columbus, and perhaps Pittsburgh; and that important quantities of imported German dies go to Columbus, and perhaps to Pittsburgh. Relatively little of the imported dies are consumed in the Philadelphia area, and no information is available in regard to shipments to St. Louis.

DETERMINATION OF DUTIABLE VALUES

With the exception noted below, the dutiable value used in calculating the ad valorem rate of duty necessary to equalize foreign and domestic costs of production was obtained by a study of customs invoices for dies imported in 1925 whose specifications were approximately the same as those for which cost data were obtained. However, it is understood from information received from the producers in Germany that dies exported to the United States have rubbed instead of rounded corners. Upon the assumption, therefore, that the dutiable values are for rubbed corners, whereas the cost comparison is upon the basis of rounded corners, there was added to the calculated dutiable value of the dies, for which cost data were obtained, the calculated cost in Germany of medium rounded corners. As previously indicated, this cost was for rounding corners to the extent known in the German industry as the half-glied, which represents a medium rounding operation in that country. The rate per linear foot was calculated from data obtained from the published agreements between the manufacturers and the workers' organization. As shown in Table 14, this addition for rounding corners amounted to \$4.21 for the composite die.

Table 14 shows the average selling prices f. o. b. plant of German granite dies in 1925, polished on four sides and top, bottom jointed, of the types and sizes for which cost data were obtained, fabricated

from three varieties of Swedish granite—namely, Bon Accord Gray, Red Swede, and Beers Red, and from one native German stone (Spremberger syenite). In addition is shown the average selling price of the German composite die obtained by averaging the selling prices f. o. b. German plant given in this table. The prices of dies fabricated from Swedish black granite are not included in the prices given in Table 14. The prices upon which this table is based could not be obtained directly at the plants in Germany, and therefore have been secured from an analysis of the invoices of shipments entered at the port of Philadelphia, and from other data obtained from importers. The price data obtained from these sources for stones of similar sizes, types, and varieties of granite have been averaged to arrive at the prices shown in the table. The invoice prices used were usually given f. o. b. German port, and to arrive at the values shown in the table upon which duties would be assessed the freight expense from the German plants to the port of shipment is deducted as a nondutiable item.

The prices shown in Table 14 reflect conditions during the whole of 1925, whereas German costs of production of manufactured granite shown in this report reflect an increased wage scale prevailing subsequent to July 10 of that year. It should be noted also that the price data do not necessarily represent transactions for the same plants from which cost data were obtained.

As previously noted, upon the assumption that imported dies had rubbed instead of rounded corners, there was added to the dutiable value of the composite granite die of \$62.64, as derived from customs invoices, the amount of \$4.21 for the calculated cost of rounding corners of such die in Germany, making a calculated dutiable value of \$66.85.

TABLE 14.—Manufactured monumental granite: Prices of granite dies, polished four sides and top, manufactured in Germany, for the year 1925

	3 feet 6 inches by 1 foot 2 inches by 3 feet		3 feet by 1 foot by 2 feet 10 inches		2 feet 8 inches by 1 foot by 2 feet 10 inches		2 feet by 1 foot by 2 feet 6 inches		Composite die, calculated price at plant
	Price f. o. b. Hamburg	Calculated price at plant ¹	Price f. o. b. Hamburg	Calculated price at plant ²	Price f. o. b. Hamburg	Calculated price at plant ³	Price f. o. b. Hamburg	Calculated price at plant ⁴	
Bon Accord Gray:									
Flat, oval, or serpentine top.....	\$114.50	\$107.86	\$76.00	\$71.36	\$67.00	\$62.83	\$44.00	\$41.26	\$70.83
Red Swede:									
Flat, oval, or serpentine top.....	114.50	107.86	76.00	71.36	67.00	62.83	44.00	41.26	70.83
Beers Red:									
Flat top.....	88.00	81.36	60.50	55.86	51.50	47.33	31.50	28.76	54.83
Oval top.....	88.00	81.36	64.00	59.36	54.00	49.83	34.50	31.76	
Serpentine top.....	88.00	81.36	64.00	59.36	54.00	49.83	34.50	31.76	
Spremberger syenite:									
Flat top.....	85.00	78.36	61.00	56.36	53.00	48.83	33.50	30.76	54.10
Oval top.....	85.00	78.36	61.00	56.36	53.00	48.83	34.00	31.26	
Serpentine top.....	85.00	78.36	64.00	59.36	53.00	48.83	36.00	33.26	
Simple average.....	100.50	93.86	69.21	64.57	60.04	55.87	39.00	36.26	62.64
Added cost for rounding corners.....	4.61	4.61	4.36	4.36	4.22	4.22	3.64	3.64	4.21
Total value.....	105.11	98.47	73.57	68.93	64.26	60.09	42.64	39.90	66.85

¹ Price f. o. b. Hamburg, less \$6.64 for inland transportation.
² Price f. o. b. Hamburg, less \$4.64 for inland transportation.
³ Price f. o. b. Hamburg, less \$4.17 for inland transportation.
⁴ Price f. o. b. Hamburg, less \$2.74 for inland transportation.

COST COMPARISON OF DOMESTIC AND GERMAN POLISHED GRANITE DIES

In Table 15 there are shown the costs of domestic and German imported polished granite dies, calculated upon two bases:

(1) Upon the basis of costs, including transportation, for both foreign and domestic dies at Philadelphia; and

(2) Upon the basis of costs, including transportation, of imported and domestic dies at Columbus, Ohio.

TABLE 15.—*Manufactured monumental granite: Comparison of United States and German costs of production for a composite polished granite die, at plants, transportation costs to Philadelphia, Pa., and Columbus, Ohio, and the costs including transportation to such points*

Item	Costs per composite die			Duty necessary to equalize differences in cost computed on a foreign value of \$68.85 per die
	United States	Germany	Difference	
Cost of production f. o. b. plants, excluding interest.....	\$108.96	\$67.44	\$41.52	<i>Per cent</i> 62.11
Imputed interest.....	1.75	2.85	-1.10	-----
Cost of production f. o. b. plants, including interest.....	110.71	70.29	40.42	60.46
Transportation charges from plants to—				
Philadelphia, Pa.....	7.72	8.06	-----	-----
Columbus, Ohio.....	6.08	15.13	-----	-----
Cost, including interest, at—				
Philadelphia, Pa.....	118.43	78.35	40.08	59.96
Columbus, Ohio.....	116.79	85.42	31.37	46.93

¹ Includes \$3.06 transportation and other charges from German plants to American Atlantic port, and the transportation charge in the United States from port of importation (Philadelphia, Pa.), to Columbus, Ohio.

Each of the two bases of cost comparisons given in Table 15 have certain advantages and disadvantages from the point of view of determining the necessary equalizing duty. These advantages and disadvantages are discussed below.

Domestic and imported at Philadelphia.

A reason in favor of Philadelphia as the point for comparing costs, including transportation, of foreign and domestic finished dies is the fact that large quantities of domestic dies transported from Barre and Quincy are marketed in the Philadelphia area because of the density of the population in that area. Philadelphia is the principal port of entry for imported finished granite, and a small quantity of such granite is marketed there in competition with the domestic product.

A reason against Philadelphia as a point of cost comparison is that relatively little imported finished granite from Germany is distributed in the Philadelphia area. The bulk of it is shipped upon the order of wholesalers in Ohio for ultimate distribution west of the Alleghenies. Domestic finished granite, therefore, shipped to the retail trade in the Philadelphia district, does not compete directly with the transit trade of imports through Philadelphia. To what extent this transit trade of imports, as a potential supply of finished granite, affects the prices of granite in the Philadelphia area, is not determinable.

Another reason against the use of Philadelphia as the center for cost comparison is the fact that red granite, which constitutes the bulk of the imports, and which is the product of the granite quarries in St. Cloud, Minn., does not seem to be in strong demand upon the Atlantic seaboard, and for that reason neither the domestic nor imported red is sold in important quantities in Philadelphia. In addition, freight rates preclude the economical shipment of Minnesota red granite to Philadelphia, and the opposition of trade unions upon the Atlantic seaboard to lettering imported granite dies adversely affects the sale of the product in the Philadelphia area.

Domestic and imported at Columbus.

One reason for comparing costs, including transportation, of imported and domestic granite dies at Columbus, Ohio, is that the principal importers of finished granite from Germany are located in the Ohio area, and in that area both domestic and imported granite are sold in considerable quantities. It is there also that the St. Cloud red granite meets the competition of imported red granite to a large extent.

Reasons against the selection of Columbus are that so far as the domestic production is concerned there is no special concentration of markets for the domestic product in that area. A large number of other cities are more important consuming centers for domestic finished granite than Columbus. The actual quantities of both domestic and imported granite shipped to the Ohio area, of which Columbus may be taken as the center, are not known.

From the above considerations the commission concludes:

1. That if a seaboard market is selected for comparing costs, including transportation, of domestic and foreign granite, Philadelphia is the proper market.

2. That if an area is selected where, in the process of internal distribution to retailers the imported and domestic granite dies meet in competition to a considerable extent under the existing tariff rate, and other competitive conditions are taken into consideration, Columbus, Ohio, should be the point to which transportation costs are calculated for the cost comparison.

Respectfully submitted.

THOMAS O. MARVIN,
Chairman,

ALFRED P. DENNIS,
Vice Chairman,

EDGAR B. BROSSARD,
SHERMAN J. LOWELL,
LINCOLN DIXON,
FRANK CLARK,

Commissioners.

STATEMENT OF THE VIEWS OF CHAIRMAN MARVIN AND COMMISSIONERS BROSSARD AND LOWELL

Red monumental granite constitutes most of the imports of manufactured monumental granite and is also the principal product of the granite quarries of St. Cloud, Minn. The demand on the Atlantic seaboard for red monumental granite is now almost entirely supplied by imported red monumental granite. Freight rates on granite, a bulky commodity, constitute a disadvantage to Minnesota and Wisconsin red granite in the eastern market. The attitude of trade unions upon the Atlantic seaboard toward lettering imported dies adversely affects the sale of imported dies in that section. The principal importers of red monumental granite from Germany are located in the Ohio area and cater to the German population in that area who seem to have a preference for the red monumental granite. Under existing conditions, the St. Cloud red monumental granite probably meets the imported red granite to a greater extent in the Ohio area.

The foregoing may be said to point to some place in the Ohio area, such as Columbus, as the principal market to which transportation costs should be computed. It must be borne in mind, however, that this investigation deals not a one with red monumental granite but also with the black and gray granite dies. The rate of duty fixed in the tariff act of 1922 is upon "granite," which includes the red, black, and gray. In the opinion of Commissioners Marvin, Brossard, and Lowell, if transportation costs are to be taken into consideration for the purposes of this investigation, transportation costs as they affect all types of granite must be considered.

Transportation costs are included in this investigation in accordance with the Attorney General's opinion of February 2, 1926, in which the Attorney General held that the President should—

by virtue of clause (4), subdivision (c), take into consideration, in so far as he finds it practicable from an analysis of the facts in each case, costs of transportation, whenever it is shown that such costs or differences therein, as between foreign and domestic articles, constitute an advantage or disadvantage in competition between the foreign and American producers.

In the course of that opinion, the Attorney General further said:

The language used in subdivision (c), given its natural and usual meaning, indicates with reasonable clearness the intent of the legislative body, when the purpose of section 315 is borne in mind. This purpose is not merely the ascertainment of the differences in costs of production by the Tariff Commission, but the equalization of the rates of duty for the protection of American producers, and to offset any advantages in competition enjoyed by foreign producers.

In the opinion of Commissioners Marvin, Brossard, and Lowell, to compute transportation costs to a point in the Ohio area selected as the principal market would not only ignore advantages or disadvantages in competition as they affect that part of the domestic granite industry which produces black and gray granite dies, but would operate to defeat the intent and purpose of section 315. It is recognized, of course, that equalization of the costs of production of domestic and imported monumental granite at any one market

necessarily means that costs are not equalized in other markets in the United States. The Supreme Court of the United States in a recent unanimous opinion holding section 315 to be constitutional said in part that, in applying the provisions of section 315, rates must be fixed "so that the duties not only secure revenue but at the same time enable domestic producers to compete on terms of equality with foreign producers in the markets of the United States." Let us suppose that Columbus, Ohio, be taken as the principal market for the purpose of computing transportation costs. Such equalization of costs including transportation to Columbus gives the imported granite an advantage in Philadelphia over the average of all domestic granite of \$8.71 per composite die; in New York, \$8.15 per composite die; and in Boston, \$7.62 per composite die. Such a method of equalization also gives the imported granite a decided advantage in all other Atlantic, Gulf, and Pacific coast ports.

Equalization of costs of production including transportation to Columbus would give the imported granite an advantage in Boston of \$9.43 per composite die over Vermont granite in Boston and of \$5.25 per composite die over Massachusetts granite in Boston. Such equalization at Columbus likewise gives imported granite an advantage over Vermont and Massachusetts granite at all seaboard points and at points in the interior of the United States west and south of Columbus, Ohio.

The foregoing illustrations serve to show that if a rate of duty be based upon the difference in the costs of production of German and domestic dies, including cost of transportation to Columbus, Ohio, the resulting rate (46.93 per cent) would fail by a wide margin to equalize the ascertained differences in costs at either Philadelphia, Boston, or New York, or other markets, as indicated above. Manifestly, such result would defeat the purpose of section 315 to protect and encourage domestic industries.

In the opinion of Commissioners Marvin, Brossard, and Lowell, Philadelphia is the point to which transportation costs should be computed in comparing costs of production of domestic and German granite dies. Philadelphia is the principal port of entry for manufactured monumental granite, 62 per cent of imports being entered at that port. Two-thirds of all imports of manufactured monumental granite at Philadelphia come from Germany, the principal competing country. Philadelphia is the point from which imports are distributed to various markets in the United States. Large quantities of domestic dies transported from Barre and Quincy are marketed in the Philadelphia area, because of the density of population in that area, and compete there to some extent with the imported monumental granite.

The rate of duty necessary to equalize the ascertained differences in costs of production, including transportation to Philadelphia, for both the domestic and foreign dies, is 60 per cent ad valorem. Such rate will more nearly "enable domestic producers to compete on terms of equality with foreign producers in the markets of the United States," in accordance with the purpose of section 315, as interpreted by the Supreme Court of the United States.

SUMMARY

Findings of fact to the following effect are, in the judgment of the undersigned members of the United States Tariff Commission, warranted by the evidence collected in the investigation of manufactured monumental granite and summarized in the foregoing report.

COSTS OF PRODUCTION OF MANUFACTURED MONUMENTAL GRANITE

- (1) Germany is the principal competing country.
- (2) The present duty on manufactured monumental granite of 50 per cent ad valorem does not equalize the difference in costs of production of manufactured monumental granite in the United States and in the principal competing country.
- (3) *Costs, f. o. b. plants.*—The average cost of production of manufactured monumental granite f. o. b. plants, including interest, is for the United States, \$110.71 per composite die, and for Germany, \$70.29 per composite die. The average cost in the United States exceeds the average cost in Germany by \$40.42 per composite die. The rate of duty necessary to equalize said difference in costs of production f. o. b. plants of manufactured monumental granite, the product of the United States, and of a like or similar article, the product of the principal competing country, is 60.46 per cent ad valorem.
- (4) In the opinion of the Attorney General, under date of February 2, 1926, it was held that in ascertaining the differences in costs of production under section 315, the President should, "by virtue of clause (4), subdivision (c), take into consideration, in so far as he finds it practicable from an analysis of the facts in each case, costs of transportation whenever it is shown that such costs or differences therein as between foreign and domestic articles constitute an advantage or disadvantage in competition between the foreign and American producers." Cost comparisons, therefore, are shown in this report with transportation included on two bases:
 - (a) Including transportation on both the foreign and domestic granite to Philadelphia, Pa.
 - (b) Including transportation on both the foreign and domestic granite to Columbus, Ohio.
- (5) *Costs, including transportation to Philadelphia.*—The average cost of production of manufactured monumental granite, including transportation to Philadelphia, Pa., is for the United States \$118.43 per composite die and for Germany \$78.35 per composite die. The cost in the United States exceeds the cost in Germany by \$40.08 per composite die. The rate of duty necessary to equalize said difference in costs of production of manufactured monumental granite, the product of the United States, and of a like or similar article, the product of the principal competing country, is 60 (59.96) per cent ad valorem.
- (6) *Costs, including transportation to Columbus.*—The average cost of production of manufactured monumental granite, including transportation to Columbus, Ohio, is for the United States \$116.79 per composite die and for Germany \$85.42 per composite die. The cost in the United States exceeds the costs in Germany by \$31.37 per composite die. The rate of duty necessary to equalize said difference in costs of production of manufactured monumental granite, the product

of the United States, and of a like or similar article, the product of the principal competing country, is 46.93 per cent ad valorem.

(7) Commissioners Marvin, Brossard, and Lowell are of the opinion that, if transportation costs are to be included, the provisions of section 315 require that domestic costs of production, including transportation to Philadelphia, should be compared with foreign costs of production, including transportation to Philadelphia. As shown in paragraph (5), page 40, such cost of production for the United States exceeds such cost of production for Germany by \$40.08 per composite die. The rate of duty necessary to equalize such difference in cost of production is 60 per cent ad valorem (59.96 per cent).

Respectfully submitted.

THOMAS O. MARVIN, *Chairman.*
EDGAR B. BROSSARD,
SHERMAN J. LOWELL,
Commissioners.

VIEWS OF COMMISSIONERS DENNIS, DIXON AND CLARK

The object sought in this, as in other 315 cases, is the correct ascertainment of production costs as between the domestic and the foreign competing article. All commissioners agree that the average cost at plants for the three domestic districts involved is \$110.71 per unit, including interest, and that the delivered cost of the German composite die laid down in Philadelphia is \$78.35, including interest.

POINTS AT ISSUE AS BETWEEN COMMISSIONERS

The views of commissioners diverge when it comes to the problem of transportation. It is obvious that competition in commodities the world over is a matter of markets. We have no interest in any foreign commodity from a competitive standpoint until that commodity actually reaches our shores and is offered for sale in our principal markets. Some of the commissioners are apparently of the opinion that the transportation costs on manufactured monumental granite should be based on Philadelphia, but, unfortunately for this hypothesis, Philadelphia is not the principal competing market. It is agreed that Germany is the principal competing country for imported manufactured granite known as dies. With respect to the inflow of these foreign dies, Philadelphia is a mere transit point. Agents who handle foreign monumental granite in Philadelphia are neither importers nor consumers. They are essentially forwarding agents. German dies, for the most part, are shipped to this country on the order of importers located in Ohio. These imports, though they first touch our shores at Philadelphia, pass through that city without breaking bulk and do not enter channels of distribution at that point, except in unimportant quantities. The commission's experts agree, and the undersigned commissioners fully concur in their judgment, that the Columbus, Ohio, area may be accepted as the most important center for the primary distribution of German monumental dies in the United States. Transportation charges, therefore, both on the foreign and domestic article should be based on the Columbus, Ohio, area rather than on Philadelphia.

To ask why the relatively unimportant city of Columbus, Ohio, should have become our most important competitive market for primary distribution of granite tombstones is like asking why the relatively small city of Akron, Ohio, has assumed primacy in rubber, Grand Rapids in furniture, and Detroit in automobiles.

DEALING WITH REALITIES

Our concern in this matter of transportation is with actual rather than fictitious distribution. We turn out a limited amount of black granite in the State of Pennsylvania and red granite in the State of Minnesota. Our principal production is in gray granite, with the business concentrated chiefly in Barre, Vt., and Quincy, Mass.

Tombstones manufactured in Barre, Vt., have a potential if not an actual distribution throughout the United States. Since death is the common lot of all and no locality is immune from the incidence of mortality, distribution of granite tombstones is widely diffused throughout the country.

These monuments (technically known as dies) manufactured in Barre, Vt., are distributed in practically every part of the United States. It would be as difficult to trace the ultimate destination of these monuments after they enter the retail trade as it would be difficult to form a correct surmise as to the destination of the souls they are designed to commemorate. What we do know for certain is that only a small percentage of the domestic monumental granite actually moves to Philadelphia for ultimate distribution. The proposition to set up Philadelphia as the principal competing market as between the foreign and domestic commodity carries a double economic error. It implies a false start and a false stop—a false start in theoretically transporting the enormous output of the New England quarries to Philadelphia—a false stop in arresting the movement of imported granite at that point when the bulk of it proceeds to Ohio. The concern of the undersigned commissioners in this matter of transportation is with actual rather than fictitious distribution. We are dealing with human beings engaged in the struggle to live by furnishing memorials to the dead. Certain members of the Tariff Commission seem to think that they can reverse by a stroke of the pen the currents of trade that have developed in obedience to economic laws determining the evolution of the industry. As well try to make water run uphill by administrative fiat.

The day is recalled when certain members of this commission were perfectly positive that transportation charges on foreign goods should be completely ignored as a factor in equalizing competition under section 315 of the tariff act. They were set aright on this question by the Attorney General of the United States. Partial nullification of the Attorney General's ruling is now being attempted under the dogma of "equalizing transportation."

"Equalizing transportation" as thus interpreted means stopping foreign goods at the port of importation, whereas the obvious and fair procedure is to take such goods to our great competitive markets. Under the theory objected to, competitive goods made in Vladivostok, Siberia, competing, let us say, in the Chicago market, would be equalized as to transportation if they were landed in Nome, Alaska. If it were permissible for the Tariff Commission to stop the goods of the foreigner at the water's edge and deny him transportation to inland markets, Congress should have so declared, and that it has not is evidenced by the fact that on May 12 a bill (H. R. 13713) was introduced by Representative Manlove amending section 315 for the purpose of basing transportation costs on United States ports of importation. Until Congress does enunciate its will on this subject, the undersigned commissioners intend to administer the law as, in their judgment, it now stands. These same commissioners will continue to resist efforts directed toward overthrowing the clear provisions of existing law as it has been interpreted by the Attorney General and the United States Supreme Court.

UNITED STATES SUPREME COURT OPINION

In a recent unanimous decision of the Supreme Court of the United States, Chief Justice Taft employs the following language:

First. It seems clear what Congress intended by section 315. Its plan was to secure by law the imposition of customs duties on articles of imported merchandise which should equal the difference between the cost of producing in a foreign country the articles in question and laying them down for sale in the United States, and the cost of producing and selling like or similar articles in the United States, so that the duties not only secure revenue but at the same time enable domestic producers to compete on terms of equality with foreign producers in the markets of the United States.

We have here a perfectly clear statement of the equalization sought. The desideratum is to "enable domestic producers to compete on terms of equality with foreign producers *in the markets of the United States,*" and not at the particular point where the foreign goods happen to enter the territorial confines of the United States.

THE DOGMA OF "EQUALIZING TRANSPORTATION"

This dogma of "equalizing transportation" at the port of importation rather than in a principal market is like the dogma that all men are created equal. Here we have a cant phrase to which men may render lip service while acknowledging the impossibility of its application in an imperfect existing world. The attempt to thus equalize transportation is on a par with an attempt to equalize the intellectual equipment of Machiavelli and the *vi lage* idiot by administrative fiat. It would be pleasant for the steel master operating in Utah to have his transportation costs so equalized that he could compete on equal terms in the New York City market with steel plants located in Pittsburgh, Pa., but the political economist knows of no means by which these delightful harmonies may be affected. The Interstate Commerce Commission undertakes no such program of distributive justice in the establishment of its rate structure.

By a purely artificial manipulation of transportation costs it is perfectly possible to arrive at figures which would justify a considerable increase in the existing *ad valorem* duty of 50 per cent on imported monumental granite dies. The international trade figures abundantly confirm the conclusions of the undersigned commissioners that no such increase is warranted. It may be noted that the net total production of domestic manufactured granite in 1925 was approximately 2,875,760 cubic feet. Imports from Germany, the principal competing country, in 1925 were 23,459 cubic feet, equivalent to eighty-two one-hundredths of 1 per cent of the domestic production. Total imports from all countries were 47,585 cubic feet, equivalent to 1.65 per cent of the domestic production. Whatever the domestic industry may be called upon to bear, it is assuredly not suffering from the ill effects of destructive foreign competition.

The separate conclusions of other commissioners may contain a statement of the effect at certain points of equalization of costs of production including transportation, at Columbus, Ohio. The converse of such equalization of costs at these points is, as far as practicable, shown below.

Equalization of costs, including transportation to Philadelphia, gives the average of all domestic granite an advantage in Columbus,

Ohio, over an average of all imported granite, of \$8.71 per composite die and in St. Louis, Mo., of \$12.55 per composite die. Equalization at Philadelphia also gives the domestic an advantage at New York City of \$0.56 and at Boston of \$1.09 per composite die.

Such equalization at Philadelphia also gives the St. Cloud, Minn., granite an advantage in Columbus of \$12.42 per composite die over the imported granite, and of \$20.02 per composite die at St. Louis.

Equalization of costs, including transportation to Columbus, gives the average of all domestic granites an advantage of \$3.84 per composite die over an average of all imported granite at St. Louis. At that point the Massachusetts granite would have an advantage of \$0.69 per composite die and the Vermont granite a disadvantage of \$0.47 per composite die over the imported granite, or an advantage of \$0.11 for the two New England districts combined.

Such equalization at Columbus gives the St. Cloud, Minn., granite an advantage over the foreign granite at Columbus of \$7.47 per composite die and of \$11.31 at St. Louis.

FORMAL STATEMENT OF CONCLUSIONS

1. Germany is the principal competing country.
2. The differences in cost of production between monumental granite dies, the product of the United States, and similar German monumental granite dies delivered at the principal competitive market, the Columbus, Ohio, area, is \$31.37. (See Table 15.) The calculated rate of duty necessary to equalize the difference in such costs computed on a foreign value of \$66.85, a figure agreed upon by the commission's experts and all commissioners, is 46.93 per cent. The existing rate of duty being 50 per cent ad valorem, a reduction of 3.07 per cent on manufactured monumental granite is indicated.

ALFRED P. DENNIS, *Vice Chairman,*
LINCOLN DIXON,
FRANK CLARK,
Commissioners.

PART II

UNMANUFACTURED MONUMENTAL GRANITE

Rate of duty: Par. 285. Tariff act of 1922. * * * granite,
* * * unmanufactured, or not dressed, hewn, or polished,
15 cents per cubic foot.

Scope of investigation.

The commission's investigation of unmanufactured granite was confined to the granite used for the manufacture of monuments and does not include granite used for base stock of monuments, building granite, or granite paving blocks. The cost data, therefore, in both the United States and Sweden, the principal competing country, are for the relatively high grades of granite, suitable for making the finished die.

DOMESTIC PRODUCTION.

The varieties of unmanufactured monumental granite and the quantity quarried (the quantity annually sold or used by the quarriers) in each of the leading granite producing States have already been discussed in the earlier part of this report (pp. 3 to 5). The chief centers of quarrying are at or near Barre, Vt., Quincy, Mass., and St. Cloud, Minn., which are also the chief centers of manufacture. The manufacturers of each of the leading districts obtain by far the greater part of their supply of raw material in the Barre, Vt. district, practically the whole of it, from the local quarries. On the other hand, the quarries in some districts dispose of a small portion of their output in outside markets. A comparatively small quantity of eastern rough granite moves westward for manufacture, but little western granite moves far eastward. The quarriers of the Vermont and Massachusetts districts sell in all markets outside their respective districts collectively about 20 per cent of their total output.

In consequence of the predominatingly local consumption of the output of the quarries, the competition between one monumental granite producing district and another in the United States is chiefly with respect to the finished products. In this competition relative excellence of design and superiority of workmanship play their part but fundamentally the interdistrict competition rests upon the characteristics of the stone of the various districts. The relationship, therefore, between the quarrying and the manufacturing branches of the industry is in all cases a close one, whether there be integration, as in Minnesota, Wisconsin, and Pennsylvania, or separation of ownership as in Vermont and Massachusetts. Unity of interest is complete as regards the securing and holding of outside markets; divergence of interest arises, when there is separation of ownership, only with respect to the prices charged by the local quarriers to the local manufacturers.

Granite suitable for use in making the polished die of a monument must be of a high grade with respect to evenness of texture and color—free from "knots" and all other imperfections. The granites produced in the two large districts—Barre, Vt., and Quincy, Mass.—are light gray and dark gray in color. Gray granite of the dark variety is apparently considered more desirable as a material for polished mon-

uments and is in greater demand with the consumers of polished monuments; the light gray stone is generally used in the manufacture of memorials with other types of finish. In both Barre and Quincy the number of deposits of granite which may be worked for monumental granite are few, and those from which the dark variety are obtained are fewer still. All the deposits of granite (light and dark stone) at Barre suitable for the quarrying of monumental granite are owned by eight concerns, corporations or estates, one of which produces light stock only. Some of the deposits of monumental granite owned by the eight quarry-owning concerns at Barre are not operated or are operated only intermittently.

In 1924 there were in Quincy, Mass., five quarry-owning and operating concerns, which owned all the deposits of granite suitable to be worked to produce monumental granite, and one of these concerns produced the larger part of the dark variety. The prices of all the quarry owners in the Barre district are practically the same for the dark and light varieties, and the spread in the scale of prices is uniform for Barre and Quincy. In these two districts there is a situation or condition of natural advantage dependent upon location, quality, and supply of certain resources of nature.

UNITED STATES IMPORTS AND EXPORTS

Imports.—Although imports of unmanufactured monumental granite have increased in recent years, they are now and always have been a small proportion of the total domestic consumption. However small their relative amount, the imports are nevertheless of considerable importance for those centers of the domestic industry where competition is chiefly felt.

Table 16 shows imports from 1918 to 1926 and the bases for a comparison each year with the domestic production. If the total of imports be compared with domestic production of unmanufactured monumental granite, the comparison will not be upon a common basis by reason of the inclusion in the imports of an indeterminable quantity of unmanufactured granite used for other than monumental purposes. This is indicated by the wide discrepancy between the unit values of the domestic production and the unit values of imported granite taken as a whole.

In order to obtain an approximately correct common basis of comparison¹ there are shown in Table 16 for each year the imports from Sweden, Finland, and Norway grouped together and the imports from Canada and "all other countries" grouped. The segregated imports from Sweden, Finland, and Norway include practically all the foreign unmanufactured monumental granite used in the manufacture of dies in the United States. The imports from Canada may include some building granite, but it is known that a considerable quantity of monumental granite of comparatively low value used for the bases of monuments is imported from that country. The miscellaneous imports of unmanufactured granite from other sources of supply seem to be of the same general kind as the Canadian imports. If year by year the unit values of the imports from Canada and from all other countries be compared, they will be found to be about the same.

¹ It should be noted, however, that the statistics for domestic monumental granite sold or used by the quarriers, given in the comparison, include rough granite used in the manufacture of bases for monuments. The quantity and value of such base stock are not known.

TABLE 16.—Unmanufactured monumental granite: Domestic production and imports for consumption of unmanufactured monumental granite compared by quantity and value, for the years 1918-1926

Year	Domestic production ¹			Imports for consumption ²				Ratio of imports to production by—	
	Quantity	Value		Country of origin	Quantity	Value		Quantity	Value
		Total	Per cubic foot			Total	Per cubic foot		
	<i>Cubic feet</i>				<i>Cubic feet</i>			<i>Per cent</i>	<i>Per cent</i>
1918	3,358,431	\$4,298,792	\$1.28	All countries.....	28,240	\$14,554	\$0.52	.84	.34
1919	3,668,422	6,914,418	1.89	do.....	23,240	17,796	.77	.64	.28
1920	3,379,330	8,144,185	2.41	do.....	43,808	42,162	.96	1.30	.52
1921	1,956,720	4,637,426	2.37	do.....	32,525	27,258	.84	1.66	.69
1922	2,086,740	4,338,339	2.08	do.....	63,410	97,977	1.55	3.04	2.26
1923	3,947,600	8,417,388	2.13	Sweden, Finland, and Norway...	47,744	104,906	2.19	1.20	1.26
				All other, including Canada.....	79,040	72,127	.91	.....	.....
				Total.....	126,784	177,033	1.40	3.21	2.10
1924	3,520,530	8,167,630	2.32	Sweden, Finland, and Norway..	86,432	168,696	1.92	2.45	2.03
				All other, including Canada.....	60,296	49,819	.82	.....	.....
				Total.....	146,728	218,515	1.47	4.17	2.64
1925	3,196,290	8,020,178	2.51	Sweden, Finland, and Norway..	83,197	166,376	2.00	2.60	2.07
				All other, including Canada.....	78,570	62,377	.84	.....	.....
				Total.....	161,767	228,753	1.46	4.91	2.85
1926	3,240,550	7,888,464	2.28	Sweden, Finland, and Norway..	87,875	171,053	1.95	2.71	2.33
				All other, including Canada.....	96,582	78,840	.81	.....	.....
				Total.....	184,457	250,793	1.36	5.69	3.40

¹ Compiled from statistics published by the Geological Survey, showing the quantity and value of unmanufactured monumental granite sold or used by the quarriers.

² Compiled from published and unpublished statistics obtained from the Department of Commerce. Statistics may include some building granite.

Exports.—Exports of unmanufactured granite from the United States are not separately reported by the Department of Commerce. It is known, however, that exports of unmanufactured granite (monumental and other descriptions) are negligible.

PRINCIPAL COMPETING COUNTRY

Table 17 shows for recent specified years the value of the imports for consumption of unmanufactured granite by leading countries of origin, together with the percentage of total imports by countries. An analysis of statistics of imports of unmanufactured granite upon the basis of quantity shows that Canada in certain recent years, including 1923 and 1926, made larger shipments to the United States than Sweden, but this is due to the inclusion in the shipments from Canada of imports of low unit values which are not comparable to the imports from the other principal foreign sources of supply or to the bulk of the domestic production of unmanufactured monumental granite. A comparison upon the basis of value, therefore, more truly represents the competitive status of the principal countries exporting unmanufactured monumental granite to the United States.

There is apparently no tariff problem with respect to unmanufactured granite used for building purposes, or with respect to unmanufactured monumental granite of the general classification known as

base stock. With respect to unmanufactured monumental granite, Sweden is found to be the principal competing country for the purposes of section 315.

TABLE 17.—*Unmanufactured monumental granite: Imports of unmanufactured monumental granite¹ by leading countries of origin, value and per cent of total in recent specified years*

Imported from—	1922 ¹		1923		1924		1925		1926	
	Value	Per cent of total	Value	Per cent of total	Value	Per cent of total	Value	Per cent of total	Value	Per cent of total
Sweden.....	\$17,003	69.8	\$100,722	56.9	\$146,636	68.0	\$147,228	64.4	\$152,558	60.8
Canada.....	7,013	28.8	43,628	24.6	47,206	22.0	47,228	20.6	59,583	23.8
Finland.....			3,330	1.9	10,176	4.7	9,844	4.3	15,363	6.1
Norway.....			854	.5	8,884	4.1	9,306	4.0	4,032	1.6
All other countries.....	360	1.4	28,499	16.1	2,613	1.2	15,149	6.7	19,257	7.7
Total.....	24,376	100	177,033	100	215,515	100	228,753	100	250,793	100

¹ Statistics may include some building granite.

² Sept. 22 to Dec. 31, 1922.

SELLING PRICES

Domestic.

In 1924 selling prices of the dark gray unmanufactured monumental granite for which quarrying costs were obtained from three quarry companies in the Barre district of Vermont were \$4.10 per cubic foot for rough-dimension blocks and \$4.20 per cubic foot for saw blocks of the type used in the manufacture of dies for which cost data were obtained in the commission's investigation. Light gray stock used in the manufacture of certain types of dies for which cost data were not obtained sold at an average price of approximately \$3.50 per cubic foot. The weighted average selling price of all unmanufactured granite sold in 1924 for various monumental purposes by the three companies, including other and cheaper kinds than those mentioned above, was \$3.25 per cubic foot.

In the Quincy, Mass., district, the selling prices of rough-dimension granite blocks used in the manufacture of dies ranged from \$3.50 per cubic foot for light gray stock to \$4 for dark gray and to \$4.30 for extra dark gray stock. The prices of dark gray and extra dark gray stock only were used in computing the cost of the manufactured monumental granite in this district. The weighted average selling price of the unmanufactured granite sold for all monumental purposes by the five companies in the district from which quarrying costs were obtained was \$2.77 per cubic foot.

Comparatively little unmanufactured monumental granite is sold in the St. Cloud district of Minnesota either to dealers or manufacturers, as practically all of the quarriers manufacture the stone obtained from their own quarries.

None of the quarriers in the Wisconsin and Pennsylvania districts from whom cost data were obtained reported sales of unmanufactured monumental granite, as the producers in these districts manufacture their own stone. Selling prices of rough stock quarried in these districts could not, therefore, be obtained. The unit sales value, however, of the production of one Pennsylvania company was given.

Foreign.

Substantially all of the granite imported into the United States from Sweden is used in the manufacture of dies or other similar types of memorials. The investigation disclosed that in many instances the large American importers contracted for their requirements for a number of years; and the contracts stipulated that for each year subsequent to that in which the contract became effective the price to be paid per cubic foot should be increased by a fixed amount above that paid in the preceding year. In consequence, the current selling prices of some varieties of imported Swedish granite are somewhat higher than the prices paid for such granite by the American importers in 1924—the year for which quarrying costs were obtained by the commission.

The unmanufactured monumental granite quarried in Sweden for export to the United States is almost invariably sold f. o. b. Swedish port. Information with respect to the amount of freight and charges per cubic foot from the quarries to the port of shipment was obtained, from which it is possible to calculate the selling prices at quarry of the several varieties of granite for which cost data are presented in this report.

Table 18 summarizes the 1924 selling prices f. o. b. Gothenburg—the principal port of shipment of unmanufactured granite to the United States—the prices at quarry, and the prices, exclusive of duty, at New York City, of four black, one gray, and one red Swedish granites, together with the simple and the weighted average selling prices of several varieties combined.

TABLE 18.—Unmanufactured monumental granite: Sweden—selling prices per cubic foot f. o. b. Gothenburg, at quarry, and at New York City (exclusive of duty), of certain varieties of granite exported to the United States, and weighted averages of several varieties combined, for the year 1924

Variety	Selling price f. o. b. Gothenburg	Freight and charges from quarry to Gothenburg	Calculated selling price at quarry	Calculated selling price (exclusive of duty) at New York City ¹
	<i>Per cubic foot</i>	<i>Per cubic foot</i>	<i>Per cubic foot</i>	<i>Per cubic foot</i>
Black granite:				
No. 1.....	\$2.500	\$0.375	\$2.125	\$3.220
No. 2.....	2.500	.308	2.192	3.220
No. 3.....	2.500	.454	2.046	3.220
No. 4.....	3.020	.206	2.724	3.740
Weighted average, 4 black granites.....	2.558	.369	2.189	3.278
Gray granite: No. 5.....	1.590	.094	1.496	2.310
Red granite: No. 6.....	1.300	.094	1.206	2.020
Weighted average, 4 black, 1 gray, and 1 red granite.....	1.976	.219	1.757	2.696

¹ Selling prices per cubic foot f. o. b. Gothenburg, plus 72 cents per cubic foot ocean transportation and charges from Gothenburg to New York City.

According to statistics published by the Department of Commerce, the declared inland value of the 1924 imports from Sweden of all varieties of granite—amounting to 71,677 cubic feet, valued at \$146,636—was \$2.05 per cubic foot. As Swedish rough granite

exported to the United States is usually invoiced f. o. b. Swedish port, and as such granite is dutiable at a specific rate of duty, it is probable that the declared values may include, in some instances, inland freight and charges from quarry to port of shipment.

COSTS OF PRODUCTION IN THE UNITED STATES AND IN SWEDEN

United States.

The costs of quarrying monumental granite have been ascertained for three quarry operating companies in Vermont (Barre), five companies in Massachusetts (Quincy), five companies in Minnesota (St. Cloud), three companies in Wisconsin, and two companies in Pennsylvania. As cost data were obtained from only two companies in the Pennsylvania district, the costs for this district can not be disclosed, but are presented in the confidential section of the report.

Methods of obtaining costs.—Cost schedules were prepared on which were taken, directly from the company records, cost data for domestic companies in the areas selected. These records were analyzed to determine the respective amounts chargeable to labor, salaries, repairs and renewals, supplies, insurance, hauling, taxes, miscellaneous expenses, depreciation, and depletion. The total of these charges for each company was then divided by its total production of salable stone to obtain unit costs per cubic foot.

Summary of costs.—Table 19 gives details of quarry costs and imputed interest per cubic foot for the Vermont and Massachusetts districts, together with the weighted average cost per cubic foot for the three eastern districts—Vermont, Massachusetts, and Pennsylvania. Costs were obtained from two companies in Pennsylvania. An analysis of the cost data obtained from one of them shows, however, that a considerable percentage of its total sales consisted of paving stones and other products not used for monumental purposes. The quarry cost for the monumental granite produced by this company was calculated on the basis of the relative sales values of the respective products.

The respective ratios in the several domestic districts for insurance and taxes, depreciation, depletion, and miscellaneous expenses vary considerably, indicating a lack of uniformity among the quarriers in their methods of distributing such charges. There was apparently no uniform method of fixing the amount to be charged to depletion. The amounts for depletion obtained from the books of the individual companies and used in the cost calculations were found to be in agreement with the amounts allowed the companies by the Government for income tax purposes. In the relatively few quarries producing by-products, such as paving stones, riprap, etc., the costs of production of such products were not determined, but their total sales value was, except for one company in Pennsylvania, treated as a credit to quarrying costs. The value of such products reported by one of the two companies in Pennsylvania was considerably greater than the value of similar products reported by any other one operator. As indicated above, the quarry cost for the rough monumental granite produced by this company was calculated upon the basis of the ratio of the sales value of monumental granite to the sales value of granite sold for other purposes. None of the quarriers in the Vermont, Minnesota, and Wisconsin districts reported production or sales of paving stones or other by-products.

Imputed interest has been calculated for the domestic districts at 6 per cent on the depreciated value of fixed assets as shown by the companies' books.

TABLE 19.—Unmanufactured monumental granite: Weighted average costs of production, f. o. b. quarry, and imputed interest, by principal districts of production in the United States, for the year 1924

[Cost per cubic foot]

Item	Vermont		Massachusetts		Pennsylvania		Average for three districts	
	Amount	Per-centage	Amount	Per-centage	Amount	Per-centage	Amount	Per-centage
Labor.....	\$0.94	45.0	\$1.10	52.0	(1)	(1)	\$0.98	47.8
Superintendence.....	.21	9.9	.20	9.4	(1)	(1)	.20	9.7
Power.....	.15	7.1	.15	7.3	(1)	(1)	.14	6.8
Repairs and supplies.....	.18	8.5	.16	7.7	(1)	(1)	.18	8.7
Hauling.....	.20	9.4	.06	2.9	(1)	(1)	.15	7.2
Taxes and insurance.....	.09	4.6	.18	8.4	(1)	(1)	.12	5.8
Depreciation.....	.04	2.2	.11	5.1	(1)	(1)	.06	2.9
Depletion.....	.15	7.3	.11	5.3	(1)	(1)	.14	6.8
Miscellaneous.....	.12	6.0	.04	1.9	(1)	(1)	.10	4.8
Total cost at quarry.....	2.08	100.0	2.11	100.0	(1)	(1)	2.07	100.0
Less: Credit for paving blocks, riprap, etc.....	.....	.....	.03	.....	(1)	(1)	.01	.....
Net total cost at quarry.....	2.08	.....	2.08	.....	(1)	(1)	2.06	.....
Imputed interest ¹.....	.12	.....	.17	.....	(1)	(1)	.14	.....
Net total cost at quarry including interest.....	2.20	.....	2.25	.....	(1)	(1)	2.20	.....

¹ Confidential.

² Imputed interest is calculated at 6 per cent on the depreciated value of fixed assets.

Sweden.

Scope and method of the cost finding in Sweden.—Cost data in Sweden with respect to certain representative types of unmanufactured monumental granite were taken from the books of three companies reported to own or lease approximately 80 per cent of the total quarrying operations of the country. The operations of these three companies are carried on in the several districts where the different kinds of Swedish monumental granite are produced. The records of each company are kept separately for the various kinds of granite and were made available for the use of the agents of the commission in obtaining costs for four black, one gray, and one red variety of monumental stone. Quarries with deposits of black granite produce monumental granite only, whereas the quarries with deposits of red and gray granite produce, besides monumental granite, paving blocks, and irregularly shaped blocks used for various other purposes. The companies operating the quarries that produce granite other than monumental granite had their expenditures segregated and were able to furnish figures pertaining specifically to monumental granite. All the companies showed on their books, in addition to the total cost for each kind of granite produced, the total quantity of each kind.

Details and summary of costs.—Quarry costs were furnished by the three Swedish companies whose operating costs were ascertained, itemized under the following heads: Labor, superintendence, power and coal, repairs, supplies, hauling, accident insurance, taxes other than income taxes, depreciation, royalty or depletion, and miscellaneous—these being substantially the same items for which detailed

quarry costs were obtained in the United States. In addition the agents of the commission were furnished the data for calculating imputed interest.

Each of the three companies whose costs were obtained operates both owned and leased quarries, and none of them carry a depletion charge as such on their books. On leased quarries royalties are paid, usually to the Government, ranging from 10 Swedish crowns per cubic meter to 37.50 crowns (7.5 cents to 28 cents per cubic foot).² The difference depends largely upon the time the leases have been running; new leases could not be made at the lower figure, it is said, but at something between 20 and 25 crowns per cubic meter (15 cents to 19 cents per cubic foot).² The royalties used as the basis for calculating the depletion charge for leased quarries were, in the absence of other information, used as the depletion charge for owned quarries. They were 10 crowns per cubic meter for two of the three companies (covering four varieties of granite), 12 crowns (covering one variety), and 22 crowns (covering one variety) for the third company. These calculated depletion charges were vouched for as reasonably accurate and acceptable to them by each of the Swedish quarrying concerns costed. Expressed in United States currency they are 7.5 cents, 9 cents, and 16.5 cents per cubic foot, respectively, or a weighted average of 9.4 cents per cubic foot. This weighted average compared with the weighted average of depletion charges for three domestic districts—Vermont, Massachusetts, and Pennsylvania—is lower by 35.2 per cent.

With respect to imputed interest care was exercised in segregating the assets of the two Swedish quarry-operating companies which carry on other activities besides quarrying, notably granite manufacturing and transportation enterprises. The imputed interest for Sweden in all instances was calculated at 6 per cent of the depreciated fixed assets pertaining to the quarries only.

TABLE 20.—Unmanufactured monumental granite: Weighted average costs of production f. o. b. quarry, and imputed interest, for four black granites, and for four black, one red, and one gray granites combined, for the year 1924

[Cost per cubic foot]

Item	Weighted average, 4 black granites		Weighted average, 4 black, 1 red, and 1 gray granites	
	Amount	Percent- age	Amount	Percent- age
Labor.....	\$0.89	47.7	\$0.72	50.9
Superintendence.....	.09	4.7	.06	5.3
Power and coal.....	.05	2.5	.04	2.8
Repairs and supplies.....	.23	12.2	.12	8.6
Hauling.....	.07	3.9	.06	3.9
Taxes and insurance.....	.03	1.4	.02	1.1
Depreciation.....	.04	2.0	.04	3.0
Royalty and depletion.....	.10	5.5	.09	6.6
Miscellaneous.....	.38	20.1	.25	17.8
Total cost at quarry.....	1.88	100.0	1.42	100.0
Imputed interest *.....	.05	.....	.04	.....
Total cost at quarry, including imputed interest.....	1.93	.....	1.46	.....
Selling expense *.....	.....	.....	.....	.....

* Imputed interest is calculated at 6 per cent on the depreciated value of fixed assets.

* The quarriers state that no selling expense is incurred in sales of unmanufactured granite to the United States.

² Swedish kroner converted into United States currency at the rate of 26.5 cents per kronen.

Table 20 shows details of the weighted average quarry costs, and imputed interest, for four black granites, and for four black, one red, and one gray granite combined. The costs for the four black granites by companies and the costs for the red and gray granites can not be shown because of the possibility of disclosing confidential information.

METHODS AND CONDITIONS OF MARKETING

The foreign product.—Imported unmanufactured monumental granite is bought abroad by domestic manufacturers of dies, who themselves manufacture the greater part of the rough stock they import and dispose of the remainder as wholesalers.

The domestic product.—Monumental granite quarried in the United States for sale in the rough form is largely disposed of through sales to manufacturers in the respective districts in which the stone is quarried. There are few jobbers or dealers in domestic unmanufactured granite in the United States who are not themselves manufacturers as well as dealers. The advertising and other sales efforts of the quarriers are made very largely in behalf of their district, rather than to promote their own direct sales of rough stock.

By far the greater part of the monumental granite produced in each of the granite quarrying districts of the United States is used in the districts where it is quarried, and within a few miles of the quarry. That portion of the output of the quarries which is not locally consumed finds such a scattered market that it is not practicable to trace it. Practically none of the monumental granite quarried in the Minnesota and Wisconsin districts is sold in the unmanufactured form in the eastern markets of the United States, and comparatively little of such granite is shipped to manufacturers outside the respective districts. Practically all the Minnesota and Wisconsin quarriers manufacture the stone procured from their own quarries, and consequently make no serious attempt to establish markets for their rough stone at points distant from the quarries. The relatively high transportation costs on unmanufactured granite from the Minnesota and Wisconsin districts to the eastern markets—amounting to \$1.73 and \$1.54 per cubic foot, respectively, on stones shipped from St. Cloud, Minn., and from Wausau or Montello, Wis., to New York City, or approximately 82.5 per cent and 63.95 per cent of the respective average quarrying costs for these districts—practically preclude the movement in large quantities of such granite to the large granite manufacturing centers on or adjacent to the eastern seaboard of the United States.

It is estimated that about 20 per cent of the rough monumental granite produced in Barre, Vt., and Quincy, Mass., is shipped out of these districts and that about 37 per cent of the Pennsylvania rough monumental granite leaves the district.

Countries of origin and ports of importation.—Unmanufactured monumental granite of the four black, one red, and one gray for which cost data have been obtained is imported into the United States almost entirely at New York and Boston. Some imports are received at other ports of entry on the Atlantic seaboard, such as Philadelphia and Baltimore, but the quantities are so small as to be practically negligible. By far the greater part of such imports come from Sweden and Finland. Table 21 shows for specified years imports of unmanufactured granite from Sweden and Finland at New York City and Boston, Mass.

TABLE 21.—Unmanufactured monumental granite: Imports for consumption from Sweden and Finland by principal customs districts, for 1924, 1925, and 1926

ON BASIS OF QUANTITY

Year	Total imports from—		Imports entered at New York from—				Imports entered in Massachusetts from—			
	Sweden	Finland	Sweden		Finland		Sweden		Finland	
	Amount	Amount	Amount	Per cent of total	Amount	Per cent of total	Amount	Per cent of total	Amount	Per cent of total
	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.	Cu. ft.
1924	71,677	10,305	62,250	86.8	—	—	5,248	7.5	9,890	96.0
1925	67,487	11,460	59,675	88.4	—	—	8,769	8.8	8,301	72.8
1926	68,608	17,900	59,091	86.0	1,846	10.3	6,014	8.8	14,063	78.7
3-year average	69,256	13,202	60,308	87.1	615	4.7	5,710	8.2	10,758	81.5

ON BASIS OF VALUE

1924	\$146,636	\$10,176	\$134,955	92.0	—	—	\$3,492	5.8	\$9,536	93.7
1925	147,236	9,844	131,256	89.2	—	—	10,510	7.1	8,301	84.3
1926	152,560	15,363	139,618	91.5	\$2,007	13.1	10,142	6.6	11,566	75.3
3-year average	148,807	11,794	135,276	90.9	669	5.7	9,715	6.5	9,801	83.1

Source: Bureau of Foreign and Domestic Commerce.

Imports at New York.—The imports of unmanufactured monumental granite from Sweden entered at New York City are used chiefly for the manufacture of dies within the metropolitan area of that city. Practically none of it finds a market outside of New York City and suburbs.

At the public hearing manufacturing importers in New York City testified that the bulk of the unmanufactured monumental granite imported at that port, consisting of several varieties of Swedish monumental granite, was manufactured, or partly manufactured by them to supply the local trade. It is known, however, that comparatively small quantities of Swedish red and gray granite are imported at New York and manufactured at that point.

Imports at Boston.—As shown in Table 21, about two-thirds of the imports of rough granite into the Massachusetts customs district comes from Finland and not from Sweden, the principal competing country. The imports from Sweden into that customs district, consisting of about one-third of the total of unmanufactured granite, go almost entirely to near-by Quincy for manufacture into dies.

TRANSPORTATION

Costs of transportation of imported unmanufactured granite from Sweden to the principal points of entering the territory of the United States.—Table 22 shows the costs of transportation of unmanufactured granite from the quarries in Sweden, the principal competing country, to any port of importation on the American Atlantic seaboard. These costs are shown under three heads—(1) inland freight and lading charges incurred in Sweden, (2) ocean freight, and (3) marine insurance and consular fees.

The details of the transportation costs incurred in Sweden were obtained from the quarry-operating companies, and the figures shown in the table are the weighted averages of these costs on board ship at Gothenburg, the principal port of shipment to the United States. The quarry districts producing the different varieties of granite are in different parts of Sweden, and the charges to Gothenburg vary not only with the mileage but also with the method of transportation. The freight charges in Sweden are highest for the black granites, which are quarried in the southern part of the country and at some distance from the coast. The other granites are quarried in districts on or near the seaboard where water transportation to Gothenburg is available.

The ocean freight charge from Gothenburg to any Atlantic port of the United States is the same. The figures given in the table, expressed in dollars per cubic foot, are based upon a rate of \$5 per long ton and 7 cubic feet to the ton. Marine insurance, \$0.0056 per cubic foot, was calculated from values at the rate of one-quarter of 1 per cent of an average sales price of \$2.25 per cubic foot. The cost per cubic foot for consular fee, amounting to \$0.0015, was obtained by dividing the charge per consular invoice (\$2.50) by the average number of cubic feet of stone per invoice for shipments entered at the port of New York.

TABLE 22.—*Unmanufactured monumental granite: Weighted average costs of transportation and charges for Swedish unmanufactured granite from the quarries in Sweden to ports of importation on the Atlantic seaboard of the United States for 1924*

(Per cubic foot)

Item	Weighted average	
	Black granite, 4 varieties	4 black, 1 gray and 1 red granite combined
Inland freight from quarries to Gothenburg, and lading charges at Gothenburg.....	\$0.309	\$0.219
Ocean freight to any American Atlantic port.....	.714	.714
Marine insurance and consular fee.....	.007	.007
Total.....	1.030	.940

Cost of transportation of domestic unmanufactured monumental granite.—Table 23 gives the published freight rates per hundred pounds, carload shipments, and such rates converted into a transportation cost per cubic foot for domestic rough granite from Barre, Vt., Quincy, Mass., Coopersburg and St. Peters, Pa., to New York City, and in addition rates are shown for St. Cloud, Minn., Wausau and Montello, Wis.

TABLE 23.—Unmanufactured monumental granites: Costs of transportation of unmanufactured granite, carload shipments, from designated quarrying centers in the United States to New York City, 1924

(Freight rates per 100 pounds converted into costs per cubic foot)

From—	To New York City	
	Rate	Amount ¹
	Cents per 100 pounds	Per cubic feet
Barre, Vt.....	0.270	\$0.904
Quincy, Mass.....	.205	.686
Coopersburg, Pa.....	.225	.720
St. Peters, Pa.....	.195	.624
St. Cloud, Minn.....	.640	1.736
Wausau, Wis.....	.490	1.536
Montello, Wis.....	.490	1.536

¹ Calculated on the basis of 7 cubic feet per long ton.

MARKETS FOR IMPORTED AND DOMESTIC UNMANUFACTURED MONUMENTAL GRANITE

There is no single market in the United States where large quantities of domestic and imported unmanufactured monumental granite meet in competition. New York City is the principal manufacturing center of imported rough granite, and it is also the most important market for unmanufactured granite from Sweden, the principal competing country. The investigation has not disclosed, however, that important quantities of domestic rough granite are sold in New York City except from the Pennsylvania district. As previously indicated, unmanufactured red granite from Minnesota and Wisconsin does not reach the eastern markets. Information is not available as to what extent, if any, rough granite from Vermont and Massachusetts is sold in the New York area. Vermont and Massachusetts granite in the form of finished monumental dies is sold in considerable quantities in the New York area. It is understood that a large part of the Pennsylvania black granite sold outside of the district, about 37 per cent, or approximately 10,000 cubic feet, is sold in the metropolitan area of New York. Much of this Pennsylvania granite, however, according to the testimony at the hearing, is a semifinished product in the form of relatively thin slabs, having one face polished. The Swedish black granite imported principally at New York is in the form of rough blocks. New York City, therefore, is the principal market for imported and domestic black granite in the rough and partly finished form—i. e., polished on one side. Other granites, red and gray, are imported from the principal competing country, Sweden, into the New York area, but the amount of such imports is small.

The second important competing market for domestic and imported rough granite is at Quincy. Imports from Sweden and Finland into the Massachusetts customs district for the three years, 1924 to 1926, inclusive, average about 16,500 cubic feet, as compared with about 60,000 cubic feet that entered at the port of New York. Of these imports through Boston, however, about 11,000 cubic feet

were from Finland, and less than 6,000 cubic feet were from the principal competing country, Sweden. These imports at Boston are chiefly of red granite, and they compete at Quincy with the gray granite of that district.

COMPARISON OF WEIGHTED AVERAGE COSTS OF DOMESTIC AND IMPORTED UNFINISHED MONUMENTAL GRANITE

Method of weighting costs.

Sweden.—The average cost of producing rough granite in Sweden is weighted upon the basis of the production in 1924 of each quarry for which cost data were obtained. Costs are for black, red, and gray granites.

The transportation costs from the Swedish quarries to Gothenburg, the port of shipment, are weighted upon the same bases as production costs. Transportation and other charges from Gothenburg to the Atlantic seaboard are unweighted, because they are the same per cubic foot for all types of granite to the important seaboard cities.

United States.—The average cost for domestic rough granite is weighted upon the basis of the production of the companies from which cost data were obtained in the Vermont, Massachusetts, and Pennsylvania districts. These costs do not include the data for the Minnesota and Wisconsin granite districts.

Transportation costs in the United States are weighted upon the basis of the estimated shipments out of the districts when costs, including transportation, are calculated to New York City from the Vermont, Massachusetts, and Pennsylvania districts.

Costs, including transportation, at New York and Boston.

Costs, including transportation, of domestic and imported unmanufactured monumental granite may be presented upon the following bases:

1. The weighted average cost of production, including transportation to New York City, of gray granite from Vermont and Massachusetts and black granite from Pennsylvania, compared with the cost of production, including transportation to New York City, of black, gray, and red granites from Sweden.

2. The weighted average cost of production, including transportation to New York City, of black granite from Pennsylvania, compared with the cost of production, including transportation to New York City, of black granite from Sweden.

The cost by the second method can not be made public, as to do so would reveal the costs of production of individual companies.

Table 24 shows the costs of production in so far as they can be shown of domestic and foreign unmanufactured monumental granite upon the above bases.

TABLE 24.—Unmanufactured monumental granite: Comparisons upon two bases of the weighted average costs of production, including imputed interest, of domestic and Swedish monumental granite, f. o. b. quarries, and at New York City, and the differences in such costs at these points, for the year 1924

(1) COSTS FOR VERMONT, MASSACHUSETTS, AND PENNSYLVANIA DISTRICTS COMBINED, COMPARED WITH COSTS, FOR 4 BLACK, 1 RED, AND 1 GRAY SWEDISH GRANITES COMBINED

[Per cubic foot]

Item	Domestic	Sweden	Differences in costs (duty per cubic foot necessary to equalize differences in costs)
Cost f. o. b. quarry.....	\$2.06	\$1.42	\$0.64
Imputed interest.....	.14	.04	.10
Cost f. o. b. quarry, including imputed interest.....	2.20	1.46	.74
Transportation and other charges from quarries to New York City.....	.82	.94	.....
Total cost, including transportation and other charges to New York City.....	3.02	2.40	.62

(2) COSTS OF PENNSYLVANIA BLACK GRANITE (IN SO FAR AS THEY CAN BE SHOWN) COMPARED WITH COST OF SWEDISH BLACK GRANITE

Item	Pennsylvania	Sweden	Differences in costs (duty per cubic foot necessary to equalize differences in costs)
Cost f. o. b. quarry.....	(1)	\$1.88	(1)
Imputed interest.....	.....	.05	.....
Cost f. o. b. quarry, including imputed interest.....	(1)	1.93	(1)
Transportation and other charges from quarries to New York City.....	\$0.65	1.09	.....
Total cost, including transportation and other charges to New York City.....	(1)	3.02	(1)

¹ Cost for the Pennsylvania district is shown in the confidential section of the report. Cost for this district can not be shown because of the possibility of disclosing confidential information.

² The cost for the Swedish granite f. o. b. quarry, and at New York City, exceeds the cost of the domestic at corresponding points.

Reasons for and against bases (1) and (2).

1. The weighted average cost of production, including transportation to New York City, of gray granite from Vermont and Massachusetts and black granite from Pennsylvania, compared with the cost of production, including transportation to New York City, of black, gray, and red granites from Sweden.

A reason for comparing the costs of domestic and imported unmanufactured monumental granite, with transportation to New York City included, is that that city is the principal market for imported rough granite from the principal competing country, Sweden. The average annual imports of rough Swedish granite at New York for the three years 1924, 1925, and 1926 were over 60,000 cubic feet, as

compared with an annual average for the same period for the country as a whole of less than 70,000 cubic feet. The bulk of Pennsylvania unmanufactured black granite which is sold out of the district is shipped to New York. Vermont and Massachusetts unmanufactured granite moves only in small quantities to New York City; most of the Vermont and Massachusetts granite sold in New York is shipped in the form of finished dies.

A reason against the use of New York as the principal market for comparing domestic and imported costs of rough granite is the fact that the investigation has not disclosed that Barre or Quincy rough granite is shipped to New York in appreciable quantities. The exact amount of shipments, if any, is not known. Any shipments of New England gray rough granite which may reach the New York market may not compete directly with much of the Swedish imports into that market, because the bulk of such imports is black granite, used largely for the manufacture of slabs for the Jewish trade.

2. Costs, including transportation at New York, of Pennsylvania and Swedish black granites.

One reason for comparing the costs of Pennsylvania and Swedish black granites, including transportation at New York City (shown in the confidential section of the report), is the fact that these granites are more directly competitive than any other imports from the principal competing country, Sweden. Both are sold in the New York market in important quantities and are used largely for the same purpose—namely, in the manufacture of polished slabs for the Jewish trade. Much of the Pennsylvania granite, however, is shipped to New York in a partly finished form—i. e., polished on one side rather than in the form of rough blocks. In the cost comparison the rough block costs are used because the partly finished slabs are not imported.

A reason against a cost comparison of imports of black granite alone is the fact that this type represents only a small portion of the domestic production of monumental granite in the eastern competitive area. Production in Pennsylvania in 1925 was about 26,500 cubic feet, as compared with about 334,000 cubic feet in Quincy, Mass., and over 1,125,000 cubic feet in the Barre, Vt., district. On the basis of shipments out of the district, Pennsylvania shipped less than 10,000 cubic feet, as compared with about 67,000 cubic feet for Quincy and 225,000 cubic feet for Barre. Inasmuch as there are other types of granite imported—namely, gray and red—a cost comparison based upon a small amount of production of domestic black granite may not be representative of competitive conditions affecting all rough granite along the Atlantic seaboard.

Respectfully submitted.

THOMAS O. MARVIN, *Chairman,*
 ALFRED P. DENNIS, *Vice Chairman,*
 EDGAR B. BROSSARD,
 SHERMAN J. LOWELL,
 LINCOLN DIXON,
 FRANK CLARK,

Commissioners.

VIEWS OF CHAIRMAN MARVIN AND COMMISSIONERS BROSSARD AND LOWELL

New York is the principal market for unfinished monumental granite, most of the imports from Sweden, the principal competing country, being entered there. At New York the imports, mostly unfinished black granite, come into direct competition with the Pennsylvania black granite and to a limited extent with the Massachusetts and Vermont gray granite. Cost comparisons of Pennsylvania black granite and Swedish black granite, including transportation to New York, have been included in Table 24, page 59.

In the opinion of Commissioners Marvin, Brossard, and Lowell the costs of production of black granite are not representative of the costs of production of granite in the United States and in the principal competing country, and the difference in the costs of production of black granite—only one of the varieties of granite included in the investigation—should not be taken as the basis of calculating the difference in the costs of production of granite in the United States and in Sweden for the purposes of section 315.

The production of black granite in the United States represents only a small portion of the production of monumental granite in the eastern competitive area. Imports from Sweden are largely black granite, but some red and gray granites are also imported from Sweden. In addition, a considerable quantity of red unfinished monumental granite is imported at the port of Boston, largely from Finland, and competes with gray granite in the Quincy district. A comparison based upon black granite alone would probably represent the larger part of the imports from the principal competing country but would not be fairly representative of competitive conditions affecting rough granite in the markets of the United States, and would take into account only a small part of the domestic production of unfinished monumental granite.

In Sweden costs of production of black granite are greater than costs of production of either red or gray granite. In the United States costs of production of black granite are less than costs of production of either the red or gray granite. To base a comparison upon the black granite would therefore be to take the high-cost product in Sweden and the low-cost product in the United States, leaving entirely out of account the low-cost product in Sweden and the high-cost product in the United States. A comparison based upon the black granite alone would indicate a maximum reduction in the present rate of duty, or a reduction from 15 cents per cubic foot to 7½ cents per cubic foot. Such a rate of duty would give foreign granite on the average an advantage at New York of 43½ cents per cubic foot over Massachusetts granite and of 61½ cents per cubic foot over Vermont granite, and an advantage at Boston of 7½ cents per cubic foot over Massachusetts granite and of 28½ cents per cubic foot over Vermont granite. A reduction in the rate of duty, based upon the black granite alone, would give the imported red and gray unfinished granite a greater advantage than it now enjoys in the markets of the United States.

Based upon the foregoing, Commissioners Marvin, Brossard, and Lowell are of opinion that the costs of production of black granite

are not representative of the costs of production of granite in the United States or in Sweden; that to adjust the rate of duty on unfinished granite upon the basis of the difference in costs of production of black granite alone would leave out of the cost comparison the larger part of the domestic granite industry; that such comparison is based upon the high-cost product in the foreign country and the low-cost product in the United States and ignores the low-cost product in the foreign country and the high-cost product in the United States.

Commissioners Marvin, Brossard, and Lowell are of opinion that the proper basis of comparison is to compare the weighted average cost of production of gray and black unfinished granites in Vermont, Massachusetts, and Pennsylvania, including transportation to New York, with the weighted average cost of production of red, gray, and black granites produced in Sweden, including transportation to New York. The ascertained difference in such costs of production indicates a maximum increase in the present rate of duty, or an increase from 15 cents per cubic foot to 22½ cents per cubic foot.

SUMMARY

Findings of fact to the following effect are, in the judgment of the undersigned members of the United States Tariff Commission, warranted by the evidence collected in the investigation of unmanufactured monumental granite and summarized in the foregoing report.

COSTS OF PRODUCTION OF UNMANUFACTURED MONUMENTAL GRANITE

(1) Sweden is the principal competing country.

(2) The present duty on unmanufactured monumental granite of 15 cents per cubic foot does not equalize the difference in costs of production of unmanufactured monumental granite in the United States and in the principal competing country.

(3) *Costs, f. o. b. quarries.*—The average cost of production of unmanufactured monumental granite f. o. b. quarries, including interest, is, for the United States, \$2.20 per cubic foot, and for Sweden, \$1.46 per cubic foot. The average cost of production in the United States exceeds the average cost of production in Sweden by \$0.74 per cubic foot. The rate of duty necessary to equalize said difference in costs of production f. o. b. quarries of unmanufactured monumental granite, the product of the United States, and of a like or similar article, the product of the principal competing country, within the limits of section 315 of the tariff act of 1922 is 22.5 cents per cubic foot.

(4) In the opinion of the Attorney General, under date of February 2, 1926, it was held that in ascertaining the differences in costs of production under section 315 the President should, "by virtue of clause (4) subdivision (c), take into consideration, in so far as he finds it practicable from an analysis of the facts in each case, costs of transportation, whenever it is shown that such costs or differences therein, as between foreign and domestic articles, constitute an advantage or disadvantage in competition between the foreign and American producers."

Cost comparisons, shown in this report on two bases, include transportation to New York in both comparisons.

(5) *Comparison of domestic costs of production of unmanufactured monumental granite produced in Vermont, Massachusetts, and Pennsylvania, with the costs of production of like or similar granite produced in Sweden, including transportation on both the foreign and domestic granite to New York.*—On this basis the average cost of production of unmanufactured monumental granite, including transportation to New York, is, for the United States, \$3.02 per cubic foot, and for Sweden, \$2.40 per cubic foot. The average cost for the United States exceeds the average cost for Sweden by \$0.62 per cubic foot. The rate of duty necessary to equalize said difference in costs of production, including transportation to New York, of unmanufactured monumental granite, the product of the United States, and of a like or similar article, the product of the principal competing country, within the limits of section 315 of the tariff act of 1922, is 22.5 cents per cubic foot.

(6) Commissioners Marvin, Brossard, and Lowell are of the opinion that the cost comparison in this investigation should be based upon domestic costs of production of unmanufactured monumental granite produced in Vermont, Massachusetts, and Pennsylvania and the costs of production of like or similar granite produced in Sweden, including transportation on both the foreign and domestic granite to New York, as shown in paragraph 5 above. On this basis the average cost of production for the United States exceeds the average cost of production for Sweden by \$0.62 per cubic foot. The rate of duty necessary to equalize said difference in costs of production, on this basis of comparison, of unmanufactured monumental granite, the product of the United States, and of a like or similar article, the product of the principal competing country, within the limits of section 315 of the tariff act of 1922, is \$0.225 per cubic foot.

Respectfully submitted.

THOMAS O. MARVIN, *Chairman.*
EDGAR B. BROSSARD,
SHERMAN J. LOWELL,
Commissioners.

IEWS OF COMMISSIONERS DENNIS, DIXON, AND CLARK

With respect to rough granite, all the experts of the commission and all commissioners agree that Sweden is the principal competing country.

Imports of Swedish granite through the port of New York in 1924 were 86.8 per cent of total imports from Sweden. New York is the principal competing market. The trade in Swedish granite is highly specialized, based on a variety of stone known as black granite. This type of granite is used principally by Jewish populations for memorial purposes. Fully 80 per cent of the rough granite imported is of the black type. Small amounts of red granite are imported from Finland and Sweden through the port of Boston for use in the granite manufacturing district of Quincy, Mass. Occasional shipments of gray granite are made from Norway. It is clear, however, that the preponderance of the import trade originates in Sweden and is concentrated in the particular variety of stone known as black granite.

SIMILAR TYPES OF GRANITE

The nearest like or similar article to the Swedish black granite is a type of stone produced largely by quarries in southeastern Pennsylvania. The principal market for the Pennsylvania black granite, whether crude or partially polished, is in New York City. New York City is unquestionably the chief marketing point for the imported Swedish granite. It is clear, therefore, that transportation costs should be equalized at this point.

We are confronted in the matter of transportation costs by a simple problem in arithmetic. We need only to compare the freight charges on the black granite which moves from Sweden to New York with freight charges on the black granite which moves from Pennsylvania to New York. The delivered costs of the competing commodities at New York, including interest, are, for the Swedish product, \$3.02 per cubic foot, and for the Pennsylvania product considerably less.

OTHER TYPES OF GRANITE

How about types of granite other than black? Our most important domestic monumental granite quarries are concentrated in New England (Barre, Vt., and Quincy, Mass.). If we were to average up the costs of the important domestic granites (New England grays and Minnesota reds) with the Pennsylvania blacks, we must of necessity take the costs of the rough stone at the quarries and compare those costs with Swedish granite delivered at New York, unless it can be shown that the New England and Minnesota granites actually compete with the Swedish granite in the New York market. Those who are disposed to cavil may urge that Pennsylvania black granite is not representative of national production, since the concentration of the industry

is largely on gray granites produced in New England. True enough. But the subject matter of this report has to do with international competition, and while the Pennsylvania black granite does not hold a commanding position in the scale of national production it does hold a predominant position in the equation of international competition. Foreign competition is not in the gray or red granites. The competition is in the Swedish black granite. All commissioners are in substantial agreement that Sweden is the principal competing country. Black granite indisputably holds a preponderant position in our import trade. Nor is there dispute as to what it costs to deliver in the New York market black Swedish granite and the Pennsylvania black granite with which it competes.

POINTS AT ISSUE AS BETWEEN COMMISSIONERS

The views of commissioners sharply diverge when it comes to the problem of transportation as applied to the movement of rough granite. It is suggested by certain commissioners that domestic transportation costs should be weighted by the theoretical expense of freighting the huge gray granite output of the New England quarries to New York. There is nothing in the data gathered by the commission's experts to warrant the assumption that any considerable tonnage of New England rough granite actually finds its way to New York. Indeed, it is known to a certainty that only 20 per cent of the product of the New England quarries moves beyond the narrow circumscribed districts adjacent to the quarries. With respect to the rough granite and the quarry from which it is taken, the economic influence is centripetal rather than centrifugal. The ratio of weight to value in the case of rough granite is unusually high, with transportation charges correspondingly heavy. This being so, natural economic law dictates that the manufacturing plant should seek the quarry rather than the product of the quarry the manufacturing plant. The practical men who operate these New England quarries have succeeded in their business by working along lines of least economic resistance. The average wage for stone cutters in Barre, Vt., is \$8 against \$11 in New York. Freight charges to New York from Barre, Vt., on rough granite are 86 cents per cubic foot; from Quincy, Mass., 66 cents per cubic foot. The loss of granite in the manufacture of tombstones runs from 10 to 15 per cent. The difference between \$8 and \$11 and the excess in freight of from 10 to 15 per cent represent the disadvantages of shipping New England rough granite from the quarries to New York for manufacture into monumental dies.

We have an analogy presented by the lumber trade. The practical lumber man is careful to establish his mill in proximity to his forest. It is the finished lumber rather than the saw log which moves to the city market. It would be a stupid piece of business to ship the saw log rather than the finished lumber to centers of lumber distribution.

If by imperious economic law rough New England granite tends to cling to the quarry, what is the sense of taking by a stroke of the pen the entire output to New York City and loading onto its cost of production a fictitious transportation expense which is paid on a commodity which does not actually move and would not so move

if every cubic foot of foreign granite were forever excluded from the territorial limits of the United States? The whole object of this investigation is to equalize costs. The objective to be sought under the dogma of theoretical transportation is not equalization of costs but the exclusion of the foreign article.

Some of the undersigned commissioners, as in a preceding 315 report submitted to the President, express the opinion that the same influences on the commission which favored the exclusion of transportation costs under subsection (c) of section 315 of the tariff act of 1922 are now bent by the use of legal fictions upon nullifying the ruling of the Attorney General that such costs must be considered as an advantage or disadvantage in competition.

Under the doctrine that hypothesis may be substituted for reality and inconvenient facts ignored, it is easy for a commissioner to arrive at any result in a 315 case. By a similar selective process one may spell from a box of lettered blocks any word that he may desire.

Of course, such methods mean the destruction of the commission as a scientific fact-finding body. The flexible provision answers to the need for scientific tariff making. To those who have been skeptical of its workability, the doctrine that what is not may be substituted for what is, in a report to the President, will provoke cynical laughter. But to the serious minded who still retain some faith in the commission as a valuable advisory board to the President, the doctrine referred to will bring only mortification and distress.

Such a doctrine is a species of sacrilege since it breaks down the invisible altar of public trust in a governmental agency.

FORMAL STATEMENT OF CONCLUSIONS

1. Sweden is the principal competing country.
2. The delivered cost of Pennsylvania granite at New York City (see cost figure in confidential section of the report) is considerably less than \$3.02 per cubic foot, the cost of the foreign competing article delivered in New York City.
3. The difference between the two is greater than 7½ cents per cubic foot, the maximum reduction permitted under the existing specific duty of 15 cents per cubic foot.

ALFRED P. DENNIS, *Vice Chairman.*
 LINCOLN DIXON,
 FRANK CLARK, *Commissioners.*

APPENDIX

CERTAIN DETAILED TABLES OF STATISTICS AND COSTS

In Table A are presented statistics indicating the trend of production of monumental granite in the Barre district of Vermont for the years 1918 to 1926. In Tables B and C are shown similar data for specified years for the Quincy, Mass., and the Minnesota districts, respectively.

TABLE A.—Monumental granite: Statistics of production in the Barre district of Vermont, 1918-1922

[Source: Mineral Resources of the United States, Pt. II]

	1918	1919	1920	1921 ¹	1922 ¹	1923	1924	1925	1926
(1) Total quarry output rough stock..... cubic feet.....	1, 654, 800	1, 273, 689	1, 178, 448	474, 000	620, 626	1, 254, 714	1, 127, 850	1, 161, 684	1, 169, 322
(2) Shipped out of district in rough..... do.....	248, 222	191, 048	176, 766	71, 100	172, 884	1, 251, 968	1, 726, 570	232, 336	232, 864
(3) Manufactured in district..... do.....	1, 406, 578	1, 082, 642	1, 001, 678	402, 900	447, 742	1, 432, 718	902, 280	928, 348	936, 458
(4) Light stock consumption in district..... do.....	871, 111	676, 626	638, 048	241, 813	278, 841	628, 701	563, 925	560, 843	584, 049
(5) Dark stock consumption in district..... do.....	527, 467	408, 978	375, 628	151, 087	167, 801	378, 017	338, 355	348, 505	350, 769
(6) Number of cutters in district.....	1, 500	1, 500	1, 469	1, 100	1, 000	1, 250	1, 000	1, 100	1, 100
(7) Average daily wage.....	\$5.00	\$4.00	.....	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00	\$8.00
(8) Average number of working days.....	260	269	.....	160	70	270	250	275	272
(9) Total pay-roll for year.....	\$1, 980, 000	\$2, 529, 000	\$2, 318, 469	\$1, 408, 000	\$800, 000	\$2, 700, 000	\$2, 000, 000	\$2, 420, 000	\$2, 392, 600
(10) Estimated overhead.....	978, 000	1, 260, 000	1, 189, 269	704, 000	280, 000	1, 350, 000	1, 000, 000	1, 210, 000	1, 198, 800
(11) Estimated light stock valuation.....	1, 572, 400	2, 434, 854	2, 253, 778	908, 527	940, 265	2, 324, 123	2, 332, 585	2, 612, 789	2, 680, 972
(12) Estimated dark stock valuation.....	1, 054, 934	1, 694, 502	1, 540, 078	619, 457	805, 924	1, 940, 246	2, 022, 223	1, 872, 215	1, 883, 523
(13) Estimated polishing cost.....	900, 000	1, 080, 000	800, 000	300, 000	311, 500	600, 000	385, 500	735, 000	1, 780, 880
(14) Output from saws.....	300, 000	350, 000	300, 000	100, 000	160, 000	250, 000	285, 000	245, 000	245, 610
(15) Sum of (3) to (14).....	6, 732, 334	9, 268, 338	8, 871, 448	4, 087, 964	3, 087, 689	9, 096, 371	8, 200, 308	9, 087, 004	9, 083, 246

¹ In 1921 and 1922 there was a strike, which accounts for the low production of those years.

TABLE B.—*Monumental granite: Volume of business in Quincy, Mass., 1920-1924*¹

	1920	1921	1922	1923	1924
(1) Value added by polishing.....	\$181, 624	\$104, 290	\$81, 469	\$143, 533	\$128, 335
(2) Value of manufacturing operations other than polishing.....	1, 774, 643	1, 266, 524	848, 278	1, 526, 172	1, 906, 789
(3) Value of manufacture not including rough stock.....	1, 956, 267	1, 370, 744	927, 747	1, 669, 704	1, 935, 124
(4) Value of rough stock.....	705, 812	845, 472	340, 115	560, 936	541, 672
(5) Total value of output of district.....	2, 662, 079	1, 716, 216	967, 862	2, 233, 640	2, 476, 796

¹ Based on statistics compiled by the secretary of the Quincy Granite Manufacturers' Association.

² The figures for rough stock are practically the same as those for the product of the quarries of the district. Approximately as much granite is brought into the district for manufacture as is shipped out of the district for manufacture elsewhere.

TABLE C.—*Monumental granite: Sold or used by producers in Minnesota, 1916-1926*¹

[Source: Mineral Resources of the United States, Pt. II]

Year	Cubic feet	Value	Year	Cubic feet	Value
1916.....	330, 500	\$995, 924	1922.....	300, 370	\$1, 672, 092
1917.....	243, 740	803, 370	1923.....	401, 620	2, 343, 069
1918.....	283, 469	1, 016, 643	1924.....	312, 170	1, 938, 839
1919.....	342, 244	1, 679, 707	1925.....	260, 620	1, 530, 591
1920.....	393, 230	1, 876, 325	1926.....	245, 200	1, 486, 780
1921.....	136, 920	911, 151			

¹ The annual values shown in this table include the value of the rough stock sold, and the value of the finished granite manufactured in the shops of the quarriers only.

In Table D are summarized the cost data obtained in the Wisconsin district. In the table are shown the average shop costs for all the plants of this district where costs were obtained, both by size of die and style of top; the average shop costs by size and three types of top collectively; the average shop costs by type of top and four sizes collectively; and in the last column is shown the final average for the district, concentrating the detailed cost information previously given in the table. In addition are shown the imputed interest applicable to each die, and the simple average of such costs.

MONUMENTAL GRANITE

TABLE D.—Manufactured monumental granite, United States: Summary of costs of production, shop costs and imputed interest for dies of the selected sizes and types of top with all exposed surfaces polished, for the year 1925

COSTS: FOR WISCONSIN

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 0"				3' 0" by 1' 0" by 3' 10"				3' 8" by 1' 0" by 3' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$38.46	\$38.46	\$38.46	\$38.46	\$19.75	\$19.75	\$19.75	\$19.75	\$17.61	\$17.61	\$17.61	\$17.61
Direct labor.....	52.51	60.58	70.19	61.09	43.51	43.57	53.57	48.89	39.19	44.45	59.73	44.79
Manufacturing expense.....	62.05	71.88	83.09	72.34	57.47	57.47	63.71	57.81	48.23	52.64	59.94	52.68
Packing expense.....	2.64	2.97	3.35	2.99	2.32	2.32	2.60	2.32	1.99	2.12	2.36	2.12
Total shop cost.....	145.66	163.99	194.99	164.88	123.05	123.05	143.63	128.78	104.92	116.82	136.63	117.48
Imputed interest.....	6.04	6.79	7.67	6.83	4.75	5.31	5.95	5.34	4.35	4.84	5.41	4.87
Total including interest.....	151.70	170.68	192.76	171.71	119.43	133.26	149.58	134.12	109.27	121.66	138.04	122.35
	Composite die											
	Size and type of die—Continued											
	3' 0" by 1' 0" by 3' 6"											
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$11.62	\$11.62	\$11.62	\$11.62	\$11.62	\$11.62	\$11.62	\$11.62	\$19.26	\$19.26	\$19.26	\$19.26
Direct labor.....	23.70	31.66	38.36	31.91	23.91	23.91	33.91	40.90	44.80	44.80	53.71	47.17
Manufacturing expense.....	34.96	39.77	45.26	40.00	40.00	40.00	43.37	45.44	55.44	63.50	63.50	56.77
Packing expense.....	1.40	1.57	1.75	1.57	1.57	1.57	2.01	2.24	2.24	2.51	2.51	2.26
Total shop cost.....	71.68	84.62	96.99	87.10	87.10	87.10	110.73	122.94	122.94	138.68	138.68	124.85
Imputed interest.....	3.22	3.59	4.02	3.61	3.61	3.61	4.59	5.13	5.13	5.77	5.77	5.16
Total including interest.....	80.90	90.21	101.01	90.71	115.32	128.97	144.85	128.71	128.71	144.85	144.85	128.71

1 All costs are simple averages.

Summary of manufacturing expense ratios to direct labor cost.

Table E presents a comparison, by companies and by districts, of the ratios of manufacturing expense to direct labor costs, and of packing costs to total shop costs exclusive of packing, used in calculating the costs of domestic polished granite dies.

TABLE E.—Manufactured monumental granite, United States: Summary of ratios of manufacturing expense to direct labor costs, and of packing costs to total costs exclusive of packing, by companies and by districts

District and company	Manufacturing expense: Percentage of direct labor	Packing cost: Percentage of total shop costs, exclusive of packing costs	District and company	Manufacturing expense: Percentage of direct labor	Packing cost: Percentage of total shop costs, exclusive of packing costs
Vermont:			Pennsylvania:		
4.....	117.31	1.20	26.....	84.35	2.46
5.....	206.90	1.15	27.....	122.06	2.09
6.....	138.32	.11	Minnesota:		
7.....	122.48	1.80	28.....	126.44	1.17
8.....	239.40	2.62	29.....	163.94	.81
9.....	143.88	1.68	30.....	128.72	1.15
10.....	233.57	1.27	31.....	116.78	1.21
11.....	168.02	.97	32.....	185.00	1.52
Massachusetts:¹			33.....	161.67	1.13
14.....	117.33	2.33	Wisconsin:		
15.....	115.88	1.87	34.....	137.39	1.84
16.....	85.70	1.26	35.....	111.06	1.96
17.....	104.13	1.74	36.....	111.11	1.77
18.....	131.93	1.62			

Districts	Range and average of manufacturing expense: Percentages by districts		
	Low	High	Simple average
Vermont.....	117.31	239.40	171.23
Massachusetts ¹	85.70	131.93	110.99
Pennsylvania.....	84.35	122.06	103.20
Minnesota.....	116.78	185.00	145.42
Wisconsin.....	111.06	137.39	119.85

¹ Direct labor costs for the Massachusetts districts do not include the cost of polishing done in plants other than those of the manufacturers.

Table F summarizes the cost data obtained from the German manufacturers of polished granite dies fabricated in that country from the variety of Swedish granite known as Black Swede.

TABLE F.—Manufactured monumental granite, Germany: Summary of costs of production, shop costs and imputed interest for dies of the selected sizes and types of top, with all exposed surfaces polished, for the year 1926

COSTS¹ FOR BLACK SWEDE

Item	Size and type of die											
	3' 6" by 1' 2" by 3' 6"				3' 0" by 1' 0" by 2' 10"				2' 8" by 1' 0" by 2' 10"			
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Serpentine top	Average
Rough stock.....	\$55.06	\$55.06	\$55.06	\$55.06	\$33.85	\$33.85	\$33.85	\$33.85	\$30.16	\$30.16	\$30.16	\$30.16
Direct labor.....	21.06	22.60	21.93	21.93	17.10	17.90	18.25	17.75	15.74	16.46	16.76	16.32
Manufacturing expense.....	31.10	32.66	33.34	32.37	25.16	26.31	26.81	26.09	23.17	24.17	24.62	23.95
Packing expense.....	4.91	3.68	3.09	3.01	3.50	3.38	3.03	3.57	3.17	3.25	3.29	3.23
Total shop cost.....	112.13	114.88	116.09	114.37	79.61	81.64	82.54	81.26	72.21	74.04	74.83	73.69
Imputed interest.....	4.78	4.98	4.94	4.87	3.37	3.46	3.49	3.44	3.06	3.13	3.16	3.12
Total shop cost including interest.....	116.91	119.77	121.03	119.24	82.98	85.10	86.03	84.70	75.27	77.17	77.99	76.81

Item	Size and type of die—Continued											
	2' 0" by 1' 0" by 2' 6"						Average of all sizes					
	Flat top	Oval top	Serpentine top	Average	Flat top	Oval top	Flat top	Oval top	Serpentine top	Average		
Rough stock.....	\$19.03	\$19.93	\$19.93	\$19.93	\$19.93	\$19.93	\$34.75	\$34.75	\$34.75	\$34.75	\$34.75	\$34.75
Direct labor.....	11.64	12.16	12.30	12.06	12.30	12.06	16.39	17.16	17.50	17.50	17.01	17.01
Manufacturing expense.....	17.06	17.85	18.15	17.71	18.15	17.71	24.12	25.74	25.74	25.74	25.74	25.74
Packing expense.....	2.23	2.29	2.29	2.28	2.32	2.28	3.45	3.54	3.54	3.54	3.58	3.53
Total shop cost.....	50.88	52.23	52.82	51.98	52.82	51.98	78.71	80.70	81.57	81.57	81.57	80.33
Imputed interest.....	2.15	2.20	2.25	2.19	2.25	2.19	3.54	3.42	3.43	3.43	3.43	3.41
Total shop cost including interest.....	53.03	54.43	55.06	54.17	55.06	54.17	82.05	84.12	85.00	85.00	85.00	83.73

¹ All costs are simple averages.

