STONE.

By William C. Day.

The year 1891 has been a comparatively dull one for the stone industry. There appears to have been less building done than usual, particulary in New York, as well as in other large cities. Labor troubles have been the cause of diminished output in particular places, but they have not interfered with production to an extent at all comparable with their effects in the early part of the present year (1892).

General depression in finances seems to have been felt in every productive State, and while in some States an increase (in some cases quite remarkable) is to be noted, it is fair to assume that the advance would have been much greater but for the obstacle named above. Small producers have been driven out of business by the score, and as a consequence it has been a good year for concerns with large capital to acquire new quarry property at reasonable figures.

Prospects for a large output in 1892 are, in general, referred to as good, or at least much better than in 1891.

While considerable quarry property has changed hands, by either sale or lease, actual new developments have not been numerous, and the state of business did not call for much prospecting for new discoveries.

The effects of overproduction in certain branches of the stone industry have been severely felt by producers. This is particularly true of granite in the form of paving blocks and of lime at a number of important centers.

The following tabular statement shows the total value of the different kinds of stone produced in the United States in 1891:

Production, by kinds, of stone for the year 1891.

Granite	$13,867,000
Sandstone	8,700,000
Limestone	15,792,000
Marble	3,610,000
Slate	3,825,746
Bluestone	1,500,000
Total	47,294,746

GRANITE AND ALLIED ROCKS.

Production.—The value of the granite product of the United States in 1891 was $13,867,000. This figure falls somewhat below that for the census year 1889, although it represents an increase as compared with

1890. The latter part of the season of 1891 has been referred to by producers generally as dull; demand for stone fell off and prices declined while wages remained unchanged in most cases.

The paving-block industry particularly shows a falling off; this was in part due to over production in 1890. The larger cities are becoming more critical as to the sizes and quality of the blocks, so that it seems to be quite generally conceded that there was very little money, comparatively speaking, in the manufacture of blocks. Inasmuch as the production of paving blocks requires no refined skill comparable to that involved in the production of fine building and ornamental stock, the depression in this branch of the industry has been felt keenly by many of the smaller concerns having no great amount of capital invested. Many of them have suspended operations and others have sold out and quit the business. There has been, moreover, not a little trouble with labor, although this was not serious by comparison with that which broke out in the early part of the present year, 1892.

In the production of building and ornamental stock the industry seems to have progressed almost normally in spite of the fact that in New York city, and probably also in others, the amount of building done in the last two years is somewhat below the average.

In a number of States in which granite quarrying is a comparatively new thing large percentage gains in production have been revealed, but most of these have been due to greatly extended operations on the part of a few wealthy and enterprising corporations rather than to an increase in the number of individual concerns. The present year opened with encouraging prospects, but the labor troubles, which began early in the season, will undoubtedly curtail production to a very serious extent.

The following table shows the distribution of the year's output among the productive States:

Production of granite in 1891, by states.

Arkansas	$65,000	New York	$225,000
California	1,300,000	Oregon	3,000
Colorado	300,000	Pennsylvania	575,000
Connecticut	1,167,000	Rhode Island	750,000
Delaware	210,000	South Carolina	50,000
Georgia	790,000	South Dakota	100,000
Maine	2,200,000	Texas	75,000
Maryland	450,000	Vermont	700,000
Massachusetts	2,600,000	Virginia	300,000
Missouri	400,000	Wisconsin	406,000
Montana	51,000		
New Hampshire	750,000	Total	13,867,000
New Jersey	400,000		

The following is a consideration of the industry in the various productive states:

Arkansas.—Quite a large percentage gain has been made in this State, although the total output is small. Future prospects are encouraging. The productive quarries are in the vicinity of Little Rock.

California.—The granite output of 1891, valued at $1,300,000, failed to reach the figure of the census year and was also lower than that for 1890. Less demand and lower prices are reported by the majority of the producers. The figure above given includes the estimated value of the granite produced by the State prison and the Folsom Water Power Company at Folsom City. This product is estimated at a value of about $500,000 and was used entirely in the construction of a dam and a canal for the purposes of power and irrigation. The Folsom Granite Company has been incorporated, with the intention of working the quarries of the Folsom Water Power Company as soon as the latter shall have finished the canal on which they are engaged.

The production of basalt paving blocks in Sonoma county showed the effects of overproduction in the two years previous.

Colorado.—Although the subject of the development of stone quarries is thoroughly and persistently agitated in the daily and technical papers of the State the limited transportation facilities afforded will doubtless prevent for some time to come anything like a vigorous development of the valuable granite which occurs in abundance.

Connecticut.—The value, $1,167,000, represents a small gain in production over the census year. The product is largely used for general building purposes.

Delaware.—While the granite output of the State is not large, being valued at only $210,000, it is nevertheless true that some of the quarries, notably those nearest Wilmington on the Brandywine, are exceptionally well equipped. The latest improvements for handling stone are in use, as well as machines for splitting large blocks. In this respect these quarries are ahead of many more productive quarries in the New England States.

Georgia.—Owing to increased production on the part of a few of the larger concerns in this State the output of granite has been larger than in any previous year. On account of the cheapness of unskilled labor and the ease of quarrying at Stone Mountain and Lithonia the granite business in these localities appears to have been profitable and to justify expectations of continued prosperity in the future.

Maine.—In this State the output did not quite equal that of the census year. The product in 1889 was about equally divided between general building purposes and street works. In fine stocks, such as cut stone and polished products, business seems to have increased over that of 1890, but the paving-block production seems to have suffered from depression in prices, while at the same time wages have been for the most part unchanged. Furthermore, the larger cities are beginning to

be more critical as to the uniformity of size and the quality of the blocks. As a result of this condition, probably brought about by overproduction in 1889 and 1890, not a few of the producers report that there is no money to be made in paving blocks at the present time. Labor troubles have also made themselves felt in a number of places, although difficulties in this direction bear no comparison with those which manifested themselves early in the present year.

Maryland.—Production in 1891 was somewhat ahead of that in 1890 and also in 1889. The output is about equally divided between Baltimore and Cecil counties.

The finest stone is that taken from quarries at Port Deposit, which has a high reputation as a building stone and is somewhat remarkable for the comparative ease with which large blocks may be quarried.

Massachusetts.—In general, business was better than in 1890, but in the last few months of 1891 it appeared to be quite dull.

Demand for ordinary building stone seemed to be somewhat better than for finished products. The production of paving blocks in this State is on a much smaller scale than in Maine, so that the depression in the paving-block trade was much less felt.

Minnesota.—Considerably extended operations on the part of 1 of the 23 active quarries in the State resulted in quite an increase in the output for the year.

Missouri.—The paving-block industry suffered a noticeable depression, but the demands for building granite exceeded that of 1890. The most extensive quarries are at Graniteville, in Iron county; they are quite well equipped, as are also those at Granite Bend, in Wayne county.

New Hampshire.—The product in 1891 was valued at $750,000; this figure represents an increase over 1890, although the gain is a small one.

New Jersey.—A considerable proportion of the output of this State is trap rock, which is largely used for street and road work. Comparatively little of the stone goes for general building, but is largely consumed as stated above and for bridge and railroad construction.

New York.—The value of the output in 1891 is very slightly above that for 1890. Most of the stone goes for general building purposes. The paving-block trade suffered in the same way as in other States which contribute to the supply of New York city.

North Carolina.—Granite-quarrying in this State has a promising outlook and particularly in the vicinity of Salisbury, Rowan county, do the prospects appear to be encouraging. The stone appears to be of fine quality, adapted to polished and ornamental work. The following firms have more or less recently commenced operations at Salisbury: The Granite Millstone Manufacturing Company, the Pink Granite Company, the Pearce Granite Company, the J. D. H. Fisher Granite Company, the Salisbury Granite Company, and the Stone Mountain

Granite Company. There are also good prospects at Mooresville, Iredell county, where the stone appears to be attractive in quality for ornamental products and is easily worked. Increased capital appears to be the thing needful.

Pennsylvania.—While the output in this State amounts in value to $600,000 it can not be said to exert much more than a comparatively local influence. While good building granite is quarried in a number of localities, the great bulk of the State's product goes for street and road purposes, while slightly more than one-fifth is devoted to general building. The amount quarried fell below that of the census year.

Rhode Island.—Granite quarrying in this State was hampered in 1891 by more or less trouble among the granite-workers.

At Westerly a large amount of finished monumental work is done, and the strikes which occurred in the spring of the present year will make a sad inroad upon the activity of 1892.

Vermont.—Substantial progress has been made in this State during the past two years. The most important advances have been made at Barre, and a marked increase in production has characterized both 1890 and 1891. The quality of the Barre granite is such that most of it is used for monumental purposes, and, judging by the increasing demand for it, its popularity seems to be well established, although the operations at Barre have all been built up in the last twelve years. Labor troubles in 1891 interfered to some extent with production, although they were hardly a serious drawback.

Virginia.—The output for 1891 was valued at $300,000; this figure falls below the total reached in 1889.

The Southern Granite and Marble Company was organized in the fall of 1891 to operate granite and marble quarries in a property of 300 acres about 6 miles from Roanoke.

SANDSTONE.

Production.—The total value of the sandstone output in the United States for the year 1891 is $8,700,000, while the corresponding figures for the census year 1889 were $10,816,057.

Depression in demand and prices is reported from the great majority of producers in every productive State. The increase in production in Ohio, the leading State, is almost entirely due to the extended operations of the Cleveland Stone Company, while the notable increase in Wisconsin is due to comparatively new enterprises in that State. The decline in business has been keenly felt by the smaller producers, many of whom have suspended operations or sold out permanently.

The following table shows the distribution of the output:

Production of sandstone in 1891, by States.

Alabama	$30,000	New Jersey	$400,000
Arizona	1,000	New Mexico	50,000
Arkansas	20,000	New York	500,000
California	100,000	North Carolina	15,000
Colorado	750,000	Ohio	3,200,000
Connecticut	750,000	Pennsylvania	750,000
Illinois	10,000	South Dakota	25,000
Indiana	90,000	Texas	6,000
Iowa	50,000	Utah	36,000
Kansas	80,000	Virginia	40,000
Kentucky	80,000	Washington	75,000
Maryland	10,000	West Virginia	90,000
Massachusetts	400,000	Wisconsin	417,000
Michigan	275,000	Wyoming	25,000
Minnesota	290,000		
Missouri	100,000	Total	8,700,000
Montana	35,000		

The following is a brief consideration of the individual productive States:

Alabama.—The value of the product is less than in the census year 1889. The general depression in the business which has shown itself during the past year in nearly every State accounts for the diminished output.

Arizona.—Sandstone is quarried at Tempe and Prescott. The product of the latter locality is shipped chiefly to Denver and Los Angeles. A branch of the Atlantic and Pacific railroad runs to the quarries. The work is so recent an undertaking that as yet no large output has been secured.

Arkansas.—The output of 1891 did not amount to so much as in 1890. It was used chiefly for curbing and flagging, and to a less extent for building.

California.—Sandstone quarrying was for much of the year at a low ebb. The product for 1891 was valued at only $100,000, while that of the census year amounted in value to $175,598.

Colorado.—In 1889 the sandstone output was valued at the remarkably high figure $1,224,098. The two years following have been exceedingly dull by comparison, the value for 1891 amounting to only $750,000. Demand for stone was so poor that quite a large number of quarries shut down altogether for both years. Nearly all the producers, however, report the early part of 1892 as very encouraging in outlook.

Connecticut.—Sandstone quarrying in this State is so old and well established a business and the product is so well and favorably known that such a thing as financial disaster, such as has visited many producers in other regions of the country, is here almost out of the question. The

product of 1891 did not, however, reach the figure attained in the census year, being $750,000 for 1891 or more than $100,000 short of the value for 1889.

Labor troubles and distrust in the money market are referred to by producers as causes for the decline in production. Practically all the sandstone of the State comes from Portland, Middletown, and Cromwell on the Connecticut river, in Middlesex county.

Illinois.—The sandstone output has never amounted to very much in this state; the value of the product in 1891 was $10,000, which is less than the corresponding figures for either 1889 or 1890.

Indiana.—There has been quite a marked increase in this State during the past two years, the product for 1891 being valued at $90,000.

The product of special interest in this State is that which comes from Orange county, inasmuch as it is well adapted to abrasive purposes and the demand for it is rapidly increasing. About one-half of the value of the output represents the value of whetstones.

Iowa.—The output was valued at $50,000 for the year 1891; this is $30,000 below the figure for 1889.

Kansas.—Production fell off very remarkably in 1891, amounting in value to only $80,000 or about $70,000 behind the figures of 1889. The product is used mainly for street work.

Kentucky.—In 1889 the output amounted in value to $117,000, but fell off to $80,000 in 1891.

Maryland.—Very little sandstone is produced in this state; the output for 1891 being valued at $10,000.

Massachusetts.—The product in 1891 was valued at $400,000, or about $250,000 behind the figures for the census year; business was universally reported as dull throughout the year.

Michigan.—The product in 1891 was valued at $275,000; this figure represents a gain of $30,000 as compared with 1889. The entire product is the result of quite extensive operations on the part of a few producing concerns. Much larger developments may be looked for in the course of a few years.

Minnesota.—The product of 1889 was valued at $131,979; that of 1891 at $290,000. This notable increase was due to the extensive operations of a single firm, and even greater results may be expected in a few years. The product was about equally divided between curbing and building.

Missouri.—Although the prospects for a satisfactory output in 1892 are good, the operations of 1891 failed to come up to those of 1889. The product of 1891 was valued at $100,000.

Montana.—While the value of the output in 1891 reached only the moderate figure $35,000, there are reasons for expecting quite an increase in a few years.

Nevada.—A small amount of stone was produced in the neighborhood of Carson City during 1891.

New Jersey.—The value of the output in 1891 was $400,000; this means a falling off of nearly $200,000 since 1889. The product is devoted mainly to building purposes.

New York.—The sandstone considered here does not include bluestone, as was the case at the tenth census. The value of the sandstone, exclusive of bluestone in 1889, was $702,419, but in the past year 1891 this figure fell to $500,000; the decrease is due simply to the general depression in the quarry business.

North Carolina.—The sandstone output has never amounted to much, although the outlook is better at present than ever before; the product of 1891 was valued at $15,000, a gain of $3,000 over 1889.

Ohio.—A gain of $153,000 in the value of the sandstone output in 1891, as compared with 1889, marks the progress which has been made in the last two years; the value of the output in 1891 was $3,200,000. A large advance in the product of the Cleveland Stone Company accounts for the State's increase. Quite a number of the smaller concerns failed to find the year a prosperous one, and many of them either suspended operations or sold out. The Cleveland Stone Company has added considerably to its property during the year and will probably show a much larger advance in 1882.

Pennsylvania.—Strikes in various localities, notably Pittsburg, interfered with the stone industry, and the product of 1891 was reduced from a value of $1,609,159 in 1889 to $750,000 in 1891. The demand for stone was slight all through the year.

South Dakota.—The product was valued at $25,000 for 1891. The prospects of an increased output in 1892 were good early in the year.

Texas.—The sandstone business in this state has never yet amounted to a great deal. The product in 1891 was valued at $6,000.

Utah.—A decrease in the amount of building done in Salt Lake City caused a falling off in the amount of sandstone produced. The product for 1891 was valued at $36,000.

Virginia.—Quite a gain in production has been made in this State since 1889. For the latter year the product was valued at $11,500, while for 1891 it amounted to $40,000. This gain was due to the operations of a few new firms who have commenced business since 1889.

Washington.—The sandstone product was valued at $75,000. The prospects for 1892 are very good. A fine grade of stone is quarried in Whatcom county.

West Virginia.—The value of the output in 1889 was greater by $60,000 than that of 1891; the value for the latter year was $90,000.

Wisconsin.—Owing to very largely increased operations on the part of a few new firms, the output has grown from a value of $183,958 in 1889 to $417,000 in 1891. Prospects for 1892 are very good.

Wyoming.—The output was valued at $25,000 in 1891. This means a gain of about $9,000 over 1887.

LIMESTONE.

The limestone industry showed very decidedly the effects of general depression in 1891. The prices for lime were almost invariably lower, and the demand as compared with previous years was very light.

A reduction in the amount of building done in many of the large cities affected the limestone industry, both as to the stone used for building as well as the lime produced from it. There seems to have been overproduction of lime in 1889 and in 1890, but more in the former year than in the latter.

Depression in the iron industry caused a very marked falling off in the consumption of stone for blast-furnace flux. This was particularly noticeable in Ohio and Pennsylvania.

The total value of the limestone product in 1889, the census year, was $19,095,179, while in 1891 it was $15,792,000, thus showing a falling off of over $3,000,000.

New undertakings were not numerous, while on the other hand a large number of small producers went out of business temporarily. A large amount of limestone is quarried in the United States by individuals, who work their quarries only in a small way, and perhaps for no other reason than that the stone is at hand on their property, and they therefore utilize time not required for farming or such other work as may regularly employ most of their time. This state of affairs exists in a number of the Western states, and particularly in Ohio and Pennsylvania.

One of the most notable changes that has occurred in the limestone industry within a few years is the formation of the Western Stone Company, with headquarters at Chicago, and operating quarries at Joliet, Lockport, and Lemont. This is referred to more in detail in connection with the consideration of Illinois limestone, page 465.

The following table shows the distribution of the limestone output among the various productive States:

Limestone production in the United States in 1891.

Alabama	$300,000	New Jersey	$100,000
Arkansas	20,000	New Mexico	2,000
California	400,000	New York	1,200,000
Colorado	90,000	Ohio	1,250,000
Connecticut	100,000	Pennsylvania	2,100,000
Illinois	2,030,000	Rhode Island	25,000
Indiana	2,100,000	South Carolina	50,000
Iowa	400,000	Tennessee	70,000
Kansas	300,000	Texas	175,000
Kentucky	250,000	Vermont	175,000
Maine	1,200,000	Virginia	170,000
Maryland	150,000	Washington	25,000
Massachusetts	100,000	West Virginia	85,000
Michigan	75,000	Wisconsin	675,000
Minnesota	600,000		
Missouri	1,400,000	Total	15,792,000
Nebraska	175,000		

The following is a series of more detailed statements in regard to the individual states:

Alabama.—The total value of the product in 1891 was $300,000. Of this, $150,000 is the value of lime made. The remainder of the product was devoted to blast-furnace flux, building, and road making. The value of the product in 1889 was $324,814.

Arkansas.—Most of the limestone is burned into lime. The total value of the output, including the value of lime, was $20,000.

California.—Almost all the limestone product of the State is burned into lime. Owing to a reduction in the amount of building done, the product did not come up to that of 1889. The total value of the output was $400,000. Prospects for 1892 are reported as better than for the past two years.

Colorado.—Most of the product is used for burning into lime. Business was exceedingly dull, much less building being done than usual. The total value of the product was $90,000.

Connecticut.—Nearly all of the product was burned into lime. The total value of the output was $100,000. Both demand and prices inferior as compared with 1889.

Illinois.—Although the limestone industry was far more prosperous in this State than in many others, business was not, on the whole, so good as it bids fair to be in 1892. The total value of the output in 1891 was $2,030,000. Something more than half of the product, estimated by value, goes for general building purposes, Illinois devoting more limestone to building purposes than any other State in the Union.

The Western Stone Company, with headquarters at Chicago and a capital of $2,250,000, has recently been formed. This company embraces the following firms, previously existing as separate and distinct concerns: Singer and Talcott Stone Company, Excelsior Stone Company, Chicago and Lemont Stone Company, Joliet Stone Company, Corneau Stone Company, Bodenschatz and Earnshaw Stone Company, Lockport Stone Company, and Crescent Stone Company. The quarries operated by this combination are located at Lemont, Lockport, and Joliet. The officers are B. J. Moore, president; E. A. Hamill, treasurer; H. L. Draper, secretary; M. B. Madden, vice-president; G. W. Campbell, manager of the Joliet department, and D. C. Norton, superintendent of the Lemont and Lockport quarries. The product sold consists of building stock in the form of rough, sawed, and machine-dressed stone.

Indiana.—The total value of the limestone output in 1891 was $2,100,000. Of this amount something more than half was devoted to building purposes. Production was about the same in activity as in 1890, although the difference, if any, was in favor of 1890. General financial depression resulted in less demands for the stone than usual. The prospects for 1892 are very good.

The oolitic stone of this State has been very completely described in the report for 1889-'90, and nothing further need be said here.

Iowa.—The product for 1891 was valued at $400,000. Somewhat more than one-half was used for building purposes, while the remainder was burned into lime. There are but few large concerns producing limestone in this State, but a large number of small producers, many of whom suspended operations in 1891, and some of them for 1890 also.

Kansas.—The output for 1891 was valued at $300,000. There are no large producing concerns in the State, and the large number of small producers report business as exceedingly dull, although improved in the early part of 1892.

Kentucky.—The total value of the product was $250,000. Business was greatly inferior in amount to that of 1890.

Maine.—The limestone of this State is almost entirely burned into lime. Business in 1891 was far less remunerative than usual. Overproduction brought about a lowering in price. The total value of the output was $1,200,000.

The consideration of the limestone industry in this State has been completely given in former reports.

Maryland.—The total value of the output, which was mainly converted into lime, was $150,000. As is evident from the figures given, comparatively little quarrying is done in this State.

Massachusetts.—Most of the limestone quarried in this State comes from Berkshire county, and is almost entirely burned into lime. The total value was $100,000.

Michigan.—The total value of the output was $75,000. Most of the product was used for building.

Minnesota.—The value of the limestone product was $600,000. This figure represents very little, if any, increase over 1890. About two thirds of the output was used for building purposes.

Missouri.—The limestone industry in this State is a large and important one, but business was very much less in amount in 1891 than in 1890, while the product of the census year 1889 amounted in value to $1,859,960, in 1891 it fell to $1,400,000. The universal report was decrease in demand and prices. The product is distributed between general building, lime burning, and street and road works.

Nebraska.—Production for the year was light, the amount falling below that of the census year. The value of the product for 1891 was $175,000.

New Jersey.—The value of the product in 1891 was $100,000. Most of this represents the value of lime, into which the stone was, for the greater part converted. As in most other States, a falling off in the amount is reported. Reports for 1892 were much better.

New Mexico.—The limestone product amounted to only a few thousand dollars, and was converted almost entirely into lime.

New York.—The value of the limestone output in 1891 was $1,200,000; one-half of this represents the value of lime, while the remainder was divided between building and road works.

The lime burners universally complain of lower prices than in 1890, and a reduced demand for the lime. The same depression as is noticeable in other states prevailed in New York during the year.

Ohio.—In the census year 1889 the limestone product of Ohio was valued at $1,514,934. The corresponding figure for 1891 is $1,250,000. Somewhat more than one-third of this amount represents the value of lime produced, while for building a little less than one-third of the total was used. The remainder was devoted to road making, bridge, dam, and railroad construction, and blast-furnace flux. In the lime business lower prices, in general, prevailed, although there are a few exceptions to this. The shutting down of a number of blast furnaces for a part of the year decreased very noticeably the consumption of stone for flux. The amount of stone used for road making was less than usual for the year.

Quite a large number of small producers who had suspended operations for either or both of the years 1890 and 1891 resumed business again in 1892, and the prospects for the latter year are very good.

Pennsylvania.—The limestone industry of this State is on the whole a very important one, although not for building purposes. The census of 1889 showed a total value for the limestone and lime output of $2,655,477; this was distributed among the various uses as follows: For building, $238,431; the value of the lime output was $1,195,955; quite a large proportion of this was devoted to fertilizing purposes; the output for blast-furnace flux was valued at $949,083; this figure was, however, somewhat below the true total, as quite a number of furnaces quarry their own flux and keep no careful account of the amount.

The total value of the limestone output for 1891 was $2,100,000. There was quite a noticeable falling off in the consumption of stone for blast-furnace flux and also for stone for manufacture into lime.

Rhode Island.—The limestone output of this State amounted to $25,000. The industry in this state amounts to but little.

South Carolina.—The value of the output for 1891 was $50,000. This figure represents a decided increase for the State as compared with the census year, when the product was valued at only $14,520. Most of the stone was burned into lime.

South Dakota.—Very little indeed was produced in 1891.

Tennessee.—The limestone industry was very dull during 1891. The total output including lime was valued at $70,000. Most of it was burned into lime.

Texas.—The output for 1891 was valued at $175,000. Most of the product was used for building.

Vermont.—The total value of the limestone output was $175,000. Most of this figure represents the value of lime produced.

Virginia.—The total value of the output was $170,000. While this figure is higher than the corresponding one for 1889, it represents no increase over 1890. More than half the total value is that of lime produced, while the remainder was used largely for blast-furnace flux.

Washington.—Practically the entire output was burned into lime, which was valued at $25,000.

West Virginia.—The output was valued at $85,000. Most of the stone was burned into lime.

Wisconsin.—The census year 1889 resulted in an output of limestone and lime valued at $813,963. In 1891 the value had fallen to $675,000. The stone is used principally for burning into lime and, to a less extent, for building.

MARBLE.

Production.—The value of the marble output of the United States in 1891 is $3,610,000. This figure represents the value of the output as sold by the producers at the place of production. Most of the product was sold in finished condition ready for the consumer. The remainder, comparatively small in amount, was sold in the rough, the work of finishing being done by marble dealers and stonecutters who make a business of finishing but not of quarrying marble.

The following table shows the distribution of the output among the various productive states:

Marble product in 1891 by States.

California	$100,000	Tennessee	$400,000
Georgia	275,000	Vermont	2,200,000
Maryland	100,000	Scattering	100,000
Pennsylvania	45,000		
New York	390,000	Total	3,610,000

Included in the designation "scattering" in the above table are the outputs of quarries in various states which have hardly gotten beyond the experimental stages and whose existence can hardly be regarded yet as likely to be permanent.

In the marble-quarrying industry there seems to have been in the last two years an unusually marked tendency toward the absorption of smaller concerns by the more powerful and prominent ones.

Cases illustrative of this tendency have occurred in Vermont, Tennessee, and Georgia.

Powerful resources seem to be absolutely essential to unqualified success in the difficult and frequently highly uncertain industry of marble quarrying. Although the output of marble in 1891 is greater than in either of the two preceding years, the number of producing concerns is less on account of the failure or absorption of a number of the minor operators.

The following statements relative to the industry in individual states will serve to show the changes and progress made in each during the past year.

Alabama.—Mention has been made in the Census Report of 1889 of marble near Florence. Actual developments, however, have not yet been made, although investigations may be continued in 1892.

Arkansas.—The development of marble property near Yellville is progressing slowly, although the quarry is not yet yielding a marketable stone. The chief hindrance is lack of transportation facilities.

California.—The output in this State amounts to $100,000, as compared with $87,030 in 1889. The operations of the Inyo Marble Company have increased and the outlook is more favorable than heretofore. Amador county marble is increasing in popularity and the output of 1892 will probably largely exceed that of former years. Most of the marble output of the State comes from quarries in San Bernardino county and the industry appears to be established on a permanent footing.

Colorado.—The production of marble in this State is still prospective. Considerable agitation of the subject of marble resources has been going on in the past few years, but it has not yet resulted in any actual developments, although the stone seems to be of desirable quality and abundant. Transportation facilities are greatly needed before much can be done.

Georgia.—Operations in this State have notably increased in the last two years, the output having advanced from $196,250 in 1889 to $275,000 in 1891. This increase is largely due to progress that has been made at the quarries at Tate. The American Marble Company, operating a green marble quarry near Marietta, has discontinued operations and their plant is now the property of the Kennesaw Marble Company, which will be devoted to the work of finishing. The Georgia product is used for all the purposes for which marble is adapted. More of it is used for cemetery work than for any other one purpose; but large quantities are also used for ornamental work and interior decoration.

Idaho.—Marble is now produced in limited quantity at Shoshone. It is used for cemetery work and building.

Maryland.—The quarries at Cockeysville produce most of the marble of this state. The value of the product in 1891 was $100,000. The Serpentine Company, of Wilmington, Delaware, operating quarries of green serpentine in Harford county, Maryland, did nothing in 1891, owing to litigation.

The Lake Chrome and Mineral Company is still engaged in the preliminary work of opening their quarries, and made only small sales of rough stone during the year.

Pennsylvania.—The marble of this State comes from quarries near Conshohocken and King of Prussia, in Montgomery county. The value of the output in 1891 is $45,000. The product is used chiefly for building purposes in Philadelphia and other cities and towns in the State.

New York.—The product comes from St. Lawrence, Westchester, Columbia, and Warren counties. The total output in 1891 was valued at $390,000. The product of the Glens Falls, Warren county, quarries is a black marble quite unique in color and general properties. The demand for it is always good. It is quite largely used for ornamental purposes and interior decoration.

Messrs. Norcross Bros. have recently reopened what is known as the old Stewart quarry at Tuckahoe, Westchester county.

Tennessee.—The marble industry of Tennessee has not increased during the past two years. This period has been quite disastrous to a number of the smaller producing concerns, which have either failed or suspended operations. The largest operators show increasing production and fair business. The use of marble for furniture has very greatly declined, but the consumption of stock for interior decoration is gradually increasing from year to year. The stone is too valuable as an ornamental article to be used for rough building, so that its use is now limited practically to cemetery work and interior decorations—particularly the latter. The Tennessee Producers Marble Company includes a number of firms who, up to a few years ago, did business under their individual names. This consolidation has doubtless benefited the industry by sustaining prices and facilitating the transaction of business by bringing a large variety of stock under one control. Messrs. W. H. Evans & Son, of Knoxville, are opening up three new quarries in Blount county in addition to the ones now operated by them. The great obstacle to satisfactory development in the Tennessee quarries is the lack of railroad facilities, which necessitates a long and expensive haul by wagon to the shipping points.

Vermont.—The marble output for 1891 was valued at $2,200,000. The industry is progressing steadily, particularly among the leading producers, although nearly all report good business and increasing demand. Most of the output is used for cemetery purposes. The Vermont Marble Company has extended its operations by leasing a number of additional quarries. The True Blue Marble Company of West Rutland, has increased its output quite markedly within the past two years, and the product is now almost exclusively sold as monumental stock, for which the demand is good. The quarry operated by this company was opened only a few years since, and it has turned out in a manner gratifying to the operators. The Rutland County Marble Company has recently commenced operations at West Rutland.

Virginia.—The operations of the Virginia Marble Company at Mountsville, Loudoun county, were suspended during 1891, owing to lack of transportation facilities. This firm has sold very little stone up to the present for the reason given above. Improvement in transportation will doubtless result in active production.

North Carolina.—Although no marble is as yet produced in this state, much of a favorable nature has been said of marble found on the property of the Nantahala Marble and Talc Company, in Swain county, western North Carolina. This property comprises 8,000 acres, and contains large quantities of marble, talc, and slate. Experts have been employed to examine the various mineral deposits, and favorable opinions have been expressed by them in regard to the extent and character of the minerals found. The marble includes a variety of

colors, of which the black and gray have been especially commended, although blue and green shades are described as choice. The American Marble Company, of Marietta, Georgia, worked up and finished a carload of the marble, and as a result expressed a very favorable opinion of the stone as regards texture, quality, and color. Through the property runs a stream known as the Nantahala river, which represents a water power of 12,000 horse power. The enterprise gives expectations of actual productive results within a year or two.

Marble imported and entered for consumption in the United States, 1867 to 1883, inclusive.

Fiscal years ending June 30—	Sawed, dressed, etc., not over 2 inches in thickness.	Sawed, dressed, etc., over 2 and not over 3 inches in thickness.	Sawed, dressed, etc., over 3 and not over 4 inches in thickness.	Sawed, dressed, etc., over 4 and not over 5 inches in thickness.	Sawed, dressed, etc., over 5 and not over 6 inches in thickness.	Veined and all other, in blocks, etc.	White, statuary, Brocatella, etc.	Not otherwise specified.	Total.
1867	.....	.....	.....	.....	.....	$192,514	$2,540	$51,978	$247,032
1868	.....	.....	.....	.....	.....	309,750	4,403	85,783	399,936
1869	.....	.....	.....	.....	.....	359,881	3,898	101,309	465,088
1870	.....	.....	.....	.....	.....	332,839	3,713	142,785	479,337
1871	$5,973	$168	$77	$44	$28	400,158	1,134	118,016	525,598
1872	3,499	1,081	452	.....	318	475,718	4,017	54,539	539,624
1873	3,124	21	.....	.....	.....	396,671	4,148	69,991	473,955
1874	1,837	.....	.....	.....	.....	474,680	2,863	51,699	531,079
1875	1,456	427	96	.....	.....	527,628	1,623	72,389	603,619
1876	595	126	203	87	.....	529,126	1,151	60,596	591,884
1877	2,124	.....	.....	.....	.....	349,590	1,404	77,293	430,411
1878	198	11	8	.....	.....	376,936	592	43,915	421,660
1879	184	.....	.....	.....	.....	329,155	427	54,857	384,623
1880	.....	.....	.....	.....	.....	531,908	7,239	62,715	601,862
1881	339	.....	.....	.....	.....	470,047	1,468	82,046	553,900
1882	655	.....	.....	.....	.....	489,351	3,582	84,577	575,145
1883	619	.....	.....	.....	.....	535,096	2,011	71,905	607,631

Marble imported and entered for consumption in the United States from 1884 to 1891.

Classification.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
In block, rough or squared, of all kinds...	$511,287	$429,186	$408,895	$355,648	$357,220	$498,275	$510,354	$492,894
Veined marble, sawed, dressed or otherwise, including marble slabs and marble paving tiles.	12,941	43,923	96,625	142,405	107,957	115,909	142,653	83,416
All manufactures of, not specially enumerated..	67,829	54,772	44,053	31,880	69,086	61,231	132,376	119,787
Total.....	592,057	527,881	549,573	529,933	534,263	675,415	785,383	696,097

SLATE.

Production.—The total value of all slate produced in the United States in 1891 was $3,825,746. Of this amount $3,125,410 represents the value of 893,312 squares of roofing slate, and the remainder, $700,336, is the value of slate used for all other purposes besides roofing.

The following table shows the distribution of the product by states:

Production of slate in the United States in 1891.

States.	Roofing slate.	Value.	Other purposes than roofing (value).	Total value.
	Squares.			
Arkansas	120	$480	None	$480
California	4,000	24,000	do	24,000
Georgia	3,000	13,500	do	13,500
Maine	50,000	250,000	do	250,000
Maryland	25,166	123,425	$2,000	125,425
Michigan	None		None	
New Jersey	2,500	10,000	do	10,000
New York	17,000	136,000	40,000	176,000
Pennsylvania	507,824	1,741,836	401,069	2,142,905
Utah	None		None	
Vermont	247,643	698,350	257,267	955,617
Virginia	36,059	127,819	None	127,819
Total	893,312	3,125,410	700,336	3,825,746

The years 1890 and 1891 do not show large gains in production, and the industry for this interval may be regarded as nothing more than fairly prosperous, although the latter year shows an advance on 1890 both in amount and prices. The West is becoming to a greater and greater extent the market for roofing slate, while mill stock is more uniformly distributed. The increasing use of metal on the roofs of buildings in the large cities in the East interferes quite largely with the consumption of slate.

Arkansas.—The production of slate in Arkansas is in its initial stages, but there is reason to look for an increase within the next few years.

California.—The amount produced in 1891 is well in advance of that reported by the census of 1889. The product comes from El Dorado county. The Chili Bar quarry, one of the newest, has made very satisfactory advances in the past two years. The demand for slate in this State appears to be sufficient to stimulate development.

Georgia.—There is an evident need of capital in the slate region of Georgia to cause an increasing production. The natural advantages of Rock Mart would appear to justify largely increased operations.

Some steps have recently been taken looking to the development of the Rock Mart quarries on a large scale, but nothing has as yet actually been done. From present appearances, however, it seems not improbable that sufficient capital will be invested to bring the slate more prominently into public notice. The methods of quarrying hitherto employed have been very crude and consequently expensive.

Maine.—The value of the product in 1891 represents some increase over that of the census. The slate is of superior quality.

Maryland.—The productive region is known as the Peach Bottom, in Harford county, bordering on York county, Pennsylvania.

The Henrietta Slate Company has begun to operate a quarry at Ijamsville, Frederick county; only 100 squares were produced in 1891, but a larger product will be the result of operations in 1892.

New York.—The most interesting feature of the slate produced in New York is the red slate taken from quarries in Washington county. This is the only locality in the country yielding red slate, and it brings a higher price than any other on account of its unique color and durable quality. Much of it commands a price of $10 per square at the quarries. Eight thousand squares were produced, valued at $72,000, or an average of $9 per square.

Pennsylvania.—A complete account of the general features of the slate industry in Pennsylvania was given in the report for 1890, and there is little to be said in the way of new developments. Many changes in the personnel of the quarry operators have taken place, but they are in the majority of cases of no interest to the general public. Progress is steady and substantial from year to year.

Utah.—Although no product is reported from the Provo Slate Company, Provo, Utah, the firm has begun to advertise for sale roofing slate as well as the various varieties of mill stock, thus indicating their readiness for active business in 1892. The slate is described as unfading purple and green, and unchangeable in color under the action of sulphuric acid.

Vermont.—Progress in slate quarrying has been steady but comparatively slow during the past two years. The uses to which milled slate is put are increasing and the outlook in that direction is favorable. The total value of the product for 1891 reaches the highest point yet attained, namely, $955,617, but the increase since the census year is not surprisingly great.

Virginia.—From $113,079 in 1889 the value of the output has increased to $127,819 in 1891.

Operations have also begun at Snowden, although nothing but preliminary work has thus far been accomplished. Actual production will probably be realized at this point in 1892.

North Carolina.—Large quantities of slate have been found at Nantahala, and it seems probable that development will follow shortly. For particulars in regard to the property in question see the report on marble in this volume.