

CENSUS BULLETIN.

No. 68.

WASHINGTON, D. C.

May 16, 1891.

MINES AND MINING.—MANGANESE.

DEPARTMENT OF THE INTERIOR,

CENSUS OFFICE,

WASHINGTON, D. C., May 1, 1891.

The following bulletin relating to manganese has been prepared by Mr. Jos. D. WEEKS, special agent, under the supervision of Dr. DAVID T. DAY, special agent in charge of the Division of Mines and Mining of the Census Office. It shows the production of manganese of the entire United States to be 23,927 long tons, with a total value of \$238,939. This product is principally from the localities of Crimora (Virginia), Cartersville (Georgia), and Batesville (Arkansas), these districts having yielded 20,325 long tons. The ores are treated under three general classes, namely, manganese ores, manganiferous iron ores, and argentiferous manganese ores, and valuable information and statistics concerning each class are given.

Robert S. Porter

Superintendent of Census.

PRODUCTION OF MANGANESE ORES.

BY JOS. D. WEEKS.

CLASSIFICATION OF MANGANESE ORES.—The ores of manganese, or those carrying manganese, may be divided into three general classes: First, manganese ores; second, manganiferous iron ores; and, third, argentiferous manganese ores. The dividing line between the first two grades is taken at 70 per cent binoxide of manganese, equal to 44.252 per cent metallic manganese, this being the standard of shipments to English chemical works. All ores containing at least this amount of manganese are classed as manganese ores; those containing a less percentage of manganese, containing also more or less iron, are classed as manganiferous iron ore. In the third class are included the argentiferous manganese ores of Colorado, which are utilized chiefly for the silver they contain. They have an added value, however, by reason of the fluxing qualities imparted to them by the presence of manganese and iron.

The long ton of 2,240 pounds is used in this report.

OCCURRENCE.—By far the larger proportion of manganese produced in the United States is mined in three localities: Crimora, Virginia; Cartersville, Georgia, and Batesville, Arkansas.

Of the 23,927 tons of manganese produced in the census year, 20,325 tons were from these three districts. Manganese is found, however, in many places in the United States. For example, all along the western slope of the eastern ridge of the Appalachian range from Maine to Georgia more or less manganese has been mined. There is also considerable manganese found associated with the hematite ores of the Lake Superior region, and in Arkansas southwest from Batesville. With few exceptions, however, the deposits are small, and the indications are not such as to justify the expenditure of large amounts of money in mining and washing plants, which are usually necessary in the economical production of manganese. From one locality in Vermont, however, as will be seen by the report, considerable manganese has been produced, and there are mines in Virginia along the Shenandoah valley and its southern extension, as well as on the upper James, at which considerable manganese was produced in 1890, and which it is believed will add largely to its production in this country in the near future. A similar statement can be made of mines in Georgia.

PRODUCTION OF MANGANESE ORES.

In the following table will be found a complete statement of the production of manganese in the United States in 1889; also a statement as to its total value, the average value per ton, the number of employes engaged in mining, total wages of such employes, and total capital for all the states in which manganese was mined, except Vermont and Virginia:

PRODUCTION OF MANGANESE ORES IN THE UNITED STATES IN 1889.

STATES.	Production.	Total value.	Value per ton.	Employés.	Wages.	Capital.
Total	23,927	\$238,939	\$9.99	432	\$123,858	\$2,094,475
Arkansas.....	2,528	23,173	9.17	96	33,191	1,200,000
California.....	53	901	17.00	10	1,149	2,400
Georgia.....	5,208	50,143	9.63	117	19,486	175,125
Nevada.....	15	83	5.53	2	53	600
North Carolina.....	17	170	10.00	2	60	250
South Carolina.....	124	744	6.00	6	400	5,000
Tennessee.....	30	120	4.00	3	70	100
Vermont.....	1,336	7,348	5.50	25	3,510	(a)
Virginia.....	14,616	156,257	10.69	171	65,939	711,000

a Included in Virginia.

In the preceding table is included a very small amount of ore which, under strict classification, would be regarded as manganiferous iron ores, but as the metallic manganese in but few cases falls below 40 per cent they are all reported as manganese ores. Less than 1,000 tons of ore fall below 44.252 per cent of metallic manganese, and the average of the whole 23,927 tons is above this percentage.

Certain explanations of these statistics are necessary to prevent wrong deductions or conclusions. In but four instances at the most is manganese ore mining prosecuted in the United States with anything like regularity, and in but two of the four was mining continuous. At the works producing the largest amount of manganese in Georgia the mines were operated but 190 days in the year, while at the Vermont mine during a large proportion of the year but little work was done. At one mine in Virginia and one in Arkansas the mining of manganese is fairly continuous. At most of the other works the production reported has been from very irregular workings, and chiefly for the purpose of testing the character of the deposit. This is true of all the production of Tennessee, North Carolina, South Carolina, and Nevada, while the California production is from an old mine, worked occasionally to meet a small demand for manganese for the purpose of making chlorine gas in working sulphuret ores.

It will be judged from this statement, therefore, that the reports in the table as to the number of employés and wages paid simply refer in most cases to men who were employed for a very brief time, and who were in most instances common laborers picked up from farm and other work, returning to their ordinary occupations as soon as their temporary services in stripping manganese ore deposits and in mining the small quantities of manganese reported were completed.

The item of capital includes not only the money actually invested in works, but also the value of the mine or mineral right. In some cases a high valuation is placed upon these rights, and future developments will be necessary to determine whether it is too high.

PRODUCTION BY STATES.—From the table of the production of manganese, given on page 3, it will be seen that 61 per cent of the manganese produced in the United States was from the mines of Virginia. Of this production 12,974 tons were from the well-known Crimora mine and the opening adjoining it, known as the Old Dominion mine. More manganese has been taken from these two mines, which are practically the same deposit, than from all the rest of the United States, and it is probably fair to say that this deposit has produced more than any other mine in the world. The grade of the ore is somewhat above the limit dividing manganese and manganiferous iron ore, the average shipments for 1889 showing 46 per cent metallic manganese.

Georgia stands second in point of production. Of the 5,208 tons produced in this state in 1889 over 4,000 tons were from the mines of one company.

Arkansas stands third in point of production, and here again by far the larger proportion of the ore produced was from one mine. The fourth state in point of production of manganese was Vermont, 1,336 tons being produced from one mine. As is noted in the table, the production of manganese in other states has chiefly been in an experimental way.

PRODUCTION OF MANGANIFEROUS IRON ORES.

A large proportion of the hematite iron ores of the United States carry more or less manganese. While in most cases the amount of manganese in these ores does not increase their value over what the same ores would be worth as iron ores were the manganese absent, they, however, make the ore more desirable for certain purposes. No attempt has been made to collect the statistics of these manganese-bearing iron ores except in cases where the manganese in them has added somewhat to their value.

A product of 31,341 tons of ore, containing on an average 9 per cent of manganese, is reported from Michigan, and a further product of 50,018 tons of ore, containing 6.74 per cent of manganese, is reported for the same state, making a total of 81,359 tons of iron ore produced in Michigan containing sufficient manganese to make it desirable to be mined. The value of this ore is reported at \$4.54 a ton. It is impossible to give any statement as to the number of employés, amount of wages, or capital invested in the production of this manganese, as these items are included in the report on the iron-ore production of the mine supplying it.

PRODUCTION OF ARGENTIFEROUS MANGANESE ORES.

Returns of the production of 17,550 tons of manganese-bearing silver ores have been received, all from Colorado. The manganese in these ores makes them desirable as fluxes.

Nearly all the argentiferous iron ores mined from the upper workings of the Leadville deposits carry manganese in varying quantities from 5 up to 25 per cent, and occasionally 30 to 35 per cent, with 5 to 20 ounces of silver, 0 to 4 per cent of lead, 7 to 18 per cent in silica, and 30 to 50 per cent of iron. It has been estimated that from 300 to 500 tons of this ore are produced per day. On the basis of the lowest figures, that is, 300 tons a day for 300 days in the year, the production of argentiferous manganese ore in the Leadville district would be 90,000 tons, but, as stated above, the total detailed reports received of this production are for only 17,550 tons.

These ores are sold to the smelters for fluxing the siliceous silver ores, and are usually paid for according to the silver contents; that is, so much per ounce of silver, without reference to the manganese contained therein. In some cases the value of this ore has been placed at \$3.50 a ton for its contents of iron and manganese.

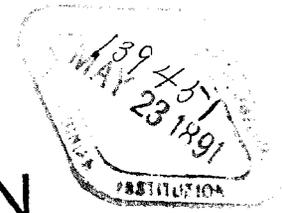
Some manganese ores were produced in Colorado in 1889, the statement concerning which will be given in the final report.

PRODUCTION OF MANGANESE ORES IN THE UNITED STATES SINCE 1880.—The production of manganese from 1880 to 1889, inclusive, was as follows:

PRODUCTION OF MANGANESE ORES IN THE UNITED STATES.

STATES.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Total.....	5,761	4,895	4,532	6,155	10,180	23,258	30,193	34,524	29,198	23,927
Virginia.....	3,661	3,295	2,982	5,355	8,980	18,745	20,567	19,835	17,646	14,616
Arkansas.....		100	175	400	800	1,483	3,316	5,651	4,812	2,528
Georgia.....	1,800	1,200	1,000			2,580	6,041	9,024	5,568	5,208
Other states.....	300	300	375	400	400	450	269	14	1,672	1,575

This table shows the production of what may be strictly regarded as manganese ores in the classification above given. It has been impossible in some cases to separate the manganese and manganiferous ores which are the product of a given mine, but where the total production of state or mine averages more than 44.252 per cent of metallic manganese its production is regarded as manganese ores.



CENSUS BULLETIN.

No. 69.

WASHINGTON, D. C.

May 18, 1891.

POPULATION OF NEW JERSEY

BY MINOR CIVIL DIVISIONS.

DEPARTMENT OF THE INTERIOR,

CENSUS OFFICE,

WASHINGTON, D. C., May 18, 1891.

This bulletin gives the population of the state of New Jersey by counties, townships, cities, towns, and boroughs, according to the official count of the returns made under the Eleventh Census; also the population of certain cities by wards. The figures according to the census of 1880 are also presented for purposes of comparison.

The total population of the state as shown by the present census, taken as of June 1, 1890, is 1,444,933, while the population according to the census of 1880 was 1,131,116, an increase of 313,817 or 27.74 per cent.

Of the twenty-one counties in the state only three show decreases, and in each of these cases the decrease is not large. Passaic and Atlantic counties show increases of more than 50 per cent. Hudson county shows an increase of 46.39 per cent. Camden, Essex, and Mercer counties show increases of more than 33½ per cent; while Bergen, Monmouth, and Union counties show increases of more than or nearly 25 per cent. In the remaining counties the increases are not so large.

The figures in detail for each county are shown in the following summary:

SUMMARY BY COUNTIES.

COUNTIES.	POPULATION.		INCREASE.		COUNTIES.	POPULATION.		INCREASE.	
	1890.	1880.	Number.	Per cent.		1890.	1880.	Number.	Per cent.
The State.....	1,444,933	1,131,116	313,817	27.74	Mercer.....	79,978	58,061	21,917	37.75
Atlantic.....	28,836	18,704	10,132	54.17	Middlesex.....	61,754	52,286	9,468	18.11
Bergen.....	47,226	36,786	10,440	28.38	Monmouth.....	69,128	55,538	13,590	24.47
Burlington.....	58,528	55,402	3,126	5.64	Morris.....	54,101	50,861	3,240	6.37
Camden.....	87,687	62,942	24,745	39.31	Ocean.....	15,974	14,455	1,519	10.51
Cape May.....	11,268	9,765	1,503	15.39	Passaic.....	105,046	68,860	36,186	52.55
Cumberland.....	45,438	37,687	7,751	20.57	Salem.....	25,151	24,579	572	2.33
Essex.....	256,098	189,929	66,169	34.84	Somerset.....	28,311	27,162	1,149	4.23
Gloucester.....	28,649	25,886	2,763	10.67	Sussex.....	22,259	23,530	a1,280	a5.44
Hudson.....	275,126	187,944	87,182	46.39	Union.....	72,467	55,571	16,896	30.40
Hunterdon.....	35,355	38,570	a3,215	a8.34	Warren.....	36,553	36,589	a36	a0.10

Of the cities, towns, and boroughs having a population of 4,000 or more the largest numerical increases are found in the cities of Newark and Jersey City, which places show increases of 45,322 or 33.20 per cent and 42,281 or 35.02 per cent, respectively. The largest percentages of increase are found in Atlantic City, Bayonne, Perth Amboy, Passaic, and Trenton cities, Atlantic City showing an increase of 138.36 per cent, while Trenton shows an increase of 92.10 per cent. In two places only are slight decreases shown.

The following table shows the results of the present census as compared with 1880 for twenty-nine cities and towns and one borough having a population of 4,000 or more, in the order of their rank :

CITIES, TOWNS, AND BOROUGHS.	COUNTIES.	POPULATION.		INCREASE.	
		1890.	1880.	Number.	Per cent.
Newark city.....	Essex.....	181,830	136,508	45,322	33.20
Jersey City.....	Hudson.....	163,003	120,722	42,281	35.02
Paterson city.....	Passaic.....	78,347	51,031	27,316	53.53
Camden city.....	Camden.....	58,313	41,659	16,654	39.98
Trenton city.....	Mercer.....	57,458	29,910	27,548	92.10
Hoboken city.....	Hudson.....	43,648	30,999	12,649	40.80
Elizabeth City.....	Union.....	37,764	28,229	9,535	33.78
Bayonne city.....	Hudson.....	19,033	9,372	9,661	103.08
Orange city.....	Essex.....	18,844	13,207	5,637	42.68
New Brunswick city.....	Middlesex.....	18,603	17,166	1,437	8.37
Atlantic City.....	Atlantic.....	13,055	5,477	7,578	138.36
Passaic city.....	Passaic.....	13,028	6,532	6,496	99.45
Bridgeton city.....	Cumberland.....	11,424	8,722	2,702	30.98
Plainfield city.....	Union.....	11,267	8,125	3,142	38.67
Union town.....	Hudson.....	10,643	5,849	4,794	81.96
Millville city.....	Cumberland.....	10,002	7,660	2,342	30.57
Perth Amboy city.....	Middlesex.....	9,512	4,808	4,704	97.84
Phillipsburg city.....	Warren.....	8,644	7,181	1,463	20.37
Harrison city.....	Hudson.....	8,338	6,898	1,440	20.88
Morristown city.....	Morris.....	8,156	5,418	2,738	50.54
Burlington city.....	Burlington.....	7,264	6,090	1,174	19.28
Long Branch town.....	Monmouth.....	7,231	3,833	3,398	88.65
Rahway city.....	Union.....	7,105	6,455	650	10.07
Gloucester city.....	Camden.....	6,564	5,347	1,217	22.76
Hackensack town.....	Bergen.....	6,004	4,248	1,756	41.84
Salem city.....	Salem.....	5,516	5,056	460	9.10
South Amboy borough.....	Middlesex.....	4,330	3,648	682	18.70
Bordentown city.....	Burlington.....	4,232	4,258	a26	a0.61
Red Bank town.....	Monmouth.....	4,145	2,684	1,461	54.43
Lambertville city.....	Hunterdon.....	4,142	4,183	a41	a0.98

a Decrease.

The following table gives in detail the population for 1890 and 1880 by minor civil divisions:

POPULATION BY MINOR CIVIL DIVISIONS.

MINOR CIVIL DIVISIONS.	1890.	1880.	MINOR CIVIL DIVISIONS.	1890.	1880.
ATLANTIC COUNTY.....	28,836	18,704	BURLINGTON COUNTY—Continued.		
Atlantic City.....	13,055	5,477	Westhampton township.....	688	715
Buena Vista township.....	1,299	885	Willingboro' township.....	789	748
Egg Harbor city.....	1,439	1,232	Woodland township.....	327	325
Egg Harbor township, including Linwood borough and Absecon town.	4,255	4,075	CAMDEN COUNTY.....	87,687	62,942
Linwood borough.....	536		Camden city.....	58,313	41,659
Absecon town.....	501	507	Ward 1.....	7,650	
Galloway township.....	2,203	2,337	Ward 2.....	9,636	
Hamilton township.....	1,512	1,464	Ward 3.....	4,533	
Hammononton township, coextensive with Ham- morton town.	3,833	1,776	Ward 4.....	5,299	
Mullica township.....	607	717	Ward 5.....	7,325	
Weymouth township.....	538	741	Ward 6.....	6,956	
BERGEN COUNTY.....	47,226	36,786	Ward 7.....	6,149	
Boiling Springs township (a).....	1,438		Ward 8.....	5,996	
Englewood township.....	4,785	4,076	Ward 9.....	4,869	
Franklin township.....	2,307	2,206	Centre township.....	1,834	1,538
Harrington township.....	2,769	2,570	Delaware township.....	1,487	1,481
Hohokus township.....	2,373	2,920	Gloucester city.....	6,564	5,347
Lodi township.....	5,131	4,071	Ward 1.....	2,845	
Midland township.....	1,829	1,591	Ward 2.....	3,719	
New Barbadoes township, coextensive with Haekensack town.	6,004	4,248	Gloucester township.....	3,091	2,527
Orvil township (a).....	1,690		Haddon township, including Haddonfield and Collingswood boroughs.	3,929	2,551
Palisade township.....	2,590	2,302	Collingswood borough.....	539	
Ridgefield township.....	5,477	3,952	Haddonfield borough.....	2,302	1,480
Ridgewood township.....	1,841	1,478	Merchantville borough.....	1,225	439
Rutherford borough.....	2,293	2,299	Stockton township.....	6,445	23,093
Saddle River township.....	2,197	1,355	Waterford township.....	2,421	2,149
Union township.....	1,560	6,665	Winslow township.....	2,408	2,158
Washington township.....	2,942	2,853	CAPE MAY COUNTY.....	11,268	9,765
BURLINGTON COUNTY.....	58,528	55,402	Anglesea borough (c).....	161	
Bass River township.....	853	1,006	Cape May city.....	2,136	1,699
Beverly city.....	1,957	1,759	Cape May Point borough.....	167	
Beverly township.....	1,451	1,369	Dennis township.....	1,707	11,812
Bordentown township, including Bordentown city.	5,090	5,334	Holly Beach City borough (g).....	217	
Bordentown city.....	4,232	4,258	Lower township.....	1,156	11,977
Burlington township, including Burlington city.	8,222	7,287	Middle township.....	2,368	12,575
Burlington city.....	7,264	6,090	Ocean City borough (j).....	452	
Chester township.....	3,768	2,855	Sea Isle City borough (k).....	766	
Chesterfield township.....	1,253	1,525	Upper township.....	1,381	11,702
Cinnaminson township.....	3,966	2,184	West Cape May borough.....	757	
Delran township.....	2,207	1,760	CUMBERLAND COUNTY.....	45,438	37,687
Easthampton township.....	654	566	Bridgeton city.....	11,424	8,722
Evesham township.....	1,501	1,602	Ward 1.....	3,158	
Florence township.....	1,922	1,528	Ward 2.....	3,023	
Little Egg Harbor township.....	1,771	1,881	Ward 3.....	2,865	
Lumberton township.....	1,799	1,689	Ward 4.....	2,378	
Mansfield township.....	1,671	1,648	Commercial township.....	2,344	2,205
Medford township.....	1,864	1,980	Deerfield township.....	2,614	1,643
Mount Laurel township.....	1,699	1,739	Downe township.....	1,798	1,687
New Hanover township.....	1,962	2,373	Fairfield township.....	1,688	m3,215
Northampton township.....	5,376	4,680	Greenwich township.....	1,173	1,245
Pemberton township, including Pemberton borough.	2,639	2,885	Hopewell township.....	1,743	1,764
Pemberton borough.....	834	799	Landis township.....	3,855	n3,486
Randolph township.....	302	423	Lawrence township (o).....	1,729	
Shamong township.....	958	1,097	Maurice River township.....	2,279	2,374
Southampton township.....	1,349	2,269	Millville city.....	10,002	7,660
Springfield township.....	1,670	1,886	Ward 1.....	3,852	
Washington township.....	310	389	Ward 2.....	1,705	
			Ward 3.....	3,057	
			Ward 4.....	1,888	
			Stow Creek township.....	972	1,107
			Vineland borough.....	3,822	2,519

a Organized since 1880.

b Exclusive of Rutherford borough.

c Exclusive of Beverly city.

d Exclusive of Merchantville borough.

e Organized since 1880 from Middle township.

f Includes population of Sea Isle City borough.

g Organized since 1880 from Lower township.

h Includes population of West Cape May, Cape May Point, and
Holly Beach boroughs.

i Includes population of Anglesea borough.

j Organized since 1880 from Upper township.

k Organized since 1880 from Dennis township.

l Includes population of Ocean City borough.

m Includes Lawrence township, taken from Fairfield in 1885.

n Exclusive of Vineland borough.

o From Fairfield in 1885.

POPULATION BY MINOR CIVIL DIVISIONS—CONTINUED.

MINOR CIVIL DIVISIONS.	1890.	1880.	MINOR CIVIL DIVISIONS.	1890.	1880.
ESSEX COUNTY	256,098	189,929	HUDSON COUNTY—Continued.		
Belleville township.....	3,487	3,004	North Bergen township.....	5,715	4,268
Bloomfield township.....	7,708	5,748	Union town.....	10,643	5,849
Caldwell township.....	3,638	3,167	Union township.....	2,127	1,310
Clinton township.....	3,684	2,742	Weehawken township.....	1,943	1,102
East Orange township.....	13,282	8,349	West Hoboken township.....	11,665	5,441
Franklin township.....	2,007	1,617			
Livingston township.....	1,197	1,401	HUNTERDON COUNTY	35,355	38,570
Milburn township.....	2,437	1,743	Alexandria township.....	1,250	1,324
Montclair township.....	8,686	5,147	Bethlehem township.....	2,308	2,830
Newark city.....	181,830	136,508	Clinton township, including Clinton town.....	2,888	2,975
Ward 1.....	7,595		Clinton town.....	1,975	842
Ward 2.....	7,151		Delaware township.....	3,097	3,092
Ward 3.....	6,404		East Amwell township.....	1,375	1,696
Ward 4.....	5,946		Franklin township.....	1,287	1,338
Ward 5.....	5,403		Frenchtown borough.....	1,023	1,039
Ward 6.....	25,890		High Bridge township.....	1,935	2,209
Ward 7.....	9,288		Holland township.....	1,704	1,886
Ward 8.....	19,575		Kingwood township.....	1,424	1,694
Ward 9.....	7,084		Lambertville city.....	4,142	4,183
Ward 10.....	13,897		Ward 1.....	1,274	
Ward 11.....	11,784		Ward 2.....	1,163	
Ward 12.....	19,616		Ward 3.....	1,705	
Ward 13.....	27,600		Lebanon township.....	2,337	2,699
Ward 14.....	5,700		Raritan township.....	3,798	4,188
Ward 15.....	8,957		Readington township.....	2,813	3,103
Orange city.....	18,844	13,207	Tewksbury township.....	2,034	2,108
Ward 1.....	4,931		Union township.....	1,134	1,167
Ward 2.....	5,481		West Amwell township.....	866	1,039
Ward 3.....	8,432				
South Orange township, including South Orange borough.....	4,970	3,911	MERCER COUNTY	79,978	58,061
South Orange borough.....	3,106	2,178	Chambersburg borough.....	(f)	5,437
West Orange township.....	4,358	3,885	East Windsor township, including Hightstown borough.....	2,756	2,271
			Hightstown borough.....	1,875	1,355
GLOUCESTER COUNTY	28,649	25,886	Ewing township.....	3,129	2,412
Clayton township, including Clayton borough.....	2,299	1,981	Hamilton township.....	4,163	3,370
Clayton borough.....	1,807	1,433	Hopewell township.....	4,338	4,462
Deptford township.....	2,064	2,480	Lawrence township.....	1,448	1,174
East Greenwich township (b).....	1,259	2,088	Princeton township, including Princeton borough.....	4,231	4,348
Franklin township.....	2,021	2,598	Princeton borough.....	3,422	3,299
Glassboro' township.....	2,642	2,598	Trenton city.....	57,458	29,910
Greenwich township.....	1,900	c2,598	Ward 1.....	5,076	
Harrison township.....	1,545	d2,841	Ward 2.....	3,063	
Logan township.....	1,523	1,765	Ward 3.....	7,331	
Mantua township.....	1,791	1,718	Ward 4.....	5,082	
Monroe township.....	1,945	1,858	Ward 5.....	5,585	
South Harrison township (c).....	971		Ward 6.....	2,791	
Washington township.....	1,155	1,366	Ward 7.....	9,383	
West Deptford township.....	1,588	1,399	Ward 8.....	3,802	
Woodbury city.....	3,911	2,298	Ward 9.....	6,128	
Ward 1.....	1,014		Ward 10.....	3,949	
Ward 2.....	1,654		Ward 11.....	5,318	
Ward 3.....	1,243		Washington township.....	1,126	1,281
Woolwich township, coextensive with Swedesboro' town.....	2,035	1,974	West Windsor township.....	1,329	1,396
HUDSON COUNTY	275,126	187,944	MIDDLESEX COUNTY	61,754	52,286
Bayonne city.....	19,033	9,372	Cranberry township.....	1,422	1,599
Ward 1.....	2,085		East Brunswick township.....	4,438	3,272
Ward 2.....	3,868		Madison township.....	1,520	1,662
Ward 3.....	3,173		Monroe township.....	3,040	3,017
Ward 4.....	4,402		New Brunswick city.....	18,603	17,166
Ward 5.....	5,505		Ward 1.....	2,573	
Guttenburg town.....	1,947	1,206	Ward 2.....	3,556	
Harrison city.....	8,338	6,898	Ward 3.....	1,731	
Ward 1.....	2,143		Ward 4.....	912	
Ward 2.....	1,203		Ward 5.....	5,122	
Ward 3.....	1,947		Ward 6.....	4,709	
Ward 4.....	3,045		North Brunswick township.....	1,238	1,251
Hoboken city.....	43,648	30,999	Perth Amboy township, coextensive with Perth Amboy city.....	9,512	4,808
Ward 1.....	10,063		Perth Amboy city by wards:		
Ward 2.....	5,765		Ward 1.....	2,533	
Ward 3.....	14,859		Ward 2.....	3,321	
Ward 4.....	12,961		Ward 3.....	3,658	
Jersey City.....	163,003	120,722	Piscataway township, including Dunellen borough.....	3,286	3,242
Aldermanic district 1.....	17,537		Dunellen borough.....	1,060	817
Aldermanic district 2.....	30,216		Raritan township.....	3,788	3,789
Aldermanic district 3.....	24,312		Sayreville township.....	3,509	1,930
Aldermanic district 4.....	36,776				
Aldermanic district 5.....	20,294				
Aldermanic district 6.....	33,568				
Kearney township.....	7,064	777			

a Exclusive of Woodbury city.

b Organized since 1880, taken from Greenwich township.

c Includes population of East Greenwich township.

d Includes population of South Harrison township.

e Organized since 1880, taken from Harrison township.

f Annexed to Trenton since 1880.

g Includes that part annexed to Trenton since 1880.

POPULATION BY MINOR CIVIL DIVISIONS—CONTINUED.

MINOR CIVIL DIVISIONS.	1890.	1880.	MINOR CIVIL DIVISIONS.	1890.	1880.
WARREN COUNTY	36,553	36,589	WARREN COUNTY—Continued.		
Allamuchy township	759	648	Mansfield township.....	1,362	1,709
Belvidere town.....	1,768	1,773	Oxford township.....	4,002	64,594
Blairstown township.....	1,662	1,458	Pahaquarry township.....	291	418
Franklin township.....	1,233	1,529	Phillipsburg city.....	8,644	7,181
Frelinghuysen township.....	879	1,042	Ward 1	2,033	
Greenwich township.....	825	a2,554	Ward 2.....	2,207	
Hackettstown town.....	2,417	2,502	Ward 3.....	2,799	
Hardwick township.....	503	583	Ward 4.....	1,605	
Harmony township.....	1,152	1,350	Pohatcong township (c).....	1,483	
Hope township.....	1,332	1,569	Washington township, including Washington	4,138	3,591
Independence township.....	904	1,018	borough.....		
Knowlton township.....	1,411	1,476	Washington borough.....	2,834	2,142
Lapatcong township.....	1,738	1,591			

^a Includes Pohatcong township.

^b Exclusive of Belvidere town.

^c Organized in 1881 from part of Greenwich township.

ROBERT P. PORTER,
Superintendent of Census.

CENSUS BULLETIN.

1395-33
MAY 22 1891
WASHINGTON

No. 70.

WASHINGTON, D. C.

May 22, 1891.

STATISTICS OF CHURCHES.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., May 1, 1891.

The first of the series of statistics of churches was presented in Bulletin No. 18, issued December 26, 1890, giving the returns of fourteen denominations, some of which were but little known, and never before represented in statistical reports.

The statistics given herewith are for the Cumberland Presbyterian Church, the Church of Jesus Christ of Latter-day Saints (Mormons), the Reformed Episcopal Church, the Unitas Fratrum or Moravian Church, the German Evangelical Synod of North America, the German Evangelical Protestant Church of North America, and a branch of the Brethren, popularly known as Plymouth Brethren. The last-named body has no ordained ministers, owns no houses of worship, and appears now for the first time in a statistical table.

The collection of statistics of the religious bodies of the United States is in charge of H. K. CARROLL, LL. D., special agent of the Census Office.

The following is a summary of the denominations given in this bulletin:

DENOMINATIONS.	Number of organizations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
Cumberland Presbyterian Church.....	2,791	2,008 $\frac{3}{10}$	662,807	551	91,288	\$3,515,511	164,940
Church of Jesus Christ of Latter-day Saints.....	425	265 $\frac{7}{8}$	92,102	178 $\frac{1}{2}$	28,075	825,506	144,352
Reformed Episcopal Church.....	83	84	23,925	2	300	1,615,101	8,455
Moravian Church.....	94	114	31,615	4	715	681,250	11,781
German Evangelical Synod of North America.....	870	785 $\frac{1}{2}$	245,781	83	5,970	4,614,490	187,432
German Evangelical Protestant Church of North America.....	52	52	35,175	1		1,187,450	36,156
Plymouth Brethren.....	109			108	7,423		2,279

Bulletins will shortly be issued with returns of the Roman Catholic and Evangelical Lutheran bodies, which returns have been gathered with great care and fullness.

Robert D. Tolson

Superintendent of Census.

STATISTICS OF CHURCHES.

BY HENRY K. CARROLL.

The seven denominations represented in this bulletin are not brought together because they are at all similar, but simply because their returns are ready. They are very dissimilar, and differ widely in history, polity, and creed.

The Cumberland Presbyterian Church is presbyterian in polity, has a creed which is described as a *via media* between Calvinism and Arminianism, and owes its origin to a revival movement at the beginning of the present century.

The Church of Jesus Christ of Latter-day Saints has a hierarchical organization, and bases its faith chiefly on the Book of Mormon. It is divided into "stakes," and has apostles, bishops, elders, evangelists, etc.

The Reformed Episcopal Church was organized in 1873. It has no dioceses, but it has synods or episcopal jurisdictions.

The Moravian Church, officially called the *Unitas Fratrum*, is an episcopal body, consisting of three provinces, of which the churches in this country form one, those in England another, and those in Germany, where the church originated, or rather was revived early in the eighteenth century, a third. It has bishops, but they are spiritual, not ecclesiastical, officers.

The German Evangelical Synod of North America celebrated October 12, 1890, the semi-centennial anniversary of its organization in this country. It accepts the symbolical books of the Lutheran and Reformed churches, representing in the United States the State Church of Prussia, which is a union of the Lutheran and Reformed bodies.

The German Evangelical Protestant Church is liberal in doctrinal belief, having no confession of faith. It is opposed to synodical organization, but its ministers are associated in *verein*, or district unions. Some of its churches are older than the century.

The Brethren, as they wish to be known, represent a movement which began in 1830 in Plymouth, England, whence they are popularly designated Plymouth Brethren. There are three branches of them in this country. They have no ordained or paid ministry, and own no houses of worship. It is with extreme difficulty that information is obtained of the two branches not represented in this bulletin.

The largest body, as will be seen, is the Cumberland Presbyterian Church. It has 118 presbyteries, which are divided among eighteen synods, and it has 164,940 communicants. It is represented in twenty-two states, lying chiefly in the south and southwest. It has also congregations in the Indian territory.

The Church of Jesus Christ of Latter-day Saints, though its chief strength lies in the territory of Utah, is also represented in nineteen states and two other territories.

The territory of the Reformed Episcopal Church embraces twelve states, of which four belong to the South Atlantic, four to the North Atlantic, and four to the North Central division.

The Moravian Church has congregations in seventeen states and two territories, including Alaska.

The German Evangelical Church is represented in twenty-two states, nearly half its strength being in Illinois, Missouri, and Ohio.

The churches of the German Evangelical Protestant Church are found chiefly in Pennsylvania, Ohio, and Louisiana; they exist also in seven other states.

The congregations of the (Plymouth) Brethren are widely scattered, being found in twenty-seven states and the District of Columbia.

A glance at the statistics herewith presented will show that of the 2,791 organizations of the Cumberland Presbyterian Church, 551, or about one-fifth, meet in halls, schoolhouses, and private houses. Of the 425 organizations of the Church of Jesus Christ of Latter-day Saints, 265 have edifices of their own, but 166, or more than one-third, meet in halls. Of the 83 organizations of the Reformed Episcopal Church only two meet in halls. The 94 organizations of the Moravian Church have 114 edifices, and only four meet in halls. Eighty-three of the 870 organizations of the German Evangelical Synod meet in halls. All the 52 organizations of the German Evangelical Protestant Church have edifices of their own, except one, which meets in a private house. All the organizations of the (Plymouth) Brethren meet in halls.

Bulletin number 18 contained the statistics of fourteen denominations. It is hoped that in a few weeks the returns of the Roman Catholic, Greek Catholic (Uniates), Russian Orthodox, Greek Orthodox, Armenian Catholic, Old Catholic, and Converted, or Reformed Catholic Churches will be ready for publication in a bulletin, and that that bulletin will be followed by another, containing the statistics of the various Evangelical Lutheran bodies.

I.—CUMBERLAND PRESBYTERIAN CHURCH.
BY COUNTIES.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
ALABAMA :								ARKANSAS—Con'd.							
Bibb	4	3	950	1	75	\$2,615	195	Independence	7	5½	2,200	1	100	\$3,075	220
Blount	11	11	3,550			13,000	333	Izard	14	12½	3,800	1	150	4,900	528
Chalhoue	4	3	650			4,000	117	Jefferson	4	2½	700	1	100	900	101
Cherokee	6	3	500			650	244	Johnson	9	8½	3,800			9,300	705
Chilton	1	1	400			750	40	Lawrence	1	1	300			150	29
Colbert	3	3	856			4,750	130	Lee	1	1	250			350	24
Coosa	2	2	450			750	99	Lincoln	4	3½	1,200			1,000	214
Cullman	2	2	550			750	99	Little River	3	1	250	1		800	89
Dallas	3	3	550			7,300	56	Logan	13	1½	250	9	300	875	302
De Kalb	4	2	600			3,000	185	Lonoke	3	3	850	1	150	3,800	191
Elmore	1	1	300			450	63	Madison	8	2	400	6	1,000	2,400	278
Etowah	9	5	1,500			6,100	362	Miller	1	1	300			1,000	45
Franklin	4	3½	1,250			1,650	249	Monroe	1	1	1,800			9,350	224
Greene	1	1	400			1,000	55	Nevada	5	3	775	1	200	2,825	184
Jackson	18	14½	4,200			10,700	622	Ouachita	5	3	650	2	350	500	204
Jefferson	14	14	3,450			60,000	792	Perry	2					150	85
Lamar	4	3	1,100		150	1,100	205	Phillips	3	3	800			3,200	128
Lauderdale	6	5	1,550			2,100	263	Polk	3	2½	600			850	70
Lawrence	5	5	2,000			5,200	436	Pope	11	11	4,600			7,200	598
Limestone	7	7	1,950			13,850	358	Prairie	3	2	600	1	75	2,000	63
Madison	13	11½	4,150			21,600	966	Pulaski	3	1	500	2	500	10,000	187
Marion	1	1	600			500	28	Randolph	1			1	500		32
Marshall	5	5	1,200			3,425	202	Saint Francis	4	3½	1,600			2,550	151
Pickens	4	4	1,800			2,900	165	Saline	2	2	500			1,550	123
Saint Clair	6	6	2,050			9,750	313	Scott	5	2½	600	1	100	2,150	220
Shelby	10	9	3,150			5,300	468	Searcy	2	2		2	300		55
Talladega	3	2	450			1,400	99	Sebastian	7	2	550	5	750	11,650	358
Tuscaloosa	4	4	1,350			1,200	170	Sevier	7	4	1,100	3		2,900	405
Wilcox	3	3	625			1,915	76	Sharp	4	4	1,000			1,750	125
Total	158	136½	41,931	2	225	187,705	7,390	Stone	5	2	600	2	200	550	163
ARKANSAS :								Union	1	1	300			300	46
Arkansas	1						12	Van Buren	3			3	250		130
Baxter	3	1	400			1,100	78	Washington	24	11½	3,700	11	2,950	15,900	1,200
Benton	7	4½	1,750			6,200	514	White	7	4½	2,050			3,950	345
Boone	6	3	700		500	4,200	417	Woodruff	1	1	400			750	18
Bradley	2	2					34	Yell	6	2	400	3	150	1,500	155
Calhoun	6	4	1,300		200	1,250	205	Total	300	178½	57,735	89	12,600	158,250	12,282
Carrroll	5	1	200		3	1,000	100	CALIFORNIA :							
Clark	2	2	600			900	75	Contra Costa	1	1	150			600	1
Clay	8	2½	650		4	1,000	212	Fresno	6	2	475	4	650	4,700	294
Glebarne	3	2	350		1	300	75	Kern	3	2	450	1	100	3,000	60
Cleveland	2	1	500		1	100	30	Lake	2	2	350			1,800	50
Columbia	6	5½	1,100			1,300	160	Los Angeles	1	1	225			1,650	50
Conway	11	10	3,750		3	6,400	621	Merced	2	2	650			7,000	130
Craighead	1	1	375			2,000	60	Napa	1	1½	250			1,000	15
Crawford	2	2	450			2,100	107	San Diego	1	1	200			1,500	25
Cross	3	2	550			700	84	San Joaquin	2	2	700			5,100	110
Dallas	1	1	250			200	25	San Luis Obispo	2	2	350			3,000	175
Drew	4	3	850		200	1,300	139	Santa Barbara	1	1	200			1,500	20
Faulkner	3	1	150		2	225	64	Santa Clara	3	3	900			13,200	62
Franklin	10	4½	1,800		4	500	490	Solano	2	2	300			1,800	17
Fulton	3	2	500		1	400	78	Sonoma	1	1	150			1,000	10
Grant	5	5	1,700			1,500	163	Stanislaus	2	2	600			5,000	75
Greene	4	2	625		2	2,100	120	Tulare	6	4	850	2	270	12,600	292
Hempstead	2	2	550			2,500	128	Yolo	1	1	300			5,000	110
Hot Spring	1	1			3		42	Total	37	20½	7,100	7	1,020	69,450	1,496
Howard	6	3½	850		1	3,250	254								

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

COUNTIES.	Number of organizations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organizations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
COLORADO:								INDIANA—Con'd.							
Elbert	1	1	180			\$1,800	10	Knox	3	4	1,200	1	500	\$4,200	383
El Paso	1	1	200			10,000	20	Martin	1	1	250			700	31
Fremont	1	1	200			3,000	105	Monroe	2	2	800			2,300	98
Logan	1	1	200			1,000	84	Parke	1	1	200			900	45
Pueblo	1	1	200			3,500	12	Pike	3	4 1/2	1,725			12,500	324
Total	5	5	980			19,300	231	Spencer	1	1	400			1,500	76
FLORIDA:								INDIAN TERRITORY:							
Citrus	1			1	175		25	Cherokee Nation	14	3 1/2	950	10	1,060	4,050	441
Polk				2	450		15	Chickasaw Nation	11	1	200	10	925	450	162
Sumter	3	1 1/2	200	1	200	200	48	Choctaw Nation	27	25	7,050	2		5,645	597
Total	6	1 1/2	200	4	825	200	88	Public Land Strip	1	1	350			1,500	25
GEORGIA:								Total							
Bartow	3	2	550	1	200	1,200	72		42	53 1/2	18,075	1	500	160,700	4,826
Chattooga	1	1 1/4	250			100	8	INDIAN TERRITORY:							
Gordon	3	2 1/4	500			1,150	90	Cherokee Nation	14	3 1/2	950	10	1,060	4,050	441
Murray	2	2	550	1	200	1,400	185	Chickasaw Nation	11	1	200	10	925	450	162
Walker	1	1 1/2	250			300	36	Choctaw Nation	27	25	7,050	2		5,645	597
Whitfield	5	5 1/2	1,200			4,400	207	Public Land Strip	1	1	350			1,500	25
Total	15	11 3/4	3,300	2	400	8,550	598	Total	53	30 1/2	8,550	22	1,985	11,645	1,220
ILLINOIS:								IOWA:							
Adams	1	1	250			600	16	Adams	1	1	300			800	78
Bond	4	4	1,200			3,500	161	Allamakee	1	1	300			7,500	126
Cass	3	3	700			6,500	197	Appanoose	1	1	200			1,500	75
Christian	2	2	900			11,200	107	Cedar	2	2	550			1,600	65
Clark	3	2	450	1		1,100	145	Clayton	1	2	350			800	80
Clay	3	3	1,200			2,900	89	Davis	1	2	400			1,500	100
Coles	13	12	3,850	1		21,700	1,045	Des Moines	1	1	300			1,500	63
Crawford	1	1	250			600	20	Fremont	3	1	450	2	155	1,600	76
Cumberland	2	2	400			1,000	75	Hardin	1	1	150			300	12
De Witt	2	1	300			4,900	165	Jefferson	1	1	200			1,000	35
Douglas	2	2	590			5,000	221	Lee	2	2	500			3,700	105
Edwards	1	1	450			1,500	119	Lucas	1	1	200			1,200	70
Fayette	3	1	400	2	250	1,800	45	Marion	1	1	100			350	20
Ford	1	1	275			5,500	730	Mills	1	1	400			1,000	37
Gallatin	5	5	1,350			2,000	50	Pottawattamie	2	2	700			2,800	47
Greene	1	1	200			5,800	403	Story	3	2	400			6,000	167
Hamilton	4	4 1/2	1,400			2,000	50	Washington	1	1	150			800	11
Hardin	1	1	300	1		2,600	95	Total	24	23	5,650	2	155	34,350	1,107
Henderson	1	1	600			800	55	KANSAS:							
Jasper	2	1	300	1		1,100	91	Atchison	1	1	250			500	83
Jefferson	2	1 1/4	500			4,200	126	Barber	2	2		2		70	
Jersey	4	4	900			4,150	478	Barton	2	2	350			5,000	86
Johnson	11			10	3,200	16,500	535	Brown	1	1		1	100	20	
La Salle	1	1	300			11,000	445	Butler	4	2	700	2		3,500	140
Logan	4	5	1,525			16,800	714	Cherokee	1	1				20	
McDonough	7	6	2,300	1	200	5,500	122	Cloud	1			1	250	26	
McLean	4	4	1,250			7,900	455	Cowley	1			1		50	
Macon	7	8	2,650			2,700	20	Crawford	1					23	
Macopin	2	2	600			2,200	54	Doniphan	2	2		2	150	62	
Madison	4	4	1,600			17,500	559	Elk	2	1		1	50	25	
Marion	6	6 1/4	2,900			13,500	473	Finney	1	1	300			4,000	82
Marshall	1	1	300			1,000	25	Franklin	2	1	200			2,000	96
Massac	1	1		1	500	2,850	330	Gray	1	1	150			2,000	19
Menard	8	8	2,210			2,800	92	Greeley	1			1	150	20	
Montgomery	6	6	1,800			1,117	130	Greenwood	1					25	
Morgan	1	1	200			1,500	91	Harper	3	1	200	2		1,000	130
Moultrie	3	3	1,500			2,850	330	Jefferson	1	1		1	60	13	
Piatt	2	1	250	1		1,500	91	Jewell	2	2		2		43	
Pope	7			7	2,500	2,850	330	Johnson	3	2	500			6,000	42
Richland	1	1	300			335	16	Kingman	3			3		115	
Saline	10	9	1,900	1	200	8,100	574	Lane	1	1		1	150	20	
Sangamon	6	6	1,600			10,700	406	Leavenworth	1	1 1/2	200			200	24
Schnyder	1	1				10	10	Logan	1	1		1	150	18	
Shelby	3	3	900			3,050	85	Lyon	1	1				25	
Tazewell	1	1	300			2,800	92	Miami	5	5	900			7,200	281
Union	2			2	800	1,350	130	Montgomery	2			1	50	69	
Vermilion	14	13	4,535			25,700	1,117	Republic	4			4	300	136	
Warren	1	1	250			1,000	18	Scott	2	1	200	1	120	3,500	46
Wayne	8	8 1/4	2,450			5,900	491	Shawnee	1	1	300			5,000	40
White	13	13	3,725			14,500	1,502	Stevens	2			2	300	66	
Williamson	2	2	450			1,000	18	Sumner	6	1 1/2	1,100	4	400	6,800	223
Total	198	167 1/4	52,260	29	7,950	313,985	14,177	Wichita	1	1	150			1,000	60
INDIANA:								KENTUCKY:							
Carroll	1	1	450			5,000	200	Adair	4	3	1,000	1	200	2,400	313
Cass	1	2	250			4,000	140	Allen	5	5	1,000			2,600	278
Daviess	2	3	1,000			5,000	141	Anderson	1	1	250			600	49
Dubois	7	7	2,800			8,000	600	Ballard	2	2	700			1,200	137
Gibson	7	9	3,150			28,300	986	Ballard	2	2	750	1	400	2,200	294
Greene	1	3	1,200			3,000	296	Barren	3	2	850			2,200	360
Hendricks	4	4	1,150			9,600	297	Boyle	5	5 1/2	1,650	3	400	2,900	524
Johnson	1	1	250			1,400	90	Brackinridge	10	8	1,950			3,500	383
								Butler	1	1				2,500	57
								Total	68	23	6,350	34	2,305	55,300	2,386

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
KENTUCKY—Con'd.								MISSISSIPPI—Con'd.							
Caldwell	5	5	2,150			\$13,900	684	Yalobusha	3	3	700			\$5,200	133
Calloway	4	4	1,200			1,700	183	Yazoo	1	1	200			1,500	91
Christian	5	5	1,400			17,200	547	Total	135	115½	36,409	4	400	108,650	6,353
Clark	1	1	300			2,000	150	MISSOURI:							
Crittenden	8	7½	4,350			8,950	639	Adair	5	2	800	3	300	9,200	472
Cumberland	3	3	1,200			2,900	255	Andrew	6	4½	1,450	1	150	3,950	244
Daviess	5	4	1,500	1	75	24,700	609	Atchison	7	5	1,500	2	350	8,700	347
Fulton	1	1	600			800	84	Audrain	4	1	300			1,000	219
Graves	11	11	4,500			10,400	984	Barry	10	4¾	2,650	2	400	4,350	450
Grayson	12	8½	3,050	2	300	4,050	710	Barton	4	4	1,300			5,200	195
Green	5	5	1,575			2,500	383	Bates	10	5½	1,700	3	336	11,290	496
Hancock	2	2	400			1,000	90	Boone	1	1	300			1,000	50
Hardin	4	1½	1,200			800	106	Buchanan	7	3¾	1,700	2	550	8,700	409
Hart	3	3	700			1,500	137	Callaway	2	1	300	1	250	1,000	60
Henderson	4	4	1,650			5,800	174	Carroll	3	2	600	1		2,750	214
Hickman	1	1	500			1,000	106	Cass	6	4¾	1,725			10,750	334
Hopkins	4	8	3,200			10,700	470	Chariton	5	4	1,140	1	75	5,600	236
Jefferson	8	3¼	1,150			20,750	203	Christian	1	1		1	100		19
La Rue	1	1	400			750	77	Clark	4	4	1,225			5,800	205
Lincoln	1	1	250			500	100	Clay	5	4½	1,350			3,800	191
Livingston	13	2½	1,050			2,900	245	Clinton	2	2	550			1,300	132
Logan	4	13½	4,100			17,850	957	Cole	3	2½	1,250			4,200	210
McCracken	3	3	1,400			3,200	222	Cooper	9	9	4,850			20,800	770
McLean	5	5	1,800			6,500	472	Crawford	9	5½	2,150	2	275	4,600	446
Marion	1	1	200			400	50	Dade	9	6	1,850	3	600	5,700	627
Marshall	6	5	1,700			3,200	252	Daviess	8	6½	1,850			7,112½	471
Mercer	1	1	250			2,000	230	De Kalb	6	19¾	1,150	2	350	1,900	214
Metcalf	10	5	1,600	5	750	2,900	537	Dent	3	2	600	1	130	2,600	138
Montgomery	2	1½	350			1,450	70	Dunklin	4	1	400			1,400	171
Muhlenberg	6	6	2,200			5,700	352	Franklin	2	2					56
Ohio	5	5	1,600			6,500	336	Gentry	7	6	1,850	1	150	8,300	395
Russell	1	1					72	Greene	5	4	1,100	1	75	20,900	424
Simpson	3	3	1,000			12,200	241	Grundy	4	3	725			3,000	168
Taylor	3	3	1,250			2,500	259	Harrison	4	2	525	1		1,600	177
Todd	6	6	1,550			8,000	407	Henry	12	8½	2,728	3	332	12,400	730
Trigg	1	1	225			800	141	Holt	1	1	300			1,500	70
Union	3	3	1,300			4,500	338	Howard	3	2½	1,150			2,250	163
Warren	7	7	2,250			19,100	717	Howell	5	3½	1,700	1	200	3,600	230
Wayne	2	1	300	1		400	135	Iron	1	1					4
Webster	5	4	1,800	1	200	5,000	396	Jackson	8	8	2,630			46,400	644
Total	213	185½	65,350	15	2,325	254,600	15,468	Jasper	5	3	1,200	2	400	4,400	309
LOUISIANA:								Johnson							
Bienville	6	5	1,650	1		3,700	166	Knox	1	1	250			800	28
Claborn	6	4	1,400	2	400	4,150	308	Laclede	1	1	150			500	106
De Soto	3	1	400			1,500	111	Lafayette	6	4½	1,375	1		13,350	459
Jackson	3	3	700			650	117	Lawrence	15	11½	4,000	3	575	18,400	916
Lincoln	4	2	850	1		1,700	126	Linn	3	2½	900			5,200	250
Natchitoches	1	1	300			350	40	Linn	3	1½	500	1		900	132
Total	23	16	5,300	4	400	12,050	868	Livingston	5	3	975	1		3,250	234
MISSISSIPPI:								McDonald							
Alcorn	3	3	950			4,600	153	Macon	4	1	400	2	325	300	133
Attala	4	4	1,400			4,250	203	Marion	16	11½	3,420	2	500	15,550	953
Benton	5	1	200			300	189	Miller	1	1	300			1,000	40
Bolivar	1	1		1			13	Moniteau	4	3¼	1,600			1,500	30
Calhoun	1	1	300			800	87	Monroe	3	3	1,060			4,700	200
Carroll	1	1	300			200	65	Montgomery	7	5½	1,900			4,200	256
Choctaw	2	2	800			1,400	140	Morgan	3	3	1,300			6,150	515
Clay	5	5	2,100			7,800	355	Newton	5	3½	1,800			3,000	235
De Soto	7	6½	2,200			10,000	359	Nodaway	2	2		2	350	3,700	205
Holmes	3	3	850			1,800	180	Oregon	5	1	300	4	725	1,400	105
Kemper	4	4	750			600	172	Pettis	3	3	1,400			24,500	385
Lafayette	2	2	700			10,800	160	Pike	17	12	4,500			39,700	1,746
Lauderdale	4	3	1,200	1	400	4,900	195	Platte	3	2½	900			4,200	134
Leake	8	7½	1,650			2,000	252	Polk	6	5	850			5,600	585
Lee	8	6¾	1,925			6,700	304	Putnam	2	1	200	1	200	850	35
Lowndes	7	6½	3,150			9,600	365	Ralls	2	2	650			3,500	165
Madison	2	2	450			900	59	Randolph	10	7½	2,200	2	550	9,200	911
Marshall	2	2	600			1,500	46	Ray	2	1½	400	1	250	9,200	73
Monroe	4	4	1,200			2,150	240	Ripley	4	1½	750			1,800	228
Montgomery	5	5	1,484			2,000	190	Saint Clair	2	2	450			1,600	95
Neshoba	5	4½	1,200			1,800	180	Saint Francois	1	1	300			800	7
Newton	3	2	500			550	84	Saint Louis	2	2	1,400			80,000	305
Noxubee	3	2½	1,400			3,000	180	Saline	10	9	4,875			31,000	946
Oktibeha	11	9	3,500	2		8,800	555	Scotland	7	5½	1,645	1	200	5,500	474
Panola	6	4¼	1,150			4,450	231	Shelby	1	1	300			1,000	48
Pontotoc	2	2	350			650	83	Stoddard	5	1	250			250	90
Prentiss	2	1½	500			700	28	Stone	1	1		1	75		17
Scott	2	2	200			350	92	Sullivan	1	1					47
Tallahatchie	2	2	700			2,000	105	Texas	2	1	300	1	150	1,700	30
Tate	4	2	850			2,600	120	Vernon	6	3	900	3	650	3,700	316
Tippah	3	1	150			200	117	Washington	4	3	900			2,600	93
Union	1	1	300			500	104	Wayne	2	2	775			2,200	82
Webster	5	5	1,200			1,750	281	Webster	1	1					70
Winston	4	4	1,300			2,300	182	Worth	2	1	250	1	150	800	29
Total	393	270¾	98,096	63	9,798	571,302½	23,990	Wright	3	2	350	1	75	1,600	133

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.								
NEBRASKA:								TENNESSEE—Con'd.															
Cass	1	1	200			\$1,800	85	Houston	8	7	2,050	1	150	\$8,400	462								
Johnson	1			1			32	Humphreys	13	11½	3,700			8,650	393								
Omaha	2	1	130	1		1,200	60	Jackson	10	9	4,410			5,175	1,023								
Tooe	2	2	460			7,000	230	James	4	3	700	1	200	2,100	140								
Richardson	1			1			9	Jefferson	2	3	850			4,000	135								
Total	7	4	790	3		10,000	416	Knox	8	8	2,750			25,000	710								
OHIO:								TEXAS:															
Athens	3	3	850			6,000	270	Anderson	2	1	350	1	300	500	61								
Butler	2	2	600			6,000	275	Archer	2					84	38								
Darke	2	1	250		175		117	Bandera	1						13								
Guernsey	1	1	300		125	3,000	42	Bastrop	5	2	300			1,800	157								
Hamilton	1	1	250			7,300	167	Baylor	2	1		2	425	800	32								
Hocking	1	1	300		100	5,200	130	Bell	3	3	400	2	600	800	116								
Knox	3	4	1,150			1,200	63	Bexar	2	2	350			10,500	132								
Meigs	1	1	250			2,000	75	Blanco	2	1					61								
Miami	1	1	500			7,000	227	Bosque	1	1	300			1,000	70								
Noble	2	2	700			1,000	165	Bowie	1	1	300			7,000	28								
Pickaway	1	1	400			10,000	500	Brazos	1	1	300			15,000	53								
Ross	2	2	650			2,600	70	Brown	6	6	750	4	600	8,250	182								
Warren	1	2	400			2,200	54	Burleson	2	1	150	1	100	3,300	69								
Washington	1	2	400			4,200	231	Caldwell	3	3		3	900		130								
Total	22	22	6,600		1,250	60,500	2,602	Callahan	2	1				800	45								
OREGON:								TENNESSEE:															
Benton	2			2	175		117	Anderson	2	2	450			1,500	70								
Clackamas	1			2	125		42	Bedford	7	7	2,450			10,200	544								
Columbia	1	1	375			3,000	101	Benton	4	4	1,000			1,700	164								
Douglas	1			1	100		16	Blount	3	3	500	1	300	1,500	250								
Lane	3	3	750			7,300	167	Bradley	10	8	2,100	2	250	6,800	570								
Linn	3	3	850			5,200	130	Cannon	2	2	450			3,500	72								
Marion	4	4	550	2	225	1,200	63	Greene	10	9½	4,150			29,600	1,136								
Polk	1	1		1	75		10	Indiana	2	2	450			19,500	519								
Umatilla	5	1½	490	3	550	3,000	171	Jefferson	6	5	1,500	1	100	16,500	623								
Yamhill	1	1	350			2,500	80	Mercer	2	2	550			4,600	114								
Total	23	10	3,365	11	1,250	22,200	897	Venango	4	4	1,400			4,600	114								
PENNSYLVANIA:								TEXAS:															
Allegheny	6	5	2,200	1	250	82,000	663	Washington	2	2	750			1,800	224								
Armstrong	1	1	200			800	32	Wayne	8	8	1,535			4,550	440								
Butler	1	1	200			500	40	Weakley	15	12	3,800	3		12,600	1,103								
Fayette	10	10	4,000			63,000	1,611	White	6	5½	2,850			7,200	538								
Greene	10	9½	4,150			29,600	1,136	Williamson	8	8	2,375			15,300	679								
Indiana	2	2	450			3,500	72	Wilson	15	15	4,550			22,300	1,223								
Jefferson	6	5	1,500	1	100	19,500	519	Total	529	464½	149,471	46	7,425	745,605	39,477								
Mercer	2	2	550			4,600	114									Anderson	2	1	350	1	300	500	61
Venango	4	4	1,400			16,500	623									Archer	2					84	38
Washington	10	9	3,400			37,500	1,395									Bandera	1						13
Total	52	48½	18,050	2	350	257,500	6,210									Bastrop	5	2	300			1,800	157
TENNESSEE:								TEXAS:															
Anderson	2	2	450			1,500	70									Baylor	2	1		2	425	800	32
Bedford	7	7	2,450			10,200	544									Bell	3	3	400	2	600	800	116
Benton	4	4	1,000			1,700	164									Bexar	2	2	350			10,500	132
Blount	3	3	500	1	300	1,500	250									Blanco	2	1					61
Bradley	10	8	2,100	2	250	6,800	570									Bosque	1	1	300			1,000	70
Cannon	2	2	450			3,500	72									Bowie	1	1	300			7,000	28
Greene	10	9½	4,150			29,600	1,136									Brazos	1	1	300			15,000	53
Indiana	2	2	450			19,500	519									Brown	6	6	750	4	600	8,250	182
Jefferson	6	5	1,500	1	100	16,500	623									Burleson	2	1	150	1	100	3,300	69
Mercer	2	2	550			4,600	114									Caldwell	3	3		3	900		130
Venango	4	4	1,400			16,500	623									Callahan	2	1				800	45
Washington	10	9	3,400			37,500	1,395									Camp	1	1	200			950	74
Total	52	48½	18,050	2	350	257,500	6,210									Cass	8	5½	1,200	2		5,000	212
TENNESSEE:								TEXAS:															
Anderson	2	2	450			1,500	70									Cherokee	11	9	4,000		600	10,350	638
Bedford	7	7	2,450			10,200	544									Clay	8	8		8	1,465	1,350	220
Benton	4	4	1,000			1,700	164									Coleman	3			2	400		120
Blount	3	3	500	1	300	1,500	250									Collin	12	7	2,450			16,200	796
Bradley	10	8	2,100	2	250	6,800	570									Colorado	1			4	410		15
Cannon	2	2	450			3,500	72									Comanche	2	1	300			1,100	110
Greene	10	9½	4,150			29,600	1,136									Cooke	3	1	600	2	400	10,000	220
Indiana	2	2	450			19,500	519									Dallas	9	6½	2,600	2	175	27,700	883
Jefferson	6	5	1,500	1	100	16,500	623									Delta	2	1½	100	1	125	75	90
Mercer	2	2	550			4,600	114									Denton	17	9	3,050	8	1,025	11,700	884
Venango	4	4	1,400			16,500	623									De Witt	4	1				500	102
Washington	10	9	3,400			37,500	1,395									Eastland	1						18
Total	52	48½	18,050	2	350	257,500	6,210									Ellis	17	8	3,600	7	1,650	17,500	920
TENNESSEE:								TEXAS:															
Anderson	2	2	450			1,500	70									Erath	4	2	600			2,000	196
Bedford	7	7	2,450			10,200	544									Falls	1	1	300			200	14
Benton	4	4	1,000			1,700	164									Fannin	20	8½	2,625	9	1,675	15,350	1,012
Blount	3	3	500	1	300	1,500	250									Fayette	1						15
Bradley	10	8	2,100	2	250	6,800	570									Fisher	1						16
Cannon	2	2	450			3,500	72									Franklin	4	3	700	1	200	2,500	180
Greene	10	9½	4,150			29,600	1,136									Freestone	4	2	800	1	400	2,000	212
Indiana	2	2	450			19,500	519																
Jefferson	6	5	1,500	1	100	16,500	623																
Mercer	2	2	550			4,600	114																
Venango	4	4	1,400			16,500	623																
Washington	10	9	3,400			37,500	1,395																
Total	52	48½	18,050	2	350	257,500	6,210																

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	STATES, ETC.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
TEXAS—Con'd.								Colorado	5	5	980			\$19,300	231
Gonzales	3	3	500			450	142	Florida	6	1 1/2	200	4	825	200	88
Grayson	16	9	2,800	7	925	15,900	781	Georgia	15	11 3/4	3,300	2	400	8,550	598
Gregg	1	1	550			4,500	124	Illinois	198	167 1/4	52,260	29	7,950	313,985	14,177
Grimes	1	1	300			250	57	Indiana	42	53 1/2	18,075	1	500	160,700	4,826
Hamilton	1			1	300		42	Indian territory	53	30 1/2	8,550	22	1,985	11,645	1,229
Hardeman	1			2	350		42	Iowa	24	23	5,650	2	155	34,550	1,167
Harrison	2	2	675			8,000	213	Kansas	68	25	6,350	34	2,305	55,300	2,386
Hays	3					300	42	Kentucky	213	185 1/2	65,350	15	2,325	254,600	15,458
Henderson	3	2	1,000	1	300	5,000	109	Louisiana	23	16	5,300	4	400	12,050	868
Hill	19	8	3,700	11	2,100	13,500	840	Mississippi	135	115 1/2	36,409	4	400	108,650	6,353
Hood	4			2	400		123	Missouri	393	270 1/2	98,096	63	9,798	571,362 1/2	23,990
Hopkins	11	4 1/2	1,700	6	1,300	6,500	371	Nebraska	7	4	790	3		10,000	416
Houston	2	1	600			1,000	110	Ohio	22	22	6,600			60,500	2,602
Hunt	8	1	400	7	1,175	3,000	288	Oregon	23	10	3,365	11	1,250	22,200	897
Irion	1						15	Pennsylvania	52	48 1/2	18,050	2	350	257,500	6,210
Jack	6	3 1/2	300	5	950	600	132	Tennessee	529	464 1/2	149,471	46	7,425	745,605	39,477
Johnson	8	3	800	5	1,000	6,300	438	Texas	476	205 1/2	75,395	206	40,550	436,108 1/2	22,297
Jones	10					15,000	50	Washington	11	4 1/2	1,550	5	1,025	15,300	470
Kaufman	1	5	2,700	4	1,300		462	West Virginia	1	1	300			2,000	32
Kerr	3						138	Total	2,791	2,008 3/8	662,807	551	91,288	3,515,511	164,940
Lamar	11	5 1/4	1,725	4	525	10,775	815	BY PRESBYTERIES.							
Lampasas	3	1	400	2	600	2,400	97	PRESBYTERIES.							
Lavaca	2	1	200			800	74	ALABAMA:							
Leon	2			2	800		92	Bibb, Ala	4	3	950	1	75	2,615	195
Limestone	8	5	1,820	3	1,100	7,200	463	Chilton, Ala	1	1	400			750	40
Llano	1			1	300		22	Dallas, Ala	3	3	550			7,300	56
McLennan	6	3	1,100			3,500	350	Jefferson, Ala	5	1	700			2,100	243
Madison	1			1	150		14	Marengo, Ala	1	1	600			500	28
Marion	4	2	1,000	2		15,600	179	Shelby, Ala	8	7	2,500			2,800	343
Milam	6	3 1/2	950	2	160	4,700	298	Tuscaloosa, Ala	2	2	700			400	100
Mills	1			1	300		28	Wilcox, Ala	3	3	525			1,915	76
Mitchell	1	1	400			3,000	65	Total	27	24	6,925	1	75	18,380	1,081
Montague	10	1 1/2	500	9	1,550	2,450	367	ALBION:							
Morris	1	1 1/2	400			1,000	30	Edwards, Ill	1	1	450			5,000	221
Nacogdoches	3	3	1,300			1,700	130	Hamilton, Ill	1	1	250			600	48
Navarro	10	5	2,600	5	1,350	13,000	577	Richland, Ill	1	1	300			335	16
Nolan	1						17	Shelby, Ill	2	2	600			1,050	45
Palo Pinto	3	1	300	1	200	1,000	116	Wayne, Ill	6	7	1,950			5,050	442
Panola	1	1	300			350	37	White, Ill	5	5	1,525			7,750	527
Parker	9	3 1/2	1,500	5	1,100	5,600	486	Total	16	17	5,075			19,785	1,299
Rains	1			1	400		38	ALLEGHENY:							
Red River	10	6 1/2	1,650	3	500	10,450	705	Allegheny, Pa	3	2	600	1	250	7,000	171
Rockwall	4	2 1/2	600	2	200	3,000	218	Armstrong, Pa	1	1	200			800	32
Runnels	1	1	200			600	50	Butler, Pa	1	1	200			500	40
Rusk	11	11	4,800			13,000	484	Indiana, Pa	2	2	450			3,500	72
San Saba	5	2	500	3	700	1,600	161	Jefferson, Pa	6	5	1,500	1	100	19,500	514
Shackelford	1	1	400			2,000	41	Mercer, Pa	4	4	1,400			16,500	628
Shelby	1	1	500			500	75	Venango, Pa	2	2	550			4,600	114
Smith	1	1	1,000			8,000	35	Total	19	17	4,900	2	350	52,400	1,576
Somervell	1	1		1	150		37	ANDERSON:							
Stephens	3						118	Henderson, Ky	4	4	1,650			5,800	174
Tarrant	11	5	1,900	6	1,200	40,600	800	Hopkins, Ky	8	8	3,200			10,700	470
Taylor	4	1	300	1	250	2,500	354	McLean, Ky	2	2	800			2,000	137
Tom Green	1	1		1	200		8	Muhlenberg, Ky	6	6	2,200			5,700	352
Travis	10	3	650	5	550	7,300	353	Union, Ky	3	3	1,300	1	200	4,500	338
Trinity	1	1		1	100		18	Webster, Ky	5	4	1,800			5,000	396
Upshur	1			1			36	Total	28	27	10,950	1	200	33,700	1,867
Van Zandt	9	2 3/4	1,700	5	1,700	4,800	360	ARKANSAS:							
Walker	2			2	250		32	Benton, Ark	7	4 1/2	1,750			6,200	514
Waller	1	1	200			300	32	Crawford, Ark	2	2	450			2,100	107
Washington	1			1	100		15	Franklin, Ark	5	3	1,300	2	400	6,300	278
Williamson	13	5 1/2	2,650	4	1,200	6,650	521	Washington, Ark	24	11 1/2	3,700	11	2,950	15,900	1,200
Wilson	1						21	McDonald, Mo	1					40	40
Wise	18	3	800	15	2,840	7,000	748	Total	39	21	7,200	13	3,350	30,500	2,139
Wood	2	1	200	1	100	800	35	ATCHISON:							
Young	2	1 1/2	300	1	225	300	43	Achison, Kans	1	1	250			500	83
Total	476	205 1/2	75,395	206	40,350	436,108 1/2	22,297	Brown, Kans	1			1	100	20	20
WASHINGTON:								BY STATES AND TERRITORIES.							
Garfield	3	1	250	2	375	2,500	60	Alabama	158	136 1/2	41,931	2	225	187,705	7,390
Spokane	1	1 1/2	250			2,000	40	Arkansas	300	178 1/2	57,735	89	12,600	158,250	12,282
Walla Walla	3	1	400	2	350	5,000	242	California	37	29 1/2	7,100	7	1,020	69,450	1,496
Whitman	4	2	650	1	300	5,800	128	Total	7	2 1/2	750	4	310	3,200	249
Total	11	4 1/2	1,550	5	1,025	15,300	470								
WEST VIRGINIA:															
Marshall	1	1	300			2,000	32								

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

PRESBYTERIES.								PRESBYTERIES.							
	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.		Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
ATHENS:								CHARLOTTE:							
Athens, Ohio	3	3	850			\$6,000	270	Dickson, Tenn	6	6	1,600			\$5,400	242
Hocking, Ohio	1	1	300			2,000	75	Hickman, Tenn	1	1	300			100	24
Knox, Ohio	3	4	1,150			7,000	227	Houston, Tenn	8	7	2,050	1	150	8,400	462
Moigs, Ohio	1	1	250			1,000	165	Humphreys, Tenn	13	11 1/2	3,700			8,650	393
Pickaway, Ohio	1	1	400			2,200	54	Montgomery, Tenn	3	1	200	2	300	370	101
Ross, Ohio	2	2	650			4,200	231	Stewart, Tenn	3	2 1/2	650			345	132
Total	11	12	3,600			22,400	1,022	Total	34	28 1/4	8,600	3	450	23,265	1,354
BACON:								CHATTANOOGA:							
Henderson, Tex	3	2	1,000	1	300	5,600	109	Bradley, Tenn	8	6	1,550	2	250	5,600	440
Kaufman, Tex	10	5	2,700		1,300	15,000	462	Dade, Tenn	1	1	300			1,000	40
Smith, Tex	1	1	1,000			8,000	35	Grundy, Tenn	1					200	40
Van Zandt, Tex	9	23 1/4	1,700	5	1,700	4,800	360	Hamilton, Tenn	14	8	2,500	6	1,200	39,100	761
Total	23	10 3/4	6,400	10	3,300	32,800	966	James, Tenn	1					200	20
BARTHOLOMEW:								CHEROKEE:							
Bradley, Ark	2			2			34	Cherokee Nation, Ind. Ter.	14	3 1/2	950	10	1,060	4,450	441
Callahan, Ark	6	4	1,300	1	200	1,250	205	Public Land Strip, Ind. Ter.	1	1	350			1,500	25
Cleveland, Ark	2	1	500	1	100	600	30	Total	15	4 1/2	1,300	10	1,060	5,550	466
Dallas, Ark	1	1	250			200	25	CHILLICOTHE:							
Drew, Ark	4	3	850	1	200	1,300	139	Carroll, Mo	3	2	600	1		2,750	214
Grant, Ark	5	5	1,700			1,500	163	Davies, Mo	8	6 3/4	1,850			7,112 1/2	471
Jefferson, Ark	4	2 1/2	700	1	100	900	101	Grundy, Mo	4	3	725			3,000	168
Lincoln, Ark	4	3 1/2	1,200			1,000	214	Harrison, Mo	4	2	525	1		1,600	177
Total	28	20	6,500	6	600	6,750	911	Linn, Mo	3	1 1/4	500	1		900	132
BELL:								CHOCTAW:							
Alcorn, Miss	3	3	950			4,600	153	Choctaw, Ind. Ter	24	24	6,850			4,945	446
Benton, Miss	5	1	200			300	189	COLSBURG:							
Lee, Miss	8	6 3/4	1,925			6,700	304	Allamakee, Iowa	1	1	300			7,500	126
Monroe, Miss	1	1	250			450	120	Clayton, Iowa	1	2	350			800	80
Pontotoc, Miss	2	2	350			650	83	Hardin, Iowa	1	1	150			300	12
Prentiss, Miss	2	1 1/2	500			700	28	Story, Iowa	3	2	400			6,000	167
Prentiss, Miss	3	1 1/2	150			200	117	Total	6	6	1,200			14,600	385
Tippah, Miss	3	1	300			500	164	COLORADO:							
Union, Miss	1	1					164	Bastrop, Tex	4	1	300			800	120
Total	25	17 1/4	4,625			14,100	1,158	Burleson, Tex	1	1	150			300	60
BONHAM:								COLEBURN:							
Collin, Tex	1			1	100		57	Milam, Tex	5	2 1/2	550	2	160	3,500	248
Fannin, Tex	20	8 1/2	2,625	9	1,675	15,350	1,012	Travis, Tex	1	1	650	5	550	6,300	230
Fannin, Tex	3	3	1,050	3	325	8,800	309	Washington, Tex	7	7		1	100	15	15
Grayson, Tex	3						107	Williamson, Tex	1					23	23
Hunt, Tex	3						107	Total	19	6 1/2	1,650	8	810	10,900	696
Total	27	11 1/2	3,675	13	2,100	24,150	1,485	CORSICANA:							
BUFFALO GAP:								CUMBERLAND:							
Callahan, Tex	1					150	49	Adair, Ky	4	3	1,000	1	200	2,400	313
Comanche, Tex	1					100	50	Barren, Ky	3	2	750		400	2,200	294
Eastland, Tex	1						18	Cumberland, Ky	3	3	1,200			2,900	255
Fisher, Tex	1						16	Green, Ky	5	5	1,575			2,500	383
Jones, Tex	1						50	Metcalfe, Ky	10	5	1,600	5	750	2,900	537
Nolan, Tex	1						17	Russell, Ky	1					2,500	72
Nolan, Tex	2	1	300			1,000	96	Taylor, Ky	3	3	1,250			400	259
Palo Pinto, Tex	1	1	400			2,000	41	Wayne, Ky	2	1	300	1		500	135
Shackelford, Tex	1						118	Total	31	22	7,675	8	1,350	15,800	2,158
Stephens, Tex	3					2,500	333	DALLAS:							
Taylor, Tex	3	1	300				18	Collin, Tex	11	7	2,450	3	310	16,200	739
Total	15	3	1,000			5,750	788	Collin, Tex	8	6	2,400	2	175	27,200	820
BURROW:								ROCKWALL:							
Arkansas, Ark	1						12	Dallas, Tex	4	2 1/2	600	2	200	3,000	218
Baxter, Ark	1						20	Total	23	15 1/2	5,450	7	685	46,400	1,777
Clay, Ark	7	2 1/2	950	4	950	950	191	TOTAL:							
Craighead, Ark	1	1	375			2,000	60	Number of organi- zations.	15	14 1/2	3,150			30,400	485
Cross, Ark	3	2	550			700	84	Church edifices.	15	14 1/2	3,150			30,400	485
Greene, Ark	4	2	625	2	350	2,100	120	Seating capacity.	15	14 1/2	3,150			30,400	485
Lee, Ark	1	1	250			350	24	Halls, etc.	15	14 1/2	3,150			30,400	485
Monroe, Ark	5	5	1,800			9,350	224	Seating capacity.	15	14 1/2	3,150			30,400	485
Monroe, Ark	3	3	800			3,200	128	Value of church property.	15	14 1/2	3,150			30,400	485
Phillips, Ark	3	3	800			2,550	151	Communicants or members.	15	14 1/2	3,150			30,400	485
Saint Francis, Ark	4	3 1/2	1,600			750	18	Number of organi- zations.	15	14 1/2	3,150			30,400	485
Woodruff, Ark	1	1	400				18	Church edifices.	15	14 1/2	3,150			30,400	485
Total	31	21	7,350	6	1,300	21,950	1,032	Seating capacity.	15	14 1/2	3,150			30,400	485
CALIFORNIA:								ROCKWALL:							
Contra Costa, Cal	1	1	150			600	1	Collin, Tex	11	7	2,450	3	310	16,200	739
Lake, Cal	2	2	350			1,800	50	Collin, Tex	8	6	2,400	2	175	27,200	820
Lake, Cal	1	1	250			1,000	15	Dallas, Tex	4	2 1/2	600	2	200	3,000	218
Napa, Cal	1	1	350			3,000	175	Total	23	15 1/2	5,450	7	685	46,400	1,777
San Diego, Cal	2	2 1/2	200			1,500	25	Number of organi- zations.	23	15 1/2	5,450	7	685	46,400	1,777
San Luis Obispo, Cal	1	1	200			1,500	20	Church edifices.	23	15 1/2	5,450	7	685	46,400	1,777
Santa Barbara, Cal	1	1	200			1,500	20	Seating capacity.	23	15 1/2	5,450	7	685	46,400	1,777
Santa Clara, Cal	3	3	900			13,200	62	Halls, etc.	23	15 1/2	5,450	7	685	46,400	1,777
Solano, Cal	2	2	300			1,800	17	Seating capacity.	23	15 1/2	5,450	7	685	46,400	1,777
Sonoma, Cal	1	1	150			1,000	10	Value of church property.	23	15 1/2	5,450	7	685	46,400	1,777
Yolo, Cal	1	1	300			5,000	110	Communicants or members.	23	15 1/2	5,450	7	685	46,400	1,777
Total	15	14 1/2	3,150			30,400	485	Total	23	15 1/2	5,450	7	685	46,400	1,777

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
DAVIS:								FOSTER:							
Christian, Ky.....	5	5	1,400			\$17,200	547	Coles, Ill.....	8	8	2,550			\$14,600	733
Logan, Ky.....	2	1 1/2	500			1,050	113	Douglas, Ill.....	2	2	590			4,900	165
Todd, Ky.....	6	6	1,550			8,000	407	Vermilion, Ill.....	14	13	4,535			25,700	1,117
Trigg, Ky.....	1	1	225			800	141	Total.....	24	23	7,675			45,200	2,015
Montgomery, Tenn.....	1	1	250			1,000	53	GEORGIA:							
Total.....	15	14 1/2	3,925			28,050	1,261	Bartow, Ga.....	3	2	550	1	200	1,200	72
DECATUR:								Chattooga, Ga.....	1	1	250			100	8
Clark, Ill.....	3	2	450	1		1,100	145	Gordon, Ga.....	3	2 1/4	500	1	200	1,150	90
Coles, Ill.....	4	3	800	1		3,100	205	Murray, Ga.....	2	2	550			1,400	185
Crawford, Ill.....	1	1	250			600	20	Walker, Ga.....	2	1 1/2	250			300	36
Cumberland, Ill.....	2	2	400			1,000	75	Whitfield, Ga.....	5	5	1,200			4,400	207
Jasper, Ill.....	2	1	300	1		800	55	Bradley, Tenn.....	2	2	550			1,200	130
Macon, Ill.....	7	8	2,650			16,800	714	Hamilton, Tenn.....	1	1	300			600	60
Montrie, Ill.....	2	2	1,000			11,500	465	James, Tenn.....	3	3	700			2,100	120
Piatt, Ill.....	2	1	250	1		1,500	91	Total.....	21	17 3/4	4,850	2	400	12,450	908
Total.....	23	20	6,100	4		36,400	1,770	GREENVILLE:							
EAST LOUISIANA:								Camp, Tex.....	1	1 1/4	200			1,500	81
Bienville, La.....	3	3	750			900	76	Franklin, Tex.....	3	2	400	1	200	6,500	100
Jackson, La.....	3	3	700			650	117	Hopkins, Tex.....	11	4 1/2	1,700	6	1,300	3,000	371
Lincoln, La.....	4	2	850	1		1,700	126	Hunt, Tex.....	5	1	400	4	850	3,000	181
Total.....	10	8	2,300	1		3,250	319	Rains, Tex.....	1	1	400	1	400	800	38
EAST TENNESSEE:								Wood, Tex.....	2	1	200	1	100	800	35
Cocke, Tenn.....	1	1	250			500	66	Total.....	23	8 3/4	2,900	13	2,850	11,800	746
Greene, Tenn.....	16	12	4,650	4	700	26,100	1,306	GREGORY:							
Hamblen, Tenn.....	4	1	450			1,500	132	Archer, Tex.....	1			1		8 1/2	20
Hawkins, Tenn.....	4	1	500	3	350	2,350	130	Baylor, Tex.....	2			2	425	32	
Jefferson, Tenn.....	2	3	850			4,000	135	Clay, Tex.....	8			8	1,465	1,350	220
Sullivan, Tenn.....	1	1	400			1,000	40	Hardeman, Tex.....	2			2	350	900	42
Washington, Tenn.....	2	2	750			1,800	224	Jack, Tex.....	2			1	225	600	80
Total.....	27	21	7,850	7	1,050	37,250	2,033	Montague, Tex.....	5	1 1/2	300	4	775	2,450	178
EDEN:								Wise, Tex.....	10	1 1/2	500	10	2,190	3,300	421
Finney, Kans.....	1	1	300			4,000	82	Total.....	30	1	800	28	5,430	8,608 1/2	993
Gray, Kans.....	1	1	150			2,000	19	GUADALUPE:							
Greeley, Kans.....	1			1	150		20	Bandera, Tex.....	1					1,000	13
Lane, Kans.....	1			1	150		20	Bastrop, Tex.....	1	1				10,500	37
Logan, Kans.....	1			1	150		18	Bexar, Tex.....	2	2	350				182
Scott, Kans.....	2	1	200	1	120	3,500	46	Blanco, Tex.....	2					800	61
Stevens, Kans.....	2			2	300		66	Caldwell, Tex.....	1	1				800	45
Wichita, Kans.....	1	1	150			1,000	60	Colorado, Tex.....	1					500	15
Total.....	10	4	800	6	870	10,500	331	De Witt, Tex.....	4	1				500	102
ELK:								Fayette, Tex.....	1						15
Bedford, Tenn.....	7	7	2,450			10,200	544	Gonzales, Tex.....	3	3	500			2,450	142
Coffee, Tenn.....	7	6	2,125	1	200	8,900	900	Hays, Tex.....	3					300	64
Franklin, Tenn.....	8	8	2,475			14,800	1,058	Kerr, Tex.....	3						133
Lincoln, Tenn.....	11	9 1/2	3,620	1		18,800	1,123	Lavaca, Tex.....	1					1,000	49
Marshall, Tenn.....	10	10 1/2	3,810			18,800	1,201	Travis, Tex.....	3	1					123
Moore, Tenn.....	2	2	455			900	212	Wilson, Tex.....	1						21
Rutherford, Tenn.....	7	7	2,400			7,050	620	Total.....	27	9	850			16,550	952
Williamson, Tenn.....	1	1	350			800	55	GUTHRIE:							
Total.....	53	50 1/2	17,685	2	200	80,250	5,713	Chickasaw, Ind. Ter.....	11	1	200	10	925	450	166
EWING (Ark):								Cooke, Tex.....	3	1	600	2	400	10,000	220
Conway, Ark.....	10	9	3,600			6,200	511	Denton, Tex.....	16	8	2,750	8	1,025	10,700	814
Johnson, Ark.....	9	8	3,800			9,300	705	Grayson, Tex.....	13	6	1,750	7	925	7,100	472
Pope, Ark.....	11	11	4,600			7,200	598	Montague, Tex.....	5			5	775	189	
Total.....	30	28	12,000			22,700	1,814	Tarrant, Tex.....	3			3	700	96	
EWING (Ill):								Wise, Tex.....	7	3	800	4	350	3,700	293
Gallatin, Ill.....	5	5	1,350			5,500	730	Total.....	58	19	6,100	39	5,100	31,950	2,250
Hamilton, Ill.....	3	3 1/2	1,150			5,200	355	HOPEWELL:							
Saline, Ill.....	9	9	1,900			8,100	524	Benton, Tenn.....	4	4	1,000			1,700	164
White, Ill.....	8	8	2,200			7,100	975	Carroll, Tenn.....	10	10	3,400			20,100	1,204
Williamson, Ill.....	2	2	450			1,000	100	Decatur, Tenn.....	1	1	200			400	44
Total.....	27	27 1/2	7,050			26,900	2,684	Gibson, Tenn.....	12	11	3,200	1		12,650	851
FLORIDA:								Henry, Tenn.....	3	2 1/2	900			2,200	178
Citrus, Fla.....	1			1	175		25	Weakley, Tenn.....	14	11	3,300	3		11,800	1,009
Polk, Fla.....	2			2	450		15	Total.....	44	39 1/2	12,000	4		48,850	3,450
Sumter, Fla.....	3	1 1/2	200	1	200	200	48	ILLINOIS:							
Total.....	6	1 1/2	200	4	825	200	88	Hardin, Ill.....	1			1	300		99
								Johnson, Ill.....	11			10	3,200	4,150	478
								Massac, Ill.....	1			1	500	2,200	54
								Pope, Ill.....	7			7	2,500	2,850	330
								Saline, Ill.....	1			1	200	50	50
								Union, Ill.....	2			2	800	1,350	130
								Total.....	23			22	7,500	10,550	1,141

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
OUACHITA:								RED RIVER:							
Columbia, Ark.	6	5 1/2	1,160			\$1,300	160	Delta, Tex.	2	1 1/2	100	1	125	\$75	90
Nevada, Ark.	3	1	275	1	200	325	59	Lamar, Tex.	11	5 1/4	1,725	4	525	10,775	815
Onachita, Ark.	5	3	650	2	350	500	204	Red River, Tex.	10	6 1/2	1,650	3	500	10,450	705
Union, Ark.	1	1	300			300	46	Total	23	12 1/4	3,475	8	1,150	21,300	1,610
Total	15	10 1/2	2,385	3	550	2,425	469	REPUBLICAN VAL- LEY:							
OWENSBORO':								Cloud, Kans.	1			1	250		26
Daviess, Ky.	5	4	1,500	1	75	24,700	609	Jewell, Kans.	2			2			43
Hancock, Ky.	2	2	400			1,000	90	Republic, Kans.	4			4	300		136
McLean, Ky.	3	3	1,000			4,500	335	Total	7			7	550		205
Ohio, Ky.	5	5	1,600			6,500	336	RICHLAND:							
Total	15	14	4,500	1	75	36,700	1,370	Giles, Tenn.	11	11	2,800			12,360	903
OXFORD:								Hardin, Tenn.	9	9	1,555			3,300	470
De Soto, Miss.	7	6 1/2	2,200			10,000	359	Hickman, Tenn.	2	2	625			2,000	120
Lafayette, Miss.	2	2	700			10,800	180	Lawrence, Tenn.	5	5	1,080			4,550	318
Marshall, Miss.	2	2	600			1,500	40	Lewis, Tenn.	2	2	200			250	45
Panola, Miss.	6	4 1/4	1,150			4,450	231	Mauzy, Tenn.	19	18	4,981	1	200	24,325	1,607
Tallahatchie, Miss.	2	2 1/2	700			2,000	105	Perry, Tenn.	1	1	200			500	55
Tate, Miss.	4	4	850			2,000	120	Wayne, Tenn.	8	8	1,535			4,550	440
Yalobusha, Miss.	3	3	700			5,200	133	Williamson, Tenn.	2	2	575			1,400	200
Total	26	21 3/4	6,900			36,550	1,154	Total	59	58	13,511	1	200	53,175	4,158
OZARK:								ROBERT DONNELL:							
Barton, Mo.	4	4	1,300			5,200	195	Jackson, Ala.	18	14 1/2	4,200			10,700	622
Dade, Mo.	9	6	1,850	3	600	5,700	627	Limestone, Ala.	7	7	1,950			13,850	358
Lawrence, Mo.	12	8	2,900	3	575	14,200	785	Madison, Ala.	13	11 1/2	4,150			21,600	966
Vernon, Mo.	6	3	900	3	650	3,700	316	Marshall, Ala.	5	5	1,200			3,425	202
Total	31	21	6,950	9	1,825	28,800	1,923	Total	43	38 1/2	11,500			49,575	2,148
PARSONS:								ROCKY MOUNTAIN:							
Archer, Tex.	1						18	Elbert, Colo.	1	1	180			1,800	10
Hood, Tex.	2						60	El Paso, Colo.	1	1	200			10,000	20
Jack, Tex.	4			4	725		72	Framont, Colo.	1	1	200			3,000	105
Palo Pinto, Tex.	1			1	200		20	Logan, Colo.	1	1	200			1,000	84
Purker, Tex.	9	3 1/2	1,500	5	1,100	5,600	486	Pueblo, Colo.	1	1	200			3,500	12
Wise, Tex.	1			1	300		34	Total	5	5	980			19,300	231
Young, Tex.	2	1 1/2	300	1	225		43	RUSHVILLE:							
Total	20	4	1,800	12	2,550	5,900	733	Adams, Ill.	1	1	250			600	16
PENNSYLVANIA:								Henderson, Ill.	1	1	600			2,600	95
Allegheny, Pa.	2	2	1,000			50,000	192	McDonough, Ill.	7	6	2,300	1	200	10,500	401
Greene, Pa.	10	9 1/2	4,150			29,600	1,136	Schuyler, Ill.	1					1,000	10
Washington, Pa.	10	9	3,400			37,500	1,395	Warren, Ill.	1	1	250			1,000	18
Marshall, W. Va.	1	1	300			2,000	32	Total	11	9	3,400	1	200	14,700	540
Total	23	21 1/2	8,850			119,100	2,755	SACRAMENTO:							
PLATTE:								Fresno, Cal.	2	1	250	1	100	2,200	100
Andrew, Mo.	6	4 1/2	1,450	1	150	3,950	244	Merced, Cal.	2	2	650			7,000	130
Atchison, Mo.	7	5	1,500	2	350	8,700	347	San Joaquin, Cal.	2	2	700			5,100	110
Buchanan, Mo.	7	3 3/4	1,700	2	550	8,700	409	Stanislaus, Cal.	2	2	600			5,000	75
Clay, Mo.	5	4 1/2	1,350			3,800	191	Total	8	7	2,200	1	100	19,300	415
Clinton, Mo.	2	2	550			1,300	132	SAINT LOUIS:							
De Kalb, Mo.	6	1 3/4	1,150	2	350	1,900	214	Saint Louis, City, Mo.	2	2	1,400			50,000	305
Gentry, Mo.	7	6	1,850	1	150	8,300	395	SALEM:							
Holt, Mo.	1	1	300			1,500	70	Crawford, Mo.	9	5 1/2	2,150	2	275	4,600	446
Nodaway, Mo.	2			2	350		45	Dent, Mo.	3	2 1/2	600	1	130	2,600	138
Platte, Mo.	3	2 1/2	900			4,200	134	Franklin, Mo.	2						56
Ray, Mo.	2	1 1/4	400	1	250	200	73	Texas, Mo.	1			1	150		15
Worth, Mo.	2	1	250	1	150	800	29	Total	15	7 1/2	2,750	4	555	7,200	655
Total	50	32 1/4	11,400	12	2,300	43,350	2,283	SALT RIVER:							
PRINCETON:								Audrain, Mo.	3						130
Caldwell, Ky.	5	5	2,150			13,800	684	Lincoln, Mo.	3	2 1/2	900			5,200	250
Crittenden, Ky.	8	7 1/2	4,350			8,950	639	Marion, Mo.	1	1	300			1,000	40
Livingston, Ky.	3	2 1/2	1,050			2,900	245	Montgomery, Mo.	7	5 1/2	1,900			6,150	515
Total	16	15	7,550			25,750	1,568	Pike, Mo.	17	12	4,500			39,700	1,740
RED OAK:								Ralls, Mo.	2	2	650			3,500	165
Dallas, Tex.	1	1 1/4	200			500	63	Total	33	23 1/2	8,250			55,550	2,840
Ellis, Tex.	13	6	2,600	5	950	14,000	743	SANGAMON:							
Hood, Tex.	2			2	400		63	Cass, Ill.	3	3	700			6,500	197
Johnson, Tex.	8	3	800	5	1,000	6,300	438	Greene, Ill.	1	1	200			2,000	50
Somervell, Tex.	1			1	150		37	Jersey, Ill.	4	4	900			4,200	126
Tarrant, Tex.	8	5	1,900	3	500	40,600	704	Logan, Ill.	1	1	300			3,000	89
Total	33	14 1/4	5,500	16	3,000	61,400	2,048	Macoupin, Ill.	2	2	600			5,500	122
								Menard, Ill.	8	8	2,210			17,500	559

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

PRESBYTERIES.								PRESBYTERIES.							
	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.		Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
WEST IOWA:								BURROW							
Adams, Iowa	1	1	300			\$800	78	Burrow	31	21	7,350	6	1,300	\$21,950	1032
Fremont, Iowa	3	1	450	2	155	1,600	76	California	15	14 1/2	3,150			30,400	485
Mills, Iowa	1	1	400			1,600	77	Charlotte	34	28 1/2	8,600	3	450	23,265	1,354
Pottawattamie, Iowa	2	2	700			2,800	47	Chattanooga	39	23 1/2	7,000	15	2,900	56,300	2,139
Total	7	5	1,850	2	155	6,800	238	Cherokee	15	4 1/2	1,300	10	1,060	5,550	466
WEST PLAINS:								CHILICOTHE							
Howell, Mo.	5	3 1/2	1,700		200	3,600	230	Chilicothie	28	17 1/2	5,175	5		18,613	1,443
Oregon, Mo.	5	1 1/2	300	4	725	1,400	105	Choctaw	24	24 1/2	6,850			4,945	446
Ripley, Mo.	1	1 1/2	300			300	12	Colesburg	6	6	1,200			14,600	385
Texas, Mo.	1	1 1/2	300			700	15	Colorado	19	6 1/2	1,650	8	810	10,900	696
Total	12	6	2,600	5	925	6,000	362	Cumercana	33	16 1/2	7,800	17	4,000	31,500	1,642
WEST PRAIRIE:								CUMBERLAND							
Clay, Ark.	1					50	21	Cumberland	31	22	7,675	8	1,350	15,800	2,158
Dunklin, Mo.	4	1	400			1,400	171	Dallas	23	15 1/2	5,450	7	685	46,400	1,777
Iron, Mo.	1					1,500	216	Davis	15	14 1/2	3,925			28,050	1,261
Ripley, Mo.	3	1	450			800	7	Decatur	23	20	6,100	4		36,400	1,770
Saint Francois, Mo.	1	1	300			250	90	East Louisiana	10	8	2,300	1		3,250	319
Stoddard, Mo.	5	1	250			2,600	93	East Tennessee	27	21	7,850	7	1,050	37,250	2,033
Washington, Mo.	2	3	900			2,200	82	Eden	10	4	800	6	870	10,500	331
Wayne, Mo.	4	2	775			800	21	Elk	53	50 1/2	17,685	2	200	80,250	5,713
Total	21	9	3,075			8,800	684	Ewing, Ark.	30	28	12,000			22,700	1,814
WHITE RIVER:								EVING, ILL.							
Baxter, Ark.	2	1	400			1,100	58	Evangel, Ill.	27	27 1/2	7,050			26,900	2,684
Fulton, Ark.	7	2	500	1	100	400	78	Florida	6	1 1/2	200	4	825	200	88
Independence, Ark.	3	5 1/2	2,200	1	100	3,075	220	Foster	24	23	7,675			45,200	2,015
Izard, Ark.	14	12 1/2	3,800	1	150	4,900	528	Georgia	21	17 3/4	4,850	2	400	12,450	908
Lawrence, Ark.	1	1	300			150	29	Greenville	23	8 3/4	2,900	13	2,850	11,800	746
Randolph, Ark.	1	1	300	1	500		32	Gregory	30	1	800	28	5,430	8,608	993
Sharp, Ark.	4	4	1,000			1,750	125	Guadalupe	27	9	850			16,550	952
Stone, Ark.	3	2	600	1	100	550	108	Guthrie	58	19	6,100	39	5,100	31,950	2,250
Total	35	27 1/2	8,800	5	950	11,925	1,178	Hopewell	44	39 1/2	12,000	4		48,850	3,450
WICHITA:								ILLINOIS							
Barber, Kans.	2			2			70	Indiana	19	26 1/2	9,125	1	500	118,500	2,767
Butler, Kans.	4	2	700			3,500	140	Iowa	11	12	2,600			13,150	544
Cowley, Kans.	1			1		50	50	Kansas	23	12	2,300	3	175	24,300	831
Harper, Kans.	3	1	200	2		1,000	130	Kentucky	16	12 1/2	3,600			29,900	1,262
Kingman, Kans.	3	1 1/2	1,100	3	400	6,800	223	King	43	11 3/4	2,650	23	1,500	18,450	1,574
Sumner, Kans.	6	1 1/2	1,100	4	400	6,800	223	Kirkville	31	23	6,740	6	900	31,850	1,784
Total	19	4 1/2	2,000	14	400	11,300	728	Knoxville	33	28 1/2	7,200	4	925	45,050	2,162
WILLIAMETTE:								LEBANON							
Benton, Oregon	2			2	175		117	Lexington	65	51 1/2	17,381	7	668	130,900	4,220
Douglas, Oregon	1			1	100		16	Little River	26	8 1/2	3,850	15	4,500	11,050	1,002
Lane, Oregon	3	3	750			7,300	167	Logan	41	41	11,100			56,700	2,809
Linn, Oregon	1	1	250			2,500	50	Louisiana	10	7	2,600	3	400	7,300	438
Polk, Oregon	1			1	75		10	McGehee	30	22 1/2	7,550	5	1,175	31,100	2,196
Total	8	4	1,000	4	350	9,800	360	McGready	18	16 1/2	5,656			13,700	1,078
YAZOO:								MCLIN							
Attala, Miss.	2	2	900			3,800	121	McMinnville	16	12 3/4	5,500	2	250	14,250	794
Bolivar, Miss.	1			1		800	87	Mackinaw	31	31	9,500			48,100	2,065
Calhoun, Miss.	1	1	300			200	65	Madison	13	13	3,950			35,800	1,243
Carroll, Miss.	1	1	300			1,800	180	Madison	40	36	7,250	3		26,700	2,453
Holmes, Miss.	3	3	850			800	39	Marshall	23	15	4,825	5		43,600	978
Madison, Miss.	1	1	300			2,000	100	Mayfield	30	29	11,400			22,700	2,100
Montgomery, Miss.	5	5	1,484			1,750	281	Memphis	28	25	8,460	3	550	105,500	1,744
Webster, Miss.	5	5	1,200			1,500	91	Miami	7	7	2,000			28,000	1,271
Yazoo, Miss.	1	1	200					Mississippi	27	25	5,350			6,150	929
Total	20	19	5,534	1		12,650	1,067	Morgan	14	17	6,450			20,500	1,242
SUMMARY BY PRESBYTERIES.								MOUND PRAIRIE							
Alabama	27	24	6,925	1	75	18,380	1,081	Muskogee	23	16 1/2	4,450	7		13,700	1,178
Albion	16	17	5,075	2	350	52,400	1,576	Nebraska	4	3 1/2	1,000			10,100	309
Allegheny	19	17	4,900	2	200	33,700	1,867	Neosho	7	4	790	3	1,125	10,000	416
Anderson	28	27	10,950	13	3,350	30,500	2,193	New Hope	26	14 1/2	7,150	6	1,125	16,950	1,188
Arkansas	39	21	7,200	4	310	3,200	249	New Lebanon	48	42 1/2	17,950	4	550	45,000	2,540
Athens	7	2 1/2	750			22,400	1,022	Nolin	32	29 1/4	15,600			89,100	2,735
Bacon	11	12	3,600	10	3,300	6,750	966	Obion	27	16 1/2	6,300	5	700	8,500	1,477
Bartholomew	23	10 3/4	6,400	6	600	32,800	911	Oregon	43	35 1/2	16,800			41,600	3,317
Bell	28	20	6,500	13	2,100	14,100	1,158	Owensboro	9	3 1/2	1,500	4	350	6,400	265
Bonham	25	17 1/4	4,625			24,150	1,485	Owensboro'	15	10 3/8	2,385	3	550	2,425	469
Buffalo Gap	27	11 1/2	3,675			5,750	788	Oxford	15	14	4,500	1	75	36,700	1,370
	15	3	1,000					Ozark	26	21 3/4	6,900	9	1,825	36,550	1,154
								Parsons	31	21	6,950	9	1,825	28,800	1,923
								Pennsylvania	20	4	1,800	12	2,550	5,900	733
								Platte	23	21 1/2	8,850			119,100	2,755
								Princeton	50	32 1/2	11,400	12	2,300	43,350	2,283
								Red Oak	16	15	7,550			25,750	1,568
								Red River	33	14 1/4	5,500	16	3,000	61,400	2,048
								Republican Valley	23	12 1/2	3,475	8	1,150	21,300	1,610
								Richland	7			7	550	205	205
								Robert Donnell	59	58	13,511	1	200	53,175	4,158
								Rocky Mountain	43	38 1/2	11,500			49,575	2,145
								Rushville	5	5	980			19,300	540
								Sacramento	11	9	3,400	1	200	14,700	540
								Saint Louis	8	7	2,200	1	100	19,300	415
								Salem	2	2	1,400			80,000	305
								Salt River	15	7 1/2	2,750	4	555	7,200	655
								Sangamon	33	23 1/2	8,250			55,550	2,371
								San Jacinto	26	26	6,710	5	600	50,400	1,574
								San Saba	8	3	800	5	600	15,550	594
								Searcy	18	6	1,850	10	1,850	13,450	1,207
								Springfield	30	15 1/2	5,000	13	2		

I.—CUMBERLAND PRESBYTERIAN CHURCH—CONTINUED.

PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	PRESBYTERIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
Texas	16	16	6,900			\$15,550	726	West Iowa	7	5	1,850	2	155	\$6,800	238
Trinity	15	11	4,950	3	900	11,850	809	West Plains	12	6	2,600	5	925	6,000	362
Tulare	14	8	1,750	6	920	19,750	596	West Prairie	21	9	3,075			8,800	684
Union	11	11	4,000			88,000	1,911	White River	35	27	8,800	5	950	11,925	1,178
Vandalia	19	19	6,800			60,000	1,117	Wichita	19	4	2,000	14	400	11,300	728
Wabash	9	10	2,500			21,700	817	Williamette	8	4	1,000	4	350	9,800	360
Waco	15	10	2,800			9,600	791	Yazoo	20	19	5,534	1		12,650	1,067
Walla Walla	17	7	2,415	8	1,575	21,300	742								
Washington	23	6	1,300	15	2,350	7,600	905								
								Total	2,791	2,008	662,807	551	91,288	3,515,511	164,940

II.—CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS.

BY COUNTIES.

COUNTIES.								BY MISSIONS.							
ARIZONA:								NORTHERN STATES MISSION.							
Apache	13	9	2,275	sh5	1,000	12,550	2,648	COUNTIES.							
Cochise	1	1	600			1,000	220	INDIANA:							
Graham	8	6	1,940	sh1 ph1	175	8,050	1,847	Greene	1			sh1			3
Maricopa	5			5	1,825	4,800	1,785	KANSAS:							
Total	27	16	4,815	12	3,000	26,400	6,500	Stafford	1			h1			23
COLORADO:								NEW YORK:							
Conejos	2	2	1,100			5,700	1,454	Kings	1			h1			25
La Plata	1	1	280			1,500	175	Queens	1			ph1			20
Total	3	3	1,380			7,200	1,629	Total							
IDAHO:								2			2			45	
Bear Lake	14	9	2,450	sh3 ph2	400	8,900	3,003	PENNSYLVANIA:							
Bingham	29	24	6,210	1ph6	950	19,720	6,068	Allegheny	2			ph2			20
Cassia	6	4	622	sh3	700	740	1,377	Fayette	1			ph1			6
Oncida	13	11	2,400	sh46	830	16,200	4,357	Franklin	1			ph1			7
Total	62	48	11,682	20	2,880	45,560	14,805	Total							
NEVADA:								4			4			33	
Lincoln	5			sh4 ph1	480		406	WEST VIRGINIA:							
NEW MEXICO:								1			ph1			12	
New Mexico	3	1	150	sh1 ph1	200	1,000	199	WISCONSIN:							
Socorro	1	1	150			130	127	Jackson	1			sh1			22
Valencia	1			sh1	150	300	116	Unorganized							
Total	5	2	300	3	350	1,430	442	10			10				352
UTAH:								SOUTHERN STATES MISSION.							
Beaver	6	5	1,395	1		25,100	1,342	STATES.							
Box Elder	17	8	2,550	11	1,470	24,000	4,776	North Alabama	1			ph1			110
Cache	23	21	7,920	2	300	87,000	6,962	South Alabama	1			ph1			46
Davis	10	9	4,700	1	100	36,500	4,686	Georgia	1			ph1			164
Emery	11	3	625	8	2,375	13,475	2,243	Kentucky	1			ph1			188
Garfield	6	6	1,450			10,900	1,460	Maryland	1			ph1			47
Iron	5	5	1,950			17,700	2,251	Mississippi	1			ph1			112
Juab	6	5	1,800	1	65	19,661	3,190	North Carolina	1			ph1			97
Kane	8	1	300	7	885	1,400	2,161	South Carolina	1			ph1			193
Millard	8	3	1,325	5	1,350	11,000	2,815	East Tennessee	1			ph1			70
Morgan	9	3	950	7	780	3,200	1,479	Middle Tennessee	1			ph1			64
Pi Uta	8	4	850	5	810	3,800	1,609	Virginia	1			ph1			127
Rich	5	3	610	2	150	5,350	1,118	West Virginia	1			ph1			59
Salt Lake	43	38	13,015	7	2,185	222,694	23,428	Total							
San Juan	1	1	250			1,500	180	12			12				1,277
Sanpete	16	14	7,760	2	500	56,980	12,713	Northern States Mis- sion.							
Sevier	13	6	2,300	6	1,230	16,715	3,943	10			10				352
Summit	13	7	4,550	3	350	20,250	2,383	Southern States Mis- sion.							
Tooele	7	6	1,575	1		13,266	1,974	12			12				1,277
Uinta	6	1	500	5	1,047	800	1,588	Total							
Utah	27	18	7,050	14	3,038	69,450	19,240	22			22				1,629
Wasatch	5	4	2,600	2	300	7,200	3,057	SUMMARY BY STATES AND TERRITORIES.							
Washington	19	8	1,650	12	1,925	4,150	2,680	STATES, ETC.							
Weber	21	10	4,800	12	2,005	61,125	10,351	Alabama	2						156
Total	293	190	72,375	114	20,865	733,216	117,629	Arizona	27	16	4,815	12	3,000	26,400	6,500
WYOMING:															
Sweetwater	1	1	200			1,600	64								
Uinta	7	5	1,350	sh1 ph1	500	10,100	1,248								
Total	8	6	1,550	2	500	11,700	1,312								

II.—CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS—CONTINUED.

STATES, ETC.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	STAKES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
Colorado	3	3	1,380			\$7,200	1,629	ONEIDA:							
Georgia	1			1			164	Bingham, Idaho	8	6	1,790	h4	650	\$10,000	1,622
Idaho	62	48	11,682	20	2,880	45,560	14,805	Oneida, Idaho	7	4	1,150	h2,5 sh3	730	11,600	2,823
Indiana	1			1			3	Total	15	10	2,940	9	1,380	21,600	4,445
Kansas	1			1			23	PANGUITCH:							
Kentucky	1			1			188	Garfield, Utah	6	6	1,450			10,900	1,460
Maryland	1			1			47	Pi Ute, Utah	2	2	300			850	326
Mississippi	1			1			112	Total	8	8	1,750			11,750	1,786
Nevada	5			5	480		406	PAROWAN:							
New Mexico	5	2	300	3	350	1,430	442	Iron, Utah	5	5	1,950			17,700	2,251
New York	2			2			45	SAINT GEORGE:							
North Carolina	1			1			97	Lincoln, Nev	5			h4,5 ph1	480		406
Pennsylvania	4			4			33	Washington, Utah	19	8	1,650	h2 sh9,1 ph1	1,925	4,150	2,680
South Carolina	1			1			193	Total	24	8	1,650	17	2,405	4,150	3,086
Tennessee	2			2			134	SAINT JOHN'S:							
Utah	293	100 $\frac{1}{2}$	72,375	114 $\frac{1}{2}$	20,865	733,216	117,629	Apache, Ariz	5	3	475	h3	800	1,550	1,170
Virginia	1			1			127	Socorro, N. Mex	1	1	150			130	127
West Virginia	2			2			71	Valencia, N. Mex	1			sh1	150	300	116
Wisconsin	1			1			22	Total	7	4	625	4	950	1,980	1,413
Wyoming	8	6	1,550	2	500	11,700	1,312	SAINT JOSEPH:							
Unorganized							214	Cochise, Ariz	1	1	600			1,000	220
Total	425	265 $\frac{1}{2}$	92,102	178 $\frac{1}{2}$	28,075	825,506	144,352	Graham, Ariz	8	6	1,940	sh1,2 ph1	175	8,050	1,847

BY STAKES.

STAKES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
BANNOCK:							
Bingham, Idaho	20	18	4,420	ph1		9,720	4,343
BEAR LAKE:							
Bear Lake, Idaho	14	9	2,450	sh3,5 ph2	400	8,900	3,003
Bingham, Idaho	1			h1	300		103
Rich, Utah	5	3	610	sh1,2 ph1	150	5,350	1,118
Uinta, Wyo	5	3	600	sh1,2 ph1	500	3,100	762
Total	25	15	3,660	10	1,350	17,350	4,986
BEAVER:							
Beaver, Utah	6	5	1,395	ph1		25,100	1,342
BOX ELDER:							
Box Elder, Utah	14	6	1,750	h3,9 sh6	1,345	20,750	3,993
CACHE:							
Cache, Utah	23	21	7,920	sh2	300	87,000	6,962
CASSIA:							
Cassia, Idaho	6	4	622	sh3	700	740	1,377
DAVIS:							
Davis, Utah	10	9	4,700	sh1	100	36,500	4,686
EMERY:							
Emery, Utah	9	1	125	h6,8 sh2	2,375	11,475	1,968
JUAB:							
Juab, Utah	6	5	1,800	sh1	65	19,661	3,190
KANE:							
Knab, Utah	8	1	300	sh6,7 ph1	885	1,400	2,161
MALAD:							
Oneida, Idaho	6	7	1,250	sh1	100	4,600	1,534
Box Elder, Utah	3	2	800	sh2	125	3,250	783
Total	9	9	2,050	3	225	7,850	2,317
MARICOPA:							
Maricopa, Ariz	5			h3 sh1 ph1	1,825	4,800	1,785
MILLARD:							
Millard, Utah	8	3	1,325	h2,5 sh3	1,350	11,000	2,815
MORGAN:							
Morgan, Utah	9	3	950	sh6,7 ph1	780	3,200	1,479
ONEIDA:							
Bingham, Idaho	8	6	1,790	h4			
Oneida, Idaho	7	4	1,150	h2,5 sh3			
Total	15	10	2,940	9			
PANGUITCH:							
Garfield, Utah	6	6	1,450				
Pi Ute, Utah	2	2	300				
Total	8	8	1,750				
PAROWAN:							
Iron, Utah	5	5	1,950				
SAINT GEORGE:							
Lincoln, Nev	5			h4,5 ph1		480	406
Washington, Utah	19	8	1,650	h2 sh9,1 ph1		1,925	2,680
Total	24	8	1,650	17	2,405	4,150	3,086
SAINT JOHN'S:							
Apache, Ariz	5	3	475	h3		800	1,170
Socorro, N. Mex	1	1	150			130	127
Valencia, N. Mex	1			sh1		300	116
Total	7	4	625	4	950	1,980	1,413
SAINT JOSEPH:							
Cochise, Ariz	1	1	600			1,000	220
Graham, Ariz	8	6	1,940	sh1,2 ph1		8,050	1,847
Total	9	7	2,540	2	175	9,050	2,067
SALT LAKE:							
Salt Lake, Utah	43	38	13,015	h4,7 sh3	73	2,185	222,694
SAINT JUAN:							
La Plata, Colo	1	1	280			1,500	175
New Mexico, N. M.	3	1	150	sh1,2 ph1		200	1,000
Emery, Utah	2	2	400			2,000	275
San Juan, Utah	1	1	250			1,500	180
Total	7	5	1,080	2	200	6,000	829
SAN LUIS:							
Conejos, Colo	2	2	1,100			5,700	1,454
SANPETE:							
Sanpete, Utah	16	14 $\frac{1}{2}$	7,760	2	500	56,980	12,713
SEVIER:							
Pi Ute, Utah	6	2	550	sh5		810	2,950
Sevier, Utah	13	6 $\frac{1}{2}$	2,300	h1,6 sh5		1,230	3,943
Total	19	8 $\frac{1}{2}$	2,850	11	2,040	19,665	5,226
SNOWFLAKE:							
Apache, Ariz	8	6	1,800	sh1,2 h1		200	11,000
SUMMIT:							
Summit, Utah	12	6 $\frac{3}{4}$	4,250	h2,3 sh1		350	19,750
Sweetwater, Wyo	1	1	200			1,600	64
Uinta, Wyo	2	2	750			7,000	486
Total	15	9 $\frac{3}{4}$	5,200	3	350	28,350	2,611
TOOELE:							
Tooele, Utah	7	6	1,575	ph1		13,266	1,974
UINTA:							
Uinta, Utah	6	1	500	sh5	1,047	800	1,588
UTAH:							
Utah, Utah	27	18	7,060	h1,14 sh13	3,038	69,450	19,240

II.—CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS—CONTINUED.

STAKES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
WASATCH: Summit, Utah	1	1	300			\$500	322
Wasatch, Utah	5	4	2,000	sh2	300	7,200	3,057
Total	6	5	2,900	2	300	7,700	3,379
WEBER: Weber, Utah	21	10	4,800	sh12	2,005	61,125	10,351
SUMMARY BY STAKES.							
Bannock	20	18	4,420	1		9,720	4,343
Bear Lake	25	15	3,660	10	1,350	17,350	4,986
Beaver	6	5	1,395	1		25,100	1,342
Box Elder	14	6	1,750	9	1,345	20,750	3,993
Cache	23	21	7,920	2	300	87,000	6,962
Cassia	6	4	622	3	700	740	1,377
Davis	10	9	4,700	1	100	36,500	4,686
Emery	9	1	125	8	2,375	11,475	1,968
Juab	6	5	1,800	1	65	19,661	3,190
Knab	8	1	300	7	885	1,400	2,161
Malad	9	9	2,050	3	225	7,850	2,317
Maricopa	5			5	1,825	4,800	1,785
Millard	8	3	1,325	5	1,350	11,000	2,815
Morgan	9	3	950	7	780	3,200	1,479
Oneida	15	10	2,940	9	1,380	21,600	4,445
Panguitch	8	8	1,750			11,750	1,786
Parowan	5	5	1,950			17,700	2,251
Saint George	24	8	1,650	17	2,405	\$4,150	3,086
Saint John's	7	4	625	4	950	1,980	1,413
Saint Joseph	3	7	2,540	2	175	9,050	2,067
Salt Lake	43	38	13,015	7 $\frac{1}{2}$	2,185	222,694	23,423
San Juan	7	5	1,080	2	200	5,000	823
San Luis	2	2	1,100			5,700	1,454
Sanpete	16	14 $\frac{1}{2}$	7,700	2	500	56,980	12,713
Sevier	19	8 $\frac{1}{2}$	2,850	11	2,040	19,665	5,226
Snowflake	8	6	1,800	2	200	11,000	1,473
Summit	15	9 $\frac{3}{4}$	5,200	3	350	28,350	2,611
Tooele	7	6	1,575	1		13,266	1,974
Utah	6	1	500	5	1,047	800	1,588
Utah	27	18	7,050	14	3,038	69,450	19,240
Wasatch	6	5	2,900	2	300	7,700	3,379
Weber	21	10	4,800	12	2,005	61,125	10,351
Total	403	265 $\frac{3}{4}$	92,102	156 $\frac{1}{2}$	28,075	825,506	142,723
SUMMARY BY MISSIONS.							
MISSIONS.							
Northern States	10			10			352
Southern States	12			12			1,277
Total	22			22			1,629
Grand total	425	265 $\frac{3}{4}$	92,102	178 $\frac{1}{2}$	28,075	825,506	144,352

III.—REFORMED EPISCOPAL CHURCH.

BY COUNTIES.

COUNTIES.					
DELAWARE: New Castle	2	2	650		16,500 139
ILLINOIS: Cook	8	8	3,500		197,100 1,445
Peoria	2	2	750		28,700 310
Total	10	10	4,250		225,800 1,755
MARYLAND: Allegany	1	1	450		5,500 65
Baltimore	3	4	925		40,500 220
Total	4	5	1,375		46,000 285
MASSACHUSETTS: Middlesex	1	1	400		8,000 111
Suffolk	1	1	450		36,000 200
Total	2	2	850		44,000 311
MICHIGAN: Wayne	2	2	350		8,100 102
MISSOURI: Jackson	1	1	400		15,000 75
Saint Louis	1	1	250		10,000 50
Total	2	2	650		25,000 125
NEW JERSEY: Essex	1	1	500		40,000 300
Hudson	1	1	225		4,500 26
Total	2	2	725		44,500 326
NEW YORK: Kings	2	2	750		21,500 219
New York	1	1	725		250,000 397
Orange	1	1	300		8,900 127
Total	4	4	1,775		280,400 743
OHIO: Ashtabula	1	1	200		5,200 142
Cuyahoga	1	1	600		28,500 93
Ottawa	1		300		
Total	3	2	1,100		33,700 257
PENNSYLVANIA: Chester	1	1	325		9,000 55
Lackawanna	1	1	350		20,000 265
Philadelphia	11	13	5,125	1	300 841,000 2,320
Total	13	15	5,800	1	300 870,000 2,640
VIRGINIA: Essex	1	1	225		1,200 27
Rappahannock	1	1	200		1,500 22
Total	2	2	425		2,700 49
SOUTH CAROLINA: (Colored.) Abbeville	1	1	200		375 35
Barnwell	1	1	200		100 35
Beaufort	1	1	200		2,000 12
Berkeley	22	21	3,450	1	8,279 1,112
Charleston	5	5	825		6,217 284
Clarendon	2	2	350		200 88
Colleton	2	2	350		650 105
Georgetown	1	1	100		275 12
Orangeburg	2	2	300		305 40
Total	37	36	5,975	1	300 18,401 1,723
SUMMARY BY STATES.					
STATES.					
Delaware	2	2	650		16,500 139
Illinois	10	10	4,250		225,800 1,755
Maryland	4	5	1,375		46,000 285
Massachusetts	2	2	850		44,000 311
Michigan	2	2	350		8,100 102
Missouri	2	2	650		25,000 125
New Jersey	2	2	725		44,500 326
New York	4	4	1,775		280,400 743
Ohio	3	2	1,100		33,700 257
Pennsylvania	13	15	5,800	1	300 870,000 2,640

III.—REFORMED EPISCOPAL CHURCH—CONTINUED.

STATES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	SYNODS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	
Virginia	2	2	425			\$2,700	49	MISSIONARY JURIS- DICTION OF THE WEST AND NORTH- WEST:								
South Carolina (col- ored).	37	36	5,975	1		18,401	1,723		Cook, Ill.	2	2	850			\$46,800	430
Total	83	84	23,925	2	300	1,615,101	8,455		Jackson, Mo.	1	1	400			15,000	75
								Saint Louis, Mo.	1	1	250			10,000	50	
BY SYNODS.								Total	4	4	1,500			71,800	555	
SYNODS.								SPECIAL MISSION- ARY JURISDICTION OF THE SOUTH. (Colored.)								
CHICAGO:								Abbeville, S. C.	1	1	200			375	35	
Cook, Ill.	6	6	2,650			150,300	1,015	Barnwell, S. C.	1	1	200			100	35	
Peoria, Ill.	2	2	750			28,700	310	Beaufort, S. C.	1	1	200			2,000	12	
Wayne, Mich.	2	2	350			8,100	102	Berkeley, S. C.	22	21	3,450	1		8,279	1,112	
Ashtabula, Ohio	1	1	200			5,200	142	Charleston, S. C.	5	5	825			6,217	284	
Cuyahoga, Ohio	1	1	600			28,500	93	Clarendon, S. C.	2	2	350			200	88	
Ottawa, Ohio	1	1	300				22	Colleton, S. C.	2	2	350			650	105	
Total	13	12	4,850			220,800	1,684	Georgetown, S. C.	1	1	100			275	12	
NEW YORK AND PHILADELPHIA:								Orangeburg, S. C.	2	2	300			305	40	
New Castle, Del.	2	2	650			16,500	139	Total	37	36	5,975	1		18,401	1,723	
Middlesex, Mass.	1	1	400			8,000	111	SUMMARY BY SYNODS.								
Suffolk, Mass.	1	1	450			36,000	200	Chicago	13	12	4,850			220,800	1,684	
Essex, N. J.	1	1	500			40,000	300	New York and Phila- delphia.	23	25	9,800	1	300	1,255,400	4,159	
Hudson, N. J.	1	1	225			4,500	36	Missionary jurisdic- tion of the south.	6	7	1,800			48,700	334	
Kings, N. Y.	2	2	750			21,500	219	Missionary jurisdic- tion of the west and northwest.	4	4	1,500			71,800	555	
New York, N. Y.	1	1	300			250,000	397	Special missionary jurisdiction of the south (colored).	37	36	5,975	1		18,401	1,723	
Orange, N. Y.	1	1	725			8,900	127	Total	83	84	23,925	2	300	1,615,101	8,455	
Chester, Pa.	1	1	325			3,000	55									
Lackawanna, Pa.	1	1	350			20,000	265									
Philadelphia, Pa.	11	13	5,125	1	300	841,000	2,320									
Total	23	25	9,800	1	300	1,255,400	4,159									
MISSIONARY JURIS- DICTION OF THE SOUTH:																
Alleghany, Md.	1	1	450			5,500	65									
Baltimore, Md.	3	4	925			40,500	220									
Essex, Va.	1	1	225			1,200	27									
Rappahannock, Va.	1	1	200			1,500	22									
Total	6	7	1,800			48,700	334									

IV.—THE MORAVIAN CHURCH.

BY COUNTIES.

COUNTIES.						COUNTIES.									
CALIFORNIA:						MINNESOTA:									
San Bernardino	1	1	100		700	10	Carver	3	3	550			9,700	294	
ILLINOIS:						Renville	2	2	230				3,200	84	
Edwards	1	2	600		4,000	336	Rice	1	1	150			1,500	63	
INDIANA:						Winona	3	3	650				6,200	255	
Bartholomew	2	3	1,150		17,600	346	Total	9	9	1,480			20,600	696	
INDIAN TERRITORY:						MISSOURI:									
Cherokee Nation	1	1	150		400	40	Laclede	3	3	500			5,500	59	
IOWA:						NEW JERSEY:									
Benton	1	1	250		1,200	14	Atlantic	1	1	200			2,000	97	
Poweshiek	1	1	150		800	31	Burlington	2	2	350			5,500	162	
Washington	1	1	250		2,500	56	Union	1	1	250			6,000	115	
Total	3	3	650		4,500	101	Total	4	4	800			13,500	374	
KANSAS:						NEW YORK:									
Franklin	1	1	75		500	19	Kings	1	1	500			35,000	122	
Osborne	1	1	250		2,000	19	New York	1	2	600			62,000	215	
Total	1	2	325		2,500	19	Oneida	1	2	400			6,200	249	
MARYLAND:						Richmond	4	5	1,000				24,000	266	
Frederick	3	3	620		3,950	150	Total	7	10	2,500			127,200	852	
MICHIGAN:						NORTH CAROLINA:									
Huron	1	1	175		1,800	24	Davie	1	1	400			800	70	
Tuscola	1	1	200		2,700	144	Forsyth	12	19	6,350			58,100	1,664	
Total	2	2	375		4,500	168	Total	13	20	6,750			58,900	1,734	
						NORTH DAKOTA:									
						Cass	2	2	440				6,500	199	

IV.—THE MORAVIAN CHURCH—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
OHIO:								BY DISTRICTS.							
Tuscarawas	6	6	2,200			\$37,400	822	NORTHERN:							
PENNSYLVANIA:								Alaska territory							
Lancaster	2	4	1,850			50,000	742	Alaska territory	2	2	100			\$5,000	36
Lebanon	1	1	300			12,000	100	San Bernardino, Cal.	1	1	100			700	19
Lehigh	2	3	950			11,500	270	Edwards, Ill.	1	2	600			4,000	336
Northampton	5	7	3,845	hl	300	130,200	2,254	Bartholomew, Ind.	2	3	1,150			17,600	346
Philadelphia	1	4	1,400			105,000	534	Benton, Iowa	1	1	250			1,200	14
Wayne	2	2	275			1,200	168	Poweshiek, Iowa	1	1	150			1,800	31
York	1	3	1,150			30,500	240	Washington, Iowa	1	1	75			2,500	56
Total	14	24	9,770	1	300	340,400	4,308	Franklin, Kans.	1	1	250			500	19
VIRGINIA:								Osborne, Kans.							
Carroll	1	1	200			200	45	Frederick, Md.	3	3	620			3,950	150
WISCONSIN:								Huron, Mich.							
Brown	2	2	350			6,500	153	Tuscola, Mich.	1	1	175			1,800	24
Dane	3	2	270	hl	300	3,500	120	Carver, Minn.	3	3	200			2,700	144
Dodge	1	1	100			400	43	Renville, Minn.	2	2	550			9,700	294
Door	5	5	725			4,800	306	Rice, Minn.	2	2	320			3,200	84
Jefferson	5	4	1,060	shl	40	7,100	642	Union, N. J.	1	1	150			1,500	63
Milwaukee	1	1	200	hl	75	1,100	32	Winona, Minn.	3	3	550			6,200	255
Outagamie	1	1	200			2,500	143	Laclede, Mo.	3	3	500			5,500	59
Wood	1	1	200			2,000	38	Atlantic, N. J.	1	1	200			2,000	97
Total	19	16	2,905	3	415	27,900	1,477	Burlington, N. J.	2	2	350			5,500	102
TOWNS.								Union, N. J.							
ALASKA TERRITORY:								Kings, N. Y.							
Bethel	1	1	50			2,000	30	New York, N. Y.	1	1	500			35,000	122
Nushagak	1	1	50			3,000	*6	Richmond, N. Y.	1	2	600			62,000	215
Total	2	2	100			5,000	36	Oneida, N. Y.	1	2	400			6,200	249
SUMMARY BY STATES AND TERRITORIES.								Cass, N. Dak.							
STATES, ETC.								Tuscarawas, Ohio							
Alaska territory	2	2	100			5,000	36	Lancaster, Pa.	2	4	1,850			50,000	742
California	1	1	100			700	19	Lebanon, Pa.	1	1	300			12,000	100
Illinois	1	2	600			4,000	336	Lehigh, Pa.	2	3	950			11,500	270
Indiana	2	3	1,150			17,600	346	Northampton, Pa.	5	7	3,845	hl	300	130,200	2,254
Indian territory	1	1	150			400	40	Philadelphia, Pa.	1	4	1,400			105,000	534
Iowa	3	3	650			4,500	101	Wayne, Pa.	2	2	275			1,200	168
Kansas	1	2	325			2,500	19	York, Pa.	1	3	1,150			30,500	240
Maryland	3	3	620			3,950	150	Brown, Wis.	2	2	350			5,500	153
Michigan	2	2	375			4,500	168	Dane, Wis.	3	2	270	hl	300	3,500	120
Minnesota	9	9	1,480			20,600	696	Dodge, Wis.	1	1	100			400	43
Missouri	3	3	500			5,500	59	Door, Wis.	5	5	725			4,800	306
New Jersey	4	4	800			5,500	374	Jefferson, Wis.	5	4	1,060	shl	40	7,100	642
New York	7	10	2,500			127,200	852	Milwaukee, Wis.	1	1	200	hl	75	1,100	32
North Carolina	13	20	6,750			58,900	1,734	Outagamie, Wis.	1	1	200			2,500	143
North Dakota	2	2	440			6,500	199	Wood, Wis.	1	1	200			2,000	38
Ohio	6	6	2,200			37,400	822	Total	79	92	24,515	4	715	621,750	9,922
Ontario	14	24	9,770	1	300	340,400	4,308	SOUTHERN:							
Pennsylvania	14	24	9,770	1	300	340,400	4,308	Davie, N. C.	1	1	400			800	70
Virginia	1	1	200			200	45	Forsyth, N. C.	12	19	6,350			58,100	1,664
Wisconsin	19	16	2,905	3	415	27,900	1,477	Carroll, Va.	1	1	200			200	45
Total	94	114	31,615	4	715	681,250	11,781	Cherokee Na., Ind. T.	1	1	150			400	40
SUMMARY BY DISTRICTS.								Total							
STATES, ETC.								Northern district							
STATES, ETC.								Southern district							
STATES, ETC.								Total							
STATES, ETC.								Total							

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA.

BY COUNTIES.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
CALIFORNIA:								ILLINOIS—Con'd.							
Los Angeles	2	2	250			3,700	160	Christian	1	1	170			2,000	150
San Francisco	1	1	275			4,500	125	Clay	1	1	90			2,500	90
Shasta	1	1	93			200	30	Clinton	4	4	875			9,250	475
Total	4	4	618			8,400	315	Cook	23	21	9,385	lsh2	450	274,500	10,565
COLORADO:								De Kalb							
Arapahoe	2	1	250	1	150	18,000	135	Douglas	3	2	450			5,700	210
ILLINOIS:								Du Page							
Adams	7	7	3,125			90,700	2,689	Fayette	2	2	300			1,500	236
Bureau	2	2	550			13,000	400	Hancock	9	9	2,945			28,700	2,285
Champaign	3	3	625			8,275	605	Henderson	2	2	320			2,600	90
								Henry							
								Iroquois							
								Jersey							
								Kane							

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA—CONTINUED.

COUNTIES.							COUNTIES.							
Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	
ILLINOIS—Con'd.							IOWA—Con'd.							
Kankakee	1	1	620		\$7,000	475	Washington	1	1	300		\$800	71	
Kendall	1	1	150		1,000	88	Woodbury	1	1	120		400	50	
Lake	1	1	250		4,000	100	Worth	1			sh1	50	35	
La Salle	1	1	1,000		35,000	820	Total	59	43	11,413	16	765	110,300	6,902
Livingston	1	1	125		500	80	KANSAS:							
Logan	1	1	600		10,000	350	Barton	1	1	144		1,800	95	
McHenry	1	1	600	sh1	8,400	664	Douglas	4	3	500	sh1	80	5,400	325
McLean	1	1	175		6,000	200	Geary	1	1	120		750	70	
Macoupin	1	1	1,025	ph1	10,000	768	Harvey	2	1	120	sh1	45	1,500	95
Marion	9	3	2,150	1	1,800	1,890	Leavenworth	1	1	250		3,000	100	
Mascac	2	2	560		9,500	325	Marshall	2	2	370		4,900	220	
Menard	2	2	460	sh1	5,000	280	Miami	1	1	120		1,000	85	
Monroe	2	2	650		11,000	185	Nemaha	1	1	100		200	39	
Montgomery	13	13	3,730		44,700	2,313	Osborne	2	1	100	sh1	45	100	75
Ogle	1	1	150		1,200	85	Rawlins	1	1	200		1,000	100	
Perry	1	1	350		6,500	170	Riley	1	1	125		500	80	
Pike	1	1	400		7,500	550	Saline	2	1	200	sh1	40	2,500	115
Saint Clair	11	10	2,775	1	1,500	100	Sedgwick	2	1	250	sh1	50	3,000	110
Shelby	2	2	700		32,450	1,855	Shawnee	1	1	300		1,500	80	
Stephenson	4	2	2,700		3,700	140	Stafford	2	1	150	sh1	40	1,500	84
Tazewell	2	2	1,600		21,500	1,082	Wabasha	2	2	285		4,100	205	
Vermilion	1	1	800		18,000	450	Washington	1	1	160		1,500	75	
Washington	9	9	2,200		2,000	120	Wyandotte	1	1	300		3,500	100	
White	1	1	2,705		36,300	1,628	Total	28	19 3/4	3,794	6	300	37,750	2,053
Will	0	0	286		2,000	130	KENTUCKY:							
Williamson	1	1	2,555		15,200	70	Campbell	2	1	1,000	1	200	27,000	875
Woodford	1	1	350		650	70	Davies	1	1	350		5,000	300	
Total	164	155	47,081	9	1,090	813,450	37,138	Henderson	1	1	325		5,000	100
INDIANA:							LOUISIANA:							
Clay	1	1	200		1,500	115	Orleans	3	3	1,550		26,450	1,250	
Crawford	1	1	75		250	75	MARYLAND:							
Dearborn	2	2	800		11,800	667	Anne Arundel	1	1	300		10,000	75	
Dubois	4	4	1,650		44,700	925	Baltimore	11	10	6,000	1	250	213,500	4,330
Elkhart	1	1	300		3,000	60	Total	12	11	6,300	1	250	223,500	4,405
Floyd	1	1	450		16,000	420	MICHIGAN:							
Franklin	1	1	500		5,000	350	Berrien	7	7	1,580		14,050	1,297	
Gibson	4	4	700		3,200	335	Cass	1			sh1	75	50	
Hancock	1	1	500		10,500	200	Emmet	3	2	325	ph1		1,400	116
Huntington	2	2	375		2,500	180	Ingham	1	1	300		2,800	48	
Jasper	2	2	300		1,200	150	Jackson	3	2	650	1	60	4,500	280
Knox	2	2	1,245		1,000	1,047	Kent	1	1	600		10,000	250	
Lake	2	2	380		4,000	228	Lapeer	1	1	120		500	30	
La Porte	3	3	1,400		37,900	2,150	Macomb	3	3	1,400		19,900	825	
Marion	3	3	1,130		30,000	1,203	Montcalm	2	1	150	1	60	1,000	115
Marshall	4	4	970		11,900	318	Muskegon	1	1	400		4,500	170	
Perry	3	3	300		6,450	610	Oakland	2	1	150		700	295	
Pike	1	1	1,410		600	25	Ottawa	5	3	860	sh1 } ph1 } 2	60	6,500	388
Posey	6	6	1,410		21,300	875	Saint Clair	3	3	900		5,900	1,000	
Pulaski	2	2	450		2,900	330	Sanilac	2	2	180		800	75	
Ripley	1	1	400		1,200	130	Washtenaw	7	7	2,620		36,400	2,189	
Saint Joseph	5	5	1,480		18,900	1,230	Wayne	8	8	4,475	1	60	133,500	3,800
Spencer	4	4	950		4,300	453	Total	50	43	14,710	7	315	242,450	10,926
Tipton	1	1	275		4,000	150	MINNESOTA:							
Vanderburg	8	8	3,175		54,400	1,535	Anoka	1	1	150		500	100	
Wabash	2	2	750		5,000	500	Becker	1			1	100	50	
Warrick	6	6	1,620		10,300	1,057	Benton	1			1	100	37	
Whitley	1	1	200		600	100	Carver	2	1	100	sh1	100	141	
Total	75	75	22,635		337,660	15,274	Clay	1	1	100		600	19	
IOWA:							Faribault	2	2	425		3,200	185	
Allamakee	2	2	400		700	160	Hennepin	4	4	865		12,400	277	
Black Hawk	1	1	150		2,400	65	Houston	5	5	820		6,500	765	
Bremer	5	4	1,000	sh1	10,500	586	Hubbard	2			sh1 } ph1 } 2	100	53	
Buena Vista	2	2	375		4,200	155	Le Snour	4	4	675		3,300	423	
Butler	1	1	108		4,900	81	McLeod	3	3	800		4,500	495	
Calhoun	1	1	200		3,500	100	Martin	2	1	120	sh1	25	1,200	70
Cass	3	3	700		8,500	308	Morrison	2	1	80	sh1	50	800	56
Cedar	2	2	720		8,700	805	Olmsted	1	1	500		4,000	200	
Cerro Gordo	1	1		sh1	24	24	Otter Tail	3	1	100	ph2		1,400	75
Des Moines	7	6	2,230	sh1	26,300	1,453	Pope	2			sh2	95	40	
Franklin	3	3	400	sh3	160	102	Ramsey	1	1	800		25,000	600	
Fremont	2	1	200	sh1	2,000	90	Rice	1	1	350		5,500	264	
Grundy	1	1		sh1	13	13	Saint Louis	1	1	300		8,000	400	
Hardin	3	3	700		6,400	398	Sibley	1	1	212		1,500	250	
Henry	1	1	200			55								
Jasper	1	1	300		3,000	150								
Keokuk	2	2	700		2,300	111								
Lee	7	5	1,720	sh2	10,500	1,328								
Lyon	1	1		sh1	50	50								
Marshall	3	1	150	sh2	1,200	107								
O'Brien	1	1		sh1	40	40								
Plymouth	3	2	475	sh1	3,000	250								
Tama	1	1	175		2,000	100								
Union	1	1	200		3,000	185								
Van Buren	1	1	200		1,000	45								

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
MINNESOTA—Con'd.								OHIO—Con'd.							
Stearns	3	2	350	sh1	40	\$3,500	182	Coshocton	6	6	1,020			\$8,300	338
Todd	2	2	250			2,500	175	Cuyahoga	12	12	6,580			195,900	4,295
Traverse	1	1		sh1	40		10	Erie	3	3	1,200			11,000	1,138
Wadena	1	1	400			1,000	90	Hamilton	10	10	6,365			217,000	6,944
Waseca	1	1	125			1,200	90	Hardin	2	2	720			7,500	540
Washington	2	2	600			4,000	245	Holmes	2	2	570			9,000	435
Winona	1	1	400			3,000	75	Huron	1	1	175			1,500	125
Wright	2	2	550			3,500	200	Licking	1	1	500			6,000	230
Total	53	40	9,072	13	650	97,900	5,567	Lorain	3	3	950			13,000	941
MISSOURI:								MARION							
Audrain	3	3	450			2,500	161	Medina	1	1	300			7,000	265
Buchanan	1	1	500			30,000	250	Mercer	2	1	300			4,000	252
Callaway	2	1 1/2	450			4,300	95	Meigs	2	2	500			3,700	250
Cape Girardeau	5	5	815			5,100	392	Miami	1	2	390			2,000	230
Christian	1	1	170			700	250	Monroe	3	3	1,325			44,000	875
Clark	2	2	700			6,000	450	Montgomery	11	11	3,074			21,850	1,433
Cole	1	1	300			20,000	300	Muskingum	1	1	1,500			50,000	2,000
Cooper	6	5	1,025	sh1	65	16,500	639	Ottawa	1	1	350			10,000	400
Crawford	1	1	150			800	35	Richland	4	4	2,000			20,100	1,947
Franklin	11	10	2,705	sh1	150	24,600	1,747	Ross	2	2	950			18,000	758
Gasconade	8	8	1,580			15,850	1,151	Scioto	1	1	450			6,000	350
Jackson	4	3	875	sh1	70	38,600	331	Seneca	1	2	900			24,500	400
Jefferson	5	5	900			6,100	385	Shelby	3	3	1,000			15,000	560
Lafayette	7	7	1,780			22,200	1,026	Stark	3	3	750			7,900	370
Lawrence	2	2	320			650	110	Tuscarawas	2	2	1,200			18,000	999
Lincoln	4	3	550	sh1	60	6,250	337	Van Wert	13	11	2,945	1	60	30,300	1,473
Moniteau	4	4	770			8,200	648	Washington	3	3	650			2,300	330
Montgomery	5	3	330	sh2	100	1,300	115	Wayne	2	2	410			5,300	273
Morgan	1	1	222			1,500	156	Wood	1	1	300			1,800	200
Osage	4	4	485			3,200	225	Total	107	106	41,019	1	60	836,200	31,617
Pettis	1	1	240			3,500	165	PENNSYLVANIA:							
Platte	2	1	130	sh1	50	3,000	85	Allegheny	4	4	2,850			86,500	2,588
Saint Charles	8	8	1,880			22,200	1,389	Crawford	2	2	500			4,500	390
Saint Louis	24	24	12,065	sh1	150	313,700	13,791	Erie	1	1	620			15,000	700
Saline	2	2	350			1,500	60	Lackawanna	2	2	600			7,150	490
Warren	10	9	2,180	sh1	60	17,400	1,383	Lancaster	1	1	300			10,000	325
Total	124	115 1/2	31,922	9	705	575,650	25,676	Lycoming	1	1	500			6,000	600
NEBRASKA:								POTTER							
Clay	1	1	100			1,600	90	Total	12	12	5,670			132,150	5,293
Fillmore	2	1	200	sh1	50	1,200	85	TEXAS:							
Hamilton	1	1	150			1,500	80	Burleson	1			sh1	110		100
Jefferson	3	2	460	sh1	70	4,000	258	Dallas	1	1	60			2,000	35
Lancaster	2	1	160	sh1	50	6,600	320	Falls	3			sh1 sh1 ph1	320		119
Otoe	6	5	900	sh1	60	13,300	584	Galveston	1	1	130			3,500	35
Pawnee	3	3	410			3,500	210	Guadalupe	2	2	550			3,800	375
Richardson	2	2	400			5,000	135	Harris	4	3	430	sh1	45	7,700	475
Saline	1	1	100			1,000	120	McLennan	3	3	310			2,700	148
Seward	2	2	350			5,800	260	Robertson	1	1	250			600	62
Total	23	19	3,290	4	230	43,500	2,142	Tarrant	1	1	250			12,000	75
NEW JERSEY:								WASHINGTON							
Essex	3	2	1,100	1	100	30,000	1,890	Total	19	14	2,380	5	475	36,300	1,864
NEW YORK:								VIRGINIA:							
Albany	1	1	700			40,000	500	Henrico	1	1	700			30,000	700
Cayuga	1	1	300			10,000	130	WEST VIRGINIA:							
Chautauqua	3	3	950			7,150	350	Mason	1	1	216			800	54
Chemung	1	1	400			9,000	690	Wetzel	1			sh1	50		60
Erie	24	24	11,016			388,020	8,809	Total	2	1	216	1	50	800	114
Genesee	1	1	180			4,000	120	WISCONSIN:							
Kings	1	1	450			9,000	70	Columbia	3	3	520			4,300	285
Livingston	1	1	350			7,400	225	Fond du Lac	5	5	1,900			34,100	1,079
Monroe	3	3	2,150			132,000	2,600	Grant	2	2	540			2,600	470
New York	1			1	300		200	Green	3	1	220	sh2	100	1,500	130
Niagara	4	4	1,350			20,500	1,045	Jefferson	1	1	400			5,000	190
Onondaga	1	1	700			16,000	1,000	Lafayette	1			ph1		60	
Rensselaer	4	4	1,200			25,000	1,715	Langlade	1			sh1	50	400	
Steuben	1	1	314			3,000	480	Lincoln	2	2	500			6,200	578
Wyoming	3	3	1,100			10,500	565	Manitowoc	1	1	125			700	70
Total	50	49	21,160	1	300	681,570	17,409	Marathon	1	1	750			16,000	500
NORTH DAKOTA:								MILWAUKEE							
Morton	2	2	400			2,300	300	Monroe	6	6	2,500			39,900	2,934
Richland	3	1	200	2	120	1,000	140	Oconto	1	1	140			1,600	60
Total	5	3	600	2	120	3,300	440	Outagamie	1	1	225			1,200	75
OHIO:								OSAGO							
Ashland	2	2	320			1,150	145	Pierce	3	3	380			3,000	325
Auglaize	2	2	1,025			14,500	943	Ozaukee	3	3	1,025			11,500	525
Brown	1	1	350			3,500	200	Racine	1	1	170			500	120
Butler	2	2	700			25,000	330	Shawano	2	2	350			3,000	185
Champaign	1	1	350			1,400	90	Sheboygan	7	7	1,710			16,550	968
Clark	1	1	650			30,000	1,500	Taylor	2	1	100	1	60	1,400	90

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA—CONTINUED.

COUNTIES.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
WISCONSIN—Con'd.								IOWA :							
Washington	10	10	1,961			\$17,950	1,591	Hancock, Ill.	3	3	750			\$10,325	438
Waukesha	4	4	700			10,700	900	Henderson, Ill.	1	1	110			1,000	95
Winnebago	2	2	270			2,000	95	Allamakee, Iowa	2	2	400			700	160
Total	63	58	14,686	5	210	182,700	11,410	Black Hawk, Iowa	1	1	150			2,400	65
STATES.								Bremer, Iowa							
California	4	4	618			8,400	315	Buena Vista, Iowa	5	4	1,090	sh1	60	10,500	586
Colorado	2	1	250	1	150	18,000	135	Butler, Iowa	2	2	375			4,200	155
Illinois	164	155	47,081	9	1,090	813,450	37,138	Cass, Iowa	1	1	108			900	81
Indiana	75	75	22,635			337,600	15,274	Calhoun, Iowa	1	1	200			3,500	100
Iowa	59	43	11,413	16	765	110,300	6,902	Cedar, Iowa	3	3	700			8,500	308
Kansas	28	19 ^{3/4}	3,794	6	300	37,750	2,053	Cerro Gordo, Iowa	2	2	720			8,700	805
Kentucky	11	10	5,525	1	200	137,400	4,912	Des Moines, Iowa	1	1		sh1	40		24
Louisiana	3	3	1,550			26,450	1,250	Franklin, Iowa	7	6	2,230	sh1	50	26,300	1,453
Maryland	12	11	6,300	1	250	223,500	4,405	Fremont, Iowa	3	3		sh3	160		102
Michigan	50	43	14,710	7	315	242,450	10,926	Grundy, Iowa	2	1	200	sh1	40	2,000	90
Minnesota	43	40	9,072	13	650	97,900	5,567	Hardin, Iowa	1	1		sh1	25		13
Missouri	124	115 ^{1/2}	31,922	9	705	575,600	25,676	Henry, Iowa	3	3	700			6,400	398
Nebraska	23	19	3,290	4	230	43,500	2,142	Jasper, Iowa	1	1	200				55
New Jersey	3	2	1,190	1	100	39,000	1,890	Keokuk, Iowa	1	1	300			3,000	150
New York	50	49	21,160	1	300	681,570	17,409	Lee, Iowa	2	2	700			2,300	111
North Dakota	5	3	600	2	120	3,300	440	Lyon, Iowa	7	5	1,720	sh2	100	19,500	1,328
Ohio	107	106	41,019	1	60	836,200	31,617	Marshall, Iowa	1	1		sh1	50		35
Pennsylvania	12	12	5,670			132,150	5,293	O'Brien, Iowa	3	1	150	sh2	90	1,200	107
Texas	19	14	2,380	5	475	36,300	1,864	Plymouth, Iowa	1	1		sh1	40		40
Virginia	1	1	700			30,000	700	Tama, Iowa	3	2	475	sh1	60	3,000	250
West Virginia	2	1	216	1	50	800	114	Union, Iowa	1	1	175			2,000	100
Wisconsin	63	58	14,686	5	210	182,700	11,410	Van Buren, Iowa	1	1	200			3,000	185
Total	870	785 ^{1/2}	245,781	83	5,970	4,614,490	187,432	Washington, Iowa	1	1	300			1,000	45
								WOODBURY, IOWA							
								Clark, Mo							
								Total							
								KANSAS:							
								Arapahoe, Colo							
								Barton, Kans							
								Douglas, Kans							
								Geary, Kans							
								Harvey, Kans							
								Leavenworth, Kans							
								Marshall, Kans							
								Miami, Kans							
								Nemaha, Kans							
								Osborne, Kans							
								Rawlins, Kans							
								Riley, Kans							
								Saline, Kans							
								Sedgewick, Kans							
								Shawnee, Kans							
								Stafford, Kans							
								Wabunsee, Kans							
								Washington, Kans							
								Wyandotte, Kans							
								Pawnee, Nebr							
								Total							
								BY DISTRICTS.							
								ATLANTIC:							
								Anne Arundel, Md							
								Baltimore, Md							
								Essex, N. J							
								Albany, N. Y							
								New York, N. Y							
								Rensselaer, N. Y							
								Lackawanna, Pa							
								Lancaster, Pa							
								Lycoming, Pa							
								Henrico, Va							
								Total							
								INDIANA:							
								Clay, Ind							
								Crawford, Ind							
								Dearborn, Ind							
								Dubois, Ind							
								Floyd, Ind							
								Franklin, Ind							
								Gibson, Ind							
								Hancock, Ind							
								Knox, Ind							
								Marion, Ind							
								Perry, Ind							
								Pike, Ind							
								Posey, Ind							
								Ripley, Ind							
								Spencer, Ind							
								Vanderburg, Ind							
								Warrick, Ind							
								Campbell, Ky							
								Davies, Ky							
								Henderson, Ky							
								Jefferson, Ky							
								McCracken, Ky							
								Mason, Ky							
								Brown, Ohio							
								Butler, Ohio							
								Hamilton, Ohio							
								Miami, Ohio							
								Montgomery, Ohio							
								Shelby, Ohio							
								Total							
								MICHIGAN:							
								Elkhart, Ind							
								Huntington, Ind							
								Jasper, Ind							
								Lake, Ind							
								La Porte, Ind							
								Marshall, Ind							
								Pulaski, Ind							
								Saint Joseph, Ind							
								Tippecanoe, Ind							
								Wabash, Ind							
								Whitley, Ind							
								Berrien, Mich							
								Cass, Mich							
								Emmet, Mich							
								Ingham, Mich							
								Jackson, Mich							
								Kent, Mich							
								Lapeer, Mich							
								Macomb, Mich							
								Montcalm, Mich							
								Muskegon, Mich							
								Oakland, Mich							
								Ottawa, Mich							
								Saint Clair, Mich							
								Sanilac, Mich							
								Washtenaw, Mich							
								Wayne, Mich							
								Total							

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA—CONTINUED.

MINNESOTA:							NORTH ILLINOIS:								
DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
Anoka, Minn.	1	1	150			\$500	100	Bureau, Ill.	2	2	550			\$13,000	400
Becker, Minn.	1	1		1	100		50	Champaign, Ill.	3	3	625			8,275	605
Benton, Minn.	1	1		sh1	100		37	Cook, Ill.	23	21	9,385	sh2	450	274,500	10,565
Carver, Minn.	2	1	100				141	De Kalb, Ill.	3	2	450	1	200	5,700	210
Clay, Minn.	1	1	100			800	19	Du Page, Ill.	9	9	2,945			28,700	2,285
Faribault, Minn.	2	2	425			3,200	185	Henry, Ill.	3	3	600			6,200	555
Hennepin, Minn.	4	4	865			12,400	277	Iroquois, Ill.	2	2	420			3,400	185
Houston, Minn.	5	5	820			6,500	765	Kane, Ill.	3	3	950			17,800	625
Hubbard, Minn.	2			sh1 ph1	100		53	Kankakee, Ill.	2	2	620			7,000	475
Le Sueur, Minn.	4	4	675			3,300	423	Kendall, Ill.	1	1	150			1,000	88
McLeod, Minn.	3	3	800			4,500	495	Lake, Ill.	1	1	250			4,000	100
Martin, Minn.	2	1	120	sh1	25	1,200	70	La Salle, Ill.	2	2	1,000			35,000	820
Morrison, Minn.	2	1	80	sh1	50	800	36	Livingston, Ill.	1	1	125			500	80
Olmsted, Minn.	1	1	500			4,000	200	Logan, Ill.	1	1	600			10,000	350
Otter Tail, Minn.	3	1	100	ph2 sh2	95	1,400	75	McHenry, Ill.	4	3	750	sh1	50	8,400	604
Pope, Minn.	2					25,000	600	McLean, Ill.	1	1	175			6,000	200
Ramsey, Minn.	1	1	800			5,500	264	Menard, Ill.	2	2	650			11,000	185
Rice, Minn.	1	1	350			8,000	400	Ogle, Ill.	2	2	350			6,500	170
Saint Louis, Minn.	1	1	300			1,500	250	Stephenson, Ill.	4	4	1,600			21,500	1,082
Sibley, Minn.	1	1	212			3,500	182	Tazewell, Ill.	2	2	800			18,000	450
Stearns, Minn.	3	2	350	sh1	40	2,500	175	Vermilion, Ill.	1	1	200			2,000	120
Todd, Minn.	2	2	250			1,000	10	Will, Ill.	9	9	2,555			15,200	2,175
Traverse, Minn.	1	1		sh1	40	1,200	90	Woodford, Ill.	1	1	350			6,000	250
Wadena, Minn.	1	1	400			1,200	90	Lake, Ind.	1	1	240			2,000	175
Waseca, Minn.	1	1	125			4,000	245								
Washington, Minn.	2	2	600			3,000	75	Total	83	79	26,340	4	700	511,675	22,814
Winona, Minn.	1	1	400			3,500	200								
Wright, Minn.	2	2	550			2,300	300	OHIO:							
Morton, N. Dak.	2	2	400			1,000	140	Ashland, Ohio	2	2	320			1,150	145
Richland, N. Dak.	3	1	200	2	120	2,000	300	Auglaize, Ohio	2	2	1,025			14,500	943
Pierce, Wis.	1	1	170			1,000	120	Champaign, Ohio	1	1	350			1,400	90
						500	120	Clark, Ohio	1	1	650			30,000	1,500
Total	59	44	9,842	15	770	101,700	6,127	Coshocton, Ohio	6	6	1,020			8,300	336
								Cuyahoga, Ohio	12	12	6,580			195,900	4,295
MISSOURI:								Erie, Ohio	3	3	1,200			11,000	1,138
Audrain, Mo.	3	3	450			2,500	161	Hardin, Ohio	2	2	720			7,500	540
Callaway, Mo.	2	1 1/2	450			4,300	95	Holmes, Ohio	2	2	570			9,000	435
Cape Girardeau, Mo.	5	5	815			5,100	392	Huron, Ohio	1	1	175			1,500	125
Christian, Mo.	1	1	170			700	250	Licking, Ohio	1	1	500			6,000	230
Crawford, Mo.	1	1	150			800	35	Lorain, Ohio	3	3	950			13,000	941
Franklin, Mo.	11	10	2,705	sh1	150	24,600	1,747	Marion, Ohio	1	1	300			7,000	265
Gasconade, Mo.	8	8	1,580			15,850	1,151	Medina, Ohio	2	2	300			4,000	252
Jefferson, Mo.	5	5	900			6,100	385	Meigs, Ohio	2	2	590			3,700	250
Lawrence, Mo.	2	2	320			6,650	110	Mercer, Ohio	1	1	300			2,000	230
Lincoln, Mo.	4	3	550	sh1	60	6,250	337	Monroe, Ohio	11	11	3,074			21,850	1,433
Montgomery, Mo.	5	3	330	sh2	100	1,300	115	Muskingum, Ohio	1	1	350			10,000	400
Osage, Mo.	4	4	485			3,200	225	Ottawa, Ohio	4	4	2,300			20,100	1,947
Saint Charles, Mo.	8	8	1,880			22,200	1,389	Richland, Ohio	2	2	950			18,000	758
Saint Louis, Mo.	24	24	12,065	sh1	150	313,700	13,791	Ross, Ohio	1	1	450			6,000	350
Warren, Mo.	10	9	2,180	sh1	60	17,400	1,383	Scioto, Ohio	1	2	900			24,500	400
								Seneca, Ohio	3	3	1,000			15,000	560
Total	93	87 1/2	25,030	6	520	424,650	21,566	Shelby, Ohio	2	2	550			3,900	275
								Stark, Ohio	2	2	1,200			18,000	909
NEBRASKA:								Tuscarawas, Ohio	13	11	2,945	1	CO	30,300	1,473
Clay, Nebr.	1	1	100			1,600	90	Van Wert, Ohio	3	3	650			2,300	330
Fillmore, Nebr.	2	1	200	sh1	50	1,200	85	Washington, Ohio	2	2	410			5,300	273
Hamilton, Nebr.	1	1	150			1,500	80	Wayne, Ohio	1	1	300			1,800	200
Jefferson, Nebr.	3	2	460	sh1	70	4,000	258	Wood, Ohio	1	1	250			1,700	60
Lancaster, Nebr.	2	1	160	sh1	50	6,600	320	Allegheny, Pa.	4	4	2,850			86,500	2,588
Otoe, Nebr.	6	5	900	sh1	60	13,300	584	Mason, W. Va.	1	1	216			800	54
Pawnee, Nebr.	1	1	200			2,600	150	Wetzel, W. Va.	1	1		sh1	50		60
Richardson, Nebr.	2	2	400			5,000	135								
Saline, Nebr.	1	1	160			1,000	120	Total	95	93	33,645	2	110	582,000	23,875
Seward, Nebr.	2	2	350			5,800	260								
								SOUTH ILLINOIS:							
Total	21	17	3,080	4	230	42,000	2,082	Adams, Ill.	7	7	3,125			90,700	2,689
								Christian, Ill.	1	1	170			2,000	150
NEW YORK:								Clay, Ill.	1	1	90			2,500	90
Cayuga, N. Y.	1	1	300			10,000	130	Clinton, Ill.	4	4	875			9,250	475
Chautauqua, N. Y.	3	3	950			7,150	350	Douglas, Ill.	2	2	300			1,500	236
Chemung, N. Y.	1	1	400			9,000	600	Fayette, Ill.	2	2	320			2,600	90
Erie, N. Y.	24	24	11,016			388,020	8,309	Jersey, Ill.	2	1	120	sh1	60	600	100
Genesee, N. Y.	1	1	180			4,000	120	Macoupin, Ill.	4	3	1,025	ph1		10,000	708
Kings, N. Y.	1	1	450			9,000	70	Madison, Ill.	9	8	2,150	1	75	28,800	1,890
Livingston, N. Y.	1	1	350			7,400	225	Marion, Ill.	2	2	550			9,500	325
Monroe, N. Y.	3	3	2,150			132,000	2,600	Massac, Ill.	3	2	460	sh1	55	5,000	280
Niagara, N. Y.	4	4	1,350			20,500	1,045	Monroe, Ill.	13	13	3,730			44,700	2,315
Onondaga, N. Y.	1	1	700			16,000	1,000	Montgomery, Ill.	1	1	150			1,200	85
Steuben, N. Y.	1	1	314			3,000	480	Ferry, Ill.	2	2	400			7,500	550
Wyoming, N. Y.	3	3	1,100			10,500	565	Pike, Ill.	1	1	200			1,500	100
Crawford, Pa.	2	2	500			4,500	330	Saint Clair, Ill.	11	10	2,775	1	200	32,450	1,855
Erie, Pa.	1	1	620			15,000	700	Shelby, Ill.	2	2	500			3,700	140
Potter, Pa.	1	1	300			3,000	200	Washington, Ill.	9	9	2,705			36,300	1,628
								White, Ill.	1	1	266			2,000	130
Total	48	48	20,680			630,070	17,284	Williamson, Ill.	1	1	210			650	70
								Orleans, La.	3	3	1,510			26,450	1,250
								Total	81	76	21,671	5	390	318,900	15,216

V.—GERMAN EVANGELICAL SYNOD OF NORTH AMERICA—CONTINUED.

DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	DISTRICTS.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
TEXAS:								WISCONSIN—Con'd.							
Burleson, Tex	1			sh1	110		100	Lisbon, Wis	1	1	100			\$1,000	30
Dallas, Tex	1	1	60			\$2,000	35	Manitowoc, Wis	1	1	125			700	70
Falls, Tex	3			hl, sh1, 3 ph1)	320		119	Marathon, Wis	1	1	750			16,000	500
Galveston, Tex	1	1	130			3,500	35	Milwaukee, Wis	6	6	2,500			39,900	2,934
Guadalupe, Tex	2	2	550			3,800	375	Monroe, Wis	1	1	140			1,600	60
Harris, Tex	4	3	430	sh1	45	7,700	475	Oconto, Wis	1	1	225			1,200	75
McLennan, Tex	3	3	310			2,700	148	Outagamie, Wis	3	3	380			3,000	325
Robertson, Tex	1	1	250			600	62	Ozaukee, Wis	3	3	1,025			11,500	525
Tarrant, Tex	1	1	250			12,000	75	Racine, Wis	1	1	200			3,000	120
Washington, Tex	2	2	400			4,000	440	Shawano, Wis	2	2	350			2,600	185
Total	19	14	2,380	5	475	36,300	1,864	Sheboygan, Wis	7	7	1,710			16,550	968
WEST MISSOURI:								Taylor, Wis							
Los Angeles, Cal	2	2	250			3,700	160	Washington, Wis	10	10	1,961	1	60	17,950	1,591
San Francisco, Cal	1	1	275			4,500	125	Waukesha, Wis	3	3	600			9,700	870
Shasta, Cal	1	1	93			260	30	Winnebago, Wis	2	2	270			2,000	95
Buchanan, Mo	1	1	500			30,000	250	Total	62	57	14,516	5	210	182,200	11,290
Cole, Mo	1	1	300			20,000	300	SUMMARY BY DISTRICTS.							
Cooper, Mo	6	5	1,025	sh1	65	16,500	639	Atlantic	26	23	11,490	3	650	380,650	9,825
Jackson, Mo	4	3	875	sh1	70	38,600	331	Indiana	80	79	31,890	1	200	724,600	25,444
Lafayette, Mo	7	7	1,780			22,200	1,026	Iowa	65	49	12,973	16	765	127,625	7,885
Moniteau, Mo	4	4	770			8,200	648	Kansas	32	22 3/4	4,254	7	450	57,250	2,248
Morgan, Mo	1	1	222			1,500	156	Michigan	73	66 1/4	21,180	7	315	332,410	15,937
Pettis, Mo	1	1	240			3,500	165	Minnesota	59	44	9,842	15	770	101,700	6,127
Platte, Mo	2	1	130	sh1	50	3,000	85	Missouri	93	87 1/8	25,030	6	520	424,650	21,566
Saline, Mo	2	2	350			1,500	60	Nebraska	21	17	3,080	4	230	42,000	2,082
Total	33	30	6,810	3	185	153,460	3,975	New York	48	48	20,680			639,070	17,284
WISCONSIN:								North Illinois							
Columbia, Wis	3	3	520			4,300	285	Ohio	83	79	26,340	4	700	511,675	22,814
Fond du Lac, Wis	5	5	1,900			34,100	1,079	South Illinois	95	93	33,645	2	110	582,000	23,875
Grant, Wis	2	2	540			2,600	470	Texas	19	14	2,380	5	475	36,300	1,864
Green, Wis	3	1	220	sh2	100	1,500	130	West Missouri	33	30	6,810	3	185	153,460	3,975
Jefferson, Wis	1	1	400			5,000	190	Wisconsin	62	57	14,516	5	210	182,200	11,290
Lafayette, Wis	1			ph1		70	70	Total	870	785 1/2	245,781	83	5,970	4,614,490	187,432
Langlade, Wis	1			sh1	50	400	70								
Lincoln, Wis	2	2	500			6,200	578								

VI.—GERMAN EVANGELICAL PROTESTANT CHURCH OF NORTH AMERICA.

BY COUNTIES.

COUNTIES.						COUNTIES.										
ILLINOIS:						OHIO—Con'd.										
Madison	2	2	800		16,000	735	Ross	1	1	500			6,000	180		
INDIANA:						Washington										
Dearborn	1	1	400		2,500	250	Total	22	23	15,850			438,800	11,793		
Franklin	3	3	750		2,650	364	PENNSYLVANIA:									
Jackson	1	1	420		12,000	400	Allegheny	8	9	6,280			434,000	12,007		
Jefferson	1	1	500		7,000	175	Butler	1	1	375			5,000	230		
Vanderburg	1	1	1,200		30,000	622	Total	9	10	6,655			439,000	12,287		
Vigo	1			ph1	75	75	TEXAS:									
Total	8	7	3,270	1	54,150	1,886	Comal	1	1	600			9,000	700		
KENTUCKY:						Gillespie										
Campbell	1	1	1,500		35,000	500	Total	2	2	1,000			10,500	1,050		
Carroll	1				50	50	WEST VIRGINIA:									
Kenton	1	1	600		16,000	700	Ohio	2	2	1,700			63,000	1,915		
Total	3	2	2,100		51,000	1,250	SUMMARY BY STATES.									
LOUISIANA:						STATES.										
Orleans	1	1	1,000		40,000	3,500	Illinois	2	2	800			16,000	735		
MISSOURI:						Indiana										
Missouri	2	2	2,600		70,000	1,700	Kentucky	3	2	2,100	ph1		54,150	1,886		
NEBRASKA:						Louisiana										
Platte	1	1	200		5,000	40	Louisiana	1	1	1,000			40,000	3,500		
OHIO:						Missouri										
Butler	1	1	1,500		25,000	1,712	Nebraska	2	2	2,000			70,000	1,700		
Cuyahoga	2	2	1,100		16,000	130	Ohio	1	1	200			5,000	40		
Franklin	2	2	3,200		55,000	1,300	Ohio	22	23	15,850			438,800	11,793		
Hamilton	11	12	8,100		326,400	7,453	Pennsylvania	9	10	6,655			439,000	12,287		
Mcigs	1	1	250		2,000	70	Texas	2	2	1,000			10,500	1,050		
Pike	2	2	400		2,800	150	West Virginia	2	2	1,700			63,000	1,915		
Total	52	52	35,175	ph1	1,187,450	36,156										

VII.—(PLYMOUTH) BRETHREN—CONTINUED.

STATES, ETC.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.	STATES, ETC.	Number of organi- zations.	Church edifices.	Seating capacity.	Halls, etc.	Seating capacity.	Value of church property.	Communicants or members.
Delaware	3			3	320		44	Missouri	2			2	350		151
District of Columbia	1			1	25		8	Nebraska	1			1	25		9
Florida	1			1	150		75	New Hampshire	1			1	80		15
Georgia	2			2	60		17	New Jersey	9			9	770		213
Illinois	5			5	550		158	New York	19			18	1,600		484
Indiana	1			1	100		14	North Carolina	1			1	25		3
Iowa	9			9	490		163	Ohio	2			2	37		5
Kansas	1			1	16		6	Pennsylvania	11			11	572		164
Kentucky	1			1	25		5	Texas	1			1	20		6
Maine	1			1	20		5	Vermont	1			1	20		4
Maryland	1			1	30		24	Washington	2			2	40		19
Massachusetts	7			7	316		119	Wisconsin	1			1	120		70
Michigan	9			9	637		192	Total	109			108	7,423		2,279
Minnesota	11			11	850		243								

[7-010]



CENSUS BULLETIN.

No. 71.

WASHINGTON, D. C.

May 23, 1891.

MINES AND MINING.—BLUESTONE.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., May 8, 1891.

The following bulletin, prepared by Dr. WILLIAM C. DAY, special agent for the collection of statistics of stone, under the supervision of Dr. DAVID T. DAY, special agent in charge of Mines and Mining of the Census Office, gives the statistics of the production of bluestone in the states of New York, New Jersey, and Pennsylvania.

The statistics show that 5,126,340 cubic feet of bluestone were produced in the three states named, which were the only states producing this peculiar variety of stone in the United States, the value of which was \$1,689,606. The expenditures by the systematically operated quarries in the production of bluestone aggregated \$608,582, of which \$527,634 was the wages of the 1,793 persons to whom the industry gave employment. It has been deemed expedient to present a separate bulletin on the production of bluestone, on account of the difference between the practical applications of bluestone and other sandstones. A report on the production of sandstone will be issued in another bulletin.

Robert T. Porter

Superintendent of Census.

PRODUCTION OF BLUESTONE.

BY WILLIAM C. DAY.

Bluestone is the name given to one of the varieties of sandstone. It consists of exceedingly small particles of silica cemented together by silica. Practically, the entire cementing material is silica, with the exception of a slight amount of argillaceous material, which is present to a very limited extent. Owing to the minuteness of the silica and the firmness of the siliceous cement the stone is extremely hard and durable, but naturally difficult to work. In the beginning of the investigation for the purpose of collecting stone statistics it was decided to include bluestone with sandstone simply as one of the varieties of the latter. This decision was, however, afterward changed, partly because the producers of bluestone are in a large number of cases apparently ignorant of the fact that bluestone is properly a sandstone, and it was found that a number of them object strenuously to the name sandstone. It was also found that, owing to the peculiarities of the methods of conducting bluestone quarrying and the subsequent disposal of the product, a separation of bluestone from sandstone was advisable and even necessary, for reasons that will be given in detail.

Owing to the hardness and durability of this stone, as well as to the manner in which it occurs in the earth, it is well adapted for purposes of street paving, such as flagging and curbing, and most of it is devoted to these uses. The business methods involved in the operations of quarrying and putting the stone into the hands of the consumers are peculiar. A certain amount of the stone is quarried from regularly organized quarries, with a definitely invested capital and plant or facilities for quarrying. From all such quarries statistics were obtained by means of schedules, according to the method adopted for all other kinds of stone; but in addition to the stone taken from these regularly operated quarries a large amount is produced irregularly and spasmodically by men who invest no capital and have no definite organization as producers of stone. Their operations are conducted as follows: Provided with a very simple equipment of the most ordinary quarry tools, they dislodge the stone found on land belonging to other persons and transport it to a number of shipping points, selling it there to dealers, who make a business of collecting stone in this manner and then shipping it to the place where used. The dealers pay the individuals who quarry the stone an amount which simply compensates the seller for his time and labor, while the owner of the property receives a certain definite percentage from the dealer for the amount of stone thus taken from his land. During the year 1889 and a number of years previous some of the dealers at various points in New York state constituted the members of the Union Bluestone Company, with headquarters in New York city. Each member of this company was entitled to furnish a certain percentage of the total amount sold by this company in a given year. The dealers may therefore be regarded in a certain sense as producers. From these considerations it becomes evident that it was impossible to obtain a knowledge of the value of the land from which stone was taken in this irregular manner, and also to obtain replies, which have been so readily secured from definitely organized companies operating quarries.

The table on page 5, giving the figures relative to the bluestone industry, includes returns from all regularly operated quarries, including replies to all inquiries which have been addressed to operators of regular quarries in all kinds of stone. The table on page 4 includes the total purchases of these dealers from the laborers who obtain their output in the manner above described, and also from farmers. The irregular methods of conducting the bluestone industry are probably due in great part

to the manner in which the stone occurs. Many of the ledges run out in a short time, and are then, of course, abandoned, so that long-continued operations at one point are not possible in many cases.

The following tables show in as complete a manner as it was possible to make them the various statistics relative to the bluestone industry in the three states considered. The area in these three states from which bluestone is taken, and which is considered in this report, comprises the following counties in New Jersey, New York, and Pennsylvania:

NEW JERSEY.—Hunterdon, Mercer, and Sussex.

NEW YORK.—Albany, Broome, Cayuga, Chemung, Chenango, Delaware, Greene, Jefferson, Oneida, Orange, Otsego, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, Steuben, Sullivan, Tompkins, Ulster, Washington, Wyoming, and Yates.

PENNSYLVANIA.—Bradford, Lackawanna, Luzerne, Lycoming, Monroe, Pike, Schuylkill, Susquehanna, Wayne, and Wyoming.

The number of square miles embraced in this area is 26,897.

TOTAL BLUESTONE PRODUCTION, INCLUDING PURCHASES BY WHOLESALE DEALERS.

STATES.	Total.		RETURNS FROM REGULARLY OPERATED QUARRIES.				Purchases by wholesale dealers.	
			Rubble and bridge stone sold by perch and cubic yard.		Dimension stone.			
			Cubic feet.	Amount.	Cubic feet.	Amount.		
Total.....	5,126,340	\$1,689,606	1,641,626	\$53,768	1,518,260	\$696,144	1,966,454	\$939,694
New Jersey.....	15,649	8,550			15,649	8,550		
New York.....	4,009,942	1,303,321	1,514,767	51,495	842,957	423,908	1,652,218	827,918
Pennsylvania.....	1,100,749	377,735	126,859	2,273	659,654	263,686	314,236	111,776

STATISTICS OF BLUESTONE PRODUCED FROM SYSTEMATICALLY OPERATED QUARRIES ONLY.

STATES.	Number of individuals or firms operating quarries.	Number of quarries operated.	PRODUCT.					LABOR.						
			Superficial feet.	Linear feet.	Cubic feet.	Total, expressed in cubic feet.	Total value.	Foremen.	Quarymen.	Mechanics.	Laborers.	Boys under sixteen years.	Office force.	Total number employed.
Total.....	211	217	4,012,817	882,005	1,861,446	3,159,886	\$749,912	144	778	109	736	18	8	1,793
New Jersey.....	3	3	67,000	4,200	.....	15,649	8,550	3	13	.....	17	1	.....	34
New York.....	142	142	2,241,335	548,985	1,612,041	2,357,724	475,403	94	484	78	436	14	7	1,113
Pennsylvania.....	66	72	1,704,482	333,820	249,405	786,513	265,959	47	281	31	283	3	1	646

STATES.	POWER.			EXPENSES.					CAPITAL INVESTED.				
	Number of boilers.	Total horse power of boilers.	Other power.	Number of animals employed.	Total wages, including salaries to office force.	Value of supplies and materials consumed.	All other expenditures for the quarries, such as rent, taxes, insurance, interest, etc.	Total expenses incurred in producing entire amount of bluestone.	In land.	In buildings and fixtures.	In tools, live stock, machinery, and supplies on hand.	In cash.	Total capital.
Total.....	12	169	.....	183	\$527,634	\$34,785	\$46,163	\$608,582	\$428,380	\$17,015	\$106,292	\$34,070	\$635,757
New Jersey.....	.....	.....	.....	.....	6,795	275	52	7,122	9,300	1,550	1,000	10,000	21,850
New York.....	9	135	.....	145	333,574	26,768	35,552	395,894	264,980	10,205	77,506	56,570	409,261
Pennsylvania.....	3	34	.....	38	187,265	7,742	10,559	205,566	154,100	5,260	27,786	17,500	204,646

STATES.	EMPLOYÉS IN BLUESTONE QUARRYING.									
	Foremen.		Quarymen.		Mechanics.		Laborers.		Boys under 16 years.	
	Average number days employed.	Average daily wages.	Average number days employed.	Average daily wages.	Average number days employed.	Average daily wages.	Average number days employed.	Average daily wages.	Average number days employed.	Average daily wages.
Total.....	162	\$2.53	159	\$2.02	135	\$2.37	159	\$1.44	146	\$0.80
New Jersey.....	137	2.20	90	2.25	.....	.....	139	1.35	90	0.75
New York.....	159	2.55	163	1.95	129	2.43	159	1.48	156	0.81
Pennsylvania.....	169	2.51	154	2.13	150	2.23	161	1.38	120	0.75

Owing to the unique character of the bluestone industry, as indicated in the foregoing statements, it has been thought advisable to give a somewhat more detailed description of it than has been necessary in connection with the other kinds of stone which are more or less distributed over the entire country. Much of this region is composed of rough mountain land, of little value except for the stone to be obtained from it. Over this region quarymen, operating on the limited scale already indicated, are continually prospecting for such ledges of stone as will justify their labor, which is carried on with extremely simple implements, producing the stone principally in the form of flagging. Originally the stone was quarried for flagging only, but recently it has been applied to quite a long list of purposes, such as rubble masonry, retaining walls and bridge stone, sidewalks, crosswalks, curbing, gutters, flagging, stepstones, flooring, vault covers, bases of tombstones, porch and hitching posts, and house trimmings, such as platforms, steps, door and window sills, lintels, and caps.

Although the name of the stone implies that it is of a blue color, this is not invariably the case. The colors vary from dark blue or slate color to bluish gray, and sometimes the stone presents a greenish tinge, and in other cases a brown. The stone is known commercially by quite a number of names, which designate, approximately, the region from which it is taken. Among the names in common use may be mentioned the following: Hudson river bluestone, Hudson river flagging, North river bluestone, North river flagging, Pennsylvania bluestone, Wyoming valley bluestone, Delaware

river bluestone, Delaware flags, bluestone flagging, and bluestone. The methods of transportation employed by bluestone quarrymen in getting their product from the quarries to the dealers necessitate the employment of a large number of teams, principally horses, although oxen are also employed in Pennsylvania. The principal shipping points for general distribution to which stone is transported directly from the quarries in New York state are Kingston (including Wilbur and Rondout), Malden, Saugerties, Catskill, and Coeymans, all along the Hudson river. Leading into Kingston are stone tramways, constructed over a distance of nine miles, coming from quarries at West Hurley, and between other quarries and shipping points similar tramways are in use. These enable exceedingly heavy loads to be hauled. Ruts have been worn in the stone by the heavily-laden wagons, and these ruts answer the purpose of a track, from which it is impossible for the wheels to escape in the course of a trip.

METHODS OF QUARRYING.—Bluestone occurs in beds, the surface layers of which are often quite thin. The thickness, however, increases with the depth, so that layers well below the surface are frequently of considerable thickness. In many quarries the stone is taken out with considerable ease by the very simplest tools and methods, so that in many cases powder is not used. When the stone exceeds six inches in thickness it is necessary to drill a row of plug holes and remove it by a series of wedges. In the quarries operated principally for flagging the blocks are simply pried out by iron or steel bars. The Knox system of blasting is in use at some of the principal quarries in New York state. Some quarries also operate mills, where the usual machinery, such as planers, saws, and rubbing beds, is operated. At some of these mills the facilities are very complete, but do not differ essentially from those in use in mills operating upon other kinds of stone.

BUSINESS METHODS.—Owing to the fact that no carefully itemized accounts on the part of the dealers are kept, and in the total absence of any records whatever on the part of the roving quarrymen, who operate here and there, the task of collecting the statistics of bluestone has been rendered one of exceeding difficulty; and having never before been attempted with the completeness which has attended the present investigation, it was entirely pioneer work. The methods adopted necessarily vary, according to the peculiarities of business methods in an individual locality.

The royalty paid by the shipping agent or dealer to the owner of the property varies from one-half to one and one-half cents per superficial foot. In some cases a percentage ranging from 5 to 10 per cent of the price received from the sale is charged by the owner of the land. The dealers keep no account of the number of feet or the total value of the stone obtained from any particular quarryman, nor do they keep a permanent record of the property from which a particular quarryman has secured the stone sold by him. Furthermore, the dealers keep a record of the stock purchased in various ways, generally measuring it in superficial feet, without taking any account of the particular thickness, or in linear feet, without noting either of the other dimensions beyond certain general limits which these dimensions do not exceed. In regard to the value of property from which bluestone is taken, it may be said that this is extremely variable, depending, as it does, entirely upon the quality and the amount of stone contained in it, as the land is worth very little for agricultural purposes. As soon as the supply of stone is exhausted the value of the property drops to the low figure at which it is valued as agricultural land.

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INMATES OF JUVENILE REFORMATORIES: 1890.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., May 2, 1891.

The report of the number of inmates of juvenile reformatories in the United States, prepared by Rev. FRED. H. WINES, special agent of the Census Office for the collection of statistics relating to pauperism and crime, forms the present bulletin.

Four tables are presented, giving the details by states grouped in geographical divisions, the distribution separately of male and female inmates, and a table of comparisons and ratios.

The following summary is deduced from the statistics presented in the bulletin:

Total number of inmates in reformatories in 1890.....	14,846
Total number of inmates in reformatories in 1880.....	11,468
Increase in the decade	3,378
Number of males, white.....	9,998
Number of males, colored.....	1,537
Number of females, white	2,905
Number of females, colored.....	406
Total number of white persons.....	12,903
Total number of colored persons.....	1,943
Number of native born, white.....	11,078
Number of foreign born, white.....	1,405
Number with nativity unknown.....	420
Number of native-born white with parents native.....	3,245
Number of native-born white with parents foreign.....	3,965
Number of native-born white with one parent foreign.....	963
Number of native-born white, nativity of parents unknown.....	2,905

In the summary of colored persons given above are included 11 male Indians, 1 female Indian, and 1 male Chinese.

Robert T. Porter

Superintendent of Census.

INMATES OF JUVENILE REFORMATORIES: 1890.

BY FREDERICK HOWARD WINES.

The tables herewith submitted show the total number of inmates of juvenile reformatories in the United States in 1890 to be 14,846. The number reported in 1880 was 11,468, an increase of 3,378, or 29.46 per cent. The increase in the total population was 24.86 per cent. In 1880 the ratio of juvenile delinquents confined in reformatories to the population was 229 in each million; in 1890 it was 237; the increase, therefore, has been only 8 to the million. The largest increase has been in the North Central division, where it was 61 to the million. In the South Atlantic and Western divisions it was 24 to the million, but in the North Atlantic and South Central divisions there has been a relative decrease, in the former of 44 and in the latter of 10 to the million. In the South Central division there has been an absolute decrease of 28 in the number of inmates of this class of institutions. It is evident from these figures that the juvenile reformatory system is not growing rapidly, though its growth slightly exceeds that of the population at large.

Table I exhibits the distribution of juvenile delinquents in 1890 by states and territories and nativity and race.

It will be observed that there is no juvenile reformatory in Alabama, Alaska, Arizona, Arkansas, Florida, Georgia, Idaho, Indian territory, Mississippi, Montana, Nevada, New Mexico, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, or Wyoming. Generally speaking, there are juvenile reformatories in all the states of the North Atlantic division and in all but two of the North Central division, while there are but three states which have them in the South Atlantic division, two in the South Central, and two in the Western.

In respect to color, this table shows the number of inmates to be 12,903 white and 1,943 colored. Of the latter 1,930 were negroes, 1 Chinese, and 12 Indians. The negroes are divided into 1,418 of pure and 512 of mixed blood. But very little importance attaches to this distinction, since the classification is, without doubt, inexact.

The preponderance of white over colored, as compared with the population of the penitentiaries (see Bulletin No. 31), indicates that reformatories are regarded more as benevolent than as penal institutions.

While nearly four-fifths of the negro convicts were found in the South Atlantic and South Central divisions, more than three-fifths of the negro juvenile delinquents were found in the North Atlantic, North Central, and Western divisions. The Chinese boy was found in California. The Indians reported were distributed as follows: District of Columbia, 1; Iowa, 2; Massachusetts, 1; Michigan, 4; New Hampshire, 1; New York, 3.

In respect to nativity, not including the colored juvenile delinquents, who may all be supposed to be natives except the Chinese boy reported, of the 12,903 white juvenile delinquents 11,078 are native born, 1,405 foreign born, and the place of birth of 420 is unknown.

The native white juvenile delinquents are divided into four subclasses, as follows: 3,245 had both parents native; 963 had one parent native and one parent foreign born; 3,965 had both parents foreign born, and in 2,905 cases the birthplace of one or both parents is unknown. Of the juvenile delinquents with one parent foreign born, 380 had a foreign-born mother and 583 a foreign-born father. Leaving out of view the 2,905 whose parentage is unknown in whole or in part, there remain 8,173 cases in which the proportion of native to foreign blood can be estimated. If to the 3,245 native juvenile delinquents born of native parents is added one-half of the number with one parent foreign born, the sum is 3,726.5. If to the 3,965 native juvenile delinquents born of foreign parents is added

an equal amount, the sum is 4,446.5. But to the latter figure must also be added 1,405 foreign-born juvenile delinquents, which gives as a result 5,851.5. In other words (confining attention to the 9,578 cases in which both the nativity and the parentage of the inmates of reformatories are known), the foreign population of this country contributes, directly or indirectly, in the persons of the foreign born or of their immediate descendants 5,851.5 to the population of the juvenile reformatories, while the entire native population contributes only 3,726.5. The difference is 2,125, or more than twice as great as in the penitentiary population, where it is only 1,009.

In the bulletin on penitentiaries it was remarked that of the penitentiary convicts whose birthplace and parentage are known the foreign-born element, the colored element, and the native white element each furnished about one-third of all the inmates of our state prisons and penitentiaries; but in the juvenile reformatories the foreign population furnishes more than one-half, the native white population only about one-third, and the colored population about one-sixth.

In respect to sex, 11,535 juvenile delinquents are boys and 3,311 are girls. The percentage of girls is somewhat larger than it was ten years ago. It was then 19.27 of the total number, but now it is 22.30 per cent. There are a little more than five times as many girls in reformatories, in proportion, as there are women in penitentiaries.

The numerical order of the states, according to the number of inmates of juvenile reformatories in each of them, is as follows: New York, 3,675; Ohio, 1,529; Pennsylvania, 1,154; Maryland, 1,061; Massachusetts, 698; Michigan, 696; Indiana, 636; Connecticut, 626; New Jersey, 608; Wisconsin, 591; Iowa, 527; Illinois, 383; Missouri, 360; Minnesota, 284; Kentucky, 273; Rhode Island, 270; Nebraska, 237; Kansas, 208; California, 206; District of Columbia, 187; Maine, 169; Colorado, 149; New Hampshire, 102; Louisiana and Vermont (each), 86; Delaware, 45.

The order of the states, as will be observed, bears no relation to their order in respect to general population.

Following the table showing the distribution of juvenile delinquents in the aggregate by states and territories, Tables II and III show the distribution of each sex separately by institutions, and exhibit also the number of juvenile delinquents with a native father or a native mother, and the number of negroes, mulattoes, Chinese, and Indians in each institution. In these tables the states are arranged in alphabetical order.

Finally, the growth of the juvenile reformatories during the decade is shown in Table IV, in which the first and fourth columns represent the population of the United States according to the census of 1890 and that of 1880; the second and fifth columns show the number of inmates of reformatories for each state at each of the dates named, and the third and sixth columns exhibit the number of juvenile delinquents to one million of the population. The remaining columns show the increase or decrease, both absolute and relative, during the decade.

Preceding the tables named are summaries showing the distribution by geographical divisions.

SUMMARY OF INMATES OF JUVENILE REFORMATORIES OF THE UNITED STATES IN 1890, BY GROUPS.

GEOGRAPHICAL DIVISIONS.	Aggregate.	WHITE.								COLORED.
		Total.	Native.					Foreign born.	Nativity unknown.	
			Total.	Parents native.	One parent foreign.	Parents foreign.	Parents unknown.			
The United States.....	14,846	12,903	11,078	3,245	963	3,965	2,905	1,405	420	a1,943
North Atlantic.....	7,388	6,783	5,765	1,552	615	2,803	795	806	212	b605
South Atlantic.....	1,293	780	714	269	65	150	230	58	8	c513
North Central.....	5,461	4,785	4,082	1,266	252	860	1,704	506	197	d666
South Central.....	359	209	202	29	4	35	134	7	.....	150
Western.....	355	346	315	129	27	117	42	28	8	e9

a Includes 12 Indians and 1 Chinese.
b Includes 5 Indians.

c Includes 1 Indian.
d Includes 6 Indians.

e Includes 1 Chinese.

SUMMARY OF DISTRIBUTION OF MALE INMATES OF JUVENILE REFORMATORIES IN 1890.

GEOGRAPHICAL DIVISIONS.	Aggregate.	WHITE.							NEGROES.	
		Native.					Foreign born.	Nativity unknown.	Pure.	Mixed.
		Parents native.	Father native.	Mother native.	Parents foreign.	Parents unknown.				
The United States.....	11,535	2,508	274	447	3,192	2,214	1,129	234	1,120	a417
North Atlantic.....	5,702	1,221	195	265	2,192	656	642	89	332	b110
South Atlantic.....	1,115	249	20	42	140	186	57	7	241	c173
North Central.....	4,159	920	50	123	748	1,261	399	135	396	d127
South Central.....	298	29	1	3	30	79	6	.....	145	5
Western.....	261	89	8	14	82	32	25	3	6	e2

a Includes 11 Indians and 1 Chinese.

b Includes 5 Indians.

c Includes 1 Indian.

d Includes 1 Chinese.

SUMMARY OF DISTRIBUTION OF FEMALE INMATES OF JUVENILE REFORMATORIES IN 1890.

GEOGRAPHICAL DIVISIONS.	Aggregate.	WHITE.							NEGROES.	
		Native.					Foreign born.	Nativity unknown.	Pure.	Mixed.
		Parents native.	Father native.	Mother native.	Parents foreign.	Parents unknown.				
The United States.....	3,311	737	106	136	773	691	276	186	298	a108
North Atlantic.....	1,686	331	75	80	611	139	164	123	125	38
South Atlantic.....	178	20	.....	3	10	44	1	1	70	29
North Central.....	1,292	346	27	52	112	443	107	62	102	a41
South Central.....	61	.....	.....	.....	5	55	1	.....	.....	.....
Western.....	94	40	4	1	35	10	3	.....	1	.....

a Includes 1 Indian.

SUMMARY OF COMPARISONS AND RATIOS, BY GROUPS.

GEOGRAPHICAL DIVISIONS.	1890.			1880.			INCREASE.		DECREASE.	
	Population.	Inmates.	Ratio.	Population.	Inmates.	Ratio.	Absolute.	Relative.	Absolute.	Relative.
The United States.....	62,622,250	14,846	237	50,155,783	11,468	229	3,378	8	.....	.....
North Atlantic.....	17,401,545	7,388	425	14,507,407	6,805	469	583	.....	.....	44
South Atlantic.....	8,857,920	1,293	146	7,597,197	927	122	366	24	.....	.....
North Central.....	22,302,279	5,451	244	17,364,111	3,184	183	2,267	61	.....	.....
South Central.....	10,972,898	359	33	8,919,371	387	43	.....	.....	28	10
Western.....	3,027,613	355	117	1,767,697	165	93	190	24	.....	.....

TABLE I.—INMATES OF JUVENILE REFORMATORIES OF THE UNITED STATES IN 1890, BY STATES AND TERRITORIES, IN THE AGGREGATE, AND BY NATIVITY AND RACE.

STATES AND TERRITORIES.	Aggregate.	WHITE.								COLORED.
		Total.	Native.					Foreign born.	Nativity unknown.	
			Total.	Parents native.	One parent foreign.	Parents foreign.	Parents unknown.			
The United States.....	14,846	12,903	11,078	3,245	a963	3,965	b2,905	1,405	420	c1,943
North Atlantic division.....	7,388	6,783	5,765	1,552	615	2,803	795	806	212	d605
Maine.....	169	166	146	93	8	13	32	17	3	3
New Hampshire.....	102	98	83	30	8	30	15	15		e4
Vermont.....	86	80	74	50	7	11	6	4	2	6
Massachusetts.....	698	671	543	108	64	307	64	128		e27
Rhode Island.....	270	244	217	87	13	108	59	26	1	26
Connecticut.....	626	554	488	186	58	179	65	46	20	72
New York.....	3,675	3,519	2,900	532	404	1,610	414	400	159	f156
New Jersey.....	608	539	405	105	42	193	125	63	11	69
Pennsylvania.....	1,154	912	789	411	11	352	15	107	16	242
South Atlantic division.....	1,293	780	714	269	65	150	230	58	8	e113
Delaware.....	45	21	18	4	2	3	9	1	2	24
Maryland.....	1,061	691	631	215	57	138	221	54	6	370
District of Columbia.....	187	68	65	50	6	9		3		e119
Virginia.....										
West Virginia.....										
North Carolina.....										
South Carolina.....										
Georgia.....										
Florida.....										
North Central division.....	5,451	4,785	4,082	1,266	252	860	1,704	506	197	g666
Ohio.....	1,529	1,290	1,054	445	73	239	297	182	54	239
Indiana.....	636	528	504	217	28	38	221	14	10	108
Illinois.....	383	329	287	1		102	184	36	6	54
Michigan.....	696	651	580	93	44	71	322	82	39	h45
Wisconsin.....	591	580	468	146	40	177	105	79	33	11
Minnesota.....	284	274	206	83	22	52	99	59	9	10
Iowa.....	527	460	437	170	22	64	181	22	1	i67
Missouri.....	360	272	239	42	4	98	95	11	22	88
North Dakota.....										
South Dakota.....										
Nebraska.....	237	226	201	80	17	15	89	15	10	11
Kansas.....	208	175	156	39	2	4	111	6	13	33
South Central division.....	359	209	202	29	4	35	134	7		150
Kentucky.....	273	190	184	21	3	30	130	6		83
Tennessee.....										
Alabama.....										
Mississippi.....										
Louisiana.....	86	19	18	8	1	5	4	1		67
Texas.....										
Indian territory.....										
Oklahoma.....										
Arkansas.....										
Western division.....	355	346	315	129	27	117	42	28	3	j9
Montana.....										
Wyoming.....										
Colorado.....	149	143	126	72	7	43	4	14	3	6
New Mexico.....										
Arizona.....										
Utah.....										
Nevada.....										
Idaho.....										
Alaska.....										
Washington.....										
Oregon.....										
California.....	206	203	189	57	20	74	38	14		j3

a Includes 380 inmates with a native father and foreign-born mother and 583 inmates with a native mother and foreign-born father.

b All white, and all natives of the United States.

c As reported by the enumerators, includes 1,418 pure negroes, 512 mulattoes or negroes of mixed blood, 12 Indians, and 1 Chinese.

d Includes 5 Indians.

g Includes 6 Indians.

i Includes 2 Indians.

e Includes 1 Indian.

h Includes 4 Indians.

j Includes 1 Chinese.

f Includes 3 Indians.

TABLE II.—MALE INMATES OF JUVENILE REFORMATORIES OF THE UNITED STATES IN 1890, BY STATES AND TERRITORIES, IN THE AGGREGATE, AND BY NATIVITY AND RACE.

STATES AND TERRITORIES.	Location.	Aggregate.	WHITE.							NEGROES.	
			Native.					Foreign born.	Nativity un-known.	Pure.	Mixed.
			Parents native.	Father native.	Mother native.	Parents foreign.	Parents un-known.				
The United States.....		11,535	2,508	274	447	3,192	2,214	1,129	234	1,120	a17
CALIFORNIA:											
City and County Industrial School.....	San Francisco	116	18	8	7	40	28	12		2	b1
COLORADO:											
State Industrial School.....	Golden.....	145	71		7	42	4	13	3	4	1
CONNECTICUT:											
State Reform School.....	West Meriden	410	187	13	34	142	6	34	1	9	34
DELAWARE:											
Ferris Industrial School.....	Wilmington...	45	4	1	1	3	9	1	2	22	2
DISTRICT OF COLUMBIA:											
Reform School.....	Washington...	187	50	3	3	9		3		36	c3
ILLINOIS:											
State Reform School.....	Pontiac.....	383	1			102	134	36	6	54	
INDIANA:											
Reform School for Boys.....	Plainfield.....	471	179	2	22	35	126	12	1	86	8
IOWA:											
Industrial School.....	Eldora.....	392	99	4	12	38	172	15	1	48	c3
KANSAS:											
State Reform School.....	North Topeka	173	30	1		4	92	5	9	27	5
KENTUCKY:											
Industrial School of Reform.....	Louisville.....	212	21		3	25	75	5		83	
LOUISIANA:											
Boys' House of Refuge.....	New Orleans...	86	8	1		5	4	1		62	5
MAINE:											
State Reform School.....	Portland.....	115	46	3	5	13	32	10	3	3	
MARYLAND:											
House of Refuge.....	Baltimore.....	223	93	5	9	21	74	16	5		
House of Reformation for Colored Boys.	Cheltenham	271								133	88
Saint Mary's Industrial School for Boys.	Carroll.....	389	102	11	29	107	103	37			
MASSACHUSETTS:											
Lyman School for Boys.....	Westborough.	194	34	11	15	70	33	24		2	c5
House of Reformation.....	Deer Island...	98	15	2	8	54	3	14		2	
Industrial School.....	Lawrence.....	32	3			9	20				
Plummer Farm School.....	Salem.....	23	14	1	1	9		3			
Truant Reform School.....	Worcester.....	16	3	2	1	7	1	1			1
House of Employment and Reformation of Juvenile Offenders.	Lowell.....	58	8	4	1	24		20		1	
Truant School.....	Springfield	20	4			16					
Truant School.....	Deer Island...	114	17	7	7	64	1	14		4	
MICHIGAN:											
State Reform School.....	Lansing.....	466	51	5	15	50	227	55	32	27	d4
MINNESOTA:											
State Reform School.....	Saint Paul.....	253	30	6	12	51	88	57	7	4	3
MISSOURI:											
Reform School for Boys.....	Boonville.....	95					60	2	19	14	
House of Refuge.....	Saint Louis...	184	34	2	1	95	1	5	1	28	17
NEBRASKA:											
State Industrial School.....	Kearney.....	166	55	3	9	13	63	8	8	7	
NEW HAMPSHIRE:											
State Reform School.....	Manchester...	90	25	3	4	27	12	15		1	e3
NEW JERSEY:											
State Reform School.....	Jamesburg...	361	60	8	10	86	110	34	4	49	
Newark City Home.....	Verona.....	166	29	7	12	83	2	24	2	5	2
NEW YORK:											
State Industrial School.....	Rochester.....	623	171	11	25	98	169	75	35	16	e23
House of Refuge.....	New York.....	489	34	9	11	138	154	49	27	67	
New York Catholic Protectory, male department.	Westchester	1,506	201	103	118	331	51	190	10		2
City Truant Home.....	Brooklyn.....	175	42	4	4	102		16		3	e4
OHIO:											
Boys' Industrial School.....	Lancaster.....	585	215	9	24	56	129	24	13	62	48
House of Refuge.....	Cincinnati	220	25	4	7	50	59	10	18	30	17
Workhouse and House of Refuge and Correction.	Cleveland.....	321	87	3	9	89		110		9	14
PENNSYLVANIA:											
Reform School.....	Morganza.....	366	183			92		42	1	47	1
House of Refuge.....	Philadelphia.	533	123		3	216	6	51	3	96	35
RHODE ISLAND:											
Sockanosset School for Boys.....	Howard.....	235	32	4	2	101	50	23	1	22	
VERMONT:											
Reform School.....	Vergennes.....	73	40	3	4	10	6	3	2	5	
WISCONSIN:											
Industrial School for Boys.....	Waukesha.....	415	111	11	12	163	50	59	2		7
Industrial School for Girls.....	Milwaukee...	30	3			2	10	1	13		1

a Includes 11 Indians and 1 Chinese.
b Chinese.

c Includes 1 Indian.
d Indians.

e Includes 2 Indians.

TABLE III.—FEMALE INMATES OF JUVENILE REFORMATORIES OF THE UNITED STATES IN 1890, BY STATES AND TERRITORIES, IN THE AGGREGATE, AND BY NATIVITY AND RACE.

STATES AND TERRITORIES.	Location.	Aggre- gate.	WHITE.							NEGROES.	
			Native.					Foreign born.	Nativity un- known.	Pure.	Mixed.
			Parents native.	Father native.	Mother native.	Parents foreign.	Parents un- known.				
The United States.....		3,311	737	106	136	773	691	276	186	298	a108
CALIFORNIA:											
Industrial School.....	San Francisco.	90	39	4	1	34	10	2			
COLORADO:											
State Industrial School.....	Golden.....	4	1			1		1		1	
CONNECTICUT:											
Industrial School for Girls.....	Middletown.....	216	40	7	4	37	59	12	19	15	14
INDIANA:											
Reform School for Girls and Women's Prison.	Indianapolis.....	165	38	2	2	3	95	2	9	14	
IOWA:											
Industrial School, girls' department.....	Mitchellville.....	135	71	3	3	26	9	7		15	b1
KANSAS:											
State Industrial School for Girls.....	Beloit.....	35	9	1			19	1	4		1
KENTUCKY:											
Industrial School of Reform.....	Louisville.....	61				5	55	1			
MAINE:											
Industrial School for Girls.....	Hallowell.....	54	47					7			
MARYLAND:											
Female House of Refuge.....	Baltimore.....	79	20		3	10	44	1	1		
Industrial Home for Colored Girls.....	Melvale.....	99								70	29
MASSACHUSETTS:											
House of Reformation.....	Deer Island.....	1				1					
Industrial School for Girls.....	Lancaster.....	97	9	1	3	49	6	17		9	3
House of Employment and Reformation of Juvenile Offenders.	Lowell.....	40	1			4		35			
MICHIGAN:											
State Industrial School for Girls.....	Adrian.....	230	42	8	16	21	95	27	7	6	8
MINNESOTA:											
State Reform School.....	Saint Paul.....	26	3	2	2	1	11	2	2	1	2
MISSOURI:											
State Industrial School for Girls.....	Chillicothe.....	9	5				4				
House of Refuge.....	Saint Louis.....	72	3	1		3	30	4	2	11	18
NEBRASKA:											
State Industrial School.....	Kearney.....	71	25	2	3	2	26	7	2	4	
NEW HAMPSHIRE:											
State Reform School.....	Manchester.....	12	5	1		3	3				
NEW JERSEY:											
State Industrial School for Girls.....	Trenton.....	50	8		3	7	12	5	5	6	4
Newark City Home.....	Verona.....	31	8		2	17	1			3	
NEW YORK:											
State Industrial School.....	Rochester.....	127	7			7	15		85	5	8
House of Refuge.....	New York.....	77	7	2	2	6	25	5	2	28	
New York Catholic Protectory, female department.	Westchester.....	678	70	60	55	428		65			
OHIO:											
House of Refuge.....	Cincinnati.....	77	8		5	4	15	3	13	22	7
Workhouse and House of Refuge and Correction.	Cleveland.....	45	7	2		11		22		1	2
Girls' Industrial Home.....	Delaware.....	281	103	1	9	29	94	13	5	27	
PENNSYLVANIA:											
Reform School.....	Morganza.....	109	57			20	1	8	4	19	
House of Refuge.....	Philadelphia.....	146	48	2	6	24	8	6	8	35	9
RHODE ISLAND:											
Oaklawn School for Girls.....	Howard.....	35	5	2	5	7	9	3		4	
VERMONT:											
Reform School.....	Vergennes.....	13	10			1		1		1	
WISCONSIN:											
Industrial School for Girls.....	Milwaukee.....	146	32	5	12	12	45	19	18	1	2

a Includes 1 Indian.

b Indian.

TABLE IV.—COMPARISON OF INMATES OF JUVENILE REFORMATORIES IN 1890 AND 1880, BY STATES AND TERRITORIES.

STATES AND TERRITORIES.	1890.			1880.			INCREASE.		DECREASE.	
	Population.	Inmates.	Ratio.	Population.	Inmates.	Ratio.	Absolute.	Relative.	Absolute.	Relative.
The United States.....	62,622,250	14,846	237	50,155,783	11,468	229	3,378	8		
North Atlantic division.....	17,401,545	7,388	425	14,507,407	6,805	469	583			44
Maine.....	661,086	169	256	648,936	116	179		77		
New Hampshire.....	376,530	102	271	346,991	111	320	53		9	49
Vermont.....	332,422	86	259	332,286	149	448			63	189
Massachusetts.....	2,238,943	698	312	1,783,085	726	407			28	95
Rhode Island.....	345,506	270	731	276,531	180	651		130		
Connecticut.....	746,258	626	839	622,700	429	689	90	150		
New York.....	5,997,853	3,675	613	5,082,371	3,842	756	197			
New Jersey.....	1,444,933	608	421	1,131,116	438	387	170	34	167	143
Pennsylvania.....	5,252,014	1,154	219	4,282,891	814	180	340	29		
South Atlantic division.....	8,857,920	1,293	146	7,597,197	927	122	366	24		
Delaware.....	168,493	45	267	146,608			45			
Maryland.....	1,042,390	1,061	1,018	934,943	759	812	302	206		
District of Columbia.....	230,392	187	812	177,624	168	946	19			134
Virginia.....	1,658,980			1,512,565						
West Virginia.....	762,794			618,457						
North Carolina.....	1,617,947			1,399,750						
South Carolina.....	1,151,149			995,577						
Georgia.....	1,837,353			1,542,180						
Florida.....	391,422			269,493						
North Central division.....	22,362,279	5,451	244	17,364,111	3,184	183	2,267	61		
Ohio.....	3,672,316	1,529	416	3,198,062	1,051	329	478	87		
Indiana.....	2,192,404	636	290	1,978,301	463	234	173	56		
Illinois.....	3,826,351	883	100	3,077,871	217	71	166	29		
Michigan.....	2,093,889	696	332	1,636,937	314	192	382	140		
Wisconsin.....	1,686,880	591	350	1,315,497	523	398	68			48
Minnesota.....	1,301,826	284	218	780,773	112	143	172	75		
Iowa.....	1,911,896	527	276	1,624,615	257	158	270	118		
Missouri.....	2,679,184	360	134	2,168,380	247	114	113	20		
North Dakota.....	182,719			86,909						
South Dakota.....	328,308			98,268						
Nebraska.....	1,058,910	237	224	452,402			237			
Kansas.....	1,427,096	208	146	996,096			208			
South Central division.....	10,972,893	359	33	8,919,371	387	43			28	10
Kentucky.....	1,858,635	273	147	1,648,690	223	135	50	12		
Tennessee.....	1,767,518			1,542,359	12				12	
Alabama.....	1,513,017			1,262,505						
Mississippi.....	1,289,600			1,131,597						
Louisiana.....	1,118,557	86	77	939,946	144	153			58	76
Texas.....	2,233,523			1,591,749	8				8	
Indian territory.....										
Oklahoma.....	61,834									
Arkansas.....	1,128,179			802,525						
Western division.....	3,027,613	355	117	1,767,697	165	93	190	24		
Montana.....	132,159			39,159						
Wyoming.....	60,705			20,789						
Colorado.....	412,198	149	361	194,327			149			
New Mexico.....	153,593			119,565						
Arizona.....	59,620			40,440						
Utah.....	207,905			143,963						
Nevada.....	45,761			62,266						
Idaho.....	84,385			32,610						
Alaska.....										
Washington.....	349,390			75,116						
Oregon.....	313,767			174,768						
California.....	1,208,130	206	171	864,694	165	191	41			20

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CENSUS BULLETIN.

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MINES AND MINING.—SANDSTONE.

DEPARTMENT OF THE INTERIOR,
CENSUS OFFICE,
WASHINGTON, D. C., May 25, 1891.

The following bulletin in relation to the sandstone industry was prepared by Dr. WILLIAM C. DAY, special agent, under the supervision of Dr. DAVID T. DAY, special agent in charge of the Division of Mines and Mining of the Census Office.

The amount of sandstone produced in the United States in 1889 was 71,571,054 cubic feet, valued at \$10,816,057, while for 1880 the value was only \$4,780,391, an increase during the decade of \$6,035,666 or 126.26 per cent. There were 16,925 workmen employed, to whom were paid in wages \$6,257,580. The total expense of producing sandstone in 1889 was \$8,130,295, and the total capital invested \$17,776,467, of which \$11,501,100 was invested in land.

The Tenth Census report included the bluestone of New York, New Jersey, and Pennsylvania with sandstone, but in the present report a separate bulletin on the production of these states has been issued, on account of the difference of the practical applications of the stones named, although the combination is scientifically correct.



Superintendent of Census.

THE SANDSTONE INDUSTRY OF THE UNITED STATES.

BY WILLIAM C. DAY.

The name "sandstone" is applied to stone which has been formed by sedimentary deposit from water of granules which have resulted from the disintegration of older rocks by various kinds of dynamic action, weathering, and erosion. Naturally therefore grains of quartz, the hardest essential component of the older rocks, are vastly more abundant in sandstone than all other minerals; indeed, most sandstones are almost entirely made up of particles of quartz. Other minerals, however, occur. Various varieties of feldspar and mica are frequently found, while small amounts of still other minerals are occasionally observed, but there is by no means the variety which characterizes the constitution of granitic and volcanic rocks.

The size of the granules composing sandstone is quite variable, giving rise to the distinction between the fine and coarse grained varieties.

The granules constituting sandstone are usually held together by some cementing material, and the nature of the latter is an all-important consideration bearing upon the strength, durability, and beauty of the stone, and, consequently, upon its value as a structural material. Some sandstones are apparently without this cementing or binding material, and are particularly desirable as abrasive material, although they may also form good building stone.

Lithologically considered, the different kinds of sandstone are classed with reference to the cementing material rather than to the mineralogical nature of the component granules. Argillaceous sandstone is one in which the cementing material is clay, and in cases where the clay has not been subjected to metamorphic action such stone is subject to disintegration under the influences of weather.

In calcareous sandstone the cementing material is calcium carbonate, and when the latter is present in great excess the stone is called siliceous limestone. Limestone being readily acted upon by acids, disintegration may easily result from atmospheric agencies.

Ferruginous sandstone is one in which the cementing material consists of oxides of iron, which determine the color of the stone when it is pink, red, brown, or shades intermediate between those named.

Siliceous sandstone is that in which the cementing material is silica, so that the rock consists of almost pure silica. Such stone is usually hard, durable, capable of withstanding great crushing strength, and is not subject to alteration in color, and as a consequence of its extreme hardness it is naturally difficult to work. This kind grades into quartzite, which has been hardened by heat and pressure.

Freestone is a name of popular origin, and is applied to such sandstones as work well in any direction. The terms "arkose," "conglomerate," and "breccia" are names which have special reference to the character of the granules present. Arkose is composed of the constituents of granitic rocks which have been disintegrated and reconsolidated into sandstone, and conglomerate is a sandstone in which the granules are rounded pebbles instead of small grains. When these fragments are angular instead of rounded it is called breccia.

The terms "quartzose," "feldspathic," and "micaceous" sandstone refer to the presence of the minerals implied by these names.

NOTE.—Acknowledgments are due to Mr. J. H. Humphries, special agent, for his valuable aid in the tabulation of the statistics herein presented.

The following table of analyses of sandstone from a number of localities will serve to indicate its general composition:

ANALYSES OF SANDSTONE.

KINDS OF STONE.	Locality.	Silica.	Alumina.	Iron oxides.	Manga- nese oxide.	Lime.	Magne- sia.	Potash.	Soda.	Carbonic acid, water, and loss.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	
1 Manyard.....	East Longmeadow, Massachu- setts.	79.38	8.75	2.43	.....	2.57	.....	4.08		2.79
2 Worcester.....	East Longmeadow, Massachu- setts.	88.89	5.95	1.79	0.41	0.27	.....	0.86		1.83
3 Kibbie quartz ..	East Longmeadow, Massachu- setts.	81.38	9.44	3.54	0.11	0.76	0.28	.....		4.49
4 Brownstone	Portland, Connecticut	69.94	13.15	2.48	0.70	3.09	Trace.	3.30	5.43	1.01
5 Sandstone	Stony Point, Michigan	84.57	5.90	6.48	.....	.....	0.68	Undetermined.		1.92
6 Quartzite.....	Pipestone, Minnesota.....	84.52	12.33	2.12	.....	0.31	Trace.	0.11	0.34	2.31
7 Buff	Amherst, Ohio.....	97.00	.....	1.00	.....	1.15	.....	0.64		0.21
8 Berea.....	Berea, Ohio.....	96.90	.....	1.68	.....	0.55	.....	0.55		0.32
9 Euclid bluestone	Euclid county, Ohio.....	95.00	2.50	1.00	.....	.....	.....	.....		1.50
10 Columbia.....	Columbia, Ohio.....	96.50	.....	.....	.....	1.00	.....	0.50		2.00
11 Red	Laurel Run, Pennsylvania.....	94.00	Trace.	1.90	.....	1.10	1.00	.....		1.92
12 Elyria.....	Grafton, Ohio.....	87.66	1.72	3.52	.....	0.17	0.20	.....		2.03
13 Sandstone.....	Fond du Lac, Minnesota.....	78.24	10.88	3.83	.....	0.95	1.60	1.67	0.06	.....

AUTHORITIES FOR ANALYSES.—Nos. 1 and 2, Leonard P. Ktunicutt, Ph. D.; No. 3, C. F. Chambers, Ph. D.; No. 4, F. W. Taylor; No. 5, F. W. Clarke, United States Geological Survey, Bulletin No. 27; No. 6, Geology of Minnesota, vol. 1; No. 7, J. H. Salesbury; No. 8, John Eisenmann; No. 11, A. A. Breniman; No. 12, F. F. Jewett; No. 13, N. H. Winchell, Geology of Minnesota, vol. 1.

The commercial names of sandstone are usually found by reference to the places at which they are quarried, as Portland brownstone, Berea grit, etc.

In connection with this report it should be carefully noted that the stone commercially known as bluestone, in so far as it comes from certain sections of the states of New York, New Jersey, and Pennsylvania, is not included here, but is specially treated in another report under the title of "Bluestone." The Tenth Census report included bluestone with sandstone from the above-named states, which is scientifically correct, but the difference in the practical applications of bluestone from the states named and the other kinds of sandstone is so well defined commercially that it was thought best to separate bluestone and treat of it in a report by itself.

The table following shows the relative standing of productive states according to the Tenth and Eleventh Censuses. The states are arranged in the order of value of output. It is evident from this that, while eighteen states only were productive in 1850, the number has now reached forty. Ohio holds first place in both columns. At the Tenth Census New York held second place, but it must be remembered that bluestone is included in the figures given for value of output. At the present time New York holds fifth place, and the apparent decline is due to the exclusion of bluestone. According to the Eleventh Census Colorado holds third place, while ten years ago it held sixteenth place among the productive states. The vast increase in the sandstone production of this state, namely, from \$9,000 to \$1,224,098, is due largely to the operations of the Union Pacific Railway Company. This company is not only one of the most extensive producing concerns, but the facilities for shipment which they afford to other large producers account in a great measure for the striking increase in production. Enormous shipments of sandstone are now made from Colorado to remote parts of the United States, and the business is in a most flourishing condition. Another notable change is the appearance of California as a productive state, holding eleventh place. This state does not appear among the eighteen states of the Tenth Census.

COMPARISON OF VALUE OF OUTPUT OF SANDSTONE AT THE TENTH AND ELEVENTH CENSUSES.

Rank.	TENTH CENSUS, INCLUDING BLUESTONE.		Rank.	ELEVENTH CENSUS, NOT INCLUDING BLUESTONE.	
	States and territories.	Value of output.		States and territories.	Value of output.
	Total	\$4,780,391		Total	\$10,816,057
1	Ohio	1,871,924	1	Ohio	3,046,656
2	New York	724,556	2	Pennsylvania	1,609,159
3	Connecticut	680,200	3	Colorado	1,224,098
4	Pennsylvania	627,943	4	Connecticut	920,061
5	New Jersey	400,420	5	New York	702,419
6	Massachusetts	144,294	6	Massachusetts	619,097
7	Missouri	81,960	7	New Jersey	597,309
8	Michigan	53,080	8	Michigan	246,570
9	Minnesota	41,150	9	New Mexico	186,804
10	Indiana	40,400	10	Wisconsin	183,958
11	Wisconsin	37,745	11	California	175,598
12	Illinois	21,830	12	Missouri	155,557
13	West Virginia	16,689	13	Kansas	149,289
14	South Dakota	12,000	14	West Virginia	140,687
15	Kansas	11,000	15	Minnesota	131,979
16	Colorado	9,000	16	Kentucky	117,940
17	Iowa	4,200	17	South Dakota	93,570
18	Washington	2,000 ^a	18	Iowa	80,251
			19	Washington	75,936
			20	Utah	48,306
			21	Indiana	43,983
			22	Alabama	43,965
			23	Montana	31,648
			24	Arkansas	25,074
			25	Illinois	17,806
			26	Wyoming	16,760
			27	Texas	14,651
			28	North Carolina	12,000
			29	Virginia	11,500
			30	Maryland	10,605
			31	Arizona	9,146
			32	Oregon	8,424
			33	New Hampshire	3,750
			34	Tennessee	2,722
			35	Idaho	2,490
				Other states (a)	26,199

^a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

It is evident that the increase in production during the last ten years amounted to \$6,035,666, or 126.26 per cent. The eighteen states which were productive in both census years produced sandstone in 1889 to the value of \$10,068,475, or 93.09 per cent of the entire product, not, however, including bluestone. The twenty-two new states produced to the value of \$747,582 in 1889, or 6.91 per cent of the total amount. It is thus apparent that, although the number of states producing sandstone is now more than twice as great as in 1880, nearly the entire output comes from the same states that were productive ten years ago.

The table following shows the comparison of these eighteen states in detail, and also gives the percentage of increase or decrease for each.

COMPARISON OF STATES PRODUCTIVE IN 1880 AND 1889.

Rank in Tenth Census.	STATES.	Value of output at Tenth Census.	Value of output at Eleventh Census.	Per cent increase.	Rank in Eleventh Census.
	Total	\$4,780,391	\$10,068,475	110.62	
1	Ohio	1,871,924	3,046,656	62.76	1
2	New York	724,556	702,419	α3.06	5
3	Connecticut	680,200	920,061	35.26	4
4	Pennsylvania	627,943	1,609,159	156.26	2
5	New Jersey	400,420	597,309	49.17	7
6	Massachusetts	144,294	649,097	349.84	6
7	Missouri	81,960	155,557	89.80	12
8	Michigan	53,080	246,570	364.53	8
9	Minnesota	41,150	131,979	220.73	15
10	Indiana	40,400	43,983	8.87	21
11	Wisconsin	37,745	183,958	387.37	10
12	Illinois	21,830	17,896	α18.02	25
13	West Virginia	16,680	140,687	742.99	14
14	South Dakota	12,000	98,570	679.75	17
15	Kansas	11,000	149,289	1,257.17	13
16	Colorado	9,000	1,224,098	13,501.09	3
17	Iowa	4,200	80,251	1,810.74	18
18	Washington	2,000	75,936	3,696.80	19

α Decrease.

The following table shows the amount yielded by states and territories not productive in 1880:

ELEVENTH CENSUS STATES AND TERRITORIES NOT REPRESENTED IN TENTH CENSUS.

Rank.	STATES AND TERRITORIES.	Value.	Rank.	STATES AND TERRITORIES.	Value.
	Total	\$747,582	28	North Carolina	\$12,000
9	New Mexico	186,804	29	Virginia	11,500
11	California	175,598	30	Maryland	10,605
16	Kentucky	117,940	31	Arizona	9,146
20	Utah	48,306	32	Oregon	8,424
22	Alabama	43,965	33	New Hampshire	3,750
23	Montana	31,648	34	Tennessee	2,722
24	Arkansas	25,074	35	Idaho	2,490
26	Wyoming	16,760		Other states (α)	26,199
27	Texas	14,651			

α The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

The following table shows for both census years the geographical distribution of sandstone. The states and territories included in the various divisions are as follows:

NORTH ATLANTIC DIVISION.—New Hampshire, Massachusetts, Connecticut, New Jersey, Vermont, Rhode Island, New York, Pennsylvania.

SOUTH ATLANTIC DIVISION.—Maryland, West Virginia, Florida, Georgia, Virginia, North Carolina.

NORTH CENTRAL DIVISION.—Ohio, Illinois, Wisconsin, Iowa, South Dakota, Indiana, Michigan, Minnesota, Missouri, Kansas.

SOUTH CENTRAL DIVISION.—Kentucky, Alabama, Arkansas, Tennessee, Texas.

WESTERN DIVISION.—Montana, Colorado, Arizona, Nevada, Washington, California, Wyoming, New Mexico, Utah, Idaho, Oregon.

COMPARISON OF TENTH AND ELEVENTH CENSUSES BY DIVISIONS AND VALUES.

DIVISIONS.	Eleventh Census.	Tenth Census.	Increase.	Per cent increase.
Total	\$10,816,057	\$4,780,301	\$6,035,666	126.26
North Atlantic	4,504,165	2,577,413	1,926,752	74.76
South Atlantic	176,292	16,689	159,603	956.34
North Central	4,149,709	2,175,289	1,974,420	90.77
South Central	204,352	.....	204,352	.....
Western	1,781,539	11,000	1,770,539	16,095.81

It is evident that in both censuses the North Atlantic division was the most productive, the North Central division following closely in value of production. The Western division stands third for the Eleventh Census, with a product amounting to \$1,781,539, while the third position for the Tenth Census is occupied by the South Atlantic division. Fourth place for the Eleventh Census is filled by the South Central division, in which at the Tenth Census no sandstone was produced. Fifth place for the Eleventh Census is occupied by the South Atlantic division, which produced only a small amount ten years ago. The great bulk of the sandstone production comes, therefore, at present from the North Atlantic and North Central divisions, the South Atlantic and the South Central producing very little in comparison, while the Western division shows the enormous increase in ten years from \$11,000 to \$1,781,539.

The following table, the states and territories being arranged in alphabetical order, gives all totals relative to the sandstone output for the calendar year 1889. From the grand total for the United States it appears that 71,571,054 cubic feet of sandstone, having a total value of \$10,816,057, were produced by 16,925 workmen from 803 quarries. To this number of men \$6,257,580 were paid in wages. The total expense of producing the entire amount of sandstone is \$8,130,295, thus indicating a profit to the producers of \$2,685,762. The total capital invested is \$17,776,467, of which \$11,501,100 is invested in land.

PRODUCTION OF SANDSTONE IN THE UNITED STATES IN 1889, BY STATES AND TERRITORIES.

STATES AND TERRITORIES.	No. of quarries.	PRODUCTION.		LABOR.							POWER.			
		Cubic feet.	Value.	Foremen.	Quarrymen.	Mechanics and stone-cutters.	Laborers.	Boys under sixteen years.	Office force.	Total employed.	No. of boilers.	Total horse power of boilers.	No. of animals.	Other power.
Total.....	803	71,571,054	\$10,816,057	782	7,746	1,983	5,912	250	252	16,925	553	15,182	2,851	165
Alabama.....	5	610,026	43,965	5	53	9	54	5	1	127				9
Arizona.....	2	127,907	9,146	1	10		10			13				3
Arkansas.....	8	210,010	25,074	3	24	9	14			50	1	12		8
California.....	15	333,209	175,598	10	114	31	64	2	1	232	2	20		33
Colorado.....	71	6,570,529	1,224,098	90	834	187	313	8	33	1,485	21	535		298
Connecticut.....	13	2,821,430	920,061	45	814	58	150	5	20	1,092	66	2,111		294
Idaho.....	2	23,710	2,490		3		2			5				4
Illinois.....	10	141,605	17,896	4	33	1	8			46	2	24		14
Indiana.....	11	334,441	43,983	12	71	25	67	11	2	188	7	113		35
Iowa.....	11	404,350	80,251	8	41	21	63	3	6	142	4	130		18
Kansas.....	17	680,289	149,289	11	159	57	88	4	10	320	4	88		84
Kentucky.....	11	888,738	117,940	15	126	43	105	11	2	302	10	102		39
Maryland.....	4	508,325	10,605	2	39					43	1	50		8
Massachusetts.....	21	1,967,179	649,097	28	358	161	347	2	10	906	33	782		289
Michigan.....	6	658,318	246,570	9	132	31	166	5	2	345	11	320		24
Minnesota.....	7	4,156,224	131,979	10	151	16	22	5	1	205	6	139		15
Missouri.....	17	734,370	155,537	12	80	17	77	3	3	192	15	282		36
Montana.....	6	614,740	31,648	6	57	1	2			69	2	26		24
New Hampshire.....	2	21,665	3,750	2	9	1				13	2	30		4
New Jersey.....	26	6,010,212	597,309	38	299	130	378	11	10	866	24	569		191
New Mexico.....	11	588,048	186,804	11	217	47	87	11	4	377	3	82		98
New York.....	63	4,878,365	702,419	58	568	183	738	10	12	1,569	30	470		302
North Carolina.....	2	50,000	12,000	1	4	2	40	5	1	53	4	100		3
Ohio.....	192	16,016,258	3,046,656	187	1,660	506	1,610	54	78	4,095	231	7,310		400
Oregon.....	2	50,000	8,424		5		2			7	1	15		6
Pennsylvania.....	150	17,414,875	1,609,159	140	1,262	337	1,102	66	25	2,932	44	1,167		376
South Dakota.....	12	341,875	93,570	9	64	18	43		6	140	2	54		36
Tennessee.....	4	53,978	2,722	2	22	2	4	1	2	33	1	30		2
Texas.....	7	180,591	14,651	3	16	4	19			42				12
Utah.....	7	145,726	48,306	6	28	1	25		1	61	3	40		10
Virginia.....	3	70,800	11,500	3	20	5	8	1		37				17
Washington.....	5	540,039	75,936	6	57	10	29	1	2	105	3	89		2
West Virginia.....	27	964,263	140,687	23	136	28	133	13	4	337	5	162		20
Wisconsin.....	32	1,146,736	183,958	15	199	39	103	5	12	373	14	260		48
Wyoming.....	7	197,775	16,760	5	32	1	28	2	1	69	1	10		44
Other states (a).....	5	1,079,448	26,199	2	29	2	19	1	2	55				45

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

PRODUCTION OF SANDSTONE IN THE UNITED STATES IN 1889, BY STATES AND TERRITORIES—CONTINUED.

STATES AND TERRITORIES.	EXPENSES.				CAPITAL.				
	Total wages.	Cost of supplies.	All other expenses.	Total expenses.	Land.	Buildings and fixtures.	Tools, live stock, machinery, and supplies.	Cash.	Total capital.
Total	\$6, 257, 580	\$1, 277, 004	\$595, 711	\$8, 130, 295	\$11, 501, 100	\$1, 492, 850	\$3, 044, 557	\$1, 737, 960	\$17, 776, 467
Alabama.....	41, 562	5, 600	1, 425	48, 587	8, 000	1, 535	3, 800	5, 200	18, 535
Arizona.....	2, 542	1, 200	.....	3, 742	19, 400	350	15, 250	.....	35, 000
Arkansas.....	11, 287	1, 122	451	12, 860	9, 750	2, 200	2, 510	3, 200	17, 660
California.....	122, 847	16, 729	7, 688	147, 264	278, 000	33, 600	49, 150	40, 200	400, 950
Colorado.....	772, 158	76, 831	53, 779	902, 768	1, 507, 255	100, 300	220, 860	181, 069	2, 009, 484
Connecticut.....	528, 089	127, 402	55, 281	710, 772	1, 190, 606	234, 992	292, 398	178, 961	1, 896, 957
Idaho.....	1, 350	75	515	1, 940	6, 200	3, 500	550	.....	10, 250
Illinois.....	8, 937	977	894	10, 808	33, 450	1, 900	5, 625	8, 425	49, 400
Indiana.....	37, 387	4, 663	1, 182	43, 232	113, 700	7, 400	40, 925	7, 200	169, 225
Iowa.....	56, 714	11, 387	2, 913	71, 014	86, 870	6, 115	71, 710	13, 760	178, 455
Kansas.....	105, 507	8, 855	3, 232	117, 594	194, 510	18, 025	32, 600	79, 000	324, 135
Kentucky.....	62, 745	14, 223	9, 134	86, 102	90, 468	12, 822	41, 200	52, 000	196, 580
Maryland.....	7, 749	410	1, 112	9, 271	27, 480	1, 700	7, 770	4, 050	41, 000
Massachusetts.....	414, 282	51, 051	44, 316	509, 649	130, 550	37, 170	126, 851	79, 291	373, 862
Michigan.....	102, 094	11, 529	14, 339	127, 962	215, 402	104, 025	177, 500	112, 950	609, 877
Minnesota.....	74, 110	23, 301	5, 696	103, 107	323, 000	16, 590	52, 900	9, 600	407, 090
Missouri.....	69, 549	8, 806	81, 773	201, 100	201, 100	14, 150	57, 480	25, 650	298, 380
Montana.....	27, 881	3, 473	100	31, 454	46, 300	6, 650	9, 450	8, 000	70, 400
New Hampshire.....	3, 138	403	80	3, 621	15, 300	2, 500	4, 010	500	22, 310
New Jersey.....	380, 767	48, 012	23, 878	452, 657	488, 650	45, 075	127, 313	132, 077	793, 115
New Mexico.....	122, 730	14, 750	1, 829	139, 309	366, 400	24, 022	21, 605	9, 473	421, 500
New York.....	522, 702	39, 017	9, 662	571, 381	567, 880	69, 155	153, 522	88, 823	879, 350
North Carolina.....	7, 500	2, 000	100	9, 600	40, 000	5, 000	25, 000	.....	70, 000
Ohio.....	1, 450, 266	585, 635	241, 834	2, 277, 735	3, 455, 499	372, 045	869, 686	373, 430	5, 075, 660
Oregon.....	3, 600	500	300	4, 400	50, 000	.....	2, 000	.....	53, 000
Pennsylvania.....	943, 641	143, 174	93, 509	1, 180, 324	1, 081, 894	250, 484	382, 781	212, 251	1, 927, 410
South Dakota.....	65, 434	19, 075	5, 704	90, 213	240, 300	14, 965	40, 505	8, 000	303, 770
Tennessee.....	2, 119	182	302	2, 603	7, 520	800	4, 168	500	12, 988
Texas.....	8, 993	1, 855	672	11, 520	10, 650	850	635	50	12, 185
Utah.....	33, 598	10, 470	253	44, 321	81, 125	30, 200	10, 250	2, 000	123, 575
Virginia.....	8, 000	570	59	8, 629	4, 700	300	1, 180	3, 000	9, 180
Washington.....	45, 722	8, 650	533	54, 905	30, 000	13, 600	11, 100	24, 000	78, 700
West Virginia.....	72, 209	6, 037	2, 398	80, 704	114, 473	8, 070	36, 510	22, 100	181, 158
Wisconsin.....	110, 509	19, 724	8, 310	138, 543	319, 615	50, 010	133, 787	47, 410	550, 822
Wyoming.....	13, 283	3, 950	638	22, 871	130, 048	1, 500	7, 300	500	139, 348
Other states (a).....	11, 519	5, 366	125	17, 010	10, 000	250	4, 676	200	15, 126

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

The following list is presented for the purpose of showing by states and territories as well as for the entire country the purposes to which sandstone is applied. It will be seen that they are as follows: Building purposes; street work; abrasive purposes; bridge, dam, and railroad work, and miscellaneous uses. In order that these general purposes may be understood, the following list of detailed uses which come under one or another of the general headings in the table is presented:

FOUNDATIONS, SUPERSTRUCTURES, AND TRIMMINGS.

Solid fronts.	Steps.	Kiln stone.	Ashlar.
Foundations.	Buttresses.	Capping.	Forts.
Cellar walls.	Window sills.	Belting or belt courses.	Dimension.
Underpinning.	Lintels.	Rubble.	Sills.

STREET WORK.

Paving blocks.	Basin heads or catch-basin covers.	Road making:	Macadam.	Sledged stone.
Curbing.	Stepping stones.	}	Telford.	Crushed stone.
Flagging.			Concrete.	

ABRASIVE PURPOSES.

Grindstones.	Whetstones.	Shoe rubbers.	Oilstones.
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BRIDGE, DAM, AND RAILROAD WORK.

Bridges.	Breakwater.	Rails.	Bank stone.
Culverts.	Jetties.	Ballast.	Parapets.
Aqueducts.	Piers.	Approaches.	Docks.
Dams.	Buttresses.	Towers.	Bridge covering.
Wharf stone.	Capstone.		

MISCELLANEOUS.

Grout.	Furnace hearths.	Cemetery work.	Lining for steel converters.
Hitching posts.	Lining for blast furnaces.	Watering troughs.	Glass furnaces.
Fence wall.	Rolling-mill furnaces.	Fluxing.	Core sand for foundries.
Sand for glass.	Adamantine plaster.	Ganister.	Random stock.
Sand for plaster and cement.	Millstones.	Fire brick, silica brick.	

DISTRIBUTION OF SANDSTONE ACCORDING TO ITS SEVERAL USES.

STATES AND TERRITORIES.	Number of quarries.	Total number of cubic feet.	Total value.	BUILDING PURPOSES.			STREET WORK.		
				Cubic feet.	Value.	Value per cubic foot.	Cubic feet.	Value.	Value per cubic foot.
Total	803	71,571,054	\$10,816,057	41,979,241	\$7,121,942	\$0.16	8,463,506	\$1,832,822	\$0.22
Alabama	5	610,026	43,965	542,700	31,310	0.06			
Arizona	2	127,907	9,146	42,250	1,750	0.04			
Arkansas	8	210,010	25,074	139,950	12,359	0.09	27,160	8,215	0.30
California	15	333,209	175,593	330,275	172,753	0.52	100	200	2.00
Colorado	71	6,570,529	1,224,098	4,601,965	703,477	0.15	1,926,464	599,955	0.26
Connecticut	13	2,821,430	920,061	2,524,895	894,226	0.35	40,500	2,250	0.06
Idaho	2	28,710	2,490	28,710	2,490	0.09			
Illinois	10	141,605	17,896	82,799	13,173	0.16	3,200	50	0.02
Indiana	11	334,441	43,983	104,600	16,033	0.15			
Iowa	11	404,350	80,251	394,870	79,356	0.20	8,840	880	0.10
Kansas	17	680,289	149,289	225,774	17,026	0.08	452,015	132,188	0.29
Kentucky	11	888,738	117,940	488,363	77,877	0.16	13,900	1,600	0.12
Maryland	4	508,325	10,605	63,269	1,944	0.03	40,320	2,045	0.05
Massachusetts	21	1,967,179	649,097	1,344,850	602,137	0.45	501,221	40,471	0.08
Michigan	6	658,318	246,570	606,182	217,720	0.36	2,496	550	0.22
Minnesota	7	4,156,224	131,979	1,088,870	82,000	0.08	51,930	38,200	0.74
Missouri	17	734,370	155,557	469,187	113,445	0.24	6,533	2,512	0.38
Montana	6	644,740	31,648	644,740	31,648	0.05			
New Hampshire	2	21,665	3,750						
New Jersey	26	6,010,212	597,309	4,607,767	486,788	0.11			
New Mexico	11	588,048	186,804	545,648	182,184	0.33	10,000	3,000	0.30
New York	63	4,878,365	702,419	1,960,277	241,216	0.12	2,864,366	459,158	0.16
North Carolina	2	50,000	12,000	50,000	12,000	0.24			
Ohio	192	16,016,258	3,046,656	10,122,544	1,846,918	0.18	1,603,614	430,552	0.27
Oregon	2	50,000	8,424	50,000	8,424	0.17			
Pennsylvania	150	17,414,875	1,609,150	9,864,139	777,123	0.08	854,907	175,062	0.20
South Dakota	13	341,875	93,570	317,751	81,949	0.26			
Tennessee	4	53,978	2,722	45,878	2,632	0.06			
Texas	7	180,591	14,651	180,591	14,651	0.08			
Utah	7	145,726	48,306	145,726	48,306	0.33			
Virginia	3	70,800	11,500	70,800	11,500	0.16			
Washington	5	540,039	75,936	540,039	75,936	0.14			
West Virginia	27	964,263	140,687	412,053	40,149	0.10	42,075	23,274	0.55
Wisconsin	32	1,146,736	183,958	1,087,856	182,333	0.17			
Wyoming	7	197,775	16,760	197,775	16,760	0.08			
Other states (a)	5	1,079,448	26,199	1,059,148	22,339	0.02	13,895	2,660	0.19

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

DISTRIBUTION OF SANDSTONE ACCORDING TO ITS SEVERAL USES—CONTINUED.

STATES AND TERRITORIES.	ABRASIVE PURPOSES.			BRIDGE, DAM, AND RAILROAD WORK.			MISCELLANEOUS.		
	Cubic feet.	Value.	Value per cubic foot.	Cubic feet.	Value.	Value per cubic foot.	Cubic feet.	Value.	Value per cubic foot.
Total	1,378,535	\$580,229	\$0.42	13,614,390	\$1,021,920	\$0.08	3,135,382	\$259,144	\$0.08
Alabama				67,326	12,655	0.19			
Arizona				85,657	7,396	0.09			
Arkansas							42,900	4,500	0.10
California	448	440	0.98				2,386	2,200	0.92
Colorado				42,100	10,666	0.25			
Connecticut				256,035	23,585	0.09			
Idaho									
Illinois				55,606	4,668	0.08			
Indiana	3,813	9,870	2.59	226,028	18,080	0.08			
Iowa				640	15	0.02			
Kansas				2,500	75	0.03			
Kentucky				389,475	38,463	0.10			
Maryland				255,041	3,368	0.01	149,695	3,248	0.02
Massachusetts				121,108	6,489	0.05			
Michigan	44,640	27,800	0.62	5,000	500	0.10			
Minnesota				3,015,424	11,779	0.004			
Missouri				258,650	39,600	0.15			
Montana									
New Hampshire	21,665	3,750	0.17						
New Jersey				1,302,445	100,521	0.08	100,000	10,000	0.10
New Mexico				32,400	1,620	0.05			
New York				9,840	445	0.05	43,882	1,600	0.04
North Carolina									
Ohio	1,277,410	525,548	0.41	2,026,314	166,114	0.08	986,376	77,524	0.08
Oregon									
Pennsylvania				4,885,686	496,902	0.10	1,810,143	160,072	0.09
South Dakota	24,124	11,621	0.48						
Tennessee				8,100	90	0.01			
Texas									
Utah									
Virginia									
Washington									
West Virginia				510,135	77,264	0.15			
Wisconsin				58,880	1,625	0.03			
Wyoming									
Other states (a)	6,435	1,200	0.19						

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

Glancing over this table, it appears that \$7,121,942 worth of stone is applied to building purposes, while \$1,832,822 worth has been applied to street work. Abrasive purposes have consumed an amount valued at \$580,229, while for bridge, dam, and railroad work \$1,021,920 worth was used. For miscellaneous purposes the amount is \$259,144. Although the value of the stone for abrasive purposes is comparatively small, it is important to note that the quality of stone applied to these purposes is necessarily very fine, and consequently has a decidedly higher average value per cubic foot than that used for any other purpose. It will be noticed that there is quite a variation in the value per cubic foot of the stone used for different purposes, and in some cases for one and the same purpose. This is due to a variety of causes, among which may be mentioned variations in the quality of the stone, distance from any competing sources, rates of wages, etc.

The tables following give the relative standing of the states and territories, first, according to value and purpose, and second, according to number of cubic feet and purposes.

RELATIVE STANDING OF STATES AND TERRITORIES ACCORDING TO VALUE AND PURPOSES.

BUILDING PURPOSES.		STREET WORK.		ABRASIVE PURPOSES.		BRIDGE, DAM, AND RAILROAD WORK.		MISCELLANEOUS.	
States, etc.	Value.	States, etc.	Value.	States, etc.	Value.	States, etc.	Value.	States, etc.	Value.
Total	\$7, 121, 942	Total	\$1, 832, 822	Total	\$580, 229	Total	\$1, 021, 920	Total	\$259, 144
1 Ohio	1, 846, 918	Colorado	509, 955	Ohio	525, 548	Pennsylvania	496, 902	Pennsylvania	160, 072
2 Connecticut	894, 226	New York	459, 158	Michigan	27, 800	Ohio	166, 114	Ohio	77, 524
3 Pennsylvania	777, 123	Ohio	430, 552	South Dakota	11, 621	New Jersey	100, 521	New Jersey	10, 000
4 Colorado	703, 477	Pennsylvania	175, 062	Indiana	9, 870	West Virginia	77, 264	Arkansas	4, 500
5 Massachusetts	602, 137	Kansas	132, 188	New Hampshire	3, 750	Missouri	39, 600	Maryland	3, 248
6 New Jersey	486, 788	Massachusetts	40, 471	California	440	Kentucky	38, 463	California	2, 200
7 New York	241, 216	Minnesota	38, 200			Connecticut	23, 585	New York	1, 600
8 Michigan	217, 720	West Virginia	23, 274			Indiana	18, 080		
9 Wisconsin	182, 333	Arkansas	8, 215			Alabama	12, 655		
10 New Mexico	182, 184	New Mexico	3, 000			Minnesota	11, 779		
11 California	172, 758	Missouri	2, 512			Colorado	10, 666		
12 Missouri	113, 445	Connecticut	2, 250			Arizona	7, 396		
13 Minnesota	82, 000	Maryland	2, 045			Massachusetts	6, 489		
14 South Dakota	81, 949	Kentucky	1, 600			Illinois	4, 668		
15 Iowa	79, 356	Iowa	880			Maryland	3, 368		
16 Kentucky	77, 877	Michigan	550			Wisconsin	1, 625		
17 Washington	75, 936	California	200			New Mexico	1, 620		
18 Utah	48, 306	Illinois	50			Michigan	500		
19 West Virginia	40, 149					New York	445		
20 Montana	31, 648					Tennessee	90		
21 Alabama	31, 310					Kansas	75		
22 Kansas	17, 026					Iowa	15		
23 Wyoming	16, 760								
24 Indiana	16, 033								
25 Texas	14, 651								
26 Illinois	13, 178								
27 Arkansas	12, 359								
28 North Carolina	12, 000								
29 Virginia	11, 500								
30 Oregon	8, 424								
31 Tennessee	2, 632								
32 Idaho	2, 490								
33 Maryland	1, 944								
34 Arizona	1, 750								
Other states (a)	22, 339	Other states	2, 660	Other states	1, 200				

RELATIVE STANDING OF STATES AND TERRITORIES ACCORDING TO CUBIC FEET AND PURPOSES.

BUILDING PURPOSES.		STREET WORK.		ABRASIVE PURPOSES.		BRIDGE, DAM, AND RAILROAD WORK.		MISCELLANEOUS.	
States, etc.	Cubic feet.	States, etc.	Cubic feet.	States, etc.	Cubic feet.	States, etc.	Cubic feet.	States, etc.	Cubic feet.
Total	44, 979, 241	Total	8, 463, 500	Total	1, 378, 535	Total	13, 614, 390	Total	3, 135, 382
1 Ohio	10, 122, 544	New York	2, 864, 366	Ohio	1, 277, 410	Pennsylvania	4, 885, 686	Pennsylvania	1, 810, 143
2 Pennsylvania	9, 864, 139	Colorado	1, 926, 464	Michigan	44, 640	Minnesota	3, 015, 424	Ohio	986, 376
3 New Jersey	4, 607, 767	Ohio	1, 603, 614	South Dakota	24, 124	Ohio	2, 026, 314	Maryland	149, 695
4 Colorado	4, 601, 965	Pennsylvania	854, 907	New Hampshire	21, 665	New Jersey	1, 302, 445	New Jersey	100, 000
5 Connecticut	2, 524, 895	Massachusetts	501, 221	Indiana	3, 813	West Virginia	510, 135	New York	43, 882
6 New York	1, 960, 277	Kansas	452, 015	California	448	Kentucky	389, 475	Arkansas	42, 900
7 Massachusetts	1, 344, 850	Minnesota	51, 930			Missouri	258, 650	California	2, 386
8 Minnesota	1, 088, 870	West Virginia	42, 075			Connecticut	256, 035		
9 Wisconsin	1, 087, 856	Connecticut	40, 500			Maryland	255, 041		
10 Montana	644, 740	Maryland	40, 320			Indiana	220, 028		
11 Michigan	606, 182	Arkansas	27, 160			Massachusetts	121, 108		
12 New Mexico	545, 648	Kentucky	13, 900			Arizona	85, 657		
13 Alabama	542, 700	New Mexico	10, 000			Alabama	67, 326		
14 Washington	540, 039	Iowa	8, 840			Wisconsin	58, 880		
15 Kentucky	485, 363	Missouri	6, 533			Illinois	55, 606		
16 Missouri	469, 187	Illinois	3, 200			Colorado	42, 100		
17 West Virginia	412, 053	Michigan	2, 496			New Mexico	32, 400		
18 Iowa	394, 870	California	100			New York	9, 840		
19 California	330, 275					Tennessee	8, 100		
20 South Dakota	317, 751					Michigan	5, 000		
21 Kansas	225, 774					Kansas	2, 500		
22 Wyoming	197, 775					Iowa	640		
23 Texas	180, 581								
24 Utah	145, 726								
25 Arkansas	139, 950								
26 Indiana	104, 600								
27 Illinois	82, 799								
28 Virginia	70, 800								
29 Maryland	63, 269								
30 Oregon	50, 000								
31 North Carolina	50, 000								
32 Tennessee	45, 878								
33 Arizona	42, 250								
34 Idaho	28, 710								
Other states (a)	1, 059, 148	Other states	13, 865	Other states	6, 435				

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

It is evident that for building and abrasive purposes Ohio holds first place, while for street work Colorado stands first. It is also interesting to note that only seven states produce sandstone suitable for abrasive purposes. These in the order of importance are Ohio, Michigan, Indiana, New Hampshire, Vermont, California, and South Dakota. The vast difference in the value of stone for abrasive purposes produced by Ohio as compared with the other states is very striking.

The following table gives information in reference to the labor employed in the sandstone industry. It is evident that the highest wages are paid in the western states. This statement, of course, is true not only for this industry, but for others generally. In Ohio and Pennsylvania wages are not greatly different, although in Pennsylvania they are, as a rule, a little higher than in Ohio.

It will also be noticed that the total wages reported in the table on page 8 as actually paid do not exactly agree with the figures which would result from computing the total wages from the data given in the following table. This is very naturally the case, since the figures of the latter table are the averages given by the producers in response to an inquiry calling for average statements. The figures given for total wages actually paid are exact.

LABOR AND WAGES INVOLVED IN PRODUCTION OF SANDSTONE CLASSIFIED.

STATES AND TERRITORIES.	FOREMEN.				QUARRYMEN.				MECHANICS AND STONECUTTERS.			
	Average number.	Average daily wages.	Average number of days.	Average yearly earnings.	Average number.	Average daily wages.	Average number of days.	Average yearly earnings.	Average number.	Average daily wages.	Average number of days.	Average yearly earnings.
Alabama.....	5	\$2.48	254	\$629.92	53	\$1.06	239	\$253.34	9	\$3.50	230	\$805.00
Arizona.....	1	3.00	150	450.00	10	1.84	89	163.76				
Arkansas.....	3	2.38	218	518.84	24	1.44	185	266.40	9	1.87	94	175.78
California.....	10	4.05	231	935.55	114	2.42	223	539.66	31	3.92	237	929.04
Colorado.....	90	3.09	208	642.72	854	2.35	216	507.60	187	2.45	236	578.20
Connecticut.....	45	2.98	249	742.02	814	1.87	249	465.63	58	2.80	232	649.60
Idaho.....					3	2.00	247	494.00				
Illinois.....	4	2.56	175	448.00	33	1.67	116	193.72	1	2.15	86	77.40
Indiana.....	12	4.00	280	1,120.00	71	1.49	175	260.75	25	1.75	280	490.00
Iowa.....	8	3.30	191	630.30	41	2.20	160	352.00	21	2.43	210	510.30
Kansas.....	11	2.72	190	516.80	159	1.87	216	403.92	57	2.02	231	466.62
Kentucky.....	15	3.06	164	501.84	126	1.61	107	173.27	43	3.15	157	494.55
Maryland.....	2	1.50	170	255.00	89	1.14	158	180.12				
Massachusetts.....	28	3.02	267	806.34	358	2.00	209	418.00	161	3.06	221	676.26
Michigan.....	9	2.92	255	744.60	132	1.68	171	287.28	31	2.63	232	610.16
Minnesota.....	10	3.00	235	705.00	151	1.53	231	353.43	16	2.00	260	520.00
Missouri.....	12	2.83	214	616.32	80	2.00	182	364.00	17	2.33	218	507.94
Montana.....	6	4.55	138	627.90	57	2.66	149	396.34	1	3.00	30	90.00
New Hampshire.....	2	3.80	174	661.20	9	1.49	119	177.31	1	1.50	130	195.00
New Jersey.....	38	3.00	268	804.00	299	2.03	246	499.38	130	3.20	241	771.20
New Mexico.....	11	4.08	120	489.60	217	2.26	96	216.96	47	3.30	116	382.80
New York.....	58	2.79	170	474.30	568	1.99	161	320.39	183	2.96	163	488.40
North Carolina.....	1	4.00	200	800.00	4	1.50	200	300.00	2	1.50	200	300.00
Ohio.....	187	2.59	222	574.98	1,600	1.73	204	352.92	506	2.06	231	475.86
Oregon.....					5	2.00	300	600.00				
Pennsylvania.....	140	2.67	201	536.67	1,262	1.83	194	355.02	337	2.66	175	465.50
South Dakota.....	9	3.98	197	784.06	64	2.07	101	207.05	18	2.91	136	395.76
Tennessee.....	2	1.83	45	82.35	22	1.08	45	48.60	2	1.50	30	45.00
Texas.....	3	2.29	215	492.35	16	1.71	76	132.24	4	1.76	138	242.88
Utah.....	6	4.09	219	895.71	28	2.93	182	533.26	1	3.00	119	357.00
Virginia.....	3	2.72	145	394.40	20	1.00	146	146.00	5	2.50	120	300.00
Washington.....	6	3.57	262	935.34	57	2.28	157	357.96	10	3.16	153	483.48
West Virginia.....	23	2.51	149	373.99	136	1.41	154	221.76	28	2.73	145	395.85
Wisconsin.....	15	3.10	174	539.40	199	1.92	144	276.48	39	2.91	167	485.97
Wyoming.....	5	3.63	120	435.60	32	2.85	142	404.70	1	3.00	175	525.00
Other states (a).....	2	2.00	138	276.00	29	1.37	134	183.58	2	1.50	175	262.50

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

LABOR AND WAGES INVOLVED IN PRODUCTION OF SANDSTONE CLASSIFIED—CONTINUED.

STATES AND TERRITORIES.	LABORERS.				BOYS UNDER SIXTEEN YEARS.				OFFICE FORCE.	
	Average number.	Average daily wages.	Average number of days.	Average yearly earnings.	Average number.	Average daily wages.	Average number of days.	Average yearly earnings.	Average number.	Average annual salary.
Alabama.....	54	\$1.16	242	\$280.72	5	\$0.59	237	\$139.83	1	\$480.00
Arizona.....	2	1.50	150	225.00						
Arkansas.....	14	1.22	149	181.78						
California.....	64	2.05	229	469.45	2	1.00	250	250.00	1	1,200.00
Colorado.....	313	2.01	238	478.38	8	1.24	119	147.56	33	725.00
Connecticut.....	150	1.74	238	414.12	5	0.85	280	238.00	20	2,006.88
Idaho.....	2	2.00	208	416.00						
Illinois.....	8	1.38	60	82.80						
Indiana.....	07	1.25	263	328.75	11	0.73	186	135.78	2	180.00
Iowa.....	63	1.48	209	309.32	3	0.51	146	74.46	6	1,250.00
Kansas.....	88	1.43	218	311.74	4	0.75	300	225.00	10	744.44
Kentucky.....	105	1.28	157	200.96	11	0.63	108	68.04	2	105.88
Maryland.....					2	0.57	175	99.75		
Massachusetts.....	347	1.70	211	358.70	2	0.60	150	90.00	10	852.84
Michigan.....	166	1.46	243	354.78	5	1.00	145	145.00	2	800.00
Minnesota.....	22	1.55	300	465.00	5	1.00	260	260.00	1	800.00
Missouri.....	77	1.38	190	262.20	3	0.75	257	192.75	3	1,000.00
Montana.....	2	1.50	100	150.00	2	1.75	300	525.00	1	55.00
New Hampshire.....					1	0.50	35	17.50		
New Jersey.....	378	1.45	251	363.95	11	0.94	231	217.14	10	480.74
New Mexico.....	87	1.79	56	100.24	11	0.75	45	33.75	4	393.33
New York.....	738	1.52	173	262.96	10	0.73	136	99.28	12	762.50
North Carolina.....	40	1.00	260	200.00	5	0.50	200	100.00	1	500.00
Ohio.....	1,610	1.33	182	242.06	54	0.74	198	146.52	78	1,157.24
Oregon.....	2	1.00	300	300.00						
Pennsylvania.....	1,102	1.41	181	255.21	66	0.89	199	177.11	25	620.62
South Dakota.....	43	1.96	118	231.28					6	472.50
Tennessee.....	4	0.60	30	18.00					2	75.00
Texas.....	19	1.20	192	230.40						
Utah.....	25	2.23	232	517.36					1	300.00
Virginia.....	8	1.00	130	130.00	1	0.75	130	97.50		
Washington.....	29	2.08	200	416.00	1	0.75	50	37.50	2	1,033.33
West Virginia.....	133	1.24	144	178.56	13	0.73	153	111.69	4	445.50
Wisconsin.....	103	1.71	145	247.95	5	0.90	217	195.30	12	977.78
Wyoming.....	28	2.02	133	268.66					1	800.00
Other states (a).....	19	1.41	147	207.27	1	1.00	175	175.00	2	450.00

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

The table following gives the states and territories in the order of their relative importance with respect to a number of different statistical items. It will be noticed that for all of these items except the number of cubic feet Ohio stands first, while Pennsylvania stands first in the number of cubic feet quarried. Inspection of this table will reveal at once a number of interesting features, which would require no little time and labor to extract from the principal table relative to production, in which all these items are contained. The most important of these items in determining the relative standing of the states is, of course, the value of the output.

RELATIVE STANDING OF STATES PRODUCING SANDSTONE ACCORDING TO VARIOUS STATISTICAL ITEMS.

STATES AND TERRITORIES.	Cubic feet.	STATES AND TERRITORIES.	Value of product.	STATES AND TERRITORIES.	Capital in land.	STATES AND TERRITORIES.	Total capital.
Total	71, 571, 054	Total	\$10, 816, 057	Total	\$11, 501, 100	Total	\$17, 776, 467
1 Pennsylvania	17, 414, 875	Ohio	3, 046, 656	Ohio	3, 455, 499	Ohio	5, 075, 660
2 Ohio	16, 016, 258	Pennsylvania	1, 609, 159	Colorado	1, 507, 255	Colorado	2, 009, 484
3 Colorado	6, 370, 529	Colorado	1, 224, 098	Connecticut	1, 190, 606	Pennsylvania	1, 927, 410
4 New Jersey	6, 010, 212	Connecticut	920, 061	Pennsylvania	1, 081, 894	Connecticut	1, 896, 957
5 New York	4, 878, 365	New York	702, 419	New York	567, 880	New York	879, 880
6 Minnesota	4, 156, 224	Massachusetts	649, 097	New Jersey	488, 650	New Jersey	793, 115
7 Connecticut	2, 821, 430	New Jersey	597, 309	New Mexico	366, 400	Michigan	609, 877
8 Massachusetts	1, 967, 179	Michigan	246, 570	Minnesota	328, 000	Wisconsin	550, 822
9 Wisconsin	1, 146, 736	New Mexico	186, 804	Wisconsin	319, 615	New Mexico	421, 500
10 West Virginia	964, 263	Wisconsin	183, 958	California	278, 000	Minnesota	407, 090
11 Kentucky	888, 738	California	175, 598	South Dakota	240, 300	California	400, 950
12 Missouri	734, 370	Missouri	155, 557	Michigan	215, 402	Massachusetts	373, 862
13 Kansas	680, 289	Kansas	149, 289	Missouri	201, 100	Kansas	324, 135
14 Michigan	658, 318	West Virginia	140, 687	Kansas	194, 510	South Dakota	303, 770
15 Montana	644, 740	Minnesota	131, 979	Massachusetts	130, 550	Missouri	298, 880
16 Alabama	610, 026	Kentucky	117, 940	Wyoming	130, 048	Kentucky	196, 680
17 New Mexico	588, 048	South Dakota	93, 570	West Virginia	114, 478	West Virginia	181, 158
18 Washington	540, 039	Iowa	80, 251	Indiana	113, 700	Iowa	178, 455
19 Maryland	508, 325	Washington	75, 936	Kentucky	90, 468	Indiana	169, 225
20 Iowa	404, 350	Utah	48, 308	Iowa	86, 870	Wyoming	139, 348
21 South Dakota	341, 875	Indiana	43, 983	Utah	81, 125	Utah	123, 875
22 Indiana	334, 441	Alabama	43, 965	Oregon	50, 000	Washington	78, 700
23 California	333, 209	Montana	31, 648	Montana	46, 300	Montana	70, 400
24 Arkansas	210, 010	Arkansas	25, 074	North Carolina	40, 000	North Carolina	70, 000
25 Wyoming	197, 775	Illinois	17, 896	Illinois	33, 450	Oregon	53, 000
26 Texas	180, 591	Wyoming	16, 760	Washington	30, 000	Illinois	49, 400
27 Utah	145, 726	Texas	14, 651	Maryland	27, 450	Maryland	41, 000
28 Illinois	141, 605	North Carolina	12, 000	Arizona	19, 400	Arizona	35, 000
29 Arizona	127, 907	Virginia	11, 500	New Hampshire	15, 300	New Hampshire	22, 310
30 Virginia	70, 800	Maryland	10, 605	Texas	10, 650	Alabama	18, 535
31 Tennessee	53, 978	Arizona	9, 146	Arkansas	9, 750	Arkansas	17, 660
32 North Carolina	50, 000	Oregon	8, 424	Alabama	8, 000	Tennessee	12, 988
33 Oregon	50, 000	New Hampshire	3, 750	Tennessee	7, 520	Texas	12, 185
34 Idaho	28, 710	Tennessee	2, 722	Idaho	6, 200	Idaho	10, 250
35 New Hampshire	21, 665	Idaho	2, 490	Virginia	4, 700	Virginia	9, 180
Other states (a)	1, 079, 448	Other states	26, 199	Other states	10, 000	Other states	15, 126

STATES AND TERRITORIES.	Number of employes.	STATES AND TERRITORIES.	Wages paid.	STATES AND TERRITORIES.	Cost of supplies.	STATES AND TERRITORIES.	Total expenses.
Total	16, 925	Total	\$6, 257, 580	Total	\$1, 277, 004	Total	\$8, 130, 295
1 Ohio	4, 095	Ohio	1, 450, 266	Ohio	585, 635	Ohio	2, 277, 735
2 Pennsylvania	2, 932	Pennsylvania	943, 641	Pennsylvania	143, 174	Pennsylvania	1, 180, 324
3 New York	1, 569	Colorado	772, 158	Colorado	127, 402	Colorado	902, 768
4 Colorado	1, 485	Connecticut	528, 089	Connecticut	76, 831	Connecticut	710, 772
5 Connecticut	1, 092	New York	522, 702	Massachusetts	51, 051	New York	571, 381
6 Massachusetts	906	Massachusetts	414, 282	New Jersey	48, 012	Massachusetts	509, 649
7 New Jersey	866	New Jersey	320, 767	New York	39, 017	New Jersey	452, 657
8 New Mexico	377	California	122, 847	Minnesota	23, 301	California	147, 264
9 Wisconsin	373	New Mexico	122, 730	Wisconsin	19, 724	New Mexico	139, 309
10 Michigan	345	Wisconsin	110, 509	South Dakota	19, 075	Wisconsin	138, 543
11 West Virginia	337	Kansas	105, 507	California	16, 729	Michigan	127, 962
12 Kansas	329	Michigan	102, 094	New Mexico	14, 750	Kansas	117, 594
13 Kentucky	302	Minnesota	74, 110	Kentucky	14, 223	Minnesota	103, 107
14 California	222	West Virginia	72, 269	Michigan	11, 529	South Dakota	90, 213
15 Minnesota	205	Missouri	69, 549	Iowa	11, 367	Kentucky	86, 102
16 Missouri	192	South Dakota	65, 434	Utah	10, 470	Missouri	81, 773
17 Indiana	188	Kentucky	62, 745	Kansas	8, 855	West Virginia	80, 704
18 Iowa	142	Iowa	56, 714	Missouri	8, 806	Iowa	71, 014
19 South Dakota	140	Washington	45, 722	Washington	8, 650	Washington	54, 955
20 Alabama	127	Alabama	41, 562	West Virginia	6, 037	Alabama	48, 587
21 Washington	105	Indiana	37, 387	Alabama	5, 600	Utah	44, 321
22 Montana	69	Utah	33, 598	Indiana	4, 663	Indiana	43, 232
23 Wyoming	69	Montana	27, 881	Wyoming	3, 981	Montana	31, 454
24 Utah	61	Wyoming	18, 283	Montana	3, 473	Wyoming	22, 871
25 North Carolina	53	Arkansas	11, 287	North Carolina	2, 000	Arkansas	12, 860
26 Arkansas	50	Texas	8, 993	Texas	1, 855	Texas	11, 520
27 Illinois	46	Illinois	8, 937	Arizona	1, 200	Illinois	10, 808
28 Maryland	43	Virginia	8, 000	Arkansas	1, 122	North Carolina	9, 600
29 Texas	42	Maryland	7, 749	Illinois	977	Maryland	9, 271
30 Virginia	37	North Carolina	7, 500	Virginia	570	Virginia	8, 629
31 Tennessee	33	Oregon	3, 600	Oregon	500	Oregon	4, 400
32 Arizona	18	New Hampshire	3, 138	Maryland	410	Arizona	3, 742
33 New Hampshire	13	Arizona	2, 542	New Hampshire	403	New Hampshire	3, 621
34 Oregon	7	Tennessee	2, 119	Tennessee	182	Tennessee	2, 603
35 Idaho	5	Idaho	1, 350	Idaho	75	Idaho	1, 940
Other states (a)	55	Other states	11, 519	Other states	5, 369	Other states	17, 010

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

The following table gives a number of deductions from the figures in the table on production, such as the percentages of the profit on capital, also on sales in the different states. It will be noticed that in two of the states loss is reported, but in these cases operations have been quite limited, and only recently begun:

GENERAL STATISTICS.

STATES AND TERRITORIES.	Total number of cubic feet.	Total value of product.	Total wages.	Total expense.	Total capital.	PER CENT OF PROFIT—		Cost per cubic foot of production.	Percentage of wages to total expense.	Amount of wages paid per cubic foot.	Percentage of wages to total value.	Value per cubic foot.
						On capital.	On value of product.					
Total	71,571,054	\$10,816,057	\$6,257,580	\$8,130,295	\$17,776,467	15.11	24.83	\$0.11	76.97	\$0.09	57.85	\$0.15
Alabama	610,026	43,965	41,562	48,587	18,535	-24.94	-10.51	0.08	85.54	0.07	94.53	0.07
Arizona	127,907	9,146	2,542	3,742	35,000	15.44	59.09	0.03	67.93	0.02	27.79	0.07
Arkansas	210,010	25,074	11,287	12,860	17,690	69.16	48.71	0.06	87.77	0.05	45.01	0.12
California	333,209	175,598	122,847	147,264	400,950	7.07	16.14	0.44	83.42	0.37	69.06	0.59
Colorado	6,570,529	1,224,098	772,158	902,768	2,009,484	15.99	26.25	0.14	85.53	0.12	63.08	0.19
Connecticut	2,821,430	920,061	528,039	710,772	1,896,957	11.03	22.75	0.25	74.30	0.19	57.40	0.33
Idaho	28,710	2,490	1,350	1,940	10,250	5.37	22.09	0.07	69.59	0.05	54.22	0.09
Illinois	141,605	17,896	8,937	10,808	49,400	14.35	39.61	0.08	82.69	0.06	49.94	0.13
Indiana	334,441	43,983	37,387	43,232	169,225	0.44	1.71	0.13	86.48	0.11	85.00	0.13
Iowa	404,350	80,251	56,714	71,014	178,455	5.18	11.51	0.18	79.86	0.14	70.67	0.20
Kansas	680,289	140,289	105,507	117,594	324,135	9.78	21.23	0.17	89.72	0.16	70.67	0.22
Kentucky	888,738	117,940	62,745	86,102	196,580	16.20	27.00	0.10	72.87	0.07	53.20	0.13
Maryland	508,325	10,605	7,749	9,271	41,000	3.25	12.58	0.02	83.58	0.02	73.67	0.02
Massachusetts	1,987,179	649,097	414,282	509,649	373,862	37.30	21.48	0.26	81.29	0.21	63.82	0.33
Michigan	658,318	246,570	162,094	127,962	609,877	19.45	48.10	0.19	79.78	0.16	41.41	0.37
Minnesota	4,156,224	131,970	74,110	103,107	407,090	7.09	21.88	0.02	71.88	0.02	56.15	0.03
Missouri	734,370	155,557	69,549	91,773	298,380	24.73	47.43	0.11	85.05	0.09	44.71	0.21
Montana	644,740	31,648	27,881	31,454	70,400	0.28	0.61	0.05	88.64	0.04	88.10	0.05
New Hampshire	21,665	3,750	3,138	3,621	22,310	0.58	3.44	0.17	86.66	0.14	83.68	0.17
New Jersey	6,010,212	597,809	380,767	452,657	793,115	18.24	24.22	0.08	84.12	0.06	63.75	0.10
New Mexico	588,048	186,804	122,730	139,309	421,500	11.27	25.43	0.24	88.10	0.21	65.70	0.32
New York	4,878,365	702,419	522,702	571,381	879,380	14.90	18.66	0.12	91.48	0.11	74.41	0.14
North Carolina	50,000	12,000	7,500	9,600	70,000	3.43	20.00	0.19	78.13	0.15	62.50	0.24
Ohio	16,016,258	3,046,656	1,450,266	2,277,735	5,075,660	15.15	25.24	0.14	63.67	0.09	47.60	0.19
Oregon	50,000	8,424	3,600	4,400	53,000	7.59	47.77	0.09	81.82	0.07	42.74	0.17
Pennsylvania	17,414,875	1,609,159	943,641	1,180,324	1,927,410	22.25	26.65	0.07	79.95	0.05	58.64	0.09
South Dakota	341,875	93,570	65,434	90,213	303,770	1.11	3.59	0.26	72.53	0.19	69.93	0.27
Tennessee	53,978	2,722	2,119	2,603	12,988	0.92	4.37	0.05	81.41	0.04	77.85	0.05
Texas	180,591	14,651	8,993	11,520	12,185	25.70	21.27	0.06	78.06	0.05	61.38	0.08
Utah	145,726	48,306	33,598	44,321	123,575	3.22	8.25	0.30	75.81	0.23	69.55	0.33
Virginia	70,800	11,500	8,000	8,629	9,180	31.27	24.97	0.12	92.71	0.11	69.57	0.16
Washington	540,039	75,936	45,722	54,955	78,700	26.66	27.63	0.10	83.20	0.08	60.21	0.14
West Virginia	964,263	140,687	72,269	80,704	181,158	33.11	42.64	0.08	89.55	0.07	51.37	0.15
Wisconsin	1,146,736	183,958	116,509	138,543	550,822	8.24	24.69	0.12	79.77	0.10	60.07	0.16
Wyoming	197,775	16,760	18,283	22,871	139,348	-4.39	-36.46	0.12	79.94	0.09	109.09	0.08
Other states (a)	1,079,448	26,199	11,519	17,010	15,126							

a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Florida, Georgia, Nevada, Rhode Island, and Vermont.

METHODS OF QUARRYING.

The work of quarrying sandstone is greatly facilitated by the ease with which parallel top and bottom beds may be obtained. In most cases good natural beds or partings parallel to the stratifications may be taken advantage of by the quarryman, and the rock is said to be thick-bedded or thin-bedded owing to the thickness of these sheets. The beds in the majority of quarries are horizontal or nearly so, and the object desired is to cut or break the sheets into rectangular blocks through to the bedding planes below. Much of this work was formerly accomplished by gunpowder used in the ordinary way or by heavy charges of powder contained in tin canisters and exploded in specially large drill holes. These processes have been supplanted in the larger quarries by the Knox patent system of blasting rock and by the more extended use of steam-channeling machines, such as are used in quarrying marble. The Knox system is particularly efficacious in thick-bedded sandstone, and the channelers are specially serviceable where the sheets are thinner. Vertical joints in the rock are a great aid in quarrying, and where they are numerous channelers are not required, and but little powder is necessary in loosening the blocks.

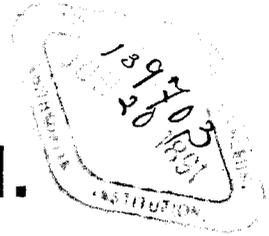
In some quarries the Knox system is used also in blocking up or subdividing the rock after the initial cuts have been made. Ordinarily, however, the plug and feather method is used, or in a rather soft variety, like the Connecticut brownstone, grooves are cut with pickaxes and the stone is broken by driving iron wedges into the grooves thus formed.

The following is a list of prominent structures built of sandstone in some of the principal cities of the United States:

PROMINENT SANDSTONE STRUCTURES IN SOME OF THE PRINCIPAL CITIES OF THE UNITED STATES.

LOCALITY.	Name of structure and date of erection.	Commercial name of stone.	Locality of quarry.
Albany, New York	All Saints' Cathedral	Potsdam sandstone	Potsdam, New York.
	Cathedral of the Immaculate Conception, 1852.	Brownstone	Portland, Connecticut.
	First Presbyterian Church, 1884		East Longmeadow, Massachusetts.
Albuquerque, New Mexico	Albany Academy, 1815	Nyack sandstone	Nyack, New York.
	Territorial University (wing)		Rio Puerco, New Mexico.
Baltimore, Maryland	First Presbyterian Church		New Brunswick, New Jersey.
Boston, Massachusetts	Mount Vernon Methodist Episcopal Church ..	Berea sandstone	Berea, Ohio.
	Second Unitarian Church	Red sandstone	Newark, New Jersey.
	New Old South Church	Pudding stone	Roxbury, Massachusetts.
Brooklyn, New York	Tremont street Methodist Episcopal Church ..	Pudding stone	Boston, Massachusetts.
	Hotel Brunswick	Buff Amherst sandstone	Amherst, Ohio.
	Saint Ann's Protestant Episcopal Church		—, New Jersey.
Carson City, Nevada	Academy of Design	Brownstone	Portland, Connecticut.
Chicago, Illinois	United States Mint	Sandstone	Cañon City, Nevada.
Cincinnati, Ohio	Union League club house	Brown sandstone	Springfield, Massachusetts.
	Palmer House	Buff Amherst sandstone	Amherst, Massachusetts.
	Public Library	Berea sandstone	Berea, Ohio.
Cleveland, Ohio	City Hall	Brownstone	Houghton, Wisconsin.
Colorado Springs, Colorado	Garfield Monument, Lake View cemetery	Berea sandstone	Berea, Ohio.
Columbus, Ohio	First National Bank building	Peachblow sandstone	Peachblow, Colorado.
Denver, Colorado	United States post office and court house	Berea sandstone	Berea, Ohio.
	Arapahoe county court house		Cañon City, Colorado.
	Tabor Grand Opera House	Buff Amherst sandstone	Amherst, Ohio.
Dover, Delaware	Barclay block	Manitou sandstone	Manitou, Colorado.
	United States post office and court house	Coal Creek sandstone	Coal Creek, Colorado.
	City Hall	Berea sandstone	Berea, Ohio.
Grand Rapids, Michigan	Hotel Denison	Blue Amherst sandstone	Amherst, Ohio.
Indianapolis, Indiana	State Capitol	Berea sandstone	Berea, Ohio.
Lansing, Michigan	United States post office and court house	Buff Amherst sandstone	Amherst, Ohio.
Leavenworth, Kansas	Chamber of Commerce building	Blue Amherst sandstone	Amherst, Ohio.
Milwaukee, Wisconsin	Westminster Presbyterian Church, 1881-'83 ..	Blue Amherst sandstone	Amherst, Ohio.
Minneapolis, Minnesota	United States post office and court house	Brown sandstone	Fond du Lac, Minnesota.
	Old custom house and post office, 1859	Blue Amherst sandstone	Amherst, Ohio.
	Columbia College	Red sandstone	Little Falls, New Jersey.
Newark, New Jersey	Trinity Church, 1846		Potsdam, New York.
	United Bank building		Little Falls, New Jersey.
	Broadway Bank building		East Longmeadow, Massachusetts.
New York city	Collegiate Reformed Church, 1872		Portland, Connecticut.
	Fulton National Bank building		Newark, New Jersey.
	Dutch Reformed Church	Berea sandstone	Hummelstown, Pennsylvania.
Philadelphia, Pennsylvania	College of Surgeons	Berea sandstone	Berea, Ohio.
	Saint Mark's Protestant Episcopal Church, 1849.	Buff Amherst sandstone	Amherst, Ohio.
	Bank of North America, 1850	Brownstone	Portland, Connecticut.
Providence, Rhode Island	Young Men's Christian Association building, 1868.	Buff Amherst sandstone	Amherst, Ohio.
	New Catholic Cathedral	Brownstone	Portland, Connecticut.
Salt Lake City, Utah	Grace Church		Little Falls, New Jersey.
San Francisco, California	Mormon Tabernacle (piers)	Red sandstone	Red Butte, Utah.
Santa Fé, New Mexico	Bank of California, 1865	Blue sandstone	Angel Island, California.
Trenton, New Jersey	Federal building	Cerrillos sandstone	Los Cerrillos, New Mexico.
Washington, District of Columbia.	State Capitol		Trenton, New Jersey.
	Smithsonian Institution, 1847-'56	Seneca sandstone	Seneca creek, Maryland.
	United States Capitol, old portion, 1793		Aquia creek, Virginia.
Washington, District of Columbia.	Executive Mansion (painted)		Aquia creek, Virginia.
	Treasury, old portion, 1836-'41		Aquia creek, Virginia.

CENSUS BULLETIN.



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WASHINGTON, D. C.

June 4, 1891.

MINES AND MINING.

COAL PRODUCT OF ILLINOIS, OHIO, INDIANA, AND MICHIGAN.

DEPARTMENT OF THE INTERIOR,

CENSUS OFFICE,

WASHINGTON, D. C., *May 19, 1891.*

The following bulletin in relation to the production of coal in the states of Illinois, Ohio, Indiana, and Michigan has been prepared by Mr. JOHN H. JONES, special agent, under the supervision of Dr. DAVID T. DAY, special agent in charge of the Division of Mines and Mining of the Census Office. It gives the product, value, and extent of the coal beds of these states, together with the number of employes, wages, expenditures, capital invested, etc. The following is a comparative statement of the product of coal in the states named for the Tenth and Eleventh Censuses:

STATES.	ELEVENTH CENSUS.		TENTH CENSUS.	
	Product. (Short tons.)	Value.	Product. (Short tons.)	Value.
Illinois.....	12, 104, 272	\$11, 755, 203	6, 115, 377	\$8, 779, 832
Ohio	9, 978, 787	9, 355, 400	6, 008, 595	7, 719, 667
Indiana	2, 845, 057	2, 887, 852	1, 454, 327	2, 150, 258
Michigan	67, 431	115, 011	100, 800	224, 500

From the above it will be seen that Illinois shows the greatest increase in production over the Tenth Census, namely, 5,988,895 short tons. Ohio has increased her product 3,963,192 tons and Indiana 1,390,730 tons. The increase in the value of product is as follows: Illinois, \$2,975,371; Ohio, \$1,635,733; Indiana, \$737,594. The coal area in Illinois is reported as 37,000 square miles, in Ohio 10,000 square miles, in Indiana 7,000 square miles, and in Michigan 7,000 square miles. The coal from these states is bituminous, and is adapted for steam and heating purposes. The total number of employes engaged in the industry in Illinois is reported as 24,323, receiving in wages \$8,694,347. The grand total of expenditures was \$10,366,069. Ohio gave employment to 19,591 persons, who were paid \$6,892,604 in

wages. The total expenditures of all kinds in the production of coal were \$8,232,183. Indiana, with her total number of 6,532 employés, paid \$2,201,044 for wages, the grand total of expenditures of all kinds being \$2,581,669.

The product of Michigan coal in 1889 was 67,431 tons, valued at \$115,011. Compared with the Tenth Census report, these figures show a decrease in production of 33,369 tons and in value of \$109,489. The total amount expended for wages, including office force, as reported for the Eleventh Census, was \$93,594, the grand total of all expenditures being \$113,714. There has been a gradual decrease in production in this state since 1882. The product of the mines of Pennsylvania and Ohio is delivered within the state at prices with which local operators find difficulty in competing.

A handwritten signature in cursive script, reading "Robert P. Forster". The signature is written in dark ink and is positioned above the printed name.

Superintendent of Census.

COAL PRODUCT OF ILLINOIS, OHIO, INDIANA, AND MICHIGAN.

BY JOHN H. JONES.

COAL PRODUCT OF ILLINOIS.

The state of Illinois contains much the larger portion of what is known as the Central coal field, covering an area of about 37,000 square miles and underlying sixty counties, in but forty-five of which, however, are operations conducted upon a commercial scale. The Illinois field contains fifteen distinct seams. Those which are available for commercial mining generally lie at considerable depth, and are reached by shafts. The coals of Illinois are bituminous, and furnish a most excellent steaming fuel. Coke is manufactured to a limited extent in Gallatin and La Salle counties, but elsewhere in the state the quality of the coal does not yield a marketable coke. Neither is it in any marked degree a good gas coal, although it is used for that purpose in some localities, rather because of its abundance than of its special adaptability. It is thought that the increasing facilities for the cheap transportation of Pittsburg coal into the state will eventually exclude local coal from the manufacture of gas.

The total product of the state during the year ending June 30, 1880, as reported to the census, was 6,115,377 short tons, valued at \$8,779,832, an average of \$1.44 per ton at the mines. The product during the year 1889 was 12,104,272 short tons, valued at \$11,755,203, an average of \$0.97 per ton at the mines. The product reported by the state authorities for the year ending June 30, 1889, was 13,105,698 short tons. The falling off in production for 1889, as shown by the present report, is mainly due to an extensive and persistent strike of the miners in the northern districts of the state during six months of the year, but also in some measure to depression in the trade, resulting from the mild winter of 1888-'89.

The average wages paid per day, given in the tables relating to employés at the mines of Illinois, Ohio, Indiana, and Michigan, respectively, were obtained from statements of operators, and are independent of the gross amount paid in wages.

The following table gives, by counties, the total production of coal in 1889 and the disposition of the same:

COAL PRODUCT OF ILLINOIS FOR 1889, BY COUNTIES.

COUNTIES.	NUMBER OF MINES.		Total product of coal of all grades for 1889. (Short tons.)	DISPOSITION OF TOTAL PRODUCT.					Total amount received for coal sold in 1889.	Average price of coal at the mines. (Short tons.)
	Regular.	Local. (a)		Loaded at mines for shipment on railroad cars and boats. (Short tons.)	Sold to local trade at mines. (Short tons.)	Used by employes. (Short tons.)	Used for steam at mines. (Short tons.)	Manufactured into coke. (Short tons.)		
Total.....	358	714	12, 104, 272	9, 884, 883	1, 699, 478	111, 224	395, 787	2, 900	\$11, 755, 203	\$0. 97
Adams.....		5	294		294				730	2. 48
Bond.....	2		62, 923	50, 510	9, 000	413	3, 000		58, 783	0. 93
Brown.....		1	60		60				90	1. 50
Bureau.....	9	11	342, 873	270, 585	44, 103	790	27, 145		441, 360	1. 29
Calhoun.....		1	981		967		14		1, 226	1. 25
Cass.....	1	3	3, 373	33	3, 114	40	186		5, 702	1. 69
Christian.....	5		136, 658	109, 361	19, 452	1, 159	6, 686		106, 745	0. 78
Clinton.....	3		156, 040	136, 417	6, 850	1, 062	11, 711		128, 957	0. 83
Crawford.....		1	110		100		10		220	2. 00
Effingham.....		4	775		770		5		1, 170	1. 51
Franklin.....		1	700		700				1, 050	1. 50
Fulton.....	24	96	406, 383	382, 618	67, 743	4, 070	11, 952		503, 912	1. 03
Gallatin.....	2	6	54, 343	40, 008	2, 455	232	448	11, 200	38, 732	0. 71
Greene.....	2	15	14, 969	1, 890	12, 912	169	8		24, 436	1. 63
Grundy.....	11	11	554, 595	524, 412	23, 083	6, 148	952		778, 752	1. 40
Hamilton.....		1	450		450				675	1. 50
Hancock.....		7	5, 249		5, 170		79		8, 025	1. 53
Hardin.....		2	40		40				50	1. 25
Henry.....	10	22	112, 542	70, 383	37, 727	1, 276	3, 156		150, 978	1. 42
Jackson.....	9	16	513, 634	453, 176	37, 496	5, 939	17, 023		474, 933	0. 92
Jasper.....		1	100		100				200	2. 00
Jefferson.....		5	1, 950		1, 775		55	120	2, 925	1. 50
Jersey.....		4	1, 104		1, 086		17	1	1, 669	1. 51
Johnson.....	1	3	3, 510	3, 000	410	100			3, 020	0. 86
Kankakee.....	1	1	55, 288	51, 331	2, 285	900	770		78, 588	1. 42
Knox.....	2	50	46, 799		46, 150		629	20	58, 546	1. 25
LaSalle.....	21	8	973, 832	749, 732	176, 603	15, 629	30, 184	1, 700	1, 118, 631	1. 15
Livingston.....	10	3	338, 089	276, 557	49, 029	3, 511	8, 992		376, 747	1. 11
Logan.....	3	3	154, 602	105, 688	35, 317	9, 337	4, 260		174, 531	1. 13
McDonough.....	6	56	96, 336	66, 660	26, 603	1, 197	1, 876		154, 549	1. 60
McLean.....	3		169, 134	117, 897	40, 157	3, 530	7, 550		216, 535	1. 28
Macon.....	2		106, 550	103, 420	92, 365	390	375		229, 131	1. 17
Macoupin.....	15	8	1, 339, 112	1, 237, 656	51, 164	6, 072	44, 220		973, 487	0. 73
Madison.....	10	16	576, 996	468, 689	75, 900	3, 924	28, 483		438, 361	0. 76
Marion.....	5		220, 819	198, 582	10, 995	2, 967	8, 275		176, 982	0. 80
Marshall.....	2	12	51, 762	35, 855	10, 130	977	4, 800		63, 890	1. 23
Menard.....	6	6	255, 050	202, 603	42, 873	1, 024	8, 550		238, 861	0. 94
Mercer.....	4	20	262, 173	232, 969	19, 955	2, 861	6, 388		295, 132	1. 13
Montgomery.....	3		33, 248	19, 078	12, 930	40	1, 200		33, 479	1. 01
Morgan.....	1	4	20, 556		19, 805		323		30, 963	1. 51
Peoria.....	35	70	588, 800	446, 371	128, 709	4, 482	9, 238		597, 440	1. 01
Perry.....	14	6	492, 555	436, 288	22, 983	6, 144	27, 140		400, 126	0. 81
Pike.....		8	102		85		17		198	1. 94
Randolph.....	9	9	111, 365	93, 022	16, 409	612	1, 322		86, 446	0. 78
Richland.....		6	140		113		27		280	2. 00
Rock Island.....	5	21	59, 127	13, 324	43, 922	601	1, 280		79, 023	1. 34
Saint Clair.....	58	24	1, 269, 366	1, 099, 564	125, 269	1, 904	42, 629		840, 393	0. 66
Saline.....	4	13	37, 095	29, 032	6, 505	708	850		32, 724	0. 88
Sangamon.....	17		894, 703	732, 234	134, 112	9, 289	29, 068		783, 279	0. 88
Schuyler.....	3	5	29, 694	19, 656	4, 280	59	5, 699		25, 963	0. 87
Scott.....	1	9	16, 739	13, 000	3, 090	547	102		25, 203	1. 51
Shelby.....	1	7	11, 750		11, 703		47		20, 155	1. 72
Stark.....	1	28	21, 568	200	21, 263	159	6		31, 310	1. 45
Tazewell.....	5	6	68, 019	50, 906	14, 806	582	1, 725		74, 173	1. 09
Vermilion.....	22	57	593, 208	494, 915	88, 917	2, 185	7, 191		606, 598	1. 02
Warren.....		31	16, 104		15, 992		101		30, 378	1. 89
Washington.....	2	2	34, 917	26, 183	7, 031	136	1, 567		32, 538	0. 93
Will.....	3	1	301, 638	276, 568	5, 960	5, 590	13, 520		353, 483	1. 17
Williamson.....	3	12	193, 159	173, 139	12, 253	1, 087	4, 680		198, 797	0. 72
Woodford.....	2		140, 523	79, 381	48, 018	2, 124	11, 000		194, 934	1. 39

a Local mines are not considered in the tables relating to labor and expenditures.

The following table shows the labor employed at the mines, both above and below ground, the average wages paid per day (obtained from statements of operators, independent of the gross amount paid in wages), and the total amount of wages paid in 1889, by counties :

EMPLOYÉS AT ILLINOIS COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	Total employés about mines.	ABOVE GROUND.												Total number em- ployed.
		Foremen or overseers.			Mechanics.			Laborers.			Boys under 16 years.			
		Average number em- ployed.	Average wages per day.	Average number of days worked.	Average number em- ployed.	Average wages per day.	Average number of days worked.	Average number em- ployed.	Average wages per day.	Average number of days worked.	Average number em- ployed.	Average wages per day.	Average number of days worked.	
Total	23, 094	217	\$2. 29	262	625	\$2. 01	266	1, 678	\$1. 53	201	64	\$0. 83	200	2, 584
Bond.....	95	1	2. 50	365	4	1. 88	225	14	1. 61	250	1	1. 00	300	20
Bureau.....	1, 438	7	2. 52	211	24	2. 17	351	94	1. 51	106	6	0. 75	115	131
Cass.....	12	1	1. 35	40	1	2. 25	53	1	1. 50	57				3
Christian.....	271	5	3. 50	234	15	2. 00	241	28	1. 47	218				48
Clinton.....	243				14	1. 88	272	26	1. 48	217				40
Fulton.....	819	6	2. 52	297	20	1. 76	250	69	1. 54	220	3	0. 67	231	98
Gallatin.....	71	2	2. 12	237	2	1. 50	237	4	1. 25	257	1	0. 50	164	9
Greene.....	13	1	2. 00	89	1	1. 00	150	2	1. 38	250				4
Grundy.....	2, 199	12	2. 28	275	33	2. 14	232	112	1. 62	204	6	1. 02	171	163
Henry.....	256	4	2. 18	300	8	1. 82	280	21	1. 47	247				33
Jackson.....	753	10	2. 28	290	27	1. 98	264	57	1. 50	224	4	0. 59	191	98
Johnson.....	14							2	1. 00	84				2
Kankakee.....	285	1	1. 80	312	4	2. 12	280	15	1. 50	164				20
Knox.....	21													
La Salle.....	3, 099	15	2. 14	234	51	2. 12	270	195	1. 61	137	7	0. 89	157	268
Livingston.....	1, 015	8	2. 41	231	15	2. 00	286	59	1. 72	162	2	2. 00	20	84
Logan.....	281	2	3. 25	307	6	1. 96	304	24	1. 46	263				32
McDonough.....	266	2	2. 15	306	5	1. 98	220	12	1. 83	180				19
McLean.....	365	3	3. 33	309	7	2. 07	302	12	1. 58	214				22
Macon.....	351	3	3. 90	348	9	2. 18	309	20	1. 50	278	1	1. 00	235	33
Macoupin.....	1, 483	12	2. 11	287	41	2. 27	290	104	1. 64	259	2	0. 84	249	159
Madison.....	686	4	2. 34	284	23	2. 13	308	61	1. 62	221	8	0. 66	288	90
Marion.....	404	4	2. 30	303	10	1. 67	302	55	1. 11	238	2	0. 75	244	71
Marshall.....	246	2	3. 00	275	5	2. 35	270	9	1. 50	130				10
Menard.....	337	5	2. 53	273	14	2. 16	264	29	1. 56	288				48
Mercer.....	466	4	2. 50	303	9	2. 33	304	28	1. 68	192				41
Montgomery.....	116	2	2. 25	300	8	2. 00	239	9	1. 44	271				19
Morgan.....	45	1	3. 30	365	2	2. 00	270	3	1. 50	210				6
Peoria.....	980	15	1. 95	193	30	1. 86	226	75	1. 51	196	6	0. 76	281	126
Perry.....	908	9	1. 81	245	22	1. 78	219	73	1. 28	204				104
Randolph.....	249	8	1. 74	208	13	1. 41	208	18	1. 34	212	2	1. 00	250	41
Rock Island.....	94	4	1. 83	258	3	2. 03	209	6	1. 41	222	1	0. 75	100	14
Saint Clair.....	1, 579	18	1. 95	281	69	1. 89	259	115	1. 64	217	6	0. 75	215	208
Saline.....	98	2	1. 50	150	2	1. 50	308	10	1. 08	175				14
Sangamon.....	1, 385	14	2. 88	278	45	2. 23	276	94	1. 61	220	3	1. 00	257	156
Schuyler.....	49	3	1. 00	240	4	1. 07	271	3	1. 25	200				10
Scott.....	40	1	3. 00	300				2	1. 25	300				3
Shelby.....	12							1	1. 25	250				1
Stark.....	4							1	1. 50	150				1
Tazewell.....	115	3	2. 17	309	8	1. 67	293	9	1. 50	239				20
Vermilion.....	974	13	2. 21	289	35	2. 09	273	94	1. 44	234	2	0. 88	185	144
Washington.....	68				3	1. 67	304	5	1. 25	255				8
Will.....	1, 152	5	1. 85	210	16	2. 14	201	46	1. 55	139				67
Williamson.....	229	2	3. 17	287	5	2. 00	247	22	1. 34	197	1	0. 50	161	30
Woodford.....	353	3	3. 33	308	12	2. 00	275	39	1. 42	242				54

EMPLOYÉS AT ILLINOIS COAL MINES, ETC.—CONTINUED.

COUNTIES.	BELOW GROUND.												Total number em- ployed.	Total amount of wages paid during 1880.
	Foremen or overseers.			Miners.			Laborers.			Boys under 16 years.				
	Aver- age number em- ployed.	Aver- age wages per day.	Aver- age number of days worked.											
Total.....	305	\$2.35	256	15,386	\$2.01	177	5,062	\$1.77	199	597	\$0.90	176	21,350	\$8,420,553
Bond.....	2	2.25	257	61	2.13	230	11	1.84	236	1	1.00	300	75	44,848
Bureau.....	7	2.39	201	945	2.03	125	326	1.85	132	29	0.76	115	1,307	362,083
Cass.....	1	2.25	53	4	2.00	49	4	2.00	51	.....	.....	.....	9	1,188
Christian.....	4	2.23	193	189	1.77	196	27	1.76	201	3	0.70	150	223	95,859
Clinton.....	3	2.80	313	30	1.35	208	167	1.85	223	3	0.50	126	203	97,066
Fulton.....	17	2.20	256	602	2.10	193	89	1.67	215	13	0.98	184	721	329,445
Gallatin.....	2	2.12	240	49	1.83	190	11	1.28	248	.....	.....	.....	62	28,445
Greene.....	.....	.....	.....	9	1.83	217	.....	.....	.....	.....	.....	.....	9	4,917
Grundy.....	14	2.74	299	1,645	2.17	145	302	1.67	150	75	1.10	135	2,036	660,466
Henry.....	6	1.97	207	201	1.54	211	15	1.60	253	1	1.00	270	223	90,602
Jackson.....	10	2.44	270	491	1.84	222	137	1.76	166	17	0.70	212	655	305,420
Johnson.....	1	1.60	84	7	1.10	84	2	1.50	50	2	0.75	50	12	1,174
Kankakee.....	1	3.20	365	230	1.85	121	29	1.90	200	5	0.85	121	265	71,205
Knox.....	1	1.50	300	20	1.88	142	.....	.....	.....	.....	.....	.....	21	4,263
La Salle.....	23	2.57	253	2,204	2.22	127	510	1.83	146	95	0.92	128	2,831	866,677
Livingston.....	10	2.32	245	770	2.07	131	134	1.82	140	17	0.79	126	931	277,240
Logan.....	4	2.33	303	190	2.07	215	48	1.60	260	7	0.75	200	249	125,603
McDonough.....	4	2.45	309	190	1.85	190	25	1.50	200	28	0.96	189	247	91,096
McLean.....	4	2.78	310	282	1.64	254	50	1.77	265	7	1.00	250	343	156,383
Macon.....	2	2.50	365	230	1.74	284	75	1.52	297	11	0.80	294	318	168,838
Macoupin.....	16	2.68	291	403	1.76	245	840	1.83	245	65	0.98	247	1,324	658,701
Madison.....	12	2.43	281	181	2.24	178	365	1.86	239	32	0.67	220	590	288,971
Marion.....	5	2.05	237	254	1.62	207	66	1.53	232	8	0.65	210	333	134,181
Marshall.....	2	2.63	232	200	1.79	109	28	1.80	120	.....	.....	.....	230	50,050
Menard.....	6	2.42	273	216	2.18	232	65	1.80	233	2	0.60	190	289	162,123
Mercer.....	4	3.25	313	273	3.15	196	142	1.96	204	6	1.25	164	425	233,569
Montgomery.....	3	2.00	320	79	1.72	104	15	1.47	232	.....	.....	.....	97	37,570
Morgan.....	1	2.25	280	30	2.00	243	7	1.50	273	1	1.00	62	39	21,368
Peoria.....	27	1.97	235	702	2.08	194	100	1.65	211	25	0.94	181	854	374,950
Perry.....	13	2.39	257	614	1.80	205	145	1.50	207	32	0.53	219	804	316,551
Randolph.....	8	2.15	202	141	1.66	165	55	1.46	183	4	0.75	145	298	66,638
Rock Island.....	4	2.19	212	71	1.86	167	5	1.59	123	.....	.....	.....	80	29,833
Saint Clair.....	39	2.25	237	727	1.70	212	590	1.80	193	15	0.78	224	1,371	574,835
Saline.....	4	1.63	262	74	1.39	146	5	1.35	130	1	0.50	200	84	23,390
Sangamon.....	15	2.69	284	936	2.14	221	258	1.75	214	20	1.03	230	1,229	634,931
Schuyler.....	3	1.83	260	34	1.61	202	2	1.25	220	.....	.....	.....	39	15,434
Scott.....	.....	.....	.....	35	1.50	250	2	1.25	300	.....	.....	.....	37	14,775
Shelby.....	.....	.....	.....	10	2.00	250	1	1.50	250	.....	.....	.....	11	5,688
Stark.....	.....	.....	.....	3	1.50	150	.....	.....	.....	.....	.....	.....	3	750
Tazewell.....	5	2.05	284	80	1.87	230	7	1.74	221	3	1.00	223	95	48,833
Vermilion.....	13	2.07	231	684	1.83	232	115	1.53	235	18	0.78	118	830	393,803
Washington.....	1	2.00	313	45	1.58	264	9	1.42	256	.....	.....	.....	55	25,462
Will.....	5	3.00	240	926	1.99	133	128	1.66	139	26	1.15	138	1,085	311,217
Williamson.....	1	2.70	191	84	1.87	249	98	1.75	181	16	0.72	204	199	83,363
Woodford.....	3	3.00	308	235	1.67	231	52	1.68	236	9	1.25	190	299	137,769

The following table shows the office force employed and the amount expended in coal-mining operations during the year 1889:

EXPENDITURES AT ILLINOIS COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	OFFICE FORCE.						Grand total employés.	Grand total wages.	Total value of supplies and materials of all kinds during 1889.	Total of all other expenditures for the mines or works.	Total mining expenditures.	Amount paid for contract work during 1889.	Grand total of all expenditures.
	Males.		Females.		Total.								
	No.	Amount of wages.	No.	Amount of wages.	No.	Amount of wages.							
Total	374	\$260,104	15	\$4,690	389	\$264,794	24,323	\$8,694,347	\$966,927	\$678,133	\$10,329,407	\$26,662	\$10,366,069
Bond	2	1,200	.....	.....	2	1,200	97	46,048	4,626	888	51,562	.....	51,562
Bureau	17	16,204	1	300	18	16,504	1,456	378,587	57,206	43,214	479,007	.....	479,007
Cass and Christian	8	4,228	.....	.....	8	4,228	291	101,275	7,721	11,913	120,909	407	121,316
Clinton	3	2,064	.....	.....	3	2,064	246	99,130	26,196	6,937	132,263	2,000	134,263
Fulton	17	9,760	.....	.....	17	9,760	836	339,205	38,385	23,805	401,395	2,400	403,795
Gallatin	3	2,820	.....	.....	3	2,820	74	31,265	1,954	980	34,199	.....	34,199
Greene	1	600	.....	.....	1	600	14	5,517	295	627	6,430	.....	6,430
Grundy	13	10,994	.....	.....	13	10,994	2,212	671,460	65,267	38,107	774,834	.....	774,834
Henry	9	7,876	.....	.....	9	7,876	265	93,478	5,074	7,168	110,720	117	110,837
Jackson	12	10,417	1	180	13	10,597	766	316,017	48,529	37,064	401,610	.....	401,610
Johnson and Kankakee	2	734	.....	.....	2	734	301	73,113	4,518	1,283	78,869	.....	78,869
Knox .....	.....	.....	.....	.....	.....	.....	21	4,263	450	1,000	5,713	.....	5,713
La Salle	35	27,529	3	813	38	28,342	3,137	895,019	84,369	38,023	1,017,411	.....	1,017,411
Livingston	18	12,679	1	87	19	12,766	1,034	290,006	20,982	10,977	321,965	150	322,115
Logan	5	3,300	.....	.....	5	3,300	286	128,903	13,186	8,350	150,439	5,500	155,939
McDonough	2	1,320	.....	.....	2	1,320	268	92,416	7,200	1,470	101,086	.....	101,086
McLean	6	4,856	1	600	7	5,456	372	161,839	20,700	2,100	184,639	2,000	186,639
Macon	6	4,760	.....	.....	6	4,760	357	173,598	16,837	21,538	211,973	.....	211,973
Macoupin	19	19,033	1	600	20	19,633	1,503	678,334	86,315	60,872	825,221	.....	825,221
Madison	11	6,638	.....	.....	11	6,638	697	295,609	35,710	22,912	354,231	.....	354,231
Marion	14	7,820	.....	.....	14	7,820	418	142,001	15,127	8,894	166,022	.....	166,022
Marshall	5	4,773	.....	.....	5	4,773	251	54,803	8,621	7,300	70,724	1,100	71,824
Menard	7	4,840	.....	.....	7	4,840	344	166,963	25,345	8,683	200,991	.....	200,991
Mercer	3	3,300	.....	.....	3	3,300	469	236,869	28,944	55,780	321,543	.....	321,543
Montgomery	2	840	.....	.....	2	840	118	38,410	2,852	1,753	43,015	506	43,521
Morgan	2	1,200	.....	.....	2	1,200	47	22,568	1,262	362	24,192	.....	24,192
Peoria	21	10,471	1	360	22	10,831	1,002	385,781	62,416	28,445	476,642	993	477,635
Perry	18	10,931	1	300	19	11,231	927	327,782	37,945	12,231	377,958	500	378,458
Randolph	5	3,160	.....	.....	5	3,160	254	69,798	7,542	2,867	80,207	.....	80,207
Rock Island	2	640	.....	.....	2	640	96	30,473	1,916	2,555	34,944	13	34,957
Saint Clair	31	13,131	.....	.....	31	13,131	1,610	587,966	77,955	78,635	744,556	5,495	750,051
Saline	3	1,230	.....	.....	3	1,230	101	24,620	2,205	882	27,707	460	28,167
Sangamon	28	23,608	.....	.....	28	23,608	1,413	658,539	68,571	39,702	766,812	.....	766,812
Schuyler	1	480	.....	.....	1	480	50	15,914	2,400	3,045	21,359	.....	21,359
Scott, Shelby, and Stark	2	1,200	.....	.....	2	1,200	58	22,413	1,625	1,181	25,219	.....	25,219
Tazewell	2	1,200	1	250	3	1,450	118	50,283	6,880	3,602	60,765	500	61,265
Vermilion	8	5,993	1	300	9	6,293	983	402,096	37,219	39,018	478,333	3,321	481,654
Washington	1	300	.....	.....	1	300	64	25,762	560	2,945	29,207	.....	29,207
Will	20	9,315	3	900	23	10,215	1,175	321,432	10,600	29,048	361,080	200	361,280
Williamson	5	5,040	.....	.....	5	5,040	234	88,403	15,982	7,610	111,995	.....	111,995
Woodford	5	3,620	.....	.....	5	3,620	358	141,389	5,500	4,762	151,651	1,000	152,651

The following table gives the value of Illinois mines and improvements and the number of animals employed therein:

VALUE OF ILLINOIS COAL MINES, BY COUNTIES.

COUNTIES.	VALUE OF MINES AND IMPROVEMENTS.									Number of animals employed.
	In land owned.		In land leased.		In build-ings and fixtures.	In tools, implements, live stock, machinery, and supplies.	Total.	Cash capital not reported in the foregoing items.	Total capital.	
	Acres.	Value.	Acres.	Value.						
Total	161,468	\$8,074,020	30,272	\$1,816,044	\$3,923,747	\$3,325,547	\$16,139,958	\$1,490,303	\$17,630,351	2,230
Bond	1,300	20,000	529	18,040	7,000	11,000	62,040	5,700	67,740	8
Bureau	36,994	2,500,342	1,460	98,000	509,977	37,239	3,145,558	157,000	3,302,558	103
Cass and Christian	2,364	70,225	674	41,210	200,016	71,525	382,970	14,713	397,689	21
Clinton	1,540	65,810	.....	.....	58,250	13,882	137,942	14,150	152,092	21
Fulton	718	43,555	2,177	110,036	107,517	101,538	362,646	48,650	411,296	75
Gallatin	2,000	20,000	100	3,000	2,500	3,115	28,615	2,500	31,115	10
Greene	80	8,000	160	8,000	4,200	600	20,800	750	21,550	10
Grundy	10,847	855,441	160	3,200	173,896	287,192	1,319,729	106,700	1,426,429	194
Henry	1,213	79,400	354	18,782	14,585	17,474	130,241	14,050	144,291	11
Jackson	46,547	956,300	320	12,800	102,775	90,320	1,162,195	45,700	1,207,895	103
Johnson and Kankakee	284	17,500	240	12,000	23,900	23,815	77,215	5,700	82,915	29
Knox .....	.....	.....	270	11,300	650	650	12,600	500	13,100	2
La Salle	14,858	1,253,946	205	13,000	382,125	214,456	1,863,527	183,770	2,047,297	280
Livingston	1,211	153,625	9	850	73,892	30,130	254,505	54,200	312,705	65
Logan	280	28,000	1,350	35,000	76,000	25,600	164,600	17,500	182,100	22
McDonough	1,049	53,475	.....	.....	8,375	12,065	73,915	12,575	86,490	27
McLean	100	20,000	680	42,400	59,800	85,500	207,700	16,100	223,800	16
Macon	6	1,000	560	28,000	37,000	70,000	136,000	20,000	156,000	36
Macoupin	8,814	195,375	391	7,820	372,901	131,650	707,746	97,700	805,446	133
Madison	1,528	77,925	770	32,410	153,800	85,250	349,385	40,400	389,785	61
Marion	869	31,285	160	8,000	63,852	35,517	138,654	17,550	156,204	64
Marshall	205	5,000	1,720	78,000	34,000	13,000	130,000	15,000	145,000	13
Menard	165	16,600	1,380	174,000	17,300	52,960	260,860	22,700	283,560	34
Mercer	2,118	118,840	.....	.....	78,600	38,800	236,240	65,750	301,990	67
Montgomery	622	6,350	.....	.....	26,665	13,985	47,000	13,200	60,200	7
Morgan	3	1,200	.....	.....	12,000	9,600	22,800	2,000	24,800	3
Peoria	5,249	286,300	2,861	177,300	88,342	116,111	668,053	57,550	725,603	89
Perry	3,197	97,500	562	46,000	94,692	78,214	316,406	45,361	361,767	134
Randolph	500	26,200	1,223	31,580	24,740	39,166	121,688	12,050	133,736	29
Rock Island	49	7,000	800	28,000	14,100	7,900	57,000	3,975	60,975	8
Saint Clair	3,408	270,995	5,561	458,210	360,132	239,417	1,328,754	105,045	1,433,799	172
Saline	240	13,200	234	2,900	8,900	7,450	32,450	5,300	37,750	16
Sangamon	4,798	216,500	1,036	82,000	379,750	214,350	892,600	97,850	990,450	136
Schuyler .....	.....	.....	360	21,750	7,100	12,200	41,050	2,700	43,750	6
Scott, Shelby, and Stark	6	600	250	18,500	2,900	1,420	23,420	2,770	26,190	2
Tazewell	438	32,400	340	44,600	10,500	13,000	100,500	6,600	107,100	13
Vermilion	4,873	380,881	311	31,856	147,429	55,105	615,271	52,134	667,405	95
Washington .....	.....	.....	157	7,850	10,000	9,500	27,350	2,800	30,150	7
Will	2,670	124,250	90	8,600	65,596	10,590	209,036	71,100	280,136	71
Williamson	160	4,000	2,813	101,650	18,200	27,253	151,103	12,600	163,703	21
Woodford	165	9,000	.....	.....	89,790	17,000	115,790	18,000	133,790	18

COAL PRODUCT OF OHIO.

The great Appalachian coal field extends over the eastern portion of the state of Ohio and covers an area of about 10,000 square miles. The western border passes through the counties of Trumbull, Geauga, Portage, Summit, Medina, Wayne, Holmes, Knox, Licking, Perry, Hocking, Vinton, Jackson, Pike, and Scioto.

The coal measures of the state are divided into three series, namely, the Lower measures, the Barren measures, and the Upper measures, but only the Upper and Lower measures contain workable veins. The principal seams are numbered from 1 to 8, beginning at the lowest or Sharon bed and ending with the Pittsburg bed, at the bottom of the Upper measures. The Lower measures furnish the greater portion of the coal mined in the state, the most important seam of which is the great No. 6 or Hocking Valley. The coals now being worked are mainly from the seams designated as Nos. 1, 2, 6, 7, and 8. The varieties are, however, better known to the trade by the names of the local districts producing them.

The following is a list of counties, mine inspectors' districts, and local districts in the state of Ohio in which commercial mines are in operation :

Mine inspectors' district.	COUNTIES.	Local district.	Subdistrict.	Mine inspectors' district.	COUNTIES.	Local district.	Subdistrict.
1	Gallia, except Cheshire township.	Ohio Valley.		5	Stark	Tuscarawas Valley.	Massillon.
2	Gallia, Cheshire township.	do.		5	Stark	do.	Wheeling and Lake Erie.
2	Washington	do.	Macksburg.	1	Vinton.....	Hocking	Vinton.
2	Washington	do.	Coal Run.	3	Perry.....	do.	Muskingum.
1	Scioto	do.	Scioto Valley.	1	Hocking	do.	Hocking.
1	Lawrence.....	do.	Ironton.	3	Athens, except Troy township.	do.	Nelsonville.
			(Yellow Creek.	2	Athens, Troy township.	do.	do.
2	Jefferson, except Spring township.	do.	Steubenville.	5	Mahoning	Mahoning Valley.	
			(Dillonvale.	5	Trumbull.....	do.	Brier Hill.
4	Jefferson, Spring township.	do.	Bergholz.	2	Guernsey.....	Cambridge	Quaker City.
2	Meigs.....	do.	Pomeroy.	2	Guernsey.....	do.	Trall Run.
2	Belmont.....	do.	Wheeling Creek.	4	Carroll.....	Connotton Valley.	
2	Belmont.....	do.	Bellaire.	2	Harrison.....	do.	
2	Morgan.....	do.	Muskingum.	2	Noble, except Brookfield township.	Macksburg.	
5	Medina.....	Medina.		3	Noble, Brookfield township.	do.	
4	Coshocton.....	Tuscarawas Valley.	do.	2	Jackson.....	Jackson.	
4	Coshocton.....	do.	White Woman.	3	Muskingum	Muskingum Valley.	
4	Tuscarawas	Tuscarawas.		5	Columbiana, northern part.	Salineville.	
4	Holmes.....	do.		4	Columbiana, southern part.	do.	
5	Wayne.....	do.	Killbuck.				
5	Wayne.....	do.	Wooster.				
5	Summit.....	Akron.					

The coal beds of Ohio, like all others of the Appalachian field, embrace all the varieties of bituminous, steam, coking, gas, and cannel coal. The larger part of the product is adapted for coking and steam, although the block coals of the Hocking valley and other sections have been extensively used for blast furnaces, but are now being superseded for that purpose by the Connellsville cokes. Very little Ohio coal is used for gas manufacture, owing to the convenience of obtaining the better gas coals of Pennsylvania. The cannels are found, as is usual, in pockets, varying in thickness and extent, but never of any great economic value, the low per cent of volatile matter detracting from their efficiency in the manufacture and enrichment of gas. Hence they have obtained only a local importance.

The total quantity of coal produced in Ohio during the year ending June 30, 1880, as reported to the Tenth Census, was 6,008,595 short tons, valued at \$7,719,667, an average of \$1.28 per ton at the mines. During the year 1889 the total production, as reported to the Eleventh Census, was 9,976,787 short tons, valued at \$9,355,400, an average of \$0.94 per ton at the mines.

The following table gives the number of regular and local mines worked, the total product of coal, by counties, and the disposition of the same:

COAL PRODUCT OF OHIO IN 1889, BY COUNTIES.

COUNTIES.	NUMBER OF MINES.		Total product of coal of all grades for 1889. (Short tons.)	DISPOSITION OF TOTAL PRODUCT.					Total amount received for coal sold in 1889.	Average price of coal at the mines. (Short tons.)
	Regular.	Local. (a)		Loaded at mines for shipment on railroad cars and boats. (Short tons.)	Sold to local trade at mines. (Short tons.)	Used by employes. (Short tons.)	Used for steam at mines. (Short tons.)	Manufactured into coke. (Short tons.)		
Total.....	323	1,745	9,976,787	8,566,223	1,196,872	50,271	93,952	69,469	\$9,355,400	\$0.94
Athens.....	29	31	1,224,186	1,102,670	70,933	4,273	7,288	39,022	994,344	0.81
Belmont.....	24	171	641,862	456,221	175,396	3,299	1,946	5,000	553,333	0.87
Carroll.....	6	39	351,782	337,393	14,101	88	200	.....	261,813	0.74
Columbiana.....	19	65	596,824	542,665	49,388	2,492	2,279	.....	471,945	0.70
Coshocton.....	8	32	166,599	112,130	53,091	.....	332	.....	163,659	0.98
Gallia.....	1	104	23,208	14,339	7,658	1,211	.....	.....	24,068	1.04
Guernsey.....	10	93	362,168	328,568	26,552	3,112	3,936	.....	313,480	0.87
Harrison.....	2	109	33,724	800	31,817	1,107	.....	.....	41,023	1.23
Hocking.....	10	32	845,049	820,294	10,757	523	13,475	.....	683,551	0.81
Holmes.....	.....	20	9,423	.....	9,272	146	.....	.....	13,037	1.38
Jackson.....	36	55	926,874	823,269	94,241	3,000	6,355	.....	953,696	1.03
Jefferson.....	16	92	271,830	173,260	90,287	3,068	2,268	2,947	273,075	1.00
Lawrence.....	6	37	102,656	44,432	57,872	352	.....	.....	106,269	1.04
Mahoning.....	8	24	240,563	187,921	23,227	2,798	4,717	22,500	280,406	1.17
Medina.....	4	.....	136,061	125,759	2,975	1,385	5,942	.....	158,003	1.16
Meigs.....	11	61	220,277	103,301	111,698	3,132	2,146	.....	223,614	1.02
Monroe.....	1	49	20,725	16,000	4,246	479	.....	.....	34,066	1.64
Morgan.....	.....	51	8,060	.....	7,662	398	.....	.....	10,502	1.30
Muskingum.....	15	132	214,065	133,539	79,254	554	698	.....	212,873	0.99
Noble.....	3	160	38,400	10,200	26,250	1,950	.....	.....	44,039	1.15
Perry.....	33	72	1,565,786	1,506,282	51,313	3,754	4,437	.....	1,317,063	0.84
Portage.....	2	.....	78,117	73,728	2,641	598	1,150	.....	99,213	1.27
Stark.....	26	41	851,994	782,466	41,541	5,502	22,485	.....	1,073,703	1.26
Summit.....	4	4	50,726	36,152	11,045	857	2,072	.....	92,723	1.83
Trumbull.....	7	6	108,120	101,270	4,193	1,417	1,240	.....	176,934	1.64
Tuscarawas.....	27	114	683,505	562,060	113,886	2,468	5,091	.....	544,524	0.80
Vinton.....	6	64	102,040	85,202	14,756	1,262	820	.....	104,972	1.03
Washington.....	2	24	18,045	11,374	6,270	341	60	.....	19,684	1.09
Wayne.....	2	6	84,178	75,478	3,350	250	5,100	.....	103,883	1.23

a Local mines are not considered in the tables relating to labor and expenditures.

The table following shows the labor employed at the mines, both above and below ground, the average wages paid per day (obtained from statements of operators, independent of the gross amount paid in wages), and the amount of wages paid during the year 1889.

EMPLOYÉS AT OHIO COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	Total employés about mines.	ABOVE GROUND.											Total number employed.	
		Foremen or overseers.			Mechanics.			Laborers.			Boys under 16 years.			
		Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.		Average number of days worked.
Total	19,343	221	\$2.28	244	334	\$1.92	235	1,420	\$1.51	102	83	\$0.77	187	2,058
Athens.....	2,228	24	2.62	282	38	2.04	239	189	1.61	201	11	0.96	179	262
Belmont.....	1,100	19	2.07	228	9	1.82	244	82	1.57	209	1	0.75	200	111
Carroll.....	565	6	2.32	160	4	1.94	207	29	1.60	217	3	0.66	192	42
Columbiana.....	955	7	2.16	260	5	1.75	208	96	1.54	249	5	0.86	200	113
Coshocton.....	290	4	2.08	256	1	2.00	210	24	1.58	200	2	0.78	193	31
Gallia.....	34							3	1.25	205				3
Guernsey.....	608	8	2.44	254	18	2.30	167	62	1.63	183	2	0.75	156	90
Harrison.....	1,187	11	2.63	241	19	2.33	221	34	1.50	151	1	0.50	180	65
Hocking.....	2,251	24	2.13	290	40	1.73	254	120	1.38	170	6	0.79	195	190
Jefferson.....	511	6	2.08	245	13	1.89	260	61	1.38	213	2	0.75	174	82
Lawrence.....	232	4	2.12	299	6	1.48	277	23	1.17	254				33
Mahoning.....	636	6	2.13	251	12	1.86	247	32	1.33	237	1	0.85	232	51
Medina.....	379	2	3.50	300	11	1.89	319	15	1.53	179	2	0.88	205	30
Meigs.....	567	6	1.98	240	16	1.68	212	81	1.17	154	5	0.47	155	108
Monroe.....	29	1	1.75	300	2	2.00	300	3	1.25	300				6
Muskingum.....	304	7	2.36	259	3	1.89	219	20	1.57	172				30
Noble.....	43	2	1.50	333	1	1.50	20	4	1.13	250				7
Perry.....	3,056	33	2.26	196	32	1.90	188	239	1.70	164	20	0.81	151	324
Portage.....	179	2	2.62	300	4	1.93	191	3	1.40	160				9
Stark.....	1,975	18	2.20	260	51	1.95	240	127	1.48	190	3	0.75	166	199
Summit.....	170	5	2.21	250	6	1.97	312	13	1.50	206	4	0.65	208	28
Trumbull.....	388	7	2.44	220	11	1.67	255	22	1.28	147				40
Tuscarawas.....	1,061	14	2.19	225	20	2.01	233	88	1.50	203	14	0.71	241	136
Vinton.....	256	2	2.13	200	6	1.42	262	28	1.21	227	1	0.60	265	37
Washington.....	23	1	3.00	267	2	1.75	189	5	1.42	245				8
Wayne.....	248	2	2.75	333	4	2.06	339	17	1.58	157				23

COUNTIES.	BELOW GROUND.											Total amount of wages paid during 1889.		
	Foremen or overseers.			Miners.			Laborers.			Boys under 16 years.			Total number employed.	
	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.			Total number of days worked.
Total	221	\$2.32	245	14,733	\$1.96	181	1,955	\$1.63	185	376	\$0.71	181	17,285	\$6,730,778
Athens.....	15	2.42	263	1,741	1.95	183	173	1.62	196	37	0.74	183	1,966	790,035
Belmont.....	15	2.13	223	812	1.94	196	154	1.62	191	8	0.56	201	989	398,586
Carroll.....	7	2.46	175	467	2.02	183	35	1.80	202	14	0.55	156	523	208,890
Columbiana.....	17	2.34	257	764	1.73	238	52	1.64	221	9	0.84	229	842	389,732
Coshocton.....	7	1.93	275	236	1.76	208	14	1.58	227	2	1.00	210	259	164,656
Gallia.....	1	1.75	242	24	1.50	205	6	1.20	242				31	10,315
Guernsey.....	8	2.24	243	468	2.12	175	87	1.84	164	15	0.76	144	578	227,713
Harrison.....				8	1.69	100							8	1,350
Hocking.....	6	2.64	239	948	2.32	213	136	2.00	213	32	0.71	245	1,122	571,763
Jackson.....	29	2.29	267	1,618	2.00	165	397	1.41	170	17	0.52	186	2,061	708,361
Jefferson.....	9	2.52	251	344	1.99	106	69	1.53	159	7	0.80	121	429	201,449
Lawrence.....	2	2.00	200	182	1.39	232	15	1.13	242				199	74,278
Mahoning.....	7	2.34	244	521	1.46	232	38	1.66	228	19	0.78	217	585	214,390
Medina.....	4	2.75	300	320	1.61	170	17	1.83	163	8	0.64	166	349	116,244
Meigs.....	8	2.03	221	346	1.90	161	76	1.27	204	29	0.89	172	459	152,620
Monroe.....	1	2.00	300	20	2.50	300	2	1.25	300				23	19,100
Muskingum.....	7	1.82	239	244	1.80	182	17	1.67	185	6	0.72	181	274	91,300
Noble.....	2	1.95	258	31	1.50	190	3	1.00	227				36	12,449
Perry.....	18	2.53	251	2,448	2.16	148	209	1.78	160	57	0.73	145	2,732	952,987
Portage.....	1	3.50	275	145	1.75	178	22	1.75	180	2	0.75	186	170	57,549
Stark.....	21	2.49	240	1,479	2.10	177	267	1.77	179	69	0.65	171	1,776	707,736
Summit.....	11	2.02	227	105	1.82	208	20	1.95	211	6	0.68	201	142	63,095
Trumbull.....	5	2.61	287	299	1.60	157	29	1.48	198	15	0.91	198	348	168,520
Tuscarawas.....	16	2.35	215	789	1.86	215	109	1.66	199	11	0.64	210	925	403,726
Vinton.....	3	2.10	262	160	1.58	205	48	1.34	195	8	0.45	226	219	74,411
Washington.....				14	1.91	231	1	1.56	180				15	9,368
Wayne.....	1	2.00	200	200	1.75	165	19	1.84	158	5	0.60	150	225	71,695

The following table shows the office force employed and the amount expended during the year 1889:

EXPENDITURES AT OHIO COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	OFFICE FORCE.						Grand total employés.	Grand total wages.	Total value of supplies and materials of all kinds during 1889.	Total of all other expenditures for the mines or works.	Total mining expenditures.	Amount paid for contract work during 1889.	Grand total of all expenditures.
	Males.		Females.		Total.								
	No.	Amount of wages.	No.	Amount of wages.	No.	Amount of wages.							
Total	240	\$159, 072	8	\$2, 754	248	\$161, 826	19, 591	\$6, 892, 604	\$568, 020	\$712, 792	\$8, 173, 416	\$58, 767	\$8, 232, 183
Athens	39	24, 807	1	300	40	25, 107	2, 268	815, 142	56, 232	73, 906	945, 280	.....	945, 280
Belmont	20	11, 910	2	1, 024	22	12, 934	1, 122	411, 520	55, 140	41, 832	508, 492	1, 412	509, 904
Carroll	5	3, 120	.....	.....	5	3, 120	570	212, 010	11, 730	20, 250	243, 990	2, 000	245, 990
Columbiana	5	3, 785	.....	.....	5	3, 785	990	364, 512	22, 495	39, 608	446, 616	23, 500	470, 116
Coshocton	7	6, 540	.....	.....	7	6, 540	207	110, 596	5, 171	11, 863	127, 630	.....	127, 630
Gallia and Guernsey	9	6, 010	1	150	10	6, 160	712	244, 188	14, 256	32, 375	290, 819	.....	290, 819
Harrison .....	.....	.....	.....	.....	.....	.....	8	1, 350	100	.....	1, 450	.....	1, 450
Hocking	12	9, 835	1	240	13	10, 075	1, 200	581, 838	50, 035	30, 401	662, 274	.....	662, 274
Jackson	33	17, 535	1	420	34	17, 955	2, 285	724, 316	54, 165	51, 029	829, 510	.....	829, 510
Jefferson	6	4, 320	1	520	7	4, 840	518	206, 289	20, 937	11, 750	238, 996	.....	238, 996
Lawrence	3	1, 358	.....	.....	3	1, 358	235	75, 636	3, 200	3, 604	82, 440	.....	82, 440
Mahoning	7	3, 515	.....	.....	7	3, 515	643	217, 905	17, 341	27, 017	262, 263	305	262, 568
Medina	2	2, 100	.....	.....	2	2, 100	381	118, 344	10, 221	16, 085	144, 650	.....	144, 650
Meigs and Monroe	12	7, 640	.....	.....	12	7, 640	608	179, 360	24, 692	23, 228	227, 280	.....	227, 280
Muskingum	3	2, 400	.....	.....	3	2, 400	307	93, 760	6, 272	7, 425	107, 457	.....	107, 457
Noble .....	.....	.....	.....	.....	.....	.....	43	12, 449	580	300	13, 329	.....	13, 329
Perry	25	14, 317	.....	.....	25	14, 317	3, 081	967, 304	60, 409	102, 368	1, 130, 081	4, 000	1, 134, 081
Portage .....	.....	.....	.....	.....	.....	.....	179	57, 549	3, 296	27, 645	86, 490	.....	86, 490
Stark	24	20, 350	.....	.....	24	20, 350	1, 999	728, 086	91, 899	93, 524	913, 509	25, 015	938, 524
Summit	3	2, 700	.....	.....	3	2, 700	173	65, 795	5, 538	37, 639	108, 972	150	109, 122
Trumbull	6	4, 400	.....	.....	6	4, 400	394	112, 920	7, 603	17, 609	138, 132	.....	138, 132
Tuscarawas	7	6, 120	.....	.....	7	6, 120	1, 068	409, 846	38, 685	26, 842	475, 373	2, 385	477, 758
Vinton	7	3, 055	.....	.....	7	3, 055	263	77, 466	3, 287	7, 791	88, 544	.....	88, 544
Washington	1	200	1	100	2	300	25	9, 668	1, 465	305	11, 438	.....	11, 438
Wayne	4	3, 060	.....	.....	4	3, 060	252	74, 755	3, 250	8, 396	86, 401	.....	86, 401

The following table gives the value of the mines and improvements and the power used in mining:

VALUE OF OHIO COAL MINES, BY COUNTIES.

COUNTIES.	VALUE OF MINES AND IMPROVEMENTS.								POWER USED IN MINING.				
	In land owned.		In land leased.		In building and fixtures.	In tools, implements, live stock, machinery, and supplies.	Total.	Cash capital not reported in the foregoing items.	Total capital.	Steam boilers.		Number of cylinders.	Number of animals.
	Acres.	Value.	Acres.	Value.						No.	Horse power.		
Total	66, 697	\$6, 329, 766	38, 201	\$2, 697, 874	\$2, 270, 971	\$1, 730, 656	\$13, 329, 267	\$988, 969	\$14, 018, 236	300	10, 342	257	2, 127
Athens	11, 522	1, 147, 007	4, 785	314, 500	409, 430	212, 673	2, 084, 210	110, 829	2, 195, 039	32	1, 246	33	217
Belmont	2, 903	154, 230	4, 515	208, 975	103, 100	96, 539	562, 844	69, 900	632, 744	9	240	8	160
Carroll	311	6, 550	630	51, 000	16, 705	14, 540	88, 795	55, 500	144, 295	1	75	.....	53
Columbiana	1, 167	37, 900	2, 443	158, 775	78, 300	51, 050	326, 025	36, 800	362, 825	13	640	7	107
Coshocton	825	41, 283	786	56, 300	68, 358	9, 925	175, 866	12, 450	188, 316	.....	.....	.....	33
Gallia and Guernsey	1, 878	51, 660	1, 666	122, 000	47, 600	139, 875	301, 135	33, 250	394, 385	17	703	16	93
Harrison	115	4, 600	.....	.....	700	125	5, 425	2, 800	8, 225	.....	.....	.....	1
Hocking	2, 627	275, 000	3, 920	302, 350	84, 200	234, 134	895, 684	68, 650	964, 334	27	980	16	146
Jackson	7, 451	1, 025, 385	1, 909	136, 186	237, 275	157, 486	1, 556, 312	88, 145	1, 644, 457	30	1, 159	36	194
Jefferson	8, 281	1, 727, 160	980	74, 500	248, 750	172, 555	2, 222, 965	30, 975	2, 253, 940	10	269	6	66
Lawrence	1, 460	33, 400	160	16, 000	8, 000	7, 000	64, 400	8, 050	72, 450	.....	.....	.....	39
Mahoning	794	80, 400	1, 424	108, 920	51, 602	30, 460	271, 382	21, 100	292, 482	14	359	13	42
Medina .....	.....	.....	490	49, 500	27, 800	15, 000	92, 300	21, 000	113, 300	10	255	5	41
Meigs and Monroe	993	64, 670	1, 050	72, 500	82, 000	71, 950	291, 120	32, 700	323, 820	8	125	4	148
Muskingum	380	28, 550	1, 095	49, 610	17, 090	17, 700	112, 950	18, 170	131, 120	3	60	2	40
Noble	235	8, 550	75	7, 500	4, 450	1, 840	22, 340	1, 350	23, 690	1	25	1	3
Perry	15, 614	1, 031, 259	4, 435	369, 400	170, 288	126, 665	1, 697, 612	140, 650	1, 838, 262	24	694	19	308
Portage .....	.....	.....	90	5, 508	14, 033	3, 382	22, 923	9, 000	31, 923	2	80	2	11
Stark	461	66, 600	3, 513	290, 200	254, 750	167, 500	779, 050	115, 500	894, 550	65	2, 520	65	164
Summit .....	.....	.....	385	42, 750	40, 400	17, 500	100, 650	15, 000	115, 650	9	280	6	12
Trumbull	387	28, 075	730	65, 500	87, 825	17, 800	199, 200	16, 300	215, 500	11	210	4	26
Tuscarawas	4, 003	337, 337	2, 106	160, 450	115, 840	96, 027	709, 654	57, 100	766, 754	9	292	7	153
Vinton	4, 690	152, 550	510	22, 750	77, 975	40, 250	293, 525	9, 350	302, 875	1	30	3	29
Washington	100	2, 000	300	12, 000	4, 000	2, 200	20, 200	1, 200	21, 400	.....	.....	.....	11
Wayne	500	25, 000	4	700	20, 500	26, 500	72, 700	13, 200	85, 900	4	100	4	21

COAL PRODUCT OF INDIANA.

What is known as the Central or Illinois coal field extends eastward over the southwestern portion of Indiana, underlying an area of about 7,000 square miles, and includes nineteen counties, Warren county lying at the northern limit and a line drawn through the eastern boundary of Greene county marking its extent eastward. The general character of the coals of this state, like those of Illinois and western Kentucky, which comprise the remaining portion of the field, are, of course, bituminous and excellent for steam and heating purposes, but of little value for the manufacture of coke and gas. Cannel coal, which appears in pockets in various portions of the Indiana region, has not attained more than local importance, either for domestic fuel or for the manufacture of gas.

There being no authorized system of collecting the statistics of production of coal in this state the figures published heretofore from year to year must be taken as approximates to some extent. The state mine inspector, in the course of his duties, has secured whatever data was available on the subject, and his estimates may be relied upon as representing very nearly the actual facts. Assuming these figures to be correct, we find that the production of coal in the state has declined since 1887, the year of maximum output. This condition is owing to the introduction of natural gas into the cities and larger towns, together with the use of crude oil as fuel at Chicago and elsewhere, thereby displacing the Indiana coals in many important near-by markets.

The production as reported by the mine inspector was as follows for the years named: 1887, 3,217,711 short tons; 1888, 3,140,979 short tons. The product for the year 1889 as reported to the census was 2,845,057 short tons, valued at \$2,887,852, an average of \$1.02 per ton at the mines. During the year ending June 30, 1880, the quantity of coal produced in the state, as reported to the Tenth Census, was 1,454,327 short tons, valued at \$2,150,258, an average of \$1.48 per ton at the mines.

The following table shows, by counties, the number of mines, the total product and the disposition of the same, together with the total amount received for coal sold and the average price per ton at the mines:

COAL PRODUCT OF INDIANA FOR 1889, BY COUNTIES.

COUNTIES.	NUMBER OF MINES.		Total product of coal of all grades for 1889. (Short tons.)	DISPOSITION OF TOTAL PRODUCT.					Total amount received for coal sold in 1889.	Average price of coal at the mines. (Short tons.)
	Regular.	Local. (a)		Loaded at mines for shipment on railroad cars and boats. (Short tons.)	Sold to local trade at mines. (Short tons.)	Used by employes. (Short tons.)	Used for steam at mines. (Short tons.)	Manufactured into coke. (Short tons.)		
Total	94	256	2,845,057	2,527,112	217,041	20,894	67,210	12,800	\$2,887,852	\$1.02
Clay	28	29	695,640	647,442	27,042	4,608	16,557	.....	795,140	1.14
Davies	8	13	191,585	176,244	9,381	3,035	2,922	.....	195,793	1.02
Dubois	2	13	15,848	5,917	9,343	188	400	.....	18,500	1.17
Fountain	2	7	41,141	38,485	1,991	300	365	.....	53,218	1.29
Gibson	1	6	1,297	128	1,059	40	40	.....	1,941	1.53
Greene	3	12	185,849	175,753	2,351	880	6,865	.....	169,595	0.91
Knox	2	4	9,040	7,200	1,816	24	.....	.....	10,405	1.15
Martin .....	.....	4	710	.....	709	10	.....	.....	837	1.25
Owen	1	15	3,958	225	3,683	20	30	.....	4,292	1.08
Parke	4	11	357,434	344,658	5,030	1,370	6,376	.....	377,324	1.06
Perry	2	15	40,050	27,186	12,166	118	580	.....	47,175	1.18
Pike	3	32	154,524	138,380	7,805	682	2,857	4,800	128,867	0.83
Spencer	2	26	18,456	14,934	3,117	5	400	.....	21,207	1.15
Sullivan	12	11	317,252	271,977	19,728	2,184	15,363	8,000	299,286	0.94
Vanderburg	6	.....	183,942	89,820	84,909	2,685	6,528	.....	212,572	1.16
Vermillion	4	14	187,651	178,925	4,152	2,274	2,300	.....	167,590	0.89
Vigo	8	13	371,903	353,685	11,415	1,903	4,900	.....	330,205	0.89
Warren .....	.....	9	2,160	.....	2,160	.....	.....	.....	3,555	1.65
Warrick	6	22	66,638	56,153	9,190	568	727	.....	50,300	0.75

a Local mines are not considered in the tables relating to labor and expenditures.

The following table gives the number of employes of all kinds in Indiana mines, both above and below ground, the average wages paid per day (obtained from statements of operators, independent of the gross amount paid in wages), and the amount of wages paid during 1889:

EMPLOYÉS AT INDIANA COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	Total employes about mines.	ABOVE GROUND.												Total number employed.
		Foremen or overseers.			Mechanics.			Laborers.			Boys under 16 years.			
		Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	
Total.....	6,448	74	\$2.34	255	160	\$1.84	256	426	\$1.47	192	6	\$0.73	152	666
Clay.....	2,592	29	2.52	225	63	1.85	255	149	1.53	141	4	0.78	131	245
Daviess.....	455	2	2.80	294	20	1.64	248	40	1.38	172	1	0.75	160	68
Dubois.....	41	2	2.02	333	1	2.37	300	3	1.39	150				6
Fountain.....	85	2	2.50	300	4	1.75	232	5	1.50	238				11
Gibson.....	7	1	1.50	60				1	1.25	40				2
Greene.....	296	1	2.00	250	7	2.00	312	21	1.53	190				29
Knox.....	22	1	1.25	120				2	1.25	237				3
Owen.....	17	1	1.50	41	1	1.50	25	3	1.00	50				5
Parke.....	591	4	2.72	281	18	1.84	288	28	1.50	268				50
Perry.....	109	3	1.59	327	3	1.44	267	12	1.11	242				18
Pike.....	340	3	2.45	260	5	2.01	276	22	1.31	277				30
Spencer.....	29	2	1.56	225				3	1.17	250				5
Sullivan.....	556	11	2.18	253	15	1.93	244	35	1.50	211	1	0.50	225	62
Vanderburg.....	318	6	2.35	335	8	1.94	289	28	1.36	236				42
Vermillion.....	276	4	2.63	311	9	2.03	231	21	1.47	239				34
Vigo.....	629	1	2.00	313	3	1.84	117	44	1.70	227				48
Warrick.....	85	1	2.44	300	3	1.42	247	9	1.03	159				13

COUNTIES.	BELOW GROUND.												Total amount of wages paid during 1889.	
	Foremen or overseers.			Miners.			Laborers.			Boys under 16 years.				Total number employed.
	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.		
Total.....	135	\$2.37	170	4,738	\$1.88	175	820	\$1.70	182	89	\$0.76	184	5,782	\$2,144,566
Clay.....	83	2.39	104	1,906	1.84	126	318	1.76	124	40	0.84	117	2,347	623,772
Daviess.....	6	2.39	250	291	2.06	169	79	1.50	221	16	0.42	269	392	164,557
Dubois.....	1	1.50	300	30	1.57	175	4	1.41	175				35	12,371
Fountain.....	1	2.00	300	65	2.25	215	8	1.66	233				74	39,984
Gibson.....				4	1.50	40	1	1.50	40				5	440
Greene.....	2	2.50	312	223	2.20	190	40	1.80	177	2	0.85	155	267	114,664
Knox.....	1	2.50	237	18	1.66	164	2	1.50	237				19	6,150
Owen.....				10	1.00	50	2	1.25	33				12	800
Parke.....	4	3.00	300	474	2.00	260	63	1.99	271				541	308,249
Perry.....	2	1.56	283	70	1.20	229	17	1.62	244	2	0.40	250	91	31,313
Pike.....	2	2.43	275	251	2.04	165	54	1.44	172				310	106,097
Spencer.....	2	1.75	250	20	1.52	188	2	1.13	250	3	0.50	230	24	8,900
Sullivan.....	10	2.24	272	435	1.64	213	37	1.66	210	12	0.73	208	494	197,646
Vanderburg.....	6	2.68	291	176	2.00	250	82	1.48	249	12	1.02	250	276	146,647
Vermillion.....	4	2.31	276	201	2.03	228	35	1.91	232	2	1.00	182	242	128,495
Vigo.....	8	2.49	300	510	1.84	193	63	1.93	197				581	231,682
Warrick.....	3	1.84	212	56	1.82	184	13	1.19	174				72	22,889

The following table shows the office force employed and the amount expended during the year 1889:

EXPENDITURES AT INDIANA COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	OFFICE FORCE.						Grand total employes.	Grand total wages.	Total value of supplies and materials of all kinds during 1889.	Total of all other expenditures for the mines or works.	Total mining expenditures.	Amount paid for contract work during 1889.	Grand total of all expenditures.
	Males.		Females.		Total.								
	No.	Amount of wages.	No.	Amount of wages.	No.	Amount of wages.							
Total.....	77	\$54,038	7	\$2,440	84	\$56,478	6,532	\$2,201,044	\$241,094	\$133,724	\$2,575,862	\$5,807	\$2,581,669
Clay.....	18	13,465	1	90	19	13,555	2,611	637,327	74,286	42,908	754,521		754,521
Daviess.....	11	6,481			11	6,481	466	171,038	9,781	19,966	200,785		200,785
Dubois.....	1	900	1	200	2	1,100	43	13,471	300	700	14,471	2,000	14,471
Fountain and Gibson.....							92	40,424	5,700	5,320	51,444		53,444
Greene.....	8	4,800			8	4,800	304	119,464	9,250	17,935	146,649	800	147,449
Knox.....							22	6,150	650	750	7,550		7,550
Owen and Parke.....	4	2,800			4	2,800	612	311,849	37,515	1,625	350,989		350,989
Perry.....	3	3,680			3	3,680	112	34,993	3,325	1,835	40,153		40,153
Pike.....	1	500	1	300	2	800	342	106,897	7,806	2,197	116,900		116,900
Spencer.....	1	900			1	900	30	9,800	1,000	700	11,500		11,500
Sullivan.....	10	6,930			10	6,930	566	204,376	28,052	7,378	240,006		240,006
Vanderburg.....	12	8,430	4	1,850	16	10,280	334	156,927	20,481	12,589	189,997	1,500	191,497
Vermillion.....	4	3,520			4	3,520	280	131,925	14,500	14,186	160,611		160,611
Vigo.....	4	1,632			4	1,632	633	233,314	25,150	2,448	260,912	1,507	262,419
Warrick.....							85	22,889	3,298	3,187	29,374		29,374

The following table gives the value of mines and improvements and the power used in mining:

VALUE OF INDIANA COAL MINES, BY COUNTIES.

COUNTIES.	VALUE OF MINES AND IMPROVEMENTS.								POWER USED IN MINING.				
	In land owned.		In land leased.		In building and fixtures.	In tools, implements, live stock, machinery, and supplies.	Total.	Cash capital not reported in the foregoing items.	Total capital.	Steam boilers.		No. of cylinders.	No. of animals.
	Acres.	Value.	Acres.	Value.						No.	Horse-power.		
Total.....	15,785	\$1,213,445	9,023	\$576,050	\$553,449	\$719,463	\$3,062,407	\$373,296	\$3,435,703	198	6,652	167	719
Clay.....	3,881	517,460	3,035	344,190	142,225	190,370	1,194,245	162,018	1,356,263	74	2,460	53	219
Daviess.....	1,130	63,000	485	25,050	28,300	56,235	172,585	26,000	198,585	10	290	17	91
Dubois.....			660	30,000	6,500	6,000	42,500	1,400	43,900	1	30	4	3
Fountain and Gibson.....	84	4,225	800	36,000	11,000	4,275	55,500	7,500	63,000	3	101	3	6
Greene.....			1,165	63,250	36,694	28,511	138,455	10,600	158,055	10	340	8	36
Knox.....	40	800	160	3,200	700	700	5,400	1,150	6,550				2
Owen and Parke.....	1,528	90,800	24	600	35,400	88,600	215,400	33,925	249,325	26	740	15	71
Perry.....	3,000	50,000	10	1,000	3,500	36,000	90,500	5,350	95,850	2	60	2	27
Pike.....	1,600	54,000	160	3,500	20,000	11,000	88,500	17,700	106,200	6	180	5	49
Spencer.....			400	6,500	6,500	3,000	16,000	1,600	17,600	1	30	1	9
Sullivan.....	1,827	157,110	502	8,510	63,185	181,000	409,805	24,860	434,665	18	965	28	67
Vanderburg.....	631	155,000	322	7,500	85,500	40,000	297,000	19,400	316,400	16	605	9	46
Vermillion.....	500	25,000	480	9,600	17,000	20,972	72,572	16,600	89,172	8	220	8	35
Vigo.....	897	77,000	480	29,600	91,045	28,400	226,045	32,643	258,688	18	500	9	46
Warrick.....	667	19,050	340	7,550	5,900	5,400	37,900	3,550	41,450	5	131	5	22

COAL PRODUCT OF MICHIGAN.

In Michigan coal is mined in six counties, namely, Calhoun, Clinton, Eaton, Jackson, Huron, and Shiawassee, although this northern field, which is a detached deposit not identified with the important coal fields east of the Mississippi river, underlies the whole or portions of fifteen counties in the southern central section of the state, including, in addition to those above named, Saginaw, Ionia, Montcalm, Gratiot, Isabella, Midland, Tuscola, Genesee, Ingham, Bay, and Liverpool counties, covering an aggregate area of nearly 7,000 square miles.

Coal mining in this state has been unprofitable, the better coals of Pennsylvania and Ohio being delivered to points within the state at prices with which local coals can not compete. Recent analyses exhibit fixed carbon 45 and volatile combustible matter 49, showing a good steaming fuel, and much the greater portion of the output is disposed of to railroad companies and manufacturers for engine use.

Owing to the conditions above stated the production has fallen off somewhat during 1889 as compared with the previous year. Prior to 1880 the aggregate output was about 500,000 short tons. The production reported to the Tenth Census for the year ending June 30, 1880, was 100,800 short tons, valued at \$224,500 at the mines, an average of \$2.23 per ton. The output for the year 1889, as reported to the census, was 67,431 short tons, valued at \$115,011, or an average of \$1.71 per ton at the mines. The largest production for any year was in 1882, when 135,339 short tons were reported, since which there has been a gradual falling off.

The following table gives, by counties, the total production of coal in 1889 and the disposition of the same:

COAL PRODUCT OF MICHIGAN FOR 1889, BY COUNTIES.

COUNTIES.	NUMBER OF MINES.		Total product of coal of all grades for 1889. (Short tons.)	DISPOSITION OF TOTAL PRODUCT.				Total amount received for coal sold in 1889.	Average price of coal at the mines. (Short tons.)
	Regular.	Local. (a)		Loaded at mines for shipment on railroad cars and boats. (Short tons.)	Sold to local trade at mines. (Short tons.)	Used by employes. (Short tons.)	Used for steam at mines. (Short tons.)		
Total	6	6	67,431	53,104	8,289	821	5,217	\$115,011	\$1.71
Calhoun	1	.....	350	175	150	10	15	650	1.86
Clinton .....	.....	1	364	.....	361	3	.....	618	1.70
Eaton .....	.....	3	812	.....	810	2	.....	1,131	1.39
Jackson	4	1	47,731	37,295	6,938	796	2,702	83,589	1.75
Huron .....	.....	1	40	.....	30	10	.....	100	2.50
Shiawassee	1	.....	18,134	15,634	.....	.....	2,500	28,923	1.59

a Local mines are not considered in the tables relating to labor and expenditures.

The following table gives the average wages paid for labor (obtained from statements of operators, independent of the gross amount paid in wages), both above and below ground, total employes at the mines, and total amount expended for labor:

EMPLOYEES AT MICHIGAN COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	Total employes about mines.	ABOVE GROUND.									Total number employed.
		Foremen or overseers.			Mechanics.			Laborers.			
		Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	
Total.....	261	7	\$2.11	199	11	\$1.92	213	28	\$1.93	249	46
Calhoun and Shiawassee	83	2	2.25	175	3	1.87	300	6	1.29	258	11
Jackson.....	178	5	2.05	209	8	1.94	181	22	2.10	246	35

COUNTIES.	BELOW GROUND.												Total amount of wages paid during 1889.	
	Foremen or overseers.			Miners.			Laborers.			Boys under 16 years.				Total number employed.
	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.		
Total.....	4	\$2.31	218	191	\$1.74	184	10	\$1.67	216	10	\$0.87	300	215	\$90,124
Calhoun and Shiawassee	1	2.50	300	55	1.73	277	6	1.70	300	10	0.87	300	72	37,204
Jackson.....	3	2.25	190	136	1.75	146	4	1.63	90	.....	.....	.....	143	52,920

The following table shows the office force employed and the amount expended in coal mines during the year 1889:

EXPENDITURES AT MICHIGAN COAL MINES IN 1889, BY COUNTIES.

COUNTIES.	TOTAL OFFICE FORCE.		Total number of employes.	Total amount of wages.	Total value of supplies and materials of all kinds during 1889.	Total of all other expenditures for the mines or works.	Total mining expenditures.	Total of all expenditures.
	Number.	Amount of wages.						
Total.....	4	\$3,470	265	\$93,594	\$9,085	\$11,035	\$114,814	\$114,814
Calhoun and Shiawassee.....	1	1,500	84	38,704	3,885	537	43,126	43,126
Jackson.....	3	1,970	181	54,890	5,200	10,498	71,688	71,688

The following table gives the value of mines and improvements, number of animals employed, power used, and number of days the mines were idle :

VALUE OF MICHIGAN COAL MINES AND IMPROVEMENTS, BY COUNTIES.

COUNTIES.	VALUE OF MINES AND IMPROVEMENTS.							Cash capital not reported in the foregoing items.	Total capital.
	In land owned.		In land leased.		In building and fixtures.	In tools, implements, live stock, machinery, and supplies.	Total.		
	Acres.	Value.	Acres.	Value.					
Total.....	142	\$7,800	480	\$9,600	\$7,800	\$12,750	\$37,950	\$11,700	\$49,650
Calhoun and Shiawassee.....	142	7,800	.....	.....	5,000	2,000	14,800	3,750	18,500
Jackson.....	.....	.....	480	9,600	2,800	10,750	23,150	7,950	31,100

COUNTIES.	POWER USED IN MINING.				Number of animals.	LABOR—NUMBER OF DAYS IDLE DURING THE YEAR.		
	Steam boilers.		Cylinders.			Depression in trade.	Funerals—holidays.	Other causes.
	Number.	Horse power.	Number.	Size.				
Total.....	12	535	9	.....	22	12	5	315
Calhoun.....	1	20	1	8" x 12"	3	265
Jackson.....	7	390	7	12	12	5	50
Shiawassee.....	4	125	1	10" x 16"	7



CENSUS BULLETIN.

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MINES AND MINING.—MINOR MINERAL INDUSTRIES.

DEPARTMENT OF THE INTERIOR,

CENSUS OFFICE,

WASHINGTON, D. C., May 26, 1891.

The following bulletin in relation to several of the minor mineral industries of the United States has been prepared by Mr. E. W. PARKER, special agent in charge of minor minerals, under the supervision of Dr. DAVID T. DAY, special agent in charge of the Division of Mines and Mining of the Census Office.

The value of the domestic production for 1889 of the minerals treated of in this bulletin is as follows :

Asphaltum	\$171,537	Barytes	\$106,313
Ozocerite (refined).....	2,500	Ocher	177,472
Buhrstones	35,155	Metallic paint	286,294
Corundum	105,565	Gypsum	764,118
Whetstones, oilstones, and scythestones	32,980	Lithographic stone	243
Asbestos	1,800	Soapstone	231,708
Fluorspar	45,835	Fibrous talc.....	244,170
Infusorial earth	23,372	Sulphur.....	7,850
Graphite	72,662	Pyrites.....	202,119

Besides the production of the minerals embraced in the preceding statement, the report contains valuable information regarding their uses, recent developments, imports, etc.

Superintendent of Census.

MINOR MINERAL INDUSTRIES.

BY E. W. PARKER.

ASPHALTUM.

Gilsonite, elaterite, uintite, wurtzilite, albertite, grahamite, asphaltum, maltha, and brea are names given to various semi-solid bitumens which differ considerably from one another in their chemical composition, in their action with acids or other agents, and upon the application of heat; but as every one of them has been called asphaltum, for the purposes of the Eleventh Census it is deemed advisable to group them under that head. This is partly for convenience, but particularly because asphaltum is the common term applied to the class when used industrially, the varieties being designated by the producing locality, and because these substances, through somewhat different processes of manufacture, are used for the same purposes. Asphaltum will be distinguished in this report from asphalt, in that the latter term is usually applied to the manufactured article used for street paving, while the crude mineral is better known as asphaltum.

PRODUCTION IN PREVIOUS YEARS.—No statement of the production of asphaltum is given in the Tenth Census reports. From 1882 to 1885, inclusive, the product was estimated at 3,000 short tons per year, having an average value of \$10,500. In 1886 the production increased slightly, being 3,500 short tons, value \$14,000. In 1887 a still further increase was noted; the product was 4,000 short tons, value \$16,000. The production each year was limited to California. The figures for 1888, as published in the "Mineral Resources of the United States," show a remarkable increase, due to the production in California of 50,000 tons of bituminous rock (a sandstone formation impregnated with asphaltum), which then came into the market as a competitor with other kinds of material for street paving. In addition to this, 450 tons of gilsonite, valued at \$22,500, were produced in the territory of Utah. The value of the total product was estimated at \$331,500, but in this aggregate the value of bituminous rock was taken at the price free on board cars. The value at the mines was about \$165,000.

PRODUCTION IN THE YEAR 1889.—The product of bituminous rock for the year 1889 was about the same as that for 1888. California produced 47,968 short tons, valued at \$126,885 at the mines; Utah 3,163 short tons, valued at \$15,000, and a small amount, 112 tons, valued at \$252, was produced in Kentucky. The production of gilsonite in Utah increased slightly, being 492 short tons, valued at \$29,400.

The tables following show the product of asphaltum and bituminous rock for the United States for the calendar year 1889, the number of men employed, the average wages per day, and the capital invested in the industry.

ASPHALTUM PRODUCED IN THE UNITED STATES IN 1889.

STATES.	Product. (Short tons.)	Value.
Total.....	51,735	\$171,537
California (bituminous rock)	47,968	126,885
Kentucky (bituminous rock)	112	252
Utah (bituminous rock)	3,163	15,000
Utah (gilsonite)	492	29,400

EMPLOYÉS AT ASPHALTUM MINES.

DISTRIBUTION.	Average number employed.	Average wages per day.	Average number of days worked.
Total.....	136		
ABOVE GROUND:			
Foremen	7	\$3.30	156
Mechanics	2	3.25	243
Laborers (a)	110	2.07	244
Boys under sixteen years of age			
Office force	2		
BELOW GROUND:			
Foremen	1	2.00	172
Miners	11	3.27	135
Laborers	3	2.60	173
Boys under sixteen years of age			

a Includes the number employed at two mines in California, where work was performed by contract, operators paying 75 cents per ton for mining.

WAGES AND OTHER EXPENSES AT ASPHALTUM MINES.

Wages paid in 1889:	
Labor.....	\$63,503
Office force at the mines.....	3,000
	<u>\$66,503</u>
Paid to contractors.....	8,340
Paid for supplies	13,884
All other expenses (such as rent, insurance, taxes, interest, commissions, etc.).....	9,610
Total	<u>98,337</u>

CAPITAL INVESTED.

In land	\$2,429,300
In buildings, machinery, etc.....	37,100
In tools, implements, live stock, etc.....	139,600
Cash (not included in foregoing items).....	45,500
Total	<u>2,651,500</u>

VARIETIES AND LOCALITIES.—Elaterite, albertite, and grahamite are very nearly alike in composition and physical properties. The first occurs principally in Derbyshire, England, and was so named by Hausmann, on account of certain elastic tendencies and its resemblance to India rubber. Albertite, a very similar mineral, occurs in Nova Scotia. Grahamite was found in West Virginia, but the deposit was small and has been exhausted.

Gilsonite and uintite (or uintahite) are names given to the asphaltum of Utah, which is the purest that has yet been found, the crude mineral containing about 90 per cent of bitumen. It was discovered by Mr. S. H. Gilson, of Salt Lake City, by whose name the mineral is generally known in commerce, and by the Gilson Asphaltum Company of Saint Louis, engaged in its mining, although mineralogists prefer to treat it under the name uintite, given it by Prof. W. P. Blake in the first article published on the subject, from the producing locality, near the Uintah mountains. The gilsonite deposits in Utah lie in the northeastern part of the territory, near Fort Duchesne, and just east of the Uintah Indian reservation. Other fine deposits exist in the Uncompahgre Ute reservation, a short distance from the Colorado state line. During the last session of Congress an unsuccessful effort was made to open to settlement the land on which these deposits lie, which is that known as the "Twelve-mile strip," embracing two rows of townships on the bank of White river. The mineral is found in veins having nearly a perpendicular dip, and are said to be of good thickness and in a position to be easily mined.

Near the locality from which gilsonite is obtained is a deposit of another peculiar form of bitumen, to which Professor Blake has given the name of wurtzilite. This mineral occurs in Wasatch county, Utah, between Salt Lake City and the Green River valley. When first discovered it was thought that a mineral form of caoutchouc had been found, but this assumption was soon disproved by tests showing that it had no tensile elasticity and would not yield to the usual dissolving agents. It was then classed as a species of elaterite, but Dr. Henry Wurtz, after a thorough investigation, has shown it to be an entirely different mineral. No wurtzilite was mined commercially during the calendar year 1889.

Another species of bitumen, ozocerite, found near the town of Thistle, Utah, is very nearly related in composition, color, and physical properties to artificially prepared paraffin, but differs so widely from asphaltum that it is treated under a separate chapter.

Although for a number of years asphaltum in different forms has been known to exist in California in large quantities, it was not until 1888 that its production assumed any important proportions as an industry. In 1888 a large deposit of bituminous rock containing an unusually large percentage of asphaltum was discovered in Ventura county, and a company of San Francisco capitalists was organized for the purpose of developing and operating it. The owners styled this mineral "asphaltum," but as it contains but 24 per cent of bitumen, the other constituents being silica (about 64 per cent), oxide of iron, and calcium carbonate, it should be classed among the bituminous rock products, and is so treated in the tables of this report. Its high percentage of bitumen, however, increases its value, and the price ranges from \$8 to \$10 per ton, while the bituminous rock of San Luis Obispo and Santa Cruz is valued at about \$2.50 per ton at the mines. Deposits of a nature similar to the Ventura product are also being operated in Santa Barbara county.

There are several deposits of bituminous rock in San Luis Obispo and Santa Cruz counties, in which the peculiar features of asphaltum formations are strikingly illustrated, clearly showing that they belong to no particular era or age; that they are found at various altitudes, and with no uniform character in appearance, hardness, or chemical composition. Deposits of solid asphaltum and springs of viscid, oily material, commonly called "brea," occur in places not a thousand feet apart, and yet in strata of unquestionably different periods of formation. A number of companies are now engaged in its production.

PRINCIPAL SOURCES OF THE WORLD'S SUPPLY.—Until the remarkable impetus given to the asphaltum industry in California and Utah in 1888, the island of Trinidad and the deposits of Seyssel, in France, and Val-de-Travers, in Switzerland, furnished the bulk of the world's supply. Cuba produces asphaltum of excellent quality, some of which has been imported into the United States. Venezuela has furnished a small portion of the supply in the past, and a few tons of bituminous limestone are imported annually from Germany and the island of Sicily. In the state of Tabasco, Mexico, large deposits of asphaltum are reported, but, although at a convenient place for shipment over the Mexican National railway, only a few small lots have been shipped.

ASPHALTUM AS A STREET PAVEMENT.—There are few subjects which have been more liberally discussed than that of street paving. Much study has been given to the matter and many comparative tests have been made, but it is not easy to decide which one of the various kinds used in the larger cities affords at the same time the smoothest travel, most durability, and greatest comfort and safety to horses. There is no doubt that asphalt pavements have some advantage over others; they are smooth, and consequently easy on vehicles, and are fairly durable. Asphalt pavements have been used in European cities for a number of years, and are now in use in over fifty cities in the United States, Buffalo (New York) and Washington (District of Columbia) being conspicuous examples.

The methods of preparing the various asphaltums are in a manner similar yet sufficiently distinct to justify a brief description of each process.

PROCESSES OF PREPARATION.—The bituminous limestone of France and Switzerland is prepared for street pavements by being first ground to a fine powder, then passed through iron cylinders, into which air heated to a temperature of 500 degrees F. is introduced. It is thoroughly stirred as it passes through the cylinder, and when it reaches the opposite end is removed in a plastic

condition and spread upon a concrete foundation, compacted by rammers, and when cool the street is ready for use.

The Trinidad asphaltum, upon being unloaded at its point of destination, is placed in large tanks and heated over a slow fire for a few days, care being taken not to heat the mass sufficiently to cause distillation. By this process all foreign substances are eliminated; vegetable impurities rise to the top and are skimmed off, while the earthy constituents settle to the bottom, and the asphaltum is then in a condition for manufacture. For street paving the refined asphaltum is treated with the residuum of petroleum and mixed with fine, sharp sand in the proportion of 14 per cent by weight or 25 per cent in bulk of asphaltum. The mixing is thorough, and is made at a temperature of about 300 degrees F. While still hot and plastic it is spread upon the foundation already prepared and rolled by heavy steam rollers. The advantage claimed for the Trinidad asphaltum over the French and Swiss limestone material, lies chiefly in the granular nature of the sand used in preparing it, which prevents the slipping of horses.

Gilsonite is prepared for this purpose by being first pulverized and mixed with petroleum oil. The mixture is then heated, care being taken to keep the temperature below 500 degrees F., as above that temperature gilsonite will decompose. This composite is mixed while heated with broken stone or gravel, and is then ready for the street. It has been ascertained that a mixture of about 80 per cent gravel makes the most durable pavement.

For the manufacture of street paving from the bituminous rock of Ventura and Santa Barbara counties, California, it is only necessary to mix it when heated with the sand of the locality where it is used. Sand is mixed with the asphaltum in the proportion of from three to eight times by bulk of sand to one of asphaltum. This method effects a considerable saving in transportation expenses. There is no appreciable loss of time in placing it on the street, as it requires only an hour after laying to "set" and be ready for traffic. Once properly mixed and laid, it seems practically indestructible, as shown by a section of this pavement which had been in use for eighteen months on one of the streets of San Francisco.

The bituminous rock of San Luis Obispo and Santa Cruz counties is a sandstone thoroughly impregnated with bitumen. It is used almost entirely for street paving, and for that purpose is probably more easily and cheaply prepared than any of the asphaltum products. The only treatment necessary is to steam it, so as to thoroughly mix its ingredients and soften it for spreading to a uniform thickness and a smooth, even surface. Bituminous rock has supplied a limited local demand for ten or fifteen years, but it is only during the past two years that it has assumed any commercial importance as an industry. It is reported that pavements made of this material fifteen years ago and used under heavy travel have recently been removed and found to have lost very little either in weight or thickness; also that it stands equally well the high temperatures of the interior cities and the cold, damp atmosphere of the coast. It is estimated that there are now fifty miles of bituminous rock street pavement in the state of California.

FREIGHT RATES, ETC.—Although the production of bituminous rock in California and of gilsonite in Utah have assumed proportions of commercial importance, with indications of much greater activity in the near future, the island of Trinidad continues to be the main source of supply for the United States. In the eastern cities Trinidad asphaltum is used for street paving to the almost entire exclusion of other kinds. This is due entirely to its advantage in cost of transportation. The railroad freight rates from the Pacific coast practically shut out the bituminous rock of California from competition in the eastern states, and a similar condition may be said to affect the sale of Trinidad asphaltum in the cities of Europe, since the bituminous limestones of Val-de-Travers and Seyssel, having the advantage in freights, control the markets. The cost of preparing the different varieties of asphaltum for street pavement is nearly the same, and as all appear to be about equally durable, the exclusive use of any one of them is due merely to the advantage in freights.

COMPARATIVE PRICES.—The following table shows the ruling prices for the different varieties of asphaltum during the year 1889:

PRICES OF ASPHALTUM IN 1889.		PER TON.
Trinidad, crude, at New York		\$13.00
Trinidad, refined, at New York		30.00
Hard Cuban, at New York		28.00
Gilsonite, at the mines		60.00
Bituminous rock, California, at the mines		\$2.50 to 10.00
Bituminous rock, Kentucky, at the mines		2.40
		CENTS PER POUND.
Prime Cuban, at New York		4.5 to 5.5

OTHER USES.—Although the greatest use for asphaltum is in the manufacture of street paving, it is by no means confined to that field. Large quantities are consumed in making floors for warehouses, cellars, wineries, breweries, etc. It renders the floors absolutely water tight, and is not affected by acids or gases. For lining dams, levees, and reservoirs a thin coat of asphaltum put on in a melted state presents a permanent water-tight surface, preventing loss by seepage, even when backed by only an earth embankment. As a coating for piling, wharf timbers, ground ends of telegraph poles, etc., it gives almost absolute protection against not only the action of air and water, but also the destructive work of insects and barnacles. It is used as a cement for sea walls and other marine architecture, where its waterproof character makes it especially valuable as a binding material. It is claimed to make wood conduits almost if not quite as durable as iron, and any iron or other metal work, such as anchors, etc., coated with it, will not rust nor be affected by sea water. It is also used as a roofing material, and, being practically a non-conductor of electricity, serves a useful purpose as an insulator for electrical wires. Varnish is manufactured from refined asphaltum or gilsonite by simply heating with spirits of turpentine.

NEW DISCOVERIES.—Asphaltum deposits have been found in some of the northwestern counties of Alabama, and some progress has been made in the way of developing the properties, but none of the mineral had been mined up to the close of the year 1889. Other deposits are reported in Grayson and Hardin counties, Kentucky, on which partial developments have been made, but the owners are waiting a more lucrative demand. In Burnet county, Texas, asphaltum is known to exist, but little authentic information is obtainable regarding its extent and character.

IMPORTS.—The increased demand for asphaltum during the past twenty years is shown by the quantities imported and entered for consumption in the United States during that time.

ASPHALTUM IMPORTED INTO THE UNITED STATES FROM 1867 TO 1889.

YEARS ENDED—	Quantity. (Short tons.)	Value. (a)
June 30, 1867.....		\$6,268
1868.....	185	5,632
1869.....	203	10,558
1870.....	488	13,072
1871.....	1,301	14,760
1872.....	1,474	35,533
1873.....	2,314	38,298
1874.....	1,183	17,710
1875.....	1,171	25,006
1876.....	807	23,313
1877.....	4,532	36,550
1878.....	5,476	35,932
1879.....	8,084	39,635
1880.....	11,830	87,889
1881.....	12,883	95,410
1882.....	15,015	102,698
1883.....	33,116	149,999
1884.....	36,078	145,571
Dec. 31, 1885.....	18,407	88,087
1886.....	32,565	108,528
1887.....	30,808	95,735
1888.....	36,494	84,045
1889.....	61,952	138,163

a Values are given for Trinidad asphaltum at the point of production. The prices at New York, freights included, are given in the previous table.

Acknowledgments are due to Capt. F. V. Greene, of New York city, for the following valuable information regarding the importation of asphaltum from Trinidad and other foreign sources. In the statements given below the figures relating to Trinidad asphaltum were obtained by Captain Greene from the records of the company of which he is vice president, while those relating to imports from other sources are estimates made by him based upon his intimate knowledge of the business. Though not derived from any positive records, they are practically correct.

IMPORTS OF TRINIDAD ASPHALTUM BY ALL COMPANIES FROM 1880 TO 1890, INCLUSIVE.

	LONG TONS.
1880.....	3,913
1881.....	6,707
1882.....	14,263
1883.....	23,309
1884.....	19,630
1885.....	15,289
1886.....	27,757
1887.....	26,593
1888.....	35,137
1889.....	52,881
1890.....	54,692
Total.....	280,171

IMPORTS FROM CUBA.—About 800 tons of asphaltum were imported from Cuba in 1881 and 1882, but there have been no importations of any consequence since 1882.

IMPORTS FROM VENEZUELA.—During 1885 and 1886 about 500 tons were obtained from Venezuela, but no amount of any importance has been imported into this country from there since that time.

From Neufchatel, Switzerland, and Seyssel, France, the imports of bituminous limestone, sometimes called "asphalte," are about 200 tons annually, and about 150 tons of a similar material are imported each year from Hanover and Brunswick, Germany. All of this material was used in laying sidewalks and for interior work. During 1887, 1888, 1889, and 1890 about 6,000 tons of bituminous limestone were imported from Sicily and used for street paving.

PAVEMENTS OF TRINIDAD ASPHALTUM.—The number of square yards of Trinidad asphaltum laid in the United States in the past decade is as follows:

NUMBER OF SQUARE YARDS OF TRINIDAD ASPHALT PAVING LAID IN THE UNITED STATES FROM 1880 TO 1890, INCLUSIVE.

	SQUARE YARDS.
1880.....	106,838
1881.....	116,629
1882.....	196,184
1883.....	387,510
1884.....	424,524
1885.....	403,882
1886.....	623,188
1887.....	799,335
1888.....	757,101
1889.....	1,130,863
1890.....	1,857,000
Total.....	6,803,054

^a Equivalent to 446 miles of roadway 26 feet wide.

Trinidad asphaltum is being used for street paving in the forty-nine cities in the United States and Canada named in the list on the following page.

CITIES WHERE TRINIDAD ASPHALT PAVEMENTS ARE USED.

District of Columbia.....	Washington and Georgetown.
Georgia	Savannah.
Illinois	Chicago.
Indiana.....	Fort Wayne and Indianapolis.
Kansas	Topeka, Wichita, and Wyandotte.
Kentucky.....	Louisville.
Louisiana	New Orleans.
Maryland.....	Baltimore.
Massachusetts	Boston.
Michigan	Detroit.
Minnesota	Saint Paul.
Missouri	Kansas City, Saint Joseph, and Saint Louis.
Nebraska	Omaha.
New Jersey.....	Newark.
New York	Albany, Binghamton, Brooklyn, Buffalo, Lockport, Long Island City, New York, Rochester, Schenectady, Syracuse, Troy, and Utica.
Ohio.....	Cincinnati, Cleveland, Columbus, Toledo, and Youngstown.
Pennsylvania	Alleghany, Altoona, Erie, Harrisburg, Philadelphia, Pittsburg, Scranton, and Wilkesbarre.
Tennessee	Chattanooga.
Canada.....	Montreal, Quebec, and Toronto.

PERCENTAGE OF USES FOR TRINIDAD ASPHALTUM.—From the best information obtainable the proportions of Trinidad asphaltum used for different purposes are about as follows :

	PER CENT.
For laying sheet asphalt pavements.....	72
For manufacturing asphalt blocks and tiles for pavements.....	24
Total for paving.....	96
For roofing	3
For all other purposes	1
Total	100

The amount of asphalt blocks manufactured and laid as pavements has varied from 5,000 to 100,000 square yards per annum, and the total from 1880 to 1890, inclusive, is estimated at 500,000 square yards.

PAVEMENTS FROM BITUMINOUS LIMESTONE.—About 55,000 square yards of bituminous limestone pavement were laid in Washington, District of Columbia, during 1876 and 1877, and about 3,000 square yards in New York in 1883 or 1884. Nearly all of this was subsequently taken up and replaced by Trinidad asphaltum. In 1887 about 10,000 square yards were laid in Rochester, New York; in 1888 about 20,000 square yards in Saint Augustine, Florida, and in 1890 40,000 square yards in New York city. Captain Greene estimates that the total amount of bituminous limestone pavement now in use in the United States does not exceed 75,000 square yards.

ASPHALT PAVEMENTS IN EUROPEAN CITIES.—The asphalt pavements in Europe are all made from the bituminous limestones obtained from the localities mentioned previously in this report. The pavements are found in Berlin, London, Paris, and a few other cities, probably not exceeding ten in all. The total area covered is, approximately, as follows, according to the authorities cited, and it is about one-fourth of that covered by Trinidad asphalt pavements in the United States.

AREAS OF BITUMINOUS LIMESTONE PAVEMENTS IN USE IN EUROPEAN CITIES.

	SQUARE YARDS.	
Berlin.....	681,486	(United States Consular Reports, No. 120.)
London	360,000	(Reports of paving companies.)
Paris.....	357,360	(Annuaire Statistique de la Ville de Paris, 1888, page 26.)
Other cities	300,000	(Estimated.)
Total.....	1,698,846	

OZOCERITE.

Under the chapter on asphaltum mention is made of one of the forms of bitumen possessing such peculiar properties as to entitle it to treatment under a separate head. This is what is known as "mineral wax," or ozocerite. Asphaltum exists in a number of forms, from semi-liquid to solid, having qualities similar to pitch or tar, but without any constant chemical composition, and its varieties are as numerous as the localities producing it. Ozocerite, on the other hand, belongs to the series of hydrocarbon compounds which include marsh gas, petroleum, and paraffin, it being very similar in appearance to the latter. It is colorless to white when pure, but frequently occurs leek green, yellow, and brown.

SOURCES OF SUPPLY.—Prior to 1888 the only locality producing mineral wax was in the province of Galicia, in Austria. Mining began there in 1862, and though at first it was found exceedingly difficult to obtain sufficient capital to push the enterprise, it has increased rapidly since that date, and at present there are thirty-five companies engaged in the industry in the province of Galicia alone. For twenty-six years production was limited to this locality, but in 1888 American ozocerite began to receive the attention of the trade, and considerable work was begun upon a newly discovered vein in Utah. The mineral had been known to exist in Utah for some years, but whether in paying quantity was not satisfactorily determined until August, 1888.

PRODUCTION.—During 1888 and 1889 most of the work done was in the way of development, but in the latter year there were incidentally produced 75,000 pounds of crude ozocerite. Of this product 33.33 per cent is lost in refining, the amount of refined ozocerite being 50,000 pounds, valued at \$2,500. The product for 1888 was estimated at 65,000 pounds of crude mineral. The figures regarding expenses and capital for 1889 are withheld from publication for the protection of individual interests. The product for 1890 will probably exceed 300,000 pounds.

USES FOR OZOCERITE.—Refined ozocerite is used for nearly all the purposes to which ordinary beeswax is applicable. It possesses nearly all the properties of beeswax except stickiness, but in cases where that quality is essential it is necessary only to mix the mineral with ordinary beeswax. The uses of beeswax are so many and at the same time so well known that it is not considered worth while to discuss them in this report. Crude ozocerite, like other hydrocarbon compounds, is used to a considerable extent as an insulator for electrical wires.

IMPORTS.—The following table shows the quantity and value of crude and refined ozocerite imported into the United States from 1873 to 1889, inclusive:

IMPORTS OF MINERAL WAX. (a)

YEARS ENDED—	Quantity. (Pounds.)	Value.
June 30, 1873.....	25,135	\$4,244
1874.....	380	40
1875.....	7,430	1,026
1876.....	16,525	2,229
1877.....	101,604	11,720
1878.....	69,884	7,870
1879.....	44,963	6,016
1880.....	103,973	14,057
1881.....	98,911	12,792
1882.....	272,509	29,322
1883.....	565,658	52,774
1884.....	617,992	69,026
1885.....	1,056,433	123,976
Dec. 31, 1886.....	800,496	71,220
1887.....	718,769	59,084
1888.....	1,164,940	89,131
1889.....	1,078,725	86,682

a Up to and including 1883 imported under "wax and manufactures of" and classed as "bay or myrtle, Brazilian, and Chinese," since as "mineral wax."

BUHRSTONES.

PRODUCTION.—The total value of buhrstones and millstones produced in 1889 was \$35,155. The estimated value of the entire product for 1888 was \$81,000, showing a decrease of about 57 per cent. While it is true that the demand for domestic millstones is steadily decreasing, it must be taken into consideration that the values of the product for 1888 and previous years were estimated and probably considerably exaggerated, owing to the prevalent desire of operators to make a favorable showing for their particular localities, and possibly, also, to a duplication of returns. It must also be remembered that the census report covers only those engaged in the quarrying and cutting of domestic stone. Manufacturers of millstones from French buhr or dealers in imported buhrstones are not included in this report, except by such reference as may be made to imports.

LOCALITIES.—The flint and quartz conglomerate from which millstones are made is found at different places along the Alleghany mountains. In Ulster county, New York, it is quarried under the name of "esopus stone;" in Lancaster county, Pennsylvania, it is known as "cocalico stone;" in Montgomery county, Virginia, it is called "Brush mountain stone," and in Moore county, North Carolina, it is found as "North Carolina grit."

The following table shows the estimated values of the product of the different regions from 1883 to 1888, inclusive, and the value of the product for 1889:

VALUE OF BUHRSTONES PRODUCED IN THE UNITED STATES FROM 1883 TO 1889, INCLUSIVE.

KINDS.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Total	\$150,000	\$150,000	\$100,000	\$140,000	\$100,000	\$81,000	\$35,155
Esopus stone	120,000	110,000	90,000	100,000	75,000	60,000	23,377
Cocalico stone	30,000	40,000	10,000	10,000	5,000	1,000	5,800
Brush mountain stone (a)							5,978
North Carolina grit (b)				30,000	20,000	20,000	

a No figures have been published previous to 1889.

b No figures have been published previous to 1886, and the quarries were abandoned in 1889. A few stones were made in the latter year from material previously quarried, but no work was done at the quarries.

LABOR AND WAGES.—The quarrying and cutting of buhrstones is a very irregular industry, those engaged in it operating only upon orders. As a rule, no record of any kind is kept, and each cutter is as much as possible an independent operator. He receives an order for a stone, repairs to the mountain, finds a "slab" from which the desired size may be readily cut, and then employs what help he needs to make the stone and haul it to the nearest railroad station. The figures given in the following table cover the industry for the United States, and are partly estimates, based upon statements of the larger operators, the men making about half time during the year:

EMPLOYÉS.

CLASSIFICATION.	Average number employed.	Average wages per day.
Total	98	
Foremen	3	\$3.00
Cutters	42	2.00
Laborers	51	1.16
Boys under sixteen years of age	2	1.00

EXPENDITURES.—The statement following shows the total amount of wages paid during 1889, the amount paid contractors, the value of supplies consumed, and other expenses connected with the quarrying and cutting of buhrstones.

OPERATING EXPENSES IN PRODUCING BUHRSTONES.

Paid for wages.....	\$17,853
Paid contractors.....	1,193
Paid for supplies.....	1,413
Paid for royalty.....	540
Other expenditures (including rent, taxes, insurance, interest, etc.).....	385
Total.....	21,384

CAPITAL.—In compiling the returns relative to capital it is necessary to estimate a large portion of the amount invested in land on the royalty paid by operators for the stone taken out. This is usually paid at a fixed rate per pair when the owners of the land know that the quarrying is being carried on.

CAPITAL EMPLOYED.

In land.....	\$29,270
In buildings, machinery, etc.....	3,300
In tools, implements, live stock, etc.....	16,375
In cash (not reported in foregoing items).....	6,000
Total.....	54,945

The decrease in the demand for millstones is due in most part to the introduction of the roller process for grinding cereals. Grinders of paints, cement rock, gypsum, etc., continue to use domestic stones, and for these purposes the form known as "chasers" is usually employed. Proprietors of flouring mills who have not adopted the roller process prefer stones made from French buhr, a quality of stone which has not yet been found in the United States.

VALUE OF BUHRSTONES AND MILLSTONES IMPORTED INTO THE UNITED STATES FROM 1868 TO 1889.

YEARS ENDED—	Total.	Rough.	Made into millstones.
June 30, 1868.....	\$74,224	\$74,224	
1869.....	60,361	57,942	\$2,419
1870.....	60,898	58,601	2,297
1871.....	39,104	35,406	3,698
1872.....	75,029	69,062	5,967
1873.....	68,578	60,463	8,115
1874.....	79,710	36,540	43,170
1875.....	115,059	48,068	66,991
1876.....	84,087	37,759	46,328
1877.....	83,925	60,857	23,068
1878.....	89,607	87,679	1,928
1879.....	106,572	101,484	5,088
1880.....	125,072	120,441	4,631
1881.....	103,912	100,417	3,495
1882.....	104,034	103,287	747
1883.....	73,685	73,413	272
1884.....	46,100	45,837	263
1885.....	35,477	35,022	455
Dec. 31, 1886.....	29,935	29,273	662
1887.....	24,007	23,816	191
1888.....	37,228	36,523	705
1889.....	40,884	40,432	452

CORUNDUM.

OCCURRENCE.—Corundum and emery are distinguished from each other in that the former is simply the oxide of aluminium found native, while emery is oxide of aluminium mixed with oxide of iron. Emery is not found in any workable quantity in the United States, while corundum is found to a considerable extent in the eastern states. The principal localities are Chester, Massachusetts; Macon and Clay counties, North Carolina, and Rabun county, Georgia. Small quantities have been produced in Westchester county, New York, and Delaware county, Pennsylvania.

PRODUCTION.—The amount of corundum produced in the United States in 1889 was 2,245 short tons, valued at the mines at \$105,565. The entire industry is controlled by three or four firms, and in order to protect private interests it is deemed best not to publish the figures by states.

LABOR AND WAGES.—The following table shows the number of men employed at corundum mines in the United States in 1889, the average wages paid each class per day, and the number of days worked:

LABOR EMPLOYED AT CORUNDUM MINES IN 1889.

DISTRIBUTION.	Average number employed.	Average wages per day.	Average number of days worked.
Total.....	129		
ABOVE GROUND:			
Foremen.....	5	\$2.63	260
Mechanics.....	5	1.40	266
Laborers.....	45	1.12	253
BELOW GROUND:			
Foremen.....	2	1.87	299
Miners.....	66	1.30	292
Laborers.....	6	1.17	217

OPERATING EXPENSES IN PRODUCING CORUNDUM.

Wages, including office force at mines.....	\$44,660
Paid contractors.....	600
Paid for supplies.....	9,383
Other expenditures.....	2,462
Total.....	57,105

CAPITAL INVESTED.

In land.....	\$21,600
In buildings, machinery, etc.....	11,100
In tools, implements, etc.....	28,200
Cash.....	12,500
Total.....	73,400

PRODUCTION IN PREVIOUS YEARS.—A considerable increase is noted in the production of corundum by comparing the figures for 1889 with those for 1880. The following table is given for comparison:

COMPARATIVE STATISTICS OF CORUNDUM PRODUCTION
FOR 1889 AND 1880.

YEARS.	Quantity. (Short tons.)	Value.
1889.....	2,245	\$105,565
1880.....	1,044	29,280
Increase.....	1,201	76,285

The estimates of the production for the intermediate years, as published in the "Mineral Resources of the United States," cover only the product of the mines in North Carolina and Georgia, and the values are given for the mineral in a more advanced stage of preparation for market; hence they are of little value for comparative statistics, as shown in the table following.

ESTIMATED PRODUCTION OF CORUNDUM FOR THE
YEARS 1881 TO 1888, INCLUSIVE.

YEARS.	Quantity. (Short tons.)	Value.
1881.....	500	\$80,000
1882.....	500	80,000
1883.....	550	100,000
1884.....	600	108,000
1885.....	600	108,000
1886.....	645	116,190
1887.....	600	108,000
1888.....	589	91,620

IMPORTS.—All corundum consumed in the United States is of domestic production. The emery used is imported and comes principally from Asia Minor.

The following table shows the imports of emery from 1867 to 1889, inclusive :

EMERY IMPORTED INTO THE UNITED STATES FROM 1867 TO 1889, INCLUSIVE.

YEARS ENDED—	Total.	GRAINS.		ORE OR ROCK.		PULVERIZED OR GROUND.		Other manufac- tures.
		Quantity. (Pounds.)	Value.	Quantity (Tons.)	Value.	Quantity. (Pounds.)	Value.	
June 30, 1867.....	\$52,504			428	\$14,373	924,431	\$38,131	
1868.....	38,080			85	4,531	834,286	33,540	
1869.....	77,916			964	35,205	924,181	42,711	
1870.....	54,866			742	25,335	644,080	29,531	
1871.....	44,811			615	15,870	613,624	28,941	
1872.....	77,424			1,641	41,321	804,977	36,103	
1873.....	70,919	610,117	\$29,706	755	26,065	343,828	15,041	\$107
1874.....	62,366	331,580	16,216	1,281	43,886	69,890	2,167	97
1875.....	58,327	487,725	23,345	961	31,972	85,853	2,990	20
1876.....	61,653	385,246	18,999	1,395	40,027	77,382	2,533	94
1877.....	42,182	343,697	16,615	852	21,964	96,351	3,603	
1878.....	56,601	334,291	16,359	1,475	38,454	65,068	1,754	34
1879.....	87,506	496,633	24,456	2,478	58,065	133,556	4,985	
1880.....	105,894	411,340	20,066	3,400	76,481	223,855	9,202	145
1881.....	97,432	454,790	22,101	2,884	67,781	177,174	7,497	53
1882.....	98,695	520,214	25,314	2,765	69,432	117,008	3,708	241
1883.....	85,490	471,105	22,767	2,447	59,282	93,010	3,172	269
1884.....	148,890	143,267	5,802	4,145	121,719	513,161	21,181	188
1885.....	74,800	228,329	9,886	2,445	55,368	194,314	8,789	757
Dec. 31, 1886.....	121,638	161,297	6,910	3,782	88,925	365,947	24,952	851
1887.....	68,209	367,239	14,290	2,078	45,033	144,380	6,796	2,090
1888.....	118,246	430,397	16,216	5,175	93,287			8,743
1889.....	218,966	503,347	18,937	5,234	88,727			111,302

^a To June 30 only; since classed with grains.

WHETSTONES, OILSTONES, AND SCYTHESTONES.

VARIETIES AND OCCURRENCE.—The sources of supply of siliceous rock in the United States used for sharpening edged tools have been the same for some years. Arkansas, Indiana, and New Hampshire furnish the bulk of the supply, and a small quantity is produced in Vermont. The Arkansas stone is found in the neighborhood of Hot Springs, and is supposed to have been formed by the action of hot water upon the quartz formations. It is found in two varieties, known as "Arkansas" and "Washita" stone, the grains in the former being smaller and more compact, of a uniform bluish-white color, and semi-transparent, while the Washita stone is more opaque and of a pure white color. In Indiana two varieties also occur, known commercially as "Hindustan" and "Orange" stone, the former being white in color and the latter of a buff or orange tint. The quarries are all located in Orange county. The quarries in New Hampshire are located in Grafton county, and the product consists of "rift sandstone" and "chocolate" whetstone. The Vermont quarries are located in Orleans county, and the product is used exclusively for scythestones. Some "Labrador" oilstones have in the past been produced at Manlius, Onondaga county, New

York, but the factory is now used for the manufacture of oilstones from Arkansas and Washita stone.

PRODUCTION.—The product of the different kinds of sharpening stones in 1889 consisted of 456 tons of scythestone, 1,500 tons of rift sandstone, 30,000 pounds of orange stone, 1,036,000 pounds of Washita oilstone, 175,000 pounds of Arkansas oilstone, and 200,179 pounds of Hindostan oilstone. The production by states is shown in the following table, and for the sake of convenience the quantity is expressed in short tons, the weight and value being given for rough stone:

PRODUCTION OF SHARPENING STONES IN THE UNITED STATES
FOR 1889, BY STATES.

STATES.	Quantity. (Short tons.)	Value.
Total.....	2,991	\$32,980
Arkansas.....	814	20,360
Indiana.....	212	7,670
New Hampshire.....	1,515	3,750
Vermont.....	450	1,200

LABOR EMPLOYED IN PRODUCING WHETSTONES.

STATES.	AVERAGE NUMBER EMPLOYED.				AVERAGE WAGES PER DAY.				AVERAGE NUMBER OF DAYS WORKED.			
	Foremen.	Mechanics.	Laborers.	Boys under 16 years.	Foremen.	Mechanics.	Laborers.	Boys under 16 years.	Foremen.	Mechanics.	Laborers.	Boys under 16 years.
Total.....	13	1	68	9	\$2.08	\$1.50	\$1.27	\$0.72	187	130	189	182
Arkansas.....	6		32		2.33		1.50		178		177	
Indiana.....	4		22	8	1.25		0.86	0.75	225		249	200
New Hampshire.....	2	1	9	1	3.00	1.50	1.47	0.50	179	130	134	35
Vermont.....	1		5		2.00		1.25		100		100	

^a Includes 2 miners and 1 laborer underground.

OPERATING EXPENSES IN PRODUCING WHETSTONES.

STATES.	Total expenditures.	Wages.	Paid contractors.	Paid for supplies.	Other expenditures.
Total.....	\$23,804	\$21,911	\$800	\$638	\$255
Arkansas.....	11,875	11,060	800		15
Indiana.....	7,148	6,763		235	150
New Hampshire and Vermont (a).....	4,781	4,088		603	90

CAPITAL INVESTED.

STATES.	Total	In land.	In buildings, machinery, etc.	In tools, implements, live stock, etc.	In cash.
Total.....	\$57,510	\$42,500	\$3,925	\$6,885	\$4,200
Arkansas.....	20,825	18,000	625	700	1,500
Indiana.....	9,225	4,700	700	1,825	2,000
New Hampshire and Vermont (a).....	27,460	19,800	2,600	4,360	700

^a These two states are combined in order that the business of individual establishments may not be disclosed to the public.

EXPORTS AND IMPORTS.—Considerable quantities of whetstone and scythestone are exported from the United States, but the material is classed with marble, limestone, etc., and there is no way of ascertaining the quantities or values of each. The imports consist of manufactured whetstones and razor hones, and are shown in the table following.

IMPORTS OF WHETSTONES AND RAZOR HONES FOR THE YEARS 1880 TO 1889,
INCLUSIVE.

Years ended June 30, 1880.....	\$14, 185
1881.....	16, 631
1882.....	27, 882
1883.....	30, 178
1884.....	26, 513
1885.....	21, 434
Dec. 31, 1886.....	21, 141
1887.....	24, 093
1888.....	30, 676
1889.....	27, 400

ASBESTUS. (a)

VARIETIES.—The fibrous material known to the trade under the name of asbestos comprises at least two distinct species of minerals, one of which, a variety of hornblende, is properly called asbestos, the other is chrysotile, a variety of serpentine, and may be readily distinguished from asbestos by yielding water when heated in a closed tube. Both asbestos and chrysotile are found in regions of altered crystalline rocks, and yet each has its own particular associates. The former occurs with metamorphic rocks rich in hornblende, while the latter is found in distinct veins penetrating masses of serpentine, which have resulted generally from the alteration of eruptive rocks rich in olivine. It is customary, however, in trade circles to include both varieties under the name of asbestos, and they are so treated in this report.

Asbestos is found in the United States in a comparatively narrow belt of metamorphic rocks, extending along the Piedmont region, or eastern slope of the Appalachian mountains, from New York through Pennsylvania, Maryland, Virginia, North Carolina, and South Carolina into Georgia. It is inferior in quality to the best that is mined in Italy or Canada. Its fibers are comparatively short and somewhat spindle-shaped, with occasional cross fractures, which not only render it brittle, but diminish its tensile strength. Asbestos is also found in considerable quantities in California and Wyoming, but this also lacks the essential quality of strength of fiber.

The asbestos of Canada properly belongs to the chrysotile variety of formation. It is found in the Thetford region, and is now being extensively mined. It occurs in serpentine in irregular veins varying in thickness from a mere film to six inches. The fibers extend directly across the vein, are long and even as well as flexible, slightly elastic, and of great tensile strength.

PRODUCTION.—The production of asbestos in the United States has shown an annual decrease since 1882. The product for 1882 was 1,200 short tons; 1883, 1,000 short tons, and 1884, 1,000 short tons. The product for 1885 showed a decided drop, being only 300 short tons, and this was again reduced to 200 short tons in 1886 and 150 short tons in 1887. In 1888 the product was 100 short tons, valued at \$30 per ton. In 1889 the only asbestos mined in this country and marketed came from California, amounting to 30 tons, valued at \$1,800. A trifling amount of asbestos, about 300 pounds, was taken out and saved as a by-product in quarrying soapstone in Pennsylvania and sold locally to druggists and chemists at an average price of 9 cents per pound. This small factor has been omitted from the total.

There was a considerable amount of development work done on asbestos mines in Wyoming, but the product was not placed upon the market. These mines are situated about twenty-two miles from Rock Creek, on the Union Pacific railroad. The veins and pockets are said to be numerous, extending in all directions, and vary in width from a few inches to over four feet. Some of the fibers are reported to be over forty inches in length, but that so far obtained is somewhat brittle, though improving in quality as greater depth is reached.

EXPENDITURES.—In the statement following, showing the amount of money paid for wages, etc., there is included the sum of \$1,900, which was expended in development work at mines in Wyoming. The statement of capital also includes that invested in Wyoming properties.

a Acknowledgments are due to Prof. J. S. Diller, of the United States Geological Survey, for valuable information regarding the varieties and occurrence of asbestos.

OPERATING EXPENSES IN PRODUCING ASBESTUS.		
Wages		\$2,700
Supplies consumed		525
Total		3,225

CAPITAL INVESTED.		
In land		\$41,500
In buildings, machinery, etc.		600
In tools, implements, live stock, etc.		500
Total		42,600

LABOR AND WAGES.—The following table shows the number of men employed, the average wages paid per day, and the average number of days worked by each class:

EMPLOYÉS AT ASBESTUS MINES IN THE UNITED STATES IN 1889.

DISTRIBUTION.	Average number employed.	Average wages per day.	Average number of days worked.
Total	12		
ABOVE GROUND:			
Foremen	1	\$2.75	75
Laborers	7	2.00	75
Office force at mines	1		
BELOW GROUND:			
Foremen	1	5.00	150
Miners	2	2.50	150

USES.—Asbestos is used in the manufacture of fireproof paints, roofing, piston packing, felt packing, fireproof cements, sheet and roll millboards, flooring, and for a covering for steam pipes and boilers. It is largely used in lining for fireproof safes, and is also made into yarn, cloth, and paper. Non-consuming lampwicks and fireproof drop curtains for theaters are now being made of this material. Some demand has also been created for its use in the manufacture of insulators for electric wires. The fiber of the American asbestos is more brittle and harsh than the imported and not so well adapted to the manufacture of spun and woven goods. It is said, however, to stand a greater degree of heat than the Canadian or foreign material, and is more suitable for the manufacture of fireproof cement and paint, for which the length of fiber is not essential. If the conditions were such that the mineral could be economically mined in this country, it is probable that a considerable amount of capital would be invested in the industry.

IMPORTS.—The following table shows the amount and value of asbestos imported and entered for consumption in the United States for the years 1869 to 1889, inclusive:

ASBESTUS IMPORTED FROM 1869 TO 1889.

YEARS ENDED—	Total.	Unmanufactured.	Manufactured.
June 30, 1869	\$310		\$310
1870	7		7
1871	12		12
1872			
1873	18	\$18	
1874	152	152	
1875	5,783	4,706	1,077
1876	5,881	5,485	396
1877	3,221	1,671	1,550
1878	3,908	3,536	372
1879	7,828	3,204	4,624
1880	9,736	9,736	
1881	27,786	27,717	69
1882	15,739	15,235	504
1883	24,612	24,369	243
1884	49,940	48,755	1,185
Dec. 31, 1885	73,643	73,026	617
1886	135,125	134,193	932
1887	140,845	140,264	581
1888	176,710	168,584	8,126
1889	263,393	254,239	9,154

The imports of crude asbestos for 1889 were greatly in excess of those for any previous years, being about 51 per cent over those for 1888, 81 per cent over 1887, and 89 per cent over 1886, exceeding the entire imports from 1869 to 1885, inclusive.

FLUORSPAR.

The production of fluorspar in the United States in 1889 was limited to one locality near Rosiclare, Illinois. The product was 9,500 tons, valued at \$45,835, an increase of 3,500 tons over the product of 1888. The price remains about the same. The following table gives the quantity and value of fluorspar produced in the United States for all the years for which figures are obtainable:

PRODUCTION OF FLUORSPAR IN THE UNITED STATES
FROM 1882 TO 1889, INCLUSIVE.

YEARS.	Quantity. (Short tons.)	Value.
1882.....	4,000	\$20,000
1883.....	4,000	20,000
1884.....	4,000	20,000
1885.....	5,000	22,500
1886.....	5,000	22,000
1887.....	5,000	20,000
1888.....	6,000	30,000
1889.....	9,500	45,835

LABOR AND WAGES.—The mining of fluorspar gives employment to about one hundred men, who work an average of two hundred days in the year. The demand for the mineral is not heavy, and the mines are operated only about two-thirds of the time. The distribution of the men employed and the wages paid each class are shown in the following table:

LABOR AND WAGES.

EMPLOYÉS.	Average number employed.	Average wages per day.
Total.....	101	-----
ABOVE GROUND:		
Foremen.....	3	\$2.42
Mechanics.....	8	1.62
Laborers.....	60	1.25
Boys under sixteen years of age.....	2	0.50
BELOW GROUND:		
Foremen.....	1	2.00
Miners.....	18	1.50
Laborers.....	9	1.25

COST OF PRODUCTION.—The expenses incurred in the mining of fluorspar in the United States for the year 1889 were as follows:

OPERATING EXPENSES.

Wages.....	\$14,213
Paid for supplies.....	5,025
Other expenses.....	3,008
Total.....	22,246

CAPITAL INVESTED.—The amount of capital represented in the industry is \$192,000, distributed as follows :

CAPITAL INVESTED.	
In land	\$131,000
In buildings, machinery, etc.	12,500
In tools, implements, live stock, etc.	13,000
Cash used as working capital.....	35,500
Total.....	192,000

USES.—Fluorspar is used principally as a flux in melting iron in foundries, for the manufacture of opalescent glass, and for producing hydrofluoric acid for chemical purposes.

IMPORTS.—Fluorspar (calcium fluoride) is not imported into the United States, but is obtained as a by-product in the reduction of cryolite to the salts of aluminium and sodium. All of the cryolite consumed in the United States is imported from Greenland. The amount of cryolite imported into the United States from 1871 to 1889, inclusive, is shown in the following table :

IMPORTS OF CRYOLITE FOR THE YEARS 1871 TO 1889, INCLUSIVE.

YEARS ENDED—	Amount. (Long tons.)	Value.
June 30, 1871.....		\$71,058
1872.....		75,195
1873.....		84,226
1874.....		28,118
1875.....		70,472
1876.....		103,530
1877.....		126,692
1878.....		105,884
1879.....		66,042
1880.....		91,366
1881.....		103,529
1882.....	3,758	51,589
1883.....	6,508	97,400
1884.....	7,390	106,029
Dec. 31, 1885.....	8,275	110,750
1886.....	8,230	110,152
1887.....	10,328	138,068
1888.....	7,388	98,830
1889.....	8,603	115,158

INFUSORIAL EARTH.

PRODUCTION.—Infusorial earth has been found in useful quantity in a number of places in California, Connecticut, Maryland, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, and Virginia, but the production in 1889 was limited to five states, namely, New Jersey, New Hampshire, Connecticut, Maryland, and California. The bulk of the product was obtained from the Dunkirk district, in Maryland, the ledge at Dunkirk producing 3,000 short tons and all other localities 466 short tons. An excellent deposit of infusorial earth was opened at Pope's Creek, Maryland, in 1887, and a considerable quantity taken out, but owing to a slack demand only 50 tons were produced at this point in 1889. In Storey county, Nevada, there is a mine of a fine quality of infusorial earth, but no work was done upon it in the census year. The following table shows the production of infusorial earth in 1889, by states :

PRODUCTION OF INFUSORIAL EARTH IN 1889, BY STATES.

STATES.	Amount. (Short tons.)	Value.
Total.....	3,466	\$23,372
California (a).....	50	8,000
Connecticut (b).....	211	422
Maryland (b).....	3,050	10,700
New Hampshire (a).....	80	2,750
New Jersey (a).....	75	1,500

a Separated and ground.

b Crude at the mines.

LABOR AND WAGES.—The mines at Dunkirk, Maryland, were the only ones which were operated actively during the year. It is necessary, however, to give the report on labor, wages, and expenses by averaging the business for the entire United States.

LABOR AND WAGES.

DISTRIBUTION.	Average number employed.	Average wages per day.	Average number of days worked.
Total.....	52		
Foremen.....	3	\$2.83	93
Mechanics.....	4	2.50	145
Laborers.....	45	1.30	107

OPERATING EXPENSES.

Wages.....	\$8,388
Paid contractors.....	575
Paid for supplies.....	760
Paid for other expenditures (rent, insurance, taxes, etc.).....	6,955
Total.....	16,678

CAPITAL INVESTED.

In land.....	\$61,380
In buildings, machinery, etc.....	21,900
In tools, implements, live stock, etc.....	16,970
In cash.....	10,500
Total.....	110,750

Uses.—Infusorial earth is used to a considerable extent in the manufacture of various cleansing preparations, either in the form of powder or so-called soap. There is but a step between the crude mineral and the merchantable articles used for cleansing purposes. To manufacture a polishing powder it is necessary only to clean and grind the crude mineral, the particles of which are loosely adherent, while in making soap the pulverized mineral is mixed with the other ingredients of soap manufacture. The greater portion of the product of this country is dried in furnaces at the pits and used for making protective coating for boilers. Some infusorial earth has been imported from Germany and used as an absorbent in the manufacture of dynamite from nitro-glycerine. The American product, however, does not possess sufficient absorbent properties for this purpose, and the German product has been supplanted by the use of wood pulp, which answers the purpose excellently and is much cheaper. The first development of infusorial earth properties in California was made in 1889. This was due to the discovery of a valuable ledge by Mrs. Emma Eells on her ranch near Calistoga, Napa county. By practical tests she learned that the mineral was excellently adapted for use as a polishing powder, and, with a number of ladies, organized a stock company for the purpose of mining and manufacturing the mineral.

The table following shows the analyses of infusorial earths from different localities.

ANALYSES OF INFUSORIAL EARTHS FROM DIFFERENT LOCALITIES.

INGREDIENTS	From Pope's Creek, Maryland. (a)	From Morris county, New Jersey.	From near Richmond, Virginia. (b)	From Storey county, Nevada. (c)
Total.....	Per cent. 100.00	Per cent. 99.09	Per cent. 98.95	Per cent. 100.00
Moisture.....	3.47		8.37	
Silica.....	81.53	80.66	75.86	81.08
Alumina.....	3.43	3.84	9.88	
Protoxide of iron.....	3.33			
Lime.....	2.61	0.58	0.29	
Ferric oxide.....			2.92	
Magnesia, soda, potash, sulphur, and organic matter.....	5.63		1.63	
Loss on ignition.....		14.01		
Water at red heat.....				18.44
Loss.....				0.48

a Made by Mr. P. de P. Ricketts, of New York.

b Made by Mr. J. M. Cabell.

c Made by Mr. W. Habirshaw.

GRAPHITE.

PRODUCTION.—The production of graphite in the United States in 1889 amounted to 7,003 short tons of crude ore. This is partly estimated, as in several instances operators kept no record of the product from the mines, and could only make returns for the quantity of refined graphite obtained, with the value. In such instances the amount of crude product is estimated according to the average per cent of yield of refined graphite per ton. A considerable portion of the graphite produced in 1889 was used in the crude state. The amount of refined graphite obtained has averaged about 400,000 pounds each year during the past decade. It will be observed that in Pennsylvania and Michigan the expenditures are in excess of the value of the product. This fact is due to the large expense incurred in developing some of the graphite properties. These mines show promise of paying activity in the near future.

PRODUCTION OF CRUDE GRAPHITE IN 1889, BY STATES.

STATES.	Crude ore. (Short tons.)	Value.	Total expenses.	Total wages paid.	Paid contractors.	Paid for supplies.	Other expenditures.
Total.....	7,003	\$72,662	\$54,741	\$38,329	\$2,285	\$7,734	\$6,393
Rhode Island.....	500	10,000	7,800	3,800		2,500	1,500
New York.....	3,460	42,410	18,370	18,370			
Pennsylvania.....	2,721	16,752	16,979	12,605		3,754	620
Michigan and Wyoming (a).....	322	13,500	11,592	3,554	2,285	1,480	4,273

a Michigan and Wyoming are here grouped in order that the business of individual establishments may not be disclosed to the public.

b Value of Michigan product only. None of that produced in Wyoming was sold.

LABOR EMPLOYED.

STATES.	ABOVE GROUND.								
	Average number employed.			Average wages per day.			Average number of days worked.		
	Foremen.	Mechanics.	Laborers.	Foremen.	Mechanics.	Laborers.	Foremen.	Mechanics.	Laborers.
Total.....	3	13	60	\$2.97	\$1.93	\$1.30	236	235	233
Rhode Island.....		4			2.00			300	
New York.....		1	30		2.50	1.40		300	300
Pennsylvania.....	2	7	24	1.96	1.79	1.13	247	191	163
Michigan and Wyoming.	1	1	6	5.00	2.00	1.50	213	213	182

STATES.	BELOW GROUND.								
	Average number employed.			Average wages per day.			Average number of days worked.		
	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.
Total.....	3	14	8	\$3.00	\$1.82	\$1.30	170	203	286
Rhode Island.....		2			2.25			300	
New York.....			6			1.40			300
Pennsylvania.....	2	9	2	2.00	1.50	1.00	250	246	245
Michigan and Wyoming.	1	3		5.00	2.50		10	10	

CAPITAL INVESTED.

STATES.	Total value.	In land.	In buildings, machinery, etc.	In tools, implements, live stock, etc.	Cash.
Total.....	\$259,475	\$179,800	\$41,350	\$27,325	\$11,000
Rhode Island.....	30,000	10,000	12,000	5,000	3,000
New York.....	95,000	50,000	25,000	20,000	
Pennsylvania.....	14,800	10,000	4,000	800	
Michigan and Wyoming.....	119,875	109,800	350	1,525	8,000

MOTIVE POWER.

STATES.	BOILERS.		WATER MOTORS.		Number of animals employed.
	Number.	Total horse power.	Number.	Horse power.	
Total.....	6	355	1	150	7
Rhode Island.....	1	125			
New York.....	2	120	1	150	3
Pennsylvania.....	2	90			2
Michigan and Wyoming.....	1	20			2

PRODUCTION IN PREVIOUS YEARS.—With the single exception of the mines in New York state the production of graphite during the past decade has been very spasmodic, and little authentic information can be obtained respecting the amount and value of the product of other localities.

The product of crude graphite in 1880 amounted to 940 short tons, worth \$49,800, as given in the Tenth Census reports. Those for subsequent years are returns for refined graphite made by the division of mining statistics of the Geological Survey.

PRODUCTION OF REFINED GRAPHITE FROM 1881 TO 1888.

YEARS.	Quantity. (Pounds.)	Value.
1881.....	400,000	\$30,000
1882.....	425,000	34,000
1883.....	575,000	46,000
1884.....	(a)	
1885.....	327,883	26,231
1886.....	415,525	33,242
1887.....	416,000	34,000
1888.....	400,000	33,000

a Practically nothing.

USES OF GRAPHITE.—From the fact that the very common and useful utensils known as lead pencils are made from graphite the name of black lead has been popularly bestowed upon the mineral. Until a comparatively recent date the use of graphite has been confined to this purpose, to the manufacture of crucibles, and to various preparations for stone polishing, etc. Of late, however, other qualities have been observed, which have opened to the mineral entirely new and extensive fields of usefulness, prominent among which is its consumption as a lubricant. For the bearings of heavy machinery it makes a superior lubricant to oil, is clean, leaves no dripping grease, and one proper application will last as long as the bearings themselves. When the discovery was first made that graphite could be so utilized some difficulty was encountered in keeping the lubricant in place. As originally employed, it was mixed with oil and applied to smooth-surfaced bearings, but, though answering the purpose excellently for a while, it would creep out and escape, and required constant renewals. This was obviated by the introduction of grooved bushings, the grooves being filled with a composition 75 per cent graphite. The box requires no refilling and the bearings need no new application until the box is worn out. Graphite bushings of this kind were first applied in 1883 and are growing in favor, being now in very general use. Graphite is also used to a considerable extent for foundry facings and washes; also as a substitute for red lead in making joints and connections, having an advantage over red lead in that it does not harden, making a perfectly tight joint that opens easily when the pipe tongs are applied. It is also said to make a good, durable paint for the covering of smokestacks, boilers, tin roofs, and other metal surfaces.

IMPORTS.—The table following shows the quantity and value of graphite imported and entered for consumption in the United States from 1867 to 1889, inclusive.

GRAPHITE IMPORTED INTO THE UNITED STATES FROM 1867 TO 1889,
INCLUSIVE.

YEARS ENDED—	Total.	UNMANUFACTURED.		MANUFACTURED. (Value.)
		Quantity. (Cwt.)	Value.	
June 30, 1867	\$54, 131	27, 713	\$54, 131	
1868	149, 083	68, 620	149, 083	
1869	351, 004	74, 846	351, 004	
1870	270, 124	80, 795	269, 291	\$833
1871	139, 954	51, 628	136, 200	3, 754
1872	329, 030	96, 381	329, 030	
1873	548, 613	157, 539	548, 613	
1874	382, 591	111, 992	382, 591	
1875	122, 050	46, 492	122, 050	
1876	168, 314	50, 589	150, 709	17, 605
1877	222, 721	75, 361	204, 630	18, 091
1878	171, 666	60, 244	154, 767	16, 909
1879	188, 650	65, 662	164, 013	24, 637
1880	300, 963	109, 908	278, 022	22, 941
1881	413, 640	150, 927	381, 966	31, 674
1882	389, 371	150, 421	363, 835	25, 536
1883	383, 070	154, 893	361, 949	21, 121
1884	288, 256	144, 086	286, 393	1, 863
1885	207, 228	110, 462	207, 228	
1886	164, 111	83, 368	164, 111	
1887	331, 621	168, 841	331, 621	
Dec. 31, 1888	353, 990	184, 013	353, 990	
1889	378, 057	177, 381	378, 057	

BARYTES.

Barytes, or natural barium sulphate, is a well-known mineral, and liberally distributed, but it is only recently that it has become of any commercial importance. Barium sulphate has been prepared artificially for a number of years, and is used to a considerable extent in the place of white lead, which it resembles closely. Improvements in machinery and in the processes of treating natural barytes have overcome many of the objections which formerly existed to its utilization, and considerable attention is now being given to the localities in the United States where it is found. The mineral, in order to be available for the uses to which it is put, must be fairly free from quartz grains, the stain of iron rust, or other impurities. If the barytes is stained to any extent it is practically valueless, as a good white color is essential to its usefulness. Quartz grains or other hard substances with which it is apt to be associated injure the machinery in grinding. The purest barytes so far produced in this country comes from Missouri, though a very fair grade is now being mined in considerable quantities in Virginia.

PRODUCTION IN 1889.—The returns from all producers of crude barytes show a product in the United States for 1889 of 21,460 short tons, valued at \$106,313, against 20,000 short tons in 1888, valued, approximately, at \$110,000.

The production was limited to four states, as shown in the following table :

PRODUCTION OF BARYTES IN 1889, BY STATES.

STATES.	Quantity. (Short tons.)	Value.
Total	21, 460	\$106, 313
Illinois	200	1, 500
Missouri	7, 558	32, 715
North Carolina	3, 000	15, 000
Virginia	10, 702	57, 298

LABOR AND WAGES.—Barytes mining in Missouri is carried on in such a very irregular manner that it is impossible to obtain any reliable statistics relative to labor and wages. Farmers mine it in off seasons ; that is, when there is no farming to do they employ themselves and their hands

in getting out the barytes found on their farms, haul it to the nearest tradesman, and receive in exchange dry goods, groceries, or other necessaries, or cash. The farmers thus occupy time which would otherwise be idle, and dispose of the barytes at a less figure than it would pay to mine it systematically. The supply thus obtained is nearly sufficient to keep the mills up to their fullest capacity.

A few mines are, however, operated with some degree of system, though for want of proper records it is necessary to estimate a considerable portion of the matter of labor and wages. The mines altogether give irregular employment to about 580 men. The rate of compensation for foremen is about \$2.50 per day, and for laborers from \$1 to \$1.50 per day. It is rarely, however, that the men make full time, and their daily earnings are reported at from 50 to 75 cents. From 75 to 100 women obtain the same sort of irregular employment, earning about 35 cents per day. Boys get from 25 to 30 cents per day. One mine was active nearly the entire year, but in most cases the number of days worked at the mines ranged from 125 to 200. One mine in Illinois employed 10 men and 2 women for 52 days. The number of men employed in Virginia and North Carolina and the average wages paid each class are shown in the following table:

NUMBER OF EMPLOYÉS AND WAGES PAID AT BARYTES MINES IN VIRGINIA AND NORTH CAROLINA.

EMPLOYÉS.	Average number employed.	Average wages per day.	Average number of days worked.
Total	215		
Foremen (a).....	11	\$1.70	220
Mechanics (b).....	7	1.43	20
Miners.....	85	0.85	290
Laborers (c).....	107	0.68	225
Boys under sixteen years of age.....	5	0.35	22

a Of the foremen, 4 were employed above ground and 7 below.

b All above ground.

c Of the laborers, 29 were employed above ground and 78 below.

OPERATING EXPENSES.—The following statement shows the amount of money paid for operating and developing barytes mines in Virginia, North Carolina, and Illinois:

WAGES AND OTHER EXPENDITURES AT BARYTES MINES IN VIRGINIA, NORTH CAROLINA, AND ILLINOIS.

Wages (including office force at mines).....	\$54,524
Paid for supplies.....	8,200
Other expenditures (rent, taxes, insurance, etc.).....	2,083
Total.....	64,807

CAPITAL.—The amount of capital represented in barytes mines in the United States is shown in the following statement, and only refers to such properties as were worked in 1889. The aggregate value of the lands on which barytes is found in Missouri is placed at \$4,500,000, but the estimates are based on prospects rather than on actual development.

CAPITAL INVESTED IN BARYTES MINES IN THE UNITED STATES.

In land.....	\$184,450
In buildings, machinery, etc.....	66,450
In tools, implements, live stock, etc.....	76,350
Cash.....	23,900
Total.....	351,150

USES.—The consumption of barytes seems to be steadily increasing. It is used quite extensively in the arts, finding its greatest service as an adulterant in the manufacture of paint. Its great weight, its likeness in many respects to white lead, and the fact that it can be used in place of that commodity, enables manufacturers to replace the costlier article with a substitute much to their own advantage. It is claimed by some that a mixture composed of one-third

barytes, one-third zinc white, and one-third white lead makes a better paint than the pure white lead. This is probably true for some special purposes. Barytes is remarkable for its weight, having a specific gravity of about 4.5, or about the same as iron ore. It can therefore be used with white lead without any appreciable loss of weight in the mixture.

PROCESS OF MANUFACTURE.—In the "Mineral Resources of the United States" for 1885 a brief description is given of the process of manufacturing or "floating" barytes. The processes have not materially changed since that date, and are about as follows:

The crude barytes, having first been assorted and cleaned, is ground or crushed to about the size of buckshot. It is then treated with sulphuric acid, for the purpose of removing iron stains and other impurities with which barytes is apt to be discolored, and afterward boiled in distilled water, dried by steam, and pulverized. The pulverized barytes is then placed in large vats and mixed with water, and part of the mixture settles rapidly. That which floats longest is the best suited for the manufacture of paint, and is drawn off, dried again by steam, and is then barreled and ready for market. It is thus that the name "floated barytes" is derived. The floated barytes finds a steady market at from \$19 to \$32 per ton, according to quality, purity of color, etc.

NEW DEVELOPMENTS.—Besides the localities from which the supply has been thus far derived, there are deposits in South Carolina which are now being investigated with prospects of development at an early date. The mineral is found along the line of the Charleston, Cincinnati and Chicago railroad, in the building of which a considerable vein was exposed, but occurs in largest quantities in the vicinity of King's Creek, where a side track can be run in and the material loaded on cars. Lack of transportation was one of the drawbacks to its development in the past, but this difficulty has been removed by the railroad builders. Diffused through the barytes is a small percentage of quartz grains, which make it necessary to use other grinding machinery than the buhr mills ordinarily used for that purpose. It is expected that mills for this purpose will be put up in the vicinity of the mines, thereby insuring a more profitable business than can be obtained by sending the barytes elsewhere to be ground and floated.

At Terrazas station, state of Chihuahua, Mexico, there are some six or eight veins of barytes from one to five feet thick, said to be of a good white color, free from yellow, brown, or black iron stains, and a considerable portion of which is a very delicate pale-blue tint, considered valuable in the highest classes of barytes, as it tends to neutralize the yellowish tint of inferior qualities. The company owning the property upon which these veins are found offered to sell the barytes in car loads at \$5 per short ton, free on board cars at the shipping point.

The following table shows the production of barytes since 1882. No statistics have been published prior to that year.

PRODUCT OF CRUDE BARYTES FROM 1882 TO 1889,
INCLUSIVE. (a)

YEARS.	Quantity. (Short tons.)	Value.
1882.....	22,400	\$80,000
1883.....	30,240	108,000
1884.....	28,000	100,000
1885.....	16,800	75,000
1886.....	11,200	50,000
1887.....	16,800	75,000
1888.....	22,400	110,000
1889.....	21,400	106,313

^a The production given for years previous to 1889 is mostly estimated, and the figures are probably slightly exaggerated.

IMPORTS.—Nearly all, if not all, of the barium sulphate imported into the United States is artificially prepared. Importations are quoted under various names, such as blanc-fixe or permanent white, satin white, enameled white, lime white, etc.

IMPORTS OF BARIUM SULPHATE FROM 1867 TO 1889, INCLUSIVE.

YEARS ENDED—	MANUFACTURED.		UNMANUFACTURED.	
	Quantity. (Pounds.)	Value.	Quantity. (Pounds.)	Value.
June 30, 1867	14,968,181	\$141,273		
1868	2,755,547	26,739		
1869	1,117,335	8,565		
1870	1,684,916	12,917		
1871	1,385,004	9,769		
1872	5,804,098	43,521		
1873	6,939,425	53,759		
1874	4,788,966	42,235		
1875	2,117,854	17,995		
1876	2,655,349	25,325		
1877	2,388,373	19,273		
1878	1,366,857	10,340		
1879	453,333	3,496		
1880	4,924,423	37,374		
1881	1,518,322	11,471		
1882	502,300	3,856		
1883	411,606	2,489		
Dec. 31, 1884	3,884,516	24,671	5,800,816	\$8,044
1885	4,095,287	20,606	7,841,715	13,567
1886	3,476,691	18,338	6,588,872	8,862
1887	4,057,831	19,769	10,190,848	13,205
1888	3,821,842	17,135	6,504,975	9,037
1889	3,601,506	22,458	13,571,206	7,660

OCHER AND METALLIC PAINT.

For commercial purposes it has become customary to separate pigments manufactured from iron oxides into two classes, viz, "ocher" and "metallic paint." The former term is usually applied to paints made from clays to which the natural mixing of iron peroxide and water has imparted a bright red or reddish-yellow color, and the latter to the darker red and brown paints manufactured from iron ores. These distinctions are adhered to in this report.

OCHER.—The production of ocher for 1880 as obtained by the Tenth Census was 4,037 tons, valued at \$135,840. The product in 1889 was 15,158 tons, valued at \$177,472, showing an increase in tonnage of 275 per cent and an increase in value of only about 31 per cent. This difference in tonnage and value is, in all probability, due to the values of the product being taken at different stages of manufacture. The high estimate placed upon the product of 1880 would indicate that prices were taken for the manufactured article, whereas the values in the present investigation were obtained for the mineral in the condition in which it was first sold, freights eliminated.

The statement of the production by states in 1880, as compared with that of 1889, is shown in the following table:

COMPARATIVE PRODUCTION OF OCHER FOR 1880 AND 1889, BY STATES.

STATES.	1880.		1889.	
	Quantity. (Short tons.)	Value.	Quantity. (Short tons.)	Value.
Total	4,037	\$135,840	15,158	\$177,472
Alabama			336	3,500
Colorado			50	150
Georgia			2,512	29,720
Maryland			616	12,000
Massachusetts			80	750
New Jersey	300	1,350		
Pennsylvania			7,922	103,797
Vermont	1,750	27,750	1,884	7,800
Virginia	1,987	106,740	1,658	18,755
Wisconsin			100	1,000

PRODUCTION IN OTHER YEARS.—According to "Mineral Resources of the United States" the amount of ocher produced in this country from 1881 to 1886 was estimated at about 7,000 tons annually. This was increased in 1887 to 8,000 tons, and a further increase to 10,000 tons was noted in 1888. The difference of 5,158 tons between the estimated product for 1888 and the amount shown by the census returns indicates that the estimates for previous years were considerably less than the actual production.

LABOR AND WAGES.—The following tables show the number of men employed at ocher mines in the United States in 1889, the average wages per day, the number of days worked, the operating expenses, and capital invested:

MEN EMPLOYED AND WAGES PAID AT OCHER MINES IN 1889, BY STATES.

STATES.	FOREMEN.			MECHANICS.			LABORERS.			BOYS UNDER SIXTEEN YEARS.		
	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.
Total	17	\$2.07	236	14	\$1.68	264	162	\$1.12	228	3	\$0.50	200
Georgia.....	2	2.35	300	2	1.25	220	25	1.00	188			
Pennsylvania.....	6	1.77	290	8	1.75	300	61	1.18	291			
Vermont.....	1	1.33	300				15	1.11	195			
Virginia.....	3	1.67	225	4	1.75	213	31	1.00	207			
Wisconsin.....	1	5.00	20				3	2.50	20			
Other states (a).....	4	2.15	170				27	1.06	188	3	0.50	200

^aThe states here grouped, in order that the business of individual establishments may not be disclosed, embrace Alabama, Colorado, Maryland, and Massachusetts.

OPERATING EXPENSES.

STATES.	Grand total expenditures.	Total wages, including office force.	Paid for supplies.	Other expenditures.
Total	\$86,247	\$59,695	\$19,011	\$7,541
Georgia.....	12,491	7,006	3,960	1,525
Pennsylvania.....	41,536	29,966	10,096	1,474
Vermont.....	6,670	3,623	1,280	1,767
Virginia.....	14,080	10,780	2,550	750
Wisconsin.....	365	250	115	
Other states (a).....	11,105	8,070	1,010	2,025

^aThe states here grouped, in order that the business of individual establishments may not be disclosed, embrace Alabama, Colorado, Maryland, and Massachusetts.

CAPITAL INVESTED.

STATES.	Total.	In land.	In buildings, machinery, etc.	In tools, etc.	Cash.
Total	\$386,453	\$249,560	\$68,693	\$45,750	\$22,450
Georgia.....	89,000	47,500	21,600	14,900	5,000
Pennsylvania.....	60,600	40,900	14,500	4,500	700
Vermont.....	12,510	6,810	3,600	2,100	
Virginia.....	30,000	13,000	7,500	4,000	5,500
Wisconsin.....	15,000	10,000	3,500	1,500	
Other states (a).....	179,343	131,350	17,993	18,750	11,250

^aThe states here grouped, in order that the business of individual establishments may not be disclosed, embrace Alabama, Colorado, Maryland, and Massachusetts.

METALLIC PAINT.—There are no statistics of the production of metallic paint published in the mining volume of the Tenth Census. In 1856 the discovery of an iron ore valuable for the manufacture of metallic paint was made in Carbon county, near the Lehigh river, and at no time since the original discovery have the mines been idle. The production in the United States in 1889 from all sources amounted to 21,026 short tons, valued at \$286,294, as follows:

**PRODUCTION OF METALLIC PAINT IN THE UNITED STATES IN 1889,
BY STATES.**

STATES.	Quantity. (Short tons.)	Value.
Total.....	21,026	\$286,294
Alabama	3,000	30,000
Colorado	90	2,500
New York.....	3,658	63,698
Ohio	540	11,123
Pennsylvania	8,849	128,036
Tennessee	3,057	24,237
Wisconsin.....	1,832	26,700

LABOR AND WAGES.—The following table is arranged to show by states the number of men employed at metallic paint mines, the average wages paid, and the number of days worked by each class of employes:

LABOR EMPLOYED AT METALLIC PAINT MINES IN THE UNITED STATES IN 1889, BY STATES.

STATES.	FOREMEN.			MECHANICS.			LABORERS.			BOYS UNDER SIXTEEN YEARS.		
	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.	Average number employed.	Average wages per day.	Average number of days worked.
Total.....	10	\$2.42	250	27	\$1.90	262	151	\$1.34	250	3	\$0.67	97
New York.....	2	3.00	300	4	1.73	171	22	1.44	204	1	1.00	175
Ohio	2	2.25	181	1	2.00	150	10	1.43	139			
Pennsylvania (a).....	1	1.25	276	16	1.81	295	83	1.30	281			
Tennessee.....	1	2.50	300	1	2.00	300	13	1.16	254			
Wisconsin.....	2	2.21	214	3	2.33	228	10	1.60	134	2	0.50	58
Other states (b).....	2	2.75	278	2	2.25	268	13	1.31	295			

^a Under laborers are included 25 miners at \$1.40 per day and 12 laborers at \$1.25 per day (300 days each) below ground.

^b The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Alabama and Colorado.

OPERATING EXPENSES.

STATES.	Total paid for labor.	OFFICE FORCE.				Grand total of wages.	Total paid contractors.	Paid for supplies.	Other expenditures.	Grand total expenditures.
		Males.		Females.						
		Number.	Wages paid.	Number.	Wages paid.					
Total.....	\$69,820	7	\$5,440	1	\$100	\$75,360	\$8,674	\$65,498	\$14,255	\$163,787
New York.....	10,603	1	540			11,143	5,146	4,705	3,070	24,064
Ohio	3,124					3,124		14	35	3,173
Pennsylvania.....	38,047	3	2,500			40,547	3,408	50,001	9,075	103,031
Tennessee.....	4,950					4,950				4,950
Wisconsin.....	5,484	2	1,800	1	100	7,384	120	9,978	1,575	19,057
Other states (a).....	7,612	1	600			8,212		800	500	9,512

^a The states here grouped, in order that the business of individual establishments may not be disclosed, embrace Alabama and Colorado.

CAPITAL INVESTED.

STATES.	Total.	In land.	In buildings, machinery, etc.	In tools, etc.	Cash.
Total.....	\$462,164	\$222,100	\$128,700	\$69,004	\$12,300
New York.....	86,164	10,500	51,350	18,314	6,000
Ohio.....	60,000	32,000	19,000	7,500	1,500
Pennsylvania.....	207,700	126,500	29,100	26,100	26,000
Tennessee.....	20,200	6,100	9,050	4,050	1,000
Wisconsin.....	48,000	28,500	8,600	4,100	6,800
Other states (a).....	40,100	18,500	11,600	9,000	1,000

a The states here grouped, in order that the business of individual establishments may not be disclosed, embrace Alabama and Colorado.

GYPSUM.

PRODUCTION.—The amount of crude gypsum produced in the United States in 1889 was 267,769 short tons. The value ranges between 75 cents and \$2 per ton, according to quality, but as only a small portion of the product is sold in its crude state it is deemed expedient to show how much of the total product was sold crude, how much was calcined into plaster of Paris or "stucco," how much was manufactured into cement, and the amount ground into fertilizer known as "land plaster," with the value of each. In each instance the number of men employed and the amount of wages paid represent the labor and expense required to bring the mineral to the condition for which the value is given, *i. e.*, the price at which it was first sold. The same may also be said of the statistics of the capital invested in the industry. The states producing gypsum in 1889 were California, Colorado, Iowa, Kansas, Michigan, New York, Ohio, South Dakota, Utah, Virginia, and Wyoming, as shown in the following table:

PRODUCTION OF GYPSUM IN 1889, BY STATES.

STATES.	Amount produced. (Short tons.)	Amount sold. (Short tons.)	Value.	Amount sold as land plaster. (Short tons.)	Value.	Amount of gypsum calcined into plaster of Paris, or stucco. (Short tons.)	Amount of plaster of Paris or stucco after calcining. (Short tons.)	Value.	Total value.
Total.....	267,769	73,243	\$82,704	108,771	\$233,307	85,755	64,711	\$448,107	\$764,118
California.....	3,000					3,000	2,250	30,000	30,000
Colorado.....	7,700			100	140	7,600	4,325	28,800	28,940
Iowa.....	21,784			14,434	23,000	7,350	5,507	32,250	55,250
Kansas.....	17,332					17,332	a13,896	94,235	94,235
Michigan.....	131,767	35,100	35,100	54,084	123,143	42,583	32,434	215,497	373,740
New York.....	52,608	21,537	21,642	31,071	57,834				79,476
Ohio.....	9,920	106	212	2,744	9,604	7,070	5,656	41,675	51,491
South Dakota.....	320					320	253	2,650	2,650
Utah.....	516,000	16,000	25,000						25,000
Virginia.....	6,838	500	750	6,338	19,586				20,336
Wyoming.....	500					500	390	3,000	3,000

a Of the Kansas product 600 tons were made into fireproof cement, producing 400 tons of cement, valued at \$6,000.

b Estimated, and value given for crude material.

c Began operations November 1, 1889.

LABOR AND WAGES.—The highest rate of compensation to foremen was \$5 per day, paid at Iowa quarries; the lowest, \$1 per day, paid in Virginia. The highest wages paid mechanics above ground were paid in Colorado, \$3 per day; the lowest, \$1 per day, paid in Virginia. Ordinary labor received as the highest pay \$2 per day, and as the lowest 75 cents. The former rate was paid by one firm in New York state and by all operators in South Dakota, Wyoming, Colorado, and California. The lowest rate was paid in Virginia. About 77 per cent of the labor was employed above ground.

LABOR EMPLOYED AT GYPSUM MINES IN 1889.

EMPLOYÉS.	Average number employed.	Highest wages paid.	Lowest wages paid.	Average wages per day.	Average number of days worked.
Total.....	761				
ABOVE GROUND:					
Foremen.....	35	\$5.00	\$1.00	\$2.54	236
Mechanics.....	84	3.00	1.00	1.96	225
Laborers.....	460	2.00	0.75	1.40	204
Boys under sixteen years of age.....	7	0.75	0.44	0.50	144
BELOW GROUND:					
Foremen.....	11	3.00	1.00	1.82	195
Miners.....	67	3.00	0.75	1.44	186
Laborers.....	97	2.50	0.75	1.20	181

OPERATING EXPENSES.

Wages (including office force at mines or quarries).....	\$249,200
Paid contractors.....	10,031
Paid for supplies.....	128,854
Paid for other expenditures.....	45,262
Total.....	433,347

CAPITAL INVESTED.

In land.....	\$1,513,250
In buildings, machinery, etc.....	540,610
In tools, implements, live stock, etc.....	318,080
In cash (not reported in foregoing items).....	101,235
Total.....	2,473,175

MOTIVE POWER.—There were twenty-four producers who used steam power at their works, in all 33 boilers, with an aggregate of 2,045 horse power. The number of animals employed during the year at gypsum works was 284.

STATISTICS OF PRODUCTION OF GYPSUM IN THE UNITED STATES IN 1889, BY STATES.

STATES.	Total amount of gypsum produced. (Short tons.)	Value.	Wages, including office force at works.	Paid contractors.	Paid for supplies.	All other expenditures, including rent, taxes, insurance, etc.	Total expenditures.
Total.....	267,769	\$764,118	\$249,200	\$10,031	\$128,854	\$45,262	\$433,347
Colorado.....	7,700	28,940	12,175	3,000	4,467	1,025	20,667
Iowa.....	21,784	55,250	11,668	3,050	8,000	3,500	26,218
Kansas.....	17,332	94,235	35,195	1,156	34,281	5,242	75,874
Michigan.....	131,767	373,740	107,078	1,700	66,706	25,447	200,931
New York.....	52,608	79,476	41,054		11,055	7,598	59,707
South Dakota.....	320	2,650	3,570	1,000		100	4,670
Utah.....	16,000	25,000	9,544		1,000	750	11,294
Virginia.....	6,838	20,336	8,396	125	745	800	10,066
Other states (a).....	13,420	84,491	20,520		2,600	800	23,920

a The states and territory here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace California, Ohio, and Wyoming.

LABOR EMPLOYED IN GYPSUM MINES IN 1889, BY STATES.

STATES.	ABOVE GROUND.											
	Average number employed.				Average wages per day.				Average number of days worked.			
	Foremen.	Mechan-ics.	Laborers.	Boys under 16 years.	Foremen.	Mechan-ics.	Laborers.	Boys under 16 years.	Foremen.	Mechan-ics.	Laborers.	Boys under 16 years.
Total	35	84	460	7	\$2.53	\$1.97	\$1.40	\$0.50	235	222	201	144
Colorado	3	6	15		3.00	2.58	2.00		221	200	103	
Iowa	3	6	50		2.83	2.38	1.50		151	61	138	
Kansas	5	14	42		2.95	2.11	1.38		267	201	222	
Michigan	10	39	131	1	2.05	1.88	1.38	0.50	310	270	266	150
New York	6	6	125	1	1.83	1.70	1.38	0.75	200	189	181	300
South Dakota	2		4		2.25		2.00		110		170	
Utah	2		15		3.50		1.75		275		275	
Virginia	2	5	33	4	1.25	1.20	0.80	0.44	64	163	86	115
Other states (a)	2	8	45	1	2.50	1.99	1.46	0.50	287	220	213	100

STATES.	BELOW GROUND.								
	Average number employed.			* Average wages per day.			Average number of days worked.		
	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.
Total	11	67	97	\$1.82	\$1.44	\$1.20	195	186	181
Colorado		1	1		2.50	2.50		300	300
Iowa									
Kansas	3	8	16	2.00	1.31	1.38	204	180	285
Michigan	3	15	54	2.00	1.29	1.25	256	304	200
New York		15			1.80			174	
South Dakota									
Utah									
Virginia	4	22	22	1.25	0.86	0.75	116	95	58
Other states (a)	1	6	4	3.00	3.00	2.00	3.00	240	150

a The states and territory here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace California, Ohio, and Wyoming.

CAPITAL EMPLOYED IN GYPSUM PROPERTIES IN THE DIFFERENT STATES.

STATES.	Total.	In land.	In buildings, machinery, etc.	Tools, implements, etc.	Cash.
Total	\$2,473,175	\$1,513,250	\$540,610	\$318,080	\$101,235
Colorado	147,600	60,000	58,500	21,100	8,000
Iowa	194,500	78,500	45,000	69,500	1,500
Kansas	512,860	359,000	63,000	67,010	23,850
Michigan	725,000	347,000	276,000	81,000	21,000
New York	177,095	102,050	32,300	18,860	23,885
South Dakota	5,560	1,000	2,000	2,500	
Utah	150,000	100,000	30,000	20,000	
Virginia	300,620	249,000	13,510	16,110	22,000
Other states (a)	260,000	216,700	20,300	22,000	1,000

a The states and territory here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace California, Ohio, and Wyoming.

CHARACTERISTICS OF THE INDUSTRY.—Taking the foregoing table of production, it will be noted that all the gypsum product of New York and Virginia has been sold either in a crude state or as land plaster. Although the returns show that 22,037 tons were sold crude, there are no evidences that it was used in any other way than as a fertilizer. The gypsum of New York state is

intermingled intimately with slate, and for this reason is found to be more available for agricultural purposes than for calcination. It is understood that the gypsum of Virginia is adapted to the manufacture of plaster of Paris, and the subject is being investigated with a view to operations if found profitable. It will be observed that while all of the gypsum produced in the eastern states is used as a fertilizer, nearly all of the western product, with the exception of that of Michigan and Iowa, is calcined. In Ohio, out of a total product of 9,920 short tons, 7,070 tons were made into plaster of Paris. About 32 per cent of the Michigan and 34 per cent of the Iowa product was so disposed of, and practically all of the product of the other western states. During the present investigation inquiries were addressed to representative firms in different producing districts for the purpose of obtaining the percentage of loss in weight by the calcination of gypsum. In making land plaster there is practically no loss, the rock being ground in the condition as quarried. In no instances in the manufacture of land plaster has the loss amounted to more than 5 per cent, and even this was exceptional, the majority of producers reporting either no loss or a loss of from one-half to one per cent. In the calcining loss percentages are reported in different producing districts as follows: Colorado, from 25 to 33.33 per cent; Iowa, from 21 to 30 per cent; Kansas, from 18 to 20 per cent; Michigan, from 20 to 25 per cent; Ohio, about 25 per cent; South Dakota, about 20 per cent; Wyoming, 22 per cent. No information was received in this respect from California or Utah. As the product of New York and Virginia is altogether consumed for land plaster, no losses are reported.

ANALYSES.—Below are given some analyses of gypsum and calcined plaster from New York, Michigan, and Ohio:

ANALYSES OF GYPSUM IN ONONDAGA COUNTY, NEW YORK.

	No. 1. PER CENT.	No. 2. PER CENT.
Calcium sulphate	94.00	94.23
Carbonate magnesia	3.00	2.65
Carbonate of lime.....	3.00	2.20
Oxide of iron		0.92
Total	100.00	100.00

ANALYSIS OF MICHIGAN LAND PLASTER.

	PER CENT.
Lime.....	32.35
Sulphuric acid	46.38
Water.....	19.70
Magnesia.....	0.54
Alumina	0.60
Insoluble residue	0.91
Total	100.48

ANALYSES OF CALCINED PLASTER FROM OHIO.

	No. 1. PER CENT.	No. 2. PER CENT.
Lime	32.52	32.76
Sulphuric acid	45.56	46.20
Water	20.14	20.00
Magnesia	0.56	0.03
Alumina	0.16	0.29
Insoluble residue	0.68	0.46
Total	99.62	99.74

PRODUCTION IN PREVIOUS YEARS.—There is a very marked difference between the reports of the Geological Survey on the production of gypsum for years prior to 1889 and the figures obtained for the Eleventh Census. The tonnage for 1889 is largely in excess of that reported for previous years, but the value is, in comparison, greatly reduced. The product for 1888 was estimated at 110,000 short tons, at an average price of \$5 per ton; that of 1889 was 267,769 tons, valued at \$764,118, or an average of about \$2.85 per ton. There was no report on the production of gypsum

compiled in the Tenth Census, and there are no reliable figures after that time and previous to 1885. Since 1885 the product has been estimated for the "Mineral Resources of the United States," as shown in the following table:

PRODUCTION OF GYPSUM IN THE UNITED STATES FROM 1885 TO 1888, INCLUSIVE.

YEARS.	Quantity. (Short tons.)	Value.
1885.....	90,405	\$405,000
1886.....	95,250	428,625
1887.....	95,000	425,000
1888.....	110,000	550,000

LOCALITIES.—The gypsum-producing belt of New York lies along the southern shore of Lake Ontario, and includes the counties of Madison, Onondaga, Cayuga, Ontario, Monroe, and Genesee. The gypsum beds of Virginia are located in the southwest corner of the state, along the North Fork of the Holston river, in Smyth and Washington counties. Transportation facilities are obtained by the Norfolk and Western railroad, which has a branch running to Saltville, Washington county, the most important producing point.

The production of gypsum in Ohio is confined to one locality, viz, the station of Gypsum, Ottawa county, on the line of the Lake Shore and Michigan Southern railroad, about ten miles west of the city of Sandusky. The product of these quarries is of great excellence and purity. The best of the stone goes into calcined plaster, while any that is "off color" or streaked with shale is ground into land plaster.

The amount of each product and its value from 1881 to 1889 is shown in the following table:

PRODUCTION OF CALCINED AND LAND PLASTER SOLD IN OHIO FROM 1881 TO 1889.

YEARS.	CALCINED PLASTER.			LAND PLASTER.		
	Barrels of 300 pounds.	Average price per barrel.	Total value.	Short tons.	Average price per ton.	Total value.
1881.....	12,409	\$1.55	\$19,234	3,705	\$4.35	\$16,117
1882.....	16,888	1.46	24,656	4,404	4.33	19,069
1883.....	20,919	1.41	29,496	4,678	4.15	19,414
1884.....	20,307	1.38	28,024	4,217	4.09	17,248
1885.....	a8,086	1.31	11,379	4,038	4.03	16,273
1886.....	21,256	1.29	27,420	4,186	3.87	16,200
1887.....	21,981	1.28	28,136	4,098	3.87	15,859
1888.....	29,876	1.21	36,150	4,116	3.91	16,094
1889.....	41,675	1.00	41,675	b2,744	3.50	9,604

a Small production in 1885, due to rebuilding of the works.

b In addition to this there were 106 tons sold crude to fertilizer companies at \$2 per ton.

The producing localities in Michigan continue the same as reported for previous years in the "Mineral Resources of the United States," but the census returns show a decided increase in production over that of any previous year. The total product for the state of Michigan alone in 1889 was 131,767 short tons. The table following shows the production of land plaster and stucco in Michigan up to and including 1887. No report of the product of 1888 has been published.

AMOUNT OF LAND PLASTER AND STUCCO PRODUCED IN MICHIGAN.

YEARS.	Land plaster. (Short tons.)	Stucco. (Barrels of 300 pounds.)
Previous to 1866	100,000	
1866	14,604	
1867	17,439	
Previous to 1868		680,000
1868	28,837	34,966
1869	29,996	41,187
1870	31,437	46,179
1871	41,126	48,685
1872	43,536	59,767
1873	44,972	82,453
1874	39,126	82,449
1875	27,019	61,120
1876	29,131	64,380
1877	40,000	65,000
1878	40,000	48,346
1879	43,658	50,800
1880	49,570	106,004
1881	33,178	112,813
1882	37,821	135,165
1883	33,227	201,133
1884	27,888	156,677
1885	28,184	141,575
1886	29,378	153,274
1887	28,794	170,107

^a Partly estimated.

The Iowa gypsum beds lie along the Des Moines river, in Webster county. All the operators have their headquarters at Fort Dodge, near which town the deposits are located.

The counties producing gypsum in Kansas are Saline, Barber, Marshall, Sedgwick, and Dickinson. There have been no previous reports on the production of gypsum in Kansas. The returns from the census inquiries show a total product for the year 1889 of 17,332 short tons, valued in its first merchantable condition at \$94,235. All of the product was calcined and sold as plaster of Paris or stucco.

The gypsum localities of South Dakota are in Lawrence county. Work was just begun on these mines in 1889, and the product was 320 tons, all of which was made into plaster of Paris.

The producing point in California is in Santa Barbara county, near the town of Guadalupe. The mineral produced here is of excellent quality and of a good white color. The beds are but a short distance from a steamboat landing, and the product is delivered in San Francisco or other ports along the coast at very little expense for transportation. Gypsum is found in a number of other places in California, notably in Nevada, Stanislaus, Kern, San Luis Obispo, San Diego, Monterey, Ventura, and Tulare counties; the Santa Barbara deposits, however, furnish the supply for the market.

In Colorado large deposits exist in the counties of Jefferson, Larimer, and El Paso. The beds that have so far been worked are in the neighborhood of Big Thompson, Larimer county, and Colorado Springs, El Paso county.

GYPSUM IMPORTED INTO THE UNITED STATES FROM 1867 TO 1889, INCLUSIVE.

YEARS ENDED—	Total.	GROUND OR CALCINED.		UNGROUND.		Value of manufactured plaster of Paris.
		Quantity. (Long tons.)	Value.	Quantity. (Long tons.)	Value.	
June 30, 1867	\$125,281		\$29,895	97,951	\$95,386	
1868	114,350		33,988	87,694	80,362	
1869	186,512		52,238	137,039	133,430	\$844
1870	148,720		46,872	107,237	100,416	1,432
1871	154,013		64,465	100,400	88,256	1,202
1872	168,873		66,418	95,339	99,902	2,553
1873	165,459		35,628	118,926	122,495	7,336
1874	170,901		36,410	123,717	130,172	4,319
1875	171,096		52,155	93,772	115,664	3,277
1876	179,070		47,588	139,713	127,084	4,398
1877	162,917		49,445	97,656	105,629	7,843
1878	140,587		33,496	89,239	100,102	6,989
1879	125,542		18,339	96,963	99,027	8,176
1880	150,409		17,074	120,327	120,642	12,693
1881	171,724		24,915	128,607	128,107	18,702
1882	200,922	5,737	53,478	128,382	127,067	20,377
1883	218,969	4,291	44,118	157,851	152,982	21,869
1884	210,904	4,996	42,904	166,310	168,000	
1885	173,752	6,418	54,208	117,161	119,544	
1886	153,338	5,911	37,642	122,270	115,696	
1887	195,890	4,814	33,736	146,708	162,154	
Dec. 31, 1888	190,787	3,340	20,764	156,697	170,023	
1889	220,140	5,466	40,291	170,965	179,849	

^a Not specified since 1883.

LITHOGRAPHIC STONE.

In "Mineral Resources of the United States" for 1886 it is stated that there were promising indications of an early production of domestic lithographic stone to take the place of the Bavarian article, the supply of which is rapidly decreasing. The promise has not been conspicuously fulfilled. That lithographic stone of good quality and in workable quantity exists in this country there seems to be every reason to believe, but no amount sufficient to be considered a factor in the industry has yet been produced, certainly not enough to enter as a competitor with Bavarian stone. During 1886 it is reported that lithographic stone from Clay and Overton counties, Tennessee, was tested by lithographers with highly satisfactory results, but inquiry has failed to discover any records of production since that date. Lithographic stone exists in Blanco and Burnet counties, Texas, and a company has been formed for the purpose of developing the properties in Blanco county.

Mr. H. J. Peyton, of Burnet, Burnet county, reports lithographic stone on his property, but he has not been able to develop it. Mr. Kenneth C. Kerr, special agent of the Census Office, reports a lithographic stone deposit near the town of Santaquin, Utah county, Utah, upon which it was expected to begin operations at an early date. The only locality in the country where lithographic stone was quarried during the year 1889 was in Hardin county, Kentucky, eight miles northeast of Elizabethtown. The amount of stone taken out was 18 tons, producing 1,200 pounds of the merchantable article, valued at \$243. In producing this amount one foreman at \$1.65 per day and one mechanic and one laborer at 75 cents each per day were employed. The amount of wages paid was \$154. Supplies to the value of \$200 were consumed, and \$228 were paid for other expenses. As in all cases where only pioneer work has been done, the expenditures were in excess of the value of the product.

Lithographic stone is also reported near the town of Tomahawk, Searcy county, Arkansas, and a company has been organized for the purpose of quarrying it, but had not begun operations up to the close of 1889.

TESTS OF DOMESTIC STONE.—During the course of the present investigation inquiries were addressed to many of the leading lithographers of the country for the purpose of ascertaining

definitely what tests of domestic stone had been made. To these inquiries a large number of replies were received. In a number of instances the tests were highly satisfactory, and specimens of work done upon domestic stone have been submitted, which show to fair advantage. It must be confessed, however, that in many cases the domestic lithographic stone is faulty, sometimes due to the presence of minute crystals of marble or quartz, at other times to different degrees of hardness in the stone itself, rendering it in either case worthless except for cheap work or for the execution of very small designs. It is confidently hoped by those interested in such properties that the imperfections are due to atmospheric influences, affecting only the stone near the surface, and that they will disappear as greater depth is reached. From present indications the supply of Bavarian stone is nearly exhausted, and it is safe to predict that within a few years greater attention will be given to the possibility of American stone furnishing the supply, not only for home consumption, but for foreign demand as well.

FIRMS WHO HAVE TESTED DOMESTIC STONE.—The following lithographers in the United States have tried the qualities of different domestic lithographic stones with varying results, generally favorable:

Mr. O. V. Greend, New Orleans, Louisiana.
 Messrs. Lehman & Bolton, Philadelphia, Pennsylvania.
 The Strobbridge Lithographing Company, Cincinnati, Ohio.
 The Los Angeles Lithographic Company, Los Angeles, California.
 The National Bureau of Engraving and Manufacturing Company, Philadelphia, Pennsylvania.
 Mr. A. L. Porter, Chicago, Illinois.

IMPORTS.—The imports of unengraved lithographic stone during late years have been as follows:

**LITHOGRAPHIC STONE IMPORTED INTO THE UNITED STATES FROM
1868 TO 1889, INCLUSIVE.**

YEARS ENDED—	Value.	YEARS ENDED—	Value.
June 30, 1868.....	\$13,258	June 30, 1879.....	\$37,746
1869.....	17,044	1880.....	56,310
1870.....	14,225	1881.....	77,894
1871.....	21,311	1882.....	111,925
1872.....	36,146	1883.....	104,313
1873.....	44,937	1884.....	128,035
1874.....	36,902	1885.....	54,022
1875.....	41,963	1886.....	71,009
1876.....	47,101	Dec. 13, 1887.....	83,182
1877.....	44,503	1888.....	113,365
1878.....	42,709	1889.....	78,077

SOAPSTONE.

VARIETIES AND OCCURRENCE.—Soapstone, or talc, is a hydrated silicate of magnesia, soft, with a soapy feeling, to which it owes its name. There are two principal varieties of the mineral, one occurring in massive form, and known as steatite, soapstone, potstone, renselaerite, etc., the other foliated and fibrous, and not dissimilar in appearance to asbestos. This latter variety, known as fibrous talc, occurs, so far as known, in but one locality in the United States, near the town of Gouverneur, Saint Lawrence county, New York. The ordinary or massive form is distributed liberally throughout the country, and is found in a number of places in Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Georgia, Alabama, Texas, Arizona, and South Dakota. The two varieties are used for entirely different purposes, and are treated separately in this report.

PRODUCTION.—The amount of ordinary soapstone produced in the United States in 1889 was 12,715 short tons, valued at \$231,708, which represents the aggregate amount received by operators

for their product. In some cases the mineral is sold rough or without further preparation than being sawed into slabs convenient for shipping, and in such condition the price ranges between \$7 and \$10 per ton. About 50 per cent of the entire product is manufactured before being placed upon the market, and the table showing its production is arranged to indicate how much was sold rough or sawed and how much was manufactured, with the value of each. In all instances the labor and wages involved and the capital invested apply to the condition of the product as marketed.

PRODUCTION OF SOAPSTONE IN 1889, BY STATES.

STATES.	Total product. (Short tons.)	CONDITION IN WHICH PRODUCT WAS FIRST SOLD.				Total value.
		Crude. (Short tons.)	Value.	Manufactured. (Short tons.)	Value.	
Total.....	12,715	6,303	\$51,575	6,412	\$180,133	\$231,708
Maryland.....	432	432	4,321			4,321
New Hampshire.....	4,252			4,252	117,883	117,883
New Jersey.....	1,500	1,500	10,262			10,262
Pennsylvania.....	4,371	4,371	36,992			36,992
Vermont.....	900			900	20,000	20,000
Virginia.....	1,260			1,260	42,250	42,250

LABOR AND WAGES.—The highest compensation for foremen was \$4 per day, paid in New Hampshire; for mechanics, \$2.50 per day, paid in Virginia. Laborers received the highest wages in Vermont, the rate at one quarry being \$1.50 per day. The lowest rates per day were as follows: For foremen, \$1.50, in New Jersey and Pennsylvania; mechanics, \$1, in Virginia; laborers, 75 cents, in Virginia. Boys received the uniform rate of 75 cents.

LABOR EMPLOYED AT SOAPSTONE QUARRIES IN 1889, BY STATES, EXCLUSIVE OF FIBROUS TALC OPERATIONS.

STATES.	AVERAGE NUMBER EMPLOYED.				AVERAGE WAGES PER DAY.				AVERAGE NUMBER OF DAYS WORKED.			
	Foremen.	Mechan- ics.	Laborers.	Boys.	Foremen.	Mechan- ics.	Laborers.	Boys.	Foremen.	Mechan- ics.	Laborers.	Boys.
Total.....	20	71	177	12	\$2.60	\$1.87	\$1.28	\$0.75	282	286	275	263
New Hampshire.....	4	45	54		3.62	1.90	1.40		303	298	292	
Pennsylvania.....	4	2	28	2	1.50	1.75	1.25	0.75	269	281	274	200
Vermont.....	3	10	19		2.00	1.50	1.38		223	260	237	
Virginia.....	7	14	61	10	3.07	2.07	1.16	0.75	286	268	272	275
Other states (a).....	2		15		2.00		1.21		337		272	

^a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Maryland and New Jersey.

OPERATING EXPENSES.

STATES.	Total ex- penditures.	Wages, including office force.	Paid con- tractors.	Paid for supplies.	Other ex- penditures.
Total.....	\$163,438	\$115,621	\$4,023	\$35,454	\$8,340
New Hampshire.....	75,750	49,927	3,423	20,000	2,400
Pennsylvania.....	24,907	13,078		11,104	725
Vermont.....	12,300	9,700	600	1,000	1,000
Virginia.....	41,537	36,287		2,900	2,350
Other states (a).....	8,944	6,629		450	1,865

^a The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Maryland and New Jersey.

CAPITAL INVESTED.

STATES.	Total value.	In land.	In buildings, machinery, etc.	In tools, implements, live stock, etc.	Cash.
Total -----	\$924,900	\$431,500	\$86,100	\$92,300	\$15,000
Georgia (a) -----	250,000	200,000	25,000	25,000	-----
New Hampshire -----	6350,000	30,000	8,000	7,000	5,000
North Carolina (a) -----	110,000	104,000	2,000	4,000	-----
Pennsylvania -----	54,300	32,500	6,100	14,700	1,000
Vermont -----	20,000	10,000	5,000	2,000	3,000
Virginia -----	112,000	44,000	28,000	34,000	6,000
Other states (c) -----	28,600	11,000	12,000	5,600	-----

^a No operations in 1889.

^b Of this amount \$300,000 is represented by capital stock paid in, not distributed.

^c The states here grouped, in order that the business of individual establishments may not be disclosed to the public, embrace Maryland and New Jersey.

USES.—The uses for soapstone at the present day are many and various. When exposed to fire or to changes of atmosphere it is one of the most durable substances known, expanding and contracting very little, even at extreme degrees of heat or cold. For this reason it is used very extensively instead of fire brick in the construction of furnaces for the reduction of ores by fluxes, for crucibles, and the linings of boilers, ranges, and heaters. One of its principal uses is for the manufacture of laundry, bath, and acid tubs. It does not absorb acid or grease, and is easily cleansed of any adherent impurities by washing. Soapstone is now receiving some attention as a material for the manufacture of fireproof, waterproof, and acidproof paint. For this purpose it is useful as a protective covering for iron and steel ships and other marine structures, for preserving limestone and sandstone structures against atmospheric changes, and in a number of similar ways. In this application of soapstone to the arts it may be said that the civilization of China has shown greater advancement than that of the western hemisphere. In China soapstone is largely used for preserving structures built of sandstone and other stones which are liable to disintegrate under atmospheric influences, and the covering of powdered soapstone in the form of paint on some obelisks in China, which were hewn out of stones liable to suffer from climatic changes, is said to have preserved the same intact for hundreds of years. Soapstone possesses one peculiar quality which fits it for the manufacture of a protective paint for metals, and that is the extreme fineness of its grain. Ground soapstone is one of the finest materials which can be produced, and adheres easily and firmly to iron and steel. Moreover, it is lighter than metallic pigments, and if mixed as a paint will cover a larger surface than zinc white, red lead, or oxide of iron. It is used as a lubricant in the form of what is known as steatite grease, and is said to be invaluable as a preventative of hot boxes. It finds some use as a base for cosmetics, for polishing glass and marble, and for the manufacture of interior wall coverings, and is also made into slate pencils. In Alabama soapstone is used for headstones, and it makes excellent hearths, griddles, and mantels. It is also used for dressing skins, leather, etc., and as an adulterant in the manufacture of soap, paper, and rubber. Possessing no poisonous or injurious constituents, it is therefore not harmful as an adulterant, except in reference to honesty in weight. Soapstone was used to a very large extent by the Indians of North America, and Dr. W. H. Holmes, of the United States Geological Survey, who has been for some time engaged in the investigation of that subject, has kindly furnished the following interesting data concerning it:

USE OF SOAPSTONE BY THE AMERICAN ABORIGINES.—Among the many varieties of rocks utilized by the American aborigines soapstone took a prominent place. The advantage of a mineral that would withstand measurably the action of fire was no doubt recognized at a very early period, and the fact that it was so easily reduced to desired shapes led first to the production of vessels for cooking and boiling, and afterward to the manufacture of pipes and many fanciful forms used in councils and religious ceremonies and in medicinal arts.

The quarrying and working of soapstone by the native races was most extensively practiced along the coast of California, but there are few known localities of this material where some

traces of native operations have not been found. The broad soapstone-bearing belt which extends along the Atlantic slope from Maine to Georgia abounds in ancient quarries, and upon a single site within the suburbs of Washington city many pits are still traceable, and thousands of fragments of partially finished pots occur upon the surface of the ground and throughout the soil and débris. Many of these ancient quarries have been reworked by the whites, and in numerous cases the traces of aboriginal work have been wholly obliterated.

The natives employed rude tools of stone, and probably also of wood and bone or antler, in their mining operations. Owing to the massiveness and toughness of the rock and the difficulty of removing the accumulations of earth and débris they seldom penetrated to a depth of more than a few feet. Masses of suitable size were broken off or were separated from the bed by the laborious process of picking with stone tools. With smaller picks and chisels of slate, quartz, quartzite, and tough volcanic rocks, the bowls of the utensils were roughed out on the quarry site. The half-finished vessels were carried away to dwelling sites, and were there finished at leisure by means of small chisels, scrapers, and rubbing stones. At best the vessels are heavy and rather rude as compared with earthen vessels of the same region. Native pipes made of this material are often elaborate and handsome in shape and of exquisite finish.

FIBROUS TALC.

The fibrous variety of talc or soapstone quarried at Gouverneur, New York, is especially valuable as a filler in the manufacture of paper. One of its valuable characteristics in this respect is its light bluish tinge, which gives to the paper an excellent white color. It is not used in the very finest papers nor in the coarsest grades, but is consumed to a large extent in the intermediate qualities. Its light weight and its fibrous nature admit of its almost entire incorporation with the other ingredients of paper manufacture.

PROCESS OF PREPARATION.—In preparing the talc to be used for making paper, it is first crushed into pieces small enough to be ground by buhrstones. After grinding, it is placed, with a quantity of flint pebbles, in large iron cylinders lined with porcelain, and the talc is reduced to the desired fineness by friction against the sides of the cylinders and the pebbles. It is then packed and delivered to the trade under various names, such as mineral pulp, asbestine pulp, agalite, etc.

PRODUCTION.—The production of fibrous talc at Gouverneur, New York, in 1889 was 23,746 tons, valued at \$244,170.

INCREASE IN THE PAST DECADE.—By comparing the product of soapstone and fibrous talc for the year 1889 with that of the Tenth Census year it will be observed that there is a gain in the quantity of the former of about 51 per cent. The increase in value is 248 per cent. This large percentage is probably due to the amount of soapstone produced in 1889 which was sold in the manufactured state. The percentage of increase in the product of fibrous talc is 464 per cent, and in value 346 per cent. The following table is arranged to show the product and value of 1880 as compared with that of 1889, by states :

COMPARATIVE STATISTICS OF SOAPSTONE FOR 1880 AND 1889.

STATES.	PRODUCT. (Short tons.)		Increase. (Short tons.)	Decrease. (Short tons.)	VALUE.		Increase.	Decrease.
	1880.	1889.			1880.	1889.		
Total.....	8,441	12,715	4,274		\$66,665	\$231,708	\$165,043	
Georgia.....	320			320	710			710
Maryland.....	300	432	132		1,950	4,321	2,371	
New Hampshire.....	2,000	4,252	2,252		30,000	117,883	87,883	
New Jersey.....		1,500	1,500			10,262	10,262	
North Carolina.....	510			510	5,100			5,100
Pennsylvania.....	4,011	4,371	360		17,055	36,992	19,937	
Vermont.....	1,300	900		400	11,850	20,000	8,150	
Virginia.....		1,260	1,260			42,250	42,250	

COMPARATIVE STATISTICS OF SOAPSTONE FOR 1880 AND 1889—CONTINUED.

STATES.	TOTAL NUMBER OF EMPLOYÉS.		TOTAL WAGES PAID.		OTHER EXPENSES.		TOTAL EXPENSES.	
	1880.	1889.	1880.	1889.	1880.	1889.	1880.	1889.
Total.....	113	280	\$29,455	\$115,621	\$2,841	\$47,817	\$32,296	\$163,438
Georgia.....	12		390		100		490	
Maryland.....	4	5	734	2,245	114	265	848	2,510
New Hampshire.....	30	103	12,000	49,927	950	25,823	12,950	75,750
New Jersey.....		12		4,384		2,050		6,434
North Carolina.....	15		2,500				2,500	
Pennsylvania.....	27	36	7,931	13,078	552	11,829	8,483	24,907
Vermont.....	25	32	5,900	9,700	1,125	2,600	7,025	12,300
Virginia.....		92		36,287		5,250		41,537

TALC IMPORTED INTO THE UNITED STATES FROM
1880 TO 1889, INCLUSIVE.

YEARS.	Quantity. (Pounds.)	Value.
1880.....		\$22,807
1881.....		7,331
1882.....		25,641
1883.....		14,607
1884.....		41,165
1885.....		24,356
1886.....		24,514
1887.....	(a)	49,250
1888.....	24,165	22,446
1889.....	19,229	30,993

a Quantity not reported previous to 1888.

SULPHUR.

PRODUCING LOCALITIES IN 1889.—Although deposits of sulphur are reported to have been discovered in a number of places throughout the United States, in only four states have there been developments of any commercial importance, and in but two of these, Utah and Nevada, was there any production in 1889. In Nevada work was just begun during the year, the beds being located near the town of Winnemucca, and said to be very valuable. The mine producing sulphur in 1889 in Utah is located about twelve miles south of the town of Frisco. The total output of these two mines was 1,150 short tons of ore, producing 450 tons of sulphur, valued at \$7,850, as shown in the following table:

PRODUCTION OF SULPHUR FOR 1889.

STATES.	Amount of ore produced. (Short tons.)	Refined sulphur. (Short tons.)	Value.
Nevada.....	550	250	\$3,850
Utah.....	a600	200	4,000

a Estimated.

The tables following include the men employed at both places above and below ground, the wages paid per day, the number of days employed, the expenses incurred in operating the mines, and the amount of capital invested.

LABOR EMPLOYED.

EMPLOYÉS.	Average number employed.	Average wages per day.	Average number of days worked.
Total	12		
Foremen	2	\$4.50	80
Miners.....	7	3.00	77
Boys under sixteen years of age.....	3	0.50	60

OPERATING EXPENSES.

Paid for wages.....	\$2,410
Paid for supplies.....	1,700
Total	4,110

CAPITAL INVESTED.

In land.....	a\$312,500
In buildings, machinery, etc.....	2,750
In tools, implements, live stock, etc.....	5,500
Total	320,750

a Includes valuation of Louisiana property.

PREVIOUS OPERATIONS AND PRODUCTION.—Prior to 1889 sulphur deposits of notable value had been located in California, Louisiana, and Utah. In California it has been found in about ten counties, but with the exception of the deposit at Clear Lake, Lake county, no work has been done. In 1864 a refinery with a capacity of six tons per day was erected at this place, and until 1868 was engaged in the refining of sulphur, but owing to a drop of about 50 per cent in the price of refined sulphur at San Francisco the enterprise ceased to be profitable, and was abandoned.

It is stated that the Mormons refined sulphur from native ore as early as 1850. About the year 1870 considerable prospecting was done in the neighborhood of Cove creek, and during the next two years a number of claims were located, and a few have been developed. The Dickert & Myers Sulphur Company, organized in 1883, was engaged up to 1888 in operating the deposits in the vicinity of Cove creek.

The sulphur beds of Louisiana are located about twelve miles from Lake Charles and eighty miles west of New Orleans. The discovery of the sulphur-bearing stratum was the result of explorations after petroleum, which, from surface indications, it was thought could be found in profitable quantity. In this the prospectors were disappointed, but their disappointment was in a measure offset by the discovery at the depth of 443 feet of a stratum of sulphur, said to be of exceptional purity. A company was formed for the purpose of developing the property and a shaft was sunk to the depth of 150 feet, when an accident stopped the work. Up to 1889 no further work had been done, but in that year the property changed hands, and the present owner expects to commence operations shortly.

IMPORTS.—The amount of sulphur produced in the United States is small, indeed, compared to that imported into the country. This is due largely to the excessive cost of transportation from the western mines, it being possible to put down Sicilian sulphur in New York at a lower figure than it would cost to transport the product of Utah or Nevada. The following table shows the imports of sulphur for the years 1867 to 1889, inclusive:

SULPHUR IMPORTED INTO THE UNITED STATES FROM 1867 TO 1889, INCLUSIVE.

YEARS ENDED—	CRUDE.		"FLOWERS" OF SULPHUR.		REFINED.		Ore. (a)	Total value.
	Quantity. (Long tons.)	Value.	Quantity. (Long tons.)	Value.	Quantity. (Long tons.)	Value.		
June 30, 1867	24,544	\$620,373	110	\$5,509	251	\$10,915	-----	\$636,797
1868	18,151	446,547	16	948	65	2,721	-----	450,216
1869	23,590	678,642	97	4,576	645	27,149	-----	710,267
1870	27,380	819,408	76	3,927	157	6,528	\$1,269	831,132
1871	36,131	1,212,448	66	3,514	92	4,328	754	1,221,044
1872	25,380	764,798	36	1,822	57	2,492	-----	769,112
1873	45,533	1,301,000	55	2,924	36	1,497	-----	1,305,421
1874	40,990	1,260,491	51	2,694	57	2,403	-----	1,265,588
1875	39,683	1,259,472	18	891	-----	-----	-----	1,260,363
1876	46,435	1,475,250	41	2,114	44	1,927	-----	1,479,291
1877	42,963	1,242,888	116	5,873	1,171	36,962	-----	1,285,723
1878	48,102	1,179,769	159	7,628	150	5,935	-----	1,193,392
1879	70,370	1,575,533	138	6,509	69	2,392	-----	1,584,434
1880	87,897	2,024,121	124	5,516	158	5,262	-----	2,034,899
1881	106,097	2,713,485	98	4,226	71	2,555	-----	2,720,266
1882	97,504	2,627,402	159	6,926	59	2,196	-----	2,636,524
1883	94,540	2,288,946	79	3,262	115	4,487	-----	2,296,695
1884	105,112	2,242,697	178	7,869	126	4,765	-----	2,255,331
1885	96,839	1,941,943	121	5,351	114	4,060	-----	1,951,354
1886	117,538	2,237,989	213	8,739	116	3,877	-----	2,250,605
1887	96,882	1,688,360	279	9,980	84	2,383	-----	1,700,723
Dec. 31, 1888	120,104	1,927,336	60	1,921	-----	3	-----	1,929,260
1889	135,935	2,068,208	282	8,184	10	299	-----	2,076,691

a Since 1871 classed under the head of pyrites.

PRINCIPAL SOURCES OF SUPPLY.—Italy and the island of Sicily furnish the larger part of the world's supply of sulphur, 90 per cent coming from Sicily. The sulphur-producing districts of Sicily cover about one-third of the entire island, and include nearly all of the provinces of Girgenti and Caltanissetta. A few mines are also found in the provinces of Palermo and Catania. Some sulphur is produced at Hakodadi, in Japan, of excellent quality, yielding 50 per cent of sulphur, most of which is shipped to San Francisco: but the trade in Japanese sulphur is limited on account of poor facilities for mining and shipping. The sulphur mines of Sicily, on the other hand, while the ore is not so rich in sulphur as is claimed for the Japanese, are conveniently situated for shipping the product, and labor is exceedingly cheap, and these advantages will continue to make the island the chief source of supply for some years to come. It is reported that large fields of sulphur on the island of Saba, one of the Lesser Antilles group of the West Indies, have been purchased by a syndicate composed of Boston and Lowell capitalists, and though the mines are said to be some distance inland, and the cost of mining and transportation to the seaboard will be quite heavy, this expense is warranted by the quantity and purity of the ore.

In a report under date of August 20, 1889, Mr. Vincent Lamantia, United States consul at Catania, island of Sicily, gives some interesting information regarding the sulphur mines of Sicily, from which the following data is abstracted. There are in all 567 mines on the island, 376 of which were in operation at the time of writing his report. Some of the important mines give employment to as many as 400 men and boys. The wages for men amounts to about 58 cents per day, and for boys about 29 cents, eight hours being the usual length of a working day. The amount of sulphur exported from the island of Sicily for the years 1850 to 1888, inclusive, and the countries receiving the same are shown in the table following.

SULPHUR EXPORTED FROM SICILY TO VARIOUS COUNTRIES FROM 1850 TO 1888,
INCLUSIVE.

YEARS.	Total. (Short tons.)	Italy. (Short tons.)	Great Britain. (Short tons.)	France. (Short tons.)	United States. (Short tons.)	Other countries. (Short tons.)
Total.....	3,303,948	478,884	744,237	729,555	596,724	754,548
1850.....	21,426	843	7,170	9,456	1,818	2,139
1851.....	25,932	1,188	10,419	9,273	1,695	3,357
1852.....	26,094	1,743	7,353	11,688	1,668	3,642
1853.....	30,972	174	15,483	10,287	1,173	3,855
1854.....	38,214	1,131	21,429	8,253	2,211	5,190
1855.....	33,747	1,221	16,176	12,276	678	3,396
1856.....	39,894	855	17,889	14,787	1,338	5,025
1857.....	39,621	897	16,662	18,858	738	2,466
1858.....	37,227	2,628	17,928	11,222	969	4,380
1859.....	49,260	2,334	20,301	18,597	3,468	4,560
1860.....	39,975	2,691	16,809	13,074	2,229	5,172
1861.....	44,973	3,918	16,446	18,090	603	5,916
1862.....	63,693	5,757	23,424	18,561	4,326	11,625
1863.....	75,477	14,511	17,358	22,986	3,132	17,490
1864.....	69,429	11,754	23,403	21,051	2,379	10,842
1865.....	70,152	14,454	20,256	16,755	5,682	13,005
1866.....	70,965	7,245	27,777	16,736	5,688	13,509
1867.....	78,261	11,040	23,439	17,940	4,245	21,597
1868.....	73,344	12,132	22,485	18,096	5,859	14,772
1869.....	73,107	11,766	23,115	14,943	8,034	15,249
1870.....	78,144	11,124	27,282	12,603	9,627	17,508
1871.....	80,601	11,844	24,588	14,898	10,227	19,044
1872.....	91,653	14,487	23,502	22,071	9,654	21,939
1873.....	99,672	17,046	18,683	21,672	10,362	31,899
1874.....	86,746	15,081	19,935	13,467	10,461	26,802
1875.....	101,868	15,075	24,177	14,655	9,555	38,406
1876.....	92,436	14,430	19,509	12,162	8,943	37,392
1877.....	98,847	21,604	21,342	16,041	16,773	23,187
1878.....	109,203	22,887	17,001	20,286	24,633	24,396
1879.....	132,411	24,036	10,833	31,563	32,607	24,282
1880.....	136,869	12,960	19,338	31,779	47,166	25,626
1881.....	133,251	14,019	21,033	28,425	42,720	27,054
1882.....	136,746	19,584	18,840	21,294	43,263	33,765
1883.....	150,297	33,072	19,578	30,186	36,510	30,951
1884.....	148,353	27,903	18,774	30,684	41,829	29,163
1885.....	148,860	23,925	17,025	26,235	34,947	46,728
1886.....	159,087	25,152	15,444	26,061	46,188	46,302
1887.....	150,168	23,580	15,438	27,003	42,273	41,874
1888.....	167,973	22,893	17,583	25,491	60,963	41,043

SULPHUR EXPORTED FROM SICILY IN 1889.

WHITHER EXPORTED.	Total. (Tons.)	From Girgenti. (Tons.)	From Catania. (Tons.)	From Licata. (Tons.)
Total.....	171,105	71,838	55,659	43,608
To United States.....	53,250	35,436	6,201	11,613
To France.....	32,619	15,510	3,855	12,954
To Italy.....	21,171	2,367	14,994	3,810
To Great Britain.....	18,276	7,995	9,597	684
To other countries.....	45,789	10,230	21,012	14,547
Total in 1888.....	167,973	69,276	60,267	38,430

SULPHUR EXPORTS FROM SICILY FOR TEN YEARS FROM 1879 TO 1888, INCLUSIVE.

Girgenti.....	644,543
Catania.....	555,410
Licata.....	264,062
Total.....	1,464,015

COUNTRIES IMPORTING SICILIAN SULPHUR FROM 1879 TO 1888, INCLUSIVE.

	TONS.
United States	428,556
France	278,661
Italy	227,124
Great Britain	182,886
Other countries	346,788
Total	1,464,015

STATEMENT BY COUNTRIES AND BY CUSTOMS DISTRICTS, SHOWING THE IMPORTS INTO THE UNITED STATES OF CRUDE SULPHUR OR BRIMSTONE EACH FISCAL YEAR FROM 1876 TO 1889, INCLUSIVE.

COUNTRIES WHENCE EXPORTED AND CUSTOMS DISTRICTS THROUGH WHICH IMPORTED.	1876.		1877.		1878.		1879.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
COUNTRIES	48,966	\$1,473,678	43,443	\$1,242,788	47,922	\$1,173,156	65,919	\$1,487,698
Dutch West Indies and Guiana	1,515	15,427						
England	30	1,211	425	14,631	(?) 160	16	2	335
Scotland	24	910	472	13,231		3,961	806	19,287
Gibraltar			290	7,789				
Quebec, Ontario, Manitoba, etc.					12	264		
Italy	46,941	1,439,839	41,819	1,194,000	47,494	1,161,367	64,420	1,453,138
Japan	456	16,291	437	13,137	256	7,548	224	4,528
Portugal							467	10,410
DISTRICTS	48,966	1,473,678	43,443	1,242,788	47,922	1,173,156	65,919	1,487,698
Baltimore, Maryland	5,157	157,828	3,882	105,175	5,455	138,202	6,969	157,243
Barnstable, Massachusetts							600	13,780
Boston and Charlestown, Massachusetts	5,031	154,883	3,931	101,215	5,795	131,945	7,841	173,506
Charleston, South Carolina					526	12,267	605	13,812
Delaware, Delaware	450	13,500					890	21,907
Huron, Michigan					12	264		
Newark, New Jersey			1,071	31,802	462	13,240	443	10,175
New Orleans, Louisiana	172	5,705	150	4,750			100	2,087
New York, New York	24,524	721,092	21,867	654,997	23,240	690,089	36,543	827,193
Philadelphia, Pennsylvania	12,549	385,071	9,216	256,224	6,657	167,222	11,794	263,467
Providence, Rhode Island	600	18,232	1,739	45,487	519	11,479		
San Francisco, California	483	17,367	862	27,768	256	7,548	224	4,528
Savannah, Georgia			725	15,370				
COUNTRIES WHENCE EXPORTED AND CUSTOMS DISTRICTS THROUGH WHICH IMPORTED.								
COUNTRIES	83,236	\$1,927,502	105,438	\$2,713,494	97,956	\$2,627,402	94,536	\$2,288,795
England	1	22					13	379
Scotland	1,664	36,444	1,668	43,311	755	20,294	3	88
France	988	23,580			526	13,770	34	858
French West Indies					2			
Greece					500	13,927		
Italy	80,301	1,862,712	102,771	2,645,293	92,944	2,504,862	92,861	2,248,870
Japan	282	4,744	691	16,253	2,980	66,356	1,038	23,714
San Domingo					240	7,875		
Spain			308	8,637			500	12,856
Spanish Possessions in Africa and adjacent islands					9	310	87	2,030
DISTRICTS	83,236	1,927,502	105,438	2,713,494	97,956	2,627,402	94,536	2,288,795
Baltimore, Maryland	13,827	313,342	16,477	430,917	13,781	364,384	11,977	286,438
Beaufort, South Carolina					540	13,880		
Boston and Charlestown, Massachusetts	8,207	183,486	8,860	226,801	7,467	194,317	7,756	173,569
Charleston, South Carolina	1,061	25,398	3,065	78,741	6,025	161,281	4,051	106,225
Middletown, Connecticut					9	310		
New Orleans, Louisiana	280	7,121	100	2,646	220	6,516	428	10,378
New York, New York	46,657	1,083,784	57,608	1,463,082	46,591	1,260,222	45,385	1,110,313
Philadelphia, Pennsylvania	10,679	254,892	17,987	477,547	14,839	408,611	22,772	549,095
Providence, Rhode Island	1,255	31,155	650	17,507	1,244	33,036	535	13,830
Richmond, Virginia					1,660	17,760		
San Francisco, California	1,270	28,324	691	16,253	6,054	151,234	1,072	24,572
Savannah, Georgia					586	15,842	560	14,365

STATEMENT BY COUNTIES AND BY CUSTOMS DISTRICTS, SHOWING THE IMPORTS INTO THE UNITED STATES OF CRUDE SULPHUR OR BRIMSTONE, ETC.—CONTINUED.

COUNTRIES WHENCE EXPORTED AND CUSTOMS DISTRICTS THROUGH WHICH IMPORTED.	1884. (a)		1885.		1886.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
COUNTRIES	105,143	\$2,242,678	96,841	\$1,941,943	117,396	\$2,237,332
Belgium			190	4,766	60	1,718
England			606	15,084	81	2,536
Quebec, Ontario, Manitoba, and the Northwest Territory						9
Italy			94,370	1,894,858	112,283	2,166,565
Japan			1,541	25,683	4,972	66,505
Spain			134	1,562		
DISTRICTS	105,143	2,242,678	96,841	1,941,943	117,396	2,237,332
Baltimore, Maryland	15,037	303,226	14,505	285,006	19,307	364,958
Barnstable, Massachusetts	650	16,163	480	11,040	1,617	35,385
Beaufort, South Carolina	600	13,259	610	12,847		
Boston and Charlestown, Massachusetts	5,294	112,152	5,125	99,712	3,681	99,898
Champlain, New York						9
Charleston, South Carolina	6,125	132,570	8,525	169,564	13,350	265,265
New Orleans, Louisiana			102	2,282	250	5,102
New York, New York	52,478	1,135,725	45,537	909,123	58,758	1,113,519
Philadelphia, Pennsylvania	18,786	401,468	18,696	381,010	15,568	300,749
Providence, Rhode Island	651	15,517	1,840	37,422	1,265	25,930
San Francisco, California	5,522	112,598	1,421	33,937	3,600	54,517
COUNTRIES	97,383	\$1,688,360	99,253	\$1,581,582	130,191	\$2,025,644
Belgium			83	1,933	180	4,086
Danish West Indies	861	5,250				
England	162	4,437	310	7,200	305	8,337
France	290	6,951				
Quebec, Ontario, etc.						
Italy	89,924	1,588,146	92,528	1,499,720	123,260	1,935,368
Japan	6,146	83,576	6,332	72,729	6,446	77,853
Spain						
DISTRICTS	97,383	1,688,360	99,253	1,581,582	130,191	2,025,644
Baltimore, Maryland	12,547	225,669	11,989	182,769	15,791	234,693
Barnstable, Massachusetts	1,152	22,816				
Beaufort, South Carolina			500	9,000	600	9,213
Boston and Charlestown, Massachusetts	4,850	85,575	3,760	62,298	6,446	104,257
Champlain, New York						
Charleston, South Carolina	12,420	220,598	12,005	199,048	23,377	364,850
New Orleans, Louisiana			200	3,845		
New York, New York	46,711	792,114	50,486	816,286	60,922	950,872
Philadelphia, Pennsylvania	15,267	269,216	10,519	173,699	13,288	202,357
Providence, Rhode Island	600	11,291	1,310	21,012	570	8,581
San Francisco, California	3,176	50,521	6,352	78,732	4,539	57,925
Savannah, Georgia					2,345	44,244
Wilmington, North Carolina			1,532	25,893	1,753	28,443
All other customs districts	660	10,560	600	9,000	560	11,200

^a Sources not reported.

PRICES.—The price for crude sulphur from 1881 to 1887 showed a steady decline. From \$31 per ton for seconds in 1881 it fell to \$27.50 at the close of 1882, to \$27 in 1883, \$23.50 in 1884, \$22.40 in 1885, until in 1887 it reached as low as \$19.50 for seconds and \$19.25 for thirds. The price has continued to range between \$19.25 and \$21 since that year for seconds and \$18 to \$19.25 for thirds. The prices at the opening of 1889 were \$19.25 and \$19.50 for seconds and \$18.75 to \$19 for thirds. In December the price for seconds was from \$19 to \$19.50, and for thirds from \$18.25 to \$18.75. The decline in prices is attributed to the increasing consumption of pyrites for the manufacture of sulphuric acid.

THE CHANCE PROCESS.—Another source of supply in 1889 was the sulphur recovered from alkali works by the Chance process, which converts the sulphur of the waste calcium sulphide into hydrogen sulphide and from this to free sulphur. Some twenty or more alkali works in England have adopted this process, and the resulting sulphur is shipped largely to the United States. This will undoubtedly be a competing factor with Sicilian sulphur. The quantity of Chance sulphur available in 1890 will amount in value to about \$200,000.

PYRITES.

PRODUCTION.—The pyrites treated under this report includes only that mined for its sulphur contents and used in the manufacture of sulphuric acid. Pyrites occurs more or less plentifully in almost every state of the Union, but its production during 1889 was limited to three states, New Hampshire, Massachusetts, and Virginia. Owing to large stocks on hand and the prevalence of low prices the New Hampshire mines, located at Copperville, Coos county, were not operated during the calendar year 1889. The product from Massachusetts and Virginia, labor employed at mines, operating expenses, and capital invested are shown in the following tables:

PRODUCTION OF PYRITES IN 1889.

STATES.	Quantity. (Short tons.)	Value.
Total.....	104,950	\$202,119
Massachusetts.....	36,350	92,119
Virginia.....	68,600	110,000

LABOR EMPLOYED AT PYRITES MINES.

STATES.	ABOVE GROUND.											
	Average number employed.				Average wages per day.				Average number of days worked.			
	Foremen.	Mechanics.	Laborers.	Boys under 16 years.	Foremen.	Mechanics.	Laborers.	Boys under 16 years.	Foremen.	Mechanics.	Laborers.	Boys under 16 years.
Total.....	4	17	65	22	\$1.75	\$1.59	\$1.06	\$0.53	287	291	273	235
Massachusetts.....	1	5	20	3	2.00	2.21	1.25	0.75	300	290	276	276
Virginia.....	3	12	45	19	1.66	1.33	0.97	0.50	283	292	272	239

STATES.	BELOW GROUND.								
	Average number employed.			Average wages per day.			Average number of days worked.		
	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.	Foremen.	Miners.	Laborers.
Total.....	3	75	51	\$3.13	\$1.55	\$1.27	303	185	254
Massachusetts.....	1	25	16	3.40	2.00	1.80	308	288	288
Virginia.....	2	50	35	3.00	1.33	1.03	300	133	239

OPERATING EXPENSES.

STATES.	Total expenditures.	Wages.	Office force at mines.	Paid contractors.	Paid for supplies.	Other expenditures.
Total.....	\$103,256	\$62,379	\$5,512	\$23,103	\$12,000	\$30,262
Massachusetts.....	63,156	10,379	2,412	23,103	17,000	10,262
Virginia.....	100,100	52,000	3,100	-----	25,000	20,000

CAPITAL INVESTED.

STATES.	Total.	In land.	Buildings, machinery, etc.	Tools, implements, live stock, etc.	Cash.
Total.....	\$1,358,882	\$955,500	\$207,000	\$149,504	\$46,878
Massachusetts.....	258,882	165,500	47,000	44,504	1,878
Virginia.....	1,100,000	790,000	160,000	105,000	45,000

SULPHURIC ACID FROM PYRITES.—Considering the liberal manner in which pyrites is distributed throughout the United States, and the economy with which sulphuric acid may be prepared from it, it is remarkable that the production of pyrites for this purpose continues comparatively small. For all ordinary purposes, such as the refining of petroleum, the manufacture of fertilizers known as superphosphates, the washing of wool, etc., acid from pyrites serves equally well with that made from brimstone, though for medicinal purposes pyrites acid is objectionable, owing to the fact that it is apt to contain arsenic or other injurious impurities in the ore. The principal reasons for the objection to the use of pyrites given by manufacturers of acid are, first, the changes necessary in the furnaces for roasting the ore, the pyrites requiring to be burned over a grate, and second, the remoteness of the mines from manufacturing centers and the cost of transportation. A great deal of attention is now being paid to pyrites localities in the country, particularly those in the southern states, and it is to be expected that as these properties are further developed suitable furnaces for the manufacture of acid will be erected at the mines and the trade supplied direct. By this means the cost of transporting the ore will be overcome, and as experiments have shown that a ton of acid can be more economically prepared from pyrites than from imported brimstone, a decided increase in production may be looked for in the near future. Mr. W. H. Adams, of Mineral City, Virginia, has made the following estimates on the comparative costs of sulphuric acid made from brimstone (imported) and pyrites. Computations are made for plants at Atlanta, Georgia.

COST OF SULPHURIC ACID FROM BRIMSTONE AT ATLANTA, GEORGIA.

(One day's work.)

Four tons brimstone, including costs of freight, losses in transit, etc., at \$24 per ton.....	\$96.00
Nitrate of soda, 6 per cent of brimstone used, 538 pounds, at \$2.50 per 100 pounds.....	13.45
Labor, five men, at \$1.25 per day.....	6.25
Coal, two tons, at \$3 per ton.....	6.00
Superintendent and office cost.....	6.00
Wear and tear.....	10.00
	<hr/>
Producing eighteen tons of chamber acid, at \$7.65 per ton.....	137.70

COST OF SULPHURIC ACID FROM PYRITES AT ATLANTA, GEORGIA.

(One day's work.)

Ten tons pyrites, including costs as above, at \$5 per ton.....	\$50.00
Nitrate of soda, 400 pounds, at \$2.50 per 100 pounds.....	10.00
Coal.....	6.00
Labor.....	6.25
Superintendent and office cost.....	6.00
Wear and tear.....	10.00
	<hr/>
Producing eighteen tons of chamber acid, at \$4.90 per ton.....	88.25

This would seem to be a decided advantage in favor of using pyrites. The advantage of making acid at the mines would appear still more apparent. The cost of mining pyrites and laying it down ready for shipment has been estimated at \$1.50 per ton. The production of 104,950 tons of pyrites during the year 1889, at a total cost of \$163,256, makes the cost per ton \$1.56, showing the estimate to be very nearly correct. The cost of pyrites in the preceding comparative table is placed at \$5 per ton, leaving a difference of \$3.44 per ton in favor of manufacture at the mines. These figures would, however, be partly offset by probable additional cost of labor and greater cost of coal and other supplies at points distant from trade centers.

On the following page Mr. Richard P. Rothwell, in a contribution to the "Mineral Resources of the United States" for 1886, gives comparative statements of the cost of sulphuric acid from brimstone and pyrites in the districts of New York and Philadelphia.

**COMPARATIVE COST OF PRODUCING ONE TON OF SULPHURIC ACID FROM BRIMSTONE
AND PYRITES.**

BRIMSTONE.	Cost per ton.	PYRITES.	Cost per ton.
Total.....	\$30.60	Total.....	\$25.75
1 ton (2,000 pounds) of brimstone "thirds," 98 per cent sulphur.....	19.00	2½ short tons of iron pyrites, 46 per cent sulphur, at 10 cents per unit per ton.....	11.50
50 pounds nitrate of soda, at 2½ cents per pound.....	1.25	60 pounds nitrate of soda, at 2½ cents per pound.....	1.50
5 hundred weight coal, \$4 per ton.....	1.00	5 hundred weight coal, at, say, \$4 per ton.....	1.00
Workmen's wages.....	2.25	Workmen's wages.....	3.00
Superintendence and management.....	2.00	Superintendence and management.....	2.00
General jobbing repairs.....	0.50	General jobbing repairs.....	0.60
Interest on capital of \$75,000 (a).....	4.60	Interest on capital of \$100,000 (a).....	6.15
Product 4½ tons of 50° Baumé, cost per ton.....	6.80	Product 4½ tons of 50° Baumé, cost per ton.....	5.72

a At 10 per cent per annum, the works being calculated to last only ten years and to produce during that time twenty tons of acid daily.

SAVING TO BE ACCOMPLISHED IN USING PYRITES.—Aside from the evident economy which the manufacture of acid from pyrites involves for the manufacturer, a saving to the country is to be noted in the amount paid for sulphur to owners of foreign mines. The 104,950 tons of pyrites produced in 1889 replace about 40,000 tons of imported brimstone, or, in other words, exert an annual saving to the country of about \$800,000 in cash. Assuming that this quantity of pyrites will produce 180,000 tons of sulphuric acid, it will be seen that there is still a very large demand to be filled. It is estimated that there are about one million tons of this acid consumed annually in this country, and its use is constantly increasing and new fields opening. With such a prospect there is no reason to fear that the increased production of pyrites will have any appreciable effect on prices of sulphuric acid.

PRODUCTION IN PREVIOUS YEARS.—The following table shows the production of domestic pyrites from 1882 to 1889, inclusive:

**PRODUCTION OF PYRITES IN THE UNITED STATES
FROM 1882 TO 1889, INCLUSIVE.**

YEARS.	Quantity. (Long tons.)	Value.
1882.....	12,000	\$72,000
1883.....	25,000	137,500
1884.....	35,000	175,000
1885.....	49,000	220,500
1886.....	55,000	220,000
1887.....	52,000	210,000
1888.....	54,331	167,658
1889.....	104,950	202,119

a Short tons.

**IMPORTS OF PYRITES CONTAINING NOT MORE THAN
3½ PER CENT COPPER. (a)**

YEARS.	Quantity. (Long tons.)	Value.
1884.....	16,710	\$50,632
1885.....	6,078	18,577
1886.....	1,605	9,771
1887.....	16,578	49,061

a Previous to 1884 classed among sulphur ores; subsequent to 1887 classed among other iron ores.

ACKNOWLEDGMENT.

Almost the entire work of collecting the information contained in this bulletin was carried on by means of correspondence. The willingness of producers to furnish the information desired has been most gratifying, and is worthy of special acknowledgment. Replies to original inquiries made for the purpose of compiling a full and complete directory of the producers of the various minerals were promptly made, and an exhaustive directory of the producers was obtained. When the work of collecting the statistics was begun, equally prompt responses were received from the majority of producers, and in but very few instances was a personal visitation by a special agent necessary in order to procure the statistics of production. In these rather exceptional instances it was found that the neglect to answer inquiries was not due to any unwillingness on the part of producers to furnish the information desired, but was either from lack of time or because of the failure to comprehend the scope of the questions contained in the schedule.