AMERICAN ROCK CEMENT.

By URIAH CUMMINGS.

PRODUCTION AND PRICE.

During the season of 1898 there were 8,418,924 barrels of rock cement placed upon the market. This is the largest amount ever produced in a single season. The prices realized were practically the same as those for 1897. The following table gives the amount and value of the rock cement produced in the United States during 1897 and 1898. The values are based on the selling prices in bulk at mills.

Product of rock cement in 1897 and 1898.

State.	1897.			1898.		
	Number of works.	Product.	Value.	Number of works.	Product.	Value.
		Barrels (a).			*Barrels (a).*	
Florida	------	----------	----------	1	7,500	$7,500
Georgia	1	18,165	$10,899	1	18,000	13,500
Illinois	3	510,000	209,000	3	630,228	220,580
Indiana and Kentucky.	15	1,731,287	692,515	19	2,040,000	816,000
Kansas	2	160,000	64,000	2	160,000	120,000
Maryland	4	296,000	118,400	4	297,475	118,989
West Virginia	1	----------	----------	1	42,874	17,150
Minnesota	2	111,731	55,865	2	128,436	64,218
New York	29	4,259,186	2,123,771	29	4,157,917	2,065,658
Ohio	3	23,697	14,218	3	26,724	13,362
Pennsylvania	7	775,000	387,500	5	499,956	249,978
Tennessee	------	----------	----------	1	10,000	8,000
Texas	1	11,390	17,085	1	11,000	16,500
Virginia	3	15,232	9,139	3	8,835	5,301
Wisconsin	1	400,000	160,000	1	379,979	151,992
Total	72	8,311,688	3,862,392	76	8,418,924	3,888,728

a Of 300 pounds.

In the following table the larger figures represent the number of barrels of cement and the smaller ones give their percentage of the total production for the years named:

Consumption of cement of all kinds in the United States.

Year.	American rock cement.	Imported Portland.	American Portland.	Total number.
	Barrels (a).	*Barrels (b).*	*Barrels (b).*	*Barrels.*
1893	7,411,815	2,674,149	590,652	10,676,616
	69.42	25.05	5.53	
1894	7,563,488	2,638,107	798,757	11,000,352
	68.76	23.98	7.26	
1895	7,741,077	2,997,395	990,324	11,728,796
	66.00	25.56	8.44	
1896	7,970,450	2,989,597	1,543,023	12,503,070
	63.75	23.91	12.34	
1897	8,311,688	2,090,924	2,677,775	13,080,387
	63.54	15.99	20.47	
1898	8,418,924	2,013,818	3,692,284	14,125,026
	59.60	14.26	26.14	

a Of 300 pounds. *b* Of 380 pounds.

It will be observed that the demand for foreign Portland cement during 1898 fell about 12 per cent below the average for the six years, and the American Portlands have supplied the increased demand for that class of cement, while the average yearly gains of the combined Portlands over the rock cements for the period named amount to 1.64 per cent. It is evident from the foregoing table that the prejudice heretofore existing against the use of American Portland is fast disappearing. Within the last few years there has been a rapidly increasing demand for cement sidewalks, and the use of Portland for this purpose alone will account for the increased demand for that product.

That the great engineering works of the country are still being laid in American rock cement is evinced by the annual consumption of over 8,000,000 barrels.

The use of nearly 169,000,000 barrels of this class of cement in this country since the establishment of the industry eighty-one years ago shows that its reputation for durability and real worth is well founded.

There seems to be a general impression in the public mind that the great difference in the prices of rock cement and Portland is due to the superior quality of the latter. The prices of each are based on the cost of production. In the entire absence of combinations or trusts the successful manufacturer of either class, in making up his selling prices, is guided by two important factors: First, the cost of production, which includes the cost of manufacture and sale; second, the condition

of the market. If the demand is brisk, he is apt to increase his margin of profit all it will bear. Thus far in the history of the industry rock cement has afforded a higher per cent of profit than Portland, and the opinion that this condition is likely to endure for many years to come is based on the following reasons:

First. A fierce competition among the manufacturers of rock cement has existed for several years and the prices have been beaten down as far as it seems possible. Rock cement being a cheap and heavy commodity, the freights paid by the purchaser oftentimes exceed the amount of the invoice for the cement. The freight rates in many instances not only protect and preserve some of the rock-cement works from annihilation, but afford a fair profit to such works. This is due to the fortunate circumstance of the plants being fairly distributed throughout the country.

Second. The change in public sentiment in favor of American Portland bids fair to continue until the foreign brands are entirely displaced by the domestic product.

Third. This change has stimulated the construction of Portland works in this country to an extraordinary degree, and it is clearly evident that, at the present rate of increase in capacity, in the near future the price of Portland will fall below the cost of production at many of the plants.

Fourth. It is clear, therefore, that while the price of rock cement has evidently reached the bottom it is not so with the Portlands, and at the much higher cost of the Portlands over that of the rock cements the ratio of freight rates is much less, and the latter does not afford the protection to the Portlands that it does to the rock cements.

NEW DEVELOPMENTS.

California.—The remarkable cement-rock deposit in Riverside County, which was described in Mineral Resources, 1890, page 463, will undoubtedly be operated for the production of both rock and Portland cement in the near future. Steps are now being taken to erect a large plant for the purpose. The prospects are therefore that southern California and Arizona will soon be supplied with cements of first quality of both classes at greatly reduced prices.

Florida.—Probably the most remarkable natural hydraulic-cement-rock deposit in the known world occurs near River Junction. From this point the deposit extends for several miles along the left bank of the Appalachicola River southerly to Aspalaga. On a recent visit to this locality the writer made a careful examination of this truly remarkable formation. It comprises something over 2,000 acres and has a thickness of 80 feet above the river. How far it may be below has not been ascertained. Enough is exposed, however, to warrant the assertion that the deposit contains sufficient raw material to pro-

duce over two billions of barrels of cement. The material is usually soft enough to be cut out with a spade, but the lumps, when placed in kilns, harden sufficiently to prevent them from crumbling while undergoing calcination.

Several analyses of samples taken from various parts of the formation show a remarkable uniformity of proportions of the ingredients essential to the production of a first-class hydraulic cement.

But the distinguishing feature of this deposit consists in its perfect purity of color. The raw material is white and the manufactured product is as white as the whitest marble. In this respect it is an ideal cement for the architect, as it will not stain the walls of fine masonry. Bricks made of one part of this cement and two parts white sand are in use in many buildings in the South, and they are extremely hard and beautiful. So far as is known to the writer, this is the only deposit of white hydraulic-cement material in the world. A small but convenient plant is in operation at River Junction, and the proprietors term the manufactured product "White Roman hydraulic cement of Florida."

Indiana.—Since the last report four new plants have been erected in the Louisville, Kentucky, district for the production of rock cement.

Minnesota.—The rock-cement works at Austin, which were destroyed by fire, are being rebuilt.

Pennsylvania.—The cement-rock deposit on the left bank of the Susquehanna River near Larrys Creek, which was rather fully described in Mineral Resources, 1895, page 889, is about to be operated on an extensive scale for the production of both rock and Portland cements.

Virginia.—The plant of the James River Cement Works, which were destroyed by flood at Balcony Falls, have been rebuilt in a most substantial manner at Locher, on the James River, near Glasgow.