

“The Carrara Marble Industry” (in Italy)

Scientific American Supplement, Vol. LIII, No. 1376
New York, May 17, 1902, pp. 22045-22046



Note: Following the images of the photographs, you will find the transcription of this article.

This article, which begins on the next page,
is presented on the Stone Quarries and Beyond web site.

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October 2012

THE CARRARA MARBLE INDUSTRY.

The product of the Italian quarries is known and recognized wherever marble is used as embodying all that is best and most desirable in this material. In color and texture, durability, economy in working, soundness, and capability of receiving the highest finish, it cannot be surpassed, and is rarely equaled. The so-called "Carrara district," embracing the communes of Carrara, Massa, Pietrasanta, Seravezza, Starone, and Arni, is the center of this industry. Carrara and Massa are the two most important, the former having a population in the city itself of 21,000 people,

with an additional 21,000 in the mountain villages surrounding it and forming part of the commune. These villages are inhabited almost entirely by the quarrymen and laboring class. The commune of Massa has a population of about 24,000. Broadly speaking, the en-

tire male population of these two communities is actively engaged in some branch of the marble industry.

QUARRIES.

There are at present in the district 611 quarries in active operation, of which 345 are at Carrara, 50 at Massa, and the balance distributed among the places named above. In addition to these, there are perhaps double this number which have been opened and afterward abandoned as being unproductive, or in which, for various reasons, active work has for the time being ceased. Under the sanction of ancient laws, the mountains where the quarries are found are



CARRARA



THE MARBLE CITY OF CARRARA.



HOW THE QUARRIED MARBLE IS CARRIED DOWN.



THE RAILWAY LEADING TO THE FOOT OF THE QUARRIES.



QUARRIES AT LA PIASTRA.

THE FAMOUS MARBLE QUARRIES OF CARRARA.

SCI. AM. N.Y.

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Quarries.

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Means of Transportation.

“Until 1890, the larger part of the output was transported to the local mills or to the Marina by ox team. The Marina, the shipping point for practically all the marble intended for export, is on the sea 6 miles from Carrara. An enormous quantity of blocks and slabs is stored here. Two large piers, double tracked and with hand-power loading cranes, extend out into the sea, and a fleet of small sailing lighters load here for Leghorn, where the marble is placed on the steamers. The exposed position of the Marina renders it impossible to load during bad weather, and many vexatious delays occur in consequence.

“The quarry railroad, which had been partially built and opened to traffic in 1876, was completed in 1890. This road, some 15 miles in length, is a marvel of engineering skill. It runs from the Marina to Carrara, connecting at Avenza with the Genoa-Pisa-Rome line of the Mediterranean Railroad. From Carrara, it makes the difficult ascent of the mountains, through many tunnels and over high viaducts, to a point some 1,500 feet above the sea level. Some idea of the obstacles overcome in the construction of this short road may be gained from the fact that it cost

to complete about \$4,000,000. Although largely patronized by the quarry owners, it has not as yet entirely supplanted the former method of hauling by ox team. The latter, however, is extremely slow, a trip to the Marina occupying the better part of a day. Rates on the railroad vary from \$1.16 to \$1.81 per ton of approximately 14 cubic feet for the haul to the Marina.

Quarrying and Handling.

“To the ordinary observer, as well as to one well informed in the practical working of the marble quarries in the United States, the system of quarrying, handling, etc., at Carrara appears exceedingly primitive. After a visit to Carrara, one is impressed with the idea that time and money would be saved by the use of modern machinery in the quarries, the adoption of steam cranes or travelers capable of handling blocks of any size easily and quickly, and a transportation system which would not involve so many delays and the rehandling of heavy material. The impression is doubtless a correct one to a certain point, but there is much to be said in favor of the system in vogue at present, which has not changed materially for hundreds of years. The cheapness of labor, enormous cost of fuel, abruptness of ascent and consequent difficulty of access to many of the higher quarries for heavy machinery, fuel, etc., and the strong inborn opposition on the part of the quarrymen to innovations and to disturb the established and time-honored order of things are apparently sufficiently strong arguments to induce quarry owners to continue indefinitely along present lines.

“A few years ago, a system of sawing blocks out of the quarries by the use of an endless wire mounted on standards and pulleys, similar to those employed in some of our quarries in the United States, was introduced. Its use, however, is very limited, and but very few of the quarries have adopted it, the old method of blasting, necessarily causing a large amount of waste, being followed. Months are consumed in drilling by hand the necessary holes for the powder charges. Masses of marble often weighing 4,000 or 5,000 tons are thus loosened and thrown out from the face of the cliff at one discharge; then comes the slow and tedious process of moving this mass into position to be sawn into marketable sizes. This sawing is done by hand power also; a single, narrow iron blade fitted into a large wooden frame and operated by two men, at one each end of the frame, with the aid of water and sharp sand, accomplishes the work. Obviously, progress is extremely slow; weeks and even months are consumed in the process.

“In the majority of cases, the quarries are far above the points reached by the railroad. The blocks are then placed on skids and lowered down the sides of the mountain by ropes and slings to the loading docks. Here, it would appear, derricks could be used to enormous advantage in placing the marble on the cars; but the loading is done entirely with rollers, skids, and crowbars. Blocks intended for sawing at the local mills are transported thither by either the railroad or ox team; if they are to be exported, they are sent to the Marina.

Selling Prices and Expenses of Production.

“So much depends on color, quality, etc., of the various marbles produced at Carrara, that it is only possible to give the range of prices approximately. The ordinary varieties are quoted from 97 cents to \$1.60 per cubic foot f.o.b. Leghorn; the finer grades of statuary blocks, from \$3.50 to \$7. A variety known as ‘Bianco P,’ a fine white grade without veining, the best of which is produced at the Massa quarries, sells at from \$1.80 to \$4. The finer grades of colored marbles sell as high as \$7 per foot.

“In considering the cost to the exporter, many things must necessarily be taken into account. Location and proximity to transportation facilities, soundness, depth or thickness of the various veins, with consequent ability or inability to produce blocks of large size, amount of labor necessary to properly open the quarry, are all important factors. A fair estimate of the average cost of actual quarrying is, I believe, 50 cents per cubic foot. Taking this as a basis, the other items of expense are made up of hauling charges, municipal toll, dressing blocks, lighterage, etc., and the total average cost per cubic foot f.o.b. Leghorn is ascertained to be about as follows:

	Cents.
Hauling to Marina by quarry railroad, per cubic foot	11
Municipal toll	2 ½
Dressing blocks at Marina	3 ½
Loading on lighters at Marina	2
Lighterage to Leghorn	12
Cost of quarrying	50
Total cost per cubic foot	81

“As has been stated, the municipality leases the quarries for a merely nominal sum; it, however, exacts a toll on all block marble shipped of approximately 2 ½ cents per cubic foot, and on sawed slabs at the rate of 7 cents per ton, or half a cent per cubic foot. Manufactured marble, statuary, and the like are exempt from this tax.

Colored Marbles.

“Many varieties of colored marbles are also found on the mountains surrounding Carrara. Two varieties of blue, dove-colored marble, known as ‘Bardiglio’ and ‘Pavonazro,’ are well known in the United States, the latter especially being largely used and commanding a high price. Some new and very beautiful fancy marbles have recently been discovered near the villages of Gragnana and Castelpoggio, north of Carrara. In the vicinity of Castelpoggio, a very fine variety of red marble is quarried. Some varieties of the well-known black-and-gold marble are found at Monte d’Arni and Foce, near Carrara. It is similar to that found at Porto Venere, in the Gulf of Spezia, having a densely black ground crossed in all directions by yellow veins. Besides these colored marbles, some fine onyx has been discovered at Monte d’Arni. These quarries are not now in active operation, it being found unprofitable to work them under present conditions. The merchants and explorers of Carrara also deal largely in the well-known Siena yellow marble and the various varieties of Numidian marbles. The latter are brought from the quarries back of Oran, on the northern coast of Algeria.

“The extent of its commerce with all nations in its own particular line, with the variety, quality, and beauty of its marbles, justly entitles Carrara to stand at the head of the marble-producing centers of the world. It has occupied this position for centuries and bids fair to continue to do so for many more to come.”

Photo captions for the photographs included in the article are as follows:

The famous Marble Quarries of Carrara.

“The Marble City of Carrara.”

“How the Quarried Marble is Carried Down.”

The Railway Leading to the Foot of the Quarries.”

“Quarries at La Piastra.”