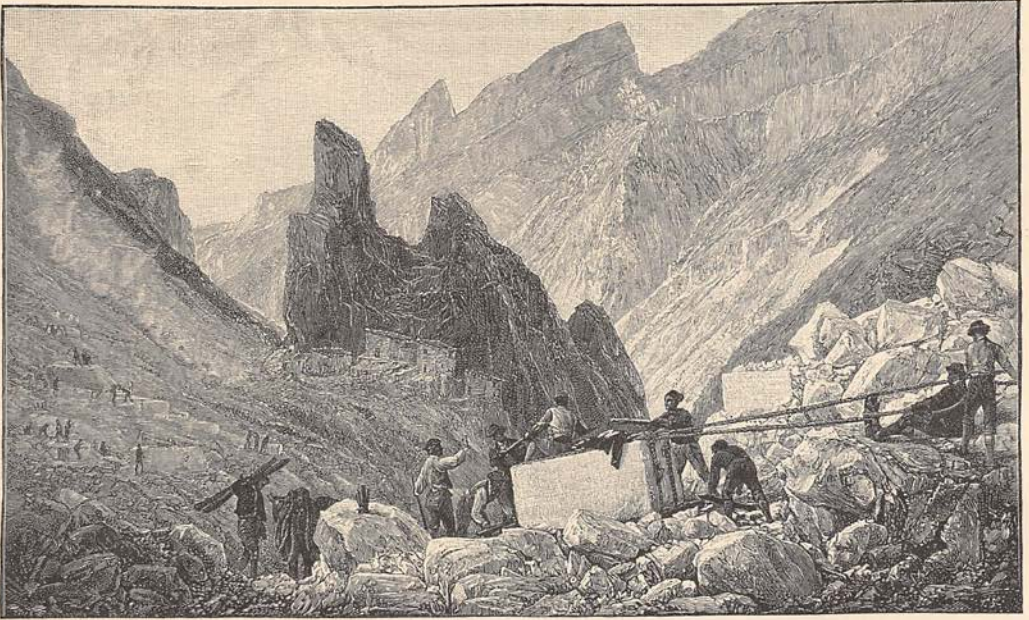


MARBLE-MINING IN CARRARA.



LOWERING THE BLOCKS FROM THE QUARRY.

CARRARA marble is an article well known the world over. It is reputed to be unquestionably the best marble for the use of sculptors, grave-stone builders, architects, and other marble-workers, and inasmuch as it has enjoyed this reputation without dispute for over nineteen centuries, it is fair to presume that it is justly entitled to its good name. The ancient Romans of the time of Augustus could find no other marble equal to that of Carrara, and they used it freely in making statues, and in building monuments, temples, and various other public edifices. The judgment of the statuaries and architects of the "year one" has been reinforced by that of their successors in each succeeding generation, and to-day Carrara marble is in such demand in every civilized nation of the world that nearly one hundred and fifty thousand tons of it are quarried every year. Of this the United States use about twenty-five thousand tons annually, notwithstanding the fact that, duty paid, the rough blocks are worth about two dollars and a half a foot, or almost two cents a pound, as they are landed from the vessel.

Carrara is situated on the west coast of Italy, forty-five miles from Leghorn and twice as far from Genoa, and, counting in the

villages which are dependencies of Carrara, it is a city of twenty thousand inhabitants. The city stands in a niche of the Appenine Mountains, which in its rear rise in barren, rocky cliffs, varying in height from three thousand to five thousand feet, and on two sides of the town soften into earth-covered hills, from three hundred to a thousand feet high, cultivated to their very tops by the growers of the grape. These side-hills lack but an eighth of a mile of coming together on the fourth side of the town. If they met, Carrara would be like a very small bit of gentian in a very large mortar. As it is, this break of an eighth of a mile affords an outlook into the world, and looking through it, one's horizon is bounded by the Mediterranean.

Carrara is entirely given up to the trade in marble. The sojourner in the city is not slow to learn this fact, nor likely to forget it. He is awakened in the morning by the clicking of the marble-cutters, and the last sound of which he is aware at night is that of the swearing teamsters, pounding their marble-laden oxen into greater speed. The ground floor of almost every house is turned into a studio, in which tombstones, cemetery and lawn figures, architectural ornaments, and occasionally a fine piece of statuary are produced.

Wonderful to relate, and much to the surprise of people who come to Carrara with no foreknowledge of the place, the houses are not built of marble, but of rough stones cemented together, and covered on the outside with a smooth coating of plaster. There is, however, marble enough in the inside work. The door-posts, the window seats and caps, the stairs, the mop-boards, and generally the floors are of marble, and a new-comer to Carrara can enjoy a very active month of sneezing if his chambers do not afford additional facilities, especially as it is customary to throw in a few marble-topped tables and stands, a half-dozen marble statues, and now and then an elaborate marble mantel-piece.

Terrible as it would be to spend a life-time in Carrara, it is a very interesting city to the few tourists who stop over a day or two on their way from Genoa to Pisa and Florence. The Carrara marble quarries are certainly one of the sights of the world. In Vermont, the workmen grovel in the earth for their marble; in Carrara they go up hundreds, sometimes thousands, of feet into the sky for theirs. Fancy a range of mountains, as high as the highest of the White Mountains of New Hampshire, rising almost perpendicularly—mountains of somber gray rock, bare of trees and of every other sort of vegetation. At the foot of these mountains, upon a plateau of a few hundred acres, place a dingy, dirty, crowded little Italian city; upon the sides of the mountains, at heights varying from five hundred to thirty-five hundred feet, place the marble quarries. Seen in a clear day, at a distance of half a dozen miles, the Carrara mountains seem to rise at an angle of ninety degrees, and the profile of their sharp peaks is so positive and clean, that one can think of nothing more effective in the way of description than to say that they look like the teeth of a magnified wood-saw. And as for the quarries, some of them seem to be patches of snow obstinately refusing to succumb to the sun's warm rays; others look like cascades dashing down the mountain sides; while others seem to be mammoth sheets of paper stuck upon an immense stone wall.

There are upward of four hundred marble quarries, large and small, in Carrara, which are worked by about five thousand men, and the annual production is about one hundred and fifty thousand tons. To procure this amount of marble, probably five hundred thousand tons are quarried, the difference between the figures which represent the annual production and those which represent the amount quarried, being waste. The reason for this is that nobody has yet been ingenious enough to de-

vide a method of quarrying adapted to Carrara which will yield more than one available foot of marble to every four feet quarried. Fortunately, the stock of Carrara marble is inexhaustible, and two thousand years of steady and constantly increasing production have not sensibly affected the supply. The mountains of beautiful white stone seem only to have been touched here and there by the miners.

About half of the quarries are located on the sides of an immense ravine called Ravaccione. A railroad has been built up into this ravine, and tourists who desire to inspect the quarries generally go to Ravaccione by rail, saving a walk of three miles. Arriving at the terminus of the railroad they are about five hundred feet higher than the city of Carrara, and are in sight of as many as two hundred quarries, of which some are not more than two hundred feet above the railroad terminus, while others are very high up the mountainsides. Very few people undertake to explore the loftier quarries, as the feat requires a deal of hard climbing, and in places an amount of nerve which people unaccustomed to mountaineering do not possess. There are some quarries into which the workmen are lowered by ropes, and still others in which the men do the drilling, and, in fact, all the other work, while suspended by ropes in mid-air, hundreds of feet above the quarry landing.

No machinery of any kind is used in the Carrara quarries. The men of to-day quarry after the fashion of their grandfathers. A common hand-drill, a few jugs of nitric acid, and a plentiful supply of gunpowder complete the outfit of the marble-miners. Slowly and painfully the drill is forced into the mountainside to the necessary depth; into the hole made by the drill the nitric acid is poured through a tin tube; and when the acid has penetrated every crevice leading from the base of the drill-hole, and has eaten space for the gunpowder, the charge is placed, the slow-match is lighted, the quarrymen betake themselves to places of safety, and in due course of time there is an explosion. After the explosion the quarrymen come back to ascertain the result. It frequently happens that they find nothing as a reward for their labor except a quantity of small rocks. Having blasted the marble out from the mountain, the producer's next step is to put the available blocks into tolerably regular shapes. This is done with the chisel and hammer, by men who receive from twenty-five to thirty-five cents a day. Very large blocks are divided by sawing. The marble-saw is a piece of heavy sheet-iron four or five inches wide, fixed in a cumbrous buck-saw frame, and it is worked by two men. The saw is made to

cut by putting sand beneath the blade, the sand being carried down into the saw-path by a small stream of water trickling from a tub. Working from sunrise to sunset, marble-sawyers can earn as much as thirty-five or forty cents.

When the marble has been squared up it is still a hundred feet, sometimes half a mile, up in the air. It is the custom to lower it with enormous cables. The block to be lowered is put upon a sledge composed of two timbers bolted fast together, and sledge and marble are slowly and laboriously lowered down the mountain-side, pieces of wood rubbed with soap being placed under the sledge in places where the descent is not steep. Sometimes the ropes break, the block escapes from the workmen, and a terrible accident ensues. Carrara is full of cripples, the victims of such accidents.

Occasionally the quarrymen are saved the trouble of lowering the marble. It not infrequently happens that the blast is so strong that the detached pieces do not stop at the quarry landing, but go tumbling to the foot of the mountain. A few days ago, in one of the ravines, I saw a block of marble weighing at least two thousand tons, which, when it was blasted, had slid over a thousand feet from the quarry. In blasting this block the miners were very careful in the use of powder, in the hope that the block would not be driven from the mountain with sufficient force to set it rolling. Fortunately, their calculations were well made. When the blast was fired the block fell forward upon its face, and slid a comparatively short distance down the mountain-side. A very little more powder would have sent it rolling to the bottom of the ravine, and the consequences might have been very serious.

In one of the ravines, it happens perhaps a dozen times a day that workmen and visitors are obliged to take to their heels to escape destruction by some boulder that has started down-hill. If one could take a safe position and witness the descent of a two-thousand-ton block of marble, the spectacle would be a grand one. But to be chased out of the ravine by this same boulder would be an altogether different experience. Nothing can be more terrifying than to be in the track of one of these rocks, with hardly a second to spare in which to choose the path of flight. You hear the tooting of a horn, which is a signal that in a few minutes a blast will be set off. Casting your eye about the ravine, you discover that the blast is to be made in a quarry perhaps two thousand feet above you. Anticipating no danger, you keep on calmly crunching your

lunch. (Everybody who visits the quarries is supposed to have a lunch with him.) Presently the explosion takes place, and you look up in the direction of the sound. At first you see nothing. A second later, an enormous rock comes bounding out from one of the recesses of the ravine. You fancy that the rock will come to a stop at a certain point which you have marked with your eye, when you are startled by the cries of a hundred quarrymen, and almost at the same time by a sound which, if you have had experience in the quarries, tells you that the boulder is already dangerously near you. You give one glance at the approaching danger and run for your life, praying as you run. Your flight is to the side of the ravine, and just as you reach a place of safety the boulder goes thundering past, enveloped in a cloud of dust, and hurling about on all sides fragments of itself and of the rocks which it crushes in its path.

In old times, all of the marble quarried at Carrara was transported from the quarries by oxen. That intended for consumption at Carrara was taken over the rough mountain road a distance of from three to five miles, while that intended for shipment was hauled five miles farther to the sea-shore. The railroad has superseded the wagon service to a large extent, but there are still hundreds of oxen engaged in carting marble from remote quarries to the railroad, and from all of the quarries to saw-mills and studios which are not reached by the railroad. Tourists invariably leave Carrara with the belief that the Carrara teamsters are the most cruel men in the world, and to this belief the writer gives his full adherence. The work which the oxen do would be hard enough under the most favorable circumstances, for the roads are indescribably rough. But the circumstances are not favorable for the poor brutes. They are under-fed and over-loaded, and upon the road are subjected to the most outrageous cruelty. There may be a dozen pairs of oxen attached to the cart. Twelve brutal men, each armed with a heavy goad, are in attendance. The drivers of the eleven leading pairs ordinarily ride, each man seated on the yoke of his own pair, facing the cart, and steadying himself by a hand on the horn of one of the oxen. From the time the team starts from the quarries until it leaves its load there is no cessation of cruelty. It is not to be wondered at that the life of an ox terminates ordinarily within three years of the day on which he makes his first journey to the quarries.

Carrara laborers, and especially those who are engaged in quarrying and transporting marble, certainly have a very hard time of it. Like the oxen, they work much and eat little. For

a day's work, beginning at sunrise and lasting to sunset, the compensation is not more than forty-five cents. It seems almost impossible that a single man can live on such wages, to say nothing of men who count their children by fives, tens, and twenties. Some of the quarrymen live five or six miles from the scene of their labor, and they have, therefore, in addition to a day of severe toil, to take a daily walk of ten or twelve miles. Many of them are obliged to leave their beds at three o'clock in the morning in order to reach the quarries in season to do a full day's work. They take with them in their coat or trowsers pocket the food for the day, which consists of a small loaf of bread. When they return home at night they eat the principal meal of the day, a dish of boiled mush, or a sort of soup made of bread, water, and oil. In the summer they are able to garnish their tables

with a dish of vegetables, into which the aromatic garlic is sure to be strongly infused. Meat and fish are luxuries which are indulged in on rare occasions. Most of the marble intended for export is taken to the sea-shore, five miles away, and is unloaded from the cars or ox-wagons upon the sandy beach. Thousands of blocks of marble are to be seen at this depot, each block bearing the initials of its owner and the number by which it is recorded in the owner's books. Here the final preparation for shipment is made. The work of squaring or shaping the block, which was begun at the quarries, is completed here, and the edges of the blocks receive what might be called a "rough smoothing." This done, Carrara having no good harbor, the marble is put into small vessels and sent to Leghorn or Genoa, for shipment to foreign ports.

Robert W. Welch.

ROSE-GERARDIA.

ON my small farm, where rocks and weeds contend
Which shall possess the more its barrenness,
In spring, among the very earliest flowers,
Almost untimely, is the saxifrage—
The season's dear, though humble, harbinger,
Rearing on fragile stem its clustered head,
Between the seams of rocks, by east winds blown,
And with a feeble root and few low leaves,
As if it needed neither earth nor sun,
But grew by that exhilarating sense
Of winter past and far-off breath of spring
That likewise man, by his own tokens, knows.

But when all summer's lush and favored flowers,
Fed on the highest suns and richest dews,
Rooted in mellow soil and sheltered nooks,
Are blighted with the year's autumnal change,
Then once again in thin, unfertile lands,
Along the beach-side and the meadow marge,
The rose-gerardia swings its little bell
And will not let the season go too soon.
Its very leaves do deprecate the frost,
Already brown, so not to tempt his touch,
And as the thought of spring, and not spring's self,
Drew from its crevices along the ledge,
The sweet, presaging herald, saxifrage,—
So, now, the latest flower at autumn's end
Grows by the memory of summer days,
Dreams of the rose, and blushes at its dreams.

John Albee.

