

THE WEST SHORE.

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ONE THOUSAND BARRELS A DAY.



ONE thousand barrels of lime a day is the record of one of the greatest manufacturing enterprises on the Pacific coast. The rapid building up of this region renders lime a most important article of merchandise, and the production here on a large scale of this most essential building material adds much to the economy and facility with which our cities and towns are being improved. This fact alone would render a description of the industry interesting, but the many details of the process of reducing hard marble to soft and fiery lime are so peculiar and so little known that a description of them can not but be entertaining to everyone possessing a mind above the mere trivialities of life.

Perhaps it is well to first inform the unscientific reader what lime is and then he will more easily comprehend the process of its manufacture. Lime is the oxide of calcium, which, in combination with carbonic acid, forms carbonate of lime, the chief constituent of limestone as we see it in nature in the form of lime rock, marble, shells of marine animals, etc. White marble, such as the famous stone of which the great masterpieces of sculpture were made, is the purest limestone in existence; but even this is not perfectly pure, for the theoretical limestone, containing fifty-six per cent. of lime and forty-four of carbonic acid, is never found in a state of nature. The best stone in the United States, such as that of Roche harbor, contains about fifty per cent. of lime, or ninety-eight and one-fourth per cent. of limestone. Lime is made by freeing the stone from its acid, and this is accomplished by heat, by which the acid is volatilized and caused to pass away into the atmosphere, leaving the white, brittle and flaky substance known as lime, or quick lime. When water is applied to lime it causes

it to boil, and when a perfect chemical combination has been effected the slaked lime absorbs carbonic acid from the atmosphere with great avidity and becomes hard, or set. This is the principle involved in the use of lime in making mortar for the purpose of cementing brick and stone work, the sand being added to the slaked lime to furnish centers of attraction around which the particles of lime shall gather in hardening, thus adding to its strength. The mortar, when used in laying masonry, gradually loses its surplus water and absorbs carbonic acid until it becomes hard, thus firmly cementing the stones or bricks together.

Knowledge of the chemical properties of limestone and of its use in the mechanical arts is not an acquirement of modern times, but existed long before the age of written history. How the stone was burned, or *calcined*—a more proper word to indicate the process—by the ancients is unknown. They may have had a far better way of achieving the result than that now in use. Certain it is that the process in use in modern times was very crude until recent years, and the reason for this was that lime burning has always been conducted on a small scale by a great many individuals scattered over the entire civilized world. It is only where an industry is conducted on a comprehensive plan, where the saving of a few cents on each item of expense means the addition of thousands of dollars to the year's profits, or, possibly, the difference between success and failure, that brains and inventive genius are invoked, and marked improvements in the process of manufacture are made. This principle is well illustrated in the lime business, for with the concentration of the industry at various points into large enterprises have come improvements that have increased both the quantity and quality of the lime produced, and have so lessened the expense of production as to materially cheapen its cost to consumers.

Lime is calcined in a kiln, so constructed that the