

**A NEW SAFETY VALVE.**

We give herewith sectional and plan views of a new safety valve, for which we are indebted to La Nature.

The plate submitted to the action of the lever that carries the counterpoise, *D*, rests upon the top of a small cylinder, *B*, movable in a vertical direction in the valve box. This cylinder carries at its lower part a transverse piece, *C*, provided with two apertures, and into which is screwed a vertical rod. This latter is connected through a nut with another rod, *D*, which is fixed to a thin metallic disk, *M*, of which the circumference is clamped between the flanges of the valve box. Beneath the disk, *M*, there is a double spiral spring, *H*, which rests upon a disk that can be maneuvered by means of a screw protected by a cover hinged to the bottom of the box. The base of the latter is provided with an aperture for the purpose of revealing the existence of any leakages of steam that might take place through the disk, *M*.

The regulation of this valve is a very easy matter. The surface of the disk, *M*, is such that the pressure exerted upon it by the steam is equal to that exerted upon the cylinder, *B*, and the rod, *C*. Such pressure is obtained by regulating the tension of the spiral spring by means of the screw at the bottom. By acting upon the nut that connects the rods, *D*, the cylinder, *B*, may afterward be brought into contact with the plate submitted directly to the action of the lever carrying the counterpoise.

Such regulations will remain in force for pressures up to an amount determined by the conditions of equilibrium adopted; but it will no longer exist if the weight, *G*, be changed or the lever rendered stationary. In fact, if the weight be increased, the cylinder, *G*, will immediately descend, and the steam will escape. In like manner, if the lever be fixed, the pressure will cause the disk, *M*, to yield and carry along the cylinder, *B*, through the intermedium of the rod, *D*.

**A CALIFORNIA VERDE ANTIQUE QUARRY.**

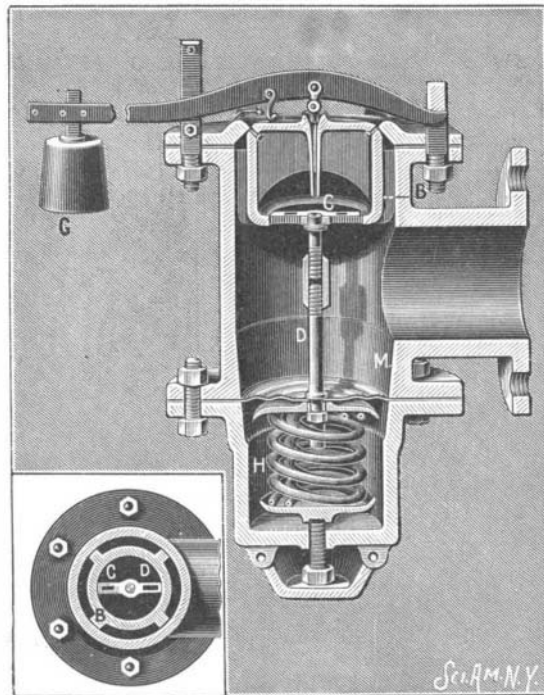
BY PROF. CHARLES F. HOLDER.

The question whether we are advancing in the mechanical arts and great schemes of engineering is often suggested when we are confronted with the work of the ancients. The pyramids are the most stupendous works of man ever contemplated, and there appears to be nothing new under the sun. Interest in irrigation in the Southwest dawned within the past twenty years, yet in Arizona and New Mexico there are traces of a civilization so old that the mind falters in following it back. We see beds of streams cut through miles of country, even mountain ranges, and a maze of irrigation streams crossing and recrossing the land, made unknown ages in the past years, so perfect from an engineering standpoint that the experts of to-day are emptying them of the sand and debris of centuries and using them as the arteries that shall bring new life to this fertile part of what was the old American Desert. Everywhere we follow in the steps of the ancients, and on the island of Santa Catalina there is an interesting illustration of this.

When the whites first visited Southern California, they found in use among all the mainland Indians richly shaped ollas or mortars of steatite or serpentine, while scores of articles were formed of finer grades of the same, which experts have pronounced verde antique. In almost every grave ollas were found, and hundreds had been handed down and were in the possession of the Mexican descendants of the Indians. There were flat stones, perforated to hang on pegs, quaint ornaments, sculpturings of various animals and tally stones with lines cut in them. One found by the writer at Santa Cruz Island on the breast of a

skeleton bore fifty or more straight marks—which might have been the man's age—and were all that could be made out.

Verde antique was valuable, and a search was made for the point of supply. Finally Prof. Schumacher, of the Smithsonian, discovered it on Santa Catalina



**A NEW SAFETY VALVE.**

Island, which lies off Southern California, in a locality named Pott's Valley, about fifteen miles from the little town of Avalon. Prof. Schumacher found on this island a perfect treasure house, and carried to the National Museum hundreds of objects representing the ancient California islanders. All the islands of this group were inhabited by a hardy race that had camps in every cañon where there was water, and Santa Catalina abounds in kitchen middens and places where these people lived. That they were a commercial

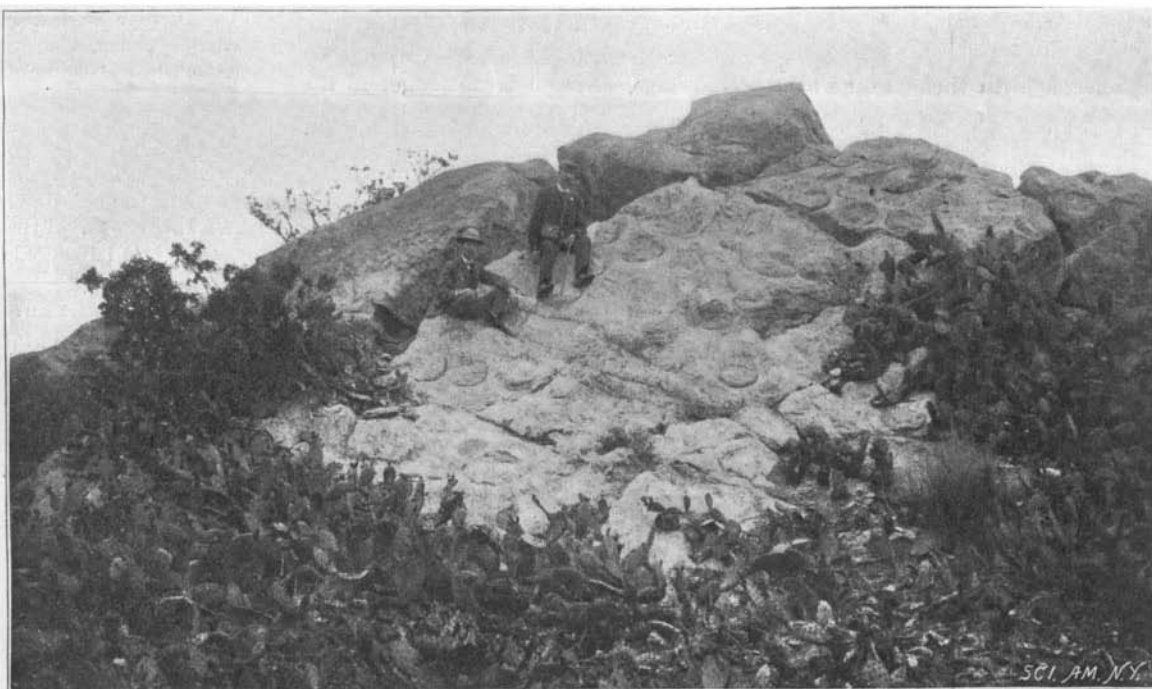
race is shown by the ollas they made, and they were the merchants who supplied the races of Southern California with their pots and mortars or ollas.

Prof. Schumacher's attention was attracted at Pott's Valley by the remarkable rock shown in the accompanying illustration, where the scars of ollas that have been broken off by the islanders are plainly seen. The rock is a lofty mass of steatite that rises in the center of Pott's Valley, now called Empire Landing. It is a land-mark from a long distance at sea, and is overgrown and surrounded with cactus and various kinds of vegetation; indeed, the cactus hides a large portion of it—an almost impregnable chevaux de frise. The scars are circular and are the marks where the round ollas were broken off. The method of work was very primitive, the natives having only slate and quartz knives to work with. With these rude implements they carved out an object the shape of a cannon ball and as large as a football. Gradually this was picked away until, finally, it hung by a narrow stem, which was broken off. The inside was then slowly dug out with the same rude tools, and in time the olla acquired the smooth and often artistic form so familiar in all the museum collections. The common shape is round, but fine mortar shapes three feet in height were not unusual.

The writer some weeks ago went over this old manufactory very carefully and found it most interesting. Here was an aboriginal manufactory—an out-door workshop—in the immediate vicinity of which were found verde antique implements in various stages from the olla just outlined to the one that had been broken off leaving the scars in the rock. In a word, the complete evolution of the olla could be traced here, especially at the head of Cottonwood Cañon, back of Pott's Valley, where verde antique crops out in ledges in every direction. On many of these can be seen the work of the native carvers, while beneath are the piles and heaps of chips as they were left centuries ago.

The early Spanish navigators, Cabrillo and Viscaino, who discovered the island three hundred years ago, described the fine canoes of the natives. These, laden with ollas, crossed the Santa Catalina channel, and the natives exchanged them for game and skins not found here. The present owners of the island, recognizing the value of the stone for commercial purposes, have followed out the mute suggestion of the ancients by establishing at Empire Landing a sawing plant, opening up a valuable quarry and one that is unique, it is believed, having no prototype at least in this country. The verde antique resembles soapstone in the crude rock and would easily escape observation. It is of different degrees of hardness, and while so soft that it can be readily worked, it has great tensile strength, its chief value being in the remarkable manner in which it can be worked. Almost every possible object can be made from it from a boat to a screw. A great value lies in its imitation when polished of the darker grades of marble; and owing to its cheapness and durability it is in demand among architects for mantles, lining, electrical slabs, and where a perfectly polished surface is required with the strength of marble. The new city hall of Los Angeles and many of the fine buildings in that city and San Francisco are finished in it, the stone taking a rich polish, abounding in greens and yellows, grays and black.

A visit to this quarry is most interesting. Here, eight or nine hundred feet above the sea, is an elaborate plant and a series of saws that are capable of cutting out hundreds of feet of verde antique a week. The rock is first bored into with a steam rock drill, a modern improvement on the flint chips of the ancient owners of the soil. A series of borings make it an easy



**THE ROUND SCARS INDICATE THE PLACES FROM WHICH THE OLLAS WERE BROKEN BY THE INDIANS.**



**SERPENTINE QUARRY AND MILL, SANTA CATALINA ISLAND, CAL.**