

An Outfit for Mining Machinery.

A complete plant for mill and leaching works for the Rosario Mining Company, Mexico, was lately shipped by Parke & Lacy, of San Francisco, Cal., the engines, batteries, and, in fact, all the iron work having been made there by Prescott, Scott & Co of the Union Iron Works. The mill is a forty-stamp one, but so arranged and with sufficient power to be increased to eighty stamps. The whole reduction works, when ready to run, will have cost \$150,000. The mines being about 100 miles from the sea coast, the contractors had made to order ten sixteen-mule wagons, with harness and all necessary appliances for handling the machinery. The engine frame weighing 11,000 pounds, a special wagon was made for it, and special wagons with saddles were made to take the two steel boilers, which weigh 7,500 pounds each.

As this outfit is exceptionally complete and expensive, the *Bulletin*, of San Francisco, has taken pains to obtain the following details with regard to the construction of the leaching works and other machinery, as well as of the processes to be employed in them.

The ore when delivered to the mill is first dried in the improved Stetefeldt drier. As soon as the ore is dried it falls into cars and is taken to the Eclipse feeders at the batteries. Two large dust chambers are arranged above the batteries, provided with sheet iron hoppers, and are connected with a Sturtevant exhaust fan, which draws the dust into them, where it is deposited at the bottom of the sheet-iron hopper.

From the battery the pulp is taken by screw conveyors and an elevator, first, into a hopper provided with a sifter or revolving screen, where coarse particles are sifted out and returned to the battery. The hopper is provided with a Standish feeder by which the pulp is discharged into the conveyor and elevator, which takes it to the Stetefeldt furnace. This furnace is of the largest size, with a shaft 6 feet square and 43 feet high, and a system of twelve dust chambers.

The building to cover the furnace, dust chamber, and cooling floor will be 46 feet wide and 102 feet long. The furnace will be built in the most substantial style, with a great many improvements in construction, which are the result of the experience at the Ontario mill, Utah. It is calculated to roast from forty to fifty tons of ore.

The ore, after cooling, is taken to the leaching house in cars. The leaching house will be 104 x 38 feet. There are eight leaching tanks, of 12 feet in diameter, and the necessary tanks for precipitating and for the solutions. For the conveyance of the solutions back to the upper tank again for reuse, a novel method is employed, the usual pumping system being dispensed with. Below all the leaching tanks and vat is a tank connected with an air compressor, the pressure of air driving the liquid to the upper vat or reservoir. For the drying of the silver precipitate a centrifugal machine will be used.

The roasted precipitate will be melted in a reverberatory furnace with charcoal gas fire, this furnace being constructed with a peculiar removable hearth, so that the hearth can be readily repaired if it becomes injured by the matter which results from the melting of the bullion.

The plans for the furnace, drying kilns, leaching tanks, etc., were all made by C. A. Stetefeldt, and the position of the batteries and engines had to conform to these more or less.

The engine, which is now set up at the Union Iron Works, where it may be seen, is of the most improved design, having a box frame and being compact and neat in design. It is a 24 x 60 inch. The eccentric rods, valve rods, and cut-off rods all have first-class bronze for journals, thus giving a better bearing surface, with no liability to heat. The fly-wheel is 18 feet in diameter, and weighs 30,000 pounds. The main pulley is 16 feet in diameter, 43 inch face, and is made in eight separate pieces bolted together. The valves are made of bronze, and all the working parts of the cut-off are steel, and every nut used in construction is case hardened. The engine is fitted with Phillips' improved metallic packing. The valve motion and cut-off is that invented by Eugene O'Neill, chief draughtsman at the Union Iron Works.

There are also two 9 x 13 Eclipse ore crushers, eight swivel dump cars, and a No. 5 Knowles pump.

There is one pair of 54-inch diameter steel boilers, 16 feet long, with 46 tubes, 3½ inch, and with double steam drums, 40 inches in diameter and 12½ feet long. The stack will be 42 inches in diameter and 8 feet long. The Crosby steam gauge, water gauge, revolution register, locomotive clock, and the Edson time recording and alarm gauge will be set up in a handsome case in front of the engine. A set of tools, tube scrapers, extra shoes and dies, and a lot of miscellaneous articles, not procurable in Mexico, go with the plant.

Among other improvements forming part of this machinery is the feed water heater, which was devised at the Union Iron Works recently. It is 30 inches in diameter, 9 feet 8 inches high, and has 157 square feet of heating surface.

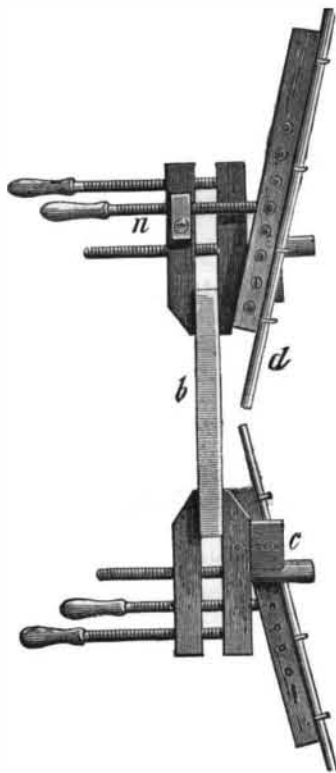
The mines of the Rosario Mining Company are located in the Rosario Mountain, a spur of the Sierra Madre, a distance of one hundred miles from the port of Ajiavampo, on the Gulf of California. The Rosario mines were discovered in 1852. They consist of a group of nine mines, under the following names: Dulces Nombres, San Jose, Bueno Fe, Carmen, San Genovera, Providencia, San Rafael, Sonorene, and Descubridora. They are on one vein, and together embrace a distance of 9,600 feet. The vein is 4,000 feet above sea level.

A MECHANICAL FINGER FOR USE IN THE PHOTOGRAPHING OF ENGRAVINGS.

Occasions frequently arise when it is necessary to have reproduced in *facsimile*, or to any determined scale, printed matter or engravings bound up in a large and thick volume. In order that the photographer to whom such work is intrusted may be enabled to accomplish it successfully, it is indispensable that the special page being operated upon be held in a firm and flat position in front of the camera. In the case of loose engravings or unbound sheets no difficulty is experienced; but when these form part of a book which is thick, heavy, and somewhat rigidly bound, then arises the difficulty of complying with the first condition in reproduction by aid of photography, viz., a position of flatness, rigidity, and rectangularity to the axis of the lens, by which it is to be reproduced.

At the last meeting of the Photographic Section of the American Institute Mr. Oscar G. Mason, of Bellevue Hospital, submitted for the examination of the members a piece of apparatus he had devised for this purpose, and which in practice he had found to answer in a most effective manner. He designated it "the photographer's compressor or mechanical finger," on account of the firmness with which it could be made to hold anything presented to it for the purpose of being copied, whether that were an anatomical or physiological preparation, or, as in the case now before us, a page in a bound volume.

To construct the mechanical finger or fingers—for two are required in most cases—is an operation within range of the powers of every one possessing even a modicum of mechanical ability. Three pairs of small cabinetmaker's handscrews are necessary. The size of those that will prove most useful for ordinary gallery work is that known in the tool stores as



"eight-inch handscrews." One of the three pairs is taken asunder, and each jaw sawed across in such a manner as to leave the threaded ends to form nuts for the lever screws of the two completed "fingers." The piece so removed by the saw should be left long enough to admit of being held in position on the lower jaw of the "finger" by a strong screw through one end, while the short end of the nut—which in small handscrews is usually too short for a second hole—may be held in position by a short dowel pin of one-eighth inch wire. This nut, as fixed in its place, is shown at *n* in the accompanying diagram, in which the whole arrangement is represented.

In this diagram *b* represents an edge view of the board upon which the volume is to be fixed while being photographed. Upon the upper jaw of the handscrew portion of the finger is firmly screwed a block, *c*, through which several holes are bored in a straight line, to admit of raising or lowering the fulcrum point of the finger to suit the thickness of the book or whatever other object is to be held in position. These, however, are very seldom required, as the lever motion is such as to accommodate the point of the finger for all thicknesses up to two inches. To this block, *c*, is attached by a strong screw or loose pin the finger box or lever, along the upper surface of which is a row of ordinary screw-eyes as used for the suspending cord of picture frames. Through this row of the "eyes," four of which is a sufficient number, is run a small rod of hard wood of such thickness as to slide easily, although not too loosely, through the screw-eyes, so as to admit of its being pushed out or withdrawn to the proper part of the book on which it is desired to make it bear. This point is then depressed to any desired degree by the action of the supplementary screw, attached as before described and as shown in the diagram. The finger rods of the apparatus exhibited at the meeting of the Institute were formed of round dowel pin wood of three eighths inch thickness.

When the book is large and heavy, to prevent the rod from making an indentation by its pressure, slips of stiff wood the length of the page are laid along the opposite margins, and

upon these the full pressure of the finger is brought to bear. The board itself may be of any dimensions to suit the class of work for which it is required, from a pocket volume up to a large plan or map.

The numerous practical photographers who were present when this piece of apparatus was exhibited and described welcomed it as supplying a want that had long been felt, and that welcome was none the less cordial from the conviction that each of them could construct it for himself at a small cost. The board itself may be sustained in a vertical position on any convenient stand, or it may be suspended on the wall. When used by Mr. Mason in Bellevue Hospital it is erected on the adjusting rod of an ordinary head rest.

A New Type of Embroidery.

The attention which has been drawn to the novel style of embroidery, exhibited first in Boston and now in New York, by Mrs. Oliver Wendell Holmes, Jr., of the former city, would seem to be justified by the originality, boldness, and artistic promise of the work. The effects are produced by combining filoselle, worsted, silk, and cotton thread on a ground of satin. There is no regularity of stitch, no parallelisms of threads, no inclinations of an exact series of darnings, none of the usual formal methods in embroidery; yet the effects are striking and pleasing. There may be something of haphazard, hit-or-miss, about the work, says the art critic of a morning paper, still the effect is impressive, if not startling. "It is, in fact, the vigor of the work which gives the pleasure. Here is one striking piece, perhaps the best: On a dark blue silk ground, imitative of an evening sky, there stands out in the foreground the gnarled limbs of a New England fir tree. Dark masses of foliage, made by the thick laying on of masses of worsted, indicate the irregular growth. The sheen of the moon on the water is expressed by silvery lines of white thread, and off in the distance is the red lamp of some lighthouse. These are the conceptions of an impressionist, only instead of the facile brush and paint there is substituted for them needle and thread. Here are fields all aglow with the autumn weeds, where the golden russets form a rich, warm mass of color. Here is quite the opposite: A storm, a blizzard, with the stinging snow, expressed by driving lines of white thread. It is all realistic, with some little of a Japanese method, for there are water pieces with tumbling waves that look almost as if they had been made at Yokohama. Some of these embroideries shock just a little by the effects of the cold, clear skies, produced by the hard silk backings, for there may be criticism, for the work itself enters from its cleverness quite into the domain of art. Perhaps this new method of expressing things with a needle is only tentative so far, for other effects might be more happily produced by taking a softer worsted back, and not the hard silk background. Mrs. Holmes has certainly produced most novel effects, quite incomprehensible to masculine minds when the methods are understood. One would suppose, however, that no tyro could ever produce this kind of work, for the requirements to make such embroideries would be a keen eye for form, outline, and a very perfect appreciation of color and contrast. Of the originality of the work, even of the pleasant impressions derived from Mrs. Holmes' embroideries, there can be no doubt."

Buggy Beans.

Recently several cases of sickness occurred in Kingston, N. Y., it was supposed, by eating diseased pork. Specimens of the pork were sent to Dr. George F. Shradly, of this city, for examination, at the request of Dr. E. H. Loughran, Health Officer, Kingston. Dr. Shradly reported that he could discover no evidence of disease in the pork, and that it was entirely free from trichinae. All of the persons who were made sick, as supposed, by the pork, also ate heartily of beans, the dish being baked pork and beans. After the report of Dr. Shradly the subject was allowed to rest, as the sick persons all recovered, though for a time it was feared that several of them would die. It was afterwards discovered that the trouble was caused by the beans, they being infested with small black insects. The bean which is thus infested presents on its surface a faint, black spot, underneath which one or more of the insects may be found. Persons who have eaten heartily of such beans have been taken violently sick with vomiting, accompanied by general weakness and prostration, which continues for a few days only.

James Tennant.

Professor James Tennant, F.G.S., of King's College, London, one of the best known of British mineralogists, died February 23, having just completed his seventy-third year. His celebrity as a mineralogist was universal, and his special acquaintance with gems secured him the honor of recutting the famous Koh-i-noor diamond for Her Majesty, and the permanent appointment of Mineralogist to the Queen. Professor Tennant was the teacher of most of the eminent geologists and mineralogists of to-day, and was the author of several valuable works in his department of science. Among his writings are: "Catalogue of Fossils Found in the British Isles," "Art Gems and Precious Stones," a "Description of the Imperial State Crown Preserved in the Jewel House of the Tower of London," "Iceland Spars," and a "Stratigraphical List of British Fossils," with remarks on their character and localities. He was likewise joint compiler with Professors Ansted and Mitchell of the "Treatise on Geology, Mineralogy, and Crystallography," published in 1857 in Orr's "Circle of the Sciences."