

MANUFACTURE OF ULTRAMARINE.

The blue pigment known as ultramarine, was formerly the product of a mineral, which, on account of its beauty, was also employed as a gem in jewelry. Being obtained in a few countries only, as an agent of painting it was very costly; but now—thanks to the great improvements made in synthetical chemistry—it is produced artificially at quite a moderate price. It is chiefly manufactured in the chemical establishments of Germany; and the composition and processes involved are described as follows, in *Dinglers Journal*:—

"The composition for a dark aluminous ultramarine consists of 100 parts of slightly burned kaolin (porcelain clay), 90 parts of soda-ash (95 p. c.), 100 parts of refined roll sulphur, 6 parts of rosin, and 4 of dry pine charcoal. Each of these ingredients is powdered, with the exception of the rosin, which is only added in pieces the size of a walnut when the materials have been mixed, and the whole is rolled together for the space of four hours. It then forms a smooth gray powder, and is loosely packed into fire-proof boxes, which are covered up, properly luted, and placed on the lower floor; and after closing up all the apertures of the furnace, it is rapidly brought to a point of temperature equivalent to the fusing point of an alloy of equal parts of gold and silver, at which temperature the oven is kept for from five to six hours. By means of small tubes inserted in the front of the furnaces, the process is watched: samples being taken from time to time, by means of hollow cylinder screws. When these samples remain of a green color on cooling, the fire is gradually slackened, and afterwards the draught is shut off; the furnace being left to cool for 28 hours. Two days afterwards the mass is removed from the boxes. It is first broken up under mill-stones, then finely powdered, filled into cast iron annealing boxes (1½ feet high, 2 feet long, and 1¼ feet wide on top, somewhat narrower in the bottom, the iron ½ of an inch thick), the covers of which overlap the sides. These boxes are placed on the upper floor of the furnace, at the same time that a fresh charge is placed on the lower floor; and are removed about twelve hours after the firing has ceased. This annealing or coloring, which changes the green to blue, by partly oxidising, and partly removing an excess of sulphur, is similar to the process of coloring red-lead.

"The blue pigment now obtained is lixiviated, and then, while moist, ground between granite or quartz millstones. When the desired fineness is obtained, the pulp is run into draining bags, and afterwards put in cast-iron dishes, which are also placed in the upper floor of the furnaces to dry, whenever the iron annealing boxes have been removed. On the Rhine, some factories are supplied with reverberatory furnaces, the soles of which are heated from below by the fire, which then again passes over the charge before reaching the flue. Such furnaces hold as much of the crude materials as will yield about 1,300 pounds of ultramarine.

"Another method consists in mixing the materials in smaller quantities, and forming them into batches, in boxes containing only about 700 pounds each. These boxes are placed in pairs on the benches of a double floor reverberatory furnace, constructed after the manner of a small furnace, heated by one fire, which first passes around the boxes on the lower floor, and from underneath them to the upper floor. The masonry of the lower floor is fire-brick, the supports of both soles and arches being stone, and the upper floor is formed of iron plates. The boxes are made from fire-proof tiles, one inch thick, grooved and let in at the edges. The fuel used is bituminous coal."

A Testimonial.

Messrs. MUNN & Co.—I received my patent papers from Washington yesterday, and am much pleased with them, they being very accurately prepared. The drawings are superbly executed. I had rather give you five times your price, than have them prepared by inexperienced persons—as a thing worth doing is worth doing well. I shall cheerfully recommend you, as honorable and reliable patent attorneys, and worthy the confidence of inventors who wish their rights protected.

ALEX. M. BRISTOL.

Detroit, Mich., July 14, 1863.

Scientific Paradoxes.

The water which drowns us—a fluent stream—can be walked upon as ice. The bullet which, fired from a musket, carries death, will be harmless if ground to dust before being fired. The crystallized part of the oil of roses—so graceful in its fragrance—a solid at ordinary temperatures, though readily volatile—is a compound substance, containing exactly the same elements, and in exactly the same proportions, as the gas with which we light our streets. The tea which we daily drink, with beneficent pleasure, produces palpitations, nervous tremblings, and even paralysis, if taken in excess; yet the peculiar organic agent called theine, to which tea owes its qualities, may be taken by itself (as theine, not as tea) without any appreciable effect. The water which will allay our burning thirst, augments it, when congealed into snow; so that Capt. Ross declares the natives of the Arctic regions "prefer enduring the utmost extremity of thirst, rather than attempt to remove it by eating snow." Yet if the snow be melted, it becomes drinkable water. Nevertheless, although, if melted before entering the mouth it assuages thirst like other water, when melted in the mouth it has the opposite effect. To render this paradox more striking, we have only to remember that ice, which melts more slowly in the mouth, is very efficient in allaying thirst.

Sights and Sounds of War.

The City Hall Park opposite our office presents a vivid picture of the actualities of war. Since the riots occurred, it has been tenanted by batteries of artillery, and companies of cavalry and infantry. These latter drill regularly in the morning, and the "spirit-stirring drum, and ear-piercing fife" are sufficiently audible. Tired artillerymen lay stretched upon the ground beside their guns; gaunt cavalry horses—some of them far outvieing Don Quixote's Rosinante in point of leanness—look wistfully toward trusses of hay that lay beyond their reach. The guard paces monotonously up and down; those that are off duty lounge and smoke; and a motley group of idlers, apple-women, and citizens in general, surround the encampment, gazing with curious eyes upon this scene, so novel in the heart of the great metropolis. Even as we write, the air is full of martial sounds proceeding from the camp; and squads of men are moving to and fro, intent on duty. The peaceably-disposed portion of the community do not object to the occupancy of the Park for this purpose; but others of opposite inclinations are loud and voluble in their indignation.

Shocking Accident.

A terrible accident occurred on the 21st inst., by which a number of persons, mainly children, lost their lives. A part of the wall of the Police Station in the 18th ward, which had been burned by the rioters, was left standing in a dangerous condition; and at the time of the accident, a large number of women and children were in the ruins, busily searching for coal which was said to be buried there. A high wind prevailed, and those beneath the dangerous portion of the building were warned to fly while they had time. Several did so, but others remaining were crushed by the bricks which fell with terrific force. A large number, estimated at twenty children, and grown people, were buried; and up to this time only eleven bodies have been exhumed. It is thought that others will be found as the investigation proceeds. The spectacle is said to have been shocking, at the time the wall fell in; and many women fainted who witnessed it.

Californian Woolen Goods.

About two years ago the California Pioneer Woolen Factory, situated near Black Point, was totally destroyed by fire. The losses were very great, but the company re-erected the building, provided it with more expensive and serviceable machinery than before, and now turn out handsome and durable goods. The new building is of brick, 242 by 50 feet. There are four artesian wells, which with other means, supply abundance of water. An 80 horse power engine, from Donahue's Foundry, consuming three and a half tons of Monnt Diablo coal per diem, moves the machinery. About fifty-five hands are employed, a few of whom are females, and a number of them

Chinamen. About 500,000 pounds of wool are used yearly. The products are coatings, cassimeres, flannels and blankets. The finest quality of blankets made command \$14 per pair, and the cheapest \$8 per pair.

MISCELLANEOUS SUMMARY.

AMERICAN ART IN ENGLAND.—The *London Times* says: "The reputation of Mr. Church, the most eminent American landscape painter, has been brought to this country by his 'Niagara,' and 'Heart of the Andes.' His pictures of 'Icebergs off the Coast of Labrador,' now exhibited at the German Gallery, will enhance the estimation of Mr. Church with those who have seen his former pictures, and affords an excellent opportunity for those who have not, to form a conception of what landscape painting in the United States is aiming at and achieving."

The picture altogether is a noble example of the application of the landscape painter's art to the rendering of grand, beautiful, and unfamiliar aspects of nature, only accessible at great cost of fatigue and exposure, and even at peril of life and limb; which seems to be one of the walks in which this branch of the art is destined to achieve new triumphs in our time. All who can honor and appreciate the art, in this new and arduous development of it, should see Mr. Church's great picture."

THE Michigan Southern Railway Company have ordered six new 30 ton locomotives to be made with all dispatch, also a large number of freight cars, as both their motive power and rolling stock are inadequate to the demands upon them. A late number of the *Toledo Commercial* reports about 200 cars of the Michigan Southern Railroad standing on the track at the depot, filled with grain, goods, &c., which could not be unloaded, because of no store rooms, and there being no propellers in port to transport their freight away.

COTTON SUPPLY.—At a late meeting of the cotton supply association, held in Manchester, the chairman stated that 1,072,000 bales were received from India in 1862; and that 1,200,000 bales were expected this year from the same source; which with 600,000 bales from other countries, would be about sufficient to give only three days work per week to the English cotton operatives. The machinery in several factories has been altered to work surar cotton; but American cotton is so superior, that three pounds of it can be spun in the same time as one pound of surar.

The great bridge over the Susquehanna river, at Columbia, Penn., which was destroyed by fire on the 28th ult., was constructed in 1834, and cost \$157,000. It was 5,020 feet long, 14 feet above high water, built all of wood, and about 40 feet wide; comprised 28 spans, resting upon stone abutments; was covered; roof above roadway, 25 feet; had two tracks also, used for vehicles and foot passengers, and tow paths, the latter for the Susquehanna and Tidewater Canal.

PACIFIC HARVESTING MACHINERY.—The *California Farmer* says:—The sale of harvesting machinery has never been so great as in the present year. The number of implements that have been sold by the several dealers is beyond any precedent. At San Francisco, they refer with just pride to the several agricultural warehouses in the city, where the assortment of agricultural implements is equal to that found in any part of the world.

Messrs. J. Z. & C. Goodrich, at Glendale, Mass., are now running their woolen mill, on satinets and melton cloths. They have 60 looms, which, until recently, ran night and day for six months, on a large contract for A. T. Stewart & Co., of this city. There are 7 sets of cards in the mill, and from 10,000 to 12,000 yards of goods are produced in a week. At present there is a great scarcity of help.

The long submarine line of telegraph between Malta and Alexandria has not been working for several weeks. The cable is supposed to have been broken by the anchor of some vessel.

The manufacture of Armstrong guns is now entirely suspended at the Royal Arsenal, Eugland.

The original MSS. of Gray's "Elegy" was recently sold in England for \$500.