

Improvement in Photography.

Photography is making great advances in England since the discovery of taking negative pictures on glass, as described in the Scientific American in 1849, and copied into Humphrey's work on Daguerreotype, page 91.

Mr. T. A. Malone describes, in the London Athenæum of June 1, a process which he has adopted, involving one or two points of novelty, by one of which he is enabled to convert a negative picture immediately into a positive one.

He prepares his glass by rubbing it with a solution of caustic alkali, washing it with water, and drying it with a cloth; and, just before applying the albumen, he breathes upon it, and rubs it with new blotting-paper, followed by cotton wool, to remove fibres and dust; the last being indispensable to prevent the absorption of iodine by such particles, whereby the picture would be spotted and spoiled. The albuminous liquors consist of equal measures of water and white of egg, beaten together to a foam, and then strained through a paper cone or filter, having a small aperture at its apex. He pours the albuminous liquor on the glass, prepared as previously described, inclining the plate from side to side until it is covered; allows the excess to run off at one of the corners, holding the plate in a nearly vertical position; and whenever the liquid ceases to drop rapidly, he breathes on, or warms, the lower half of the plate, the moisture of the breath in the one case, or the warmth in the other, causing it to flow more freely: wiping the edges continually promotes the operation. The great object is to procure a uniform coating. When the glass is sufficiently dripped, it is dried; for which purpose Mr. M. uses a double-ring gas-burner of some eighty jets, but says an open fire answers as well, except from the danger of dust. The film, he adds, when dry, is quite free from cracks, and is so thin and transparent that the brilliancy of the glass is unimpaired, so that it is almost necessary to mark it to know which side has been coated. The next process is to iodize the albuminous film; the plan of effecting which, with the subsequent steps for procuring and fixing the negative picture, we describe in his own words:

"Dilute pure iodine," he says, "with dry white sand in a mortar, using about equal parts of each. Put this mixture into a square glass trough, and ever it place the albumined plate; as soon as the latter has become yellow in color, resembling beautiful stained glass, remove it into a room lighted only by a candle or through any translucent substance—yellow calico for instance. Here plunge it vertically and rapidly into a deep, narrow vessel containing a solution of aceto-nitrate of silver, made by adding three ounces of nitrate of silver to two ounces of glacial acetic acid, diluted with sixty ounces of distilled water. Allow it to remain until the transparent yellow tint disappears, to be succeeded by a milky-looking film of iodide of silver. Washing with distilled water completes the operation. After it has been submitted to the action of the light, pour over its surface a saturated solution of gallic acid. A negative Talbotype image on albumen is the result. Washing with water, before and after immersion in a solution of one part of hyposulphite of soda in sixteen parts of water until the yellow tint is removed from the shadows, completes the process."

It is by the following slight variation of the process, at the period when the picture is being treated with gallic acid, that it is converted into a positive one:

"While the gallic acid, is developing its reddish brown image," says Mr. Malone, "pour upon the surface a strong solution of nitrate of silver:—the brown image deepens in intensity until it becomes black. Another change commences: the image begins to grow lighter, and, by perfectly natural magic, finishes by converting the black into white, presenting the curious phenomenon of the conversion of a Talbotype negative into, apparently, a Daguerreotype positive, but by very opposite agency, no mercury being present; metallic silver (probably) here producing the lights, while, in the Daguerreotype, it produces the shades of the picture.

Lloyds.

This is a word often met with in English newspapers—is a great company of underwriters, whose agents are located all over the commercial world. It is expected of the agents of Lloyds' that they ascertain the workmanship of all vessels when upon the stocks the injuries they receive in the course of their voyages—the nature of the repairs put upon them—their sailing properties, &c. &c., and transmit all the particulars to the company in England.

The accuracy and vigilance of these agents has been matter of surprise to American and other shipmasters; for it is said the condition and properties of United States ships are as accurately understood in London as in Boston or New York. A Yankee ship-master, making application at Lloyds' for insurance upon his vessel, observed that the officer referred to once to what proved to a great alphabetical register, in which were recorded the names and other memoranda regarding thousands and thousands of vessels, arranged under all the classes peculiar to that establishment, from "A 1, red letter," down to the lowest insurable class. In due time the Yankee was informed that his insurance would be so and so, (naming the terms;) that although one worthy to stand as "A 1," his vessel had worked into lower classes; that when she ran aground at such a place, she received greater damage than the owners were perhaps aware; and that the repairs put upon her when she was got off were not adequate to the injury she received, &c. &c. The surprise of the Yankee captain, in the language of romance writers, was easier imagined than described. He found they knew more of his vessel than he did himself.

In New York there is a mercantile Association conducted like Lloyd's, in another field. A number of Canadians from Montreal were as surprised at the great amount of credit they could receive, as others were at the small amount—they did not know the secret.

Charleston Cotton Manufacturing Co.

Our advertising columns of this morning announce that the books of the above company will be open to-day and to-morrow to receive subscriptions for new stock. The remarkably liberal offer of Charles T. James, Esq., to take half of a large mill to be built in our city, has aroused the feelings of every one who has the interest of Charleston at heart. We believe our capitalists are prepared to respond to this offer in an appropriate manner, and we would particularly commend the subject to our friends the planters in our district and neighborhood. Your cotton is to be worked up. Let it be done by your own mill; show by your liberality in this subscription that you can put your means into factories as well as the millionaires of the North, and that you are determined, as far as possible, to be independent of all those who would scatter firebrands among you. This mill, when enlarged, will consume of your crops, some eight or nine thousand bales, and will give employment to at least seven hundred persons; while by making your own shirtings it will save our State in labor about \$170,000 per annum, and in profits, in ordinary years, at least \$75,000 more—both amounts being now paid away for the same goods made at the North, and consumed at the South.—Subscribe liberally for this stock, and so evince your enterprise and disposition to promote this great industrial effort.—[Charleston Mercury.]

[By the above it will be seen how much the South is aroused to the subject of cotton cloth making, so as to make the cotton into cloth in the regions where it grows.

Rapid Travelling.

Though our voluntary peregrinations be confined to narrow limits, although our globe is but a speck in space, and although a voyage from pole to pole would be, by the shortest route, but some paltry 12,000 miles, fortunately for astronomy, we make an annual tour in the course of our orbital revolution round the sun, which carries us to two points of space nearly 200,000,000 of English miles apart.—Seated on this comfortable railway carriage called the globe, we are actually tearing through space at the rate of nineteen miles per second, or 68,000 miles an hour; and the dis-

tance between the points of space occupied by us, the travelling spectators, on any two days, is accurately known. For instance, on the longest and on the shortest day, our positions are, as we have said, nearly 200,000,000 miles apart. Of course this annual trip makes a vast change in the celestial scenery of the bodies nearest to us. The other planets, if they did not move themselves, would appear to do so by our own relative motion; as it is, they have apparent movements, resulting from their own as well as from our earth's orbital motions. But the most extraordinary fact is this, that, notwithstanding the vast space which separates the position of our earth at opposite seasons of the year, the scenery of the fixed stars is noways sensibly distorted by our change of place. The vast distance from the earth to the sun is seen from the nearest fixed star under an angle probably not exceeding one second, which is about one two-thousandth of that which the sun's or moon's disc subtends! This is called the "annual parallax"; and, admitting it to exist, the nearest fixed star must be 206,000 times more distant from the sun than our earth is; or 5,000,000,000 diameters of our globe or about twenty billions of English miles.

East India Antiquities.

At a recent meeting of the Asiatic Society, in London, the Secretary read an official letter to the Bombay Government from H. B. E. Frere, Esq., resident at Sattara, respecting a library of Arabic MSS. at Bejapore. Mr. Frere suggests that the books, for many of them seem to be of great value, should be removed either to Bombay or to the library at the Indian House. Some objections may be made to their removal by their custodians; but Mr. Frere proposes that they should be compensated by Government undertaking the repair of the building, thus averting the loss of a specimen of a very peculiar and magnificent style of architecture. The less rare and valuable volumes might be left; and the loss of the others might be supplied by a complete set of works in the native languages, published by or on behalf of the Government. These books would be of more practical value than those removed, and might form the basis of a library as useful, and as much used by the modern inhabitants, as the old library was by their ancestors.

The second paper read was "An Account of the Inscriptions of Warraputa, a cataract in the river Essequibo, South America," by Dr. G. R. Bonyun. Warraputa consists of two rapids, between which there is a bed of boulders, all of which are coated with a black glaze formed by the iron of the rock being converted a sesquioxide by the action of the water. On the rocks there are figures which forcibly strike the mind as being written characters, and not mere capricious marks. The writer entered into a comparison of several of the characters, and in conclusion laid down certain inferences as not unfairly deducible:—1. That the inscriptions are significant. 2. That their meaning must be sought in some ancient Semitic dialect—and lastly, they were inscribed by a civilized people, at a remote period of antiquity.

Interesting Discovery near Pittsburg.

The Pittsburg Gazette announces that Mr. James Sims, a painter of that city, has discovered upon the lands of Mr. Geo. Ledlie, on the line of the Perryville Plank Road, near the head of Federal street, Allegheny City, a vein of earth about eight feet thick, and apparently containing thousands of tons, which is similar to Blake's Fire and Water-Proof Paint.—It is formed of eleven different colors, all neutral tints, suitable for painting the outside of houses, fences, &c. In the mine it is of the consistence of tallow, and on being dried, reduced to powder, and mixed with oil, it makes a beautiful and desirable paint. The Gazette states that it is contemplated to erect works and prepare it for the market. It is said to be a first rate article, and can be afforded cheap.

Delaware Powder.

The most extensive powder-mills in the world are those on the Brandywine, Delaware, and the best powder made is at these mills. They manufactured last year 2,500,000 pounds.

Scientific Memoranda.

It has long been alledged that the aurora borealis has the effect of producing a certain direction of wind, and colored aurora borealis is always indicative of a change of existing weather.

The mean annual fall of rain on the surface of the globe has been taken at 34 inches, which, taking the area of its surface, 196,816,658 square miles, would amount (at 1,000 ozs. to the cubic foot) to 431,033,808,959,644½ tons per annum.

It is a fact undeniably proved that if sheep are allowed free access to salt, they will never be subject to the disease called the "rot."

Wooden posts or stakes driven under salt vats, owing to the preserving quality of the salt, are practically indestructible. It would be very easy to adapt this hint to the preservation of fence, garden posts, &c., as they do in Syracuse.

The elastic force of steam is the moving agent of the machinery attached to an engine, and therefore to keep the velocity constant the supply of steam must be regulated to the resistance to be overcome.

Twenty-seven inches of snow give three inches of water when melted, and the water thus obtained is found to contain ammonia, which is the cause of its great softness.

A large species of the star-fish possesses the power of breaking itself into fragments under the influence of terror, rage, or despair.

When we look at the moon through a telescope which magnifies 200 times, we behold the objects on its lunar surface in the same manner as if we were standing at a point 238,800 miles from the earth in the direction of the moon, or only twelve hundred miles from that orb, reckoning its distance to be 240,000 miles.

A cement composed of 4 parts of pure chalk and 5½ parts of fresh blue alluvial clay, will be found cheaper than any other as a hydraulic mortar.

A vessel moving through the water communicates a motion to the same, and this quantity of motion is equal to that which is lost by the moving vessel.

Potatoes.

The Germans have recently taken a particular fancy to raising potatoes. The following is their method of producing the greatest good for the greatest number:

"The potato is planted whole without any preparation, only allowing a little more space than usual. When the plants have attained the height of the hand, they are also cleaned and heeded as usual. When, however the time for drawing up the earth around them has arrived, the following process is adopted instead: the green stalks are divided and laid down by the hand on the flat soil in the form of the spokes of a wheel, and covered with the neighboring earth—the operation being readily performed by placing the foot on the plant. Some weeks later the leaves begin to push through the soil, when they are again laid down and covered with four inches of earth. This is all the labor required, and occupies about the same time as the ordinary hoeing-up process, but it produces six times more fruit. The subterranean stalks are covered with potatoes, in the form of a wreath or chaplet."

The Elephant and the Camel.

Elephants have the bitterest enmity to camels. When the camel scents the elephant it stops still, trembles in all its limbs, and utters an uninterrupted cry of terror and affright. No persuasion, no blows can induce it to rise; it moves its head backwards and forwards, and its whole frame is shaken with mortal anguish. The elephant on the contrary as soon as he perceives the camel elevates his trunk, stamps with his feet, and with his trunk thrown backwards, snoring with a noise like the sound of a trumpet, he rushes towards the camel which with its neck outstretched and utterly defenseless awaits, with the most patient resignation, the approach of its enemy. The elephant, with its enormous shapeless limbs, tramples on the unfortunate animal in such a manner that in a few minutes it is scattered around in small fragments.