Photogenic Paper.

The paper is to be dipped in a solution of salt in water, in the proportion of half an ounce of salt to half a pint of water. Let the superfluous moisture drain off, and then lay the paper upon a clean cloth, dab it gently with a napkin, so as to prevent the salt collecting in one spot more than in another. The paper is then to be pinned down by two of its corners on a drawing-board by means of common pins, and one side washed or wetted with the photogenic fluid, (weak nitrate of silver) using the brush prepared for that purpose and taking care to distribute it equally. Next, dry the paper as rapidly as you can at the fire, and it will be fit for use for most purposes. If, when the paper is exposed to the sun's rays, it should assume an irregular tint, a very thin extra wash of the fluid will render the color uniform, and, at the same time, somewhat darker. Should it be required to make a more sensitive description of paper, after the first application of the fluid the solution of salt should be applied, and the paper dried atthe fire. Apply a second wash of the fluid and dry it at the fire again; employ the salt a third time, dry it, and one application more of the fluid will, when dried, have made the paper extremely sensitive. When slips of such papers, differently prepared, are exposed to the action of daylight, those which are soonesteffected by the light, by becoming dark, are the best prepared.

Paper dipped in a solution of the bichromate of potass, and dried without exposure to the rays of light and kept secret from the rays of the sun makes excellent photogenic paper. Take paper prepared in this way, place a picture or a flower, or a leaf upon it and expose it a few minutes to the rays of the sun and beneath the flower on the leaf there will be light and shade according to the thickness or attenuity of the various parts of this pattern of nature.

When photogenic drawings are finished in a perfect way, the designs then taken on the plate or paper are exceedingly beautiful and correct, and will bear to be inspected with a considerable magnifying power, so that the most minute portions of the objects delineated may be distinctly perceived. We have seen portraits finished in this way by a London artist with an accuracy which the best miniature painter could never attempt, every feature being so distinct as to bear being viewed with a deep magnifier. And in landscapes and buildings, such is the delicacy and accuracy of such representations, that the marks of the chisel and the crevices in the stones may frequently be seen by applying a magnifying lens to the picture, so that we may justly exclaim in the words of the poet, "Who can paint like Nature!" That LIGHT—that is the firstborn of Deity, which pervades all space, and illumines all worlds—in the twinkling of an eye, and with an accuracy which no art can imitate, depicts every object in its exact form and proportions, superior to everything that human genius can produce.

How the Velocity of Light is Proved.

The eclipses of the moons of the planet Jupiter had been carefully observed for some time and a rule was obtained, which foretold the instants, in all future time when the moons were to glide into the shadow of the planet and disappear, and then appear again. It was found that these appearances took place sixteen minutes and a half sooner, when Jupiter was on the same side of the sun with the earth, than when on the other side; that is, sooner by one diameter of the earth's orbit, proving that light takes sixteen minutes and a half to travel across the earth's orbit, or eight minutes and a quarter to come to us from the sun. We behold the flash of a cannon long before we hear its report.

A glass tube may be drawn out to the fineness of silk, and liquids made to pass through it afterwards.

For the Scientific American.

The Formation of the Eye.

All the works of man's ingenuity are infinitely surpassed by the Eye. Its structure is truly wonderful. The exterior parts are admirably defended from injury, being surrounded with durable orbits of bone, they cannot be easily hurt. The eyelids by closing when we sleep shut out the light from disturbing our repose and the eyebrows both beautify and protect from dust the beautiful and delicate orb. The eyelids break the force of light and guard the sight from many injuries. The globe of the eye is composed of tunicles, muscles, humors and vessels. The *cornea*, or exterior coat, is transparent; under this is the *choroid* which is full of vessels, and the next is the *urea* which is circular and colored.—There is an opening in the middle of it called the pupil which appears black, and lastly the *retina*, which is a fine fibrous expansion of the optic nerve. There are three humors in eye, the watery immediately under the cornea, thin and transparent, the crystaline behind the opening in the middle of the urea, and the vitrious, so called from its resemblance to melted glass, which fills the hind part of the cavity of the globe and gives the spherical figure to the eye. There are six muscles of the eye which enable it to move in all directions. Vision is performed by the rays of light falling on the outward coat of the eye, which by its compactness and convexity unites them into a focus and they are passed through the pupil of the eye to be more condensed by the crystaline humor. The rays of light thus brought to a common centre penetrate the vitrious numor and stimulates the retina upon which the images of objects painted in an inverse direction, are represented to the mind through the medium of the optic nerve. The extreme minuteness of this picture is wonderful, for the space of eleven hundred yards, when it is represented in the bottom of the eye, makes no more than one-tenth of an inch.

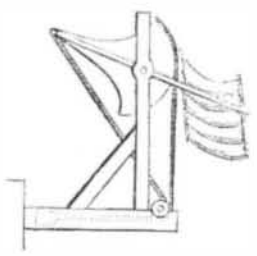
The faculty of our sight is a wonderful property of human nature. Though the images of outward objects are painted upon the retina upside down, yet we see them in their proper positions, and what is astonishing with such a small organ as the eye, we perceive the largest objects and scan their dimensions. From the towering rock we can behold the numerous buildings of a large city below with the utmost exactness, and these are painted with precision upon a surface three times the size of a pin head. Millions of rays coming thro' the pupil are united in the retina without contusion and are preserved in harmony and order. From the topmast of a vessel we can behold the ocean covered with a vast fleet and innumerable waves rolling around us, and yet each of the waves, small as they may be, reflects a volume of rays upon the eye. How seldom are these things reflected upon. The habit of seeing leads us to consider this thing as simple in itself, but still it is not yet in our power to explain the manner in which we come to see objects. We know how the image forms itself in the bottom of the eye, but the eye itself has no idea of what passes into it. The impression must reach the brain, and to do this, the rays must paint an image on a coat woven with nerves. In this way the motion impressed by the rays upon the retina is transmitted to the brain by the optic nerve, and thus we take an interest in objects which surround us, but here we can explain no more. We are as yet ignorant of the connection between matter and mind and hence it is, that although we may be delighted by gazing on a beautiful picture, or a lovely landscape, we cannot give a reason for the feeling or an explanation of the sensation. G. R.

A Tooth Discharged from the Ear.

The London Lancet for December has a letter from Dr. Coates, gives an account of the case of an old man, whom he found suffering with severe pain in one side of the face and head, which were highly inflamed and swollen. Fomentations, poultices, &c., were applied for two or three days without avail. One night a fit of sneezing forced out of the ear, which had discharged pus, a piece of bone that proved to be one of the wisdom teeth of the upper jaw. After that he soon recovered.

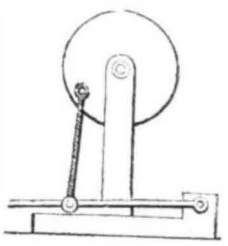
MECHANICAL MOVEMENTS.

Wind Mill.



The above cut represents a method of applying the direct action of the wind and has often been proposed within the past few years somewhat modified, but the same in principle as displayed in the engraving. The plan is not very new and it altogether depends upon the vibrating action of the sector by the preponderance of the wind, or counterweight as the wind may vary.

Reciprocating Circular and Rectilinear Motion.



This cut represents a method of producing reciprocating from circular motion. It is a common way of operating by a pulley and connecting rod to obviate the construction of a crank. It is the crank principle, and no more. From this old motion have all the ideas of lever trip hammer motion been derived, except the direct motion of Nasmyth's steam hammer. This principle was also applied to the early power looms for lifting the treadles, but a more simple plan is now used by cams lifting the treads, said cams being affixed on a shaft.

It will be observed from a mistake of the engraver, in not cutting the bar with dotted lines and showing it to work on the other side of the upright, whenever the pin of the connecting chain comes to the upright, it is *there*, and there it will stick, very much like a *space annihilator* that appeared a short time ago in the columns of one of our cotemporaries. It was in the same predicament, and instead of annihilating space it *annihilated* itself.

Novel Ornament.

At the Lord Mayor of London's last banquet there was placed in the midst of an elaborate trophy in honor of the birthday of the Prince of Wales, a magnificent plume of feathers, with a royal coronet and motto, "Ich Dien," This splendid object measured nine feet in height, and, with the exception of the stems, which were of gilt metal, was composed entirely of spun glass of the finest texture and most dazzling whiteness; the fibres which constituted the feathery portion of the plume, were as fine as hair, and had the soft and glossy appearance of silk. Their flexibility admitted of their being formed into the most perfectly natural shape; and thus a highly graceful elegance had been preserved in the whole arrangement. As a matter of curiosity it may be added that the combined length of the several fibres of glass employed in the construction of this interesting ornament was equal to fifty thousand miles.

Coloring Alcoholic Liquors.

This is done by burnt sugar. The sugar is burnt to such a degree that it loses its original properties and turns into *caromel*, a red substance, which will not dissolve in water but will in alcohol and then it will form a mechanical mixture with water. All liquors are white when distilled but are afterwards colored by this caromel or burnt sugar according to the fancy or design of the various liquor makers. The quality of alcoholic drinks cannot be distinguished by the color. Caromel is also the name for the smell arising from the sugar while calcining.

An elastic ball room of immense proportions, divided by sliding pannels to advance or retire according to the number of tickets sold, is being built in Paris for the winter

Sun-Painted Landscape.

A few artists in London have formed what they denominate a Calotype Society. It consists of some dozen amateurs of Sun-painting who correspond on the subject of their art-science. Some of the Sun-painted landscapes produced by the members. resemble highly finished and brilliant etchings of Rembrandt. The operations of this Society may be regarded as yet in their infancy; but they are destined to confer no small advantage on Art—by recording for the landscape and building painter more accurate and finished studies than his time or inclination would enable him to make.

Cough Syrup.

The following cure is recommended for colds, which has been tried and found to be an infallible cure. It is worth trying.

"Put a quart of hoarhound to a quart of water, and boil it down to a pint.—Strain it, and put the water to a pint of molasses, and simmer the whole down to a pint. Then add two or three sticks of liquorice, and a table spoonful of essence of lemon. Take a table spoonful of the syrup three times a day, or as often as the cough may be very troublesome."

Candlewicks.

The wick should be smooth without knots, bleached and not so thick as they are erroneously and commonly made, and if they are dipped in spirits of turpentine and dried before moulding it will be found to be a great improvement. If a small quantity of beeswax be melted with the tallow for candles it is also a great improvement, as the candles will be found to last much longer and not be so apt to run.

The most important desideratum to be accomplished in the fine arts, is to so prepare a a daguerreotype plate so as to transfer the impression to a lithographic stone.

There is a permanent lake of sour water in Texas not far from Nacogdoches. It is the resort of invalids.

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