

THE EVENING NEWS.

Thursday, June 23, 1870.

HOW GLASS PAPER WEIGHTS ARE MADE.

Every one knows those paper weights of solid colorless glass in a hemispherical shape, in the centre of which are bouquets, portraits, and even watches and barometers, etc., but few persons know how or by what means these things are incarcerated in the centre of the glass. There is a great distinction to be made, not merely between the objects, but also between the materials of which they are composed. As those representing flowers and bouquets, in glass—those from which the name is derived—are the most ancient and the best known, we will begin with them.

The first thing to be done is to sort and arrange a certain quantity of small glass tubes of different colors in the cavities of a thick molten disc, disposing them according to the object to be represented. This done, the tubes are enclosed between two layers of glass. To do this they begin by placing on one side of the disc which contains the tubes a layer of crystal, to which the tubes soon become attached. When this is done the disc is removed and a second layer of crystal is placed on the opposite side. The object being placed in the centre between these two layers of glass thus soldered together, it becomes necessary to give the ball its hemispherical form, which is done, when the crystal is again heated by means of a concave spatula of moistened wood. It then only remains to anneal and to polish it on the wheels.

That a glass ornament, being covered with a layer of hot glass, should receive no injury or change of color, may be easily understood from its extremely refractory nature; but it is not the same with objects in metal, such as watches, barometers, etc., which a far less degree of heat would oxidize or even entirely destroy. The mode of manufacture, therefore, of these latter objects is quite different from that of the first. It is easy to prove this. If we look at a paper weight, provided the interior be of glass, the upper and under part of the recipient will also be of glass. If we now examine a paper weight containing a watch or barometer, under the lower part of the ball will be found a piece of green cloth, the use of which is to keep in place the objects which, instead of only forming one body with the covering of glass which surrounds them, are only placed in a cavity made beforehand in the centre of the half-spherical ball. In a word, to take out the glass ornaments it would be necessary to break the paper weight, whilst to take out the others it would suffice to take off the cloth.

As for the paper weights in which are placed portraits, usually of a yellowish color, these profiles are made of refractory earth, and many thus bear well a heat which only softens glass. Manufactured successfully at Venice under the name of millefiori, and then in Bohemia, these paper weights have been carried to perfection only by French artists. The sole difficulty in their manufacture is in avoiding internal air bubbles, which would more deform the objects, as any defect would be much increased by the thickness of the glass.

CONDENSATION OF VAPOR AND ELECTRICITY.

It is found that the condensation of water in the summer sky is always attended by a great development of this unseen and mysterious energy—be it fluid, vibration, force, or whatever else we choose to call it. The more rapid the condensation, the more copiously is the electricity developed. Which is the cause and which is the effect, it is impossible to say; but the two phenomena accompany each other in a very remarkable manner.

This connection between the development of electricity and the condensation of aqueous vapor, which was for a long time known only to exist in the case of the thunder-cloud, has since been found to be universal. The attention of scientific men was called strongly to this subject by an incident which occurred to an engineer in charge of a locomotive near Newcastle, in England, in 1840. This engineer happened to pass one hand very near the cloud of vapor which was issuing from the escape-pipe of his engine, at the instant when the other was in contact with a metallic handle attached to some part of the machinery. The combination happened to be such as to make his body part of an electric circuit, and he experienced a sudden and quite powerful shock.

This incident led to a more thorough study of the electrical phenomena connected with the condensation of water, and it was found that electricity could be excited in any quantity by this means. In the case of the condensation of vapor in the atmosphere, so long as the cloud remains small, the presence of electricity does not manifest itself by any outward sign; but when it becomes large and very dense, and especially when it is rapidly formed, and it produces two effects strikingly manifest to the senses—a brilliant chain of forked and glittering light dazzling the eye, and a series of tremendous detonations and reverberations overpowering the ear. The direction of the line of light is often towards the earth, and by the very remarkable effects which are produced at the termination of it, we know that in some way or other a force of very extraordinary intensity has been transmitted from the cloud to the ground.

The discharges, as we term them, take place sometimes in very quick succession, showing that the electric energy is very abundantly developed, and in such cases the condensation of water goes on in an equally extraordinary manner. This state of things continues for several hours. The two effects—namely, the development of electricity and the condensation of water—go on together, the one keeping pace, to all appearance, exactly with the other. The electricity as it is developed, discharges itself in glittering lines of light darting through the air. The water descends, by its gravitation, to the earth in a deluging shower. During all this time the cloud moves slowly on from west to east, increasing all the while in density and extent, until the heavens are black with it, and the earth for a region of many miles is thrown into deep shadow.

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