scope, the effect will be pseudo-scopic that is, relative positions of near and distant objects will be reversed; but, if a print from a negative taken by what is known as a "Latimer-Clark" camera be examined, it will be found quite correct. In the former case the right eye is made to examine the picture intended to be, and which should have been, opposite the left eye, and vice versa. Here is a simple rule to observe:—If the slide holding the sensitive plate has been motionless during the taking of both sides of the picture or during the impressing of both ends of the plate, then the images must be transposed before they can be seen in stereoscopic relief. We are now assuming that ordinary instruments have been used, and do not intend our observations to apply, in anticipation, to other reflecting instruments which might easily be invented, and nearly as easily made, for the purpose of controverting the rule.

But a second advantage arises—and that not merely the ability to discern between correctly and incorrectly mounted pictures and of seeing *both* in stereoscopic relief, but one of which we have frequently found the value when the binocular camera was directed to a view—we allude to the power conferred of seeing upon the ground glass of the camera the precise effect, as respects stereosity, which will eventually be produced. In the course of our experience we have met with very few who were fully alive to this great advantage, or who, being alive to it, could adequately realise it in their own practice. Yet it is true that by a slight optical effort both the images thrown on the ground glass by the lenses of the camera can be resolved into one, and that image possessing all the relief to be found in nature.

We now come to the means to be employed by which such effects may be secured; and, first of all we shall suppose the case of a person desirous of learning how to see in proper relief a correctly mounted picture.

The first attempt must be made by means of a diagram. Upon a sheet of plain white paper let two simple ink marks, dots or crosses, be made close to the under margin, and about an inch apart. Now, upon another sheet of white paper place any kind of ink mark, and place it at a distance of eighteen or twenty inches from the eyes. Now hold the former paper in such a manner as that it shall be about halfway between the eyes and the other paper, the marks being at the top and the position such as merely to allow the single mark to be seen and no more; in short, so that the two marks on the one sheet and the one mark on the other shall be nearly in a line. Then look intently at the single, or more distant mark, and while doing so, the mind will soon become conscious of the fact that there are *three* crosses or marks now visible upon the nearer paper, which, by the way, may be moved in or out from the eyes till these conscious images coalesce. By a little effort the eyes can soon be diverted from the contemplation of the distant mark to the central one of the three which intervene, and which lies directly in the path of the distant mark.

When after a little practice this can be easily done, then make two marks a little farther apart than those upon which the first attempt was made, increasing, if need be, the distance between the eyes and the sheet containing the single mark. After ten minutes spent in this mode of practice such an amount of control will have been acquired over the muscles of the eyes that a binocular photograph may then be made to take the place of the double-image diagram. But this photograph should be carefully selected, it must have strong leading characteristics, and, above all, its lines must be mounted nearer to each other than is usual. It will be better for the student to select a well-marked picture, cut it through the middle, and make it overlap so as to bring its elementary parts closer together. Treat this picture as was done with the diagram. Let it be held up, at a distance of about eighteen inches, against a sheet of paper containing a mark which is more than twice as far from the eyes. Direct the eyes towards the mark and they will imperceptibly observe that there are *three* photographs intervening between the vision and the image. Now without any effort let the eyes be insensibly directed toward the central one of the three pictures, and the instant this is effected the picture stands before them in all the relief of nature, being composed of both the original images. We shall not here enter into the philosophic bearings of the act; all we notice is the fact.

When the foregoing effect has been obtained, the eyes will ever afterwards obey the will, and by diverging the axes slightly or, to state it more correctly, by rendering them parallel, stereoscopic pictures may be seen in all their marvellous relief without an instrument.

The converse of this is more easy. The pictures, which must be reversed, are placed directly opposite the eye at a distance of about eighteen inches, and an object of small dimensions, such as a pencil, held between the eyes and the pictures in such a way and at such a distance that when the right eye is directed to the left picture it shall intercept it to some extent, doing the same thing when the right-hand picture is viewed by the left eye. In this position, examine the pencil attentively, and the mind will soon realise the fact that there are three pictures in the background, the centre one of which may, with little effort, be made the subject of examination by the eyes. This method differs from the former, inasmuch as the axes of the eyes converge to such an extent as to cross between the eyes and the picture. No pain or peril whatever to the organs of vision results from the proper examination of images in this manner, although, like everything else, the power is capable of being abused.

NEW PROCESS FOR RENDERING GLASS HAIL AND FIRE-PROOF.

The *Salut Public* of Lyons gives an account of some experiments that have lately been made with a view to testing the value of a process, invented by M. de la Bastie, a manufacturer of Bourg, for strengthening glass so as to render it not only hail-proof, but also to resist the effects of fire and accidents.

These experiments were carried out at the railway station of Point d'Ain at the request of the authorities of the railway company, in order to satisfy them of the value of this invention, which naturally would be of the highest importance to them, were it possible to render less liable to breakage the glass roofs, the repairs of which form a serious item in the expenditure of railway companies.

A sheet of glass 6 millimetres in thickness, held in a wooden frame, was placed on the floor of the room, and a brass ball weighing 100 grammes was left fall on it, from a height which was gradually increased until the glass was broken by the shock. It was found that falling from a height of 24 centimetres the glass was shattered by the ball.

A sheet of glass only half the thickness (viz., 3 millimetres), but which had been prepared by the new process, was then placed in the frame, and the same weight was allowed to fall upon it, gradually increasing the height, but without any effect even when dropped from the ceiling of the room.

The experiment was next continued out of doors, and it was not until the weight have been dropped from a height of 5·75 centimetres, that the plate of glass was broken. Dropped on the ground a sheet of the prepared glass rebounded slightly, and with a sound similar to that of metal when thrown down.

Another experiment was made with a view to test its resistance to fire. A slip of common glass was held in the flame of a lamp, and at the end of 24 seconds it snapped in two. The same was repeated with a slip of the prepared glass, but the flame had no effect upon it; and even after plunging the heated glass suddenly into cold water the glass was not broken. The importance of such an invention may easily be imagined, and its application in an endless variety of ways will readily suggest themselves not only to engineers, builders, &c., but to persons engaged in almost every class of trade.

Some time ago the English engineers engaged on board the ironclads of the Turkish fleet were dismissed or withdrawn and natives appointed in their room. According to the *Levant Herald* the Turkish mechanics have since come to grief, some having narrowly escaped being "boiled." Those in charge of the *Mahomoudieh*, one of the largest of the ironclads, had received orders to get the ship under weigh. After several fruitless efforts to get the engines to move, growing impatient, says the *Herald*, they began to try the virtue of some of the cocks whose uses they had had no previous opportunity of becoming acquainted with. One of these took the reconnoitring artisans considerably by surprise, answering their researches with a jet of steam which quickly filled the engine room and scalded their hands and faces.