

THE STEREOSCOPE AND ITS IMPROVEMENTS.

MR. G. C. COOKE'S STEREOSCOPE, MR. CLAUDET'S STEREOMONOSCOPE, AND M. D'ALMEIDA'S NEW STEREOSCOPIC APPARATUS.

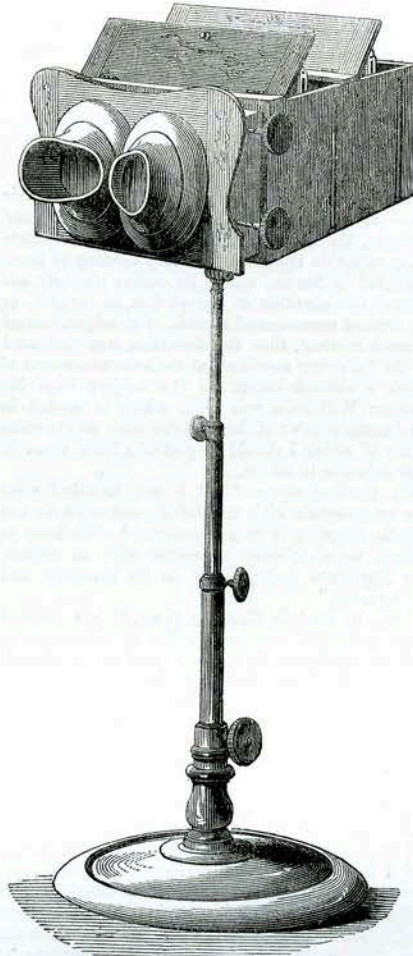
It would be a psychological inquiry of much interest, to ascertain the principles by which we are led to receive pleasurable impressions from the contemplation of the productions of the mimetic arts. From the earliest childhood, up to the very evening of life, we delight in representations of nature. This feeling is not confined to any one class—it is not a peculiarity of any favoured nation; the peasant and the peer, the highly cultivated and the uncivilized man, enjoys, each in his own way, copies of those things with which he has been familiar. This peculiar faculty of the mind is manifest in every human being, but it varies greatly in its character, and yet more widely in its degree, according to the education of the individual—according, indeed, to the circumstances by which he has been surrounded.

The extraordinary popularity of the stereoscope—especially that form of the instrument which we owe to Sir David Brewster—is a forcible illustration of this. We look upon a photographic picture of—it may be—an avenue of trees, or a chasm in an Alpine country, and we express pleasure at the perfection of the detail and general beauty of the picture: we place either of those pictures in the stereoscope, and our expressions of pleasure are exalted into bursts of delight. The distance, the shadows, the visible hollows, the truth—the almost more than truth—of the *solid* picture which we see, appears to give us a new pleasure. We are charmed with a work of Art presented to us on a plain surface; but if, by the trick of Art, we are led to imagine that we look upon a figure of three dimensions, our pleasure is increased. How often have we heard the exclamation, "The figure seems to stand out of the picture!" and this has been, by the uneducated admirer, regarded as the very perfection of artistic effort. Realizing this, as we do, in the highest degree, in a good stereoscope, with a truly executed stereoscopic picture; it is not surprising that the little instrument—which originated in researches for an explanation into the phenomena of single vision with a pair of eyes—should have become so suddenly popular, and so long retained its popularity.

That constant attempts should be made to add to the facilities of our enjoyment in the use of the stereoscope, is not to be wondered at. We have stereoscopes produced for a shilling, which, to some extent, have brought the pleasures of them home to the poor; and we have these instruments fitted with all the appliances and ornamentation which give it a place amidst the luxuries of the wealthy. Tastes of every order are catered to—very bad taste, indeed, in many cases;—and the production of these instruments and pictures has generated for hundreds of hands new forms of industry. We have described in previous numbers of the *Art-Journal* the ordinary forms of the stereoscope; we have endeavoured to render clear the principles upon which the stereoscopic effects depend; and we have already referred to some of the modifications which have been more recently introduced. Our attention has lately been called to a new form of the instrument, which has been patented by Mr. George Colleton Cooke, and is manufactured by NERGETTI and ZAMBRA, of Cornhill, who have in many ways been valuable contributors to the art. Several of their admirable publications we shall ere long bring under review.

This instrument possesses advantages over every modification which we have yet ex-

amined. The improvements made by Mr. Cooke are several, and we must endeavour to render them as intelligible as possible to our readers. Ordinarily, the stereoscopic lenses are placed in cylindrical tubes, without any arrangement by which the eyes are left to view the picture undisturbed by the lateral rays which naturally fall upon them. Mr. Cooke applies to his stereoscope conical or pyramidal, or trumpet-mouthed tubes for the eye-pieces, as shown in the accompanying woodcut; by this arrangement the eyes are protected, the field of



view is increased, and larger lenses than usual can be employed: therefore, less in impediment or obstruction than heretofore is offered to the rays emanating from the picture, and the eye of the observer is enabled to range more freely over the field of view. One difficulty has constantly presented itself in the use of the ordinary lenticular stereoscope. Whatever may be the conditions of vision, whether the observer had "long or short sight," the same lenses were used, and frequently the pictures were very imperfectly seen; and we are convinced that in many cases the stereoscopic effect was never seen at all—imagination, to some extent, supplying the deficiencies of the eyes or the instrument.

In the new form of stereoscope we have the adaptation to the eye-pieces of additional movable lenses, adapted to different kinds of sight, for the purpose of assisting the observer in viewing the pictures. These lenses are either meniscus, concave, plano-convex, or double-convex, as may be required; and they are adapted to the instrument in such a manner that they are moved into and out of use by means of small levers projecting through the sides of the box, as shown in the drawing. If thought desirable, these lenses may be coloured, or coloured glass may be similarly adapted to

the instrument, so as to throw any particular tint or colour over the picture when viewing the same. By this arrangement the snowy appearances of some photographs are removed, and many charming effects may be produced—the golden glow of a meridian or of a tropical sun, may be cast over the landscape, the roseate tints of a summer evening may be imitated, or we may look upon the grey valleys and the purple hills of the gloaming of the autumn. Beyond this, such an arrangement presents to the philosopher the means of studying some of the laws of natural coloration in a manner—as it appears to us—far more satisfactorily than with the coloured spectacles of Wollaston or Herschel. These lenses or glasses, in Mr. Cooke's stereoscope, may either be placed immediately below the eye-pieces, as would be most desirable for persons having short or defective sight, or they may be placed about half way between the picture and the eye-pieces, as would be best if it be desired to magnify the picture. If magnifying lenses of short focal distance are employed, and placed immediately under the ordinary lenses, then the picture must be brought nearer to the eye, for which purpose, a shelf or ledge, upon which the picture is placed, is adapted to the inside of the instrument. This arrangement is shown at the opening nearest the eye-pieces. In addition to this there is the adaptation, immediately above the space occupied by the picture, of a double "passe-partout" or frame, for the purpose of preserving uniformity of size in the pictures, as well as to prevent any light from being reflected from their margin and confusing the eye.

The arrangements which have been described open for the stereoscope a new epoch: the instrument is rendered effective for every pair of eyes, and all the adjustments are of the most simple kind, so that any person can at once readily obtain the conditions best suited to his circumstances of vision. The screen, or as the inventor calls it, the "passe-partout," is a very ingenious and a most important introduction. With it in the stereoscope you look absolutely into a dark chamber, and see, in all the beauty of light and shadow, the picture you desire to see, and that alone,—there is no intrusion of pieces of lateral images upon the stereoscopic one. The power of magnifying the picture is another improvement; and looking at the ordinary picture, and at it when magnified, the difference is such as can scarcely be understood unless it is seen. In one case we looked upon a champagne country, beautiful in all the effects of distance, but bounded by a band of indistinct hills; in the other, every tree put forth additional clusters of leaves, and the remote hills were developed in all their characteristic details. In one example a temple of Thebes was seen, and we were pleased with the truthful representation of ancient Egypt; while in the other we realized—which we had never done before—the colossal grandeur of those temples which were designed as emblems of eternal power, and to subdue the minds of the worshippers by the awful vastness of their sculptured columns. Hieroglyphics, which were but dimly seen in the smaller pictures, came forth distinctly in the larger one, and it required but small effort of the imagination to feel that you looked upon the actual ruin of a fane in which a Pharaoh had prayed to the mighty and mysterious Isis. For portraits, there is in this instrument a novelty,—instead of looking on a miniature of our friends, there they are, in size and in solidity, before us.

After a most careful examination of all the conditions of Mr. Cooke's stereoscope, we are bound to state that it is by far the greatest improvement which has been made in this most interesting instrument.

Mr. Claudet and M. D'Almeida have been working in another direction. With the ordinary

form of stereoscope, but one person at a time can view the picture. They have been endeavouring to render it visible to many. Mr. Claudet's ideas are best communicated in his own words:—

"I found that the images produced separately by the various points of the whole aperture of an object-glass are visible only when the refracted rays are falling on the ground glass of the camera-obscura in a line nearly coinciding with the optic axes, so that when both eyes are equally distant from the centre of the ground glass, each eye perceives only the image refracted in an oblique direction on that surface from the opposite side of the object-glass. Consequently each side of an object-glass, in proportion to its aperture, giving a different perspective of a solid placed before it, the result is an illusion of relief as conspicuous as when looking naturally at the objects themselves. From the consideration of these singular facts, unnoticed before, I was led to think that it would be possible to construct a new stereoscope in which, looking with both eyes at once on a ground glass at the point of coalescence of the two images of a stereoscopic slide, each refracted by a separate lens, we could see it on that surface in the same relief which is produced by the common stereoscope."

The *Stereomonoscope* is, in fact, a camera-obscura supplied with two lenses, each mounted on a sliding frame, in order to be able to give them, according to the focal distance, the horizontal separation necessary for producing on the ground glass the coalescence of the images of the two sides of a slide placed before the camera. The slide being cut in two parts, the two images can also, moving in a groove, be separated in a horizontal direction, until they are sufficiently apart to be refracted on the ground glass by the two lenses in the most oblique direction consistent with the production of a well-defined image; for it is to the increased degree of obliquity of the refracted rays in falling on the ground glass that is due the more effective extinction, or evanescence, of the image for the eye, whose axis consequently deviates in a greater degree from the line of refraction.

M. D'Almeida proposes to obtain such a disposition as shall render the stereoscopic images visible at the distance of many feet, and that the illusion of relief shall be perceived from different points of the apartment in which the experiment may be tried. By means of a lens he projects upon a screen the image of two ordinary stereoscopic pictures. The projected images are brought together, but they are not superposed line upon line—this is impossible, for the pictures are not identical. The two images form upon the screen a confusion (*enchevêtrement*) of lines; it becomes necessary, therefore, that one image only should be offered to each eye. To effect this, M. D'Almeida places in the path of the rays two coloured glasses, the colours employed being complimentary—thus one is a green glass, and the other is a red one. By this means the projected images on the screen are rendered, one green and the other red. If we then place before the eyes coloured glasses of the same tint, parallel to these, the green image is shown only to the eye covered with a green glass, and the red image to the eye covered with the red glass, and thus stereoscopic relief is obtained.

Motion has been employed by M. D'Almeida to produce the same result, with uncoloured images. A similar arrangement of the lens and pictures to the preceding is adopted, except that a perforated card is placed before each stereoscopic picture, and these cards can be made to revolve with rapidity,—this motion being produced by an electro-magnetic apparatus,—the picture falling on the screen only when the light passes through the perforation:

a similar arrangement is placed in front of the observer, moved, indeed, by the same apparatus at the same rate. It will be understood that the perforations are so adjusted that *the two images do not fall on the screen at exactly the same time*. With great rapidity, first one and then the other picture becomes visible; and when the motion is sufficiently rapid, the individual placed behind the second system of perforated cards sees the picture with all the effects of stereoscopic relief.

We have no doubt but, from the suggestions furnished by these very ingenious arrangements, we shall in a short time be called on to view stereoscopic exhibitions. R. HUNT.

CORRESPONDENCE.

To the Editor of "THE ART-JOURNAL."

THE OBELISK AS A FEATURE OF BRITISH ART.

SIR,—At the last meeting but one of the Architects' Institute, the Rev. Mr. Burgess read a most interesting paper on Obelisks, especially alluding to those re-erected in Rome; and in its course strongly advocated the adoption of the obelisk in Britain, as one form of monumental record. The subject caused so much interest, that the discussion was continued on the following meeting; at the commencement of which a communication on the subject from Sir Gardner Wilkinson was read, which is quoted in the August number of the *Art-Journal*; and to some points of which I should be glad of a little space in your columns to advert.

Sir Gardner says,—“But it may be asked what idea we associate with an obelisk, and what is our plea for adopting it as a monument? We have no feeling, no association connected with an obelisk. The Egyptians had a reason for its invention and employment.”

Now, to start in *limine*, a pyramid is a scarped small mountain, and an obelisk is a splinter of rock fashioned on four sides; and it is possible that both these were originally images or emblems adopted from hill-worship. However this may be, as regards our use of the obelisk, we have its prototype in many places *around our own isles*, among which, the “Needles,” in the Isle of Wight, are perhaps the best known, although by no means the most perfect examples. Such natural forms in many places, approaching very near to the obelisks in shape, are to be found indeed in many places in the world, and I believe that very nearly, if not the exact prototype, in small, of the Egyptian obelisk is to be found among the natural crystals. Perhaps, therefore, of all forms adopted by Art, the obelisk is the one that is thus the most common heritage of man. This is one plea for adopting the obelisk; and two ideas we may associate with the obelisk are, those of Elegance and Endurance. There are obelisks yet standing, which we have reason to suppose, have held their position for not less than 3000 years, and this forms another plea for adopting it as a monumental record.

Sir Gardner proceeds to object that the point of the “pyramidion,” or angular summit of the obelisk, has been deformed in some examples in Rome, by the adjuncts of crosses, rays, and various other conceits, and that they have been placed on incongruous bases. This is, however, only an objection applied to these inharmonious adjuncts, and has no just relation to the employment of the obelisk itself, free of these additions. As regards, indeed, the additions of any finial to the obelisk, Mr. Burgess expresses himself very clearly that he greatly objects to it; in which opinion, I, for one, beg thoroughly to join, as I conceive that any adjunct of this kind injures the character of the obelisk, and destroys its *upwardness*. Also, as Sir Gardner remarks, “that when we have treated it we have erred in depressing the apex.” This again is a perfectly just observation as regards defects in rendering the obelisk, but contains no argument against this feature justly treated.

Sir Gardner further says that the Egyptians “employed the obelisk as a contrast to the long horizontal lines of the cornice of their temples; and two obelisks were placed for this purpose in front of the towers of their propylæa;”—that is, these were associated in a twin treatment on these occasions; but this, I appre-

hend, contains no more argument against their being treated otherwise on other occasions than such as would argue that because the dome and the spire are occasionally treated double, that they should not sometimes be single; or that because some statues stand in niches, that none ought to be allowed to have their places singly on a pedestal.

I confess, if I may venture to say so, that it appears to me the whole argument to which this has reference, is swayed by an archaeological feeling that the obelisk wholly belongs to the Egyptians, and that we have no right to it. Now this is an obstruction which, if it had been entertained at the time of Pericles, we should have had no Parthenon, for the Parthenon has columns as well as the temples of Egypt. It is an obstruction of a nature also directly in the path of the progress of Art. The Greeks, however, although I believe they did use single columns, did not adopt the obelisk; if they did I hold that they would no doubt have improved it, as they did the columns which they adopted from those of Egypt. But as it is, the Egyptians seem to have carried the natural type of the “splinter of rock” but a short way in Art; and, as far as I have been as yet able to learn, its problem remains to this day in the unfinished state in which it was left by the Pharaohs. Would Sir Gardner Wilkinson desire to interpose his authority in the path of the working out of one of the most interesting problems which perhaps remain to the architects of the present day to solve, viz., the perfecting of this feature by means of a compensatory curvilinear treatment, analogous to that by which the Greeks improved the, in some degree, similar feature of the column? As, however, by the kind invitation of the Royal Institute of British Architects, I, on two late occasions, entered pretty fully into my views on this subject, I may be excused from further detailing them here.

As regards, however, in a general view, the use of the obelisk, as a separate monumental record, I would draw attention to this point, that, although in several of the Egyptian examples they were directly associated with buildings, they were never joined to them, nor were they ever features of support, which columns were and are; and yet columns were used separate and isolated, as I understand, even by the Greeks. *A fortiori*, therefore, obelisks seem more naturally appropriate in the latter situation. Also obelisks were used as features of record; Hieroglyphics being incised over their surface, they thus became, as it were, open books of vast endurance. In the case of the adoption of an obelisk monolith of large size in this country, in memory of any subject worthy of the record, I would likewise suggest a similar employment of its whole surface, that is, not in hieroglyphics of course, but in inscription in our own language and time, which, in my belief, might, by proper treatment, be so incised as to enrich the surfaces with an arrangement of letters which would be perfectly legible even at the top, however high the obelisk might be.

My view is, that the question should be regarded, if possible, freed from archaeological trammels; that we should consider the types of obelisk form which nature affords us in our own country; that examples of the treatment of the obelisk by the Egyptians and other nations (for its use, even in old times, was not confined to Egypt) should of course be consulted, and their effects, good or insufficient, tested; and that improvements should be thoroughly tried and tested according to the best rules of Art, especially those which have bequeathed to us the columns of the Parthenon: and further, that in case such a feature of record be required, it be a British obelisk of British granite. In regard to this last point, I understand that our isles will afford such of dimensions as large as, or larger than, any of those which were hewn of old time from the quarries of Egypt. JOHN BELL.

ARSENIC IN PAPER-HANGINGS.

SIR,—I must beg of you to pardon the liberty I am taking, in addressing you on the subject of one of your articles in the number for this month. I refer to that on “Arsenic in Paper Hangings,” signed “Robert Hunt;” in which that gentleman has alluded to my name in a disparaging, and, in what appears to me, a somewhat unfair manner.

Mr. Hunt says—“Dr. Halley states some experiment instituted by him to determine the question of the volatilization of arsenic from paper, but these