

more, the convergence of the optic axes upon near or distant objects enables us to appreciate solidity, relative size, and relative distance, and when looking through a stereoscope at two dissimilar photographs, convergence of the optic axes by refraction again comes into play to separate the planes of the subject, and to, in short, impart to the picture what I have already termed the realism of the original view or object.

Now suppose a pair of lenses, mounted on a camera front and separated by about the distance that separates the eyes, and a twin or binocular negative to be taken. The point of view of each lens was different, hence there must, in theory, be a dissimilarity in the two pictures, just as we have seen that there is in the two pictures seen by the two eyes. Practice agrees with theory in this. The right-hand negative has more of the right side of the picture than the left-hand negative has, and the left-hand negative has more of the left-hand side of the picture than the right-hand negative; and where the two negatives are joined the amount of subject included on those sides is severally less than that on the corresponding sides. Prints from such negatives having the same relation in the matter of right and left, and inclusion of subject as the double view as seen by the two lenses had, fulfil every condition necessary for binocular examination. Put it in another way. Imagine the lenses to be your eyes. They saw two dissimilar pictures of the view, and your positive prints are, practically, what your eyes or your lenses saw. The stereoscope lets you see the two views under the same angular conditions as they were taken, the result is a coalescence of the dis-

similar results in the brain, and Nature herself over again, a perfect *facsimile* in miniature.

#### THE STEREOSCOPIC CAMERA AND LENSES.

Although not essential to the production of binocular pictures, I shall assume the use of a binocular camera in stereography—that is, a camera fitted with a pair of lenses and a collapsible division extending from back to front, and virtually making two cameras of one. The lenses must be accurately paired as regards focus and diaphragms. For most kinds of work single lenses are employed, although rectilinear doublets have an advantage in the matter of extra rapidity and for short-focus work in giving freedom from distortion. A focal length of five inches will be most convenient; but for confined subjects a pair of wide-angle doublets, of about four inches focus, and for distant objects a pair of singles, of, say, seven inches, are desirable. Beyond that focal length it is seldom desirable to go, and I shall show you later that the occasions when even a pair of seven inches would be found serviceable are not frequent in the course of ordinary work. I do not wish to dogmatise on the debated point as to the distance of separation of the lenses when mounted on the camera front, but, from my own experience, would recommend three inches from center to center. The acme of convenience is, of course, gained by having the power of adjusting the lenses to suit near and distant objects, the rule to follow being, the nearer the object the less the separation, and the more distant the object the greater the separation. Three