

A HITHERTO UNDESCRIBED VISUAL PHENOMENON.

TO THE EDITOR OF SCIENCE: So far as I know, the curious visual fact I am about to describe has not been noted by psychologists, and as it may, and seems to me really to be of practical as well as psychologic importance, I wish to ask your readers to verify and, possibly, to explain it.

For several years I have observed the following peculiar appearance of a distant light at night: The electric (incandescent) lamps of a town two or three miles away and below me, when observed fixedly and singly, have distinct appearances of movement, if seen under certain conditions. These conditions are as follows:

1. The observer must sit in the darkness, *i. e.*, without visible objects about, which would fix a number of objects in the attention and prevent the needed indefiniteness, or lack of 'fixing' necessity.

2. The night must be dark, moonless, etc., so that there is no multiplicity of distant objects to arouse the definite ocular fixation, or localizing necessity, which prevents the indefiniteness, the lack of sensational or topographic features required to produce the phenomenon in question.

3. By means of the hand, interposed shades, etc., one must shut out of the 'field of vision,' as well as possible, all other lights except the one to be observed.

4. The movements of the distant light are made more manifest and pronounced by: (a) closing one eye; (b) not winking; (c) immobility of the head; (d) steadiness and continuousness of the gaze.

The distant light must be strong and rich enough so that (as happens with weak powers) the image does not fade to invisibility with constant fixation. A star as an object is not so good as a brilliant electric light, because, most stars are too weak in light-power, or other stars are too near by to secure the singleness of object desirable, etc. I have become able by practice to observe the movement in a star, but a beginner will succeed better with a distant electric light. To myself and some friends the movements are observable with

both eyes open, but they are more pronounced with a single eye, and besides they have generally a peculiar character with a single eye. Perhaps half the friends who have made the tests do not observe the more decided movements of myself and others. These speak only of a quivering or of slight vibratory movements. The appearances of movements are not those of 'twinkling,' changes in the rays, etc., and only a little experience is required to convince one that they are not caused by clouds, atmospheric radiation or other conditions—in a word they are not 'objective.'

The character of the apparent movements, as they appear to myself and other friends who see them as plainly as myself, is as follows: With the right eye (the head being level, or erect), the light will somewhat slowly move, with varying rapidity, and without regular rhythm or 'beat,' to the right, and often upward—the motion being like that of a small balloon or floating downy seed, in a breeze, moving according to the force, gusts or eddies of the wind. With the left eye alone the movements are usually but not always to the left and also sometimes upward. I suspect the character of the movements will depend upon whether one is right-eyed or left-eyed. (I am convinced that either by necessity or habit one is always partly or preponderantly right-eyed or left-eyed, just as one is right-handed or left-handed—but this, *ad interim*, is 'another matter.') I have made a number of experiments as to the influence of position of the head upon the movements, but the consideration of these may also be omitted.

As to the explanation of the phenomenon:

1. It is not, I think, due to the spreading of the tears over the cornea in an irregular manner; nor to their drying, producing a slight warping of the same or irregularity of transparency.

2. Nor to lymph-movements in the substance of the cornea.

3. Nor to *muscæ volitantes*—which are not uniform in direction, etc.

4. Nor to movements of the blood corpuscles in the capillaries of the retina, for

the same reasons, and also because the macula has no capillaries.

In other words, the movements are not ocular in origin, unless in a last analysis they are due to a shifting of the functional activity from one set of macular cones to another. The direction of the movements with a single eye seems to forbid this supposition, and one is driven to think of them as caused by the mechanism or physiology of the sensation-making centers in the cuneus of the occipital lobe—the cerebral center for vision. The fact suggests several not uninteresting queries as to the psychology and physiology of sensation.

The practical bearings of the phenomenon are of far greater importance and interest, and may be vaguely indicated as follows: There is no doubt, of course, as to the fact of the subjective production of images, ghosts, wraiths, telepathic visions, animals, snakes, etc., in delirium tremens, in clairvoyant states, in hypnotic conditions, in pathologic conditions of the mind and body and even in some people in health, when the mind is in a state of heightened sensibility, etc. It will be remembered that the vast majority of these subjective sensations occur in the night, in dim light, etc. If they occur with the eyes closed, that does not change the essential psychologic law of the apparent action and movement of the image, which must be conditioned upon the physiology or mechanics of visualization. The apparent movements of the images will obey the same laws of seeing, shifting as those of the distant light in the night. The facts of crystal-gazing, apart from the mere subjective creation of the images (about which, I take it, there is no doubt in the minds of students) and especially of the movements of these images, may receive a psychologic explanation, at least some light and rationality, from the analogy of the movements of the light I have described.

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SHORTER ARTICLES.

BACTERIAL SPOT, A NEW DISEASE OF CARNATIONS.

WE have recently received for examination from Pennsylvania and the District of Columbia a number of carnation plants suffering from a spot disease of the leaves and stems that appears to be quite distinct from anything hitherto described. In its earlier stages the disease looks something like stigmonose, or puncture disease, but the small spots are usually surrounded by a narrow, water-soaked area or ring, while the center of the spot is usually slightly brown. As the spots grow larger they resemble more the ordinary carnation spot caused by *Septoria dianthi*. The water-soaked marginal area, however, makes it easy to distinguish from this latter disease. The spots increase in size more rapidly in soft-leaved varieties and soon collapse and dry, leaving a brown, sunken area. Badly diseased leaves soon wither. Microscopical examination shows that the spots in all stages are filled with bacteria, which, in the early and middle stages of the disease, are usually in pure cultures. These bacteria grow rapidly in beef broth and nutrient agar (acidity plus 15 of Fuller's scale) and on ten per cent. nutrient gelatine of the same acidity, but where malic acid is added to the nutrient gelatine at the rate of one half gram per one hundred cubic centimeters, the growth is extremely slow. The germ also grows well upon steamed potato. The colonies are round and unbranched, pearly white, wet and shining, and do not spread rapidly over the culture medium. After a few days the central portions of the colonies break up into zoogloea. The complete cultural characters for various media have not yet been determined, but are now being investigated. It is evident that the organism causing this disease is quite distinct from the orange-colored one, *Bacterium dianthi*, described by Arthur and Bolley as the cause of 'Bacteriosis' of carnations. Inoculation experiments have been made, both from a maceration of young diseased spots in distilled water and from pure cultures in beef bouillon. Bacteria from both sources, when applied to the surface of leaves, old or young,