

THE SENSATIONS OF LIGHT AND COLOR.—A. Charpentier, *C. R. Acad. des Sciences*, March 20 and 27, 1878 (abstr. in *Revue des Sciences Médicales*). The sensations of light and those of color are the results of two very distinct functions, which while intimately associated in the habitual exercise of vision, can be neatly isolated in physiological analysis, the sensation of color being essentially variable, according to the point of the retina considered, and by numerous experimental conditions, independently of the luminous sensibility, but, reciprocally, the luminous sensibility may change under certain conditions while the sensibility to colors remains constant. Thus the eye that has rested in darkness possesses a much greater luminous sensibility than that which has been in constant activity, while in the one as in the other we find the same minimum for the appreciation of each color, *i. e.*, the chromatic sensibility is not modified either by exercise or repose. To explain the effect of resting the eye, on the sensibility to light, we may invoke the facts noticed by Boll, viz., that there exists in the retina a chemical substance of a red color, which the light bleaches, and which regenerates itself in darkness, and admitting next that the optic nerve is excited, not directly by the light but indirectly by the chemical modification which the light produces in the retinal red; the resting of the eye in obscurity produces therefore an increase of sensibility to light on account of the presence in it of the photo-chemical red substance.

This hypothesis is confirmed by the following experiment: when we present to an eye that has just had its repose in obscurity, a pure color, that eye does not see a saturated color, but one strongly mixed with white; thus we add to the chromatic impression a strong impression of white light, such as we obtain by the aid of the mixture of color and white in the rotating disks of Chevreul.

HERING'S THEORY OF COLOR.—A work recently issued, presents Hering's theory of the perception of color. It appears to be in antagonism to Young's theory, which assumes that three different sets of fibrils in the retina are susceptible to different wave-lengths of light. Hering assumes that the perception of color is the consequence of a chemical process: in general that when an assimilation is taking place, black is perceived by one retinal substance; if dissimilation is taking place, white is perceived by the same substance. A second retinal substance furnishes the sensations blue and yellow, according as assimilation or dissimilation is taking place; a third gives under corresponding conditions the sensations red and green. The white substance is also capable to some extent of being acted on by colored light; the sensation of course still remains white. In this view, the process of perception of complementary colors is an antagonistic one. Thus, yellow and blue, which if mixed produce white, if perceived together will neutralize each other, leaving only so much of the white sensation as is due to the action of colored light on the white substance of the retina. This part of the theory, Professor Rood has tested by experiment. He finds that if a certain amount of yellow is mingled with a certain amount of blue, the white product has a total of as much light as the two colors had separately. But, if Hering's theory were correct, a certain amount of light ought to be extin-