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Phototropism in Cerianthus.

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Cerianthus membranaceus is an actinian which is positively heliotropic. It is always oriented with its oral disk and tentacles toward the source of light whether the light be diffuse daylight, or artificial light in a dark room. Direct sunlight, however, causes it to retract into the sand. Measurements were made of the amount of light necessary to cause heliotropic bending. The relation between the time of exposure necessary and the intensity of the light follows the equation expressing the Bunsen-Roscoe law, namely, $K = I \times t$. I = intensity, t = time in seconds, K = constant.

Measurements were made of the total reaction time taken between the instant when the beam of light was thrown across the animal and the instant when the ends of the tentacles began to move. The equation expressing this relation is of the same type, $K = I(t + p)$, in which p is a constant.

In case *Cerianthus* is acted upon by two lights of unequal intensities, the relation between the angle turned (α) and the ratio of the intensities of the lights is expressed by the equation $\log I_1/I_2 = K \tan \alpha$, where $K = .615$. This means that the muscle tonus on a given side is proportional to the log I on that side. Therefore, since the angle turned is the result of muscle tonus, the tangent is proportional to the logarithm of the ratio of the two intensities.