

3. In many animals belonging to various groups living in the absence of light, it has been observed that the eye is rudimentary and without vision, or that it has entirely disappeared.

Among the anisopleural Gastropods which are in this condition we may cite,—

A. The species of *Cæcilianella* (for example, *Cæcilianella acicula*, O. F. Müller, sp.), which live concealed in the ground. In these the absence of pigmented eyes has been known since Nilsson's investigation.¹ In the species of *Testacella*, the eye, although very minute and almost rudimentary, is still distinct and pigmented; and this not unnaturally, since this Mollusc has not an exclusively subterranean existence.

On the other hand, it is well known that a certain number of animals, including both terrestrial and fresh-water forms (Amphibians, Fishes, Insects, Arachnids, Crustaceans, Molluscs, &c.), live in caves absolutely shut off from the light. They form the "cave fauna" of Carniola, Falkenstein, of the mammoth cave of Kentucky, of Cuba, &c. Among the anisopleural Gastropods which are found blind in such environment, we may mention,—

B. The species of *Zospicum*, allied to *Pupa*.²

C. *Helix hauffeni*, F. Schmidt.³

D. *Bithinella pellucida*, Hauffen, sp.

The last species, investigated by Wiedersheim⁴ and de Rougemont,⁵ exhibits at the base of the tentacles an unpigmented tubercle, like that of *Guivillea*.⁶

Among the Gastropods of the cave fauna there appear to be some forms which still retain normal or approximately normal eyes. Such, for example, is a species of *Zonites* described by Dall.⁷ These are forms in which adaptation to a life in dark caves has not yet been so old-established or so complete as that of the species above mentioned.

4. Finally, there are certain marine animals (Fishes, Crustaceans, Molluscs, &c.) which live in depths so great that the light is feeble or nil, apart from that produced by phosphorescent forms. These also exhibit marked modifications in the organs of vision.

¹ *Historia Molluscorum Suec.æ*, 1823.

² Frauenfeld, *Besuch einiger Krainenhöhlen*, *Verh. d. k. k. zool.-bot. Vereins Wien*, Bd. iv. p. 64, 1854; Frauenfeld, *Die Gattung Carychium*, *ibid.*, p. 75.

³ Schmidt, *Beschreibung neuer Höhlenthiere*, *Verh. d. k. k. zool.-bot. Vereins Wien*, Bd. v., 1855, p. 4.

⁴ *Beiträge zur Kenntniss der Württembergischen Höhlenfauna*, *Verh. d. Phys. Medic. Ges. Würzburg*, Neue Folge, Bd. iv., 1873.

⁵ *Étude sur la faune des eaux privées de lumière* (1876).

⁶ Wiedersheim, *loc. cit.*, p. 210, pl. vii. fig. 14, b.

⁷ Packard, *On a new cave fauna in Utah*, *Bull. U. S. Geol. and Geogr. Survey of the Territories*, vol. iii., 1877, p. 163.