

such different relations to the peculiar kind of blood of the Articulata,¹ that no homology can be traced between them and the lungs of Vertebrata, no more than between the so-called lungs of the air breathing Mollusks, whose aërial respiratory cavity is only a modification of the peculiar kind of gills observed in other Mollusks. Examples might easily be multiplied; I will, however, only allude further to the alimentary canal of Insects and Crustacea, with its glandular appendages, formed in such a different way from that of Vertebrata, or Mollusks, or Radiata, to their legs and wings, etc., etc. I might allude also to what has been called the foot in Mollusks, did it not appear like pretending to suppose that any one entertains still an idea that such a name implies any similarity between their locomotive apparatus and that of Vertebrata or Articulata, and yet, the very use of such a name misleads the student, and even some of the coryphees of our science have not freed themselves of such and similar extravagant comparisons, especially with reference to the solid parts of the frame of the lower animals.²

The identification of functions and organs was a natural consequence of the prevailing ideas respecting the influence physical agents were supposed to have upon organized beings. But as soon as it is understood, how different the organs may be, which in animals perform the same function, organization is at once brought into such a position to physical agents as makes it utterly impossible to maintain any genetic connection between them. A fish, a crab, a mussel, living in the same waters, breathing at the same source, should have the same respiratory organs, if the elements in which these animals live had any thing to do with shaping their organization. I suppose no one can be so short-sighted, as to assume that the same physical agents acting upon animals of different types, must produce, in each, peculiar organs, and not to perceive that such an assumption implies the very existence of these animals, independently of the physical agents. But this mistake recurs so constantly in discussions upon this and similar topics, that, trivial as it is, it requires to be rebuked.³ On the contrary, when acknowledging an intellectual conception,

niden, in *SIEBOLD und KÜLLIKER's Zeitschrift, f. wiss. Zool.*, 1849, I., p. 246.

¹ *BLANCHARD, (EM.) De la circulation dans les Insectes, Compt. Rend.*, 1847, vol. 24, p. 870. — *AGASSIZ, (L.) On the Circulation of the Fluids in Insects, Proc. Amer. Assn.*, for 1849, p. 140.

² *CARUS, (C. G.) Von den Ur-Theilen des Knochen- und Schalengerüsts, Leipzig, 1828, 1 vol., fol.*, p. 61-89.

³ I hope the day is not far distant, when zoologists and botanists will equally disclaim having

shared in the physical doctrines more or less prevailing now, respecting the origin and existence of organized beings. Should the time come when my present efforts may appear like fighting against windmills, I shall not regret having spent so much labor in urging my fellow-laborers in a right direction; but at the same time, I must protest now and for ever, against the bigotry spreading in some quarters, which would press upon science, doctrines not immediately flowing from scientific premises and check its free progress.