valuable as stimulating the investigator to seek realities. And reality, in the scientific sense, means a definite positive mechanism, existing in the organism itself or in the surrounding medium. The object of investigation is to understand these mechanisms; the leading idea may often prove an empty fancy beyond the world of realities.

In the second half of last century the investigations on the history of the development of animals disclosed many organs (for instance, rudimentary organs), the function of which in the life of the organism could not be understood. According to the Darwinian idea the development of species consisted in innumerable minute changes. These changes were conceived as being due to "chance," which to a certain extent seemed to contradict the idea of "fit adaptations."

The historical way of explaining the structure or occurrence of organisms is, however, at present not considered contradictory to the ideas of adaptation. Even Lamarck, as mentioned above, thought that a species must exist for a very long time before the effects of the influence of surroundings appear or disappear.

As to the origin of variation it is now more and more recognised that a comprehension is only to be gained by studying the reaction of organisms against the influence of surroundings. One may endeavour to ascertain these reactions by experiment, by observing the changes taking place in the organisms when subjected to altered conditions. In nature we may also observe how the shape of individuals alters in various surroundings, and how similar shapes reappear in similar environments.

In recent times we note an increasing tendency to observe animals in their natural surroundings, and during frequent expeditions the influence of this tendency has been predominant. In recent literature we may find many investigations and many opinions, which remind us of the interest attached to these problems about a hundred years ago.

In the history of oceanic research nothing has possibly contributed so much to the awakening of this interest as the discovery of entirely different animal-communities living on either side of the Wyville Thomson Ridge (see Fig. 106, p. 124). Atlantic forms occur to the south and Arctic forms to the north of the ridge, corresponding to the very different thermal conditions on either side.[1]

[1] See Murray and Tizard, "Exploration of the Faroe Channel, during the summer of 1880, in H.M.'s hired ship 'Knight Errant,'" *Proc. Roy. Soc. Edin.*, vol. x. p. 638, 1882; Tizard, "Remarks on the soundings and temperatures obtained in the Faroe Channel during the summer