

stances; but "the workers themselves act as if they suffered in their instinct from the imperfect state of their queen, for they fed these male larvæ with royal jelly and treat them as they would a real queen."* But what is more surprising, the workers of Humble-bees habitually endeavour to seize and devour the eggs of their own queens; and the utmost activity of the mothers is "scarcely adequate to prevent this violence."† Can this strange instinctive habit be of any service to the Bee? Seeing the innumerable and admirable instincts all directed to rear and multiply young, can we believe, with Kirby and Spence, that this strange aberrant instinct is given them "to keep the population within due bounds?" Can the instinct which leads the female spider savagely to attack and devour the male after pairing with him‡ be of service to the species? The carcase of her husband no doubt nourishes her; and without some better explanation can be given, we are thus reduced to the grossest utilitarianism, compatible, it must be confessed, with the theory of natural selection. I fear that to the foregoing cases a long catalogue could be added.

Conclusion.—We have in this chapter chiefly considered the instincts of animals under the point of view whether it is possible that they could have been acquired through the means indicated on our theory, or whether, even if the simpler ones could have been thus acquired, others are so complex and wonderful that they must have been specially endowed, and thus overthrow the theory. Bearing in mind the facts given on the acquirement, through the selection of self-originating tricks or modification of instinct, or through training and habit, aided in some slight degree by imitation, of hereditary actions and dispositions in our domesticated animals; and their parallelism (subject to having less time) to the instincts of animals in a state of nature: bearing in mind that in a state of nature instincts do certainly vary in some slight degree: bearing in mind how very generally we find in allied but distinct animals a gradation in the more complex instincts, which show that it is at least possible that a complex instinct might have been acquired by successive steps; and

* Kirby and Spence, *Entomology*, vol. ii, p. 161 (3rd ed.).

† *Ibid.*, vol. i, p. 380.

‡ *Ibid.*, vol. i, p. 280. A long list of several insects which either in their larval or mature condition will devour each other is given.