pit-fall in loose sand, lying motionless at the bottom, and if the prey is about to escape, casting jets of sand all round.*

It has been asserted that animals are endowed with instincts, not for their own individual good, or for that of their own social bodies, but for the good of other species, though leading to their own destruction: it has been said that fishes migrate that birds and other animals may prey on them:† this is impossible on our theory of natural selection of self-profitable modification of instinct. But I have met with no facts in support of this belief worthy of consideration. Mistakes of instinct, as we shall presently see, may in some cases do injury to a species and profit another; one species may be compelled, or even apparently induced by persuasion, to yield up its food or secretion to another species; but that any animal has been specially endowed with an instinct leading to its own destruction or harm, I cannot believe without better evidence than has hitherto been adduced.

An instinct performed only once during the life of an animal appears at first sight a great difficulty on our theory; but if indispensable to the animal's existence, there is no valid reason why it should not have been acquired through natural selection, like corporeal structures used only on one occasion, like the hard tip to the chicken's beak, or like the temporary jaws of the pupa of the Caddis-fly or Phryganea, which are exclusively used for cutting open the silken doors of its curious case, and which are then thrown off for ever.‡ Nevertheless it is impossible not to feel unbounded astonishment, when one reads of such cases as that of a caterpillar first suspending itself by its tail to a little hillock of silk attached to some object, and then undergoing its metamorphosis; then after a time splitting open one side and exposing the pupa, destitute of limbs or organs of sense and lying loose within the *lower* part of the old bag-like split skin of the caterpillar: this skin serves as a ladder which the pupa ascends by seizing on portions between the creases of its abdominal segments, and then searching with its tail, which is provided with little hooks, thus attaches itself, and

* Kirby and Spence, *Entomology*, vol. i, pp. 429–435.

† Linnæus in *Amœnitates Academicæ*, vol. ii; and Prof. Alison on "Instinct" in *Todd's Cycl. of Anat. and Physiol.*, p. 15.

‡ Kirby and Spence, *Entomology*, vol. iii, p. 287.