

the results of experience accumulated in former generations (Lamarck, Spencer, Wundt, &c.); or it is the outcome of congenital variations wrought upon in the usual way by natural selection (Weismann, Ziegler, &c.).

(4) There remains a fourth question practically unanswerable at present:—Excluding intelligence, by hypothesis, what degree of consciousness attends the performance of instinctive actions? Does an instinctive action rise to the *focus* of consciousness, or is it, as it were, on the *margin* of consciousness, or is it wholly *sub-conscious*? As yet we are hardly warranted in having more than mere opinions on the subject.

As an illustration of what may be called distinctively post-Darwinian work, we may take Prof. K. Groos's study of the play of animals. Unless we choose to regard nature as an illusion, we must admit that many animals play, as really as children do. The simplest forms of play are concerned with bodily movements, and may be described as gambols and frolics; also very fundamental is the game of experiment in which the animal without serious purpose tests things, itself, or its fellows; and from these roots arise more complex forms of play, the sham-hunt, the race, the sham-fight, and so on.

The first interpretation of the play of animals was due to the poet Schiller, and was afterwards independently elaborated by Herbert Spencer. According to this theory, play is an expression of superabundant vitality, of overflowing energy, of irrepressible good spirits. But this merely states one of the internal conditions of play, and does not interpret the quite distinctive forms of play observed in different kinds of animals. Nor does it fit in well with the familiar sight of a dog or a child turning in a moment from extreme weariness to riotous play. Spencer eked out the theory by suggesting that while surplus energy was the fundamental condition, the precise forms of play were defined by *imitation*. But although imitation is of enormous importance in life, it does not explain the forms of play; we need only recall the play of animals, *e.g.* kittens, which have been isolated in early life.