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STRUCTURE AND PURPOSE

IT may some day be admitted that the greatest of all the great qualities of Charles Darwin was his distinct realisation of the fact that animals and plants are actually alive. Of course we knew it before in a certain sense; it was one of those imperfectly apprehended ideas, of which we scorn to be reminded but which are not effectively our own. How men used to talk old days (say before 1860) of affinity and adaptation.

"Affinity" had detached itself from blood relationship; "adaption" had come to mean something which chiefly concerned men - most of all, men seated in professors' chairs or standing in pulpits. With Darwin came the impulse which has effectively taught us to regard animals and plants as things with a life and interests of their own- with what we must call their delights and their hardships: things capable of struggle and victory and defeat. It was really about this that mankind wanted to know, all the time that they were being put off with systems of classification and theories of morphology.

It is perhaps a bold thing to say that some of our most honoured and successful workers in biology have never, even down to this day, felt the influence of this productive conception, We doubt whether Herbert Spencer has; we doubt (and tremble as we doubt) whether Huxley has. The eloquent, fearless, and luminous Huxley, the originator of so many fruitful inquiries, the man who, above all others, won the popular mind to consider with attention *The Origin of Species* - does he not look upon animals mainly as material for dissection or morphological generalisation? If we say this, it is only to add instantly that two convictions, deeply planted, if not instinctive, give permanent worth to all Huxley's writings - a sense of duty towards mankind, and a sense of the historical value of facts. But how slight and occasional are his attempts to realise nature from any but the student's point of view. In his deservedly popular book on the crayfish, we have indications of real desire to penetrate the inner world of one living thing; but it is with an effort that he maintains the attitude, and he soon slips away into the well-accustomed paths of morphology.

Of the true spirit of the naturalist, born to observe living things and to read a life history in slight external marks, White, of Selborne, is our purest, though by no means greatest, example. Conrad Sprengel had the same inspiration. Charles Darwin, among many still higher gifts, possessed this one to the full. Such insight into the living world exists unalloyed

in many a schoolboy or rough country fellow; but in the end it is too often overpowered by neglect, or deliberately quenched by the spelling-book and Latin grammar. Whenever care is taken that the genuine and in-born love of living things shall get training and due recognition, natural history will grow apace.

We are far from maintaining that system and morphology are valueless. They are not only profitable, but indispensable. But they are not the highest. It is not for these that the genuine enthusiasm of the instinctive naturalist can be roused. They are helps to a higher and more stimulating study. They are to live natural history what grammar is to literature.

How can we indicate with any degree of precision the difference which appears to us so vital? Let us suppose that the seeds of plants are in question. One set of men will proceed very systematically, creating new and carefully-defined technical terms, and spreading a sort of logical net, so wide and so fine that no seed can fail to be entangled somewhere. If we question these investigators about a peculiar seed which happens to interest us, they will perhaps tell us that it is "solitary by arrest, with facial hilum, the embryo being curved round a starchy albumen." These and the like characters tell us as much as can be gathered from a

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seed, as to the place of the plant in the botanical system. Further, they give information useful to the physiologist bent upon verifying an induction. But the child of nature turns a deaf ear; all this is nothing to him. Meanwhile a second teacher comes by, and shows how the seed grows, and how its tissues are fashioned out of simpler parts. We learn from him the laws of plant development, as well as points of useful comparison between the flower and widely different organisms. Then some spark of interest is kindled; but still the born naturalist, whose devotion is an instinct rather than a form of intellectual curiosity, is only moderately roused. Last of all comes an interpreter of nature, to whom plants are neither material for glossaries, nor texts for parables, but creatures alive and busy, each the centre of its own little world. Darwin or Lubbock takes us by the hand, and at once we begin to sympathise. The seeds are no longer hard, round particles, but a brood of young ones. The plants are no longer mere members of certain natural orders, but faraway cousins, leading a life so unlike ours that it is hard to put ourselves in their place, but so like ours that only in this way can we truly understand a single detail of their structure.

We are made to see how a tough and glossy skin may be a protection against drought; prickles a defence against browsing cattle; wheels of hairs a defence against ants; scent and gay colours a fascination for bees; hooked fruits a means of transport by unwilling animals. We read, not without surprise at our former blindness, the open secrets of nature. We see

one plant scattering its seed by explosion; another by triggers which release suddenly a slowly-accumulated strain; a third, by imitative arts, tempting the greedy bird to carry off that looks like a tasty beetle, while it is only a hard seed, which he will soon drop in disgust, but only after it has got well away from the spot where it grew. Even the winds are pressed into the service, and made to scatter the plumed seed of the dandelion or the winged seed of the pine. At length we realise that the plant is no dead, passive, and unalterable product of extinct forces, but a regenerative and plastic will, shaping new weapons for every new crisis, and taking advantage of every fresh opportunity by means of organs adapted from such materials as may chance to be ready at hand.

In these studies the lover of nature can at length find satisfaction. The correct use of technical words gave him no pleasure; analysis could not still his longings; the joy which he sought was such as an enthusiast of another kind draws from pictures or music. When he finds repose, it is because he "sees into the life of things," and shares the sensations of that creative mind whose thoughts are the phenomena of mankind.