

## HERDER AND THE THEORY OF EVOLUTION

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HAVING mentioned in an earlier paper<sup>1</sup> that Herder, more or less, grasped the point of view which we now know as Darwinism, how near he actually did come to our modern views on evolution can be seen from an examination of the first part of his *Ideas for the Philosophy of the History of Mankind*, generally known as the *Ideen*, and its comparison with the *Origin of Species*.

After beginning with the position of the earth in the universe of the stars, followed by some chapters on its crust, its formation, the influence of its atmosphere, and the revolutions through which it had to pass before man could make his appearance, Herder continues by tracing the various forms of life, from the lichen up to man, in the order in which he supposed they were produced, to finally enunciate what might be considered as the text of his book: "Thus has Nature produced the greatest variety out of a simplicity in endless progression"; and to illustrate this unity of creation he employs practically every branch of organic natural science, geology, botany,<sup>2</sup> comparative anatomy, reproduction, and embryology, as well as "that strange uniformity or typical form (*Hauptform*) which is in force through vast numbers of distinct species and is the foundation of the great generic distinctions," of which Darwin says: "This truly wonderful fact the wonder of which we are apt to overlook from familiarity." While, moreover, "If species had been independently created no explanation would have been possible of this kind of classification."<sup>3</sup>

<sup>1</sup> "The Scientism of Goethe," *The Open Court*, August, 1927.

<sup>2</sup> See Part 1, book ii. chap. 2, for his account of the fertilization of plants and uniformity of generation; book iii. chap. 4, for his suggestion of the possibility of a sensitive system in plants.

<sup>3</sup> *Origin of Species* (6th edition), p. 104; cf. book ii. chap. 4.

But interesting as his views on the uniformity of nature may be, we are rather concerned, however, with the manner in which he traces and accounts for the boundless variety that has arisen out of this uniformity, in short, for the origin of species. That he, at all, recognized the difficulty of the origin of species seems, in the first place, remarkable in view of the state of scientific knowledge at his time, even though it occurred to him in somewhat this form: "Why did the creative mother separate species from each other? For no other reason, but to make and preserve the image of their conformation more perfect. We know not how many of our present species of animals may have approached nearer to each other in an earlier age of our Earth; but we see, that their boundaries are now genetically separated," that is, as he explains, they breed true, or the hybrids are wholly or partially sterile.<sup>4</sup>

It was this difficulty that led him to suppose that "new forms arise no more, for when the door of creation was shut, the forms of organization already chosen remained as appointed ways and gates by which the inferior powers might in future raise and improve themselves within the limits of nature," an assumption which, happily, he does not consistently maintain.<sup>5</sup> And in trying to establish laws which are as operative now as when life first appeared, he disposes to the view, like so many naturalists of the past century, that climate has exerted a profound influence in determining the laws and variations among the lower animals as well as among the tribes of men, saying, "Thus do all animals vary; and shall not man, who is also in the structure of his nerves and muscles an animal, change with the climate? According to the analogy of nature, it would be a miracle, did he remain unchanged."<sup>6</sup>

To this theory may also be regarded as a part what he calls "the chains with which Nature binds us from our infancy to our country, manners, language, and possessions";<sup>7</sup> and from such passages, which occur throughout the book, the law of adaptation to environment can be deduced, in illustration of which we may consider the following sentences: "The bird flies in the air: every deviation of its figure from the structure of the quadruped is ex-

<sup>4</sup> Book vii. chap. 4, end; cf. *Origin of Species*, chap. 9.

<sup>5</sup> Book v. chap. 3.

<sup>6</sup> Book ii, chap. 3, and throughout the second part of the work; contrast with *Origin of Species*, pp. 43-112, etc.

<sup>7</sup> Book i. chap. 4.

plicable from its element. The fish swims in the water: its limbs have few articulations. But when, as in the manatee, it touches the earth, its forefeet at least are set free, and the female acquires breasts. . . . Thus from the slime of the worms, from the calcareous abode of the shell-fish, from the web of the insects, a better limbed and superior organization gradually rises. . . . And thus it is anatomically and physiologically true, that the analogy of one organization prevails through the whole animated creation of our Globe."<sup>8</sup>

Again in explaining the gradual development of the brain from the end of the spinal cord, and of the senses, as well as of the special sense organs which characterize certain species,<sup>9</sup> he employs this same method; but had he only been able to explain the ultimate law of this development, in short, the necessity of variety of an organ, before the advantageous change occurred, which, by its serviceableness, was grasped and developed by natural selection it is possible that he might have been able to have given us a complete theory. As it is, however, he omits the active cause of development, though in some passages he comes near to it, as, for example, where he discusses the law of persistence and the struggle of each species and individual to persevere. And though it is the struggle for existence which changed the law of persistence into one of development, unfortunately Herder did not quite comprehend the means by which the change is effected.

"Self-preservation," as he says, "is the first object of every existing being: from the grain of sand to the solar orb everything strives, to remain what it is."<sup>10</sup> And in the absence of struggle or competition this law of persistence suffices, and there is no development for "the less a nation is pressed upon, the truer it must remain to its rude and simple way of life, and the more pure must it preserve its original form."<sup>11</sup> However, such cases are rare, for: "Nothing in nature stands still; everything exerts itself, and pushes on. Could we contemplate the first periods of creation, and see how one kingdom of nature was erected on another; what a series of powers urging onward would be displayed progressively unfolding

<sup>8</sup> Book ii. chap. 4.

<sup>9</sup> Book vi. chap. 1, middle; cf. *Origin of Species*, pp. 159-164, "Utilitarian Doctrine;" and pp. 108-112, and 397, for growth of organs by use.

<sup>10</sup> Book viii. chap. 4.

<sup>11</sup> Book vi. chap. 1, end. Herder's hints at this important law in several places; cf. *Origin of Species*, pp. 82, 83, for the persistence of anomalous forms, e.g. the *Ornithorhynchus*.

themselves."<sup>12</sup> But in this struggle, "millions of creatures have perished: what ever could preserve itself abides and, still, after the lapse of thousands of years, remains in great harmonious order."<sup>13</sup> . . . In short, every species extends its possession of the Earth in proportion to its capacity, cunning, strength, or courage. Each strives with each, as each is pressed upon; each must provide for his own substance, and defend his own life. But why acts Nature thus?" he asks, "and why does she thus jostle her creatures one upon another? Because she would produce the greatest number and variety of living beings in the least space, so that one crushes another, and an equilibrium of powers can alone produce peace in creation. Each species cares for itself, as if it were the only one in existence; but by its side stands another, which confines it within due bounds: and in this adjustment of opposing species creative Nature found the only means of maintaining the whole. . . . I concern myself not, therefore, whether whole species of animals have perished from the face of the Earth. Has the mammoth disappeared? so have giants; when these existed, the relations between the several creatures were different: as things at present are, we perceive an evident equilibrium, not only over the whole Earth, but in particular regions and countries."<sup>14</sup>

That Herder regards each special organ, or the adaptation as a whole, as having been designed, or developed, simply for the preservation of the particular species in its struggle for existence, and not for the benefit of any other, nor for man, who is but "a fraction of the whole,"<sup>15</sup> seems rather clear, although he, unhappily, depends too much on climate as the first causes of variety, even though he does admit that "climate is a chaos of causes, very dissimilar to each other, and in consequence acting slowly and in various ways, till at length they penetrate to the internal parts and change them by habit, and by the genetic power itself," (or heredity).<sup>16</sup> And though he allows that species are capable of wide variation within their own limits, he does not go so far as to presume that one species can develop into another; in addition to which we must mention the power of inheritance,<sup>17</sup> especially important to him for his theories of the

<sup>12</sup> Book v. chap. 3.

<sup>13</sup> Book xv. chap. 2.

<sup>14</sup> Book ii. chap. 3.

<sup>15</sup> Book iii. chap. 5.

<sup>16</sup> Book vii. chap. 5.

<sup>17</sup> Particularly book vii. end of chap. 4.

laws of reproduction and generation—that “eternal wonder of wonders;” and so much does it appeal to him that he suggests inheritance as a solution to the old question of innate ideas,<sup>18</sup> a view which later found general support.<sup>19</sup>

From these principles, Herder arrives to the conclusion that advance in organization implies differentiation of structure in the organic being, a deduction which is singularly agreeable with our present views. Saying that the mouth is what first distinguishes animals from plants, he traces points of differentiation in polyps, worms, and birds, to observe that “the higher we ascend the more complicated are the parts;”<sup>20</sup> and similarly with the difference in sex, “the more complicated the internal organization of a creature, the more we perceive its capacity for conceiving and producing living beings,” a principle which he follows in a similar manner from the plants that are wholly or partially hermaphroditic, through those with distinct sexes, the fish, birds, etc., up to the higher animals.<sup>21</sup> He also offers, as further evidence for the same law, the sensitive divisions and the many complications of the nervous system in those animals which are considered to come nearest to reason,<sup>22</sup> as well as the instincts of, for example, spiders and bees, which he presumes become more complex and more difficult to acquire with a rise in the scale of organization.<sup>23</sup> He even applies this physiological division of labour to the history of society, saying in part: “Man is the most perfect of earthly creatures, only because in him the finest organic powers we know act with the most elaborately organized instruments.”<sup>24</sup>

That Herder did not fully grasp the significance of his theory is clearly evident from his frequent deviations, and the many contradictions which his work contains, as for instance, despite what he has said on development we might assume from certain passages that the various degrees of development came suddenly and spontaneously into being, instead of being developed by a gradual proc-

<sup>18</sup> Book viii. chap. ii. 5.

<sup>19</sup> Book vii. chap. 4; cf. Law of Correlated Variations, *Origin of Species*, pp. 114-115.

<sup>20</sup> Book iii. chap. 1; cf. *Origin of Species*, pp. 89, 97-100.

<sup>21</sup> Book iii. chap. 1, end; cf. *Origin of Species*, pp. 76-78.

<sup>22</sup> Book iii. chap. 2, end.

<sup>23</sup> Book iii. chap. 4; cf. *Origin of Species*, pp. 205-207.

<sup>24</sup> Book vii. chap. 4.

ess.<sup>25</sup> Likewise, he entertains the teleological view that the elephant, the lion, and man, for example, were all endowed with special organs for definite purposes,<sup>26</sup> an error which is not so surprising as even the *Origin of Species* was at first viewed as a proof of teleology. Finally, he often fails to appreciate the full value of the universal struggle for existence, though at times he clearly recognizes it to be necessary for his theory, as without it development is not possible.

That such confusion is apt to lead one to depreciate the value of the book cannot be gainsaid, yet anyone who is familiar with the conditions of natural science at his time, and the difficulties under which he labored, can fail to appreciate, in spite of all his omissions, the method by which he builds, nor the nearness with which he approaches our present-day theories. That he did not go further is because the world was not ready to receive the principle which we have come to know as Darwinism. Nor was he in a position to gather that vast mass of evidence which made the strength of Darwin "as calm and irresistible as the movement of a glacier." Yet, at any rate, the fact that he at least recognized the point of view which later became the foundation of our laws of evolution and natural selection seems to us to entitle him to a place in the history of biological science.

<sup>25</sup> Book x. chap. 2.

<sup>26</sup> Book iii. chap. 3.