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ANAXIMANDER, EARLIEST PRECURSOR OF DARWIN.

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AS has been aptly remarked by Huxley, 'There is no snare in which the feet of a modern student of ancient lore are more easily entangled, than that which is spread by the similarity of the language of antiquity to modern modes of expression.' The great exponent of evolution observes further in the same connection that he does 'not pretend to interpret the obscurist of Greek philosophers'; all that he wishes to point out is that 'the words, in the sense accepted by competent interpreters, fit modern ideas singularly well.'[\[1\]](#)

The force of these remarks becomes manifest when one inquires into the rightfulness of regarding Anaximander, the Milesian, companion or pupil of Thales (*'sodalis Thaletis'* Cicero calls him) in the sixth century before our era, as the first who foreshadowed modern ideas of evolution. It may be of some profit for us to consider briefly the manner in

which his doctrines have been interpreted by naturalists, and thereafter to examine into the original sources, which have preserved for us the skeleton of his system, and can alone enlighten us in regard to his conception of nature. An inquiry of this kind will not be without value in case it merely serves to bring home and emphasize the fact of historical continuity of ideas which are commonly considered as modern.

It is a matter of no little moment, when we stop to realize it, that conceptions of organic evolution, and also of a heliocentric cosmogony, assumed shape in the mind of man, however vaguely or imperfectly, in periods of remote antiquity, and have exercised a determining influence on human thought ever since. Natural laws become invested with new and more profound interest on finding that they have seldom been discovered offhand, revealed, as it were, by a single flash of genius; but by the progressive development of ideas, extending sometimes throughout centuries, and leading from dim, far-distant adumbrations up to our present understanding of the truth. There comes to us, also, through the tracing of ideas back to their sources, an increased sense of our indebtedness to the princely legacy of Greek thought. It has been justly said by one of Huxley's distinguished pupils, that 'even amidst our present wealth of facts, the impassable boundaries of human thought seem to confine us to unconscious revivals of Greek conceptions. There are many observers, but few who

can strike out into the absolutely virgin soil of novel suggestion.'^[2]

Early christian theology reveals very clearly the impress of Greek philosophy, and natural science may be said to have been dominated by it. In so far as the theory of evolution is concerned, history shows beyond all doubt that it took its rise among Ionian philosophers, declined with the decay of Greek science, was kept alive by Greek influence in theology, and, after gathering increased momentum, became revealed in fuller grandeur to Lamarck and Darwin. Yet scholars are by no means agreed concerning the extent to which either the central theory, or its subordinate propositions, such as the law of the survival of the fittest, were developed amongst the Greeks. Many important scientific discoveries were actually anticipated by this ingenious people, though they seem to have felt their way rather by intuition than by inductive reasoning combined with the observational method. It is the belief of conservative writers that the Greeks anticipated the evolution idea by suggestion, or by a series of happy conjectures, though indeed they carried it well into the suggestive stage; nor does it seem possible to maintain a more superlative estimate than this.

The question as to who was the first evolutionist has been answered in various ways.^[3] Professor Osborn, in the work above quoted, holds to the belief that it is not Anaximander, but Empedocles of Agrigentum, who 'may justly be called

the father of the evolution idea.' Huxley pays a general tribute to the sages of Miletus by calling them 'pronounced evolutionists'; but it is Heraclitus, the corypheus of the Physicists, of whom he avers that 'no better expressions of the essence of the modern doctrine of Evolution can be found than are presented by some of his pithy aphorisms and metaphors.' Haeckel, on the other hand, apostrophizes Anaximander as 'the prophet of Kant and Laplace in cosmogony, and of Lamarck and Darwin in biology.' Another distinguished German critic, Schleiermacher, venerates Anaximander as 'the father of speculative natural science'; and a not unlike sentiment has been voiced by Lyell.

The causes of this singular lack of unanimity are not difficult to trace; they have one and all to do with the original sources. In the first place we must note the different interpretations of the meager yet priceless materials that have come down to us, all derived in the last resort from the 'Opinions' of Theophrastus, a work long since obliterated by the hand of time. Secondly, we must pay due heed to the pitfalls Huxley has warned us against in the opening words of this article. Whoever seeks to understand ancient systems of philosophy must not be misled by 'the similarity of the language of antiquity to modern ideas of expression' into supposing that the world presented itself to the classic mind under the same aspects, and that problems of nature and of life possessed for it the same significance, as in our day. Our contemplation of the universe has become modified by

the sum-total of all the new ideas that have entered into the world during the last two thousand years, and if mental processes have not grown in the meantime more subtle, they have at least a vastly more complex *organum* to work upon. Speculations during the olden time were cast in a different psychic mold than with us; conceptions rested upon a different basis of fact; even the simplest words were used in a different significance. As M. Brochard sagely observes: 'C'est une erreur manifesto que de vouloir retrouver à tout prix chez les anciens nos propres solutions; mais c'est une aussi, est plus répandue encore, de s'imaginer que les questions à résoudre se posaient pour eux exactement comme pour nous.' What we understand now-a-days by the terms matter, motion, space, ether, soul and so on, is not what the corresponding words denoted in the past ages. Nomenclature, with halting gait, is invariably left behind by the onward march of ideas.

Disparity of modern estimates arises in still larger measure from another cause; from the attempted* reconstruction of ancient systems of philosophy out of a handful of mutilated excerpts and traditions. Such attempts are almost certainly foredoomed, since the arbitrary nature of ideas precludes the application of a principle of 'correlation of parts,' by means of which the trained expert is enabled to restore missing features from a few characteristic fragments. Efficient as may be the workings of this principle in comparative anatomy, we must not be beguiled by the allurements of Renanism into transporting it, as some have

endeavored to do, from the realm of morphological facts into the realm of ideas. We may be permitted to hazard shrewd guesses here and there, basing them upon the influence of milieu and previous suggestion, or upon contemporary analogy, in the endeavor to revive relics of intellectual progress that 'abode their little hour or two and went their way'; but beyond this we can not go.^[4]

Believing, as we think rightly, that Anaximander should be regarded as the earliest precursor of Darwin, it will be profitable for us at this point to examine the small collection of fragments which have survived, and which constitute the authentic sources of information in respect to his ideas of organic evolution. Notwithstanding these fragments are but five in number, they have not hitherto been searched out and brought together under one head in English form. Those desirous of consulting the original texts will find them collated in the indispensable works of Hermann Diels,^[5] Bitter and Preller,^[6] Fairbanks,^[7] Mullach and others.

ORIGINAL SOURCES RELATING TO THE EVOLUTIONARY DOCTRINES OF ANAXIMANDER.

PSEUDO-PLUT. *Stromat.* 2 (Dox. 579).—Further he [Anaximander] declares that in the beginning man must have been born from animals of a different species. His reason is that, whereas other animals quickly find food for themselves, man

alone requires long rearing. And it is evident that had he been originally such as he now is, he could never have survived.^[8]

HIPPOLYT. *Philosoph.*, I., 6 (Dox. 660).—Primitive animals were derived from moisture evaporated by the sun. In the beginning man was of very different form than at present, and resembled a fish.

ÆTIUS *Plac.*, V., 19, 4 (Dox. 430).—Anaximander taught that the first animals were begotten in the water, and were covered with prickly integuments; on attaining sufficient age, they emerged upon the land, and, their coverings having burst, they soon changed their manner of life.

PLUT. *Symp.*, VIII., 8, 4 (Diels, *Fragm. d. Vor-Sokrat.*, p. 20).—Wherefore they (the Syrians) reverence the fish as of the same origin and the same family as man, holding a more reasonable philosophy than that of Anaximander. For he declares, not that fishes and men were generated at the same time, but that at first men were engendered in the form of fishes; and that growing up as sharks^[9] do till they were able to nourish themselves, they then came forth on dry ground.

CENSORIN. *Dies Natal.*, 4, 7.—Anaximander of Miletus believed that either fish, or animals very like fish, sprang from heated earth and water, and that

^[4] human fœtuses grew in these animals to a state of puberty, so that when at length they burst, men and women capable of nourishing themselves proceeded from them.

It will observed that the first four passages stand in substantial agreement with one another, as might be expected from having all been derived from a single source. This work of Theophrastus contained, no doubt, an accurate transcript of the doctrines of Anaximander, since in one instance his very words appear to have been quoted; and as the works of the latter are known to have been in the hands

of Apollodorus, there is every reason to suppose that Theophrastus wrote with them lying open before him. When we come to Censorinus, however, we meet with such an absurd and strikingly different version as to leave little doubt that it rests upon a faulty translation of the Greek texts; yet we shall see presently that the majority of modern writers regard this as a faithful rendering of the Milesian's views.

As early as 1819, Heinrich Ritter, to whom we owe the first satisfactory collation of pre-Socratic texts, interpreted Anaximander as having taught that 'after the first imperfect and short-lived creatures had been engendered in slime, an advance took place from the lower to the higher grades of life, until at length man was formed.' Cuvier, whose accuracy and erudition have seldom been called in question, went so far as to attribute to our philosopher the belief that men had been first fish, then reptiles, then mammals, and lastly what they now are. 'This system' he further remarks, 'we find reproduced in times very near to our own, and even in the nineteenth century.' More conservative is the estimate of Sir Charles Lyell, who while admitting that our philosopher 'made at least some slight approach, twenty-five centuries before our time, to the modern doctrine of evolution,' yet denies that he anticipated the Lamarckian theory of progressive development. [\[10\]](#)

Edward Zeller, than whom is no more competent authority, speaks in following wise of Anaximander's evolutionary

ideas: "The animals, also, he thought, originated from primitive slime, under the influence of the sun's heat; and as the idea of a gradual succession of animal species corresponding with the periods of geological formation was naturally beyond his reach, he assumed that the land animals, including man, had been at first fishes, and afterwards, when they were able to develop themselves under their new shape, had come on shore and thrown off their scales."^[11] Professor Osborn gives practically the same résumé as Zeller, adding, however, that we find in these fragments the 'dim notion of survival or persistence throughout decidedly trying circumstances, which was greatly developed later by Empedocles.' He is unwilling to grant that Anaximander attempted to account for the origin of other land animals, or had any notion of the development of higher from lower organisms, except in the case of man.

Theodore Gomperz, in his work on 'Greek Thinkers' suggests several influences which may have given definiteness to Anaximander's speculations. For instance, the theory that the first animals were generated in sea-slime is traceable as far back as the Homeric poems, in which water and earth were supposed to be the elements of all organic bodies; and this presumption, the author remarks, 'may have been strengthened by the wealth of all kinds of life contained in the sea, not to mention the discovery of the remains of prehistoric marine monsters.'^[12] As for the casting by primeval animals of their bristly integuments, the same writer observes: "It is likely enough that the

analogous change sustained by some insect larvæ may have led him to this hypothesis. We can hardly doubt that he traced the forefathers of the terrestrial fauna from the descendants of these marine animals, thus obtaining a first vague glimpse of the modern theory of evolution." Another ingenious suggestion is that Anaximander, in seeking to explain the origin of human species, drew his analogy from the shark, which 'was popularly believed to swallow her young when they crept out of their capsules, to vomit them forth and swallow them again, and go on repeating the process till the young animal was strong enough to support an independent existence.'

Comment upon the various estimates here brought together appears unnecessary. It is enough that they all present Anaximander to us as a keen and deeply contemplative student of nature, who arrived at a dim adumbration of great truths. Evolutionist or not, as one will, the fact remains that his teachings contain germs of suggestion having high potentiality, which developed in the fulness of time into definite conceptions of organic, and even universal evolution. It is worth while for us to know that hints occur, in that far-off period, of theories of the survival of the fittest, of adaptation to environment, even of evolution as an explanation of the origin of all forms of life. That they remained only hints was inevitable without a knowledge of the essential facts of paleontology. Yet, after all is said, we must grant it was no small thing for Ionic genius to have given the first impulse to lines of thought which have

profoundly influenced all departments of human understanding. Nor is it a small thing to realize that our questionings of nature, and indeed our very conceptions of life, re-echo at this day in surprisingly similar manner the questionings and conceptions that occupied the Hellenic mind more than twenty-five centuries ago. As intellectual pioneers, we owe them reverence for having first blazed the way along which all modern thought has followed.

1. ↑ Huxley, T. H., 'Evolution and Ethics,' in his 'Collected Essays,' Vol. IX., p. 69 (London, 1894).
2. ↑ Osborn, H. F., 'From the Greeks to Darwin,' p. 10 (New York, 1894).
3. ↑ Out of a mythical and legendary past far antedating the Homeric poems, if we would believe certain French writers, it is possible to reconstruct the earliest archetype of Darwin. Those who, as the author of 'Modern Mythology' would say, 'care to go in for these things a little,' will do well to consult the following: Houssey, F., 'Nouvelles recherches sur la faune et la flore des vases peints de l'époque mycénienne.' *Revue Archéol.*, Vol. XXX. (1897), p. 81 ff.— Coupin, H., 'Le poulpe ea la croix gammée.' *La Nature*, May 20, 1905, p. 396.
4. ↑ For suggestions of contrary nature one may compare the following from Huit's 'Philosophie de la nature chez les anciens' (Paris, 1901): "Tel penseur de l'antiquité a eu son temps de célébrité: nous n'avons de son système qu'une connaissance rudimentaire et tronquée: à l'imagination et au raisonnement de le reconstruire. De l'œuvre antique rien ou presque rien n'a survécu; qu'à cela ne tienne: sur ces vagues indications, avec autant de hardiesse, mais moins de sûreté que Cuvier dans ses restitutions paléontologiques, l'esprit créera a nouveau ce qu'une autre pensée avait enfanté" (p. 208).

For an illustration of the manner in which suggestions of this nature have been carried out, we may refer to the attempted resuscitation of the doctrines of Empedocles by J. Bidez, the success of which is viewed by Professor Lortzing in following wise: "Der Verfasser geht in seinen Kombinationen oft zu weit: er sucht aus dem dürftigen Material zu viel

herauszupressen und lässt in der Ausfüllung der Lücken der Ueberlieferung seiner Phantasie allzusehr die Zügel schiessen" (*Jahresbe. Class. Altertumsw.*, Vol. CXVL, p. 33, 1903).

Moreover, as Dr. Alfred Gudeman has warned us in his interesting essay on 'Literary Frauds among the Greeks' ('Class. Stud, in honour of Henry Drisler,' 1894), much that appertains to the early doxographers is tainted with the suspicion of unguineness, or of later interpolation.

5. ↑ 'Doxographi Græci' (Berlin, 1879). Idem, 'Fragmente der Vorsokratiker, Griechisch und Deutsch' (Berlin, 1903).
6. ↑ 'Historia Philosophiæ Græcæ,' 8th ed. (Gotha, 1898).
7. ↑ 'The First Philosophers of Greece' (London, 1898).
8. ↑ An interesting commentary on the argument here presented, which is recognized as extremely important for the general theory of evolution, is to be found in N. M. Butler's essay: 'Anaximander on the Prolongation of Infancy in Man' ('Class. Stud, in honour of Henry Drisler,' New York, 1894).
9. ↑ The reading of *γᾱλεοί* in place of *παλαιοί* is conjectural, but approved, nevertheless, by the best editors.
10. ↑ 'Principles of Geology,' Vol. I., Chap. II.
11. ↑ 'History of Greek Philosophy,' Vol. I., p. 255 (London, 1881).
12. ↑ Numbers of such discoveries are mentioned in pagan literature, some of the remains being interpreted as 'bones of giants,' others as belonging to 'sea monsters.' As late as the second century of our era, Pausanias, who seems to have had a veritable passion for natural curiosities of all sorts, records having seen huge bones in various parts of Greece. Near Megalopolis, where he observed some of them, remains of mammoths and other large extinct animals have been found plentifully in modern times.

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