

least, "there is no new thing under the sun." An interesting contribution to his researches is made by Prof. Nicholas Murray Butler, who endeavors to show that the old Greek philosophers, notably Anaximander and Xenophanes, held to the theory of the descent of man from the lower types of animals. It is one thing of course, to advance a theory, and another very different thing to bring together in proof of a theory such a wealth of evidence as to revolutionize the thought of the scientific world. But if the old Greeks could not do what Darwin and his followers have done, they seem to have anticipated by about twenty-five hundred years some of Darwin's most important conclusions. Such, at least, is Professor Butler's view, as advanced in a volume entitled "Classical Studies in Honor of Henry Drisler," a collection of essays by former pupils of Drisler, published last year in honor of the fiftieth anniversary of his professorship at Columbia College. Professor Butler says:

"Ever since the doctrine of organic evolution began to attract serious attention, about forty years ago, students of Greek philosophy have repeatedly called attention to cosmological opinions put forward by the ancients that parallel in a curious way, or else directly foreshadow, discoveries that are a part of the glory of modern science. Zeller, in his brilliant essay, 'Darwin's Greek Predecessors,' points out that not a few fruitful scientific ideas that were the property of the early Greek philosophers were first forgotten by the Greeks themselves, then overlooked by the Middle Ages, and finally rediscovered and fully demonstrated with great *clat* by the modern scientific split. Among the pre-Socratic thinkers, Zeller cited Anaximander and Xenophanes as leading examples of philosophers who exhibited this form of prescience.

"The close analogy between Anaximander's theory of the development of the earth from a fluid state of matter, and of man from lower animals, and the modern scientific theories, has been fully shown by Teichmüller. It is idle to dismiss these analogies as mere guesses, when the grounds upon which they rest are stated. But while it has been noticed that Anaximander mentioned the fact that the period of infancy in man is longer than in the lower animals, the full importance of the passage has not been recognized, nor has its agreement with the extremely important contribution by John Fiske to the general theory of evolution been pointed out. The passage in which Anaximander's theory is preserved for us is quoted from Plutarch by Eusebius (Prop. Evan. I, 8, 2), and reads as follows: 'Further, he (Anaximander) says that in the beginning man was born from animals of a different species. His reason is that, while other animals quickly find food for themselves, *man alone requires a prolonged period of suckling. Hence, had man been originally such as he is now, he could never have survived.*' Reading this passage, in connection with other fragments of Anaximander,

it is clear that he observed and understood the main point in connection with the prolongation of the period of infancy in man; namely, that it affords a needed opportunity for the adjustment of the complex physical and psychical activities to their environment.

"This fact has been pointed out and illustrated by John Fiske, who rightly considers his treatment of it an important contribution to the doctrine of evolution, and one necessary for its completion. . . .

"The materials out of which Fiske constructed his doctrine are: (1) The experience of Wallace in trying to bring up a baby orangoutang; (2) Wallace's emphasis on the importance of psychical rather than physical variations in the highest animals; (3) the statement by Herbert Spencer that where the psychical life is complex there is not time for all capacities to become organized before birth. Thus far Fiske and Anaximander are in entire agreement."

In like manner, it might be shown that the conception and basis of the atomic theory were promulgated by Leucippus and his pupil, Democritus of Abdera, nearly 500 years before Christ. Leucippus first taught that all matter is composed of invisible and indivisible atoms, possessing within themselves (inherently) the principle of motion. Before him Anaxagoras, Empedocles, and Heraclitus had taught that matter is composed of infinitely small particles; but it was Leucippus who first held that these particles have a definite figure, and are endowed, inherently, with motion, and to him and to his pupil, Democritus, is due the honor of the promulgation, if not discovery, of the Atomic Theory. Leucippus further held that heat is due to the conflict of atoms. Being innumerable, and constantly in motion, they strike against each other, and heat is the result. Democritus expanded this theory of his master. He maintained the impossibility of division of matter beyond a certain point, to-wit, the atom; that the primary atoms are specifically of the same size and weight, and that their motions are originally in straight lines, which becomes curved by impact. In fact, he referred every active and passive motion or sensation to atomic motion. The atoms are impenetrable, and of a density in ratio to their volume. In reading the fragmentary literature that has come down to us from this school, we are amazed that they should have arrived at such clear ideas of matter, and that the world should subsequently have practically ignored their philosophy for nearly 2,300 years.

Concerning the anticipation of the germ theory of the causation of disease, let us consult M. Terrentius Varro, the Roman Consul to whose rashness and presumption the disaster of the battle of Cannæ was largely due. In a work on Country Life (*De Re Rustica*), written about 115-110 B. C., in one of the chapters devoted to the choice of a site for a villa, and the construction of the latter, he says:

"You shall choose for the site of a villa the foot of a well-wooded hill, where there may be wide-