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ARTICLE I.—HUMBOLDT, RITTER, AND THE NEW  
GEOGRAPHY.

*Humboldt's Kosmos.* Four Vols. 8vo. Stuttgardt. 1845-1858.

*Ritter's Erdkunde.* AFRICA. One Vol. 8vo. ASIA. Eighteen Vols. Berlin. 1822-1859. 8vo.

*Guyot's Earth and Man.* Boston: Gould & Lincoln. 12mo.

ONE of the well known master-pieces of Raphael, which adorn the *stanze* of the Vatican, presents to our eye "the School of Athens," an assembly of philosophers studying, teaching, arguing, and disputing within the porch of a temple of science. Aristotle and Plato, the former extending his hand over the visible earth, the latter pointing upward to the unseen world,—representatives of material and speculative philosophy,—form the center of the group, while around them Socrates, Diogenes, Pythagoras, and Epictetus, with a score of lesser luminaries, are engaged in earnest discussion. The

tenable. The elementary act of the mind in thinking is to distinguish one object from another, but not to distinguish it as one, which requires the consideration of it in a special relation. The relation of number, by which every object can be connected with every other, is only one of the thought relations, a relation universally applicable to every object, but not therefore explaining every other. The fallacy which leads the metaphysician to think it does explain every act and object to which it may be applied, is literally *cum hoc ergo propter hoc*. But though we dissent from the author in this fundamental position, we recommend his book as an interesting, original, and ingenious contribution to the knowledge of man.

## SCIENCE.

DARWIN ON THE ORIGIN OF SPECIES.\*—The received doctrine in respect to the origin of species in the vegetable and animal kingdoms, has generally been, that they were formed by the Creator, each after its kind, and endowed with the power of propagating their like. It has been admitted, indeed, that within the limits of single species, a great number of varieties might arise, some of them as the result of culture and breeding, and that these varieties might, with sufficient pains-taking, be preserved true to their originals. It was also admitted that species nearly allied might propagate hybrid species, and that between certain kinds of plants this propagation might go on to an extent not easily defined or controlled. But it has been contended that in most species the limits within which varieties diverge from the common type, were very narrow, and that a constant tendency to come back to certain common and essential characteristics, is continually making itself manifest. Even in the best established varieties of plants and animals, the constant pains of the culturist and the breeder is required to keep the variety up to its normal state and to overcome the tendency to fall back to the original or the wilder forms.

This doctrine is rejected by the eminent naturalist, Dr. Charles Darwin, who has written this volume to explain, and in part to vindicate, the view which he would substitute. He contends that an induction

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\* *On the Origin of Species by means of Natural Selection or the Preservation of Favored Races in the struggle for life.* By CHARLES DARWIN, M. A., Fellow of the Royal Geological, Linnæan, &c. Societies. New York: D. Appleton & Co. 1860. 12mo. pp. 432.

from the facts of animal and vegetable life warrants the conclusion, that all living animals "have descended from, at most, only four or five progenitors, and plants from an equal or lesser number. Analogy would lead me one step further, namely, to the belief that all animals and plants have descended from some one prototype. But analogy may be a deceitful guide. Nevertheless, all living things have much in common, in their chemical composition, their germinal vesicles, their cellular structure, and their laws of growth and reproduction. We see this even in so trifling a circumstance as that the same poison often similarly affects plants and animals; or that the poison secreted by the gall-fly produces monstrous growths in the wild-rose or oak-tree. Therefore I should infer from analogy that probably all the organic beings which have ever lived on this earth, have descended from some one primordial form, into which life was first breathed."

The facts which first suggested to the author this most sweeping inference from analogy, were the extraordinary changes in the form, the habits, and even the instincts of pigeons, by the care of breeders. The carrier, the tumbler, the runt, the barb, the pouter, the turbit, the Jacobin, the trumpeter, the laughner, and the fantail, are all as unlike one other as are different species of birds. Yet all these have been produced from the common wild pigeon, care being taken by man to develop slight peculiarities, by separating the parents in which they appear, and doing the same with those of their offspring in which the peculiarities desired were most conspicuous. Dr. Darwin also makes much of the fact that, in certain conditions of the parents of both plants and animals, accidental peculiarities of every kind are transmissible, and become fixed in their offspring; and he argues that what can be effected in the case of the pigeon, might be accomplished for every other species, provided they could be isolated as easily and brought under the plastic culture of man. Now, what man accomplishes with a few species, by artificial methods of seclusion and separation, he contends nature has done with all the animal and vegetable tribes, by the force of natural selection in the struggle for existence. He conceives the process thus. An animal or plant which possesses any marked peculiarity or tendency, coupled with superior vigor of constitution, would assert a superiority over its feebler competitors, displacing them by an excluding or overshadowing growth, robbing them of nourishment or of prey, or gaining an advantage in transmitting life to offspring. Where one variety or tendency survives in a single generation, or long enough to gain a fixed and permanent superiority, ten thousand may have been overborne and

perished. All that is wanting, is time. In hundreds of millions of generations there is not only opportunity of developing all the feathered tribes from a single species, or form, as he terms it; but to develop fishes from birds, and beasts from fish, and man from the highest of the three—not only is this possible, but special organs, as the eye, may be so far developed by “natural selection,” as to convert the simple apparatus of an optic nerve, merely coated with pigment and invested by transparent membrane, into an optical instrument as perfect as, “for example, the eye of the eagle.” The same mode of reasoning would also apply to the development and transmission of instincts. But when did all these transitions take place? Of course in the long ages which are called the geological periods. But do we find any fossil records of these intermediate varieties through which our present existing races must have been developed from the primeval forms or form? Certainly not. Unfortunately, they have all perished; but if they had not perished, analogy teaches that we ought to find them, and therefore we may believe that they did exist. This very convenient use of the geologic plants and animals reminds us of the way in which a professed artist executed the order to paint on a wall the Israelites and Egyptians crossing the Red Sea. He simply covered the wall with a coating of red. When asked, where are the Israelites? he replied, they are gone over the sea. But where are the Egyptians? Surely, they are all drowned; and if the sea were not so red, you could see them all at the bottom. Dr. Darwin’s mode of reasoning from analogy is also somewhat like that of the Irishman who said he had heard that feathers made a soft bed, but he had tried one upon the floor and did not find that his bed was at all improved. He concluded, therefore, by analogy, that many feathers would make a very hard bed, forgetting, as Dr. Darwin, that the relations of more or less apply even to analogy. We admit all Dr. Darwin’s facts. We do not question that it was nature’s design to provide for many varieties by culture, and that many of the so-considered species may have originated from an original pair. But there is a limit beyond which analogy, pliable as it is, will not carry us.

But we did not design to go into the argument. The Naturalists will have a pretty fight of it among themselves, and the discussions which will be evolved may perhaps tend to bring us all at last to think, with Mrs. Browning, that “a larger metaphysics might help our physics.”

We have only to propound one question, which may help to a solu-

tion of many particular questions which will arise. What is this analogy on which these extraordinary theories are reared? Does it imply a rational as well as a creating mind? If so, is it fair to introduce as an element to determine the origin of species, any reference to the probable plans or design of the Creator? If so, which theory would such a reference favor, the old or the new? Moreover, if Dr. Darwin's theory be true, by what processes and intervals of transitional gradation, and from what primitive form of fish, or beast, or fowl, was this faculty of interpreting the past history of nature for millions of years, by analogies drawn from the rearing of domestic pigeons, developed in Dr. Darwin, to its sublimest attainment of sagacity?

WELLS'S ANNUAL OF SCIENTIFIC DISCOVERY.\*—The volume for 1860 of this useful and convenient repository of the leading discoveries and improvements in the various departments of science and the arts, is the eleventh of the series, and like its predecessors shows commendable diligence on the part of its compiler in gathering from many diverse sources the materials of which it is composed. It contains very much that is interesting and important to the general reader, as well as to the man of science; and its copious index renders it valuable as a book of reference. It is embellished with a portrait of Isaac Lea, Esq., of Philadelphia, the President of the American Association for the Advancement of Science, for the present year.

#### VOYAGES AND TRAVELS.

AN ARCTIC BOAT JOURNEY.†—The readers of Dr. Kane's narrative of Arctic exploration will remember that in the autumn of 1854 a party of eight persons made an attempt to go by boat from Rensselaer

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\* *Annual of Scientific Discovery*; or, Year Book of Facts in Science and Arts, for 1860, exhibiting the most important discoveries and improvements in Mechanics, Useful Arts, Natural Philosophy, Chemistry, Astronomy, Geology, Zoology, Botany, Mineralogy, Meteorology, Geography, Antiquities, etc. Together with notes on the progress of science during the year 1859; a list of recent scientific publications; obituaries of eminent scientific men, etc. Edited by DAVID A. WELLS, A. M., Author of "Principles of Natural Philosophy," etc., etc. Boston: Gould & Lincoln. 1860. pp. 430.

† *An Arctic Boat Journey*, in the Autumn of 1854. By ISAAC I. HAYES, Surgeon of the second Grinnell Expedition. Boston: Brown, Taggard & Chase. 1860. pp. 375.