

eters that, when they extend Euclid, they ought to tell us whether or no they extend his words. Mr. Reynolds, having very properly called attention to the angle of more than two right angles, proceeds thus, "An obtuse angle is greater than a right angle." Does the word *obtuse* go past two right angles? Is an angle of 2½ right angles obtuse? We suspect this is not meant. Since acute and obtuse angles are to be associated with those non-Euclidean angles which form the remainders of the revolution, why not call these last *co-acute* and *co-obtuse*? The second work, which is by one of Mr. Wilson's colleagues at Rugby, is an idea which may be applied to either Euclid or any modern substitute. Simple constructions are demanded, with hints when necessary, and blank space is left for the drawing. We hold that the study of geometry as a science ought to be preceded by some geometrical *experiment*, such as these constructions would help to supply, and a little training in analysis of thought, not enough to be called by such a grand name as *logic*. We give an example of Mr. Kitchener's constructions—a very good one; but the answer is given wrongly: "A fly is 2 inches from the centre of a given circle 6 inches in radius; another fly is stationed half-way between the first fly and the centre of the circle; let the first fly make for any point in the circumference, and find how far he will be from the second fly when he has got half way." The answer should be half a radius, or 3 inches; it is printed half an inch.

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DARWIN'S HYPOTHESIS.

Dr. Joseph Dalton Hooker, President of the British Association, in his inaugural address delivered at Norwich, commented on critiques in the *Athenæum* which it would seem he has read in haste.

In No. 2103, of date February 15, 1868, appeared a critique on Mr. Charles Darwin's two volumes on the Variation of Plants and Animals under Domestication. From this critique Dr. Hooker quotes the following words: "They contain nothing more in support of origin by selection than a re-assertion of his guesses founded on the so-called variations of pigeons;" and these words are correctly copied; but if Dr. Hooker had read the context with more care, he would have found that they were closely followed by this sentence, quoted from Mr. Charles Darwin's own description of his work: "In one case alone—namely, in that of the domestic pigeon—I will describe fully all the chief races, their history, the amount and nature of their differences, and the

probable steps by which they have been formed." This, then, was not an "inconsiderate" statement made by the *Athenæum*; it was a deliberate statement made by Mr. Charles Darwin.

Next, Dr. Hooker makes the *Athenæum* say, "Mr. Darwin's theory is a thing of the past," and that "natural selection is rapidly declining in scientific favour." Now, there is not one word to this effect in the columns of the critique commented on. No term implying respect for Darwinism is used; and it is called throughout an hypothesis, or a supposition, and never a "theory." The *Athenæum* did not misapply this word. The *Athenæum* did not write of vogue as if it were a thing of scientific value; and whilst weighing evidence it did not count editions and translations. There are no vague generalities in the critique. Dr. Hooker makes the *Athenæum* say that origin by selection is a thing of the past, when the truth is, that the *Athenæum* said that Mr. Darwin had postponed the production of his facts to the indefinite future. After saying that "his first book," the volumes before us, went fully into only one case—that of the domestic pigeon; after promising "a second book" on the variability of organic beings in a state of nature, and "a third book," trying the principle of selection by seeing how it will explain the geological succession of organic beings,—Mr. Darwin says, "the principle of natural selection may be looked upon as a mere hypothesis until it explains these and other large bodies of facts." On these statements the reviewer remarked that the geologic succession of organic beings is a thing which the past generation of the students of ancient life believed they knew, and which the present generation of them are sure is not known; and that "if Mr. Darwin's supposition is to be deemed a mere hypothesis until it shall satisfactorily explain what is not known, the discussion of it is adjourned by its author *sine die*."

There is a third proof that Dr. Hooker has carelessly read the critique he quoted. In it Mr. Charles Darwin is accused of ignoring the work published by M. Flourens in refutation of his hypothesis. This work is founded upon the results of the experiments in crossing breeds, which have been continued for about a hundred years by Buffon, by George and Frederic Cuvier, and by M. Flourens. If Dr. Hooker had read the critique attentively, he would have been aware of the existence of this book; and surely the President of the British Association would have deemed some notice due to the Perpetual Secretary of the French Academy of Science and Director of the Museum of Natural History at Paris.

The following sentence occurs in Dr. Hooker's Address: "So far from natural selection being a thing of the past, it is an accepted doctrine with every philosophical naturalist—including, it will always be understood, a considerable proportion who are not prepared to admit that it accounts for all Mr. Darwin assigns to it." This sentence is suicidal; for the end of it kills the beginning. Natural selection in pairing or propagating, and natural selection in forming, originating or developing species, are very different propositions. The first was known before there were any philosophers, and is denied by nobody; the second is the hypothesis of Mr. Darwin.

"Reviews," says Dr. Hooker, "on 'The Origin of Species' are still pouring in from the Continent; and Agassiz, in one of the addresses which he issued to his *collaborateurs* on their late voyage to the Amazon, directs their attention to this theory as a primary object of the expedition they were then undertaking." Now, in the *Athenæum* for April 4, 1868, Dr. Hooker might have read the very words in which M. Agassiz mentions the Darwinian supposition. They have been reported to Dr. Hooker in a way to induce him—for he would not consciously mis-state their purport—to believe and to intimate that M. Agassiz has said something favourable to the hypothesis under consideration. He said the reverse. We re-quote the pith of them for the benefit of Dr. Hooker. M. Agassiz says, "The South American Fauna will give me the means of showing that the transmutation theory is wholly without foundation in facts." . . . "If the facts are insufficient on our

side, they are absolutely wanting on the other." . . .
 "We certainly cannot think the development theory
 proved because a few naturalists think it plausible."
 . . . "I wish to warn you, not against the develop-
 ment theory itself, but against the looseness of
 the methods of study upon which it is based."

down to a mere fishing-station of some three
 hundred inhabitants. If any doubt remains on the
 subject, I will observe that Belize is so very much
 nearer to the great headland of St. Vincent than
 to the promontory of Sagres that, had the Villa
 do Infante been built there, the name of Villa de
 Sagres applied to it in the charter of King João
 the Second, would scarcely have been appropriate;

32, St. George's Square, Aug. 21, 1868.

To Dr. James Hunt, President, and the
 Council of the Anthropological Society.

Gentlemen,—I have received from you resolu-
 tions of your Council, under date August 18th,
 professing to refer to a communication printed in
 the *Athenæum* of August 15. This is rather dis-
 ingenuous, for the document was a letter from me