

Devonian on the evidence of their mutual relation with horizontal and inclined quartzite are all of one formation; all contain the same fossils, and all have the same relation to the quartzite in different localities. See Quart. Journ. Geol. Soc., vol. xv., p. 196, &c.

## CORRESPONDENCE.

### DIFFICULTIES OF DARWINISM.

SIR,—In the article on Mr. Darwin's theory that I contributed to your magazine in April and May last, I contented myself with stating the scientific arguments both for and against it, as they presented themselves to me. I did not touch on any of the points connected with theology, as I mistrusted my ability to deal properly with them; and now, if Mr. Grindley's attack had been directed against myself alone, I should not have troubled you with any remarks on the subject; but as he has stated that this theory is opposed to the truths of Revealed Religion, I feel that I ought to do my best to show that I believe such not to be the case.

In his first paragraph Mr. Grindley says that "its direct effect would be to shut the Creator out of the world of His own creation, and to set up instead what the Rev. Baden Powell calls the 'self-evolving powers of nature.'" Now in this I cannot agree with him. They who speak of this theory as "shutting out the Creator from the world of His own creation," seem to imagine that its advocates dispense with the necessity of a Creator altogether; and they talk of the "theory of creation and the 'theory of development'" as if the one were the exact contrary of the other. But the theory of development, or of natural selection, is merely a theory of *the way in which the Creator has carried on His work of creation*; not a denial of a Creator, nor of creation. I cannot understand why natural selection has been so often mistaken for a cause, when it is evidently the effect of the "struggle for life" acting on variations in species, which variations are the effects of an unknown law ordained and guided, without doubt, by an Intelligent Cause "on a preconceived and definite plan." I have neither time nor space to go into any of the proofs now, but I must refer Mr. Grindley to a most able pamphlet called "Natural Selection not inconsistent with Natural Theology," by Dr. Asa Gray, published in the "Atlantic Monthly" for July, August, and October, and reprinted in England by Trübner and Co., 60, Paternoster-row, which I would also recommend to your other readers who take an interest in the subject.

The second paragraph requires no notice. I leave it to your readers to judge whether satisfactory answers have been, or can be, given to most of the statements by any other hypothesis.

With reference to the third paragraph, I must protest against Mr. Grindley saying that I profess "to have answered the principal objections to the Darwinian theory." If he looks at my article again, he will see that I merely state the objections and the answers *that have been given to them* (the answer to No. 4 being the only original one), and leave it an open question. It is not until I have stated the arguments in favour of the theory that I say that, on the whole, the evidence seems to be in favour of it. He also puts four queries to me, upon which I must make a few remarks.

1. It seems that he had only read one-half of my paper when he wrote this. He has by this time, I hope, found my opinion on it in the second half.

2. I must confess that I do not understand what Mr. Grindley means by "no specimen in the transition state has ever been found;" although it cannot be a mistake, for he uses the same words again.

According to Mr. Darwin's theory, all species are in a transition state. Mr. Grindley cannot have formed very clear ideas on the subject, if he thinks that we ought to find animals of half one species and half another, like mermen or centaurs. If he means connecting links between species, any elementary work on natural history or palæontology will point out many to him.

3. I have not the slightest doubt but that Professor Owen is quite right, and that it is a fact that "no known cause of change productive of the varieties of mammalian species could operate in altering the size, the shape, &c., &c.;" but I do not see how Mr. Grindley obtains from it the conclusion which he implies, viz., that therefore the variations could not have taken place. We do not know the causes of many things. Besides, it is not at all necessary to Mr. Darwin's theory to suppose that man has been developed from the gorilla; on the contrary, as they are recent species, the parent stock of both is most likely extinct.

4. Mr. Darwin does not pretend to adduce direct evidence of one species changing into another; although, when we see two forms so different as to have been at first classed by all naturalists as distinct species, and afterwards, on the discovery of connecting links, obliged to be referred to one and the same, I think that we might fairly take that as an instance of one species having passed into another. For even if one of them should not be a lineal descendant of the other, yet, as they are allowed to be of the same species, they must have had a common progenitor, which could not have been like them both. Among species, I need hardly say, instances of this kind are innumerable, and in the case of the foraminifera, Messrs. Carpenter, Jones, and Parker have been obliged to acknowledge that many forms, previously considered not only as of different species, but as of different genera and even orders, "must, in all probability, have had a common origin."

Mr. Grindley says that, until direct evidence can be produced, it is no "true physical law," but a "mere dream." I am sorry to have to refer him again to my paper, but, if he will take the trouble to look, he will see that I do not say that it is a true physical law, but that at present it must be considered as a very probable hypothesis. A probable hypothesis only becomes a true theory when the probabilities in its favour amount to certainty; and it then becomes one even if no direct proof can be given. The first law of motion itself has not been, and cannot be, proved by direct experiment; yet who disbelieves it? The theory of the undulation of light, and even the very existence of ether upon which it depends, cannot be proved directly, yet it is believed to be true on account of the immense number of phenomena that it explains; and, although I do not mean to say that the proof of the transmutation of species is at all equal to the proof of the undulatory theory of light, still it easily explains a great number of phenomena.

With regard to paragraphs 4, 5, and 6, I am willing to admit that Adam may have been "a noble specimen of man, and Eve a soft Circassian beauty;" though I do not know that "the Scriptures of Truth" anywhere "assert" this; but I am sorry to see Mr. Grindley wasting the best and most eloquent parts of his letter on shadows. No advocate of the Darwinian theory, to the best of my knowledge, ever said that "the mental and moral powers of man" were developed from the instincts of the lower animals. On the contrary, I see many reasons for believing that, when the time was come that man was fitted to receive them, they were given him by a special interposition of the same power that created all things. The Rev. J. Kenrick, in his essay on Primæval History, published in 1846, has remarked that "it is impossible to define the time which he (man) occupied in advancing from his primæval condition to that in which he appears at the commencement of history;" and we must remember that it is the mental qualifications of man, and not the physical strength of his body, which gives him

"dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." The only argument, as far as I know, against this view is that there are races of men, as the Zulu Caffres, who seem to have no more sense of right and wrong than the beasts, and no belief in or knowledge of a God.

As for Mr. Grindley's indignation at the "humility" of those "who would link themselves with brutes," I feel no more disgraced in supposing that our present bodies are the noblest result of creation's work, perfected through countless ages, and through countless forms, than in the fact that our actual bodies, in which we are now living, are formed of the food we eat, which, in its turn, must shortly before have existed only as inorganic elements—as, in fact, "the dust of the ground."

With regard to the last paragraph, I stated in my paper that there is nothing like a total absence of intermediate forms in the geological record; and if Mr. Grindley does not mean them by his "species in a transition state," I do not know what he does mean. I do not remember where Sir C. Lyell "proves the theory that *all the great classes of organic life were created at once*," and I do not think that he is likely ever to have attempted to do so; but I have never seen the third edition of his "Principles." In the ninth chapter of the ninth edition, he shows that, owing to the great imperfection of the geological record, "we must not too hastily infer that the highest class of vertebrated animals did not exist in remoter ages," and also that we ought to be on our guard against "taking for granted that the date of creation of any family of animals or plants in past time coincides with the age of the oldest stratified rock in which the geologist has detected its remains," and I suppose it is to this that Mr. Grindley refers. In my paper I said that I thought the geological argument was in favour of Mr. Darwin's theory, because all known fossils are intermediate to living forms—that is to say, they fall naturally into the modern classification, and help to fill up the gaps in it, and because, as a general rule, the older a form is, the more it differs from living ones. I cannot, therefore, imagine what made Mr. Grindley think that my conclusions were opposite to those of Sir C. Lyell, or that they were drawn from the same facts; but as he says that he only received his copy of the "GEOLOGIST" on the morning that he wrote his letter, I dare say he read it rather hastily.

I do not wish to take up more of your space than I can help, or I would make some remarks on the numerous inconsistencies and absurdities in Mr. Grindley's letter; such as "theories which now-a-days take the place of facts." Compare "to bring forward a number of isolated statements is simply absurd" with "this single statement is weighty enough to decide the whole question."... "If it cannot trace the sequence of the development of the mammal into man."... "But if they cannot point to the possession of a moral nature beyond the pale of humanity, then I contend that their whole theory fails," &c., &c. But as none of these bear directly on the question at issue, I leave them for the amusement of your readers.

Yours truly,

Staff College, June 7.

F. W. HUTTON.

#### DEER'S HORNS IN BRIXHAM CAVERN.

DEAR SIR,—The important communication which appeared in the last (June) number of the "GEOLOGIST," from your correspondent Mr. Drake, contains the following passage, which seems to require a little attention, namely: "The arrow-head found entangled in the horns of the stag by Mr. Pengelly, at Brixham, was vast in importance." I cannot understand how the idea of an "arrow-head" being found so "entangled" has got abroad. A similar passage occurs in Professor Ansted's "Geological Gossip," and is possibly the original of Mr. Drake's.