

Raleigh Anticipated Darwin.

To the Editor of the Educational Review.

DEAR SIR,—In perusing Sir Walter Raleigh's History of the World, published in 1614, I have just come across a passage which seems to me of the greatest interest as showing that Raleigh anticipated Darwin in realizing:

- (1) That species are not immutable.
- (2) That they are affected by environment, especially climate.

As I do not think this passage is at all well known, I venture to transcribe it for the benefit of your readers. It is from chapter vii, sec. 9, and the author is seeking to prove that the ark was large enough for the then existing beasts. "But it is manifest, and undoubtedly true, that many of the *species*, which now seeme differing, and of severall kinds, were not then in *rerum natura*. . . . And whereas by discovering of strange Lands, wherein there are found divers Beasts and Birds; differing in colour or stature from those of these Northern parts; it may be supposed by a superficiall consideration, that all those which weare red and pyed Skinnies, or Feathers, are differing from those that are lesse painted, and weare plaine russet or blacke; they are much mistaken that so thinke. And for my own opinion, I find no difference, but only in magnitude, between the Cat of Europe, and the Owncce of India; & even those Dogges which are become wilde in Hispaniola, with which the Spaniards used to devoure the naked Indians, are now changed to Wolves, and begin to destroy the breed of their cattell, and doe also oftentimes tear asunder their owne children. The common Crow and Rooke of India is full of red feathers in the drown'd and low Islands of Caribana; and the Black-bird and Thrush hath his feathers mixt with blacke and carnation, in the North parts of Virginia. The Dog-fish of England is the Sharke of the South Ocean: For if colour or magnitude made a difference of *Species*, then were the Negro's, which we call the Blacke-Mores, *non animalia rationalia*, not Men, but some kind of strange Beasts: and so the Gyants of the South America should be of another kind, than the people of this part of the World. We also see it daily, that the nature of Fruits are changed by transplantation, some to better, some to worse, especially with the change of Clymate. Crabs may be made good Fruit by often grafting, and the best Melons will change in a yeare or two to common Cowcummers, by being set in a barren Soyle."

Sincerely yours, IAN C. HANNAH.

King's College, Windsor, N. S., 24th April, 1906.

Our Coasts. II—Their Lessons.

Continued.

The Agents at Work.

PROFESSOR L. W. BAILEY, LL. D

It will be interesting now to note some of the special peculiarities of the *muddy* deposits, both for the reason that they are so conspicuous and cover such large areas about the head of the Bay of Fundy, and because in connection with them are found certain features which are of the greatest service in throwing light upon the events of periods long antecedent to our own.

The extent of the mud-flats laid bare by the ebb of the tide along portions of the coast of Albert and Westmorland counties, New Brunswick, and the shores of Minas Basin, Nova Scotia, is very large, their breadth being in some instances a mile or more. The mud itself is of a bright red colour, extremely fine and tenacious, the redness being due to iron oxide contained in the rocks from which the material was derived, while the fineness is the result of the long continued trituration of the same material under the action of moving waters. This material is constantly being deposited, the tide at each flood spreading a thin layer over those previously laid down, while at ebb the whole surface is laid bare and exposed to any influences which may operate upon it. One of these might be a passing shower, every drop of which falling upon such fine and light material would leave its impress, to be subsequently buried and preserved under the new layers afterwards deposited. Or if, instead of rainy weather, there be a warm summer sun, the surface will dry, and by drying be made to shrink, thus producing numerous cracks or small fissures, also to be buried later as a new tide comes in. One may sometimes see the whole surface of a mud flat honeycombed by these shrinkage cracks. Or again, as "worms come out after a shower," even in our streets and fields, so they do from their burrows on the tidal flats, and one may readily recognize not only their holes or homes, but also long, round trails extending in all directions over the muddy beds, marking where the worms have made their daily travels in search of food. Finally, the observer perchance may find an impression which he readily recognizes as the track of a three-toed wading bird, or another equally characteristic of some domestic animal, or of man, and, like Crusoe on his desert island, he naturally infers that where such tracks exist there must recently have been either bird or quadruped or man to produce