



## LXIII. On the strata of mountains

William Richardson D.D.

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*Reference to the Description of Mr. H. B. Way's Method of procuring Turpentine from Fir Trees. Pl. VIII, Fig. 4.*

*a*, Represents the lower part of a fir tree, as growing in the earth; *b*, shows the part where a portion of the bark is taken off to assist the emission of the turpentine; *c*, is a hollow cut within the body of the tree, it is in the form of a bason at the lower part to receive the turpentine, which exsudes into it from the pores of the tree: this bason is about six inches from the ground.

LXIII. *On the Strata of Mountains.* By WILLIAM RICHARDSON, D. D.

*To Mr. Tilloch.*

SIR, BETWEEN two and three years ago, a friend transmitted to me from London a Number of your Philosophical Magazine, containing a paper from Mr. FAREY, in which he is pleased to speak in most flattering terms of a memoir of mine, published in the Philosophical Transactions for the year 1808.

The subject was the arrangement of the strata in the country where I lived, with the entire removals of vast portions of them, showing the terminations of the strata left behind, often abrupt, and sometimes forming a perpendicular façade, where the abrupting agent acted on an accumulation of strata.

Mr. Farey exults that a gentleman who had never met with his observations on the strata of England, nor read his publications on their subject, should find that the strata in Ireland had the same operations performed upon them; sometimes partial abruptions, sometimes entire removal of vast portions of these strata, without leaving a trace behind to aid our conjectures in discovering what was become of such vast portions of matter.

Mr. Farey speculates upon the agent that performed these mighty operations: I do not presume to venture so far. I limit myself to *facts*, from which those who choose to avail themselves of my data, may draw such inferences as they think can be sustained.

Cosmogonists, who by their respective theories pretend to lay open original formation, carry their views too far back, and overlook a most important step in the discussion, that is, the actual arrangement of our materials, however originally formed,

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Enumeration of the strata of which any country is composed, with an account of the changes they have undergone, and the operations that have been performed upon them, forms the true geological history of that country, and an accumulation of many of these detached histories affords the best materials for a general history of the physical world.

Statistical surveys seem the proper deposits for the curious facts of every country.

Mr. Farey avails himself of this opportunity to lay before the world the stratification of *Derbyshire*; and in my contribution to my friend Mr. DUBOURDIEU's Statistical Survey of *Antrim*, I shall trace the arrangement of the strata of that *county* with much accuracy.

The curious basaltic construction of the Giant's Causeway in my neighbourhood, first brought my attention on such subjects.

From the singular *forms* which nature had impressed upon her materials in that wonderful spot, I proceeded to her arrangements, the source of the beauty and grandeur of our coast, displayed in a succession of magnificent façades.

The consummate regularity of these arrangements I laid before the world in the memoir I have mentioned, and gave a detailed account of the operations that had been performed on them.

I now proceed from the more diminutive arrangements of nature, so well exhibited in our magnificent façades, to her grander arrangements, the construction of her great mountains, all composed (with us) of vast strata.

These strata it appears are abrupted at the periphery; and the materials carried off; *always* at one side; and sometimes in the whole contour, as in the great hemispherical mountain KNOCKLAID, whose middle frustum is a vast stratum of white limestone, showing itself every where round the periphery, several hundred feet high, forming a steady plane, slightly inclined to the horizon: which plane so far above the surface, *on the mountain*, is found, when traced in the direction of its dip, again to catch the surface of the earth, in its rectilineal course, at a few miles distance.

Can it be sustained for a moment, that *Knocklaid* was originally formed as it now stands, bold, and solitary? Is it not rather a portion of the great consolidated mass of strata left standing when the materials once contiguous were carried off from its whole contour?

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The particular arrangements of other *Antrim* mountains, and their local circumstances, lead us to the very same conclusion.

Were we from these data to *generalize*, and, calling in the aid of *analogy*, to pronounce *all* mountains to be similar to those of *Antrim*, must we not form the general conclusion,

That the mountains of the world were not *formed*, but *left* behind,—not the stupendous constructions of mighty agents,—but the scattered remnants of a diminished world?

Moy, Ireland, May 12, 1811.

W. RICHARDSON, D.D.

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LXIV. *Some Remarks on the Physiology of the Egg: communicated in a Letter from JOHN AYRTON PARIS, M.B. to WILLIAM GEORGE MATON, M.D. V.P.L.S. &c. &c.\**

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DEAR SIR, THE extensive range which the *ovipari* form in the scale of animated existence renders the physiology of the egg a subject of extraordinary interest and importance to the disciple of Linnæus: I am therefore induced to hope that the communication of any new facts relative to its organization and development will be received by you as an acceptable tribute to the cause of natural history.

The *ova*, or germs of oviparous animals, admit of an evident division into two orders. I. The Perfect, and II. the Imperfect. The former are deposited by the *aves*, *serpentes*, and by most *oviparous quadrupeds*, and are completely formed *in utero*; whilst the latter, produced by some of the *testacea*, *amphibia*, and by most *pisces*, acquire additions after their exclusion. The observations contained in this memoir relate more particularly to the class *aves*, the history of whose *ova* comprehends whatever is interesting or important in the germs of inferior animals. The egg, when completed and deposited, consists of the following parts:

1. *Vitellus* or *yolk*, with its *capsule* and *cicatricula*;
2. The two *albumina*, with their proper membranes;
3. The *chalazæ*;
4. The *folliculus æris*;
5. The *common membranes*;
6. The *exterior involucre*, or *shell*.

The necessity of any description of these parts is superseded by the minute and valuable details which are to be found in the works of Fabricius ab Aquapendente, Harvey, Malpighi, and of many modern and enlightened physio-

\* From the Linnean Transactions, vol. x.