



XL. Reply to Captain Forman's theory of the tides

Mr. Henry Russell

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perfectly opaque. The compact felspar has a splintery conchoidal fracture; the fracture of the claystone, on the other hand, is even, and always smooth. The compact felspar is more or less fine in the grain, and the splinters more or less large. The strata of the compact felspar, like those of the greenstone and claystone, are also at times columnar, the columns being composed of small round concentric balls, and very brittle. These balls are at times partially composed of hornstone. This mineral occurs also in the compact felspar, in thin beds, in veins, and in masses; its colour is green, its fracture smooth, conchoidal, it is slightly translucent on the edges, and is as hard as quartz.

Claystone again succeeds the compact felspar, and the latter is again succeeded by the former, thus alternating for about eight or ten miles across the peninsula. The claystone always possesses a slaty structure, and soon decays. The soil over the greenstone and amygdaloid is rich and good, while over the claystone and compact felspar it is light and poor.

XL. *Reply to Captain FORMAN'S Theory of the Tides. By*
Mr. HENRY RUSSELL.

To the Editors of the Philosophical Magazine and Journal.

GENTLEMEN,—THE expansibility of water being a well attested fact, Captain Forman's theory will no doubt meet with due attention; but I am persuaded that very few will be delighted with his method of reasoning.

With regard to his question, "Do the waters at the time of their rising press downwards, or do they not?" I answer, They press downwards; but with as much less power as is equal to the attractive power of the moon.

To the next question, "How are we to account for their rising, except by supposing that they are pressed upwards by the expansion of the particles below?" I answer, By the superior gravity of those waters which constitute the ebb.

I do not deny an expansion and contraction of the waters occasioned by the arrival and departure of the moon; but the circumstance of the highest tides being invariably accompanied by the lowest ebbs, is alone sufficient to convince any impartial inquirer, that the ebb and flow of the waters are produced by changes of place, and not by rarefaction and condensation alone.

The satisfaction which Mr. Forman seems to derive from a handful of water is by no means enviable. He speaks of the

the moon as if astronomers and philosophers think its attractive power over substances upon the face of the earth equal to the attractive power of the earth itself; but I believe there are very few philosophers who are not satisfied of the contrary. Surely he does not wish us to understand, that because the moon has not power to sustain a handful of water in the atmosphere, it has no power over it whatever. He may as well attempt to teach us, that because a magnet has not power to lift a scale-beam, it has not power to disturb its equilibrium. Upon re-examining the subject, Capt. Forman may possibly discover, that the altitude of the flow is to the altitude of the ebb, as the gravity of the ebb is to the gravity of the flow.

HENRY RUSSELL.

XLI. Notices respecting New Books.

The Fossils of the South Downs; or, Illustrations of the Geology of Susser. By Gideon Mantell, F.L.S. The Engravings executed by Mrs. Mantell, from Drawings by the Author. 4to, pp. 327. London 1822.

THE infant science of Geology is making rapid advances, and must continue to do so when embraced with such ardour as is displayed in the volume before us. Mr. Mantell, to whom the public is indebted for describing, and that very minutely, the geological phænomena of an unexplored part of Sussex, is a surgeon residing in the county, who, amid the numerous and anxious duties of his profession, has snatched a few moments which he has consecrated to science; but he has done more, he has enlisted his amiable partner in the same cause; and forty-two well engraved plates attest Mrs. Mantell's talents as an engraver, as well as her love of science, to which she has thus so liberally contributed.

Mr. Mantell's work is preceded by a preliminary Essay, written by a Clergyman of the Established Church, to prove the correspondence between the Mosaic account of the creation and the geological structure of the earth.

Although Mr. Mantell at first intended to confine his researches to the South Eastern division of Sussex, yet he has extended them to nearly the whole county, which he describes very carefully and very minutely in all its various formations. He confines himself almost entirely to facts, seldom offering an opinion on a disputed point, but rather wishing to show the sentiments of others.