I. Reply to a note in the Rev. Mr. Conybeare's paper entitled "An examination of those phænomena of geology, which seem to bear most directly on theoretical speculations"

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JANUARY 1831.

- I. *Reply to a Note in the Rev. Mr. Conybeare's Paper entitled "An Examination of those Phenomena of Geology, which seem to bear most directly on theoretical Speculations."* By C. LYELL, Esq. F.R.S. For. Sec. G.S. &c.

To the Editors of the Philosophical Magazine and Annals.

Gentlemen,

I OBSERVE in the first page of your last Number (December 1830) the following passage, in a paper by my friend the Rev. W. D. Conybeare: "While on classical subjects, I would just remark how much I am gratified by finding every quotation in Mr. Lyell's able remarks on the attention of the ancients to geology, identical with those previously given in my own Outlines, with the single exception of the passage from Strabo, to which, however, I have given a reference although certainly partial and imperfect: as there is not a word of acknowledgement, of course this coincidence is accidental."—Surprised at this unexpected charge, I immediately compared the second chapter of my "Principles of Geology" with those two pages of the introduction to the "Outlines," (pp. 38, 39,) which comprise the whole of Mr. Conybeare's allusions to the geological doctrines to be met with in the writings of classical antiquity. The authors cited in those pages are Aristotle, Lucretius, Seneca, Plutarch, Pliny, Herodotus, Polybius, Strabo, Pausanias, Xenophon, Theophrastus, and Ovid. Of these twelve, five only are to be found among the classical authorities adverted to by me; viz. Aristotle, Seneca, Pliny, Strabo, and Ovid. The passages

N.S. Vol. 9. No. 49. Jan. 1831.

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which

which I have cited from Aristotle and Seneca relating to the supposed periodical revolutions of the globe, had been previously collected and commented upon in Dr. Prichard's "Egyptian Mythology," a work to which I have been careful to refer in no less than four places in my second chapter, and to which Mr. Conybeare has also acknowledged his obligations in his Introduction (p. 39). In regard to other citations from Aristotle's *Meteorics*, besides that they must be familiar to all who are at once scholars and naturalists, Mr. Conybeare can hardly be ignorant that they have been referred to again and again, not only in the works of the early Italian writers on geology, but also by Hooke, Ray, and Burnet*, the last-mentioned of whom has given a translation of the passage in the *Meteorics*, lib. 1. 14. to which Dr. Prichard and Mr. Conybeare refer. An enumeration of all the passages in Pliny relating to the birth of new islands and analogous subjects is to be found in Raspe's work†; but even Raspe lies open to an accusation from Mr. Conybeare of having copied his citations from previous writers, and among others from Hooke. The last-named philosopher has called attention to the same notices by Pliny on the formation of new lands by river-alluvions, to which Mr. Conybeare refers‡. The learned mathematician has moreover enlarged§, as well as Whiston|| after him, on "the burying of Typhœus under Etna," and other mythological stories of the gigantomachia; and passages on this subject from Pindar, Sophocles, Plutarch, Apollodorus, Virgil, Ovid, Lucan, and several others, are quoted by these writers, many of which allusions have been revived by some of the learned of our days, and perhaps regarded by them in the light of original discoveries in the mines of classic lore.

The only passage in Strabo mentioned in the "Outlines," is one not alluded to by me, but which had been already given at full length by Raspe more than sixty years before, in his copious extracts from the writings of the ancients on volcanic phenomena; but I have looked in vain for that "partial and imperfect reference" which Mr. Conybeare says may be traced in his own two pages to that doctrine of Strabo respecting elevation by earthquakes, of which I have endeavoured to point out the importance.

Is it then the trite quotation from the *Metamorphoses* of Ovid which has laid me open to so sweeping a charge of pla-

* Sacred Theory of the Earth, vol. i. p. 214.

† *De Novis Insulis*, 1763.

‡ Hooke's Discourse of Earthquakes: Posthumous Works, p. 299.

§ Ibid. p. 323.

|| New Theory of the Earth, &c. p. 201.

gicism? I should have owed an apology to my readers for pretending to recall to their minds that celebrated passage so hackneyed by repeated references in the works of Fabio Colonna, Hooke, Moro, Generelli, Ray, Vallisneri, Fortis, and others, had not all those writers in common with Mr. Conybeare neglected to give a full and connected view of the Pythagorean system as developed in the memorable verses of the Roman poet.

I have scrupulously stated, in my "Principles of Geology*," Hooke's acquaintance with the learned Italian writers who preceded him, as well as his allusion to Strabo and other classical authorities†; and I have not been silent respecting the erudition of Moro‡, and several of his successors. The notions of Theophrastus respecting fossils are discussed by Fabio Colonna§, and alluded to by Scilla||; and the various references to Plutarch and Lucretius in the treatises of the early geologists are known to those who are versed in the history of the science. No less rich are the various writings of Fortis in classical citations bearing on geology. Mr. Conybeare is surely aware that his predecessors had left no field open wherein geologists of his day might display their scholarship, unless they availed themselves of a more enlarged acquaintance with natural phænomena to form a juster estimate of the relative value of facts and theories recorded by the ancients. The estimate of their importance given by me in the "Principles of Geology" is somewhat different from that to which Mr. Conybeare inclines; for I have been disposed to refer to observation and inductive reasoning the origin of those crude speculations which in the "Outlines" are attributed "to principles assumed on the high *priori* road."

Your readers will, perhaps, think that these rival claims to priority to half a dozen classical common-places are unworthy of the cultivators of a science which more than any other is marked by the daily discovery of grand and unexpected truths in physical science, especially as the initiator of this discussion ranks high as an original observer: but I feel that I should presume too much on the acquaintance of the public with my work, and regard too little the weight of an assertion made by Mr. Conybeare, if I allowed the statement in his note to pass without observation.

2, Raymond Buildings, Gray's Inn,
Dec. 5th, 1830.

* Principles of Geology, p. 32.
§ *De Glossopetris, &c.*

† Ibid. p. 34.

‡ Ibid. p. 42.

|| *De Corporibus Marinis*, p. 41.