

directly and exclusively from the crushing of the superficial rocks as they follow downwards the shrinking nucleus. The former is my view, the latter Mr. Mallet's. Let us clearly understand each other, and there need be no disagreement between us on other points.

G. POULETT SCOPE.

PALÆOZOIC STARFISHES.

SIR,—In the January Number of this MAGAZINE a list is given of Palæozoic Starfishes. It is not, however, complete yet. Allow me to call your attention to a paper by Simonowitsch (Sitzungsab., Wiener. Ak. 1871, Band 64), where the following new species were described:—*Aspidosoma petaloïdes*, Sim.; *Asterias acuminatus*, Sim.; *Xenaster margaritatus*; *Xenaster simplex*.

This last genus is a particularly interesting one. All the above are from Devonian beds. The following have also been apparently overlooked:—*Aspidosoma Arnoldii*, Goldf.; *Calaster latescutatus*, Sandb.; *Asterias rhenana*, Müll.

These will considerably enlarge your list of Devonian species.

E. B. TAWNEY.

“CREEPS.”

SIR,—Happening to read, in your March Number, Mr. R. Mallet's letter “In reply to Mr. Scope's Observations, etc.,” the “Creeps” of the Coal-fields, as described in Lyell's Elements, and in Naumann's Lehrbüch der Geognosie, at once occurred to me. Indeed, I should be very happy to learn, and be much obliged to any one who would be so kind as to inform me, whether similar causes might act upon a large scale, producing earthquakes, igneous ejections, and even elevation of mountains.

Supposing a large excavation to have been made by the eroding and dissolving action of subterranean waters (or by other means), a sink-hole or subsidence of the soil may result; but were an uplifting and fracturing of the floor with a rubbing a total impossibility, would this rubbing be sufficient to produce heat? Agreed, heat would result; let us multiply the masses twice, or thrice, perhaps a greater amount of heat arises? Finally: Some part of the earth's crust having, from any reason, lost its stability or power to resist the tension, *creeps* upon a large scale taking place, fissures being produced, rubbings would result, a fragment some miles of width rising slowly, dislocations (*structure en éventail*), upheaval or subsidence of the soil or crust, and igneous ejections or even volcanic phenomena being caused; would such a state of things be at all compatible with the present state of science—or of nature?

“Mi pare però che farebbe veramente un vano sforzo d'ingegno chi volesse spiegare in questo modo le oscillazioni della crosta del globo.”—Stoppani, Corso di Geologia, iii. § 473, 1873.

“Unter diesem von der Mitte aus abwärts wirkenden Druck bildete sich in dem Feldspathgebirge die fächerförmige Schieferung aus.”—Studer, Geol. der Schweiz, vol. i. p. 172, 1851.

“Les tremblements de terre, dont la cause est plus mystérieuse, malgré les travaux si remarquables et si précieux de M. Alexis

Perrey et ceux de M. R. Mallet, les soulèvements contemporains, etc.”—A. D’Archiac, Géol. et Paléont., p. 737, 1866.

“This found, I will, like a veteran rat, hasten away before I have an old house about my ears.”—W. Irving, Little Britain.

RÖNNE ON BORNHOLM, DENMARK,  
April 12, 1874.

M. JESPERSEN.

*HYBODUS*, A COAL-MEASURE FISH.

SIR,—Allow me to correct an error that has inadvertently crept into my paper on the above subject, that appeared in last month’s *MAGAZINE*. The sentence at the foot of the group of illustrations says, “Teeth of *Hybodus* (Figs. 1 and 2), compared with teeth of *Cladodus* (Figs. 3–6).” It should have been, “Teeth of *Hybodus* (Figs. 1–3), compared with teeth of *Cladodus* (Figs. 4–7).” The whole tenour of my paper was to prove Fig. 3 a tooth of *Hybodus*, and not of *Cladodus*.

NEWCASTLE-ON-TYNE.

W. J. BARKAS, M.R.C.S.E., etc.

THE FLEET. IN REPLY TO THE REV. O. FISHER.

SIR,—The Rev. O. Fisher has written a short letter, in which he objects to certain statements in my paper on the origin of the Fleet. I did not attempt to disprove Mr. Fisher’s theory, as I considered it unnecessary if I gave a better. I don’t think I said the present shore-line of the Fleet was formed by marine erosion, because since it became a lagoon it must have been considerably modified; due to the meteoric waste of the adjoining land, the growth of peaty accumulations, and the erosion due to wind and the waters of the lagoon. I should imagine the original shore-line was a gradual curve, while at present it is full of indentations and small bays.

From what data can Mr. Fisher affirm that there were “never marginal cliffs to the lagoon”? If cliffs had once existed, and composed of frail materials, they would long since have disappeared, and all surface traces of them have been obliterated, the ground being now a long gradual slope; this is the case with the lagoon called Lady’s Island Lake, mentioned in my paper. But in drainage or similar works, sections will be exposed showing the site of the cliffs. From the Ordnance Maps I question if any of the margins of the lagoons I enumerated would be considered due to marine erosion; yet in most cases in their vicinity the old sea cliffs can be traced, but not always without railway works or other deep cuttings.

I strongly suspect if the bank of the Fleet is moving inwards, that the margin of the Fleet will do likewise, and this seems to be allowed by Mr. Fisher, so that if its area is curtailed on one side, it increases on the other, and eventually, if the bank is moved backwards to the original cliff-line, still the Fleet will be found behind it, or an alluvial flat that can be reclaimed.

I do not understand what Mr. Fisher means when he says, in connexion with the bays he enumerates, they “cannot possibly have been formed by the sea, they must be drowned valleys.” Now all the lagoons I have seen must be “drowned” or submerged valleys;