researches of M. Spring and others on the physical and chemical changes produced by the action of high pressures. It seems rather rather late in the day to take this position, but the subject is too wide to be discussed here. The Belgian physicist, too, is well able to defend himself: witness his reply to the American critic cited by General McMahon.

ALFRED HARKER.

ST. JOHN'S COLLEGE, CAMBRIDGE.

## COCCOSTEUS DECIPIENS.

SIR,—In a very important paper on the structure of *Coccosteus decipiens*, Ag., Dr. Traquair has recently remarked (Ann. & Mag. Nat. Hist. [6] vol. v. p. 125) that he suspects I have mistaken the lateral margin of the interlateral plate for a pectoral spine in my description of *Coccosteus*, and he feels justified in asserting that, if such a pectoral swimming organ does really exist in *C. Bickensis*, that species cannot be referred to *Coccosteus*, in which no such appendage is present.

In reply, I must repeat that there occurs a hollow, triangular, bony spine, filled with calc spar, quite distinct from the other plates. Apart from this spine, *C. Bickensis* agrees so well with undoubted species of *Coccosteus*, that I am inclined to regard Dr. Traquair's statement cited above as not yet beyond question; and although a similar pectoral organ has not yet been recognized in Scottish specimens, it is quite likely it may still be found. I am all the more confirmed in this opinion since, according to Dr. Traquair, the sclerotic ring appears to exist only in *one* specimen from Gamrie in the Edinburgh Museum, while it is rather common in my German specimens. The pectoral spine is much more rarely seen in my fossils than the sclerotic ring, and I am thus not astonished that it should hitherto have escaped observation in the Scottish examples of *Coccosteus*. Finally, I would add that the spine in *C. Bickensis* attained a length of 55mm. (fig. 12 of my paper on Placoderms), but the end is wanting, the impression of it being retained on the rock. It is therefore not shorter, but much longer than in the restoration of *Brachydeirus inflatus*.

I may add that my specimens are exposed in the Royal Geological Museum here at Göttingen, and may be examined by any one interested in the subject.

A. VON KOENEN.

GÖTTINGEN, *March 12th*, 1890.

## TIDAL ACTION.

SIR,—As tidal action has been called in of late in your pages to assist if possible in solving the riddle of the Triassic sandstones and conglomerates, it may be well to point out one line of evidence which seems to have been overlooked by the supporters of the tidal theory, *i.e. the zoological.*

Mr. Mellard Reade writes as follows in the Philosophical Magazine, vol. xxv. p. 342:—"Although it is on the littoral margins and the shallow seas opening into the oceans that the resistless force of the tides is most obvious," etc., etc.[1]

[1] See Mr. Mellard-Reade's Article in this Number, *supra*, p. 157.—ED. GEOL. MAG.

https://doi.org/10.1017/S0016756800194555 Published online by Cambridge University Press