

CORRESPONDENCE.

THE STUDY OF MAMMALS.

SIR,—I am indebted to the reviewer of this work in your last number for pointing out that the family *Tritylodontidæ* occurs twice in the systematic table. Its second occurrence is not, however, as he supposes, an inadvertent repetition, but a “misprint” for *Triconodontidæ*. Another slip occurs on p. 99, where in giving the range of *Oryx* Persia stands instead of Syria.

R. LYDEKKER.

DYNAMIC METAMORPHISM “AGAIN.”

SIR,—Personally I am sorry to be called upon to point out briefly that Mr. Fisher (GEOL. MAG. Sept. 1891, p. 430) has made the mistake of substituting exclusion (or “outness”) in space for *logical* exclusion of one term from a series of other terms used in a train of reasoning, and that this misconception seems to run through the whole of his letter except the last paragraph. It is not Mr. Fisher’s (*P-W*) *w*, but the “*last term*” of the four which I had just enumerated (p. 299), which is logically outside the other three. To say that it is outside the cubic unit (not “element”) of the mass, on which the work is done, is something to which I am unable to attach any meaning at all. The energy, to which the motion of the train (in my illustration) is due, is *dissipated* (not annihilated or necessarily “converted” into some other form of energy) according to the ordinary laws of thermodynamics, having been obtained as heat from the potential energy of the fuel and atmospheric oxygen, and utilized, while in a condition of high intensity (the H_2O being the carrier of the energy), to move the piston of the engine with the load attached. In running down from a state of high intensity (in which work can be got out of it) to a state of low intensity (in which it is either absorbed by surrounding bodies, or passes off by radiation into the general entropy¹ of the universe), there is no destruction, there is only dissipation, of energy; and when it is thus dissipated, you cannot get any more work out of it. If energy were (under the conditions specified) “stored up in the train,” after it had come to a standstill (the idea which was before my mind, though, I fear, not explicitly stated), the train would be, after translation, in a *position of advantage with respect to motion*, as compared with its position before translation, which is absurd. Certainly during the accelerating stage of translation energy is being stored in the train, just as you store energy in the weight of a clock in winding it up; but the same amount of energy is taken out of the train in bringing it to a standstill, just as it is taken out of the clock-weight, when it runs down. There is therefore no more energy stored in the train, after it has come to rest, than there is in the weight and works of a clock after it has run down. So in the case of the rock-mass under consideration, the source of the energy is gravitation. The work done on the rock is only a case of

¹ “Entropy” in the sense in which the word was first used by Clausius.