at least a small portion of the time of the new commission will be devoted to a subject of such importance.

Malvern. HILDERIC FRIEND.

IN some interesting remarks upon this subject (NATURE, pp. 427, 489), the Rev. Hilderic Friend suggests—and I believe he is correct in assuming for the first time—that the alluvial mud of such a river as the Nile derives its fertility, not from the nature of the sediment itself, as usually supposed, nor entirely from bacteria, but from the multitudinous remains of annelids that live in the mud.

That there is "need for careful study of the alluvium of rivers from this point of view," and any other, is to be freely admitted. If we except the study of pre- and post-Pleistocene deposits carried out by Mr. Clement Reid, and summarised in his "Origin of the British Flora," there is scarcely another work that can be mentioned dealing with the subject. It is true that lately the Geological Survey have become alive to the necessity of introducing details as to the fertility or otherwise of the soils derived from the geological formations surveyed. But these are isolated, and are but the necessary outcome of previous activities of agricultural experimental stations. But neither have these latter undertaken any systematic study of the character and constituents of river alluvium. The nearest approach to a treatise on the subject is Darwin's "Earthworms," and his work, whilst dealing with terrestrial forms and their influence in fertilising, renewing, and enriching the soil, strangely enough bears out Mr. Hilderic Friend's suggestion as to the cause of alluvial fertility.

For without earthworms, what would the soil be? *Ergo*, without fluviatile annelids, what would the alluvium be—but a sterile accumulation of sand? Here we may add that where worms are too plentiful on land bad results follow, so too we may assume, accepting the worm-fertilising theory as correct, that an excess of annelids tends to cause, as on land, putrefaction, as may be illustrated by the case of ponds overstocked with blood-worms, causing the appearance of blood, which was a fruitful source of superstition in former days, notably at Garendon in this district.

But apart from theoretical considerations, based on the hypothesis that Tubifex and other annelids do tend to increase fertility, we may attempt to draw an analogy with former conditions, and so to some extent corroborate Mr. Friend's very probable theory.

All who have made any study of the palæontology of the Trias (referring here specially to Britain) are familiar with the extreme barrenness of great thicknesses of both Lower and Upper Keuper relieved alone by certain limited horizons at which a definite flora and fauna is to be met with.

It has been assumed, and there is *apparently* no great reason against this on a purely faunistic basis, that the Trias is a desert formation; but on other grounds, and also from a study of the flora and fauna, I have come to the conclusion (during a study of the Midland Trias, in which I am aided by a Government grant from the Royal Society) that the whole of the Triassic formation is a *delta* formation, in other words, that from the Bunter (first suggested to be a delta deposit by Prof. Bonney) upwards conditions similar to those in the Nile area prevailed during Triassic times, and were responsible for its *formation*. Locally, wind acted on rocks, but formed no deposit.

Now it is a remarkable fact that in the deposits in the British Keuper, in which alone plant-remains have so far been discovered, or where carbonaceous deposits occur, that a common associate of the plant-remains is a form of track or casting which has usually been ascribed to annelids or crustacea; and we must not overlook the fact that annelids alone are not the predominating component of the fauna of alluvial tracts, but Protozoa in their myriads, occasionally sponges, Crustacea (minute and large), insects, scorpions, and molluscs form a large proportion of the bulk of alluvial deposits. Of these, annelids and Crustacea are most likely to be preserved, and are most often discovered in the rocks. So that it seems that only where annelid life in Triassic times was abundant was plant-life in evidence, just as now only where the Nile is alluvial does it yield productive results, due, apparently, to the same cause. The analogy I have drawn strengthens Mr. Friend's theory, and, moreover, if the worms be found to be actually conducive to fertility (by experiment or otherwise), my case for the delta-origin of the Trias will receive additional confirmation.

It would seem to us that no more fitting study could be made by the lake surveys that are now going on in different parts of the kingdom than the very probable connection between worms and alluvium, for it seems that Mr. Friend has more or less proved his case without much need for argument. This affords another instance of the utility of beings hitherto supposed to have no useful part to play in the history of time or things.

July 2. A. R. HORWOOD.

A Singular Mammal called "Orocoma."

IN a letter of the Jesuit Father Cat at Buenos Aires, dated May 18, 1729 ("Lettres difiantes," éd. Lyon, 1819, tom. v., p. 466), the following passage occurs:—

"Outre ces animaux, il en est un qui m'a paru fort singulier: c'est celui que les Moxes appellent *orocoma* [or *ocorome*, according to the "Abrégé d'une Relation espagnole," in the same tome, p. 66]. Il a le poil roux, le museau pointu, et les dents larges et tranchantes. Lorsque cet animal, qui est de la grandeur d'un gros chien, aperçoit un Indien armé, il prend aussitôt la fuite; mais s'il le voit sans armes, il l'attaque, le renverse par terre, le foule à plusieurs reprises, et quand il le croit mort, il le couvre de feuilles et de branches d'arbres, et se retire. L'Indien, qui connoit l'instinct de cette bête, se lève dès qu'elle a disparu, et cherche son salut dans la fuite, ou monte sur un arbre, d'où il considère à loisir tout ce qui se passe. L'orocomo ne tarde pas à revenir accompagné d'un tigre qu'il semble avoir invité à venir partager sa proie; mais ne la trouvant plus, il pousse des hurlemens épouvantables, regarde son compagnon d'un air triste et désolé, et semble lui témoigner le regret qu'il a de lui avoir fait faire un voyage inutile."

In asking what mammalian species this "orocoma" is, and whether there is the slightest foundation for this story, I fully know I am showing my great ignorance. I hope the Editor and his readers will forgive me, taking into account the entire absence of a scientific reference library in this part. KUMAGUSU MINAKATA.

Tanabe, Kii, Japan, June 15.

Pwdre Ser.

WHEN a boy, at the latter end of the 'thirties of last century, I was told by a well-known man of the name of West—lock-keeper on the river Witham at Lincoln—that he had seen a star fall on the south common there, where he had a cow grazing, and that, on going up to it, he found nothing but a lump of jelly. At this distance of time I cannot recall all he said, but I remember he described the object as shining and as about the size of a plate. I have no recollection of his calling it luminous.

Up to this time I have always thought my informant was under an illusion, but, after Mr. McKenny Hughes's article, there seems to be something more than I was aware of in the account he gave me.

F. M. BURTON.

Highfield, Gainsborough, July 2.

Curve Tracing and Curve Analysis.

I HAVE unwittingly done an injustice to Mr. R. H. Duncan's book on "Practical Curve Tracing" (vol. lxxxiii., p. 461). I judged by the review of it in NATURE of June 9 that it deals only with the subject indicated by its title. After writing to you regretting that no author deals with practical curve analysis, I bought Mr. Duncan's book, and find that, after describing each class of curve and how to trace it, he gives clear directions for reversing the process and deducing a formula from a given curve. So far as it goes, the book excellently meets the want which I expressed, and my only regret is that the author has not developed the subject a little further.

A. P. TROTTER.

London, July 5.