action must at least be continued somewhere back in early geological time, and would render any astronomer or physicist most impatient in hurrying geologists up for time. Lastly, where have all the resulting materials gone? for they would be sufficient to entirely change the south slopes of the mountain. Had my critic studied the field geology of that region near the coast, he might observe the pumices of Phase VI. covered only by a few metres of alluvial breccia.

Lastly, if Prof. Franco's explanation was feasible, it should be applicable to all the volcanoes in its neighbourhood. Now, Roccamonfina, which so strikingly resembles Vesuvius in size, shape, and many of its rocks, has the lower lip of its crater of explosion directed to the opposite points of the compass, to that of Monte Somma, but no one would dare assert the prevailing winds to differ at Roccamonfina.

Conclusions.—That the picture discussed by the author is a very fair representation of Somma truncated by an eccentric crater produced by the explosive eruptions of Phase VI.

That ancient writers' accounts correspond fairly well with this figure, and the result of geological investigations.

That the Plinian eruption took place together with its successors around the same axis, as the explosive eruptions of Phase VI.

I would remark that this is a general statement; it is highly probable that not one of the great eruptions were from *exactly the same geometrical axis*; but by saying the *same axis*, I understand approximatively the same for practical considerations. In fact, it is very doubtful if the axis is exactly fixed during the whole period of any one single eruption.

In fine, I am deeply indebted to my friend Prof. Franco for so patiently discussing the historical part of the subject, and for giving us such a rich classical and literary treat, and really hope he will take up some other similar knotty questions bearing on such an interesting geological region.

IV.—BRITISH MUSEUM CATALOGUE OF FOSSIL REPTILIA, AND PAPERS ON THE ENALIOSAURIANS.

By R. LYDEKKER, B.A., F.G.S., etc.

IN writing Part I. of the British Museum Catalogue of Fossil Reptilia, in which a large number of forms are known solely by *dissecta membra*, I was fully prepared to find that many of my determinations, which are frequently provisional, would subsequently need correction. It is, moreover, highly probable that there are really more species represented in the collection than I have indicated, as in some cases, in my desire to avoid the introduction of new specific or generic names which could not be fully substantiated, I have provisionally included under generic or specific headings specimens which may prove to indicate distinct forms. I have lately had the advantage of going over a considerable part of the Dinosaurian collection with Prof. Marsh, who has pointed out to me several erroneous determinations, the most important of which I am

glad to take an early opportunity of correcting. I am also indebted to Dr. Baur for pointing out a less excusable error in regard to the serial position of *Geosaurus*.

At the same time I take the opportunity of adding some observations regarding my papers on the Ichthyopterygia and Sauropterygia published in the July and August numbers of this MAGAZINE, which were written in the hope of inviting criticism of which advantage might be taken in the second part of the Museum Catalogue.

In the diagnosis of the Pythonomorpha, Prof. Cope has been followed; and I have omitted to notice that Prof. Marsh¹ has figured a sternum in one genus. Following Owen² and Pictet³ *Geosaurus* is placed in the Pythonomorpha. Wagner has, however, pointed out its relationship to *Cricosaurus*. In the crushed vertebræ of the type one of the transverse processes has been mistaken for the neural spine; and the apparently procœlous character of some of the centra seems to be due entirely to the effects of pressure. The vertebræ, indeed, are truly Crocodilian; and it seems that the genus (with which *Cricosaurus* is probably identical) should form the type of a distinct subfamily of Crocodilia, characterized by the presence of a sclerotic ring, and the absence of a lateral vacuity in the mandible. This subfamily *Geosaurinæ* should be placed next the subfamily *Metriorhynchinæ* of the *Teleosauridæ*, since the skull of *Cricosaurus* is essentially of the type of that of *Metriorhynchus*; with which genus I had, indeed, proposed to identify it. From the similarity in the teeth it is possible that *Pristichamps*, of the Lower Eocene, may prove to be a late survivor of the *Geosaurinæ*.

The vertebræ of *Bothriospondylus suffosus* appeared to me to resemble the figure of the vertebra of *Creosaurus*, but Prof. Marsh states that they undoubtedly belong to an immature member of the Sauropoda, which may be identical with one of the Kimeridgian species of *Ornithopsis*. The vertebra of *B. robustus* is probably also referable to the same suborder, and may belong to an immature *Cetiosaurus*.

The two calcanea provisionally referred on p. 225 to *Iguanodon* are also recognized by the same authority as Sauropodous. The teeth provisionally assigned by Sir R. Owen to *Hylæosaurus*, and entered on p. 185 under that heading, Prof. Marsh recognizes as undoubtedly Sauropodous, having some resemblance to those of *Diplodocus*. This would remove any bar to Sir R. Owen's identification of *Regnosaurus* with *Hylæosaurus*; but the former may equally well be identical with the later *Polacanthus*, although probably too large to belong to *Vectisaurus*, on the assumption that the latter belongs to the *Scelidosauridæ*. Assuming that these teeth are truly Sauropodous, the small size of the tooth referred by Phillips (and probably correctly) to *Cetiosaurus Oxoniensis* suggests that they may belong to the smaller *C. brevis*, which would then be proved to differ widely from *Ornithopsis* (? *Pelorosaurus*), which had large teeth.

¹ Amer. Journ. ser. 3. vol. xix. pl. i. (1880).

² Odontography, p. 263. It is pointed out that the vertebræ approximate to the Crocodilian type.

³ Paléontologie, 2nd edition, p. 506.

It is not improbable that the mandibular ramus entered on p. 227 as a young *Iguanodont* may really indicate a smaller adult form allied to *Laosaurus* or *Camptonotus*, in which event the undetermined femur mentioned on p. 195 may perhaps belong to the same form. I am also inclining to the opinion which was suggested in the Catalogue, that some of the portions of pectoral and pelvic girdles entered under the head of *Iguanodon Bernissartensis* may indicate a second large species of Wealden *Iguanodont*.

I am further indebted to Prof. Marsh for pointing out that the name *Omosaurus* is preoccupied by Leidy (Proc. Ac. Nat. Sci. Phila. 1856, p. 256). Since, however, the form so designated is known only by the preliminary description, I do not intend to propose a new name; more especially since I think it not improbable that *Stegosaurus* is generically inseparable from *Omosaurus*, in which case the former name should be adopted.

Turning to the Enaliosaurians, Prof. Marsh informs me that *Baptanodon* shows no trace even of a dental groove, and it would therefore seem that Dr. Baur's suggestion as to the generic unity of this form with *Ophthalmosaurus* is not well founded.

In regard to *Plesiosaurus Oxoniensis* (*suprà*, p. 352), a visit to the Oxford Museum, where I have seen the whole of the type-specimens, has shown that the skeletons in Mr. Leeds' collection indicate a form so much superior in size to the type of that species, that I am inclined to think it will be safe for the present to retain for them the name of *P. eurymerus*, although I can see no structural difference in the vertebræ. Both the pectoral girdle and the limb-bones figured by Phillips under the former name are from a different locality from the vertebral column, and I now think are probably both referable to *P. plicatus*. This pectoral girdle when entire was of the type of that of the so-called *Elasmosaurus*. In these notes I have used the term *Plesiosaurus* in its wider sense. With regard to *P. philarchus*, which I was inclined to include in *Thaumatosauros*, I have since seen reasons which have induced me to regard this form as indicating a new genus connecting *Thaumatosauros* with *Pliosaurus*.

Finally, I must offer my apologies to Prof. Cope for the statement regarding *Elasmosaurus* (*suprà*, p. 356). In a separate copy in the Museum Library of the memoir to which I have alluded the figure of the skeleton is given in the reversed manner I have mentioned. This copy belongs, however, to an advance issue, of which, I am informed, the greater portion was suppressed, and in the serial itself the erroneous restoration and the accompanying letterpress have been amended.

V.—AN UNDESCRIBED CARBONIFEROUS FOSSIL.

By Prof. T. RUPERT JONES, F.R.S., and Dr. HY. WOODWARD, F.R.S.

IN the Museum of Practical Geology, London, is a remarkable specimen, marked D $\frac{3}{2}$, which the late Mr. J. W. Salter referred to, in the 'Quart. Journ. Geol. Soc.' vol. xix. 1863, p. 92, as "a huge bivalve Crustacean," . . . "with a carapace 7 inches long," giving it the name "*Dithyrocaris pholadomya*." It is in a dark micaceous