

more or less in a straight line of strike, and its distance across at right angles to the bedding is perhaps scarcely a quarter of that occupied by parts of the so-called inversion of the Tanôl and metamorphic rocks of the Northern Punjab. The dip angles in these last, too, are greatly lower than those along the Pir Panjâl.

Except for the uppermost beds being the most metamorphosed, it may be doubted whether any one would feel compelled to invoke the aid of an inexplicable inversion in order to contradict very ordinary and self-evident structural facts. That inversion is frequently present in disturbed districts, no field-geologist would deny; but where its presence is unnecessary to explain the facts, this need not be asserted on insufficient evidence, nor does there seem to be any conclusive reason why metamorphism need always, or only be assumed to have acted vertically upwards.

If the relative position of the rocks could have been explained by simple inversion, and if the unconformity at the base of the Tanôl-Infra-Trias group, which could not have escaped participation in the overthrow, had no existence; it would have been a very simple matter to assign conjectural places to each of the groups older than the fossil-bearing Trias. Geological difficulties are not to be solved, however, by losing sight of the conditions presented to observation.

The riddles of the northern Punjab may be doubtless read when ample time and patient labour have been devoted to recording each geological feature upon large-scale maps and in carefully made sections; till this can be done, it will be wiser to put forward the mere speculations of cabinet geology accompanied by ample reservations, and to refrain from accepting theories as facts.

NOTICES OF MEMOIRS.

RADIOLARIA IN "DIASPRO."—Bolletino del R. Comitato d'Italia, 1880.
Nos. 1, 2.

THE above Journal contains a report of a verbal announcement made by Prof. Dante Pantanelli, on the discovery of *Radiolaria* in the Italian "Diaspro" from various places, and of different ages; two from the Lias, and one probably Cretaceous, but the greater number were from the Upper Eocene. In a previous meeting of the same Society (Soc. Toscana di Sc. Nat.), Prof. de Stefani, in speaking of this diaspro and manganese, attributed their formation to deposits in deep seas, but this idea was combated, and in consequence, Prof. Pantanelli undertook the examination, with the above results. The importance of this is much increased by the fact, that the diaspro of Murlo and Crevole are intercalated with the serpentine, and we may hope that much light will thus be definitely thrown on a question which is occupying much attention in Italy, and has also been taken up by some of our leading English geologists, we mean the formation of the Italian serpentines. Prof. Pantanelli thinks we may now definitely accept the hypothesis of Stoppani that the serpentines are volcanic rocks, for the most part erupted in deep seas. Thus the same conclusion is arrived at from quite different stand-points. He also

thinks it may facilitate an explanation of the mode of formation of manganese deposits, as they occur in connexion with the diaspro rich in fossils, and hints, that it would make us doubt the possibility of their being formed by an endogenous action, or from deposits of mineral water.

Prof. de Stefani called attention to the use the microscope may now be to the anthropologists, in showing from what locality implements made of this rock were derived.

The writer of this notice believes he is in a position to refer to the Eocene "diaspro" the rock mentioned by Prof. Bonney in this Magazine last year (August, No. 182, p. 369), in which attention was called to its containing fossils, which Prof. Bonney was himself inclined to refer to Radiolaria and Bryozoa, and can also add that Professor Pantanelli has in the press an article describing a large number of the Radiolaria observed.

A. W. W.

REVIEWS.

I.—ON THE STRUCTURE AND AFFINITIES OF THE PLATYSOMIDÆ. By RAMSAY H. TRAQUAIR, M.D. Transactions of the Royal Society of Edinburgh, vol. xxix. pp. 343-391, Pls. iii.-vi.

IN the above memoir Dr. Traquair discusses an interesting group of deep-bodied Palæozoic fishes, some forms of which have long perplexed Palæichthyologists as regards their affinities and systematic position among the Ganoids. The position and form of the teeth, the skeletal structure, conformation and attachment of the scales; the absence, presence, or form of certain fins, having been the objects respectively studied, has led, as a natural consequence, to the publication of many and diverse opinions in regard to these characters, and their bearing upon the classification. Yet none of the respective authors have hitherto succeeded in establishing the natural position of the group in the above order of fishes upon a basis sufficiently satisfactory to be permanently, or even generally accepted; nor has their relationship to the many, and in some instances widely separated genera, with which they have been associated by one author or the other.

In a concise but comprehensive introduction, which commences with an enumeration of the genera Dr. Traquair refers to the family *Platysomidæ* as enlarged by himself (viz. *Eurynotus*, Ag.; *Benedenius*, Traq.; *Mesolepis*, Young; *Euryosomus*, Young; *Wardichthys*, Traq.; *Cheirodus*, M'Coy (*Amphicentrum*, Young); *Platysomus*, Ag.), is embodied the various views enunciated respecting the structure and classification of some of these genera, of which the following is a brief résumé. Agassiz classed *Eurynotus* and *Platysomus* (including *Euryosomus*) in his Lepidoid family of Ganoids. Giebel includes the same genera in his "Heterocerei Monopterygii," along with Palæoniscoid genera, and also with *Eugnathus*, *Conodus*, and *Megalichthys*. Quenstedt places *Platysomus* among the Heterocercal Ganoids, immediately after *Palæoniscus*, *Amblypterus*, and *Pygopterus*. Sir Philip Egerton advocated the removal of *Platysomus* to the Pycno-