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NOTICES OF MEMOIRS.

- I. — NOTE ON A FOSSIL FISH AND MARINE WORM FOUND IN THE PLEISTOCENE NODULES OF GREEN'S CREEK ON THE OTTAWA.
By SIR J. WILLIAM DAWSON, F.R.S. (Canadian Record of Science, vol. iv. pp. 86-88, April, 1890.)

THE Pleistocene Clays of Green's Creek are well known from the occurrence in them of fish-bearing nodules resembling those

found on the coast of Greenland. *Mallotus villosus*, *Osmerus mordax*, *Gasterosteus aculeatus*, and *Cyclopterus lumpus*, have already been recorded from this deposit; and Sir William Dawson now adds a species of *Cottus*, which seems to be *C. fasciatus* of Reinhardt. Other nodules containing Nereid worms are also described, and believed to represent a species of the genus *Nereis*.

II.—THE OCCURRENCE OF RADIOLARIA IN ALBITE CRYSTALS.

A. ISSEL. RADIOLAIRES FOSSILES CONTENUES DANS LES CRISTAUX D'ALBITE. *Compt. Rend.* tome cx. pp. 420—424, Fevr. 24, 1890.

A. ISSEL. IL CALCIFIRO FOSSILIFERO DI ROVEGNO IN VAL DI TREBBIA. *Annali del Museo Civico di Storia Naturale di Genova*, (2) ix. 1890, pp. 91—119, pls. v. and vi.

PROBABLY one of the last places in which a geologist would attempt to commence fossil collecting would be in a rock containing authigenous crystals of albite, and perhaps the most remarkable discovery announced in the present year is that not only does such a rock yield a Radiolarian fauna, but that the fossils occur in the albite crystals themselves. The calciphyre, in which this unexpected find has been made, occurs at several places round Rovigno, a village situated in the tongue of Pavia that runs south up the Trebbia valley to the summit of the Ligurian Apennines. The rock occurs in a series of calcareous marls, calcareous and argillaceous "schists" and tiles, belonging to the group of Upper Eocene beds (piano liguriano), which has already yielded so many interesting results. The beds are so much contorted that the stratigraphical sequence is determinable but with difficulty; the fossiliferous rock, however, certainly belongs to the lower part of the series, the upper part of which consists of serpentines, gabbro, diabase, phthanite with pyrolusite, and breccias. The calciphyre occurs intercalated with beds of hard, black, siliceous schist, which together are 6·3 mètres in thickness; the limestone is of a ground-mass of ordinary cryptocrystalline calcite, in which are scattered crystals of felspar; these are often minute in size, but range to a length of 3 cm. Their crystallographic and optical properties clearly prove them to be albite. Analyses of the rock and of the insoluble residues are given; these, however, are less satisfactory; thus in the former 10 per cent. of silica is accompanied by only traces of alkalies; hence so much other siliceous matter must be present that little can be learnt from bulk analyses. The Radiolaria occur mostly within the albite, but sometimes a specimen projects above the face of a crystal into the surrounding matrix. That the structures really are Radiolaria there seems little room for doubt. Prof. Issel has had considerable experience in the examination of the Radiolarian fauna of the diaspores that occur in the same series;¹ while the plate of microphotographs that accompanies the second

¹ See, e.g. his recent paper, "Dei noduli a radiolarie di Cassagna e delle rocce silicee e manganesiere chi vi si connettono," *Atti Soc. Ligus. Sci. Nat. e Geogr.* vol. i. No. 1, 1890.

paper seems quite sufficient to settle the question. The fossils are referred to the genera *Ethmosphæra*, *Heliosphæra*, *Caryosphæra*, *Lithopera*, *Spirocampe*, *Dictyomitra*, *Euchitonia*, *Stichocampsa*, and *Polystichia*; *Microleucitos* is a new genus. Moreover, there seems to be no doubt that the albite has been formed *in situ* around the Radiolaria, the material in the chambers of which is often different from that of the albite around it; a halo of less transparent matter also often surrounds the test of the fossil. The limestone shows signs of erosion by acidulated water, and Issel attributes the formation of the calciphyre to hydrothermal agencies acting upon a calcareous marl at or subsequent to the emission of the overlying "anfibromphic" rocks. Hence he concludes "that from this we see that the formation of large crystals of felspar in the heart of a sedimentary rock may be a local phenomenon produced independent of the cause to which metamorphism is by many attributed." J. W. G.

III.—"*Ichthyosaurus campylodon* E TRONCHI DI CICADEE NELLE ARGILLE SCAGLIOSE DELL' EMILIA." By Prof. G. CAPELLINI. [Mem. R. Accad. Sci. Istit. Bologna, ser. 4, vol. x. (1890), pp. 1-24, pls. i. ii.]

IN the Bulletin of the Italian Geological Society last year (vol. viii. pp. 43-45), Prof. D. Pantanelli announced the discovery of Saurian jaws in the supposed Eocene beds of Emilia, determining them to be Crocodilian, and applying to them the name of *Gavialis mutinensis*. Prof. Capellini now gives good figures and a detailed description of the fossil in question, proving that it is a fragment of the snout of *Ichthyosaurus campylodon*, and must have been derived from the Cretaceous formation. The Professor is also engaged at present, in collaboration with Prof. Solms Laubach, upon a monograph of the fossil Cycads of Emilia: he thus adds a description and figure of a Cycadean stem from the same horizon as the *Ichthyosaurus* snout, proposing for it the name of *Raumeria masseiana*.

REVIEWS.

I.—THE CONNEXIONS OF THE ANIMAL WORLD IN GEOLOGICAL TIMES.

LES ENCHAINEMENTS DU MONDE ANIMAL DANS LES TEMPS GEOLOGIQUES—FOSSILES SECONDAIRES. By ALBERT GAUDRY. pp. 523, and 403 Woodcuts. (Paris, 1890.)

WITH this volume we have the third, and we presume the final, part of Prof. Gaudry's 'Enchainements'; and its appearance would seem to indicate that the work as a whole has been a financial success. If such a work were published in this country, we confess we should be rather at a loss to indicate the class of readers to whom it would be acceptable, since it makes no pretence to be a scientific and detailed palæontological manual, and yet appears to be too