

dug out at a little depth in the Cassiterides (book ii. cap. v. § 15); this was about 57 B.C.

Strabo further describes the Cassiterides as “islands in the high seas just under the same latitude as Britain, northward and opposite to the Artabri.”<sup>1</sup>

(To be continued in our next Number.)

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## NOTICES OF MEMOIRS.

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ON THE GEOLOGY OF THE WEST BALKAN.<sup>2</sup> By FR. TOULA. (Proceed. Imper. Acad. Vienna, March 14, 1878.)

THE southern margin of the Berkowiza-Balkan is composed of Tithonian coral-limestones. Beneath these lie Middle-Liassic strata, with *Belemnites paxillosus*, *Spiriferina verrucosa*, *Rhynchonella* (near *curviceps*), and *Gryphæa* (near *cymbium*). Beneath these are dark-tinted limestones with Crinoids, small Gasteropods, *Lima radiata*, and *Betzia trigonella* (Recoaro Limestones), resting on red sandstones of the Werfen Schists, which in their turn rest on argillaceous schists of the Carboniferous (Culm) Formation. The Lower Triassic Limestones stretch out wide above Pecenoberols, and upwards to the summit of the defile, where they are seen to rest on intensely yellow sandstones containing *Myophoria costata*. Near Ginci-Han Liassic beds appear again. Their organic remains are—*Belemnites paxillosus*, Schlth., *Pleurotomaria* (near *expansa*, Sow.), *Rhynchonella acuta*, Sow., *Spiriferina rostrata*, Schlth., *Lyonsia unioides*, Gldf., *Pecten liasinus*, Nyst, *Pect. sublaevis*, Phill., *Plicatula* (near *spinosa*, Sow.), *Gryphæa* (near *fasciata*, Tietze). The steep northern slope is formed of granite, intersected by many veins of andesite. Farther off, crystalline schists extend to beyond Berkovac. On the whole, the Berkowiza-Balkan is an independent portion of the Balkan chain. Cretaceous deposits are wanting throughout the section, except that perhaps the coral-limestones on the southern side may possibly be Lower Cretaceous, if not Tithonian.

The crystalline schists past the line Berkovaz-Vraza are succeeded by Palæozoic argillaceous schists and conglomerates, overlain by red sandstones and light-coloured limestones. Mighty masses of these limestones, locally abounding with organic remains (*Thamnastræa*, *Actinaræa*, *Reptomulticava*, *Chætetes Coquandi*, Mich., *Lithodomus*, *Caprotina Lonsdalei*, d'Orb.), rise above the Lower Triassic deposits. Near Vraza, sandy limestones and marls, characterized by the presence of *Orbitolinæ*, appear on the northern base of the Caprotina-limestones. Several of their beds abound with fossils, as,—*Ostrea Vrazaënsis*, sp. nova, *Rhynchonella* (near *lata*, d'Orb.), *Terebratula*, *Waldheimia*, *Cerithium Forbesianum*, *Turbo*, *Astarte numismalis*, *Cyrena* (?) *lentiformis*, Roem., *Cardium* (near *Ibbetsoni*), *Pecten*, *Areopagia gracilis*, sp. nova, *Terebratula*, and *Rhynchonella lata*.

<sup>1</sup> Peacock, p. 107.

<sup>2</sup> Notes on the Geology of other parts of the Balkan, by M. Toula, are given in the GEOL. MAG. Dec. II. Vol. IV. p. 518.

The organic remains in the Inoceramus-limestone between Vraza and Ljutibrod are,—*Galerites (vulgaris ?)*, *Ananchytes ovatus*, *Cardiaster pilula*, *C. ananchytis*, *Inoceramus* (near *Crippsi* and *Cuvieri*), *Terebratula* (near *Hebertina*), *Trochus*, *Ammonites (Harpoceras)*, *Hamites*. Beneath these strata lie sandy limestones, abounding with *Orbitolina*, resting on Bryozoan limestones. These contain *Reptomulticava micropora*, *Ceriocava subnodosa*, *Multicrescis Michelini*, etc., together with spines of *Cidarites*, *Nucleolites* (near *Olfersi*), *Terebratula*, *Ostrea* (near *Boussingaulti*), *Lima Tornbeckiana*, and *Serpula filiciformis*. Caprotina-limestones appear farther southward. The whole series reminds one of the three subdivisions of the "Schratten Limestones" in the Northern Alps, resting to the south on red sandstones and conglomerates. Lower Triassic red sandstones, resting on quartzite schists, and overlain by Lower Triassic limestones, are amply developed between Cerepis and Obletnja. Melaphyres and diorite are widespread. Granite appears at two places. At one spot on the banks of the River Isker the Triassic limestones contain *Natica*, *Pecten Alberti*, *Modiola triquetra*, *Gervillia socialis*, *G. mytiloides*, *Leda*, *Myophoria costata*, *M. lævigata*, *M. elegans*, *Myoconcha gastrochæna*, *Anoplophora* (near *musculoides*), etc.

Argillaceous schists of the Carboniferous formation (Culm), cropping out from beneath red sandstones, prevail in one part of the Isker Valley, striking N.—S. Some intercalated sandstones yield vegetable remains, as *Archæocalamites radiatus*, *Cardiopteris polymorpha*, *Neuropteris antecedens*, *Stigmaria inæqualis*, and *Lepidodendron Veltheimianum*. The Culm schists continue as far as Ronca, where red conglomerates and sandstones appear again, forming the narrow defile through which the River Isker enters the gorges of the Balkan.

COUNT M.

## REVIEWS.

I.—MANUAL OF THE GEOLOGY OF IRELAND. By G. HENRY KINAHAN. 8vo., pp. 444, Map, 8 Plates, and 26 Woodcuts. (London, Kegan Paul & Co., 1878.)

UPWARDS of twelve years ago Lyell observed how increasingly difficult he felt it to keep up with the progress of geology. And every student of the science must continually be impressed with this difficulty. The grand work of our American brethren is in itself an immense study, and so important is the light it has thrown on every branch of geology, that it possesses a world-wide interest. But while the GEOLOGICAL MAGAZINE and the Geological Record announce to us periodically what has been done, and what is being done, the number of isolated works is too great, and access to them often too difficult, for those who wish to glean the sum and substance yielded by minute observation.

And in the British Islands, as has been often remarked, the increase in our knowledge becomes every year more and more a matter of local detail, supplementing and illustrating the work and conclusions of those who sketched out the main features in their