

NOTICES OF MEMOIRS.

I.—ON THE ZONE OF *AMMONITES ACANTHICUS* OR *AMMONITES TENULOBATUS*.¹

IN an elaborate memoir descriptive of the fossils and localities of the zone of *Am. acanthicus* in the Swiss and Savoy Alps, M. E. Favre, after a careful comparison of the fossils with those from other Jurassic strata, together with remarks on the nature and age of the fauna of this zone, gives the following *résumé* of his researches.

1. There is no general break in the Upper Jurassic strata in the Alpine or Mediterranean regions.

2. The zone of *Am. acanthicus* of the Alps of Switzerland and of Savoy is the equivalent, in the Eastern Alps, of the zone of *Am. tenuilobatus*, and *Am. isotypus* and of the zone of *A. Beckeri*.

3. It is the equivalent, in the Jura, of the zone with *Am. tenuilobatus*, and of the zone with *Am. Eudoxus* and *Am. pseudomutabilis*.

4. The zone of *Am. tenuilobatus* is the exact equivalent of the Astarte zone (*terrain astartien*), of which it is only a peculiar facies.

5. The stratigraphical position of the zone *Am. acanthicus* and its palæontological affinities unite it closely with the Kimmeridgian.

6. In all the Alpine region, there is a very marked palæontological line between the zone of *Am. acanthicus* and the strata upon which it reposes, which are, either the zone of *Am. transversarius* or of *Am. bimammatus*. The latter has more affinity with the subjacent strata and ought to be classed in the Oxfordian. There is, on the contrary, a close palæontological relation between the zone with *Am. acanthicus* and the Tithonian strata which overlie it.

7. The general classification which would best suit the whole of the Alpine strata would be to fix the upper limit of the Oxfordian at the base of the zone with *Am. acanthicus*, and to give the name of Kimmeridgian (or Alpine Kimmeridgian) to the whole of the beds comprised between the Oxfordian and the strata of Berrias or the base of the Neocomian. This name should be employed here in the sense which M. Waagen gave to it in 1865; and which M. Lorient also attributes to it; except a slightly less extension of the lower part, the last author makes it to include all the strata to the zone of *Am. transversarius*. However, this latter difference is not very important in this region, since the Corallian *facies* inferior to the zone of *Am. acanthicus* is not here developed. The zone with *Am. acanthicus* would be the Lower Kimmeridgian, and the Tithonian beds the Upper Kimmeridgian. The equivalents of the Jurassic and Alpine *facies* are approximately given in the accompanying Table:

¹ E. Favre, La Zone à *Ammon. acanthicus* dans les Alpes de la Suisse et de la Savoie.—P. De Lorient, Monographie paléontologique de la Zone à *Am. tenuilobatus* de Baden.—Mémoires de la Société Paléontologique Suisse, Basel, 1877, vols. 3, 4.

FRIBOURG ALPS. (Favre.)	LÉMENC. (Pillet.)	EASTERN ALPS. (Neumayr.)	CRUSSOL. (Fontannes, Hug Uenin)	AIN. (Falsan, Choffat.)	ARGOYA. (Moesch.)
Upper and Lower Tithonian strata. <i>Ter. Janitor.</i>	Beds of the Droquet Vineyard. <i>Ter. Janitor.</i>	Upper Tithonian. <i>Ter. Janitor.</i>	(Fontannes, Hug Uenin)	Purbeck. Portlandian with <i>Nerinea</i> .	Hattingen Oolite Corallian of Nattheim.
Couches du Calvaire. <i>Am. stercaspis</i> . <i>Ter. diplyga</i> .	L. Tithonian, Inwald and Rogoznik. <i>Am. lithographicus</i> , <i>Ter. diplyga</i> and <i>Cidaris carinifera</i> .	Calcaire du Château. <i>Am. stercaspis</i> , <i>Am. lithographicus</i> .	Fish Beds. <i>Cid. corinifera</i> . Beds with <i>O. virgula</i> .	Plattenkalke (Solenhofen) <i>A. stercaspis</i> , <i>lithographicus</i> .	Wettingen beds, Piérocérien (<i>Am. Eudarus</i>)
Zone with <i>Am. acanthicus</i> (<i>Am. isotypus</i> , <i>pychoicus</i> , <i>tenuilobatus</i> , <i>Frotho</i> , <i>longispinus</i> , <i>Ter. Janitor.</i>)	Zone of <i>Am. acanthicus</i> and <i>Beckeri</i> , <i>Ter. Janitor.</i>	Zone of <i>Am. tenuilobatus</i> .	Corallian (Valfin.)	Baden and Astarte beds. (Letzi beds.)	Wangen beds (Corallian.)
Limestones. <i>Belem. hastatus</i> , <i>Am. Manfredi</i> , <i>Arviculus</i> , <i>Evabo</i> , <i>bimammatus</i> , <i>Eggr</i> ; <i>Collyrites Inburgensis</i> .	Oxfordian.	Zone with <i>Am. bimammatus</i> .	Beds with <i>Hemicidaris crenularis</i> .	Zone of <i>Am. bimammatus</i> (<i>Ter. à chaillies</i>).	Geissberg beds. Effingen beds (Zone of <i>Ter. impressa</i>).
	Zone of <i>Ter. impressa</i> .	Zone of <i>Am. transversarius</i> .	Hydraulic limestone with <i>Ter. impressa</i> .	Zone of <i>Am. transversarius</i> .	Birmensdorf beds (Zone of <i>Am. transversarius</i>).

J. M.

II.—LAND PLANTS IN THE SILURIAN ROCKS.

Count Saporta, in his report to the Academy of Sciences on the Fern (*Eopteris Andegaversis*), obtained from the Silurian slates of Angers, remarks that this important discovery was forestalled in America, where remains of Silurian land plants had been found. The first of these, found some years ago by Dr. S. S. Scoville, in shale of the Cincinnati group, and provisionally referred to *Sigillaria*, were briefly described in the American Journal of Science for 1874 (p. 31). Dr. Newberry also noticed them in the same Journal (p. 110), and considered they were casts of some large *Fucoids* or marine plants. These remains have been again studied by Prof. Leo Lesquereux, together with other specimens sent to him from the Silurian of Cincinnati and also from the Lower Helderberg sandstone of Michigan, which, from their characters, seem to him to be evidently representatives of land vegetation, and the description of them was communicated to the American Philosophical Society (Oct. 19th, 1877).¹ The following are the species noticed; *Psilophyllum gracillimum*, *P. cornutum*, *Annularia Romingeri*, *Sphenophyllum primævum*, *Protostigma sigillaroides*.

Prof. Lesquereux remarks that the character of these Silurian plants, described by him, give us a microcosmical representation of the flora of the Carboniferous, so simple and at the same time so admirable in the multiple division of its specific forms; and thus we now have represented in the Silurian—

1st. The *Lycopodiaceæ*, by species of *Psilophyton*, diminutive forms but primitive types of the *Lepidodendron*.

2nd. The Ferns, by a species related to *Paleopteris* or to the group of the *Neuropteridæ*, which is the most common species of the coal.

3rd. The *Calamiteæ*, by *Sphenophyllum* and *Annularia*, these forming two sections related to the *Équisetaceæ*.

4th. The *Sigillariæ*, placed by some authors as an order of plants between the Conifers and the Cycadeæ, and here represented by the *Protostigma*.

5th. The *Fucoids*, represented by *Calamophycus septus*.

J. M.

 REVIEWS.

I.—THE EPOCH OF THE MAMMOTH AND THE APPARITION OF MAN UPON THE EARTH. By JAMES C. SOUTHALL, A.M., LL.D., Author of the "RECENT ORIGIN OF MAN." Crown 8vo. pp. 430. (London: Trübner & Co., 1878.)

WE give the size of this book lest it should be confounded with the royal 8vo. issued by the same writer on the same topic so recently as 1875. This rapid re-composition reminds us of the method of the late Sir Charles Lyell; but although Dr. Southall writes easily, he does not yet possess either the caution in collecting and weighing evidence, or the charming philosophic style which

¹ Proc. Amer. Phil. Soc. 1877, vol. xvii. p. 163, pl. iv.