Maetra podolica, Eichwald. (See p. 282.)

Miocene (Sarmatian): Heraklitza, and near Malgara.

Fig. 16. Limestone-cast of a right valve, showing pallial and muscular scar-impressions (Heraklitza).

17. } Two views of an example of the small globose form which may re-
18. } present the young condition of this species (near Malgara). $\times 1\frac{1}{4}$.

Cardium protractum, Eichwald. (See pp. 282-83.)

Miocene (Sarmatian): Ghermé Tepe.

19. Natural cast of right valve.

Anthracotherium cf. *minus*, Cuvier. (See p. 286.)

Oligocene (Stampian): Masatly.

20. Coronal aspect of what is probably a 2nd molar tooth belonging to the left ramus of a mandible. [M. 8246.]

Corbicula semistriata, Deshayes. (See p. 287.)

Oligocene (Stampian): Masatly.

21. External aspect of the right valve of a specimen with closed valves.
22. Dorsal view of the same, showing the summits, ligament-area, &c.
23. Interior of a right valve of another specimen, exhibiting dentition, lateral sockets, etc.

Spondylus subspinosus, D'Archiac. (See p. 289.)

Eocene (Lutetian): Tzenguerli Deré.

(The matrix of this specimen contains nummulites.)

24. External aspect of valve, showing the strong longitudinal ribs with occasional short thick spines.
25. Magnification of sculpture-striations observed on the ribs of the left lateral region, which has been less subjected to eroding influences than other parts of the specimen.

Cycloseris cf. *Perezi*, Haime. (See p. 290.)

Eocene (Lutetian): Vernitza.

26. Upper surface of calyx, showing the crowded and dentated character of the septa.
27. Basal view of another specimen, exhibiting the fine costations through the thin epitheca; the dentated margin; and the central area with the thickened septa,

Diplomystus marmorensis, sp. nov. (See p. 284.)

Miocene (Sarmatian): Gorgona Deré (southern end).

28. Left lateral aspect.

APPENDIX III.

NOTES on NUMMULITES in the TURKISH ROCKS described by
COL. ENGLISH. By RICHARD HOLLAND, Esq.

[PLATE XXV.]

There appear to be at least three species of nummulites (giving six forms) in the rocks from Vernitza. These are:—

1. (Pl. XXV, figs. 1-3.) A large nummulite having a width of from 45 to 50 millimetres, and a thickness of from 5 to 10 mm. It is microspheric, and there are eleven to twelve turns of the spiral

H. W. B., Photogr.

Hemmer, Collo.

NUMMULITES FROM THE COUNTRY SURROUNDING THE
DARDANELLES.

in a radius of 3 mm. The filets cloisonnaires are sinuo-striate and delicate. The chamber-ratio is irregular: $\frac{\text{Height}}{\text{Width}} = \frac{2}{1}, \frac{4}{3}$. The septal angle is about 45° . The spire is irregular after the first few turns, and the line of the spiral duplicates and coalesces occasionally.

This nummulite is identified as *Nummulites Dufrenoyi*, D'Archiac, form B.¹ De la Harpe refers *N. Dufrenoyi* to the *N. complanata* of Lamarck. It undoubtedly belongs to the *complanata*-group; but it is quite sufficiently distinct, as D'Archiac has shown, and the true *N. complanata* nowhere occurs in these rock-specimens. Moreover, the 'companion'-form of the species differs from *N. Tchiatcheffi*, D'Archiac, which is the 'companion' of *N. complanata*.

2. (Pl. XXV, fig. 4.) A moderate-sized nummulite varying in width from 8 to 10 millimetres, and having a thickness of about 5 mm. Megalospheric, with six turns of the spiral in a radius of 3 mm. Filets cloisonnaires sinuo-striate and rather coarse. Spire fairly regular. The chamber-ratio is rather irregular: $\frac{\text{Height}}{\text{Width}} = \frac{4}{5}, \frac{3}{5}$. Surface non-tuberculate, but the 'pillars' are visible as white specks on a varnished surface. Septal angle = about 50° . This nummulite occurs in great abundance in the main Nummulitic rock at Vernitza. It agrees fairly in dimensions with *N. Tchiatcheffi*, D'Archiac, but differs considerably in the general appearance of its horizontal section. It is identified as *N. Dufrenoyi*, D'Archiac, form A.

3. (Pl. XXV, fig. 5.) A microspheric nummulite, measuring about 15 mm. in width, and rather thin. Filets cloisonnaires sinuo-radiate. Delicate in its characters. The dimensions are not given, because very few specimens have been secured sufficiently well preserved for accurate measurement, and no specimen from which the thickness could be properly measured. On the other hand, a varnished specimen has furnished a fairly-good photograph of the spire, except the first few turns. This nummulite is provisionally identified as a variety of *N. distans*, Deshayes, form B.²

4. (Pl. XXV, fig. 6.) A megalospheric nummulite, rather smaller than No. 2, varying in width from 5 to 8 mm. and in thickness from 3 to 4 mm. The spire is regular at first, and gives seven or eight turns in a radius of 3 mm.; it then frequently becomes more or less irregular. The filets cloisonnaires are sinuo-striate, and more delicate than in No. 2. The chamber-ratio is regular: $\frac{\text{Height}}{\text{Width}} = \frac{2}{1}$; septal angle = about 75° . Although in external appearance this nummulite and No. 2 are somewhat similar, the spiral characters are strikingly different. This No. 4 is provisionally identified as a variety of *N. distans*, Deshayes, form A. A goodly number of

¹ D'Archiac & Haime, 'Description des Animaux fossiles du Groupe Nummulitique de l'Inde' 1853, p. 89 & pl. i, figs. 4a-4e.

² Deshayes, 'Descr. Foss. rec. en Crimée, &c.' Mém. Soc. Géol. France, vol. iii (1838) p. 68 & pl. v, figs. 20-22; D'Archiac & Haime, 'Descr. Anim. foss. Groupe Nummulitique de l'Inde' 1853, p. 91 & pl. ii, figs. 1a-c, 2a, 3a, 4a, 5a, & 5b.

specimens have been examined, but it does not occur in profusion in the rock.

5 & 6. Two very small nummulites, about 3 or 4 mm. in width. These occur in the rocks in great profusion, but they are very difficult to deal with, because of their minute size and crystalline condition. It has not been found possible hitherto to obtain good split specimens. Several have been ground down and then varnished, but they have not furnished results such as to justify the identification of the species. It is thought that there are two forms—one microspheric and one megalospheric; and roughly they resemble *N. variolaria*, Sowerby,¹ and *N. Heberti*, D'Archiac.²

All these nummulites are highly crystalline. Nos. 2 & 4 split readily under the usual treatment, though the process spoils nearly 50 per cent. of the specimens operated upon. When they are split the crystalline condition entirely masks the internal structure, but this is fairly well brought out by the use of a varnish of Canada balsam dissolved in benzol. Nos. 1 & 3 split with very great difficulty, and, in fact, to obtain the spiral characters of No. 3 it has been necessary to grind a specimen down to the median plane and then use varnish. In spite of the intractable nature of the specimens, Mr. H. W. Burrows, F.G.S., has kindly attempted to get some micro-photographs; and he has succeeded (by the use of the acetylene-light) in securing from opaque varnished specimens results which are highly satisfactory in the circumstances.

Associated with the nummulites in the rocks are numerous Orbitoides. It has not yet been found possible to separate out any good specimens, but a transparent section of the 'black' rock shows a few of the chambers of the median plane in one of the Orbitoides. These chambers are clearly rectangular, and the Orbitoides are Discocyclines. It is probable that the species *Orbitoides (Discocyclina) papyracea* and *O. (D.) dispansa* both occur.

Other Nummulitic rocks from the neighbourhood of Mount Elias have also been examined. Some of them contain nummulites and Orbitoides in outward appearance not unlike those from Vernitza, but it has not been found practicable to isolate specimens good enough and numerous enough to examine them properly for purposes of identification.

Three transparent slides cut from the rocks of Mount Elias have been examined. These contain, in addition to *Nummulites* and *Orbitoides*, *Orbitolites* (probably *O. complanata*), *Alveolina* (near *A. oblonga*), numerous *Textulariæ*, *Biloculina*, *Polymorphina*, *Milolina*, and several Globigerine and Rotaline forms.

¹ Thomas Brown, 'Illustrations of the Fossil Conchology of Great Britain' 1849, p. 37 & pl. xxvi, figs. 3-5; and D'Archiac & Haime, 'Description des Animaux fossiles du Groupe Nummulitique de l'Inde' 1853, p. 146 & pl. ix, figs. 13 a-13 g.

² D'Archiac & Haime, *op. cit.* p. 147 & pl. ix, figs. 14 a-14 g, 15, & 15 a.

It is deduced from other palæontological evidence that these beds are of Lutetian age. There appears to be nothing in the foraminiferal evidence to conflict with this view.

EXPLANATION OF PLATE XXV.

- Fig. 1. *Nummulites Dufrenoyi*, D'Archiac, form B. External view, showing the delicate sinuo-striate filets cloisonnaires. Natural size.
2. *N. Dufrenoyi*, D'Archiac, form B. Transverse section in matrix. Natural size.
3. *N. Dufrenoyi*, D'Archiac, form B. Segment of central whorls on the median plane of a split section. $\times 10$.
4. *N. Dufrenoyi*, D'Archiac, form A. Central whorls on the median plane of a split section. $\times 8$.
5. *N. distans*, var., Deshayes, form B. Central whorls on the median plane of a ground section—the first few turns wanting. $\times 10$.
6. *N. distans*, var., Deshayes, form A. Central whorls on the median plane of a split section. $\times 10$.

DISCUSSION.

THE PRESIDENT said he considered that the paper was an excellent illustration of the value of geology in throwing light upon the origin of the present superficial features of the earth.

DR. C. W. ANDREWS thought that remains of *Anthracotherium* were not of very great value for the determination of horizons, as that genus had a considerable range, and closely-allied forms occurred in the Upper Eocene and Miocene of Egypt. Nevertheless, its occurrence in the Dardanelles area was of extreme interest, and further finds might well throw considerable light on the distribution of the early Ungulates.

MR. R. B. NEWTON pointed out that there could be no question as to the Oligocene age of the *Anthracotherium*-remains obtained from the coal-deposits at Masatly, since they were found associated with *Corbicula semistriata*, a very characteristic shell of that period.

MR. A. P. YOUNG said that it seemed likely that some of the igneous rocks exhibited would, on analysis, yield interesting results. The green pyroxene observed in one of the slides might prove to be wholly or in part a soda-iron silicate, such as frequently crystallized out from magmas in which the alumina-constituent was deficient in respect of alkalis.

THE AUTHOR thanked the Fellows present for the reception accorded to his paper.