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EVENING MEETINGS OF THE GEOLOGICAL SOCIETY

TO BE HELD AT BURLINGTON HOUSE.

SESSION 1912-1913.

1913.

Wednesday, May 7 — 28*
" June 11 — 25*

[Business will commence at Eight o'Clock precisely.]

The asterisks denote the dates on which the Council will meet.

THE

QUARTERLY JOURNAL

OF THE

GEOLOGICAL SOCIETY OF LONDON.

EDITED BY

THE ASSISTANT-SECRETARY OF THE GEOLOGICAL SOCIETY.

quod si cui mortalium cordi et curae sit non tantum inventis herere, atque iis uti, sed ad ulteriora
perire; atque non disputando adversarium, sed opere naturam vincere; denique non belle et probabiliter
perire, sed certo et ostensivè scire; tales, tanquam veri scientiarum filii, nobis (si videbitur) se adjun- ant.
Ant. Organum, Praefatio.

VOLUME THE SIXTY-NINTH.

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MCMXIII.

obviously refers to a *Peltoceras*. I have received from the Whitby Museum a specimen supposed to be the type. It is rather more than 2 inches in diameter, and is then three-quarters of an inch thick; but it does not altogether agree with the description. Further search for any specimen so named by Simpson may be requested of those who have charge of old collections of Scarborough fossils.

PELTOCERAS SUBTENSE. Leckenby identified this doubtfully with *Ammonites arduennensis* d'Orbigny, but it is not that species. The regular radial (versiradiate) costæ, which bifurcate about the middle of the lateral area, distinguish it from d'Orbigny's species. The position of furcation distinguishes it from many other species. It is a much compressed form, carrying the costate stage a long time, and hardly attaining to the bituberculate stage. The largest example is 176 mm. in diameter.

PHLYCTICERAS HYPERBOLICUM. Simpson's *Ammonites hyperbolicus* is a most remarkable and interesting species. It is the senile development of the genus *Phlycticeras*,¹ which, so far as I recollect, has not yet had any of its species recorded from England. It has lost nearly all ornament, though there remain just sufficient traces of rib-contour to indicate the generic association. The keel has been reduced to a mere ridge. Such a senile species of the genus has not, so far as I know, been recorded.

QUENSTEDTOCERAS GREGARIUM. This species has as a distinctive feature ribs much forwardly inclined across the whorl (prosi-radiation). A Russian species, *Amaltheus leachi* Nikitin² (non Sowerby), has the same style of tangential ribbing—as if the periphery had been turned forwards around the centre; and it has much the same proportions. Another Russian species, *Amaltheus rybinskianus* Nikitin,³ is what one would expect as the involute stouter-whorled development. I have not seen such tangentially ribbed forms from any other English localities where other *Quenstedtocerata* abound.

QUENSTEDTOCERAS LONGÆVUM. Leckenby's placing of this as a synonym of *Ammonites lamberti* Sowerby was not correct. The Bean types show two species belonging to two different stocks, one is near to *Q. placenta* (see below) and the other belongs to the *Cadoceras-grewingki* series (see *Cadoceras*, sp. nov., p. 162).

QUENSTEDTOCERAS MARLÆ. D'Orbigny ('Terr. jurassiques: Céphalopodes' pl. clxxix) has several forms under this name. It is

¹ *Phlycticeras* Hyatt = *Lophoceras* Parona & Bonarelli. For a treatise on the species see their work, 'Call. inf. Savoie' Mém. Acad. Savoie, ser. 4, vol. vi (1895) p. 90.

² 'Die Jura-Ablagerungen zwischen Rybinsk, &c.' Mém. Acad. Imp. St. Pétersb. ser. 7, vol. xxviii (1881) No. 5, pl. i, fig. 5.

³ *Id.* pl. i, fig. 8.

advisable to fix one as the type, and for this the example depicted in his figs. 5 & 6 is selected. I understand that this occurs high in the Divesian; but it is doubtful whether we have it in England. The Russian variety (figs. 7 & 8) has nothing to do with it, and probably occurs low in the Callovian. See *Cadoceras grewingki* (p. 162).

QUENSTEDTOCERAS PLACENTA. This very involute species is not a true *Quenstedtoceras*, but still less is it a *Cadoceras* of the *grewingki* series. It would seem to be peculiar to Yorkshire.

QUENSTEDTOCERAS TURGIDUM. This is a senile form, like the example which A. d'Orbigny has ascribed to *Ammonites lamberti* ('Terrains jurassiques: Céphalopodes' pl. clxxviii only), but with a more trigonal whorl, and the venter is more acute in the costate stage.

QUENSTEDTOCERAS VERTUMNUS. This is a species with stout ribs, which look like pieces of cord wound round the whorl. I have not seen it from any other locality. Dr. Pompeckj rightly associates it with *Q. maria* d'Orbigny sp., but it is not 'a modification of a *Quenstedtoceras maria* d'Orb. sp. with a wider umbilicus';¹ rather is *Q. maria* the involute inflated development of *Q. vertumnus*.²

IV. ON DEVELOPMENT AND HOMŒOMORPHY.

There is an interesting repetition in development, leading to homœomorphy, in many of the Middle Jurassic ammonites. They pass repeatedly and independently from evolute compressed to involute inflated, in some cases to spherocoones, a phenomenon which may be observed in the Callovian genera *Cadoceras*, *Phlycticeras*, in the Divesian *Quenstedtoceras*, and in the Argovian *Cardioceras*. (A similar line is followed by the Kimmeridgian *Amœboceras*, but is not carried so far.) The same phenomenon is also repeated again and again in the different stocks of these various genera quite independently. This phenomenon has caused much confusion in the identification of the various species, and has led to much 'lumping,' because it was not understood. And the 'lumping,' or the failure to recognize what were the critical points of distinction, underlying the likeness, has caused stratigraphical lists to be invalid, and has also given a wholly false range to some much-quoted species, thereby impairing stratigraphical correlation. And that the likeness, the homœomorphy, should have caused the 'lumping' is the best testimony to its completeness. The likeness is often the greater when, as is so frequently the case, the loss, or nearly so, of the principal distinctive characters (ornament, keel, etc.) has accompanied the inflation.

Other genera not dissimilar in time and in appearance, *Macrophalites*, *Erymnoceras*, *Pachyceras*, develop in a different direction—

¹ J. P. Pompeckj, 'Jurassic Fauna of Cape Flora': Norw. North Polar Exped. vol. i (1900) No. 2, p. 97.

² See § IV, 'On Development & Homœomorphy.'

