(Dr. Kner having lately died) came upon the specimens. They had been in the Museum twenty years before Kner described them; the exact locality from which they came is Zaleszczyk, on the Dneister, upon the borders of Russia and Galicia; a very inaccessible place and one of which the geology appears to be very little known, excepting that there are both true Upper Silurian and true Lower Devonian beds there, with complete transition. An odd specimen was with the three bits from Zaleszczyk, which had not come with them and seemed to me to be undoubtedly from Herefordshire. The resemblance, however, of the rock in which the Galician specimens were embedded to our cornstones was striking; the figured specimen was in matrix having a little more of a limestone character. Kner's figure, of which a woodcut copy is given in the Monograph of *Cephalaspidae*, is bad and misleading.¹ The specimen is much more like *Scaphaspis Lloydii* than is the figure, the central ridge not being marked at all as I had thought from the drawing. In fact, the resemblance to *Sc. Lloydii* is exceedingly close, the posterior corners of the shield, however, in the Galician species being somewhat produced, instead of quite rounded off, as in *Sc. Lloydii*.

Two interesting things were noticed in the specimens. Firstly, that a form like *Pteraspis rostratus* is also present in one of the blocks; and, secondly, that in the block with Kner's figured specimen there are *marine* shells. An *Orthoceras* is lying almost against the fish-shield, which is very perfect, and there are two *Lamelli-branchs* in close proximity. We must not therefore conclude from the corn-stones and Scotch beds that the *Cephalaspidae* were exclusively lacustrine or fluviatile. The Galician specimen is tolerably perfect and has not been much knocked about by sea waves, as the Steganodictyan fish-remains of Cornwall and Devon seem to have been before deposition.—E.R.L.

II.—ON ITALIAN TERTIARY BRACHIOPODA.

By THOMAS DAVIDSON, F.R.S., F.G.S., ETC.

(Plates XIX. and XX.)

Continued from p. 370.

23. *Terebratula Voglianei* (Michelotti), Pl. XIX. Fig. 18. Essai sur le Miocène Inf. de l'Italie Sept. p. 51, Pl. 4, Fig. 15, 16, 1861; and Sequenza, Brach. Mioc. delle Provincie Piemontesi, 1866.

NO very perfect example of this species appears to have been collected; the one figured in my plate was kindly given to me by Sig. Meneghini. The shell is ovate and smooth, about ten lines in length by nine in breadth; the valves are moderately convex, and there exists a deepish sinus in the ventral valve to which corresponds an elevation or fold in the opposite one. *Ter. Voglianei* occurs in a yellowish marl in the Lower Miocene at Dego, and along with it is found a small *Terebratulina*, which may probably be a variety of *T. caput-serpentis*.

I would beg leave to suggest that Italian Palæontologists should

¹ See Note, preceding page.

seek for better examples of this species, as well as of the so-termed *T. miocenica* and *T. anceps*, in order that their specific claims may be accurately determined.

Sig. Sequenza is now of opinion that his *T. Lyelliana* is a synonym of *T. minor*, and that his *T. Benoitiana* will require to be added to the synonyms of *T. sphenoidea*.

24. *Terebratulula rhomboidea* (Biondi), Pl. XIX., Fig. 8. Memoria prima su alcune specie Malacologiche Siciliane. Atti dell' Accademia Gioenia di Scienze Naturali di Catania, second series, vol. x., p. 8, pl. iii., figs. 2 and 3, 1855.

I have never seen a specimen of this species, and consequently cannot discuss its specific claims. I have reproduced one of Sig. Biondi's figures. The shell is ovate, smooth, and bicipitate; about fourteen lines in length by ten in width, and was found by Sig. Biondi at Cape Pachino, in Sicily, and in beds that have been referred to the Eocene period.

25. *Terebratulula caput-serpentis* (Linné), Pl. XIX., Fig. 19.

Out of mere variations in shape and age of this variable shell, many so-termed distinct species have been fabricated; but the makers of these species have generally failed in establishing any really distinctive characters. After a lengthened examination of a number of specimens, I am almost disposed to believe that *T. caput-serpentis* has continued to exist throughout the entire Tertiary period, and it is now a common shell in many seas. It is even probable that its ancestors lived during the Cretaceous period. Anyhow it occurs in the Lower Miocene at Dego; in the Middle Miocene at Grangia and Gassino, in the Hills of Turin; in the Upper Miocene at Starzano (Tortonese); Marmorito (Province of Asti), etc., in Tuscany. It abounds in the older and newer Pliocene of various parts of Italy; in Calabria, Sicily, etc. It is common also in the Quaternary deposits of the same kingdom, in the south of France, at Nice, Gibraltar, etc. Some Italian Eocene specimens, as well as some from Biarritz, seem to me undistinguishable from *T. caput-serpentis*.

26. *Terebratulina Tauriniensis* (Sequenza), Pl. XIX., Fig. 20, 20a. Piedmontese Brachiopoda, annali dell' Accademia degli aspiranti di Napoli, third series, vol. vi., pl. iii, figs. 1, 1a, 1866.

I have seen only one example of this minute shell, and cannot consequently discuss its specific claims. It may very possibly be no more than a young stage of *T. caput-serpentis*. Sig. Sequenza figured a dorsal valve only, but since then Sig. Rovasenda has found a complete specimen, which I have figured in my plate. It occurs in the Middle Miocene of Gassino, a locality at three hours distance from Turin.

27. *Terebratulina striatula* (Sow. ?) Pl. XIX., Fig. 21, 21a.

Many of the specimens obtained by Sig. Meneghini and M. Bayan from the Eocene beds in the north of Italy can scarcely be distinguished from some of our English examples of *T. striatula*. It is variable in shape, some specimens being shorter and broader than others. The dorsal valve is usually uniformly convex, but a slight median depression towards the front is also sometimes present in speci-

mens of this species. The surface is ornamented by numerous radiating ribs, with interspaces between them of about equal breadth. In these interspaces are interpolated one or two shorter ribs, the entire surface being crossed at intervals by concentric lines of growth. This shell has been confounded by Baron Schauroth and others with the *Terebratulina tenuistriata* of Leymerie, but in this last named shell the ribs are much finer and more numerous than in the species under description. *T. striatula* (if I am correct in my identification) was found by Sig. Meneghini, at Breonio, and by Mr. Bayan, in his Eocene stages, E. and F., at the Bucca di Scissa and Val di Scaranto, near Brendola (Colli Berici); Castellunga near Castelvies; Lonigo, and Val di Lonte in the Vicentin; Valle Organa near Bassano; as well as in his Oligocene, stage G., at San Gonini Lugo.

28. *Terebratulina* ? *Michelottina* (Dav.), Pl. XIX., Fig. 22, 22a.

Shell small, oval, compressed, longer than wide, broadest anteriorly, sides and front rounded; hinge-line straight, a little less than the width of the shell; beak prominent, area flat, fissure large and laterally margined by prominent deltidial plates; dorsal valve semi-circular, elongated, with acute cardinal extremities, very slightly convex; surface of valves ornamented with from 22 to 24 radiating rounded ribs, of which half that number commence at variable distances from the beaks and extend to the front, so that a smaller or shorter rib intervenes between each pair of the larger ones. The shell is largely punctured; interior not known; length 4, width 3, depth 1 line.

Mr. Bayan collected three or four examples of this pretty little shell in the Eocene, stage E., at Mossano (Colli Berici) near Vicenza. It is remarkable on account of its flattened appearance, as well as from the length of its hinge-line.

29. *Terebratula* (or *Waldheimia* ?) *Hilarionis* (Meneghini M.S.) Pl. XVII. Fig. 4, 5. *Terebratula Hilarionis* (Meneg.) Bayan, Bull; Soc. Géol. de France, second series, vol. xxvii., p. 459. 1870.

Shell variable in shape, nearly circular, a little longer than wide, broadest posteriorly, tapering gradually towards the front which is more or less regularly rounded. Dorsal valve either moderately and uniformly convex or with a slight median depression in the anterior half of the valve. Ventral valve convex and slightly deeper than the opposite one; beak small, rounded, and much incurved—laterally compressed and keeled along the middle; beak ridges sharply defined, foramen minute; surface of valves smooth; length 15, breadth 14, depth 8 lines.

The identification of this shell has given me some trouble, and I am still uncertain whether it might not be referable to a species already named. It bears a striking likeness to some forms of Liassic *Waldheimia numismalis*, and it is possibly the shell alluded to by D'Archiac in the third volume (p. 276, 1850) of his "Histoire des Progrès de la Géologie," under the designation of *T. subnumismalis*; this species being stated to occur in the Eocene beds of the Kressenberg, but as the Viscount neither describes nor illustrates his species his name cannot supersede the same designation given by myself to

a well known Liassic species. It may likewise perhaps be referable to one of the species from the same locality described by Schafhäult in his work on the Kressenberg (1863), such as perhaps to his *T. picta*, but if so, that designation had been previously assigned to a recent species, and consequently could not be retained for the shell under description. It is also, I think, the same species as the one, perhaps incorrectly, identified by Ooster in his work on the "Brachiopodes fossiles des Alpes Suisses" (pl. ix. 1863), under the designation of *Terebratula Kickxii*, Galeotti; but Dr. L. de Koninck, to whom I sent drawings of our Italian species, assures me that it is specifically distinct from the one described by Galeotti in his memoir "Sur la constitution Géognostique du Brabant," pl. 4, fig. 15, 1837, which was subsequently better figured by Nyst in his work "Sur les coquilles et Polypiers de Belgique," pl. 29, fig. 4. When adult, *T. Kickxii* and its synonyms *T. trilobata* and *T. levis* are elongated shells, wide near the beaks, and tapering considerably towards the front; *T. Kickxii* occurs in the sands of Assche and Gand, and also in the Eocene sands of Cassel, near Dunkirk. The interior of our Italian fossil is not known. Sig. Meneghini procured his specimens from the volcanic tuffa, or Lower Eocene of St. Giovanni Ilarione, in the Vicentin territory¹ and he gave to it the manuscript designation of *T. Illarionis*, but as Mr. Bayan has spelt the name with an *H*, in his published memoir, it will be preferable to leave it so in this communication. The shell was found by Mr Bayan in his Eocene stages B. and C., along with *Nerita Schmiedeli* at the Val di Ciampo, Croce Grande, Pozza; also at La Gichelina, near Malo, etc. This rock, which in some places assumes the form of a friable green sand, would correspond to the horizon of the *Calcaire grossier* of the Paris basin (lower part), for it contains such shells as *Terebellum sopitum*, *Strombus Bartonensis*, and other such species of that epoch.

30. *Waldheimia septigera* (Loren), Pl. XIX., Fig. 15, 16. *Ter. septigera* Loven; Moll. Scand., p. 29, 1846; and for figure Dav. Annals and Mag. of Nat. Hist., second series, vol. 16, pl. x., fig. 1. *Waldheimia peloritana*, Sequenza, Sicilian Brach., pl. vi., fig. 1-10. 1865.

Sicilian Lower Pliocene, specimens of this shell were described by Sig. Sequenza under the designation of *W. peloritana*, but it was subsequently recognized by Mr. Jeffreys, Sig. Sequenza, and myself to be referable to the still existing *Wald. septigera* of Loven. Mr. Jeffreys is still, however, impressed with the idea that both *W. septigera* and *W. peloritana* should be considered synonyms of Philippi's

¹ For the better understanding of the various Eocene localities referred to in this paper, it may be mentioned that a great alluvial depression extends between Vicenza and Schio. It is in the hill to the west of this depression that are situated Castelvecchio, Bolca, Chiampo, Malo, St. Giovanni Ilarione, Val di Lonte, Gambughiano, Castelfomberto, and St. Urbano. In the hills to the east, in the direction of Bassano, we find Lugo, Laverda, Crosara; and still further to the east the Valle Organa and Castelcies, which are beyond Brenta, near Possagno; on the contrary Mossano, Lonigo, and Brendola are in the chain of hills known by the name of Colli Berici, which extend to the south of Vicenza, and between that town and the Monti Euganei.

T. septata, but Sig. Sequenza assures me that the loop in *T. septata* sends off lateral branches which become attached to the septum in the dorsal valve (Pl. XIX., Fig. 10), while in *W. septigera* these lateral processes would not exist, the loop retaining the characters of *Waldheimia* (Pl. XIX., Fig. 16). *W. septigera* has, I believe, been collected from the Middle Miocene of Serravalle di Scrivia. In the Lower Pliocene at St. Filippo, Gravitelli, etc., near Messina. In the Upper Pliocene, in Calabria and Messina. In the recent State it has been dredged by Loven at Finmark, and by Dr. Carpenter and Mr. J. G. Jeffreys at a depth of 345 fathoms, between the islands of Shetland and Færøe; and again recently (Porcupine expedition by Mr. Jeffreys, at from 165 to 175 miles south of the Scilly isles, and at about 185 miles from Ushant).

31. *Waldheimia cranium* (Müller), Pl. XIX., Fig. 11, 12. Zool. Dan. Prod. p. 249, No. 3006, 1776. = *Ter. euthyra* (Philippi), Enum. Moll. Sic., vol. 2, p. 68, pl. xviii., fig. 8, 1844. *Macandrevia cranium* (King), Proceedings of the Dublin University Zoological and Botanical Association, vol. 1, part 3, p. 201, 1859.

Mr. Jeffreys has for some time past entertained the opinion that *Ter. euthyra* is the fossil representative of the recent *Wald. cranium* and Sig. Sequenza is now disposed to adopt the same conclusion. The loop of the fossil was figured by Dr. Suess in the German edition of my General Introduction (Pl. I. Fig. 5, 1856), and it agrees with that of *W. cranium*. Dr. Carpenter believes that the deflected portion of skeleton or loop is connected with the lower portion on each side by a slight suture that may be easily ruptured, but if this is really the case in all examples, of which I am by no means certain, it would not alter the main character or shape of the loop, which is essentially that belonging to the genus or sub-genus *Waldheimia*. I am well aware that Prof. W. King has proposed that this species should serve as the type of a new genus *Macandrevia*, but I hardly imagine that the small differences that it presents in some of its internal details would warrant its complete generic separation from *Waldheimia*, but I am willing to admit that a difference of opinion may be entertained upon this point, and I merely offer my own view upon the subject. The fossil specimens of *W. cranium* do not appear to attain quite the dimensions of the full grown recent shell, but as has been shown both by Messrs. MacAndrew and Jeffreys, the living shell is a northern type and becomes consequently smaller and more stunted in its growth as it deviates in a southern direction from its more favoured northern habitat; the last dwarfed representatives of the species having been dredged by Mr. MacAndrew, at Vigo Bay. It abounds in the recent state at Uddevalla, east Loffoden, Christianiaford, etc. In the older Pliocene it occurs near Messina in Sicily, where it does not appear to be very abundant, and I may also observe that some Sicilian specimens present a median depression in the dorsal valve, which I have not observed in any of the recent examples.

32. *Waldheimia ? Davidsoniana* (Sequenza), Pl. XIX., Fig. 13, 13a. Sicilian Brachiopoda, pl. v. fig. 1-6, 1865.

In external shape this small species much resembles *T. minor*, but its interior is so dissimilar to it, as well as to that of *Waldheimia*, that Sig. Sequenza seems to think that it will be necessary to create a sub-section for its reception. It occurs in the Upper Pliocene of Gravitelli, near Messina.

33. *Waldheimia* ? *depressa* (Sequenza), Pl. XIX., Fig. 14. Sicilian Brachiopoda, pl. v. fig. 15, 16.

This is a very minute shell, to which the same palæontologist had, in 1862, applied the designation of *T. pusilla*. Sig. Sequenza has recently informed me that it will be perhaps necessary to suppress it entirely. I have never seen the shell, nor do I believe Sig. Sequenza has ever seen its loop. It occurs in the older Pliocene of Rometta, near Messina, where the shell appears to be very rare.

34. *Terebratella septata* (Philippi), Pl. XIX., fig. 9, 10. Enum. Moll. Siciliæ, vol. 2, p. 68, tab. xviii., fig. 7, 1844.

This shell has been well described by Philippi and Sequenza. In external shape it does not seem to differ very much from *W. septigera*, but has its beak more incurved and its beak ridges sharply defined, a character not present in the last named species. The loop in *T. septata* is undoubtedly that of a *Terebratella* (Pl. XIX., Fig. 10) while that of *W. septigera* would agree with that of *Waldheimia*. It occurs in the older and newer Pliocene of Lamato and Nasiti in Calabria, and abounds likewise in several localities near Messina.

35. *Terebratella* ? *Spinellii* (Meneghini), M.S. Pl. XIX., Fig. 17. Shell longitudinally oval, sides and front rounded, valves almost gibbous and uniformly convex without fold or sinus; beak small and truncated by a circular foramen; each valve is ornamented with about 22 small rounded simple ribs. Interior not known, but on the exterior of the dorsal valve a dark line extends from the umbo to about half the length of the valve, indicating the presence of an internal septum, which may possibly have afforded a second attachment to the loop. Length 7, width $5\frac{1}{2}$, depth 5 lines.

A single specimen of this shell was obtained by Sig. Meneghini in the volcanic tuffas of the Nummulitic or Eocene formation at Chiampo in the Vicentin. It bears much outward resemblance to some small specimens of *Terebratella oblonga*, but is a more inflated shell.

36. *Megerlia truncata* (Linné), Plate XXI., Fig. 1, 2.

This is a well known but very variable shell, and I fear that more than one so-termed species has been fabricated out of some of its variations. In external shape it is usually more or less semi-circular and wider than long, but it is likewise sometimes almost circular, and more or less strongly marked by numerous fine dichotomous thread-like radii, these being scarcely visible on some specimens, while they are more or less distinctly seen on others; these small ribs are also granulated in some specimens. It evidently existed during the Miocene and Pliocene periods, and is a common shell in the Mediterranean. In the Miocene it occurs at Grangia, in Piedmont, and was found also in the same formation in Tuscany by Sig. Meneghini. It is very common in the older and newer Pliocene of Calabria and Sicily, nor is it a rare fossil in the Island of Malta, at Nice, Gibraltar, and in many other places.

36. *Megerlia oblita* (Michelotti), Pl. XXI., Fig. 3, *Orthis oblita* (Michelotti), Fossiles des Terrains Miocènes de l'Italie Septentrionale p. 78, pl. 2, fig. 3.

I am very doubtful whether this so-termed species be distinct from *M. truncata*, but as Sig. Michelotti seems to be so strongly impressed with the idea that it possesses differences of specific value, I will provisionally record it under its distinctive appellation. I have not myself seen more of it than a ventral valve, and consequently must not pronounce a decided opinion upon the subject. Its surface, according to Sig. Michelotti, would be smooth and marked by concentric lines of growth only. It occurs in the Middle Miocene of the Hill of Turin.

37. *Megerlia* (?) *orbicularis* (Meneghini), M.S., Pl. XXI., Fig. 4, 4a.

Shell small, circular, about as wide as long; dorsal valve most convex at the umbo, gently concave towards the front; ventral valve uniformly convex, beak incurved, foramen large. Surface marked with numerous thread-like striae. Interior not known. Length and breadth about five lines. Two examples of this small shell were found by Sig. Meneghini in the Upper Miocene of St. Dalmazio (near the Pomarane), and at Palazzo, near Siena. I have not seen the shell but several very fine drawings of it were kindly forwarded to me by the distinguished palæontologist above named. I should not be surprised if *M. oblita* and *M. orbicularis* were varieties only of *M. truncata*.

38. *Platidia* (*Morrisia*) *anomioides* (Scacchi Sp.), Pl. XXI., Fig. 15. *Orthis anomioides* (Scacchi and Philippi). Enum. Moll. Sicil., vol. 2, p. 69, 1844. *Platidia anomioides* (Costa). Fauna del regno di Napoli, p. 48, pl. iii., fig. 4, and pl. iii bis., fig. 6, 1852.

This well-known species occurs fossil in the Lower Pliocene in various localities near Messina, and is found alive in the Mediterranean. Mr. Jeffreys dredged one or two large examples between Shetland and the Færøe Islands (Porcupine Expedition, 1869). It had also received the name of *appressa* from E. Forbes.

39. *Platidia* (*Morrisia*) *Davidsoni* (Deslongchamps), Pl. XXI., Fig. 16. *Morrisia Davidsoni* (Desl.). Annals and Mag. of Nat. Hist., second series, vol. 16, pl. x., fig. 20, 1855.

Some examples of this species were found by Sig. Sequenza in the Quaternary deposits of Trapani in Sicily, and it is found alive in the Mediterranean.

40. *Argiope decollata* (Chemnitz. Sp.), Pl. XXI., Fig. 5, 5a, and 6, 7, 8. ?

This is a very variable species and seems to have enjoyed a considerable vertical as well as horizontal range. Its first appearance (if we correctly identify some small specimens, Pl. XXI., Fig. 6, 7, 8, found by M. Bayan) would take place in the lower part of his Eocene stage F. This same shell was also found by Sig. Michelotti in the Lower Miocene of St. Liberta in the Vicentin territory. It occurs in the Middle Miocene of the Hill of Turin, and is not rare in beds of the same epoch in Tuscany. It was found along with *Crania abnormis*, in a sand near the Hospital of St. Colombano, a

locality situated on a small hill in the plain of Lombardy, and in the territory of Lodi. This sand is a continuation of the Miocene of the Parmesan and Plaisantin, a spot celebrated from the occurrence of beautiful specimens of *Haliotis monilifera*. It occurs likewise, according to Sig. Meneghini, in the Upper Miocene of Parlascio and Palazzo in Tuscany; at Monte Gibio and near Messina. In the Older and Newer Pliocene, it is a common fossil in Tuscany, in Calabria, and especially near Messina. It has been collected from the quaternary deposits of Italy and is alive in the Mediterranean. It will also be seen from one or two of our figures that sometimes, after having attained a certain period of its growth, the extension of the ribs is suddenly stopped (Pl. XXI., Fig. 6-8), the shell continuing to extend, but without reproducing any of its ornaments; this I have also noticed to be the case in several recent examples of the same species.

41. *Argiope costulata* (Sequenza), Pl. XXI., Fig. 9, 9a, 9b. Piedmontese Brachiopoda. Annali dell' Accad. degli Aspiranti Naturalisti di Napoli, third series, vol. vi., pl. 2, fig. 2, 1866.

I know very little about this species (?), which seems to approach by its external and internal characters to *Argiope cuneata* of Risso. Its single septum in the dorsal valve removes it at once from *A. decollata*. A single example was found by Sig. Rovasenda in the Middle Miocene of Baldissero in Piedmont. More specimens will have to be collected and examined before its specific claims can be properly ascertained.

42. *Argiope cuneata* (Risso). Histoire Nat. des Principales productions de l'Europe Méridionale, vol. iv., p. 388, fig. 179, 1826.

This species is stated by Sig. Sequenza to occur in the Quaternary deposits of Sicily, but as I have never seen any fossil specimens I cannot do more than to record his statement. It is found alive in the Mediterranean.

43. *Argiope Neapolitana* (Scacchi sp.), Pl. XXI., Fig. 10. Scacchi Oss. Zool., p. 18, 1833, and Philippi Enum. Moll. Sicil., vol. i., p. vi., fig. 15, 1836.

Two or three specimens of this well-known species were found by Sig. Meneghini in the Pliocene of Siena. When quite young it does not always exhibit those two or four rounded ribs which occur in middle-aged and adult individuals, and in this early condition may be sometimes mistaken for *A. lunifera* or *A. cistellula*. I am, therefore, uncertain whether the minute specimen (Pl. XXI., Fig. 11) which was found by Sig. Meneghini in the same deposit and locality, and which was identified by him with the *A. variolata* (Sold.), (Saggio Tav. 150, fig. 293) may not be referable to one of the above-named species. In his work, "Fauna del Regno di Napoli," pl. iii., fig. 5, Prof. Costa has figured a specimen of *A. Neapolitana* without ribs.

44. *Argiope lunifera* (Philippi), Pl. XXI., Fig. 12. *Terebratula* (afterwards *Orthis*) *lunifera* (Philippi). Moll. Sicil., vol. i., p. 97, and pl. 4, fig. 16, a. b., 1836. *Argiope cistellula* (Wood., Sequenza). Sicilian Brachiopoda, p. 71, pl. viii., fig. 7.

Mr. Jeffreys assures me that after a careful study of the *Terebra-*

tula lunifera and *Argiope cistellula*, he has arrived at the conclusion that they are both referable to a single species. Sig. Sequenza quotes *A. cistellula* from the Lower Pliocene of Rometta and Milazzo, near Messina; it is also found in the Quaternary deposits of the same island, and is alive in the Mediterranean.

45. *Argiope levis* (Sequenza), Pl. XXI., Fig. 13, 13a. Piedmontese Brachiopoda. Annali dell' Accad. degli Aspiranti Naturalisti di Napoli, third series, vol. vi., pl. 3, fig. 2, 1866.

Whether this species be distinct from the *A. lunifera* or *A. cistellula* has still to be determined. Sig. Sequenza observes that it approaches to the last named species, as well as to *A. Neapolitana*, but most so to *A. megalcephala* (Sandberger). It was found by Sig. Rovasenda in the Middle Miocene of Grangia in the Hill of Turin.

46. *Argiope* (?) *Rovasendina* (Dav.) Pl. XXI., Fig. 14, 14a. b. c. d.

Shell minute, compressed, almost circular, wider than long, sides and front rounded, ventral valve slightly convex, beak hardly projecting and gently incurved; hinge-line straight, rather more than half the width of the shell; hinge-area triangular, flat; foramen large, laterally margined by a deltidium. Dorsal valve semicircular and very slightly convex, less deep than the opposite valve, and most convex at the umbo; cardinal angles obtuse, hinge-area narrow. Surface smooth, marked only by a few concentric lines of growth; shell largely punctured. Length $2\frac{1}{2}$, width 3, depth 1 line. I have examined five examples of this interesting little species, which were found by M. Bayan in his Oligocene stage I. or bed with Bryozoa at Monté Sgreve di Sant Urbano, and not far from Vicenza. In these beds occur, likewise, many examples of *Scutella subrotunda*. None of the specimens exhibit the interior so that I cannot feel certain with reference to the genus to which it should be referred. It has much of the external size and shape of some forms of *Platidia* or *Morrisia*, but does not show the horse-shoe shaped aperture in the smaller valve, so characteristic of that genus. I have consequently provisionally left it with *Argiope*.

47. *Thecidium Mediterraneum* (Risso), Pl. XXI., Fig. 17, 17a, b, 18, 19. Risso Hist. Nat. des Principales Productions de l'Europe Méridionale, vol. iv., p. 344, 1826. *Thecidium testudinarium* (Micheletti). Annali delle Scienze del Regno Lombardo-Veneto, 1840.

This is a well-known species, and I had occasion to describe several of its varieties, both recent and fossil in the GEOLOGICAL MAGAZINE, Vol. I., 1864, to which the student is referred. Specimens agreeing with those from the Lower Miocene or Oligocene of Bernburg have been found by M. Bayan at Gambugliano and Crosara in the upper portion of his Eocene stage F. The same geologist has also procured it from his stage H. at Castel Goberto, this last locality being situated in the upper portion of his Oligocene or Lower Miocene of Lyell. In the Middle Miocene it occurs in abundance in the Hill of Turin, at Parlascio in Tuscany, and is alive in the Mediterranean. It is not rare in the Island of Malta, at Peyrehorade (Landes), and in several other continental localities.

(To be concluded in the October Number.)

EXPLANATION OF PLATES XIX. AND XX.

PLATE XIX.

- FIG. 1. *Terebratula grandis* (Blum.), Pliocene, Monté Mario, Rome.
 2. *Terebratula ampulla* (Brocchi), Sp., after Brocchi's original figure, Piacentino.
 3. *Terebratula Regnolii* (Meneg.), Upper Miocene, Parlascio, and from a drawing by Sig. Meneghini. His collection.
 4. *Terebratula Roncioni* (Meneg.), from a drawing by Meneghini. His collection. Pliocene, Hills of Pisa.
 5. *Terebratula Lyelliana* (Sequenza), Pliocene, Sicily.
 6, 7. *Terebratula Galeottina* (Dav.), Middle Miocene, Gassino.
 8. *Terebratula rhomboidea* (Biondi), Eocene? Cape Pachino, Sicily, after Biondi.
 9, 10. *Terebratella septata* (Philippi). 9. Exterior; 10. Interior of dorsal valve, Older Pliocene, Messina.
 11, 12. *Waldheimia oranium* (Müller) = *T. euthyra* (Philippi). 11. Exterior; 12. Interior of dorsal valve, enlarged from a figure by Dr. Suess. Older Pliocene, Messina.
 13, 13a. *Waldheimia ? Davidsoniana* (Seq.). 13. Exterior; 13a. Interior of dorsal valve, enlarged after Sequenza. Upper Pliocene, Messina.
 14. *Waldheimia ? depressa* (Seq.), Older Pliocene, Messina, after Sequenza.
 15, 16. *Waldheimia septigera* (Loven) = *W. peloritana* (Seq.). 15. Exterior; 16. Interior of dorsal valve. Lower Pliocene, near Messina.
 17. *Terebratella ? Spinellii* (Meneg.), Eocene, Chiampo, collection of Sig. Meneghini.
 18. *Terebratula Voglianoi* (Michelotti), Lower Miocene, Dego.
 19. *Terebratulina caput-serpentis* (Linné) Middle Miocene, Grangia, collection of Sig. Rovasenda.
 20, 20a. *Terebratulina Tauriniensis* (Seq.), Middle Miocene, Gassino, collection of Sig. Rovasenda. 20a. Enlarged.
 21, 21a. *Terebratulina striatula* (Sow ?), Eocene, Valle Organa, environs of Bassano. Mus. of Imp. School of Mines, Paris. 21a. Enlarged.
 22, 22a. *Terebratulina Michelottina* (Dav.), Eocene, Colle Berici. Mus. Imp. School of Mines, Paris. 22a, b, c. Enlarged.

PLATE XX.

- FIG. 1, 2, 3. *Rhynchonella bipartita* (Brocchi), after drawings by Sig. Meneghini. Upper Miocene, Palazzo, near Siena. His collection. 2 and 3. Var. *plicato-dentata* of Costa.
 4, 4a. *Rhynchonella Bolcensis* (Massalongo), Eocene, Bolca. Mus. Imp. School of Mines, Paris. 4a. Enlarged.
 5. *Rhynchonella complanata* (Brocchi), Middle Miocene, Gassino.
 6. *Rhynchonella sicula* (Seq.), M.S., Older Pliocene, near Messina.
 7. *Rhynchonella Meneghiniana* (Dav.), Eocene, Bolca, collection of Sig. Meneghini.
 8, 13. *Rhynchonella Buchii* (Michelotti), different forms and ages. 13. *Rhynchonella deformata* (Seq.), Middle Miocene, Hill of Turin.
 14, 19. *Rhynchonella polymorpha* (Massalongo), different varieties and ages, Eocene, Monte Spilecco, near Bolca, Zovo di Castelveccchio, etc., from different collections.

III.—ON THE TRANSITION BEDS BETWEEN THE DEVONIAN AND SILURIAN ROCKS.

By ALFRED MARSTON, Esq., Ludlow.

THE transition or passage-beds between any two large formations are always difficult to make out, and those between the Old Red Sandstone and the Silurian are no exception to the rule. Much light has recently been thrown upon the latter, yet much more