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XXVII.—*On Ammonites from the Cambridge Greensand.*
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[Plates X. & XI.]

Ammonites (Scaphites) æqualis, Sow.

Shell much inflated, convex, with a wide back, and the convolute portion so coiled as not to produce an umbilicus: this part forms about half the length of the shell, and is always half the width of the back, or wider. The back is about twice as wide as the side, and less convex. When the whorl recurves and forms the mouth, it contracts.

Both spire and hamus are marked with fine elevated ribs, which are most elevated on the sides, and bifurcate before crossing the back. On the spire they are curved slightly away from the mouth, so that the lines are concave in front; on the hamus they pass over straight, and are separated by wider concave channels.

The symmetrical septa consist of a rather small square dorsal lobe, with two small notches on each side, and two digitated terminal branches. The dorsal saddle is enormously wide, extending to the limit of the back, where the ribs bifurcate; it is centrally cleft by a branch half as large as the dorsal lobe. The superior lateral lobe is as wide as half of the dorsal saddle, has one small notch on each side, and terminates in two large branches, which bifurcate, are digitated, and are near together. The inferior lateral lobe is small, and at the base of the side. On the ventrum are the ventral lobe and four pairs of accessories.

The *Scaphitæ* of the Cambridge Greensand are abundant in individuals, though few in forms. Authors have generally, and perhaps rightly, referred similar fossils to the *S. æqualis* of Sowerby.

Nearly all the specimens found are the last chamber, or
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hamus, which may indicate that, after these had become filled with phosphate of lime, the partitioned part was broken off and floated away at the surface, much as the recent *Spirula* is found drifting. Perfect shells are rare, and young ones never found.

There are three variations from this form: one, which is ornamented with a row of tubercles on each side, is also found in the Gosau Chalk.

Ammonites rostratus, Sow.

Ammonites rostratus, Sow. *A. symmetricus*, Sow.

Numerous citations have been given by Continental writers, to whom the species seems scarcely known, being regarded as synonymous with *A. inflatus*, Sow.

Shell keeled, few-whorled, with a flat back, flat sides, quadrate mouth, and umbilicus becoming relatively smaller with age, but never less than the height of the body-whorl; not very deep, it is angular, though not making a sharp angle with the side. The back is generally a little narrower than the side is high; out of its middle arises the narrow keel, from each side of which the ribs are directed backward and outward at an angle of 45° , then descend straight, elevated, perpendicular, and separated by wide spaces, and terminate, generally separate, in tubercles at the base. On a whorl there are from 25 to 35 ribs, each having a tubercle above the middle, and another where they reach the back. The wide intercostal spaces are smooth. When full-grown, the last two or three ribs incline frontwards; the keel and adjacent lateral parts of the back become elevated, and are directed upward and forward in a curve to form the rostrum, which is hollow and rhomboid in section; for the last rib but one, instead of dying away on nearing the keel, as those behind it do, is continued up its side, becoming less and less distinct. The whole whorl becomes narrow. This rostral prolongation is open in front, and in its upper third curved slightly down.

The septa are symmetrical. The dorsal lobe is longer than wide, extending between two tubercles, and being margined by the rising of the ribs. It has three notches on each side, the two terminal of which become with age digitated branches. The dorsal saddle is relatively very wide, extending down to the lateral tubercle; it is doubly cleft, the upper accessory being much the larger, above the middle, and in a line with the dorsal tubercles. The upper lobe gets relatively wider with age, and is from a third to more than half the width of the dorsal saddle; it has a branch on each side, and two terminal branches digitated with age. The lateral saddle is slightly wider than the superior lateral lobe. The lower lateral lobe is on the ventral angle, and very small.

Besides this, there are four rare forms varying from the type chiefly in the degree of development or suppression of the ribs and tubercles.

This Ammonite is found on every digging along a line of thirty miles, and is the most abundant. The whorls are always coiled on the dorsal tubercles or the homologous thickenings of the ribs; so that the size of the umbilicus depends on the rate of increase in the height of a whorl. As a general rule, the more compressed the shell, the closer the ribs.

In a very young state, the whorls are smooth and round, and continue so for three or four whorls, and then rapidly assume the typical form; and as this part appears devoid of septa, it might have been formed in the egg.

Large specimens are very rare, and the largest found are much inferior in size to those of the Gault at Folkestone or the Upper Greensand of the Isle of Wight and Devizes, though there can be no doubt that some Cambridge specimens reached a diameter quite as great as that of their southern brethren. Part of a whorl with the rostrum attached is only $1\frac{1}{2}$ inch high. Broken rostra are comparatively common; and it can only be supposed that the large shells to which they belonged, having but weak septa and being filled with phosphate of lime, were broken up before fossilization. The result was not the production of the numerous small examples; for, as the last half whorl is almost invariably devoid of partitions, these died small if not young, and there is no evidence that a rostrum was ever formed.

It is probably the true *A. symmetricus* of Sowerby; but that type is seemingly now lost.

Ammonites pachys. Pl. XI. fig. 4.

Keeled, few-whorled; whorls flattened on the sides and back, so as to appear in section nearly quadrate [about half-embracing]. Umbilicus as high as the back is wide, and higher than the side of the last-formed chamber; it is deep, with the ventrum nearly at right angles with the side of the whorl, where it is rounded: this space is marked (at a diameter of $2\frac{1}{4}$ inches) with about twenty-two strong rounded ribs descending from as many large spinous tubercles which margin the base of the side. From each tubercle two ribs (rarely three) ascend the side of the whorl, at first but little elevated, but higher and wider near the back. The interspaces are never wider than the ribs, and on the back are narrower; on the sides, owing to a curve in alternate ribs, they are equal. On the dorsal surface the ribs are curved anteriorly, and become obliterated near the keel. On the back (and in old specimens on the sides too) the ribs are crossed transversely by small elevated lines placed rather close together.

The back is a little inflated. The keel is round, wide, moderately elevated, with the smooth spaces on each side slightly depressed.

The mouth is a little wider than high.

Septa very like those of the southern forms of *A. rostratus* (to which the form is nearly related), but with the lobes deeper, and with finer digitations. The dorsal lobe is as long as the back is wide, extends in width to the line where the ribs arise, has two rather narrow branches on each side, and terminates in two acute branches conspicuous in having no digitations on the inner side. The lateral lobe is in the middle of the side, not quite so long as that of the back, with two branches on each side, and terminating in three, of which the middle one is much the largest. At a diameter of $1\frac{5}{8}$ inch the distance between two septa where they cross the keel is $\frac{3}{4}$ ths of an inch. In examples of the southern form of *A. rostratus*, at a diameter of $2\frac{1}{2}$ inches the interseptal space on the keel is only half an inch.

Much as it differs, I incline to regard this as a constituent variety of *A. rostratus*, with near affinities to *A. inflatus*.

Ammonites Timotheanus, Pictet, Grès Vert, pl. 3. figs. 1 & 2.

Few quadrate whorls, enlarging rather rapidly, two-thirds embracing, gibbous; with a flat back, flattened sides, and flat ventrum. The sides, very slightly inflated, round into the umbilicus and into the back, slightly converging, so that the back is narrower than the base. The mouth is nearly a fourth wider than high. The umbilicus is not shallow, and is half as high as the mouth is wide. The cast is perfectly smooth, and only marked with the elegant foliations of complex septa.

The siphuncle is unusually wide, being of the width of the dorsal lobe. The septa are almost exactly the same as in *A. latidorsatus* (Mich.). The dorsal lobe is relatively a little deeper by the terminal branches being separated for only half as far; these and the preceding branch on each side are bifid. The superior lateral lobe is deeply cleft, making the two bifid terminal branches large. The superior lateral saddle is not deeply cleft.

I have seen but two specimens of this form, both collected by Mr. Carter. So far as figures and descriptions enable me to judge, it might be classed as a variety of *A. latidorsatus*, differing chiefly in the flatness of the back, and perhaps in the rate of enlargement; but it appears, from Michelin's figure, that the young states are sufficiently unlike to justify a distinction. This form always had a flat back and trapezoidal mouth, &c., while the other has a round back and lune-shaped mouth. It exactly corresponds with the Ammonite figured by Prof. Pictet in the 'Grès Vert' (pl. 2. fig. 6) as *A. Timotheanus*; but it does not

correspond with his description and the figure answering for Mayor's MS. species. That form is spoken of as "ornée de cinq à six sillons qui partent de l'ombilic dans la direction qu'auraient des tangentes au cercle ombilical." This character may perhaps not be sufficient to distinguish a species; but it certainly makes a well-marked form, indicating an animal which formed periodic varices.

Ammonites latidorsatus, Mich.

A. latidorsatus, D'Orb. Paléont. France; Pictet, Grès Vert, pl. 3. fig. 5.

Few-whorled, much inflated, whorls two-thirds embracing, a little wider than high, with nearly parallel flat sides, and a rather depressed round back, which rounds into the sides. The body-chamber is half as high again as the whorl at the opposite side of the shell, than which the umbilicus is slightly narrower. The umbilicus is deep, with the flat and almost horizontal ventrum making a sharp angle with the side, though the line of meeting is just rounded. The cast appears perfectly smooth, but is marked by shallow and narrow sulcations arising in the umbilicus and passing over the back, where two are separated by interspaces narrower than the height of the whorl. The mouth is lunate.

The septa are like those of *A. planulatus*, the only difference being that the inferior lateral lobe is not cleft so deeply.

This is a very rare fossil; and the only specimen known to me was detected in the collection of the Rev. J. F. Blake, who has presented it to the University Museum. The diameter is $1\frac{1}{4}$ inch, and the last fourth of the outer whorl is devoid of chambers. It corresponds with the Continental figures and description, though this sulcated form, which cannot be considered typical, is a variety distinguishable from Michelin's smooth shell.

Ammonites Mayorianus, D'Orb.

A. planulatus, Sow. Min. Con.; Sharpe, Chalk Moll. pl. 12. fig. 4.

A. Mayorianus, D'Orb. Paléont. France, T. C.

A. octosulcatus, Sharpe, pl. 19. fig. 3.

A. Griffithsii, Sharpe, pl. 11. fig. 3.

Inflated, with few whorls, more than half embracing; mouth as wide as high. Sides a little inflated, and passing imperceptibly into the round back. Umbilicus about as high as the body-whorl, with the horizontal but inflated ventrum rounding into the side. The depth of the ventrum exposed is about the same as the width of the unembraced part of the adjacent whorl, with which it forms a right angle. The cast commonly shows very fine depressed ribs, arising about the middle of the side, and passing over the back; they are close together, and on

nearing the back are curved mouthwards. In the umbilicus arise four or five more or less deep, wide sulcations, which are mostly flexuous, being first directed a little forward, then perpendicularly upward, and finally curved forward on the back to the siphuncle, the two sides meeting there in a broad V-shape and dying away without impressing it. Between each two sulci there are commonly from twelve to eighteen ribs.

The septa consist of the dorsal lobe, three lobes on each side, and one or two in the umbilicus, all except the last much branched, digitated, and close together. The dorsal lobe is longer than wide, has three notches on each side, and terminates in two large branches, which are cleft laterally, the parts which continue backward being also cleft. The superior lateral lobe has two or three small notches on each side, and terminates in three large branches, which are trifurcate and digitated. The dorsal saddle is larger than the lobe; it is centrally cleft, and has a few notches, besides each half being cleft. The inferior lateral saddle is much smaller, but similar.

This form, which differs a little from those most common at Cambridge, has been described first, because one of the types of it is the identical specimen figured by Mr. Daniel Sharpe as *A. planulatus*, and, moreover, it is the most inflated modification that occurs. The example figured, Palæont. Monogr. Cret. Mol. pl. 12. fig. 4, had septa to the end; and so has one of 4 inches diameter, the largest I have; but fragments with the shell preserved occur, showing the back of a whorl to have been from 4 to 5 inches wide. The small line-like ribs passing over it are in this large size a quarter of an inch wide, though but little elevated, being separated by narrow shallow grooves. The sulcations go on deepening and widening.

On comparing small examples with corresponding specimens of *A. Mayorianus*, D'Orb., from the Upper Greensand of the Perte du Rhône, I fail to notice any distinction: compare them as we may, there is no character they have not in common; consequently no hesitation is felt in regarding our form as identical with those of France and Switzerland; but it is not so absolutely identical with the Chalk fossil known as *A. planulatus*. I know that form from a beautifully distinct cast of the umbilicus partly formed by an *Exogyra* growing attached to the specimen; it is from the lower Chalk of Burwell in Cambridgeshire. The umbilicus measured not less than 4 inches across, and was shallow. The umbilical part of the whorls is flat, and the depth of the ventrum exposed only *one-fourth* the width of the unembraced part of the side. On the *Exogyra* are the foliations of the septa. And this enables me to state that the sulci, which were straight on the sides, were not a sixth of the

width or depth of the internal casts of those in *A. Mayorianus*, and did not bend into the umbilicus, but terminated at the base of the side. The ribs on the back are more elevated and wider apart; the number of whorls fewer. The sulci are arranged relatively to each other like those figured in 'Cret. Mol.' pl. 12. fig. 3. It will be readily seen, on referring to that plate, how much better the above description coincides with the Lewes Chalk fossil than with the ancestral race figured beside it. Hence Sowerby's name, specially used, should be restricted to the Chalk form to which it was originally given; while D'Orbigny's would with more propriety be preserved for the Continental fossil, with which ours corresponds.

In the variations from *A. Mayorianus*, the whorls gradually become more compressed, with flatter sides rounding into the umbilicus, which is relatively smaller. There are from five to eight sulci. These specimens frequently occur with part of a whorl devoid of septa at a diameter of an inch and a half. In the young state (diam. $\frac{3}{4}$ inch) the sides are flat, and a little converging to the back; and as the sulcations are scarcely impressed, the shell has the aspect of *A. Beudantii*.

Some specimens, which died small, exactly correspond with Mr. D. Sharpe's figure of *A. octosulcatus* in the number of sulcations, their relative size, and the way they pass over the back: though the form of the whorl is not quite the same, yet so near are the two, that I have no doubt of the propriety of regarding *A. octosulcatus* as a slight variety of *A. Mayorianus*.

There are no specimens at Cambridge of *A. Griffithsii*; but, judging from Mr. Sharpe's figure and description, it cannot be regarded as other than a variation from *A. Mayorianus*.

The type of shell here discussed is one of the more abundant of the Greensand Cephalopods, occurring in this neighbourhood wherever that deposit is worked.

Ammonites Weistii, Sharpe, 'Chalk Mollusca,' pl. 21. fig. 3.

Few-whorled, inflated; back round; mouth semilunar, much wider than high; umbilicus moderately open, with its deep border forming a large angle with the side of the shell.

Ornamented with about twenty-two wide, straight ribs, nearly all of equal length; every third rib is somewhat thickened on the sides as it nears the umbilicus, while the ribs between these thickened ones frequently become obliterated before reaching the edge of the umbilicus.

Septa simple, consisting on each side of three lobes. Dorsal lobe marked on each side with two simple digits. The dorsal saddle, half as wide again as the dorsal lobe, is indicated by a

small accessory. The superior lateral lobe is about half the width of the dorsal lobe, and much shorter; the terminal branches are similar, only less developed.

Only two specimens of this *Ammonite* have come under my notice.

The exact affinities of *A. Weistii* are not quite clear. Specimens of *A. navicularis* come very near to it, but have not the constant greater elevation of occasional ribs; rather in this it approaches *A. peramplus*, which, however, has spines in the young state at their umbilical termination.

Ammonites navicularis, Mant., var.

The flattened back is slightly inflated, and rounds into the side; the flattened side, which is also a little swollen, rounds into the umbilicus. The mouth is higher than wide. The few whorls are almost entirely embracing, forming a deep and small umbilicus about half the diameter of the whorl opposite to the mouth.

Ornamented with about (thirty to) forty wide rounded ribs, which are straight, strongest where they pass over the back, and separated by spaces of not more than their own width. About half the ribs arise in the umbilicus, the remainder near the middle of the side.

There are three lateral lobes on each side. The dorsal lobe is wide and square, with three branches on each side, the lower of which have five digits. Dorsal saddle rather wider than the lobe. Superior lateral lobe half as wide as the dorsal saddle, and deeper than the dorsal lobe; it has two branches on each side and a large terminal one which bifurcates. Lateral saddle like dorsal.

The few specimens found show considerable variation in the form of the mouth, which is sometimes as wide as high. They are more flattened than is usual in examples of *A. navicularis* from the Chalk, and differ in never having any tubercles; the umbilicus is also commonly smaller. The Warminster Upper Greensand contains similar shells; but they have tubercles on the back.

It may be necessary to separate the Cambridge shell as a variety; for it is intermediate between *A. Weistii* and *A. navicularis*, and may be an extremely compressed variety of the former. But *A. Weistii* can scarcely claim to be more than a well-marked variety of *A. navicularis*, connecting it with *A. peramplus*. Our fossils also nearly resemble *A. vectensis*, Sharpe, and cannot be distinguished as more than a variety, the only differences being that the ribs are straight (seemingly more elevated), the back slightly flatter, and the umbilicus commonly larger. This being

so, confusion may be avoided by marking Cambridge specimens *A. navicularis*, var. *nothus*.

Diam. $2\frac{1}{4}$ inches, with septa to the end.

Ammonites rhamnonotus. Pl. XI. fig. 7.

Few-whorled, flat, with a round back and small umbilicus.

Ornamented with about thirty-six radiating ribs, which continue uninterruptedly over the back, and are alternately long and short. The long ribs mostly arise in the umbilicus, and the shorter ones at a third or half the width of the whorl from the back; they are nearly straight, elevated, and become tumid where the side rounds into the back, but are most elevated in the middle of the side. On the back the ribs are rather less distinct, bend slightly towards the mouth, and each bears in its centre a small sharp tubercle. In a younger state there are also tubercles at the extreme edge of the back, which seem to disappear with a diameter of twelve lines. These are, moreover, the only tubercles in specimens of five lines diam., the back being till then smooth and rounding.

Mouth twice as high as wide, forming more than half the diameter of the shell.

Septa complicated, divided on each side into four lobes. The dorsal, which is wider and shorter than the superior lateral, is ornamented with two branches on each side; the lower of these has three digits. The saddles are all half as wide again as the lobes they correspond to, and divided by an accessory lobe into two unequal parts. The superior lateral lobe, which is long and narrow, has on each side two branches, of which the lower has three digits, and in the middle a branch which bifurcates. In the inferior lateral lobe the terminal branch does not bifurcate, but terminates in three digits.

Height of shell $1\frac{3}{4}$ inch; height of umbilicus less than $\frac{1}{4}$ inch. Height of mouth 1 inch, width $\frac{1}{2}$ inch.

It nearly resembles *A. sexangulatus*; but the much more numerous and finer ribs, differently arranged, and the absence of lateral tubercles from the back, readily distinguish it. The *A. Itierianus*, D'Orb., has a very distant resemblance. Essentially the shell is a compressed form of *A. Mantelli*, with a mesial row of dorsal tubercles instead of two lateral rows.

Loc. Cambridge. Coll. University Museum.

Ammonites sexangulatus. Pl. XI. fig. 1.

Few-whorled, discoidal, compressed, with an angular tuberculated back and small umbilicus.

Ornamented with about twenty-five wide, rounded, radiating ribs, which are somewhat wavy, being for the most part bowed

a little forward on the middle of the side: they are separated by spaces never narrower than the width of the ribs. Less than half of the ribs reach the umbilicus, two commonly uniting in a fork at about a third the width of the whorl from it, and a single free one (which dies away at the same distance) sometimes occurring between pairs of forks.

The sides, which are parallel, slope into the umbilicus, and make a large angle with each half of the back, by tubercles being developed on the ribs at the line where the back would begin to round. The ribs are prolonged, somewhat widening and curving forwards, to the centre of the back, where they terminate in prominent tubercles. Thus the back is ornamented with three rows of tubercles.

The mouth is six-sided, with the sides opposite and parallel. It is half as high again as wide, and nearly half the height of the shell.

The septa appear to consist of three lobes on each side. The dorsal is wider and shorter than the superior lateral; they both have three small branches on each side, and at the end two larger ones trifurcate. The dorsal saddle, which is about as wide as the lobe, is cut into by two very small accessory lobes.

In a young state (diameter $\frac{3}{4}$ inch) the sides are perfectly parallel; only one or two of the ribs reach the umbilicus, and all the others are much shorter than the short ones in the larger specimen.

Height $1\frac{5}{8}$ inch; width of umbilicus $\frac{1}{4}$ inch. Height of mouth $\frac{1}{8}$ inch, width $\frac{9}{16}$ inch.

Loc. Cambridge. *Coll.* University Museum.

This form belongs to the small series with trituberculated backs, typified by *A. papalis*. I am not familiar with any form which closely resembles it. *A. Itierianus*, D'Orb., has some likeness to the young form; but the much more numerous ribs, smaller umbilicus, &c., easily identify the shell described. *A. Brottianus* is nearly related.

Ammonites acanthonotus. Pl. XI. fig. 5.

Few-whorled, compressed, with the sides gently inflated; back rounded, bearing a mesial row of spines; umbilicus as high as the whorl at the opposite side of the mouth.

The umbilicus is shallow, with the lower third of the side, which it includes, gently bevelled down to the preceding whorl; it is marked with radiating ribs, each terminating under the succeeding whorl in a small tubercle.

On the side of a whorl there are about twelve tubercles, from which its upper two-thirds inclines inwards, rounding gently on nearing the back. From each eminence diverge two ribs (in

the young state, sometimes three); and there is a free rib not descending quite so far as these, intermediate between each two tubercles. The ribs, parted by spaces of about twice their width, are rather small and obtuse, becoming relatively less elevated and narrower with age. At a third of the width of the side from the back all the ribs are parted by regular distances, but from about that point two of them converge towards a tubercle on the back. The intermediate ribs, which do not pass over the back, terminate where the back and side pass into each other.

The back is about half as wide as the umbilicus is high, and supports on the last whorl a row of spines one-fourth more numerous than the lateral tubercles. They are short and large, having for the base the whole width of the back, are directed forward, and get steadily higher. They are an adult character, the ribs passing over the back till the specimen gets of more than nine lines diameter.

The mouth, less than half the shell's diameter, is about a fourth higher than wide.

The septa are obliterated; they were simple, with a small inferior lateral lobe, and below it three small accessory lobes.

A slight inflation extends all round one side of the whorl; but, from the near resemblance the shell has to *Ammonites glossonotus*, I am not inclined to give that weight to the distortion it otherwise would have.

The late Dr. S. P. Woodward, in 1862, regarded this shell as a monstrosity of *Ammonites lautus*, Sow.,—a view with which I cannot agree.

Ammonites glossonotus. Pl. X. fig. 4.

Few-whorled, discoidal, moderately compressed; back rounded; umbilicus moderately large.

Around the umbilicus are (about ten) prominent tubercular spines, from each of which commonly arise two ribs, and another is generally placed in each of the hollow spaces intermediate between the tubercles. These ribs are elevated, narrow, and not nearly so wide as the spaces between them, which are of about equal width. Two of the ribs ascend the side of the shell, nearly parallel to each other, for two-thirds of its height, when the hinder one bends rather suddenly forward so as to unite, on the side of the back of the shell, with the front one, which curves forward slightly; united, they pass over the back as a thick, elevated, tongue-like fold extending forward. Rarely a rib passes over the back singly.

The mouth, about three-fourths as wide as high, is shaped like an ass-shoe.

The septa are obscure, but appear to be unsymmetrical. The dorsal lobe is short, nearly square, and has a branch on each

side, which bifurcates. The dorsal saddle is unequally divided. The superior lateral lobe has a few digits on each side, and two terminal trilobed branches.

Height $1\frac{3}{4}$ inch; width of umbilicus $\frac{1}{2}$ inch. Height of mouth $\frac{3}{4}$ inch; width nearly $\frac{5}{8}$ inch.

This is one of those remarkable *Ammonites* which undergo a transformation of ornamentation. The characters described are only those of the adult state. In a younger condition, the ribs appear to have been alternately long and short, and to have each passed over the back without a forward curve.

The example figured is the only one I have seen. There is no cretaceous shell that can be compared with it; and one of the few *Ammonites* having two ribs united to pass over the back is a species from the Lias of Amberg, described by Münster as *A. Fischeri*. That, however, has no umbilical tubercles; the ribs are wide and obtuse, and fewer, and the aspect more compressed.

Loc. Ashwell. Coll. University Museum.

Ammonites Woodwardi. Pl. XI. fig. 3.

Few-whorled, inflated, with convex sides bearing spines, and a round back. Umbilicus mostly higher than the whorl opposite to the mouth, and appearing relatively high from the half-embracing whorls enlarging but slowly: it is quite smooth and rather deep; but the sides are inflated, and round imperceptibly into the sides of the whorl.

Around the side of the whorl, midway between the back and the umbilicus, is a row of some ten or eleven rather elevated spines, from which slight inflations descend to the umbilicus, and strong round elevated ribs arise to pass over the back. In each tubercle are collected three ribs, but only two of them pass over to the corresponding tubercle; for the spines of one side are placed a little between those of the opposite side, rather than facing them, so making a zigzag, which does not, however, strike the eye. The ribs, separated by spaces fully as wide, in the more compressed forms, where the tubercles are a little below the middle of the whorl, pass straight over the back; but in inflated forms the costæ are noticeably arched forward; and in this variety the tubercles are above the middle of the side; and consequently the back, which is very much broader, is much less convex than in the less inflated form. There is no area that can be named a side, the lateral spines dividing the umbilicus from the back; thus defined, the back will be nearly as wide as three-fourths the height of the umbilicus.

The mouth is wider than high, shaped like a moon entered on her fourth quarter.

The septa are simple, the dorsal lobe being square, with two small terminal branches. There are two lateral lobes, one above and one below the spines.

Diameter $1\frac{1}{8}$ inch, with septa to the end.

It also occurs in the Gault of Folkestone; and is not easily distinguished from one described by Von Hauer, from the Lias, as *A. spinescens*.

The name has for some years been associated with that of the late Dr. S. P. Woodward, under whose friendly guidance it was my privilege to gain a knowledge of shells.

Ammonites caelonotus. Pl. X. figs. 2 & 3.

Few-whorled, much compressed, with nearly flat though slightly inflated sides; back rounding, with a deep mesial groove; umbilicus as high as the whorl at the opposite side to the mouth.

The umbilicus is shallow, but well defined, its narrow horizontal spiral boundary forming right angles with the vertical sides. Around this umbilical angle are about twenty-five little eminences—the thickened origin of the ribs. From these points the ribs ascend towards the back, being directed forward at a considerable curve for about one-fourth of their length. Each rib then, on the side towards the mouth, gives off a branch, and these bend back a little, so as to be for about half their length perpendicular, and then again curve forward in a small arc, passing on to the back, where they continue to be directed towards the mouth till terminating on the margin of the dorsal groove at the distance of the fifth rib in front of their own straight part. The ribs are wide, rounded, and depressed, and separated by sulcations of about half their width, which taper gradually both towards the back and umbilicus.

The back is half the width of the umbilicus, with a deep mesial groove, towards which the sides gently round; the sides of the sulcation make a sharp angle with the back.

The mouth at its base is two-thirds as wide as high; at its upper part, where the sides begin to round into the back, it is half as wide as high.

The septa of this shell are remarkable for the small size of the dorsal lobe, which is contained in the dorsal groove, and bifurcates. There are two lateral lobes: the superior lateral is twice as wide and half as long as the dorsal lobe; there are two notches on each side of it, and at its termination three branches, the central of which has three digits. The dorsal saddle, which is more than twice as wide as the superior lateral lobe, is divided into two subequal parts.

This is one of the less common forms; but the few specimens

I have seen (perhaps twenty-five) show a wide amount of variation. The fossil figured (Pl. X. fig. 2) is one of the most compressed forms; and from it the umbilicus gets higher, the whorls thicker, the ribs more numerous and less elevated, till at last, to judge from fragments, the section of a whorl must have been wider than high. In the form described the dorsal channel is a third the width of the back, but in the widest form it is only a ninth.

A variety occurs in which the whorls are nearly half-embracing (Pl. X. fig. 3), flattened on the sides, rounding on the back, and step-like around the umbilicus, ornamented with about thirty-two rather elevated wide ribs separated by sulcations of about equal width. The ribs are generally alternately long and short, and terminate in fifteen umbilical tubercles. Aperture rather higher than wide. Diameter $1\frac{1}{4}$ inch minimum.

MM. Pictet and Campiche, in their work on the fossils of Ste. Croix, pl. 27. f. 2, have referred this type to *A. falcatus* of Mantell. But at Cambridge no specimen of *A. falcatus* has ever occurred, nor do the ribs vary in the least so as to approach that fossil more than is seen in the specimen figured. The roundness of the back and every feature of the ribs are matter for distinction; hence, and especially as the distribution is different, the forms are separated. It is, no doubt, nearly related to *A. falcatus*, having a channelled back and ribbed sides.

Diam. $2\frac{1}{4}$ inches; septa to the end.

Ammonites splendens, Sow.

A. splendens, Sow. M. C. t. 103; Pictet, Grès Vert, pl. 6. fig. 6; D'Orb. pl. 63.

A. Fittoni, D'Arch.

A. auritus, D'Orb. T. C. vol. i. pl. 65. figs. 3 & 4.

Shell compressed, with a small umbilicus, high, flattened sides, and a very narrow flat back. The umbilicus, about as high as the mouth is wide, and never more than a third the height of the whorl, is shallow, with the horizontal ventrum, which rounds into the side, not much deeper than the unembraced part of the whorl on which it abuts. The sides of the whorls are very slightly inflated, and converge, so that the back is only half as wide as the base. The mouth is less than half the height of the shell. The sides of the cast are smooth, or marked only with a few broad flexuous ribs scarcely elevated. The dorsal angles are each crenated, with a row of minute tubercles, which send slight thickenings a short way down the sides.

Commonly in larger specimens the lower half of the side is slightly inflated, so that the upper half looks more compressed: the same peculiarity occurs rarely in specimens from Folkestone.

Septa commonly unsymmetrical, though the degree of inequality varies. The dorsal lobe is square, with two digitated terminal branches, and two or three small notches on each side. The dorsal saddle is half as wide again as the lobe, and mesially cleft, though not deep. The inferior lateral lobe is almost as large as the dorsal saddle: it terminates in three large branches, all well digitated, the lateral ones bifurcating in full-grown forms, but not into equal parts. There are three other lobes, which are mere notches. The septa are very close together.

I have referred this fossil to the *A. splendens* of Sowerby rather than to the *A. Fittoni* of D'Archiac, because it is quite identical with typical specimens from Folkestone, though, were Sowerby's figure followed, no doubt it should be named *A. Fittoni*. But for the mineralization, it might have been supposed that ours were southern Gault fossils, the only difference being that, from the smaller size of the crenulæ, the back is commonly a little convex instead of being slightly concave. Nothing appears to be gained by separating *A. Fittoni* from *A. splendens*; for it is not a well-marked variety, and our specimens are slightly intermediate. It is a common fossil, and abundantly represented in all collections, particularly those of the University and Mr. Carter.

One variety, for which I am indebted to Mr. C. S. P. Darroch, of Trinity College, has the septa at first slightly unsymmetrical, and afterwards symmetrical. The shell is inflated, the mouth being two-thirds as wide as high. The rather deep umbilicus is bordered at the ventral angle with sixteen round tubercles. The dorsal tubercles are larger than those at the umbilicus. The back is round. The sutures are the same as in *A. splendens*, except that there are three small lobes in the umbilicus instead of two, while the lateral lobes are relatively only half as wide.

There are many variations of *A. splendens*, through which the smooth forms pass into others having a sharp and elevated flexuous rib descending from each small dorsal crenulation to the base of the side, where two commonly unite to form a slight thickening; between each two is a free rib, commonly not descending so far. Occasionally two ribs unite in one dorsal tubercle.

Some specimens reach as large a size as those from the Gault, and must have had a diameter of 7 or 8 inches, but are only found in fragments.

Passing on from these forms, the ribs gradually get less sharp and wider apart, the umbilical thickenings more elongated, and unite three ribs with intermediate free ones. Two unite more commonly in each dorsal tubercle, which becomes a trifle larger. The whole shell gradually thickens, the umbilicus

enlarges, the ribs strengthen, the umbilical tubercles, as well as those bordering the back, are more elevated; and thus *A. splendens* varies into a new form, which it may be useful to distinguish as *A. cratus*.

Ammonites cratus. Pl. XI. fig. 2.

Form inflated, with half-embracing whorls, and a mouth narrower than high, though wider than the umbilicus. The sides are convex. The flat back is less than half as wide as the mouth.

Around the umbilicus is a row of twelve large and elevated spines, separated by spaces wider than their bases: they send thickenings down the umbilicus, into which the most convex part of the side rounds, abutting on the embraced whorl. They also give rise to extremely elevated narrow ribs, separated by wider, deep, concave channels, curving moderately mouthward. Three ribs are collected in each spine, and there is a free one between each two bundles. About one half reach the back single, and terminate each in a strong, elevated, tubercular thickening, which extends obliquely forward into the middle of the back; the remainder unite in twos at the dorsal angle, and form similar tubercles. These tubercles are so arranged as to give a slightly dendritical aspect to the back.

Septa symmetrical, consisting of the dorsal lobe and, on each side, three (? or more) lobes. The dorsal lobe is rather longer than wide. The dorsal saddle, much wider than the lobe, is centrally cleft. The superior lateral saddle is as wide as the dorsal, has a single notch on each side, and terminates in three large trifurcate branches. The other parts of the suture have the same structure as those described, but get rapidly smaller. As the forms depart from the original series, and the whorls get more inflated, the septa become less and less unsymmetrical.

This extreme form is not common. The largest example in the University Museum measures $3\frac{1}{2}$ inches high, and has septa to the end.

Another branch of the series now passes on rapidly to *A. auritus*, Sow., with which should be united *A. Guersanti*, Pict. (not D'Orb.); for our specimens are almost identical with fig. 7, pl. 5 of the 'Grès Vert,' differing only in having rather fewer tubercles on the back—a character which is the only one to show that the figure is not copied from D'Orbigny's *A. auritus*, pl. 67. vol. i. 'Terr. Crét.'

Ammonites leptus. Pl. X. fig. 5.

Few-whorled, greatly compressed; sides nearly flat; back

very narrow; umbilicus rather more than half the height of the last whorl.

The umbilicus, which is angular, is bordered on the side by about fifteen (somewhat elevated, but not very large) tubercles, separated from each other by fully the width of their bases. To each of these tubercles converge three or four ribs, two or three of which generally die away on reaching the eminence. The ribs are round, very gradually widen, and are separated by sulcations about equally wide; for the lower two-thirds of their length they are straight, and then gracefully curve forward, dying away either separately or uniting in twos in large expanded dorsal tubercles, which occupy the whole of the back, bend a little outwards, and (probably) somewhat resembled those of *A. auritus*; they numbered about thirty on each side, and were neither opposite nor regularly alternate.

The mouth is high and narrow, with the sides converging not unlike an Egyptian doorway; it is more than twice as high as wide.

Height $2\frac{1}{8}$ inches; width of umbilicus $\frac{9}{16}$ inch; height of last whorl $\frac{1\frac{5}{6}}$ inch; width of base of mouth $\frac{7}{16}$ inch.

The specimen described is the only one I have seen. Though the shell is otherwise well preserved, the dorsal tubercles are all broken off quite at their bases. A line of the last whorl, broken away, extends two-thirds round the shell; so that perfect specimens were probably not less than 4 inches in diameter.

The affinities of this form are very near to *A. splendens*, Sow., very evident with *A. serratus*, Park, and not too distant to recall the idea of *A. auritus*, Sow. The close ribbing, large dorsal tubercles, and compressed aspect sufficiently and severally distinguish it from all of them.

Loc. Ashwell. University Museum.

Ammonites auritus, Sow.

α. *A. auritus*, Sow. M. C. vol. ii. pl. 134; D'Orb. T. C. vol. i. pl. 65.

A. Guersanti, Pictet (not D'Orb.), Grès Vert, pl. 5. f. 7.

β. *A. Raulinianus*, Pictet & Campiche, T. C.; Ste. Croix, pl. 29; D'Orb. pl. 68. T. C.; Pictet, Grès Vert, pl. 7. fig. 2.

As has already been seen, *A. Fittoni* passes into *A. auritus*; and similarly *A. auritus* passes into the fossil figured by Pictet and Campiche as *A. Raulinianus*, which is only a variety of the *A. Raulinianus* of D'Orbigny. The *A. auritus* figured by Sowerby is a more robust form than that of D'Orbigny, more intermediate in the series, and consequently a convenient type for our forms.

The first form is a compressed shell, with the umbilicus half as high as the mouth, which is nearly two-thirds as wide as

high. The sides are very slightly inflated, and converge so that the back is only half as wide as the lower part of the mouth; they round into the umbilicus, bordering which are ten slightly elevated tubercles, forming the boundary for the embracing whorl. The flat back has on each dorsal angle a row of eighteen or nineteen tubercles, which alternate, are larger than those of the umbilicus, and are directed slightly upward, though scarcely rising above the back. From the tubercles arise flexuous ribs twice or three times as numerous as the dorsal tubercles, at which they meet commonly in twos, sometimes in threes, with usually a free rib between each two tubercles; they are similarly collected at the umbilicus. The degree of elevation of the ribs, which are sometimes indistinct, varies much, as does the degree of flexure.

The septa are unsymmetrical, with a square dorsal lobe having two branches on each side, and two terminal branches, between which are a row of dorsal tubercles. The dorsal saddle, wider than the lobe, is cleft mesially by a branch in a line with the other row of dorsal tubercles. The superior lateral lobe is longer than the dorsal, has on each side two lateral branches, and terminates in three branches larger than the others. There do not appear to be any accessory lobes.

From this, forms diverge having the septa variously symmetrical and unsymmetrical, in which the whorl is thicker, while the umbilical tubercles are elevated into spines, and those of the back become higher and wider. These are more typical forms of *A. auritus*, about intermediate between the figures of Sowerby and D'Orbigny.

Ammonites Raulinianus, var.

This is quite inseparable as a species from *A. auritus*.

Shell inflated, with a flat back tuberculate at the sides; whorls half-embracing. Umbilicus nearly as high as the mouth, and bordered with spines.

Mouth as wide as high, with the sides slightly converging to the back; in their lower third they round into the umbilicus, and on its margin support a row of nine or ten spines, generally large, but varying. The back has about eighteen tubercular spines, larger than those of the umbilicus, sometimes directed upward, sometimes outward. The rows on the two sides are alternate, so that the ornament of the back is zigzag. The ribs are commonly strong and obtuse, and slightly curved forward. Three always diverge from each umbilical spine, and two always meet in each dorsal tubercle. Occasionally a dorsal tubercle sends down a free rib.

Septa nearly symmetrical, with a square dorsal lobe, narrower

than the back, with two notches on each side, and terminating in two small branches. The dorsal saddle is considerably wider. The upper lateral lobe is long and narrow, terminating in three small branches, and having one branch on each side. The lower lobe is very small, and in a line with the umbilical tubercles.

It is unwillingly that this form has been described separately from *A. auritus*, of which it is a badly marked variety, differing chiefly in a different inflation of the shell. It has been classed by the Swiss naturalists with *A. Raulinianus*; but in this series names nowhere mark real boundaries or breaks.

The young shell so nearly resembles *A. Studeri* that I am unable to discover any character not common to the two forms. This circumstance in no way invalidates the conclusions arrived at on the affinities of this shell; for all the forms, from *A. Fittoni* to the most extreme variation of *A. Studeri*, have round backs in the young state; and if this shell is more inflated than usual, that is because the adult is one of the most gibbous of the series.

There are many variations from this form, in one of which the ribs disappear; in another the dorsal tubercles gradually become obsolete, while the back gets narrower and the sides more convex, till at last the back as a flat region becomes obsolete, and the alternate ribs almost meet in alternate thickened terminations along its middle. The ribs curve much toward the mouth as they near the back. This small shell with a dendrous back is probably immature.

Ammonites Salteri, Sharpe, Cret. Moll. pl. 23. figs. 5 & 3, is a variation including those more compressed forms in which the dorsal spines are reduced to tubercles and the umbilical spines are small and the ribs slightly elevated.

In a variety which may be named *A. tetragonus* the shell has flat sides and a flat back, and the mouth nearly quadrate. On the lower third of the side is a row of ten or eleven small spines, which are moderately elevated and separated by wide intervals. At each dorsal angle is a row of about eighteen tubercular spines, larger than the umbilical row, and, though short, directed laterally, which widens the back. These spines are connected by ribs, which on the last half-whorl are very slightly elevated, and ultimately become obliterated. Three appear to have always diverged from each umbilical spinous eminence. The last half-whorl is devoid of septa. Diameter 2 inches; width of mouth $\frac{7}{8}$ inch.

Another shell (Pl. XI. fig. 6) of the same group scarcely differs as a variety from *A. Renauxianus*, P. & C. Ter. Crét. Ste. Croix, pl. 31. figs. 2-5; D'Orb. T. C. vol. i. pl. 27. Shell compressed, with very few whorls, one-third-embracing, and enlarging very

slowly. The flat sides, so slightly converging as to be almost parallel, are half as high again as wide. The ventrum is horizontal, and rounds into the side. The shallow and open umbilicus shows that, up to the first, the whorls were smooth. Here there are fourteen thickenings, which rapidly become moderately elevated tubercles. A rib given off from each of these bifurcates a little way up the side, but is very little elevated. One or both of the branches reach the back, terminating in a tubercle not larger than that at the umbilicus. In the last quarter-whorl the ribs are curved towards the mouth, and are obliterated in the upper part of the whorl. The dorsal tubercles in the same space rapidly get smaller, becoming oblique thickenings; they form a row of twenty-five. The last half-whorl is devoid of septa. These shells are as unsymmetrical as any in the young state, but become finally nearly symmetrical. The square dorsal lobe, more than half the width of the back, has a notch on each side and two small terminal branches. The dorsal saddle is of the same width, and mesially cleft. The upper lateral saddle is rather narrower, with a notch on each side and three terminal branches. The other parts are similar, but much smaller. There are two small accessory lobes.

The dorsal tubercles are alternate, and the back slightly convex. There are other specimens, one-fourth larger, with the mouth perfect and as wide as high, with the shell inflated. The dorsal angle is obtuse and rounded; the side rounds more noticeably into the ventrum.

I believe these shells to be variations from *A. auritus*.

Ammonites Vraconensis, Pictet & Campiche, T. C. Ste. Croix, pl. 31. fig. 1.

Inflated, few-whorled; whorls two-thirds-embracing, with (diam. 2 inches) flat sides and a nearly flat back. The sides converge, giving the mouth something of the outline of an inverted flower-pot. At one-third up the side is a row of eight or nine large elevated spines, the space interior to which rounds down to the whorl it embraces, and is smooth. From each spine commonly arise (three or) four ribs, which extend up the side to the margin of the back. At the angle where the side and back meet is a row of tubercles about three times as numerous as the umbilical spines, and in these the ribs terminate, commonly two, sometimes but one, in each; so that there are generally one or two free ribs between all the spines. Many of the ribs are straight; but the hinder one of the two, meeting in a dorsal tubercle, necessarily has a bend in its upper third. The dorsal tubercles of the two sides are not opposite, but alternate,

and, compared with the umbilical spines, small. The umbilicus is deep, and about as high as or higher than the whorl opposite the mouth.

Ammonites Studeri, Pictet & Campiche.

A. Studeri, P. & C.; Ste. Croix, pl. 30.

Few-whorled, more than two-thirds-embracing, greatly inflated, with a flattened back, and umbilicus as high as the whorl opposite the mouth, and bordered by a row of large spines.

The mouth is rather wider than high, and nearly twice as wide as the back. The exposed part of the ventrum is inflated and nearly horizontal; but quite on its border, where the side rounds into it, is placed the row of ten massive tubercles; these are much-elevated cones, with bases a fourth the height of the side; above them the sides are flat, and converge to the back. From each spine arise two or three ribs, which are slightly curved mouthward, obtuse, and not much elevated till reaching the margin of the back, where they terminate each in a thickening which can scarcely be termed a tubercle, and which extends a short way on to the back. Those of the two sides are alternate, so that the slightly convex back presents a distant approach to the kind of zigzag ornament which marks the back of *A. Raulinianus*.

In the most typical specimens the septa are almost effaced; they appear nearly, if not quite, symmetrical. The dorsal saddle is wide and unequally cleft by a small branch. The superior lateral lobe is long, with two small notches on each side, and terminates in three trifid branches. The inferior lobe is small, and in the line of the tubercles.

Specimens identical with those figured in the 'Paléontologie Suisse' are rare; but small specimens having all the characters of ornament the same, and differing only in being relatively much less inflated, are by no means uncommon. But it is with doubt that I have cast these in with *A. Studeri*; for the young state of *A. Raulinianus* is identical.

The adult shells of this type vary much in the degree of elevation and number of the ribs, as well as the way in which they are gathered in the tubercles.

I believe the facts given in this paper compel the union under one specific type of every shell it describes after *Ammonites celonotus*. Throughout the series the variations in the septa are insignificant. Every variety of shape is nothing but an inflated form of *Ammonites splendens* modified by the different development of crenulæ and ribs. The four chief species, *Ammonites splendens*, *A. auritus*, *A. Raulinianus*, and *A. Studeri*, are inseparably linked together by intermediate forms; while the

young of *A. auritus* is the species *A. splendens*, and small shells like *A. Studeri* become with age the species *A. Raulinianus*.

Yet the other forms all have a value, though for convenience they may be regarded as varieties of these types, which are but subspecies of a larger group now named *Ammonites permutatus*.

Ammonites (Crioceras) occultus. Pl. X. fig. 1.

Moderately compressed, flattened, with few whorls, which rapidly enlarge, and are so closely coiled that, while the whorls do not appear to have actually touched, the tubercles of the back have impressed themselves into the underside of the succeeding whorl. The transverse outline of the last whorl is four-sided. The back is flat, and the base is a little concave. The sides round into the base, and approximate each other with increasing rapidity as they near the back, into which they also gradually round. The back is half as wide as the base, and one-third the height of the side. In the earlier whorls the back appears to have been more round.

The shell is ornamented with a great number of moderately elevated rounded ribs, which, below the middle of the side, are slightly inflected forwards, as they are on nearing the back. At the base of the side the ribs are collected in twos and threes, forming elongated, elevated, obtuse tubercles; they ascend the side at about equal distances apart, and so pass over the back; but, at the angles which the sides make with the back, every third or fourth rib develops a large elevated tubercle, the base of which is at least as wide as the space between the ribs: the tuberculated ribs are often stouter than the others. On the basal side, where the ribs are bent forwards, are two impressed lines marking the width of the back of the preceding whorl; the space between the lines is rather more than a third of the width of the base.

The septa are indistinct. The dorsal lobe is twice as long as wide, and extends over three ribs; it has two large, bifurcating, many-digited, terminal branches, and two branches on each side, the lower one being large. The dorsal saddle is as wide as half the height of the side, divided by one large and many smaller branches. The superior lateral lobe is about as large as that on the back, but longer; it terminates in a trifid branch, the central ramus of which has three digits. The inferior lateral lobe is short; the basal lobe minute.

This remarkable *Crioceras* was obtained by the Rev. Dr. Cookson from near Hunstanton. But I suspect that both it and the *Trigonia* formerly named *T. Hunstantonensis* have been obtained from the Drift. It has been liberally presented to the University Museum.

For the drawings which illustrate this paper I am indebted to the kindness and skill of the accomplished artist, Mr. Robert Farren.

EXPLANATION OF PLATES X. & XI.

[All the figures are of the natural size.]

PLATE X.

- Fig. 1. *Crioceras occultus*, Seeley : *a*, lateral view ; *b*, ventral view, showing how the dorsal spines indented the succeeding whorl ; *c*, a section and septum ; *d*, dorsal view.
Fig. 2. *Ammonites cælonotus*, Seeley.
Fig. 3. ———, var.
Fig. 4. ——— *glossonotus*, Seeley.
Fig. 5. ——— *leptus*, Seeley.

PLATE XI.

- Fig. 1. *Ammonites sexangulatus*, Seeley.
Fig. 2. ——— *cratus*, Seeley.
Fig. 3. ——— *Woodwardi*, Seeley.
Fig. 4. ——— *pachys*, Seeley.
Fig. 5. ——— *acanthonotus*, Seeley.
Fig. 6. Var. of *A. Renauxianus*, Pictet & Camp.
Fig. 7. *A. rhamnonotus*, Seeley.

XXVIII.—Descriptions of new Genera and Species of Gallerucidæ.

By J. S. BALY.

Fam. Gallerucidæ.

Subfam. HALTICINÆ.

Genus SIMÆTHEA.

Corpus elongatum, parallelum, subcylindricum. *Caput* exsertum, fere perpendiculare, pone oculos constrictum ; *oculis* orbitu circumdatis, prominentibus, integris ; *facie* inter antennarum insertiones elevata ; *encarpis* triangularibus, supra fossa transversa profunda terminatis ; *antennis* corporis longitudini fere æqualibus, filiformibus, articulis cylindricis, primo breviter curvato, a basi ad apicem paullo incrassato, secundo brevi, obconico, tertio ad primi longitudinem æquali. *Thorax* transversus, basi vix transversim sulcatus, disco convexus, lateribus anguste marginatis, rotundatis, angulis anticis dente obtuso armatis. *Elytra* thorace paullo latiora, parallela, apice subacute rotundata, supra convexa, regulariter punctato-striata. *Pedes* robusti ; *coxis* anticis non contiguis, suberectis ; *femoribus* paullo, *posticis* magis incrassatis, his subtus non sulcatis ; *tibiis* omnibus apice spina acuta armatis ; *tarsorum* posticorum articulo primo duobus sequentibus paullo brevior ; *unguiculis* appendiculatis. *Prosternum* distinctum sed angustissimum.

Type, *Simæthea Laportei*, Baly.

Simæthea must be placed in close proximity to *Podagrica*. In



Seeley, H. G. 1865. "XXVII.—On Ammonites from the Cambridge Greensand." *The Annals and magazine of natural history; zoology, botany, and geology* 16, 225–247.

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