

the convexity facing inwards; they thicken a little towards the venter and some terminate in subtubercles just below the outer keels. There is a tendency for the ribs to bend forwards just short of the ventrolateral shoulder. A few ribs reach the outer keels, but most weaken and disappear a short distance away from these. All three keels are equally thick and strong.

REMARKS. — The specimen was referred to "*Ammonites bisulcatus*" by LUNDGREN (1881). It has, however, a higher whorl section and stronger keels that are more deeply bisulcated. The agreement with REYNÈS' figures is good (REYNÈS, 1879, pl. 16, figs. 1, 2), although his drawings do not show a tendency towards thickening of the ventral terminations of the ribs.

Unfortunately the exact provenance of the specimen is unknown, as it was picked up loose in crushed rock (*krosstenslera*). The original label bears a note by LUNDGREN saying that the specimen in all probability came from the "ammonitbank", although it was found in loose material in the fields around property 12 at Djuramåsa, northwestern Skåne.

Paracoronicerias crossi (WRIGHT)

Pl. IV, fig. 1; figs. 3, a—b

1879 *Arietites crossi* WRIGHT, p. 283, pl. 10, figs. 1, 2.

1953 "*Arietites*", NILSSON, p. 161, fig. 34.

1954 *Coronicerias (Paracoronicerias) crossi* (WRIGHT), DONOVAN, p. 27.

MATERIAL. — A single large, well-preserved specimen.

REPOSITORY. — Lund, LO 3911.

PROVENANCE. — Dompång in the Döshult district.

COLLECTOR. — Unknown.

AGE. — Lower Sinemurian; according to DONOVAN (1954, p. 27) the holotype comes from the *gmundense* subzone of the *semicostatatum* zone.

DESCRIPTION. — The specimen consists of at least nine whorls of which the final quarter whorl is body chamber. The last whorl is, however, incomplete and it seems probable that the body chamber was much

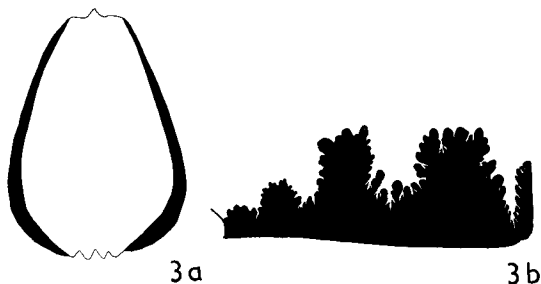


Fig. 3, a—b. *Paracoronicerias crossi* (WRIGHT); a, whorl section ($\times 0.3$); b, suture line (weathered) ($\times 0.5$). Specimen LO 3911.

longer, possibly at least an entire whorl. The whorl section is high ($B/H = 76\%$) and the coiling very evolute. Owing to damage to the umbilicolateral part of the last part of the last preserved whorl (see pl. IV, fig. 1) the coiling appears more evolute than is actually the case. As far as can be ascertained the ribbing is simple throughout. The ribs are weakly concave-forwards and widen and vanish at the side keels. At the beginning of the last whorl the side keels are moderately strong and the side furrows broad and rather deep. On the last half of the whorl the furrows become broader and shallower and the side keels round off until barely perceptible. The umbilicus occupies about 56% of the total diameter. At a diameter of 385 mm there are 29 ribs; at a diameter of 330 mm there are 30 ribs.

Owing to the weathered nature of the surface of the specimen no well-preserved sutures occur; the suture line figured in fig. 3 b is therefore only approximate.

DIMENSIONS. —

diameter	=	385 mm (= 1.00)
thickness	=	63 » (= 0.16) (measured intercostally)
		71 » (= 0.18) (over the ribs)
umbilicus	=	215 » (= 0.56)
height of last whorl	=	93 » (= 0.24)

REMARKS. — The present specimen agrees most closely with *Paracoronicerias crossi* (WRIGHT) and is referred to that species, although certain differences do occur. At a diameter of about 360 mm the figure of the holotype has about 26 ribs and is thus slightly less densely ribbed than the Swedish form. The B/H ratio is approximately 83% (ascertained from the figure), while that of the Swedish specimen is 75% and the umbilicus of the holotype takes up about 51% of the total diameter and that of our specimen 56% . The ribs of the holotype as figured seem to be slightly more bent and a little stronger near the umbilical margin. The ventral terminations of the ribs of our specimen are somewhat stronger at the beginning of the last whorl but with a definite tendency towards weakening there. Unfortunately, *P. crossi* is a rare and poorly known species.

The specimens attributed by SCHMIDT (1914, pl. 3, figs. 1, 2) to *P. crossi* are similar, as far as can be judged from the figures, but the ribbing is denser.

The present specimen was mentioned and figured by NILSSON (1953, p. 161, fig. 34) but it does not seem to have been known to LUNDGREN; it would therefore seem likely that it was collected after the appearance of his monograph.

Paracoronicerias charlesi DONOVAN (1955) is somewhat similar but it is more densely ribbed. The specimen figured by HYATT (1889, pl. 6, figs. 1, 2) as *P. gmuendense* is less densely ribbed although its whorl section is similar. Another comparable species is *P. trigonatum* (HYATT) (1889, pl. 7, fig. 1) but it has a more depressed whorl section and is less densely ribbed.

Genus *Agassiceras* HYATT, 1875TYPE SPECIES. — *Ammonites scipionianus* D'ORBIGNY.*Agassiceras scipionianum* (D'ORBIGNY)

Pl. VI, figs. 1, 2; fig. 4

1844 *Ammonites scipionianus* D'ORBIGNY, p. 207, pl. 51, figs. 7, 8.?1881 *Ammonites scipionianus* D'ORB., LUNDGREN, p. 55.1952 *Agassiceras scipionianum* (D'ORBIGNY), DONOVAN, p. 745.1956 *Arietites* (*Agassiceras*) *scipionianus* (D'ORBIGNY), WALLISER, p. 205.

MATERIAL. — 11 specimens.

REPOSITORIES. — Lund, with plastic molds of the important specimens in the museum of Geologiska Institutet, University of Stockholm; LO 3915, LO 3916 (= plastic mold, G. I. C 1201), LO 3917, LO 3918 (G. I. C 1203, as well as several unnumbered specimens not specifically treated in the text).

PROVENANCES. — Djuramåsa property 12, Döshult, northwestern Skåne.

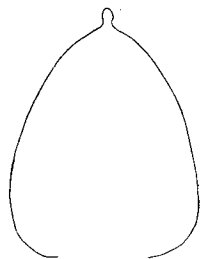
COLLECTORS. — Unknown.

AGE. — Lower Sinemurian; *scipionianum* subzone of the *semicostatum* zone.

DESCRIPTION. — The collection contains a number of specimens that seem to be typical for the species. Specimen LO 3915 (pl. VI, fig. 1) represents a more strongly ornamented variety and is probably best regarded as transitional to *A. nodulatum* (BUCKMAN). It is slightly distorted but otherwise well preserved. At a diameter of 125 mm there are 28—29 ribs on the last whorl. The ribs are weakly convex inwards and mostly simple; in rare cases a tendency to develop loops in the umbilical area is to be discerned. Occasionally 2 ribs begin together at the umbilical margin where a subtubercle forms; such ribs are of unequal strength. On earlier whorls the ventrolateral tubercles are strong and rounded, but on the last whorl they weaken gradually. The ribs are always strongest in the umbilical third of the side there being a consistent tendency for the ventral sides of the ribs to vanish [such a tendency is not apparent in *Agassiceras nodulatum* (BUCKMAN)]. At the beginning of the last whorl some of the ribs swing forwards on the venter and fade before reaching the keel but on the last half whorl the area between the ventrolateral tubercles and the keel is smooth. The keel is at all stages very prominent and slightly undercut. There are 7 whorls. The whorl section is depicted in fig. 4.

The tendency of the Swedish representatives of the species towards the development of a smooth outer area is shown more emphatically by specimen G. I. C 1201 (plastic mold; original in Lund, LO 3916). This specimen consists of a fragment showing the venter and part of the flank

Fig. 4. *Agassicerias scipionianum* (D'ORBIGNY). Whorl section of specimen LO 3915. ($\times 0.6$).



(pl. VI, fig. 2). The keel is high and strong, as in typical specimens, and the surface is ornamented with sinuous growth lines that run up onto the keel and cross it. Another specimen (LO 3916) has 27—28 ribs on the final whorl, which terminates at a diameter of 103 mm; the ribs are strong and tuberculate near the umbilical margin but on the last preserved whorl they fade out towards the venter and at this stage there are no ventrolateral tubercles. HYATT (1889) observed a similar suppression of the tuberculation on large individuals.

As an example of a more ornate variety may be taken specimen LO 3918 (plastic mold G. I. C 1203) in which the ventrolateral sculpture is quite strong, although the umbilical ends of the ribs are weaker. There are 27—28 ribs at a diameter of 120 mm; the growth lines follow closely the course of the ribbing. A somewhat more strongly ornamented specimen LO 3917 from Döshult has slightly fewer ribs at a diameter of 125—130 mm, there being only 25—26.

The specimen marked as being the original to LUNDGREN (1881, p. 55) is badly distorted and can only be doubtfully referred to *A. scipionianum*. It is septate but the suture is not well enough preserved to permit study and reproduction.

In the following table the numbers of ribs and whorls at the maximum diameters of four specimens are shown.

Specimen	LO 3915	LO 3916	LO 3917	LO 3918
Diameter (in mm).....	25	103	125—130	120
Number of ribs	28—29	27—28	25—26	27—28
Number of whorls	7	7	6	6

DIMENSIONS. — The measurements of the most complete specimen are presented below.

diameter	= 132 mm (= 1.00)
thickness	= 39 » (= 0.30)
umbilicus	= 52 » (= 0.39)
height of last whorl	= 48 » (= 0.36) (measured from the umbilical margin).

REMARKS. — The types of variation recorded in the foregoing were also commented on by DONOVAN (1952, p. 746). The umbilicus is about 39—40 percent of the diameter, which agrees well with DONOVAN's figure of 38 percent. It is of interest to note that fully grown Bristol specimens are less than half the size of mature Swedish forms. *A. scipionianum* is more densely ribbed than the related *A. nodulatum* (BUCKMAN).

Agassicerias nodulatum (BUCKMAN)

Pl. II, fig. 2; pl. III, fig. 2; pl. V, figs. 1, a—c

1921 *Aetomoceras nodulatum* BUCKMAN, pl. ccxxii, figs. 1, 2.

1952 *Agassicerias nodulatum* (BUCKMAN), DONOVAN, p. 746.

MATERIAL. — 4 specimens.

REPOSITORIES. — Lund, LO 3914, LO 3913, LO 3912, and Stockholm, G. I. 6026.

PROVENANCES. — Döshult, Djuramåsa, property 12, northwestern Skåne.

COLLECTORS. — Unknown.

AGE. — Lower Sinemurian; *scipionianum* subzone of the *semicostatum* zone.

DESCRIPTION. — The most complete specimen is LO 3914 (pl. V) on which the apertural border is preserved. It is also noteworthy inasmuch as the costation is particularly coarse, there being 18 ribs in the last whorl; the specimen has a maximum diameter of 113 mm. The ribs are strong, undivided and straight; they begin at the umbilical margin at a weak bullate tubercle and continue on to strong, bullate ventrolateral tubercles, some of which are oblique. In the outer third of the flanks some of the ribs weaken and almost fade out (this tendency is much less pronounced than in *A. scipionianum*). The ribs swing sharply forward on the venter and then vanish before reaching the keel. The growth lines follow the course of the ribbing. There are 7 whorls. The apertural border has the same shape as the growth lines and is ventrally drawn out to a point (pl. V, fig. 1 c); it is marked by a constriction after which it flares out.

A single well-preserved fragment (G. I. 6026) shows four very slightly curved strong ribs with bullate ventrolateral tubercles. The ribs sweep sharply forwards on the venter and vanish before reaching the prominent keel. The ribbing of this specimen is finer than that of LO 3914.

Specimen LO 3913 from Döshult is noteworthy in having particularly coarse and widely spaced ribs; the maximum length of the fragment is 49 mm, the whorl height is 30 mm and there are 5 ribs.

Another fragment from Döshult (LO 3912) figured in pl. II, fig. 2 is very coarsely ribbed and resembles rather closely the specimen figured by WRIGHT (1880, pl. 19, figs. 8, 9). The keel is partly damaged. The maximum length of the specimen is 80 mm and the greatest whorl height 24 mm; on this specimen there are 7 ribs. It is septate throughout but

none of the sutures is sufficiently well preserved to permit reproduction. The growth lines are rather prominent; on the flanks they follow the course of the ribbing but sweep strongly forwards on the venter. The altered shell material is about 0.5 mm thick.

DIMENSIONS. — The dimensions of the most complete specimen, LO 3914, are given below.

diameter	= 113 mm (= 1.00)
thickness	= 23 » (= 0.23)
umbilicus	= 40 » (= 0.36)
height of last whorl	= 43 » (= 0.38) (measured from the umbilical margin).

REMARKS. — The Swedish specimens of *Agassicerias nodulatum* agree well with the raricostate Cheltenham form figured by WRIGHT (1880, pl. 19, figs. 8, 9), which has about 17 ribs at a diameter of about 70 mm. It also displays the same sort of enfeeblement of the ribbing in the middle of the flanks as shown by the complete specimen here described. DONOVAN (1954, p. 31) referred WRIGHT's specimen to *A. nodulatum* only with hesitation, and then as "aff. *nodulatum*", owing to the coarseness of the ribbing. BUCKMAN's figures of the holotype show it to have weaker ventrolateral tubercles than LO 3914. The specimen figured by REYNÈS (1879, pl. 28, figs. 3, 4), considered by DONOVAN (1955, p. 30) as being a typical representative of *A. nodulatum*, differs from LO 3914 in having more regular ribbing and weaker ventrolateral tubercles, but agrees with G. I. 6026 in both the ribbing and the tuberculation. The umbilicus of specimen LO 3914 takes up about 36 percent of the total diameter and is thus somewhat less than that of *A. scipionianum* (cf. DONOVAN, 1952, p. 746). In the following table the rib densities of *A. scipionianum* and *A. nodulatum* are compared.

Rib densities of *Agassicerias*

	<i>Agassicerias scipionianum</i>					<i>Agassicerias nodulatum</i>		
	DONOVAN (1952)	D'ORBIGNY (1844)	LO 3916	LO 3915	LO 3917	BUCKMAN (1921)	WRIGHT (1880)	LO 3914
Diameter (in mm).	30 50	53	103	125—30	125	68?	65	113
Number of ribs . .	18 24	25	27—28	25—26	28—29	23	17	18

Genus *Euagassicerias* SPATH, 1924

TYPE SPECIES. — *Euagassicerias resupinatum* (SIMPSON).

Euagassicerias resupinatum (SIMPSON)

Pl. IV, fig. 2, pl. VI, fig. 3; pl. VII, figs. 1, a—c; pl. VIII, figs. 1, a—b; pl. IX, figs. 1, a—b; pl. X, figs. 1, a—b, pl. XVII, fig. 5; figs. 5, a—b, 9

- 1843 *Ammonites resupinatum* SIMPSON, p. 15.
 1844 *Ammonites Sauzeanus* D'ORBIGNY, p. 304, pl. 95, figs. 4, 5.
 1881 *Ammonites Sauzeanus* D'ORB., LUNDGREN, p. 51, pl. 2, figs. 5—7; pl. 3.
 1909 *Agassicerias resupinatum* SIMPSON sp., BUCKMAN, p. 6 b, pl. 6.
 1951 *Coroniceras sauzeanum* D'ORB. sp., TROEDSSON, p. 240 (in part).
 1952 *Euagassicerias resupinatum* (SIMPSON), DONOVAN, p. 742.
 1954 *Euagassicerias resupinatum* (SIMPSON), DONOVAN, p. 27.
 1955 *Euagassicerias resupinatum* (SIMPSON), DONOVAN, p. 30.
 1956 *Arietites (Euagassicerias) sauzeanus* (D'ORB.), WALLISER, p. 202, encl. B, fig. 2; encl. E, fig. 6.

MATERIAL. — More than 50 specimens.

REPOSITORY. — Lund, LO 3919—3928, etc.

PROVENANCES. — Döshult, stream bed at Dompäng, borehole at Oregården (Lund no. 271), Löparehus (in the vicinity of Döshult).

COLLECTORS. — Some of the material was collected by H. SJÖGREN, B. LUNDGREN, and G. TROEDSSON; the other collectors are unknown.

AGE. — Lower Sinemurian; *sauzeanum* subzone of the *semicostatum* zone.

DESCRIPTION. — The abundant material of this species in the present collection permits an accurate description of its characters. The general features are evolute, squarish whorls with low keel and no side furrows, ventrolateral tubercles and single, rather stout ribs. The ventrolateral tubercles may be spinate on mature whorls but are mostly blunt; on young whorls they are often bullate in an oblique direction forwards. There is much variation in the strength of the keel and the ventrolateral tubercles.

Some of the specimens in the collection have portion of their body chambers preserved. Specimen LO 3928 is crushed but appears to have the entire body chamber. The apertural border is preserved; on the last part of the body chamber the ribs degenerate into folds. The last preserved third of a whorl of specimen LO 441 is body chamber.

The ribs may stop bluntly at the umbilical margin thus forming subtubercles. The ribs of specimen LO 441 become broader and flatter on

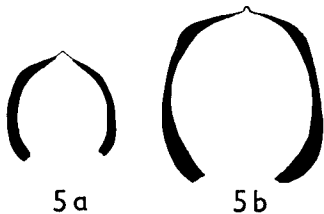


Fig. 5. *Euagassicerias resupinatum* (SIMPSON); a, whorl section of specimen with strongly arched venter and broad, ill-defined keel (LO 3924); b, whorl section of specimen with flatter venter and small though sharp keel (LO 438). ($\times 0.5$).

the body chamber (at a diameter of 176—187 mm). On the final volution the ribs change from being perpendicular to the tangent of coiling and lean backwards, although they remain straight, occasionally a rib may fail to attain full development (see pl. X, fig. 1 b). Specimen LO 3925 has unusually knobbed tubercles on the terminations of the ribs. Specimen LO 3927 from Löparehus shows a remarkable tendency towards flexing of the ribs; it has strong ventrolateral tubercles and consists of six whorls. It could also be established for specimen LO 3919 that it is built up of six whorls. The inner whorls of specimen LO 3920 possess ribs with strong umbilical zones; this does not occur to the same extent on the outer whorls (pl. VII, figs. 1, a—b). The ribs on the last whorl of this specimen are curved slightly convex forwards.

An aragonitically preserved specimen from a depth of 53.0—53.5 m in the Oregården core, diameter about 20 mm, has strong growth lines that roughly follow the course of the costation; the ribs of this specimen are slightly flexed.

Specimen LO 3922 from a depth of 52.9—53.0 m in the Oregården core has the aragonitic shell material retained; it has strongly clavate ventrolateral tubercles with feeble extensions to the keel and in this respect deviates from typical representatives of the species; the ventral striations or growth lines interrupt the feeble keel (cf. DONOVAN, 1952, p. 742). The tubercles of specimen LO 3926 are anomalous; they are sharp and strongly drawn out obliquely on the ventral extensions of the ribs. A fairly complete specimen LO 3923 (pl. VIII, figs. 1, a—b) is one of the more strongly ornate specimens of the collection. Another similar specimen is LO 3920 which is strongly tuberculated throughout, even on the last part of the last preserved whorl, which may be body chamber, although here they become somewhat blunter.

The keel of specimen LO 3923 (pl. VIII, figs. 1, a—b) is not always exactly medianly located; at a diameter of 24 mm the keel of this specimen is stronger than usual for the species. The keel of specimen LO 441 is also stronger than that of the majority of specimens in the collection. A very weak keel is displayed by LO 438 (pl. IX, fig. 1 b). The venter is usually weakly arched; specimen LO 3924, however, has a strongly arched venter (Fig. 5 a).

The largest specimen in the collection is that figured by LUNDGREN (1881, pl. 3) and figured in pl. X, figs. 1, a—b in the present paper. The Swedish representatives of *E. resupinatum* seem generally to reach a larger

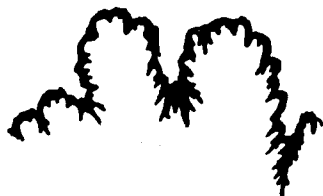


Fig. 6. *Euagassicerus resupinatum* (SIMPSON). Suture line of specimen LO 438. ($\times 1$).

size than is usual for the species, judging from the accounts in the literature. The suture line of LO 438 is figured in fig. 6 (original to LUNDGREN, 1881, pl. 2, figs. 5—7).

REMARKS. — The Swedish representatives of *E. resupinatum* agree well with the figures of this species. BUCKMAN's figure of the holotype (1909, p. 6 b, pl. 6) agrees well with the more strongly ornamented variants in our material. The specimens recorded by WRIGHT (1878, pl. VIII, figs. 4—6) have 20—23 ribs on the last preserved whorl, slenderer ribs than is usually the case and seemingly a higher whorl section and may be transitional to *E. spinaries* (QUENSTEDT). The specimen figured by D'ORBIGNY (1844, pl. 95, fig. 5) is feebly keeled and agrees with the most weakly carinate Swedish specimens; it has strong ventrolateral terminations to the ribs.

DONOVAN (1952, p. 742) noted that the smooth initial stage of the species lasts up to a diameter of about 13 mm. A slightly stronger keel may develop around a diameter of 20 mm and tubercles usually have developed by then; he also drew attention to the common occurrence of small individuals (see above). The rib frequency of his Bristol material is about 15—17 ribs per whorl.

In a large block of ironstone in the present collection a number of identically orientated ammonites are preserved in close proximity to each other. This arrangement suggests that the empty shells drifted ashore (cf. REYMENT, 1958). Sandstone pieces from Löparehus display similar concentrations in a less favorable state of preservation. A specimen from the borehole at Oregården, LO 3922 (pl. XVII, fig. 5) in shale is embedded at right angles to the bedding and must have been buried in an upright position. It would therefore seem that this shell came to rest in mud in the same manner as the nautiloid figured by the writer recently (REYMENT, 1958, pl. II, fig. 1).

DIMENSIONS. — Measurements of some of the specimens of *E. resupinatum*.

	LO 3925	LO 3925 A	LO 441
Diameter	73 mm (= 1.00)	24 mm (= 1.00)	187 mm (= 1.00)
Thickness { intercostal	19 " (= 0.26)	10 " (= 0.42)	42 " (= 0.22)
{ costal			48 " (= 0.26)
Umbilicus	30 " (= 0.41)	11 " (= 0.46)	82 " (= 0.44)
Height of last whorl	25 " (= 0.34)	8 " (= 0.33)	62 " (= 0.23)
	LO 3924	LO 438	LO 3920
Diameter	78 mm (= 1.00)	130 mm (= 1.00)	180 mm (= 1.00)
Thickness { intercostal	24 " (= 0.31)	36 " (= 0.28)	48 " (= 0.27)
{ costal	26 " (= 0.34)		59 " (= 0.33)
Umbilicus	32 " (= 0.39)	58 " (= 0.46)	78 " (= 0.43)
Height of last whorl	28 " (= 0.36)	43 " (= 0.33)	63 " (= 0.35)

Where two measurements occur under "thickness" the first refers to the intercostal thickness and the second to the thickness taken over the ribs. In the table following hereunder the rib densities of several specimens are given. The diameter is taken as being the maximum diameter of the specimen.

Rib densities of *Euagassicerias resupinatum* (SIMPSON)

	LO 3925	LO 3925 A	LO 441	LO 3924	LO 3926	LO 438	LO 3920	LO 3920 A	Figure by D'ORBIGNY 1844, pl. 95, f. 4	SIMPSON'S original in BUCKMAN, 1909 pl. 6
Diameter (mm)	73	24	187	78	43	50	180	42	29	34 ²
Number of ribs	20—21	14	21—22	19—20	17—18	19—20	19	15—16	15	16

Euagassicerias aff. *resupinatum* (SIMPSON)

Pl. VIII, fig. 2; fig. 7

MATERIAL. — A single specimen.

REPOSITORY. — Lund, LO 3929.

PROVENANCE. — Döshult.

COLLECTOR. — Unknown.

AGE. — Lower Sinemurian; *sauzeanum* subzone of the *semicostatum* zone.

REMARKS. — The specimen referred here resembles *E. resupinatum* as regards general form and appearance but differs in being generally more strongly ornamented. The keel is relatively strong and on either side has broad, shallow furrows, a condition not found in *E. resupinatum*. The ribs are robust and straight and begin at a long umbilical subtubercle and terminate at fairly strong ventrolateral tubercles. From some of the ventrolateral tubercles the ribs continue strongly onto the venter in a direction oblique to the keel; they fade rapidly at the broad sulcus.

The whorl section also seems to be somewhat squarer (fig. 7). The specimen is 80 mm in length and has 6 ribs on the outer whorl fragment (which seems to be body chamber) and 8 ribs on the preserved portion of the second last whorl.

Euagassicerias spinaries (QUENSTEDT) has a tendency to develop faint grooves on larger whorls but differs from the form here recorded in the shape of the whorl section. The ribbing of the inner whorl preserved is



Fig. 7. *Euagassicerias* aff. *resupinatum* (SIMPSON). Whorl section at approximately 52 mm diameter. LO 3929. (× 1).

reminiscent of that of *E. terquemi* (REYNÈS) (REYNÈS, 1879, pl. 19, figs. 9—12) but the specimens are too small to permit comparison with our larger fragment.

Euagassicerias spinaries (QUENSTEDT)

Pl. IX, fig. 2; pl. X, fig. 2; pl. XI, figs. 1, a—b, 2; figs. 8, a—b, 9

1858 *Ammonites spinaries* QUENSTEDT, p. 69, pl. 7, fig. 4.

1883 *Ammonites spinaries* QUENSTEDT, QUENSTEDT, p. 79, pl. 11, fig. 8—10, 12, and possibly 13.

?1889 *Coroniceras sauzeanum* HYATT, pl. 6, fig. 14.

1927 *Paracoronites noduliferus* BUCKMAN, pl. dccxxxvii, A—B.

1952 *Euagassicerias spinaries* (QUENSTEDT), DONOVAN, p. 743.

MATERIAL. — 18 specimens.

REPOSITORY. — Lund, LO 3930—37, and unnumbered specimens.

PROVENANCE. — Döshult, Löparehult.

COLLECTORS. — The specimen from Löparehult was collected by G. TROEDSSON in 1945; the other collectors are unknown.

AGE. — Lower Sinemurian; *sauzeanum* subzone of the *semicostatum* zone.

DESCRIPTION. — Most of the material in the present collection consists of incomplete specimens. The majority are internal molds but specimen LO 3936 (pl. IX, fig. 2) has much of the shell material, though calcitized, preserved. Specimen LO 3935 is the largest fragment in the collection and it has a whorl height of 77 mm. It is here figured in order to show the nature of the coarse ribbing, the coarse growth lines and the degenerate ventrolateral tubercles (see pl. X, fig. 2).

Specimen LO 3936 possesses weakly flexed ribs that are slightly more sinuous than those of the lectotype (here figured in pl. XI, figs. 1, a—b; original to QUENSTEDT, 1883, pl. 11, fig. 8; designated lectotype by DONOVAN, 1952, p. 744; Tübingen Collection Ce 5/11/8). The ribs of

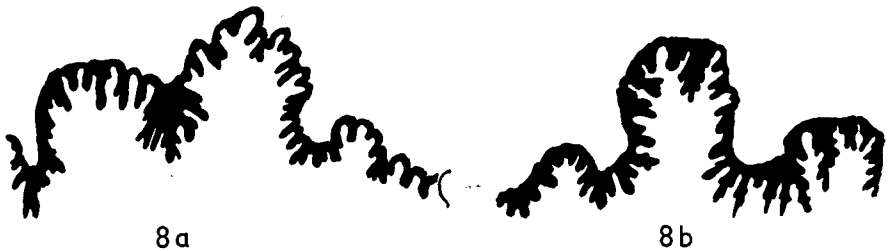


Fig. 8. Sutures of *Euagassicerias spinaries* (QUENSTEDT); a, specimen LO 3930; b, specimen LO 3934. ($\times 0.9$).

LO 3936 are strong and simple and bend forwards on the venter; they are uneven in thickness. The forwards swing of the ribs at the ventrolateral angle and their quick subsequent fade-out is also well shown by specimen LO 3933 (at a whorl radius of about 55 mm). Most large specimens have straight to concave-forwards ribs (for example, the weathered internal mold LO 3937, pl. XI, fig. 2) and in this respect agree with the lectotype.

As most of the material is crushed the properties of the venter could be studied in only a few cases. Specimen LO 3932 has a relatively strong, almost parallel-sided keel with weakly developed ventral furrows; the ventral growth lines are spaced and strong, particularly where they join the keel. This detail is not visible on the steinkern. At a whorl height of 75 mm specimen LO 3931 has a rounded, rather flattish keel with faint, broad side furrows. The strong, sharp, club-shaped ribs swell faintly at the ventrolateral margin, continue a short distance onto the venter in a straight line at right angles to the median plane and then vanish at more than 10 mm from the keel. This specimen is closely comparable with BUCKMAN's (1927) pl. dccxxxvii A; the whorl section shown in fig. 9 also agrees.

Specimen LO 3937 has about 12 ribs to the half whorl (incomplete) at a diameter of 110 mm and LO 3936 (pl. IX, fig. 2) has about 17 ribs at a diameter of 41 mm. There is a clear tendency towards greater rib density with increase in size. By way of comparison the lectotype has about 23 ribs at a diameter of 106 mm whereas BUCKMAN's (1927) specimen has about 28 ribs. DONOVAN (1952, p. 743) noted the number of ribs to the whorl to increase from around 20 at a diameter of 5—6 cm to about 30 at 14—15 cm or more. The tendency of some of the earlier ribs of LO 3936, a small specimen, to divide was not duplicated in the rest of the material; this specimen has also convex-outwards ribs whereas the lectotype and the other specimens in the collection studied have concave-outwards ribs; it would therefore seem likely that there is a change in the direction of curvature during growth.

Specimens LO 3936 and LO 3933 have moderately sharp, pinched-up tubercles at the ventrolateral margin. The last preserved tubercle of the former is developed as a loop.

The ventral growth lines are almost identical with those of *Enagassicerus resupinatum* (SIMPSON); they are poorly visible on steinkerns but strong and ridged where shell material is preserved.

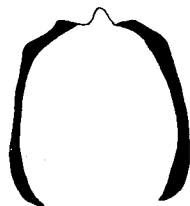


Fig. 9. *Enagassicerus spinaries* (QUENSTEDT). Whorl section of specimen LO 3931. ($\times 0.5$).