THE BAJOCIAN AMMONITE *DORSETENSIA* IN SKYE, SCOTLAND

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ABSTRACT. The genus *Dorsetensia* is revised to include *Ammonites pinguis* Roemer and related species. Dimorphism is possible but separate specific names for macroconchs and microconchs are retained for the present. In the basal part of the Humphriesianum Zone and Subzone *D. hannoverana* (Hiltermann) (? M), *D. hebridica* sp. nov. (? M), and *D. pinguis* (Roemer) (? m) occur, while stratigraphically higher in the Humphriesianum Subzone are *D. liostraca* Buckman (? M) and *D. romani* (Oppel) (? m).

IN western Scotland Bajocian ammonites occur mainly in the Bearreraig Sandstone of Trotternish, Isle of Skye. Ammonites from the Humphriesianum Zone have been found in the Upper Sandstones (Morton 1965), and the fauna is dominated by species of *Stephanoceras* and *Dorsetensia*. The former are discussed by Morton (1971), the latter genus is the subject of this paper.

STRATIGRAPHY

The genus *Dorsetensia*, as revised herein, occurs in three localities in Trotternish. From south to north these are:

Torvaig (NG 502444): from the dark sandstone bed at the base of the Upper Sandstones —*Dorsetensia pinguis* (Roemer), *D. hannoverana* (Hiltermann), and *D. hebridica* sp. nov.

Bearreraig (Rudha Sughar NG 518537)—*Dorsetensia romani* (Oppel), *D. liostraca* Buckman, from loose blocks of the lower part of the Upper Sandstones.

Rigg (NG 521566): from lower part of the Upper Sandstones on the shore south of the waterfall—*Dorsetensia romani* (Oppel), *D. liostraca* Buckman; from *c.* 12 m higher in the lower part of the Upper Sandstones, shore north of waterfall—*D. liostraca* Buckman.

The associated ammonite faunas are listed in Morton (1971).

Placing of the faunas in stratigraphical sequence must depend on correlation of more or less isolated sections, but those at Bearreraig and Rigg are at approximately the same position in the lower part of the Upper Sandstones. The ammonite bed at Torvaig is taken as the basal bed of the Upper Sandstones, so that the species of *Dorsetensia* from Torvaig are probably slightly older than those from Bearreraig and Rigg.

Similar relationships between *pinguis* and *romani* were found in Germany by Westermann (1954, pp. 22–23) and Huf (1968, pp. 14–16), and are partly the basis for subzonal division of the Humphriesianum Zone. The '*pinguis* Schichten' (Westermann) or 'Zone' (Huf) is equivalent to the Frechi (+Umbilicum) Subzone, while the '*romani* Schichten or Zone' is equivalent to the Humphriesianum Subzone (s.s.) (Westermann 1967, table 10). A similar subzonal sequence probably exists in Skye, but absence of direct evidence of stratigraphical sequence precludes categorical confirmation. Recognition of an upper Blagdeni Subzone is, however, already achieved (Morton 1971).

[Palaeontology, Vol. 15, Part 3, 1972, pp. 504–518, pls. 102–105.]

Dimensions. The dimensions given for the specimens are as follows:

D. Diameter of specimen.
Wh. Whorl height.
Wb. Whorl breadth.
Ud. Diameter of umbilicus.
b/h. Whorl breadth divided by whorl height.

The letters A and P in front of the diameter indicate that the measurements were taken at the aperture and the end of the phragmocone respectively. In the graphs the latter is indicated by a circle.

Abbreviations. Numbers prefixed by HMS are specimens from the Hunterian Museum, University of Glasgow, by Call. J. from the collection of Dr. J. H. Callomon, and by GSE from the Geological Survey, Edinburgh.

SYSTEMATIC PALAEONTOLOGY

Genus DORSETENSIA Buckman 1892

Type species. Ammonites edouardianus d'Orbigny 1844, original designation by Buckman (1892, p. 302).

Discussion. The genus *Dorsetensia* was created by Buckman for a group of sonniniids from the Humphriesianum Zone. Subsequent experience suggests that the type species *edouardiana* is less common than the widespread species *romani* (including *complanata*) and *liostraca* (and closely related species *subtecta* and *tecta*) which occur in the lower part of the Humphriesianum Zone, for example in England (Buckman 1892), France (Haug 1893, Brasil 1895, Gillet 1937, Maubeuge 1949, 1951, Roché 1943), Germany (Dorn 1935, Huf 1968), Switzerland (Maubeuge 1955, 1967), Spain (Fallot and Blanchet 1923), Poland (Kopik 1967), U.S.S.R. (Stankewicz 1964).

There are many similarities between *Dorsetensia* and *Witchellia*, such that some authors (e.g. Haug 1893, Gillet 1937, Krimholz 1958) have regarded *Dorsetensia* as a junior synonym of *Witchellia*, while others (e.g. Oechsle 1958) have included both in *Sonninia*. Other authors, notably Dorn (1935) and Maubeuge (1951), recognized *Dorsetensia* and *Witchellia* as separate genera but confused the species, including the type species, belonging to each. Distinction of *Dorsetensia* and *Witchellia* can be justified on morphological and stratigraphical grounds. In *Witchellia* the radial line is more flexed on the whorl sides and the venter remains distinctly separate and tabulate even in involute smooth forms, while in *Dorsetensia* such forms have an acutely fastigate venter. The two genera are also stratigraphically separate—*Witchellia* from Laeviuscula Subzone, Sowerbyi Zone, *Dorsetensia* from Humphriesianum Zone.

As previously defined the genus *Dorsetensia* includes species ranging from evolute ribbed forms with tabulate venter (the type species *edouardiana*) to involute smooth forms with acute venter (e.g. *liostraca*). In the lower part of the Humphriesianum Zone there occur also more or less evolute species with tabulate to bisulcate venters and ribbing which branches near the umbilical edge and is very slightly flexed on the whorl sides (e.g. *pinguis*, *hannoverana*). These species are variously classed as *Sonninia* (e.g. Gillet 1937, Hiltermann 1939, Westermann 1954, Oechsle 1958), *Witchellia* (e.g. Dorn 1935, Maubeuge 1967), *Dorsetensia* (Jäger 1952), *Poecilomorphus* (Huf 1968), or ?*Pelekodites* (Westermann 1967). Their morphological features, particularly style of ornament, and stratigraphical occurrence suggest that they should be included in the genus *Dorsetensia* (see also discussion of *pinguis* below). Huf (1968, p. 54) commented on the occurrence of intermediates between *hannoverana* and *Dorsetensia deltafalcata* (Quenstedt).

Dorsetensia liostraca Buckman

Plate 102; Plate 103, figs. 1–2; Plate 104, figs. 1–2

1892 *Dorsetensia liostraca* S. Buckman, pp. 301–311, pl. 53, figs. 11–16, pl. 55, figs. 3–5, pl. 56, fig. 1.
1935 *Dorsetensia liostraca* S. Buckman, Dorn, pp. 101–102, pl. 9, fig. 5, pl. 22, fig. 3, pl. 27, fig. 1, text-fig. pl. 8, figs. 5–8.
1967 *Dorsetensia liostraca* Buckman, Kopik, pp. 25–27, pl. 6, fig. 4, pl. 7, figs. 1–4.
1968 *Dorsetensia liostraca liostraca* S. Buckman, Huf, pp. 97–103, pls. 30–40.

Material. Ten specimens, some fragmentary: HMS26380/1–2, HMS26381/1–6, HMS26382, GSE7234.

Dimensions:		*D.*	*Wh.*	*Wb.*	*Ud.*
HMS26380/1		—	32·6	16·8	
HMS26381/1	? A	*c.* 196	*c.* 84·8 (43)	—	41·5 (21)
		168	79·4 (47)	31·0 (19)	31·2 (19)
	P	140	66·8 (48)	28·4 (20)	27·4 (20)
HMS26381/2		142	72·5 (51)	—	28·2 (20)
		c. 117	*c.* 54·8 (47)	—	25·3 (22)
		c. 102	*c.* 47·5 (46)	—	22·4 (22)
HMS26381/3	A	*c.* 192	*c.* 82·0 (43)	27·2 (14)	45·0 (23)
		172	76·9 (45)	27·6 (16)	37·0 (22)
		154	72·0	26·7 (17)	29·0 (19)
HMS26381/5		*c.* 144	70·2 (49)	27·2 (19)	28·2 (20)
HMS26382	A	*c.* 158	*c.* 80·0 (51)	*c.* 27·0 (17)	24·4 (15)
		128	66·1 (52)	23·3 (18)	21·0 (17)
	P	96·0	50·0 (52)	20·8 (22)	14·5 (15)
		81·6	42·0 (52)	16·2 (20)	13·7 (16)
GSE7234		39·2	18·9 (48)	9·3 (24)	8·2 (21)

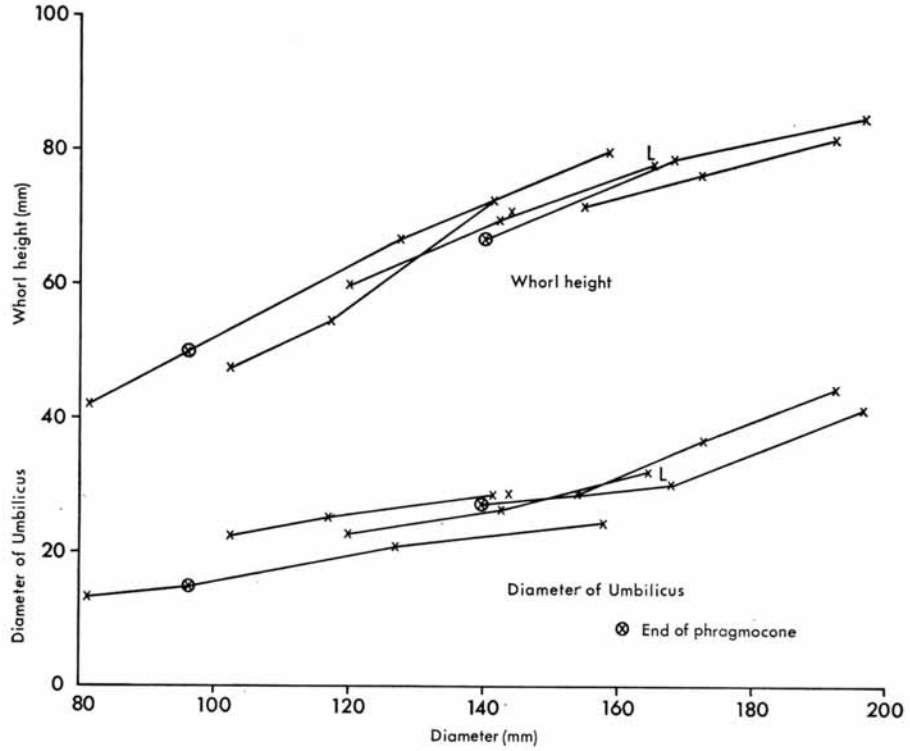
Description. Involute, compressed, oxyconic; whorl section high and narrow, with relatively sharp umbilical angle and umbilical wall becoming vertical; venter acute with prominent keel, hollow on most of body chamber but septicarinate on phragmocone; apart from faint ribbing on the innermost whorls, ornament consists of only growth lines and faint strigation on the body chamber; the radial line is straight or only very slightly flexed on the whorl sides, but is strongly projected ventrally; the body chamber is just over half a whorl in length—185° in HMS26382, 190° in HMS26381/3, and 210° in HMS26381/1; the suture line is comparatively uncomplicated with the lateral lobe open and approximately as broad as long, and three well-developed umbilical lobes.

Discussion. The Skye specimens are typical of the *Dorsetensia liostraca* group. Buckman (1892) named three species—*liostraca*, *tecta*, and *subtecta* distinguished mainly by width of umbilicus—but commented on the occurrence of intermediates. It is likely that all three, together with *lotharingica* Maubeuge and *thilense* Maubeuge are variants of one species. The relative umbilical diameter of the specimens from Skye is comparable with

EXPLANATION OF PLATE 102

Fig. 1. *Dorsetensia liostraca* S. Buckman; HMS26381/3, Humphriesianum Zone, lower part of Upper Sandstones, shore just south of Rigg Waterfall, Trotternish, Skye. ×1.

that of *D. liostraca*. Buckman (1892, p. 310) regarded form β as type, of which pl. 53, figs. 11–15 and pl. 55, figs. 3–4 are examples. Of these pl. 55, fig. 3 is the only large complete specimen and is refigured by Huf (1968) as lectotype. The whorl height and umbilical diameter of this specimen (SMJ6260) are plotted in text-fig. 1 with data for the Skye specimens.



TEXT-FIG. 1. Whorl height and umbilical diameter plotted against diameter for *Dorsetensia liostraca* S. Buckman from Skye, also for the lectotype (L) from Dorset.

D. liostraca is characteristic of the lower part of the Humphriesianum Zone (i.e. the Humphriesianum Subzone) and is recorded by Buckman (1892, p. 310) from England, by Buck, Hahn, and Schädel (1966, pl. 4) and Huf (1968, pp. 102–103) from Germany, by Kopik (1967, p. 11) from Poland, and by Pavia and Sturani (1968, p. 312) from SE. France. However, Dorn (1935, p. 120) shows the species as also ranging down into the Sauzei Subzone.

Locality. Humphriesianum Zone, lower part of Upper Sandstones; shore just south and just north of Rigg waterfall. Specimens were also observed at Bearreraig.

Dorsetensia romani (Oppel)

Plate 103, figs. 3–8; Plate 104, figs. 3–6

1862 *Ammonites Romani*, Oppel, p. 145, pl. 46, figs. 2*a–b*.
1892 *Dorsetensia complanata*, S. Buckman, pp. 306–307, pl. 53, figs. 1–10, pl. 54, figs. 1–2.
1893 *Witchellia complanata* (Buckm.), Haug, pp. 312–315, pl. 10, figs. 4–5.
1935 *Dorsetensia complanata* Buckman, Dorn, p. 98, pl. 9, fig. 4, pl. 10, fig. 5, text-fig. pl. 8, fig. 1.
1935 *Dorsetensia romani* Oppel, Dorn, pp. 100–101, pl. 9, fig. 5, pl. 11, fig. 4, pl. 13, fig. 2, text-fig. pl. 8, fig. 4.
1937 *Witchellia complanata* Buckman, Gillet, pp. 66–67, text-figs. 47–48.
1951 *Dorsetensia complanata* Buckman, Maubeuge, pp. 40–45, pl. 1, fig. 2*a–c*, pl. 14, fig. 3.
1967 *Dorsetensia complanata* Buckm., Kopik, pp. 22–24, pl. 4, fig. 4, pl. 5, figs. 1–2, pl. 6, fig. 1.
1967 *Dorsetensia* aff. *complanata* Buckm., Kopik, pp. 24–25, pl. 6, figs. 2–3.
1968 *Dorsetensia romani romani* (Oppel), Huf, pp. 86–93, pl. 13, fig. 6, pls. 14–27, pl. 28, figs. 1–2.

Material. Thirteen specimens and three fragments: Call. J. 461, Call. J. 462, Call. J. 463, Call. J. 464, Call. J. 465, HMS26383/1–3, HMS26384/1–2, HMS26385, HMS26386/1–2, HMS26387, HMS26388/1–2.

Dimensions:		*D*	*Wh*	*Wb*	*Ud*
Call. J. 461		61·0	25·3 (42)	14·2 (23)	18·2 (30)
		51·1	22·0 (43)	12·8 (25)	16·4 (32)
Call. J. 462	P	78·5	34·2 (44)	16·1 (21)	21·1 (27)
Call. J. 463		*c.* 71·0	*c.* 30·0 (42)	14·4 (20)	18·1 (26)
	P	49·0	21·5 (44)	9·7 (20)	*c.* 12·0 (25)
Call. J. 464		64·0	28·1 (44)	*c.* 13·4 (21)	16·9 (26)
	P	*c.* 51·0	*c.* 22·5 (44)	—	13·1 (26)
		43·3	20·0 (46)	—	12·3 (28)
Call. J. 465		72·3	35·1 (49)	12·1 (17)	15·9 (22)
		54·0	26·3 (49)	11·5 (21)	*c.* 12·0 (22)
HMS26383/1		32·6	14·6 (45)	—	8·6 (26)
HMS26383/2		*c.* 53·0	*c.* 22·0 (42)	—	*c.* 15·5 (29)
HMS26383/3		39·6	17·8 (45)	7·8 (20)	*c.* 10·0 (25)
HMS26384/1		*c.* 78·0	*c.* 31·0 (40)	*c.* 12·5 (16)	*c.* 24·0 (31)
		64·0	27·0 (42)	12·1 (19)	19·8 (30)
HMS26384/2		50·7	25·7 (51)	—	9·3 (19)
		42·4	21·4 (51)	—	8·4 (20)
HMS26385		—	10·1	7·1	—
HMS26386/1		48·3	21·1 (44)	8·7 (18)	13·8 (29)
		41·0	17·0 (42)	7·8 (19)	13·0 (32)
	P	36·4	14·2 (39)	7·4 (20)	10·5 (29)
HMS26386/2		47·2	16·6 (35)	—	16·5 (35)
		40·4	15·5 (38)	—	15·0 (37)
	P	32·3	13·7 (42)	—	*c.* 11·5 (36)
HMS26387		—	25·3	9·5	—
HMS26388/1		—	36·2	15·5	—
HMS26388/2		*c.* 71·5	*c.* 30·0 (42)	—	*c.* 22·3 (31)
		c. 56·0	*c.* 22·3 (40)	9·7 (17)	14·9 (27)
	P	52·1	21·5 (41)	—	13·9 (27)

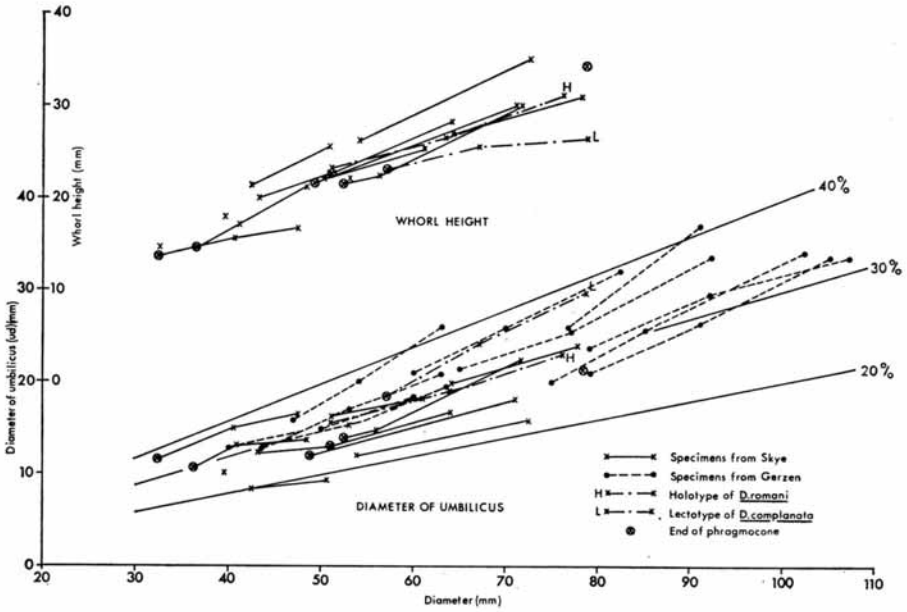
EXPLANATION OF PLATE 103

All figures natural size.

Figs. 1, 2. *Dorsetensia liostraca*, S. Buckman. 1, HMS26381/3, ventral view of Plate 102 fig. 1; 2, HMS26381/1, ventral view.

Figs. 3–8. *Dorsetensia romani* (Oppel). Loose blocks from lower part of Upper Sandstones, Rudha Sughar, Bearreraig, Trotternish, Skye. 3, 4, Call. J. 461; 5, 6, HMS26383/3; 7, 8, Call. J. 462.

Description. Moderately involute, compressed, becoming suboxyconic in some; whorl section narrow, acute, with venter scarcely differentiated from whorl sides; umbilical angle sharp, with umbilical wall steep or vertical; venter acutely fastigate with prominent hollow keel; ornament of distant broad ribs, mostly simple, and developed mainly on the lower part of the whorl sides, fading towards the venter and also on the body chamber towards the aperture; the radial line is very slightly flexed on the whorl sides



TEXT-FIG. 2. Whorl height and umbilical diameter plotted against diameter for *Dorsetensia romani* (Oppel) from Skye, and for the holotype of *D. romani* (Oppel) (H) and the lectotype of *D. complanata* Buckman (L). Data from Huf (1968), for umbilical diameter of *D. romani* (Oppel) from Gerzen, Germany, are also shown.

but is strongly projected ventrally; most of the specimens are incomplete, but the length of body chamber is 190° in Call. J. 463, 200° in HMS26388/2, 210° in Call. J. 465, and 220° in HMS26386/2; the suture line is moderately complex, but with the lateral lobe broad-stemmed.

Discussion. The whorl shape, involution, and ornamentation of the specimens is typical of *Dorsetensia romani* (Oppel), abundantly figured by Huf (1968). Two specific names have been widely used in the past (see synonymy and Huf 1968, pp. 86–88): *romani* Oppel 1862 and *complanata* Buckman 1892. The holotype of *romani* (figd. Huf 1968, pl. 13, fig. 6*a–e*) and the lectotype of *complanata* (Buckman 1892, pl. 53, figs. 3–5, and Huf 1968, pl. 15, fig. 1*a–d*) are very similar, differing only in that *complanata* is slightly more evolute (Ud. = 32–38% D. cf. 30% in *romani*) and has thinner whorls (Wb. =

17% D. cf. 19–21% in *romani*). However, both fall within the ranges of variation of the Skye specimens and of specimens from Gerzen, Germany, described by Huf (1968) (text-fig. 2), so that *complanata* Buckman must be regarded as a junior synonym of *romani* (Oppel). This confirms Huf's conclusion. Comparing the Skye specimens with those from Gerzen, there is considerable overlap in the range of variation, but the Skye specimens tend to be more involute (text-fig. 2), grouping below the line Ud. = 30% D. rather than over this line as in those from Gerzen.

The occurrence of *D. romani* is closely paralleled by that of *D. liostraca*, both in Skye and in other areas (see synonymy lists). It is possible that *D. romani* may be the microconch of *D. liostraca*, although no specimens with lappets are recorded.

Dorsetensia romani (incl. *complanata*) is widely recorded from the lower part of the Humphriesianum Zone, and is used as subzonal index by some authors (see synonymy list and Pavia and Sturani 1968, p. 312, Westermann 1967, pp. 133–134).

Localities. Humphriesianum Zone; lower part of Upper Sandstones.

(*a*) Call. J. 461–465, HMS26383/1–3 from loose blocks of the Upper Sandstones, Rudha Sughar, Bearreraig.

(*b*) HMS26384/1–2, HMS26385, HMS26386/1–2, HMS26387, HMS26388/1–2 from lower part of Upper Sandstones, shore south of Rigg waterfall.

Dorsetensia pinguis (Roemer)

Plate 105, figs. 1–12, 19–20

1836 *Ammonites pinguis*, Roemer, p. 186, pl. 12, fig. 3.
1939 *Sonninia pinguis* (Roemer), Hiltermann, pp. 164–167.
1968 *Sonninia* (*Poecilomorphus*) *pinguis pinguis* (Roemer), Huf, pp. 54–61, pl. 4, figs. 7–12, pl. 5, figs. 1–8.

Material. Fourteen specimens and one fragment: HMS15347/1, 2, HMS15349/1, 3, HMS26389/1–11.

Dimensions:		*D*	*Wh*	*Wb*	*Ud*	*b/h*
HMS15347/1		27·5	11·5 (42)	8·8 (32)	8·8 (32)	0·77
		19·1	7·4 (39)	7·3 (38)	6·3 (33)	0·99
HMS15347/2		*c.* 21·2	9·0 (43)	8·4 (40)	7·8 (37)	0·93
		13·5	5·0 (37)	*c.* 5·0 (37)	4·7 (35)	1·00
HMS15349/1	A	*c.* 30·0	12·4 (41)	12·4 (41)	*c.* 9·6 (32)	0·77
		24·8	10·6 (43)	*c.* 8·9 (36)	7·2 (29)	0·84
HMS26389/1	A	39·6	14·9 (38)	11·3 (29)	13·5 (34)	0·76
		33·2	12·6 (38)	10·1 (30)	12·2 (37)	0·80
		30·7	11·2 (37)	8·7 (28)	11·3 (37)	0·78
	P	24·5	9·4 (38)	8·3 (34)	8·4 (34)	0·88
HMS26389/2	A	28·8	10·8 (38)	9·5 (33)	10·4 (36)	0·88
		22·1	8·7 (39)	7·8 (35)	7·3 (33)	0·90
	P	*c.* 19·0	8·0 (42)	7·0 (37)	4·2 (33)	0·87

All figures natural size.

EXPLANATION OF PLATE 104

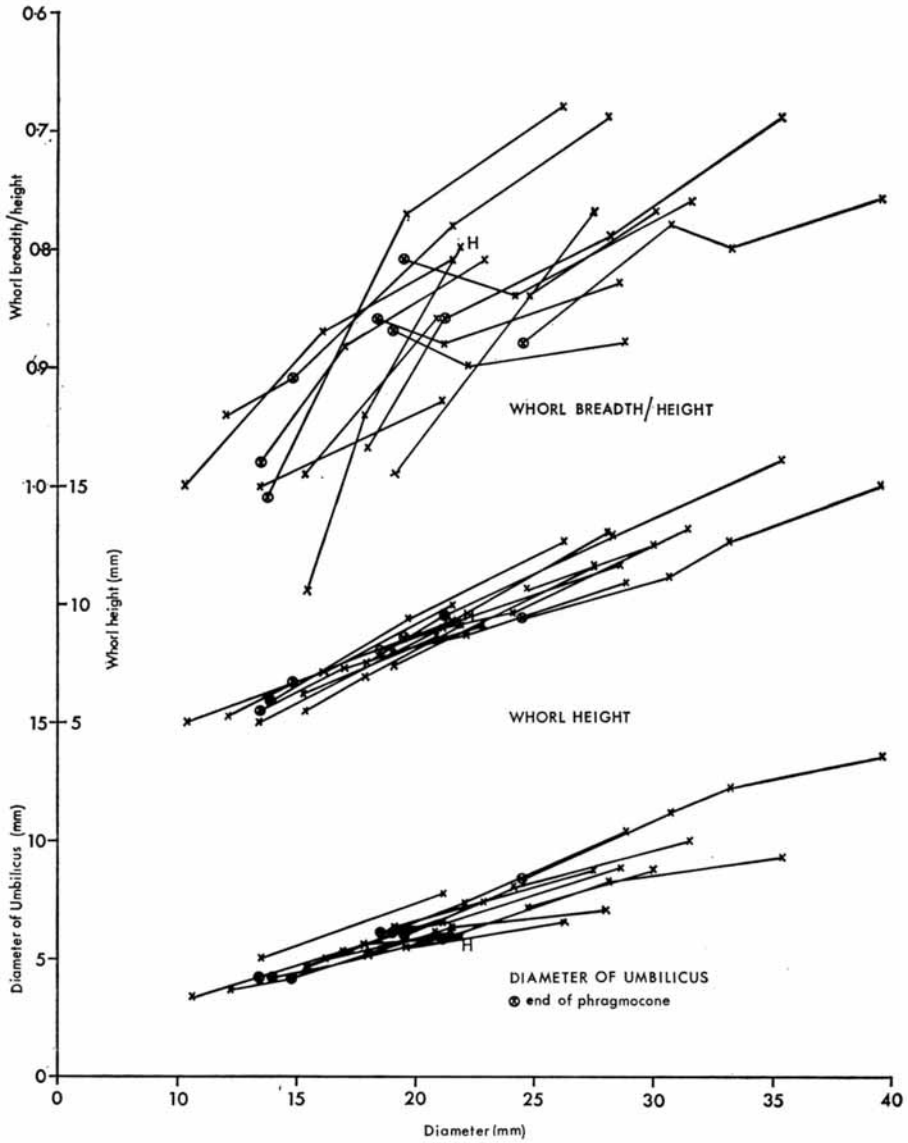
Figs. 1, 2. *Dorsetensia liostraca* S. Buckman; HMS26382, Humphriesianum Zone, lower part of Upper Sandstones, shore just north of Rigg waterfall, Trotternish, Skye.

Figs. 3–6. *Dorsetensia romani* (Oppel). 3, 4, HMS26387, Humphriesianum Zone, lower part of Upper Sandstones, shore just south of Rigg waterfall, Trotternish, Skye. 5, 6, Call. J. 464, Humphriesianum Zone, loose block from lower part of Upper Sandstones, Rudha Sughar, Bearreraig, Trotternish, Skye.

Dimensions:		*D*	*Wh*	*Wb*	*Ud*	*b/h*
HMS26389/3	? A	28·6	11·6 (41)	9·6 (34)	8·8 (31)	0·83
		21·2	9·0 (42)	7·9 (37)	6·5 (31)	0·88
	P	*c.* 18·5	8·0 (43)	6·9 (37)	6·1 (33)	0·86
HMS26389/4	A	31·5	13·2 (42)	10·0 (32)	10·0 (32)	0·76
		24·1	9·6 (40)	8·1 (34)	8·0 (33)	0·84
	P	*c.* 19·5	8·6 (44)	7·0 (36)	6·0 (31)	0·81
HMS26389/5		20·8	8·7 (42)	7·5 (36)	6·2 (30)	0·86
		15·3	6·2 (41)	6·1 (40)	4·6 (30)	0·99
HMS26389/6	? A	26·2	12·6 (48)	8·6 (33)	6·6 (25)	0·68
		19·7	9·4 (48)	7·2 (37)	5·5 (28)	0·77
	P	13·8	5·9 (43)	6·0 (43)	4·2 (30)	1·01
HMS26389/7		28·1	*c.* 13·0 (46)	*c.* 9·0 (32)	*c.* 7·0 (25)	0·69
		21·5	9·1 (42)	7·1 (33)	6·3 (29)	0·78
	? P	14·9	6·6 (44)	6·0 (40)	4·0 (27)	0·91
		12·2	5·3 (43)	5·0 (41)	3·4 (28)	0·94
HMS26389/8	A	35·3	16·0 (45)	*c.* 11·0 (31)	9·2 (26)	0·69
		28·2	12·8 (45)	10·1 (36)	8·1 (29)	0·79
	P	21·1	9·5 (45)	8·2 (39)	5·9 (28)	0·86
		18·0	7·5 (42)	7·3 (41)	5·1 (28)	0·97
HMS26389/9	A	22·8	9·0 (40)	7·3 (32)	7·4 (33)	0·81
		17·0	7·3 (43)	6·4 (38)	5·3 (31)	0·88
	P	*c.* 13·5	5·5 (41)	5·4 (40)	4·0 (30)	0·98
HMS26389/11	A	*c.* 21·5	10·0 (47)	8·1 (38)	6·2 (29)	0·81
		16·1	7·1 (44)	6·2 (39)	5·0 (31)	0·87
		10·3	5·0 (49)	5·0 (49)	3·1 (30)	1·00

Description. Moderately evolute, planulate; whorl section subquadrangular, with venter fairly well differentiated from whorl sides; umbilical angle rounded, with umbilical wall becoming steep but rarely vertical; venter broad, tabulate with prominent keel and becoming bisulcate in some; ornament of broad distant ribs, mostly bifurcating at the umbilical angle and fading on the top of the whorl sides before reaching the venter; the strength of the ribbing varies considerably; the radial line is slightly flexed on the whorl sides, but is strongly projected ventrally; the peristome is at least partially preserved on five specimens, and the lengths of the body chambers vary: 205° in HMS26389/2, 215° in HMS26389/8, 225° in HMS26389/9, 235° in HMS26389/4, and 245° in HMS26389/1; none shows lappets, and crowding of sutures is evident only in HMS26389/2; the suture line is moderately simple, with the lateral lobe fairly broad-stemmed.

Discussion. There is considerable variation in relative dimensions (text-fig. 3) and ornamentation. In style of ornament, whorl section, and venter, and also in the range of variation, the Skye specimens are very similar to those figured by Huf (1968) as *Sonninia* (*Poecilomorphus*) *pinguis pinguis* (Roemer). This species is herein transferred from *Poecilomorphus* mainly because of differences in the style of the ornament: *Poecilomorphus* has strongly falcate ribbing which is typically stronger on the outer part of the whorl sides, while *pinguis* has almost straight ribbing which fades on the ventral shoulder. It is placed in the genus *Dorsetensia* because in the almost straight ribbing and tabulate keeled venter it is similar to the type species *D. edouardiana* (d'Orbigny), although these features are more strongly developed in *pinguis*. Comparisons with *D. deltafalcata* (Quenstedt) were made by Huf (1968, pp. 53–54) and in his detailed synonymy list (pp. 54–55) *pinguis* is twice recorded as a *Dorsetensia*.



TEXT-FIG. 3. Umbilical diameter, whorl height, and whorl breadth: height ratio plotted against diameter for *Dorsetensia pinguis* (Roemer) from Skye, and for the holotype from Germany (H).

The Skye specimens of *D. pinguis* are all of relatively small size, even when complete. Most have the body chamber preserved, but in the absence of lappets or crowding of sutures (except in HMS26389/2) evidence of maturity is lacking and the specimens may be juveniles. The specimens figured by Huf (1968, pls. 4–5) are of similar small size, but many of these (including the holotype) lack body chamber.

'*Poecilomorphus*' *pinguis* is used as index species for a Pinguis Subzone of the Humphriesianum Zone by Buck, Hahn, and Schädel (1966, pl. 4), and Huf (1968, pp. 12–16). Westermann (1967, p. 123) suggested a new name (Frechi Subzone) for this subzone. Pavia and Sturani (1968, p. 311) record the species from a lower horizon—Sauzei Subzone.

Locality. Humphriesianum Zone; basal bed of Upper Sandstones; foot of cliff overlooking shore east of Torvaig, near Portree.

Dorsetensia hannoverana (Hiltermann)

Plate 105, figs. 15–18, 23–24

1939 *Sonninia pinguis hannoverana*, Hiltermann, p. 167, pl. 11, figs. 8–9.
1968 *Sonninia* (*Poecilomorphus*) *pinguis hannoverana* (Hiltermann), Huf, pp. 64–69, pl. 6, figs. 5–12, pl. 7, figs. 1–3, pl. 10, fig. 1.

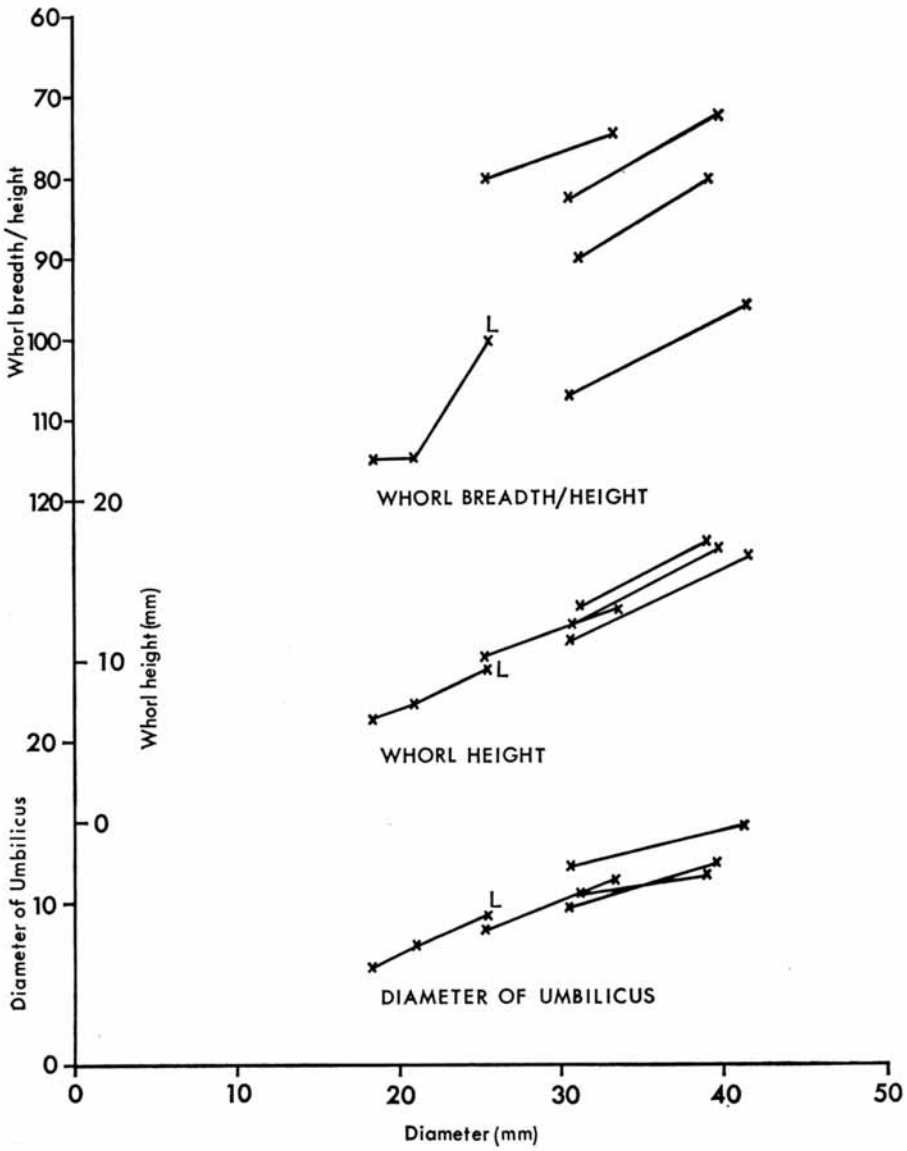
Material. Four specimens and three fragments: HMS15348/1–3, HMS26390/1–4.

Dimensions:		*D*	*Wh*	*Wb*	*Ud*	*b/h*
HMS15348/1	P	41·4	16·4 (40)	15·8 (38)	14·8 (36)	0·96
		30·8	11·2 (36)	12·0 (39)	12·2 (40)	1·07
HMS26390/1		39·0	17·4 (45)	14·1 (36)	11·9 (31)	0·81
		31·1	13·3 (43)	12·0 (39)	10·4 (33)	0·90
HMS26390/2		39·7	16·9 (43)	12·4 (31)	12·1 (31)	0·73
		30·6	12·2 (40)	10·1 (33)	9·8 (32)	0·83
HMS26390/3		33·2	13·4 (40)	10·0 (30)	11·3 (34)	0·75
		25·3	10·2 (40)	8·3 (33)	8·2 (32)	0·81

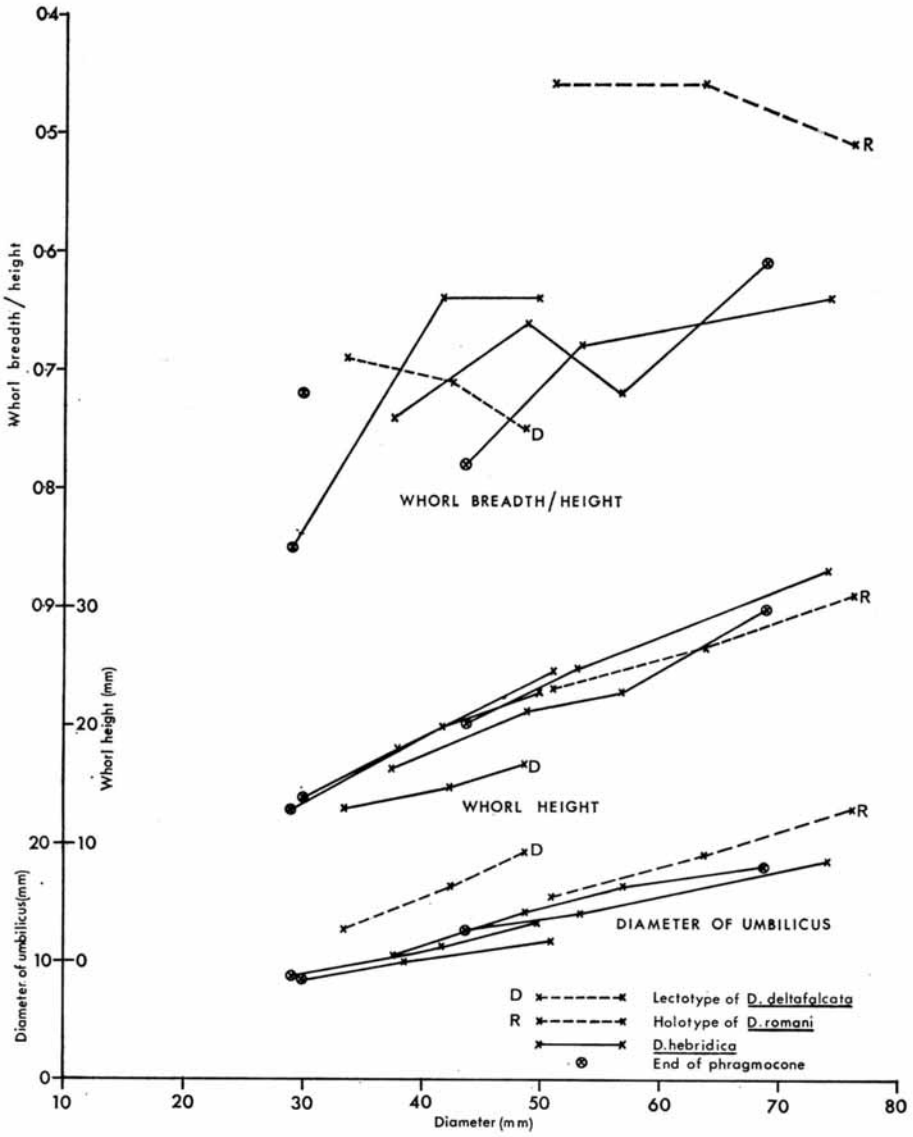
Description. Moderately evolute; whorl section subquadrangular with venter well differentiated from whorl sides; umbilical angle rounded, sometimes sharply so, with umbilical wall becoming steep and vertical in some; venter broad, tabulate with prominent keel and sometimes bisulcate; ornament of strong broad distant ribs, mostly bifurcating from the umbilical angle and fading on the ventral shoulder; the radial line is slightly flexed laterally and strongly projected ventrally; the specimens are incomplete, lacking body chamber.

Discussion. The specimens grouped in this species differ from the other specimens from the same locality described under *D. pinguis* (Roemer) in having thicker whorls and stronger ribbing. They are also larger, especially when allowance is made for lack of body chamber. There is very good agreement in these features with the species described by Hiltermann (1939) and Huf (1968) as *Sonninia* (*Poecilomorphus*) *pinguis hannoverana* (see text-fig. 4). Huf's measured specimens (p. 67) are smaller than the Skye specimens, but those figured on pl. 6, figs. 11 and 12 are comparable. This species is transferred from *Poecilomorphus* to *Dorsetensia* for the same reasons as *D. pinguis* discussed above.

According to Huf (1968, p. 69) *D. hannoverana* comes from the '*pinguis*-Zone', i.e. the lowermost part of the Humphriesianum Zone.



TEXT-FIG. 4. Umbilical diameter, whorl height, and whorl breadth: height ratio plotted against diameter for *Dorsetensia hannoverana* (Hiltermann) from Skye, and for the lectotype from Germany (L).



TEXT-FIG. 5. Umbilical diameter, whorl height, and whorl breadth: height ratio plotted against diameter for *Dorsetensia hebridica* sp. nov. from Skye, and for the lectotype of *D. deltafalcata* (Quenstedt) (*D*) and the holotype of *D. romani* (Oppel) (R).

Locality. Humphriesianum Zone; basal bed of Upper Sandstones; foot of cliff overlooking shore east of Torvaig, near Portree.

Dorsetensia hebridica sp. nov.

Plate 105, figs. 13–14, 21–22, 25–26

Material. Holotype HMS26391 and four syntypes: HMS26392, HMS26393/1–3.

Dimensions:		*D.*	*Wh*	*Wb*	*Ud*	*b/h*
HMS26391	? A	49·8	22·8 (46)	14·7 (30)	13·3 (27)	0·64
		41·6	19·9 (48)	12·8 (31)	11·2 (27)	0·64
	P	*c.* 29·0	12·8 (44)	10·9 (38)	8·9 (31)	0·85
HMS26393/1		*c.* 74·0	*c.* 33·0 (45)	21·0 (28)	18·5 (25)	0·64
		53·2	24·9 (47)	17·0 (32)	14·0 (26)	0·68
	? P	43·7	20·1 (46)	15·6 (36)	12·8 (29)	0·78
HMS26393/2	P	68·9	29·9 (43)	18·3 (27)	18·2 (27)	0·61
		56·8	22·8 (40)	16·5 (29)	16·4 (29)	0·72
		48·8	21·1 (43)	13·9 (29)	14·1 (29)	0·66
		37·5	16·4 (44)	12·1 (32)	10·6 (28)	0·74
HMS26393/3	? A	*c.* 51·0	24·5 (48)	11·2 (22)*	11·9 (23)	0·46*
		38·5	17·9 (47)	9·7 (25)*	10·0 (26)	0·54*
	? P	*c.* 30·0	13·8 (46)	10·0 (33)	8·4 (26)	0·72

* affected by partial crushing

Description. Moderately involute; whorl section high subquadrangular, with venter fairly well differentiated from whole sides; umbilical angle becoming sharp, with umbilical wall becoming vertical; venter fairly broad, tabulate or subtabulate, sometimes bisulcate, with prominent keel; ornament of strong distant ribs on the inner whorls but fading on the outer whorl so that the larger specimens are almost smooth; on the body chamber the ribbing is more strongly developed on the middle of the whorl sides; the radial line is very slightly flexed on the whorl sides but is strongly projected ventrally; none of the specimens shows the peristome clearly, but HMS26391 and HMS26393/3 appear to be complete, with 230° and 215° of body chamber respectively; the suture line is moderately complex, with large broad-stemmed lateral lobe.

Discussion. The specimens grouped here are larger and slightly more involute than the other species from Torvaig—*D. pinguis* and *D. hannoverana.* They differ also in that all show decline of ribbing on the body chamber, while only one or two of *D. pinguis* show this. Decline of ornamentation is also evident in *D. deltafalcata* (Quenstedt) and *D. romani* (Oppel). *D. hebridica* is more involute than *D. deltafalcata*, with relative umbilical

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EXPLANATION OF PLATE 105

All figures natural size.

All specimens from Humphriesianum Zone, basal bed of Upper Sandstones, Torvaig, Trotternish, Skye. All HMS collection.

Figs. 1–10, 17–20. *Dorsetensia pinguis* (Roemer); 1, 2, 26389/4; 3, 4, 26389/3; 5, 6, 26389/2; 7, 8, 15347/1; 9, 10, 26389/8; 17, 18, 26389/1; 19, 20, 15349/1.

Figs. 11, 12, 15, 16, 23, 24. *Dorsetensia hannoverana* (Hiltermann); 11, 12, 26390/3; 15, 16, 15348/1; 23, 24, 26390/2.

Figs. 13, 14, 21, 22, 25, 26. *Dorsetensia hebridica* sp. nov.; 13, 14, 26393/1; 21, 22, 26393/3; 25, 26, holotype, 26391.

diameter 25–30% D compared with generally 35–40%, and correspondingly higher relative whorl height (40–48% cf. 35–40%). The relative whorl breadth (and $b:h$ ratio) is, however, comparable. The relative umbilical diameter and whorl height of *D. hebridica* are generally comparable with *D. romani*, but the relative whorl breadth (and $b:h$ ratio), and breadth of venter, are much greater in *hebridica* than in *romani*. The appropriate dimensions of *D. hebridica* are summarized graphically in text-fig. 5, with data for the lectotype of *D. deltafalcata* and the holotype of *D. romani* (from Huf 1968, pp. 82, 90) shown for comparison.

It is not certain whether the specimens are adults or not. Certainly they are larger than the specimens of *D. pinguis* from the same bed and show decline of the ornamentation on the body chamber which is common in adult macroconchs.

Locality. Humphriesianum Zone; basal bed of the Upper Sandstones; foot of cliff overlooking shore east of Torvaig, near Portree.

DISCUSSION

The specimens of *Dorsetensia* from Skye may be divided into two distinct groups in terms of size. At Rigg and Bearreraig specimens of *liostraca* are much larger than those of *romani*, while at Torvaig complete specimens of *hannoverana* and *hebridica* would be larger than those of *pinguis*. This is also evident from the literature on other areas, for example, Buckman (1892), Dorn (1935), Kopik (1967), and Huf (1968). Some of the small specimens figured show lappets (Buckman 1892, pl. 52, figs. 15–17, and Dorn 1935, pl. 3, fig. 2 and pl. 9, fig. 5) and presumably *Dorsetensia* is dimorphic. However, microconch specimens with lappets are exceptional—none has been found in Skye and two specimens figured by Buckman (pl. 53, figs. 1–2, SMJ6250, and pl. 53, figs. 3–4, SMJ6251) are adults showing crowding of the last two or three sutures but lacking lappets—so that it seems possible that lappets were not developed on all *Dorsetensia* microconchs.

The macroconch:microconch pairings suggested for Skye *Dorsetensia* are *D. liostraca* (M): *D. romani* (m) in beds stratigraphically higher than those with *D. hannoverana* (M) and *D. hebridica* (M):*D. pinguis* (m). In the latter case the microconchs of *hannoverana* and *hebridica* are presumably less variable and have been grouped in *pinguis*. A conservative taxonomic approach is used herein, because revision of species of *Dorsetensia* into bisexual taxa should be based on a larger and wider sample than that from Skye alone.

Acknowledgements. The work was commenced as part of a Ph.D. thesis in the University of Glasgow supervised by Professor T. N. George. Further fieldwork was carried out with the assistance of a grant from the Central Research Fund of the University of London. For access to collections or loan of specimens I am grateful to Dr. W. D. I. Rolfe (Hunterian Museum, Glasgow), Dr. J. H. Callomon (University College, London), Mr. R. B. Wilson (Geological Survey, Edinburgh), Dr. C. L. Forbes and Dr. R. B. Rickards (Sedgwick Museum, Cambridge), Dr. F. Westphal and Dr. J. Wendt (Tubingen, Germany). Dr. J. D. Hudson (Leicester) and Dr. G. E. G. Westermann (Hamilton, Canada) presented specimens from Torvaig. I thank Dr. M. K. Howarth, Dr. J. H. Callomon, and Dr. H. S. Torrens for their comments on the manuscript. The photographs are by Mr. M. Hobbs and Mr. E. L. Cory.

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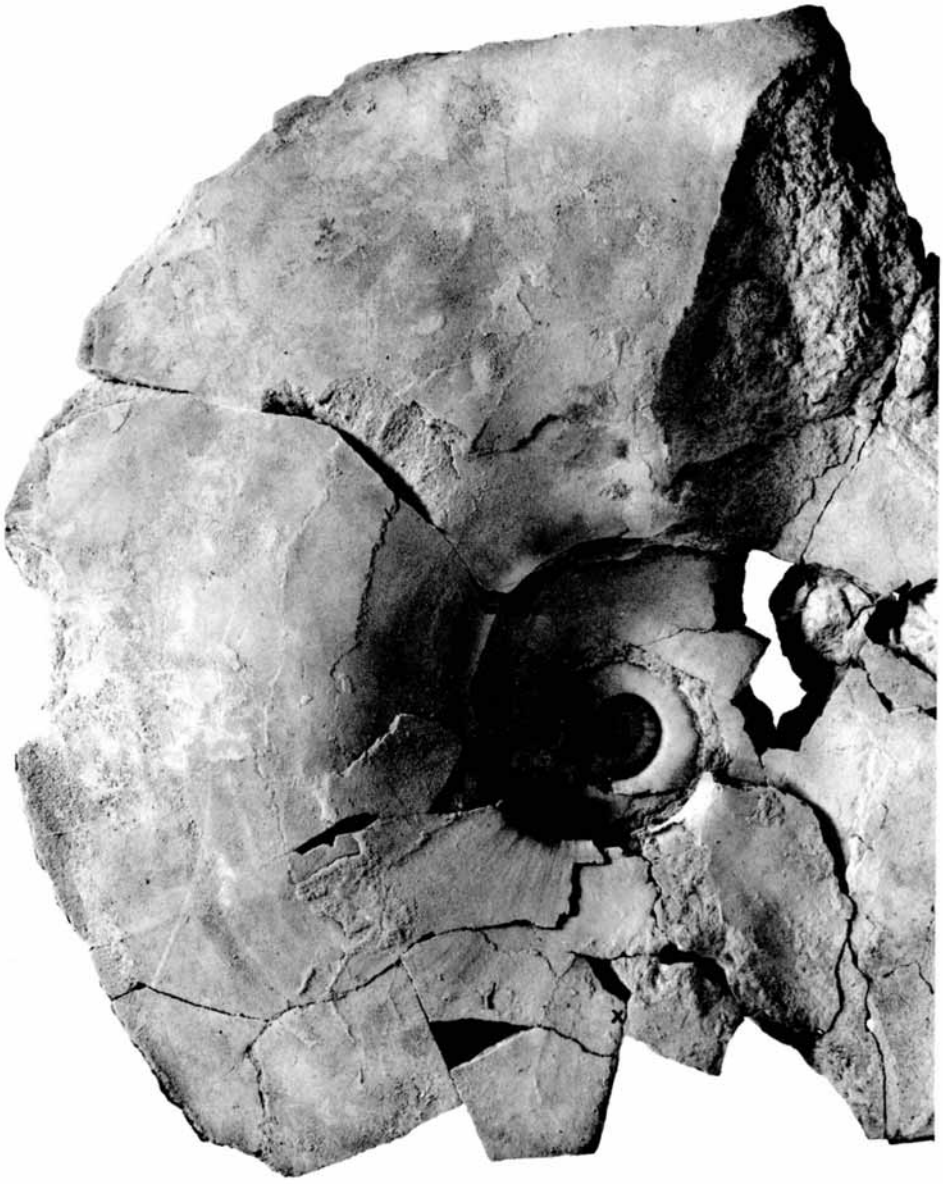
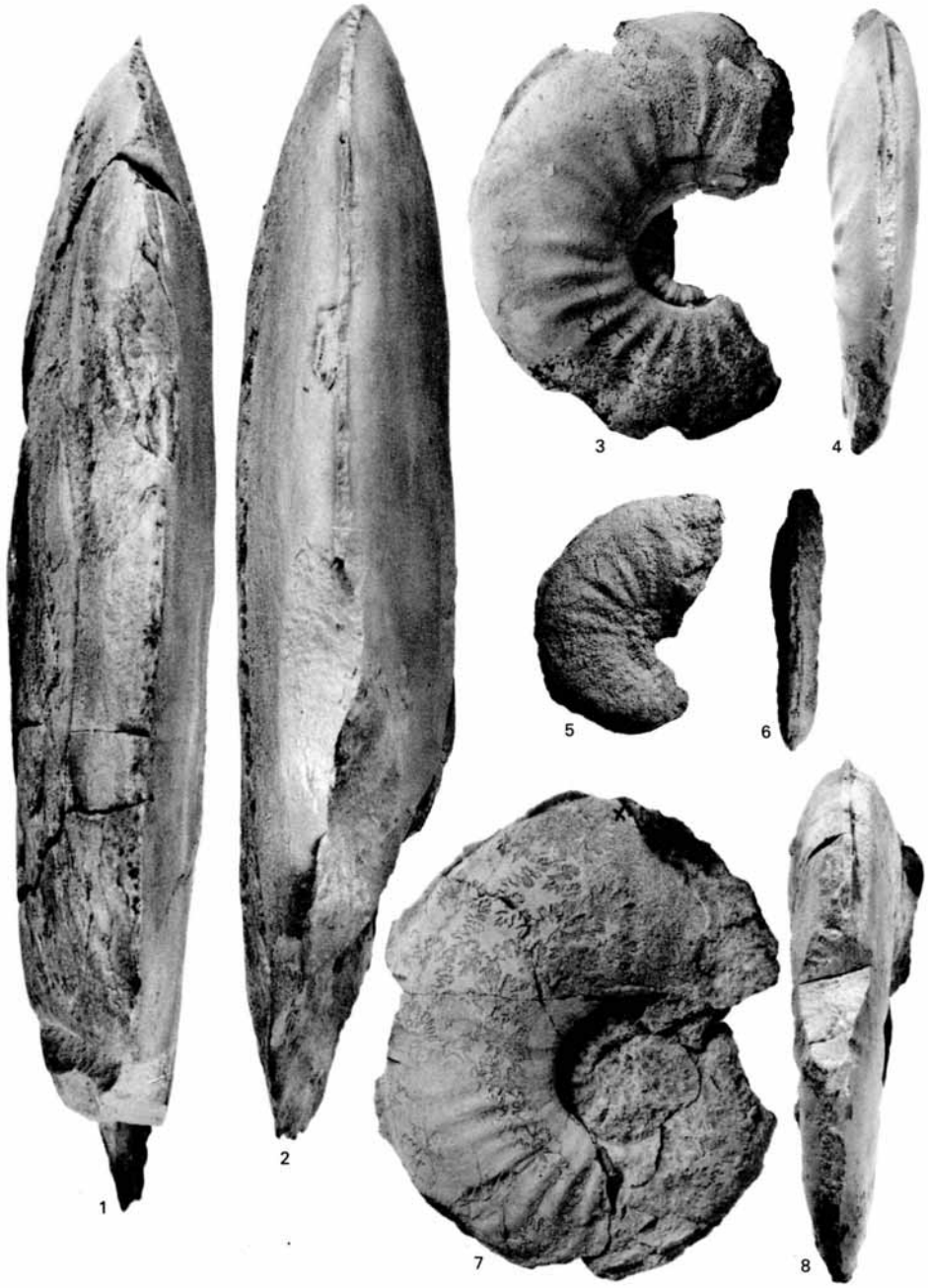
Final typescript received 19 January 1972



MORTON, The ammonite *Dorsetensia* in Skye



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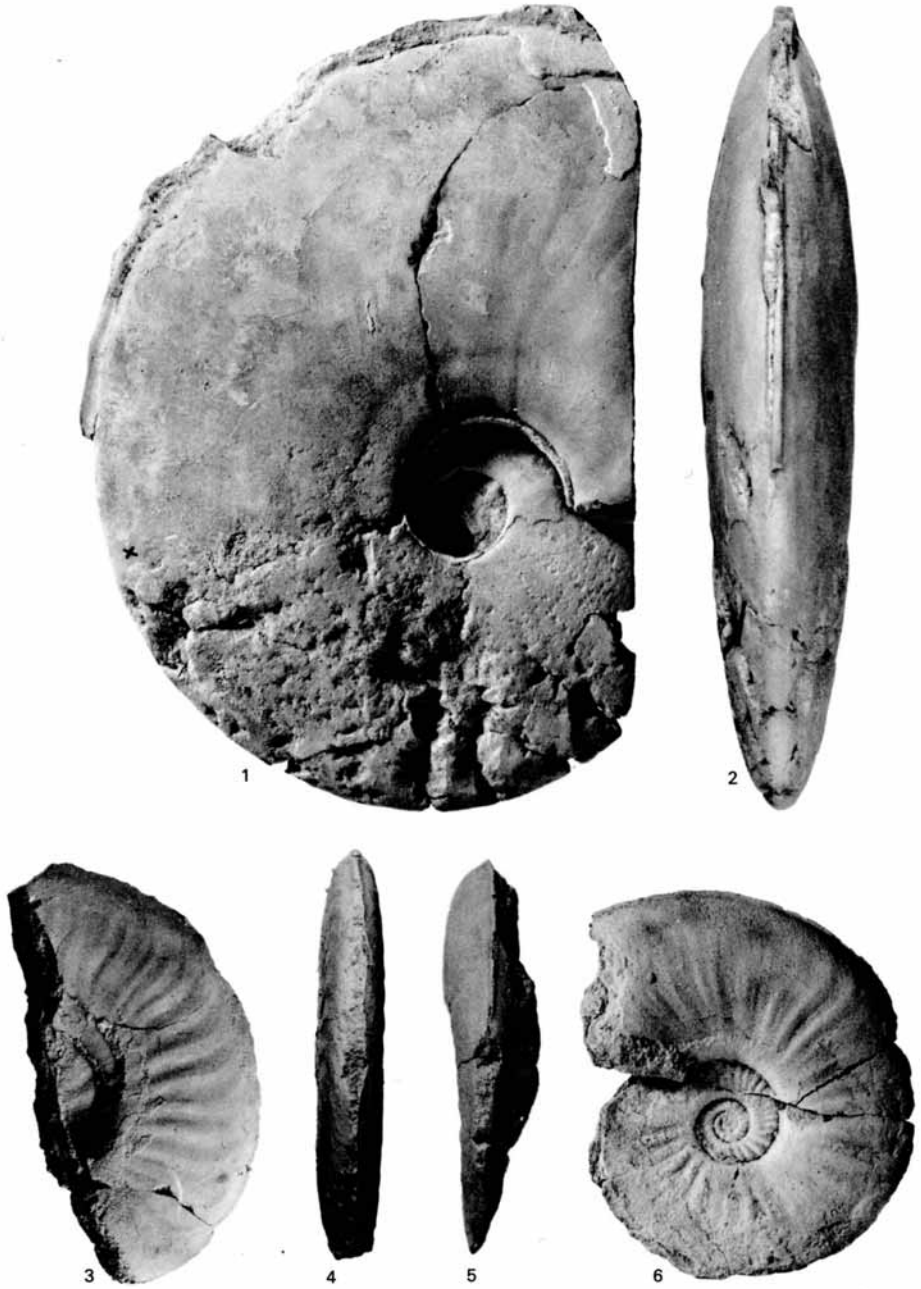

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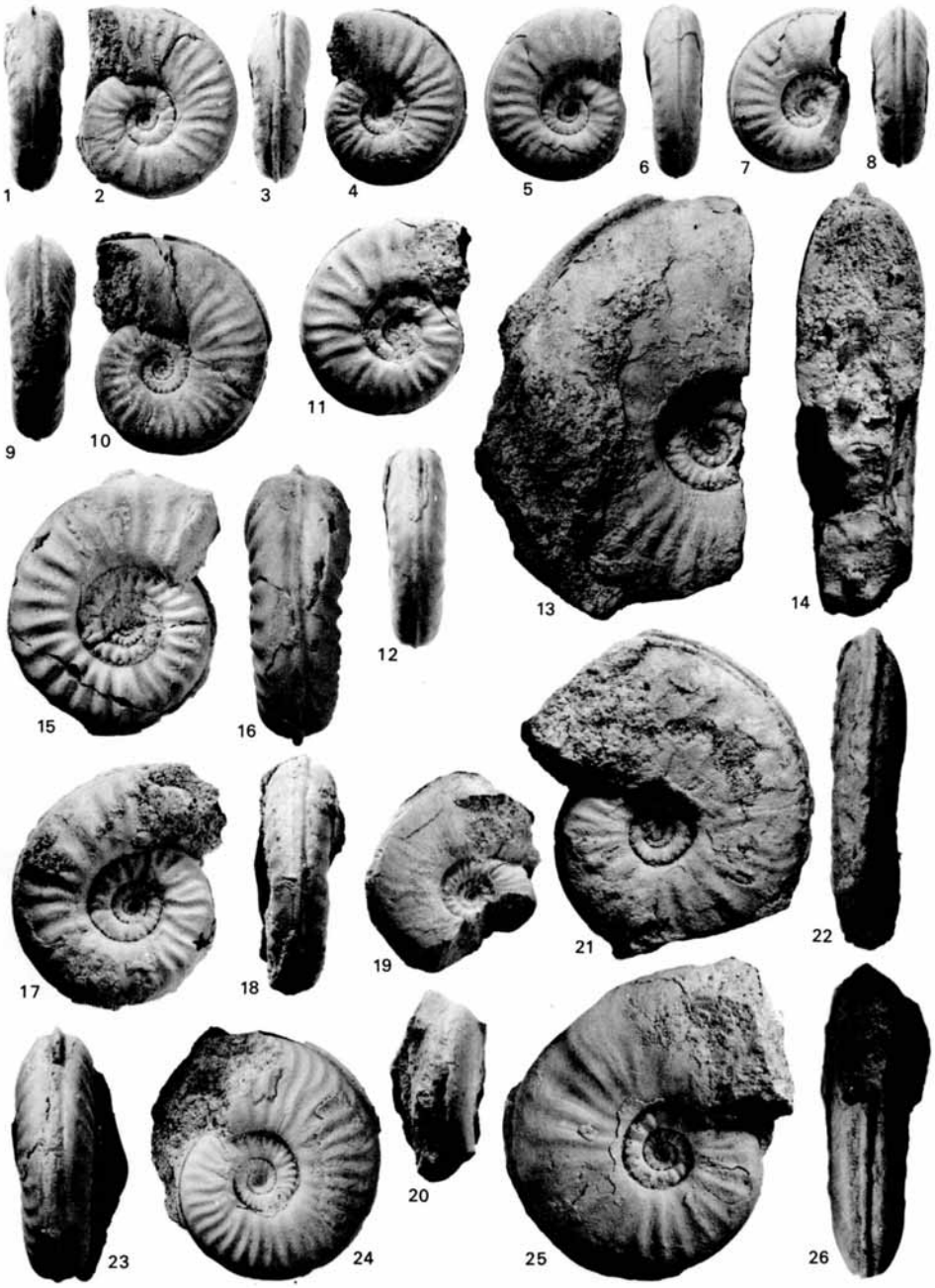

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