APPENDIX

PAGE NUMBERING AS ORIGINAL

STRATIGRAPHICAL DETAIL

Foreword

Each section or outcrop is treated individually and the figure number refers to the locality (detail) diagram. Each sample number is underlined on the left, thicknesses are indicated on the right (in feet, except the Durnford Street section which was measured, with the help of Dr. N. Mouravieff, in metric units). A brief lithological and faunal description is given followed by the detail of the conodont fauna: weight processed, numbers of each element type (followed by percentage of total fauna in brackets), total number and yield. Finally, a faunal list includes the diagnostic conodonts plus, for Middle Devonian faunas, details of the bars and blades in terms of their multielement designation sensu Klapper and Philip (1971). Simple cones are indicated by form generic names; as regards Belodella, the basal cross-section seems to be gradational and the specific distinction on forms of this basis is not herein considered to be warranted. Hence Belodella sp. is followed by t (= "B. triangularis") , r (= "B. resimus") and/or d (=B. devonicus") in brackets. For completion, lists of the other faunal elements are included as they have appeared in past literature. In the case of Taylor's corals, generic synonomy is after Scrutton (in House and Selwood 1965, p. 54-5). The following abbreviations appear in the lists: I. = Icriodus, Po. = Polygnathus, Pa. = Palmatolepis, A. = Ancyrodella, Ag. = Ancyrognathus.

Rum Bay - Dunstone Point

Section in badly sheared dark slate with quartz and calcite veins and evidence of vulcanism. Occasional lenticles of limestone and pools of decalcified crinoid debris. Northward, thicker limestone development at Dunstone Point.

JB 19 Dark grey, medium-coarse grained limestone. Argillaceous and pyritic. Lots of crinoidal debris. Nowakia, Ostracods, microgastropods.
Wt. 1.8 kg. Conodonts: Icriodids 19
Yield: 11 / kg.
I. cf. I. fusiformis.

JB 20 - ditto - JB19+ 35'
Wt. 0.5 kg. Conodonts: None

JB 21 - ditto -
Wt. 0.8 kg. Conodonts: Icriodids 1

JB 22 - ditto - JB21 + 60'
Wt. 0.4 kg. Conodonts: None

MB 23 Thin bedded, flaggy and slaty argillaceous limestone. Dolomitisation widespread. Pyritised ostracods, microgastropods, bivalves, goniatites, Nowakia. Crinoids and fenestellid bryozoans common.
Wt. 2.0 kg. Conodonts: Simple cones 1, Icriodids 44
Yield: 22 / kg.
I. corniger, I. cf. I. corniger, I. retrodepressus, I. cf. (I. corniger - I. curvirostratus-I. introlevatus) assemblage, Acodina sp.

MB 24 - ditto - lithology. Ostracods, microgastropods, Nowakia MB23 + 6'
Wt. 0.4 kg. Conodonts:

Simple cones	8	(47)
Linguiformid gp.	1	(6)
Icriodids	7	(41)
Bars and blades	1	(6)
Total	17	

Po. cf. Po. linguiformis, I. cf. I. expansus, Belodella sp. (t,r), Acodina sp.

Taylor (1950, p.147) records the following: Fenestella spp., Fistulipora triloba, F. cyclostroma, F.2 nov. spp., and Braithwaite (1967, p. 310) records orthocerids from Dunstone Point.

Batten Bay - Mount Batten (West)

(Fig. 5)

From Dunstone Point northwards, the section is in grey shales and slates with shaly limestones and volcanic bands, often decomposed. Much faulting and tectonism. Northwards, volcanism is more evident - brown, purple, yellow, buff, pale green and in part vesicular. No exposure across the central foreshore of Batten Bay, then -

B18 (102b) Thin bedded, much dolomitised, pale grey limestone. Solitary rugosa and Stromatoporoids for 75'
Wt. 1 kg. Conodonts: None

(102a) Brown, buff and yellow decomposed volcanics, in part vesicular. for 45'

(102) Brown and green, partly laminate, sheared volcanics; brecciated texture. for 60'

B17 (101) Rather massive, grey and red, medium grained limestone. Small shale residue. Crinoid debris, stromatoporoids and Rugosa.
Wt. 0.5 kg. Conodonts: None for 70'

B16 - ditto -
Wt. 0.8 kg. Conodonts:
Yield: 29/kg.

Simple cones	4	(17)
Linguiformid gp.	4	(17)
Simple polygnathids	1	(5)
Icriodids	6	(26)
Bars and blades	8	(35)
Total	23	

I. cf. I. corniger, Po. linguiformis

(100/a) Brown and green shaley tuff with dolomitised calcareous xenoliths.

-Fault-

B 15 At fault, beds of limestone show great deformation.
Red matrix of fault breccia.
Wt. 0.5 kg. Conodonts: None
- Section continues nort of Fault zone:-

B 14 (99) Pink and grey, thin bedded limestone, slaty in part, fine grained. Red shale partings. Amphipora horizons common.
Wt. 0.5 kg. Conodonts: None at base

B 13 ditto -
Wt. 0.5 kg. Conodonts: None at 75'

The section continues in thin bedded limestones which essentially comprise three types - white weathered, cleaved sparsely fossiliferous micrite; richly fossiliferous fine grained, grey limestone; and grey-red beds with numerous Amphipora ramosa. Taylor (1950, p.147) also records Favosites spp., Alveolites spp., and Callopora spp.

(97a) Wt. 0.4 kg. Conodonts: None at 130'

B12' Wt. 0.5 kg. Conodonts: None at 155'

B 11 at Mount Batten point. Wt. 0.5 kg. Conodonts: None at 180'

B 10 Wt. 0.5 kg. Conodonts: None at 235'

B 9 Wt. 1 kg. Conodonts: None

Fault complex - massive crystalline calcite development.
Section on East foreshore of Mount Batten:

87 Thin bedded, grey limestone much calcite veining
Wt. 0.2 kg. Conodonts: None at base

B4 (87a) - ditto - Red shale partings. at 23'
Wt. 0.5 kg. Conodonts: None
Rotten volcanics. Fault zone.

B5 (88) White weathered, richly fossiliferous limestone, partially dolomitised, a little red shale. Solitary corals, stromatoporoids, Alveolites lumps, articulated crinoid ossicles, Heliolites, bioclastic horizons. for 17'
Wt. 0.9 kg. Conodonts: Bars and blades 3 (at 10')

Taylor (1950, p.147) records from this richly fossiliferous beach exposure, Trematophyllum ?= Domophyllum sutherlandi, Heliolites porosus, Favosites, Alveolites, Stromatopora.

Section continues - 200 yards to North. Repeats sequence seen on West shore. Thinly bedded, fine-grained, pink and grey limestone. Pools of sparite, indistinct organic detritus. ? Amphipora.

B7 Wt. 1 kg. Conodonts: None — at base

B6 Wt. 0.9 kg. Conodonts: Yield: 10/ kg. — at top

Simple polygnathids	3
Icriodids	2
Po. asymmetricus gp.	1
Bars and blades	4
Total	10

- Gap -

B8 As above. Slatey.
Wt. 0.5 kg. Conodonts: None

(89 a-b) Below the castle - fine grained, muddy limestones, white weathered, cleaved and with pockets of amphiporoids in upper 30'.

Hocelake Quarry - Turnchapel

(Fig. 6)

Hooelake Quarry S - going N.

HL1 (64) Thin irregularly bedded, dark grey limestone. Quite muddy, shale partings common, much of it red. Flattened massive stromatoporoid. at base
Wt. 1.1 kg. Conodonts: None

(64a) Thin bedded dark grey, muddy, fine-grained limestone with indistinct amphiporoids. at 2'

(64b) Thin-bedded, grey, muddy, med.grained limestone with small stromatoporoids,
Wt. 0.2 kg. Conodonts: None at 3'

HL2 (64c) Grey, fine-grained, dark, slaty limestone becoming more massive. Unfossiliferous. Red purple and a little green shale.
Wt. 0.4 kg. Conodonts: None at 7'

HL3 (64d) Thin-bedded, cleaved, dark grey, muddy limestone.
Shell fragments, tabulates and amphiporoids at 40'
Wt. 0.4 kg. Conodonts: None

(64e) Dark grey - black limestone. Numerous small amphiporoids at 60'

HL4 (65) Grey, fine-grained, muddy limestone. Red-purple and buff in part. Amphipora. at 90'
Wt. 0.4 kg. Conodonts: None

HL5(65a) Slightly thicker bedded dark grey muddy limestone. Buff-brown shale partings. Stromatoporoid fragment. at 120'
Wt. 0.5 kg. Conodonts: None

Small fault with crumpling of beds to north -

HL6(66a-b) Irregularly bedded, fine-med. grained limestone. Muddy with shale partings. Obscure macrofauna. at 130'
Wt. 0.6 kg. Conodonts None

(67)	Grey, slightly pink limestone. Amphiporoids.	at 185'
HL7 (67a)	Grey, thick bedded, fine-med. grained limestone. Red argillaceous material occurs as thin, irregular seams. Wt. 0.4 kg. Conodonts: None	at 210'
HL8	Dark grey, medium grained limestone. Thick bedding but laterally slaty with shale partings. Indistinct tabulates. Wt. 0.8 kg. Conodonts: None	at 260'
	Pink to grey slaty limestone with red shale.	at 270'
(69)	Thin-bedded, med. grained, grey limestone, Sparsely fossiliferous.	at 290'
(69a)	Thicker bedded, med. grained, grey limestone. Sparsely fossiliferous.	at 350'
HL13 (69b)	White weathered, pale grey, fine-grained, massive limestone. Wt. 1.5 kg. Conodonts: None	at 370'
(71a)	Pink and grey mottled, fine grained limestone. Sparsely fossiliferous.	to 400'
(71)	- ditto -	to 435'
HL12	Grey fine-med. grained cleaved limestone. Red and buff shale partings Wt. 0.5 kg. Conodonts: Bars and blades 1	at 455'
(72)	Pink and grey, massive limestone.	to 480'

From the dark shaly limestone with coralline horizons, Taylor recorded Hooeiphyllum = Acanthophyllum (Grypophyllum) cf. tenue, A. (Grypophyllum) stummi, G. regressum, Amplexus sp., Favosites spp., Callopora sp., Stromatopora sp. and Amphipora ramosa.

To north west, by bricked-up railway tunnel.

HL9 (70a)	Thin bedded, med.grained, pink-grey limestone and slaty limestone, partially dolomitised. Crinoidal debris. Wt. 1.3 kg. Conodonts: Simple polygnathids 1 Yield: 2 / kg. Bars and blades 1 Total 2	for 3'
HL10	Grey, medium-grained limestone. Massive appearance. Some red-brown ferruginous shale. Wt. 0.5 kg. Conodonts: None	18'

- Gap 70' -

HL 11 (70c) Small isolated exposure east of HL10. Fine grained pale grey limestone, pink in part. 5'

Wt. 1.3 kg. Conodonts: Simple polygnathids 3 (25)
Yield: 9/ kg. Ancyro-group 2 (16.5)
Palmatolepids 3 (25)
Bars and blades ... 4 (33.5)
Total 12

Ancyrodella cf. A. gigas, Pa. spp.

HL To N.E. under road bridge. Red shale, in part calcareous. 12'
Wt. 1 kg. Conodonts: None "egg cases"

Clovelly Bay: Turnchapel - Mount Batten

East end of disused quarry. (Figs. 5,6).

43. Massive, white weathered, pale grey limestone. Fine-med.grained. 25'
Wt. 0.5 kg. Conodonts: None

Westward towards Mt. Batten, isolated outcrops.

B1. Pale grey, fine-grained, unfossiliferous limestone.
Wt. 1 kg. Conodonts: None

B2. Pale grey and pinkish, partly laminated, fine-grained limestone.
Wt. 0.5 kg. Conodonts: None

B3. - ditto -
Wt. 0.5 kg. Conodonts: Bars and blades 2
Yield: 4 / kg.

Hexton Quarry

HQ 1 Northernmost. Grey (pink) fine-med. grained limestone. Small pink shale partings. 150'
Wt. 0.5 kg. Conodonts: None

HQ 2 Southernmost. - ditto -
Wt. 0.5 kg. Conodonts: None

Langshill Quarry, Oreston

(Fig. 6)

L1 At contact with purple/grey/green shales. Pale red, fine grained limestone. Grey/pale lilac weathering. Finely laminated.
Wt. 1.7 kg. Conodonts: None

L2 Pale grey, white weathered, fine grained, compact limestone. Microstylolites common. Red, buff and pale green shale residue.
Wt. 2.7 kg. Conodonts: None

L3 Grey, fine-med. grained, partly dolomitised limestone. Red shale partings.
Wt. 4.0 kg. Conodonts: None

Radford Quarry

(Fig.7)

R9 Thin bedded, dark grey, fine-med. grained argillaceous limestone. Red shale partings. at 25'

Wt. 2.2 kg. Conodonts: Yield: 14 / kg.

Simple polygnathids	6	(20)
Icriodids	13	(43)
Ancyro gp.	1	(3)
Po. asymmetricus gp.	3	(10)
Nothognathellids	1	(3)
Bars and blades	6	(21)
Total	30	

I. symmetricus morphotype 1, Po. asymmetricus, Ancyrodella sp.

117 ditto - Crinoid ossicles. at 35'

Wt. 3.5 kg. Conodonts: Yield: 51 / kg.

Simple cones (Acodina)	11	(6·5)
Simple polygnathids	42	(23)
Icriodids	82	(45·5)
Ancyro gp.	5	(3)
Po. asymmetricus gp.	10	(5·5)
Bars and blades	30	(16·5)
Total	180	

Po. asymmetricus asymmetricus, Po. asymmetricus, A. aff. A. rotundiloba, I. symmetricus, Acodina sp.

R 8 Pale pink limestone. Small insoluble residue. at 50'

Wt. 2.1 kg. Conodonts: Simple polygnathids. 3

Yield: 2 / kg.

R 7 - ditto - at 75'

Wt. 1.3 kg. Conodonts: Yield: 5 / kg.

Simple polygnathids	5
Bars and blades	2
Total	7

R 6 - ditto -. Partially dolomitised (red). Less red shale. at 100'

Wt. 2.2 kg. Conodonts: Bars and blades 1

R 5 Grey and pink limestone. Small detrital quartz. "Egg cases". at 125'
Wt. 1.7 kg. Conodonts: Simple polygnathids 11
Yield: 9 / kg. Bars and blades .. 4
Total 15

R 4 Pale grey-pink, fine grained unfossiliferous limestone.
Small detrital quartz. "Egg cases". at 150'
Wt. 1.0 kg. Conodonts: Simple polygnathids 2
Yield: 5 / kg. Bars and blades ... 3
Total 5

R 3 - ditto - Shale component small. at 175'
Wt. 1.2 kg. Conodonts: Simple polygnathids 10 (59)
Yield: 14 / kg. Icriodids 1 (6)
Ancyro gp. 1 (6)
Po. asymmetricus gp.?1 (6)
Nothognathellids 1 (6)
Bars and blades 3 (17)
Total 17

Ancyrodella sp.

R 2 Pale grey-pink, fine grained limestone. Weakly discernible
Amphipora elongated by non-penatrative cleavage. at 200'
Wt. 0.5 kg. Conodonts: None

R1/115 - ditto - Non-fossiliferous. at 225'
Wt. 3.5 kg. Conodonts: Simple polygnathids 10 (22)
Icriodids 4 (10)
Yield 12/kg. Ancyro gp. 2 (5)
Palmatolepids 14 (33)
Bars and blades 13 (30)
Total 43

Ag. cf. Ag. triangularis, Pa. aff. Pa. Subrecta, A. curvata, Pa. spp.

119 Access from footpath North of quarry. Grey-pink, fine-med. grained
limestone. Buff shale residue. ?Crinoid debris at 240'
Wt. 2.5 kg. Conodonts: Simple polygnathids 11 (38)
Yield: 12 / kg. Palmatolepids 12 (40)
Bars and blades .. 7 (22)
Total 30

Pa. termini, Pa. spp.

No fossils have hitherto been recorded from Radford Quarry, though Ussher (1912, p.55) notes markings resembling "Stromatactis" in places.

Breakwater - Bedford Quarries

(Fig.8)

Now disused, the outcrops in the north and west are small and isolated.

127	Thin bedded, pale grey limestone.	8'
127a	Red shaley limestone matrix with organic limestone clasts - Stromatoporoids, Alveolites.	18"
	Wt. 0.6 kg. Conodonts: Bars and blades 1	
127b	Pale weathered, thicker bedded limestone.	9'
125a	Red calcareous shale.	
	Wt. 0.5 kg. Conodonts: None	4'
125b	- ditto -	
	Wt. 0.5 kg. Conodonts: None	5'
123	Massive med. grained, grey limestone "Egg cases".	
	Wt. 0.2 kg. Conodonts: None	

Pomphlett Mill Quarry

(Fig. 8)

PQ 1 Northmost (lowest) exposure. Thin bedded, dark grey, fine-med. grained argillaceous limestone with shaley partings.
Amphipora. Dark brown shale residue. at 20'

Wt. 1 kg. Conodonts: None

PQ 2 Rather massive, dark grey (red tinted) limestones. Shale partings.
Amphipora. Red shale residue. at 75'

Wt. 0.4 kg. Conodonts: None

PQ 3 Pale grey, fine-medium grained limestone. Some horizons richly fossiliferous: Amphipora and others. Buff shale residue. at 110'

Wt. 0.6 kg. Conodonts: None

PQ 4 Pale grey (lilac tint), fine grained limestone. Pale buff shale residue.
Wt. 1 kg. Conodonts: None at 180'

Billacombe Road roundabout, north side

Richly fossiliferous, grey, medium grained limestone.
Stromatoporoids and tabulates.
Wt. 0.4 kg. Conodonts: None

Saltram Quarry
(Fig. 8)

105 Near entrance to quarry, adjacent to River Plym. Limestone and shale sequence. 2' crinoidal limestone with slatey limestone and shale above (25' S.) and below (8' N. - with limestone lenticles).

Wt. 0.4 kg. Conodonts: None

112 Basal horizons within quarry. Dark, sparsely fossiliferous, argillaceous limestone. nr. base
Wt. 0.5 kg. Conodonts: None

107a Northern part of Quarry. Dark grey, slatey limestone, folded and strongly cleaved. High insoluble dark shale residue. at 40'
Wt. 1 kg. Conodonts: None

107b - ditto - at 60'
Wt. 1 kg. Conodonts: None

109 North-east corner of quarry. Thin bedded (6" - 1'), dark grey-black, crinoidal limestone. On the whole, sparsely fossiliferous. at 170'
Wt. 0.4 kg. Conodonts: None

110 S.E. Corner. Red dolomitised limestone.
Wt. 0.5 kg. Conodonts: None

Laira Bridge Cutting

(Fig. 9)

1. Olive-green cleaved shale. Hard and compact. Non-fossiliferous.

1a. Green and grey ? decalcified shaly rock with a wavy lamination. Contains disarticulated trilobites - Phacops (Phacops) cf. hefteri STRUVE 1970, Phacops spp., Otarion (Otarion) cf. druida ERBEN 1952, Proetus sp. (written communication Burton, 1971), small solitary corals, Pleurodictyum, atrypid brachiopods, rare bivalves, fenestellid bryozoans, ostracods.

1b. Grey-green shales / slates.

1c - d. Irregularly bedded argillaceous limestone. Grey and pale green (tuffaceous ?). Fine crinoidal debris. Ostracod.
Wt. 0.6 kg. Conodonts: Linguiformid gp. 1
Yield: 2/kg. Total 1

Po. linguiformis linguiformis

1e - f. Dark grey, fine-medium grained muddy limestone. Small lamellar stromatoporoids, solitary Rugosa, some with stromatoporoid coating, Heliolites, small tabulates, crinoidal debris. 23'

1h. Green-grey shale (? tuffaceous). 6'

1g. Black, med.grained bituminous limestone. Stromatoporoid and coral debris. Irregularly bedded and slaty with shale partings.
Wt. 1.6 kg.
Yield:5/kg.

Conodonts:	
Simple cones	2
Simple polygnathids	1
Linguiformid gp.	2
Icriodid	3
Total	8

Po. l. linguiformis, I. expansus-nodosus gp. morphotype 2, Panderodus sp.

Cattewater Road

(Fig. 9)

Green grey shale interbedded with tuff and having limestone lenses and thin limestone beds which pass progressively upward (to the south) into thicker bedded, more calcareous beds.

CR1. Dark grey, fine-medium grained limestone with shale partings and yellow-brown ferruginous shale residue. Calcite veined. 2' at 18'
Wt. 2.0 kg. Conodonts: Simple polygnathids 1
Yield: 1/kg. Icriodids 1
Total 2

I. expansus-nodosus morphotype 2, Po. cf. Po. pseudofoliatus

CR2. Pale grey-yellow weathered limestone with buff shale residue. 1' at 50'
Wt. 0.5 kg. Conodonts: Bars and blades 1
Yield: 2 /kg.

CR3. Dark grey limestone with dark, partly ferruginous shale and small pyrite residue. ? Fish teeth, "egg cases". at 75'

Wt. 2.25 kg. Conodonts:	Simple cones	38 (63)
Yield: 27/kg.	Linguiformid gp.	1 (2)
	Simple polygnathids	11 (18)
	Spathognathodids	1 (2)
	Bars and blades	9 (15)
	Total	60

Po. pseudofoliatus, Po. aff. Po. xylus, S. aff. S. brevis, Belodella sp. (t, r, d), Coelocerodontus sp., Panderodus sp., (O_1, A_1)

Taylor (1950, p.150) records from these lower limestones the following corals:

Acanthophyllum cf. fibratum, Leptoinophyllum, Acanthophyllum (Grypophyllum) sp.A., Trematophyllum = Domophyllum cf. abreviatum, Amplexus sp. Also recorded are Favosites sp's and Stromatopora sp's. Ussher (1912, p.59) records Athyris ? sp. and Orthis interlineata ? from the shales.

CR4. Dark grey, argillaceous, flaggy limestone with pools of fine crinoidal debris. ?Fish teeth and scales, "egg cases", foram. at 135'

Wt. 2.5kg.
Yield: 9/kg.

Conodonts:

Simple cones	18	(82)
Linguiformid gp.	1	(2)
Simple polygnathids	1	(2)
Bars and blades	2	(4)
Total	22	

Po. aff. Po. linguiformis, Belodella sp. (t,r), (A_2)

From these more southerly limestones, Taylor (1950, p.149) records an abundant coral fauna: Pexiphyllum = Macgeea bunthi nov. sp. Phillipsastraea sp., Hooephyllum = Acanthophyllum (Grypophyllum) sp., Sparganophyllum cf. difficile, Favosites 3 sp's, Heliolites porosus, Alveolites sp's and Stromatopora concentrica.

Princerock Quarry (Plymouth Power Station)

(Fig. 9)

PS4. Dark grey, medium-grained limestone with much black shale at bed margins Lateral passage into shale also. ?Fish teeth, brachiopods, ostracods, Nowakia

Wt. 1.5 kg. Conodonts:

Simple cones	30	(58)
Linguiformid gp.	3	(6)
Simple polygnathids	7	(13)
Spathognathodids	1	(2)
Icriodids	2	(4)
Bars and blades	9	(17)
Total	52	

Yield: 35/kg.

Po. pseudofoliatus, Po. aff. Po. xylus, Po. cattedowni, S. cf. S. bidentatus, I.n.sp.a, Bellodella sp. (t,r), Coelocerodontus sp., Scolopodus ?sp., (O_1, N, A_1, A_2)

PS3. Dark grey argillaceous limestone. ?Fish scales, egg cases.

Wt. 1.25 kg. Conodonts:

Simple cones	3	(14)
Linguiformid gp.	3	(14)
Simple polygnathids	5	(22)
Icriodids	2	(9)
Bars and blades	9	(41)
Total	22	

Yield: 18/ kg.

Po. pseudofoliatus, Po. cf. Po. cattedowni, Po. cf. Po. xylus, I.n.sp.a, Belodella sp.

- Fault -

PS2. Grey, fine-med. grained shaly limestone

Wt. 0.3 kg. Conodonts: none.

PS1. Grey, fine - med. grained, flaggy limestone with ferruginous shale partings. Richly crinoidal (debris). Pale green, buff and brown shale residue. ? Fish teeth.

Wt. 0.4 kg. Conodonts:

Linguiformid gp.	1	
Bars and blades	1	
Total	2	

Yield: 5/kg.

Those samples from the east of the fault are on the approximate strike of the horizons which include Taylor's highest coral association E.N.E. of the quarry - see Cattewater Road (CR4). Worth (in Ussher 1912, p.59) records from Prince Rock Quarry the following: Actinostroma, Alveolites suborbicularis, Cyathophyllum roemeri, Cyathophyllum sp., Pachypora reticulata, "bryzoon ?" (sic).

Faraday Road

(Fig. 9)

Coarse grained flaggy limestone	10'
Shale and thin limestone	5'
Coarse grained flaggy limestone	5'
Calcareous shales becoming thicker bedded and more calcareous	25'
Dark grey limestone	5'
Thicker bedded flaggy limestone	10'
Dark grey, fine grained flaggy limestone	5'
Argillaceous limestone with sandy-shale horizons. Brachiopods and crinoidal debris	10'

3. Flaggy argillaceous limestone, in part decalcified. Richly crinoidal concentrations orientated articulated stems up to 4" in length. Small Rugosa. 37'

Wt. 0.2 kg. Conodonts: None

- Gap - 10'

4. Dark grey argillaceous limestone with small branching stromatoporoids, passing into dominantly shaly beds with limestone lenses and nodules. colonial Rugosa -"Cyathophyllum", lamellar stromatoporoids, stromatoporoid coated corals, solitary Rugosa, crinoidal debris. 15'

Wt. 0.2 kg. Conodonts: None

Cattedown Quarry

(Fig.10)

North and east walls.

7. Thin bedded dark limestones. Beds are variable and repetitive -
e.g. Limestone with fine crinoidal debris 3" - 6"
Limestone with massive stromatoporoids, (large irregular and smaller globular and hemispherical forms), Thamnopora and solitary corals. Several generations of coating can be recognised involving both tabulates and stromatoporoids. Some forms appear in growth position others have been upturned. 3" - 5"
Limestone with fragmented fossil debris 2" - 8"
Some debris beds appear to be graded in two directions from the middle. This kind of sequence is repeated for about 10'.

8. On strike of 7. The lower beds are argillaceous and are interbedded with shale.

Wt. 2.3 kg.	Conodonts: Simple cones	3	(25)
Yield: 5/kg.	Linguiformid gp.	3	(25)
	Simple polygnathids	3	(25)
	Bars and blades	3	(25)
	Total	12	

Po. linguiformis aff. forma nova 1, Po. cf. Po. xylus, (N)
- Fault -

West Wall.

12. Thin bedded, fine-med. grained dark limestones. Purple shale residue. In the main unfossiliferous. Some crinoidal debris.

Wt. 0.5 kg.	Conodonts: Simple cones	8	(67)
Yield: 24/kg.	Linguiformid gp.	1	(8)
	Icriodids	1	(8)
	Bars and blades	2	(17)
	Total	12	

Po. linguiformis, Belodella sp. (t,r)

10. Quite thick bedded, in part massive, grey, medium grained limestone. Pale weathered. Crinoidal and shelly debris. Rare solitary corals and isolated slightly convex upward stromatoporoids within the individual beds. There tends to be an alternation of layers with crinoidal debris and others of pure micrite, the corals being found in the latter. "Egg cases". 30'

Wt. 2.8 kg. Conodonts: Yield: 19/kg.

Simple Cones	21 (40)
Linguiformid gp.	7 (13)
Simple polygnathids	1 (2)
Spathognathodids	1 (2)
Icriodids	6 (11)
Bars and blades	17 (32)
Total	53

Po. cf. Po. cattedowni, Po. cf. Po. angustipennatus s.l., Po. linguiformis, I. sp. a, I. obliquimarginatus, Belodella sp. (t, r), (A_2 B_3).

Taylor (1950, p.150) records only Favosites and Stromatopora from this locality.
Worth(in Ussher 1912, p.59) lists the following from Cattedown Quarry:- Actinostroma sp., cf. Stromatopora concentrica, Alveolites suburbicularis, Cyathophyllum sp.,Favosites goldfussi, Pachypora cristata.

14. Pale grey, fine grained limestone and fine-med. grained, partially dolomitized limestone. The former limestone may be stromatoporoidal in nature. This part of the section if overgrown but the extensive nature of the stromatoporoid areas suggest a local "bloc-reef" development. 10'

Wt. 0.5 kg. Conodonts: None

Gasworks Quarry (= Esso Quarry), Cattedown

(Fig. 10) East Wall.

20. Thin (6" - 9") bedded, dark grey limestone, brown ferruginous shale residue. Some beds contain wedges of bioclastic material. Abundant shelly debris. Crinoid ossicles, tabulates, Rugosa. The brachiopods are thin shelled and usually disarticulated. "Egg cases". Sponge spicules. at 10'

Wt. 6 kg. Yield: 58/kg.

Conodonts:		
	Simple cones	145 (41)
	Linguiformid gp.	108 (30)
	Simple polygnathodids	3 (1)
	Spathognathodids	8 (2)
	Icriodids	15 (4)
	Bars and blades	71 (22)
	Total	350

Po. aff. Po. latus, Po. xylus, Po. cf. Po. pseudofoliatus, Po. cattedowni, Po. l. linguiformis ♂ morphotype, I. obliquimarginatus, I. expansus-nodosus gp. morphotype 3, S. brevis, Belodella (t,r), Panderodus sp. Coelocerodontus gp. (O_1, N, A_1, A_2, A_3, O_2, B_1, B_2, B_3)

19 (1) Thin bedded, argillaceous, pink and grey limestones with red shale partings.

Wt. 2.7 kg. Yield: 7/kg.

Conodonts:		
	Simple cones	12 (60)
	Linguiformid gp.	1 (5)
	Simple polygnathids	2 (10)
	Spathognathodids	2 (10)
	Bars and blades	3 (15)
	Total	20

S. bidentatus, Po. cf. Po. pseudofoliatus, Po. linguiformis, Belodella sp. (t,r)

- Fault -

19 (2). Red Calcareous shale

Wt. 1.4 kg. Conodonts: None

West Wall (Fig.11)

16. Grey, rather massive, fine-med. grained limestone. A little pink shale. 35'

Wt. 1.3 kg. Conodonts:

Yield: 54/ kg.	Simple cones	42 (60)
	Linguiformid gp.	9 (13)
	Simple polygnathids	2 (3)
	Spathognathodids	1 (2)
	Icriodids	3 (4)
	Bars and blades	13 (18)
	Total	70

S. brevis, Po.l. linguiformis γ morphotype, I. cf. I. obliquimarginatus, I. cf. I. sp. a sensu BULTYNCK 1972, Po. pseudofoliatus, Po. cf. Po. cattedowni, Belodella sp. (t,r), Panderodus sp., (A_1).

Dark grey, richly fossiliferous fine-med. grained limestone, in part cleaved. Crinoid debris, Rugosa, coating stromatoporoids, branching tabulates. Beds thicken upwards. (southward). 30'

Red-grey slaty cleaved limestone with crinoid debris. 6'

More massive, red-stained limestone. 18'

Richly crinoid slaty limestone. 3'

Richly fossiliferous limestone. Laterally persistent beds (2" - 3") of crinoidal debris alternate with muddy horizons. Debris beds appear to be colonized by extensive hemispherical stromatoporoids above which they are "tennis ball", globular stromatoporoids. 45'

17, 18. Massive, white weathered, med.-grained grey limestone. Richly fossiliferous. Massive irregular and globular stromatoporoids, locally forming small 'block reefs'. Rugosa, tabulates. Several generations of coating. In situ growths alternate with fine bioclastic horizons, some of which are wedge shaped, and apparently graded in two directions. 50'

Wt. 1.0 kg. Conodonts: None

Taylor records the following from the Gasworks Quarry: Sparganophyllum (?) sp., Neospongophyllum sp., Favosites sp's., Alveolites sp., and Heliolites porosus.

Fisons Quarry, Cattedown (S)

(Fig. 11)

77 b Red sugary dolomitized and argillaceous limestone. Thin sections suggest two phases of dolomitization.

Wt. 0.5 kg. Conodonts:

Yield: 786/kg

Simple cones	38	(9.5)
Simple polygnathids	44	(11)
Icriodids	125	(32)
Ancyro-group	6	(1.5)
Palmatolepids	80	(20·5)
Bars and blades	100	(25·5)
Total	393	

Ancyrognathus trianqularis, Ancyrodella curvata, Palmatolepis subrecta, S. sannemanni treptus, I. symmetricus morphotype 1 and 2, Belodella sp., Acodina sp.

77 a Coarse recrystallised grey limestone.

Wt. 0.5 kg. Conodonts: None

77 c Cleaved red argillaceous limestone.

Wt. 0.3 kg. Conodonts:

Yield: 257/ kg.

Simple cones	3	(4)
Simple polygnathids	14	(18)
Icriodids	28	(37)
Ancyro-group	5	(6)
Palmatolepids	14	(18)
Bars and blades	13	(17.5)
Total	77	

Ancrodella curvata, Palmatolepis subrecta, Pa. proversa. I. symmetricus morphotype 2, Belodella sp.

77 d (North) Red Calcareous shale

Wt. 0.75 kg. Conodonts:

Yield: 28/ kg.

Simple polygnathids	3	(14)
Icriodids	3	(14)
Palmatolepids	1	(5)
Bars and blades	14	(67)
Total	21	

77 m (North) Red argillaceous limestone matrix
Wt. 0.5 kg. Conodonts: Palmatolepids 1
Bars and blades 1
Total 2

Pa. cf. Pa. subrecta

77 e (North) Red calcareous shale.
Wt. 0.5 kg. Conodonts: None

78 (North) Pure grey limestone clasts.
Wt. 0.4 kg. Conodonts: None

78 a (East) Slightly dolomitized, grey fossiliferous limestone. Tabulates and stromatoporoids.
Wt. 0.4 kg. Conodonts: None

79 a (West) Pale pink, partially dolomitized, slightly argillaceous limestone.
Wt. 0.4 kg. Conodonts: None

79 b (West) as 79 a
Wt. 0.5 kg. Conodonts: None

79 c (West) as 79 a
Wt. 0.4 kg. Conodonts: None

80 Pure, grey, fine-grained, richly fossiliferous limestone with some red shaley admixture.
Wt. 0.8 kg. Conodonts: None

74. Fairly massive, pure, white weathered limestone. Three horizons distinguished - those of mud grade with rare scattered Rugosa, bioclastic horizons containing broken coral and crinoid debris and those with large massive hemispherical stromatoporoids - tending to be repetitive. Also Amphipora horizons.

75. Amphipora micrite. Thick bedded to massive, white weathered.

East of Quarry

76 as 75
Wt. 0.3 kg. Conodonts: None

73 as 75
Wt. 1.4 kg. Conodonts: None

Teat's Hill Quarry - Coxside

(Fig. 12)

44. Thin bedded, fine-grained, dark grey-black argillaceous, bituminous limestone interbedded with shale. Beds. 4" - 6", irregular, A little crinoid and coral debris.

44(1). Slightly ferruginous shale residue at base

Wt. 0.6 kg. Conodonts: Yield: 25 / kg.

Simple cones	7	(47)
Simple polygnathids	5	(33)
Bars and blades	3	(20)
Total	15	

Po. pseudofoliatus, Belodella sp. (t)

44 (2) Dark grey shale residue. "Egg cases", phosphatic debris. at 11'

Wt. 2.5 kg. Conodonts: Yield: 84 / kg.

Simple cones	115	(55)
Simple polygnathids	32	(15)
Icriodids	4	(2)
Bars and blades	60	(28)
Total	211	

I. regularicrescens, Po. pseudofoliatus, Belodella sp. (t,r), Panderodus sp., (O_1, N, A_1, A_2, A_3.)

44 (3). Purple-buff shale residue. "Egg cases", sponge spicules at 20'
bryzoans, phosphatic debris.

Wt. 1.7 kg. Conodonts: Yield: 120/ kg.

Simple cones	125	(62)
Linguiformid gp.	11	(5)
Simple polygnathids	15	(7)
Spathognathodids	2	(1)
Icriodids	29	(14)
Bars and blades	22	(11)
Total	204	

Po. pseudofoliatus, Po.l.linguiformis ♂ morphotype, Po. cf. xylus, S. bidentatus, S. sp., I. regularicrescens, I. aff. I. obliquimarginatus, I. n.sp. b, I. expansus-nodosus gp. aff. morphotype 3, Belodella (t,r), Panderodus sp., Scolopodus ? sp., (O_1, N, A_1, A_2, A_3, B)

44 a Thicker bedded (9" - 1') dark grey-black, med-grained limestone. Small organo-detrital component. 30'

44 b Buff weathered shale with thin impersistent limestone beds, some decalcified. Brachiopods, sponge spicules and crinoid ossicles in the shale, small tabulates in the limestone. 15'
Wt. 0.2 kg. Conodonts: None

45. Abundantly fossiliferous, dark grey, argillaceous, med.grained,pyritic, limestone,partially decalcified. Tabulates include Heliolites and Alveolites. Solitary rugose corals, small stromatoporoids, crinoid and shelly debris. Sponge spicules. 15'
Wt. 1.2 kg. Conodonts: Simple cones 1
Yield: 3/ kg. Linguiformid gp. 1
Icriodids 1
Total 3

Po. cf. Po. linguiformis, Belodella sp. (t)

45 a ditto. "Cyathophyllum" colony 5'

45 b - c ditto. Few stromatoporoids. Large and abundant cystifer corals, and bioclastic horizons with smaller solitary corals 5'

45 d Increasingly argillaceous limestone. Massive stromatoporoid colonies (2' x 1') and large cystifers. 5'

45 e Dominantly argillaceous beds with lenses and irregular seams of limestone plus an abundance of corals. Some colonial Rugosa ("Cyathophyllum") and tabulates (Heliolites) quite large. Some evidence of derivation - breakage and abrasion. 5'

45 f ditto. Bedding surface shows (apparently) in-situ growth of branching stick corals and large solitary forms. 5'

gap 15'

Thick bedded-massive, med.-coarse grained limestone. Dark grey and pyritic. Recrystralised, sometimes obscure macrofauna - tabulates and stromatoporoids.

46.	Wt. 1.8 kg. Yield: 6/ kg.	Conodonts:	Linguiformid gp.	3	(30)	at base
			Simple polygnathids	1	(10)	
			Icriodids	3	(30)	
			Bars and blades	3	(30)	
			Total	10		

Po. cf. Po. linguiformis, I. expansus-nodosus gp.

46 b	Wt. 0.6 kg.	Conodonts:	none			at 25'

47.	Pale grey, red-stained limestone.					at top
	Wt. 1.5 kg.	Conodonts:	Simple cones	5	(20)	
	Yield: 17 / kg.		Linguiformid gp.	5	(20)	
			Icriodids	11	(44)	
			Bars and blades	4	(16)	
			Total	25		

Po.l. linguiformis, I. expansus-nodosus morphotype 2, Panderodus sp.

Ussher (1912, p.55) records Smithia = Phillipsastraea hennani from the shaly horizons of this quarry.

Sutton Pool, Coxside
(Fig. 12)

48. Massive crinoidal limestone with red veins. Some dolomitization. Articulated crinoid stems up to 4" long. Alveolites and stromatoporoids. 10'

Wt. 0.2 kg. Conodonts: Simple cones 1
Yield: 20 / kg. Icriodids 1
Bars and Blades 2
Total 4

Belodella sp. (r)

48 a. Grey, medium-grained, calcite veined, in part cleaved limestone. Crinoid debris and large massive stromatoporoids. Solitary Rugosa. 20'

49. Grey and red (patches), med.-coarse grained limestone. Much crinoidal debris. "Egg cases". Mostly obscured by seaweed. At top 30'+

Wt. 1.0 kg. Conodonts: Linguiformid gp. 2 (15)
Yield: 13 / kg. Icriodids 7 (50)
Bars and blades 4 (35)
Total 13

Po. l. linguiformis, I. expansus-nodosus group morphotype 2, (N, A_1)

Taylor (1950, p.152) records the following fauna from the beach outcrop north of Sutton Cove: Acanthophyllum s.l. several sp's, Disphyllum sp., Favosites sp's, Alveolites sp's, Heliolites porosus, Stromatopora sp's. Hennah (1824, p.35) records "... the most perfect specimen of "Encrinite" i.e. the head and stem being evident, and connected together ..." from Teat's Hill.

Dead Man's Bay (Quarry), Coxside
(Fig. 12)

50. Rather massive, pale grey, fine-medium grained, argillaceous limestone. Buff shale. Large Rugosa, tabulates, massive stromatoporoids and pools of crinoidal debris.

Wt. 0.5 kg. Conodonts: Simple cones 3 (10)
Yield : 64/kg. Linguiformid gp. 5 (15)
Simple polygnathids 11 (34)
Spathognathodids 1 (3)
Icriodids 1 (3)
Bars and blades 11 (35)
Total 32

S. brevis, I.n.sp.c, Po. varcus group, Po. cf. Po. pseudofoliatus, Po. l. linguiformis γ morphotype, Belodella sp. (t,r), (N,A,B_1).

51. Thin bedded, pink, dolomitized crinoidal limestones.

Wt. 2.8 kg. Conodonts:
Yield: 6 / kg.

Simple cones	2	(12)
Linguiformid gp.	1	(6)
Simple polygnathids	4	(23)
Icriodids	1	(6)
Bars and blades	9	(53)
Total	17	

Po. linguiformis, Po. varcus gp., I. cf. I. obliquimarginatus, Panderodus sp.
From Dead Man's Bay, Taylor (1950, p. 152) records: Macgeea cf. solitarium, Disphyllum (Phacellophyllum) = Macgeea (Thamnophyllum) caespitosum, Heliolites porosus, Favosites spp., Stromatopora.

Drake's Island

(Fig. 16)

- Fault -

DI 3. Red, much dolomitised limestone with some crinoidal debris. A little detrital quartz. at base

Wt. 2 kg. Conodonts:
Yield: 6/ kg.

Simple cones	1	(8)
Linguiformid gp.	6	(50)
Icriodids	2	(17)
Bars and blades	3	(25)
Total	12	

Po. l. linguiformis

DI 2. Flaggy, dark grey, dolomitised, pyritic limestone. at 10'
Foram, Nowakia, 'Egg cases'

Wt. 2.5 kg. Conodonts:
Yield: 18 / kg.

Simple cones	2	(5)
Linguiformid gp.	11	(25)
Icriodids	26	(58)
Bars and blades	5	(12)
Total	44	

I. expansus-nodosus gp. morphotype 2, Po. l. linguiformis γ morphotype, (A_1)

DI 1. Pink-grey, slightly dolomitised limestone with small green (? tuffaceous) shaly residue. Crinoid ossicles and Alveolites. at 18'(top)

Wt. 2.2 kg. Conodonts: Linguiformid gp. 3
Yield: 2 / kg. Icriodids .. 1
Total 4

To NW of first fault - green/yellow, sheared tuffs, "filled with chlorite, limonite and secondary quartz ....It has been fine grained, but in consequence of the shearing and decomposition its original structure are nearly effaced".... probably a very rotton basic lava or tuff (after Flett, in Ussher 1912, p.70,72). Many small clasts and a few large rafts of limestone are included in these "schalsteins". These vary from pebble size up to 2' x 1' x 4" (D15), are fine to coarse grained, slightly rounded to angular and all are elongated parallel to cleavage. (150' - 200' normal to cleavage)

DI 4. Several small limestone clasts, some with small tabulates.
Wt. 2.3 kg. Conodonts: None

DI 5. Large, fine grained limestone raft. 'Egg cases', sponge spicule.
Wt. 2.2 kg. Conodonts: Simple cones 6 (43)
Yield: 6/ kg. Linguiformid gp. 3 (21)
Simple polygnathids 1 (7)
Bars and blades 4 (29)
Total 14

Po. angustipennatus s.l., Po. l. linguiformis morphotype, Coelocerodontus sp.

To NW of Second Fault - limestone sequence

DI 7. Heavily calcite veined, grey limestone. at contact
Wt. 2.2 kg. Conodonts: Linguiformid gp. 1
Yield: 1 / kg. Bars and blades 1
2

DI 6. Dark grey, slightly pyritic limestone. 50' up dip
Wt. 1.8 kg. Conodonts: simple polygnathids 1
Yield: <1/ kg.

Po. angustipennatus s.l.

West Hoe - Hoe - Citadel

(Fig.12 partim)

H1 West Hoe Park, East Wall. near 'base'

Thick bedded - massive, pale grey, fine-med. grained limestone and red sugary dolomite.

Wt. 2.3 kg. Conodonite:

Yield: 17 / kg.

Simple cones	5(13)
Simple polygnathids	8(20)
Po. asymmetricus gp.	9(22)
Palmatolepids	?2(5)
Bars and blades	16(40)
Total	40

Po. cf. Po. cristatus, Pa.?n.sp., Po. cf. Po. asymmetricus

H2 Beach cliff exposure N.E. of West Hoe pier.

Pale grey, fine grained, partially dolomitised limestone. Crinoidal debris, and Thamnapora, Alveolites, and Amphipora

Wt. 2 kg. Conodonts:
Yield: 3 / kg.

Simple cones	2
Linguiformid gp	1
Bars and blades	2
Total	5

H3 Below Citadel, southernmost horizons.

Pale grey, partially dolomitised, richly fossiliferous, massive limestone. Stromatoporoids and tabulates. Little bioclastic material.

Wt. 0.5 kg. Conodonts: None

H4 Below Citadel, to east.

Thinner bedded, white weathered, fine grained limestone. Richly fossiliferous horizons.

Wt. 0.5 kg. Conodonts: None

Taylor records (1950, p.153) from the "Hoe foreshore and cliffs" horizons rich in Amphipora ramosa, Favosites spp., Pexiphyllum(?)= Macgeea(?)sp., and Stromatopora spp. Hennah(1824, p.33) records univalves (especially Turbo) from under the Citadel. North of the Hoe, where the city is presently built up, from the older literature comes an indication of the extent and boundaries of the limestone:

Hennah (1824, p.8) noted that the limestone ran along the north side of the "Parade" (= ? Royal Parade) westwards turning to the southwest parallel and north of Millbay Lane and then trending northwestward somewhat irregularly to the turnpike at the east end of Union Street, finally paralleling the latter on the south side, into Stonehouse.

From a sewage tunnel running south from George Street to the Royal Parade, Ussher (1907, p.60) records dark grey slates with crinoidal, dolomitised limestone lenticles, vesicular igneous rock and red and green variegated slates. South of Hennah's limits, Ussher lists several borehole and excavation details which include limestones,"red sandstones" (probably dolomite) and dark slates (possible the dark calcareous type found in Coxside and Princerock).
Taylor (1950, p.153) notes the excavation of brown and red shales from"N.W. of West Hoe" which he considers "in all probability identical with those shales forming the core of the syncline" These may be localised "stratigraphical leaks".

From Millbay Quarry came one of the first records of fossils in the Plymouth Limestone (Hennah, (8 August) 1814, p. 410).

Richmond Walk (460544) Devonport Hill - Ordnance Quarries - Coles Timber Yard

(Fig. 13)

Section starts a little south of the railbridge, on the west side of the (disused) railway cut. Volcanic traces. Northernmost limestones beds, in south dipping limb of shallow syncline.

25 Thin and irregularly bedded dark-grey-black argillaceous limestone with black shale interbedded. Bituminous and pyritic. Richly fossiliferous. Some beds are predominanly bioclastic - small crinoid ossicles, shelly debris, and small solitary corals, the latter tending to increase in size upward toward the level at which laminate stromatoporoid or Heliolites colonies are common, and often intimately associated in what appears to be if not in situ, not far removed. 'Egg cases', ? fish teeth. at 20'

Wt. 3.5 kg. Conodonts: Yield: 29/kg.

Simple cones	38	(37)
Linguiformid gp.	11	(11)
Simple polygnathids	6	(6)
Spathognathodids	7	(7)
Bars and blades	41	(39)
Total	103	

Po. rhenanus, Po. aff. Po. rhenanus, Po. varcus gp., Po. l. linguiformis, S. brevis, Belodella sp. (t,r,d), (O_1, N, A_2, A_3, O_2, B_2, B_3).

Taylor (1950, p. 153) records from these lowest horizons the following corals:- Disphyllum (Phacellophyllum)= Macgeea (Thamnophyllum) varians sp. nov., Cystiplasma= Mesophyllum (Cystiphylloides) thomasi, Spinophyllum=Cylindrop Cylindrophyllum stonehousense, Ptenophyllum=Acanthophyllum sp., Acanthophyllum sp.A., Stromatopora spp., Favosites spp.,Alveolites sp., Callopora spp.

28. Thick bedded, dolomitised bioclastic "packstones". Grey and pale-red, mottled appearance in part. Fauna is largely broken stromatoporoids and corals. at 55'

Wt. 4.5 kg. Conodonts: Yield: 51 /kg.

Simple cones	8	(3.5)
Linguiformid gp.	76	(33)
Simple polygnathids	37	(16)
Icriodid (fragment)	1	(0.5)
Bars and blades	107	(47)
Total	229	

Po. xylus, Po. aff. Po. rhenanus, Po. linguiformis nova forma 2, Po. l. linguiformis χ morphotype, Po. timorensis, Belodella sp.(t,r,d), (O_1, N, A_1, A_2, A_3, O_2, B_1, B_2.)

From these higher horizons Taylor (1950, p. 153) records: Neospongophyllum smithi sp. nov., Stringophyllum sp., Vollbrechtophyllum (Neospongophyllum) sp., Hoeiphyllum = Acanthophyllum (Crypophyllum) tenue, Stromatopora spp., Favosites spp., Callopora spp.

26. White weathered, partially dolomitised limestone. Some horizons contain large massive stromatoporoids - transported but unbroken. at 70'

Wt. 4.2 kg. Conodonts: Simple cones 9 (14·5)
Yield: 15 / kg. Linguiformid gp. 5 (8)
Simple polygnathids 9 (14·5)
Spathognathodids 1 (2)
Bars and blades 38 (61)
Total 62

Po. aff. Po. rhenanus, Po. l. linguiformis, Po. varcus gp., S. brevis, Belodella sp. (r,d), (O_1, N, A_1, B)

Taylor (1950, p. 153) records from these horizons (equivalent to those at the cutting for the footpath):- Macgeea cf. solitarium, Arcophyllum = Mesophyllum sp., Pachyphyllum = Phillipsastrea cf. bouchardi, Dialytophyllum = Mesophyllum sp.

27. Green and red shaley limestone, irregular occurrence. at 40'

Wt. 0.5 kg. Conodonts: Simple polygnathids 1
Yield: 12 / kg. Bars and blades 5
Total 6

40. Section continues south in massive, white weathered limestones, strongly cleaved where beds plunge southward. Pale grey and fine grained. Small insoluble residue of shale, locally much dolomitised. Fossils sparse, mainly obscure recrystallized tabulates. at 90'

40/1 Wt. 3.0 kg. Conodonts: Simple cones 3
Yield: 2 / kg. Bars and blades 3
Total 6

40/2 Wt. 2.5 kg. Conodonts: Linguiformid gp. 1 at 125'
Yield: 1 / kg. Bars and blades 1
Total 2

40/3 Wt. 3.5 kg. Conodonts: Linguiformid gp. 1 at 160'
Yield: 1 / kg. Bars and blades 2
Total 3

__ gap (tuff ?) __

39. Pale grey micrite. 12'

Wt. 3.4 kg. Conodonts: Linguiformid gp. 9 (23)
Yield: 11 / kg. Simple polygnathids 10 (27)
Bars and blades 17 (50)
Total 36

Po. cf. Po. varcus gp., Po. l. linguiformis

- Gap (fault)

39b Dark thin, blue-grey slatey limestones and shales. Pyritic. Crinoids (some articulated), bryozoans, microgastropods, ostracods, Nowakia, bivalves, "Egg cases". 20'

Wt. 2.5 kg. Conodonts: Linguiformid gp. 1 (6)
Yield: 6 / kg. Icriodids 13 (82)
Bars and blades 2 (12)
Total 16

I. cf. I. corniger, I. expansus-nodosus gp. morphotype 1, Po. n.sp. aff. Po. porcillus

Mount Wise - Mutton Cove - Dock Yard - Devonport
(Fig. 13)

At present the westernmost outcrop of the limestone is Mutton Cove, though during excavations for the Dockyard (= Devonport since 1884) in the last century, Hennah (1824, p.16,17), Davidson (1863) and Worth (1878) list an abundant fauna from the latter, in particular several brachiopods. (See Ussher 1907, p. 52-3 for details).

32. Mutton Cove. Dolomitised red limestone including hollow moulds of brachiopods and small articulated crinoid ossicles.

Wt. 2.5 kg. Conodonts: Yield: 70 / kg.

Simple cones	16	(9)
Linguiformid gp.	20	(11)
Simple polygnathids	36	(20)
Spathognathodids	2	(1)
Bars and blades	102	(59)
Total	176	

Po. l. linguiformis γ morphotype, Po. linguiformis nova forma 1, Po. aff. Po. varcus gp., Po. xylus, S. brevis, Belodella sp. (r,d), (O_1,N,A_1,A_2,O_2,B_1,B_2,B_3).

36. Small exposure below footpath, S.W. of Scott Memorial. Rather dolomitised grey-pink, med. grained limestone. Solitary corals, crinoid debris, brachiopods, bivalves and bryzoans. "Egg cases".

Wt. 6.5 kg. Conodonts: Yield: 195 / kg.

Simple cones	187	(15)
Linguiformid gp.	172	(13)
Simple polygnathids	262	(21)
Spathognathodids	1	
Bars and blades	644	(51)
Total	1266	

Po. biconvexus, Po. aff.Po.rhenanus, Po. timorensis, Po. varcus, Po. aff. Po. timorensis, Po. mucronatus, Po. serratus, Po. tuberculatus, Po. aff. Po. aspera, Po. aff. Po. transversus, Po. l. linguiformis γ morphotype, S. brevis, S. planus, Belodella sp. (t,r,d), Coelocerodontus sp., Panderodus sp., (O_1, N, A_1, A_2, A_3, O_2, B_1, B_2, B_3).

The brachiopods which have been recorded from Dockyard, Mutton Cove and Mount Wise are numerous. They are thought to come from approximately comparable levels, the best preserved coming from the latter locality. Of particular note are Stringocephalus burtini (after Worth) and Hypothyridina cuboides (Sowerby) for which Mount Wise is in all probability the type locality.

38. By landing place, S.E. Mount Wise, to E. of fault. Much disturbed, pale grey dolomitised limestone.

Wt. 1.0 kg.
Yield: 40 / kg.

Conodonts:		
Simple cones	4	(10)
Linguiformid grp.	6	(15)
Simple polygnathids	2	(15)
Spathognathodids	3	(7.5)
Bars and blades	25	(62.5)
Total	40	

Po. l. linguiformis γ morphotype, Po. varcus gp., S. brevis, Belodella sp. (r), (O_1, N, A_1, A_2, A_3).

This is in faulted contact with grey, buff and green shale to the west from which Ussher (1907, p. 53) records Orthis arcuata and Streptorhynchus crenistria.

Devils Point (459533) - Western King Point (463533)

(Fig. 14)

52 Devils Pt., Grey and reddish, richly fossiliferous, thick bedded - massive limestone. Fine-med. grained. Colonial rugose and tabulate corals, lamellar stromatoporoids and crinoidal debris. at base.
Wt. 0.9 kg. Conodonts: None

52a Some beds appear to be of a bioclastic nature. at 40'
Wt. 0.6 kg. Conodonts: None

52b Red dolomite. at 60'
Wt. 0.5 kg. Conodonts: Icriodids 1
Yield: 6 / kg. Bars and blades 2
Total 3

52c Wt. 0.5 kg. Conodonts: None at 70'

54 At about 110' from Devils Point, thin bedded grey fossiliferous limestone, Fauna as before. at 90'
Wt. 0.3 kg. Conodonts: Simple polygnathids 4
Yield: 20 / kg. Bars and blades 2
Total 6

Taylor records the following from Devils Point limestone:- Stromatopora concentrica, S. spp., Favosites spp., Alveolites spp., Callopora spp. Tsien (personal communication) has identified Stringophyllum sp. and Temnophyllum sp. from these horizons. Thereafter, the sequence continues in thinner bedded, more argillaceous pink limestones.

WK 1 Pink crinoidal limestone. Interbedded red shale. at 95'
Wt. 0.8 kg. Conodonts: Simple polygnathids 7 (8)
Yield: 116 / kg. Spathognathodids 2 (2)
Icriodids 23 (25)
Ancyro gp. 22 (24)
Po. asymmetricus gp. 13 (14)
Bars and blades 26 (27)
Total 93

Po. asymmetricus ovalis, Po. aff. Po. asymmetricus, A. rotundiloba alata, A. rugosa s. l., S. brevis, I. n.sp. aff. I. alternatus.

WK 2 Pale pink, fine crinoidal limestone with broken corals and small tabulates. at 105'

Wt. 1.8 kg. Yield: 57/kg.

Conodonts:		
	Simple cones	3 (3)
	Simple polygnathids	11 (11)
	Icriodids	23 (22·5)
	Ancyro gp.	15 (14·5)
	Po. asymmetricus gp.	30 (29·5)
	Bars and blades	20 (19·5)
	Total	102

Po. asymmetricus ovalis, Po. dengleri, A. rotundiloba alata, A. rugosa s.l., I. n.sp. I. alternatus.

WK 3 Pink and grey crinoidal limestone. Lamellar Alveolites, some coarse crinoidal debris. Small solitary rugose corals. at 120'

Wt. 0.8 kg. Yield: 23/kg.

Conodonts:		
	Simple polygnathids	1 (6)
	Ancyro Gp.	3 (17)
	Bars and blades	14 (77)
	Total	18

A. rotundiloba alata

WK 4 Red argillaceous matrix enclosing white solitary corals. (Noted by Hennah 1824, p. 12-13). Crinoidal debris and tabulates. Red shale partings. at 135'

Wt. 1.5 kg. Yield: 16/kg.

Conodonts		
	Simple cones	1 (4)
	Simple polygnathids	3 (13)
	Icriodids	3 (13)
	Ancyro gp.	2 (9)
	Po. asymmetricus gp.	3 (13)
	Palmatolepids	1 (4)
	Bars and blades	10 (44)
	Total	23

Po. asymmetricus

WK 5 Grey and pink crinoidal limestone. at 155'

Wt. 1.2 kg. Conodonts: Yield: 127.kg.

Simple cones	15	(10)
Simple polygnathids	37	(24)
Spathognathodids	1	(1)
Icriodids	48	(32)
Ancyro gp.	1	(1)
Po. asymmetricus gp.	8	(5)
Palmatolepis	2	(1)
Bars and blades	40	(26)
Total	152	

Pa. aff. Pa. transitans, Po. asymmetricus, Po. nismi, Pa. cf. punctata, I. expansus-nodosus gp., Belodella sp. (r,d)

54 d Grey, red-veined limestone. Crinoid debris and small thamnoporoids. 190'

Wt. 0.3 kg. Conodonts: Ancyro gp. 1

Yield: 3/kg.

A. rugosa s. l.

WK 7 Pale grey limestone. Calcite veined and much recrystallised. 285'

Wt. 0.4 kg. Conodonts: None

WK 8 Pale grey, thick bedded limestone. 330'

Wt. 2.3 kg. Conodonts: Yield: 7/kg.

Simple polygnathids	7	(46·5)
Nothognathellids	1	(7)
Bars and blades	7	(46·5)
Total	15	

WK 9 Pale grey, massive, fine grained limestone. Small red shale partings and irregular seams of red dolomite. Crinoids, tabulates. 345'

Wt. 5.6 kg. Conodonts: Yield: 2/kg.

Simple polygnathids	3	(27)
Nothognathellids	1	(9)
Bars and blades	7	(64)
Total	11	

Taylor (1950, p. 153) recorded from the "southern beds of Western King" the following:- Hexagonaria cf. hexagonum, Favosites spp., Alveolites spp. and Stromatopora spp. Tsien (personal communication) has recognised coral species of Disphyllum and Macgeea in the thin bedded red limestones and Hexagonaria and Tabulophyllum in the southernmost beds.

The beds to the north east and north west of Western King Point display a number of interesting features, all involving red argillaceous limestones in disconformable relationships with the grey limestones (though some red shale does appear to be contemporaneous), these have been sampled thus:

WK 6a Red shale and calcareous slate with scattered crinoid ossicles.

Wt. 1.8 kg. Conodonts:

Yield: 318/kg.

Simple cones	3	(1)
Simple polygnathids	30	(7)
Spathognathodids	1	
Icriodids (+Pelekysgnathus)	50	(9)
Ancyro gp.	2	
Palmatolepids	365	(58)
Bars and blades	124	(25)
Total	575	

Ancyrognathus cryptus, Ancyrodella curvata, Pa. triangularis, Pa. quadrantinodosalolata, Pa. cf. Pa. gigas, Pa.tenuipunctata, Pa. delicatula delicatula, Pa. subperlobata, Pa. minuta minuta, Pelekysgnathus sp. I. aff. I. alternatus.

WK 6b Pale grey, fine grained limestone 'lenticles' within red shale

Wt. 0.4 kg. Conodonts: None

b 1 Red argillaceous limestone matrix of breccia .

Wt. 0.5 kg. Conodonts:

Yield: 232/kg.

Simple cones	3	(2.5)
Simple polygnathids	7	(6)
Icriodids	15	(12.5)
Ancyro gp.	1	(1)
Palmatolepids	60	(51.5)
Bars and blades	31	(26.5)
Total	117	

Ancyrodella curvata, Pa. triangularis, Pa. subperlobata, Pa. quadrantinodosalobata, Pa. minuta minuta

b 2 Red argillaceous limestone matrix of breccia.

Wt. 0.4 kg.	Conodonts:	Simple cones	1 (2.5)
Yield: 110/kg.		Simple polygnathids	10 (23)
		Icriodids	5 (12)
		Palmatolepids	27 (60)
		Bars and blades	1 (2.5)
		Total	44

Ancyrognathus cryptus, Pelekysgnathus cf. planus, Pa. delicatula clarki, and Pa. spp. as b 1

56 Red and grey laminated, argillaceous limestone infilling of (?) solution hollows.

Wt. 1.0 kg.	Conodonts:	Simple cones	3 (9)
Yield: 27/kg.		Simple polygnathids	5 (18)
		Icriodids	1 (4)
		Ancyro-gp.	1 (4)
		Palmatolepids	5 (18)
		Bars and blades	13 (47)
		Total	28

A. nodosa, Pa. tennipunctata, Pa. cf. Pa. delicatula

Eastern King

(Fig. 14)

58 Northernmost section starts in white weathered, fine grained sparsely fossiliferous limestone. for 10'

58a Thinner bedded, fine grained, grey and red streaked limestone. for 15'
The next 100' are made up of well differentiated grey fossiliferous limestone and red calcareous slate beds (up to 2'), in part laminated. The lower horizons contain large laminate stromatoporoids (e.g. 3' x 2' x ½") and northwards corals become more common as do bioclastic horizons.

58b Wt. 0.5 kg. Conodonts: None at 30'

59 White streaked fine grained limestones. Red material is less common and forms beds up to 3" - 4" thick. for 40'

Wt. 1.0 kg. Conodonts:	Simple polygnathids	2	(29)
Yield: 7 / kg.	Bars and blades	5	(71)
	Total	7	

Thick bedded grey limestone with irregular red patches and(apparently) interbedded red shale. Beds become thinner and more uniformly red towards Eastern King Point. Tabulates, stromatoporoids and crinoid debris. for 70'

61 At the point, red, fine crinoidal limestone. Red shale and dolomite residue

Wt. 4.8 kg. Conodonts:	Simple cones	5	(4)
Yield: 24/kg.	Simple polygnathids	46	(40)
	Icriodids	4	(4)
	Ancyro gp.	7	(5)
	Palmatolepids	4	(4)
	Bars and blades	50	(43)
	Total	116	

A. rotundiloba, Pa. aff. Pa. transitans

61a 20' south of 61. Southermmost. Red slatey limestone, in part pale red and red banded.
Wt. 0.5 kg. Conodonts: None

Durnford Street

(Fig. 14)

		cms.
	White weathered, pale grey, fine grained limestone (=W)	10
Z/P24	Pink and red, argillaceous limestone and shale (=R)	35
	R	20
	W	25
Y/P23	W	10
	W	15
	W & subordinate red shale partings	35
X/P22	R	15
	R	10
W/P13/P21/63/DS1	W	30

Wt. 5 kg. Conodonts: Yield : 122/kg.

Simple cones	14	(2)
Simple polygnathids	265	(45)
Spathognathodids	10	
Icriodids	84	(14)
Ancyro gp.	12	(2)
Po. asymmetricus gp.	55	(9)
Palmatolepids	34	(6)
Bars and blades	135	(22)
Total	609	

A. gigas s.l., A. rugosa s.l., Po. asymmetricus asymmetricus, Po. asymmetricus, Pa. ? durnfordi, Po. nismi, Pa. cf. Pa. punctata, Pa. cf. Pa. proversa, I. symmetricus morphotype 1, I. aff. I. brevis

	W. & red shale partings	45
V/P20	W	20
	W & red shale partings	100
	R	10
	W	25
U/P19	R	35
	W	150
	R	100
	W	900
G	Red shales - distinctive horizon	70 - 100

			cms.
DS2	W	- just North of red shale bed Wt. 0.5 kg. Conodonts: None	400
F	R		20
	W		700
E	R		20
DS3	W	Massive limestones with rather indistinct tabulates and massive stromatoporoids. Irregular red argillaceous areas, including infilling of irregular cavities. Wt. 1.8 kg. Conodonts: None	1900
D	R		
DS4	W		1000
		Wt. 0.5 kg. Conodonts: None	
C	R		
	W		100
B/P14	R	Pale red and pink banded limestone and red shale partings.	

Wt. 0.1 kg. Conodonts: Yield: 44/kg.

Simple polygnathids	3	(7)
Icriodids	14	(32)
Ancyro gp.	1	(2)
Palmatolepids	26	(59)
Total	44	

Ancyrognathus triangularis, Pa. aff. Pa. subrecta, I. symmetricus morphotype 2

62	W	Near top (southernmost)	450

Wt. 3.0 kg. Conodonts: Yield: 2/kg.

Simple polygnathids	3	
Bars and blades	3	
Total	6	

A	R	(top)	
		Total	6280 cms.

Barn Pool, nr. Cremyl
(Fig. 15)

132 Pale grey, fine med. grained, partially dolomitised limestone. at 15'
Red streaks. Fauna obscure due to recrystallisation.
Wt. 3.3 kg. Conodonts: Simple polygnathids 27 (62)
Yield : 13 / kg. Icriodids 3 (7)
Ancyro gp. ? 1 (1)
Po. asymmetricus gp.? 1 (1)
Bars and blades 12 (29)
Total 44

I. symmetricus

132 a-b Pink and pale grey limestone, richly fossiliferous. Crinoid at 35'
debris and coralline beds.
Wt. 0.7 kg. Conodonts: Simple polygnathids 12 (55)
Yield: 30/ kg Icriodids 3 (15)
Bars and blades 6 (30)
Total 21

C4 - ditto - Massive limestone, debris rich beds at first followed by at 68'
beds full of corals. Less fossiliferous southwards.
Wt. 1.8 kg. Conodonts: Simple polygnathids 41 (45)
Yield: 51 / kg. Icriodids 14 (15)
Ancyro-group ? 1 (1)
Po. asymmetricus gp. ? 1 (1)
Palmatolepids 2 (2)
Nothognathellids 10 (11)
Bars and blades 22 (25)
Total 91

Pa. cf. Pa. punctata (juv.)

133c Massive, grey limestone interspersed with slaty horizons and red dolomitised veins and stringers, some aparently conformable, most cross-cutting and irregular. Crinoidal, bioclastic beds and solitary Rugosa, colonial Rugosa, branching tabulates and stromatoporoids; the latter range from small domes to larger lamellar stromatoporoids.
Wt. 0.2 kg. Conodonts: None at 88'

133 d - ditto - at 118'

Wt. 0.2 kg. Conodonts: Icriodids 2
Yield: 20/ Kg. Po. asymmetricus gp. ? 2
Total 4

133 e - ditto - Quite fossiliferous including much bioclastic material. Some beds are wedge-shaped. at 138'

Wt. 0.2 kg. Conodonts: None

134 - ditto - Includes breccia with grey limestone blocks included in a red matrix. Red veining common. at 165'

135 - ditto - ? Massive stromatoporoids. Forams. at 225'

Wt. 0.6 kg. Conodonts:	Simple cones	1	(7)
Yield: 23 / kg.	Simple polygnathids	4	(29)
	Icriodids	2	(14)
	Ancyro gp	1	(7)
	Palmatolepids	?1	(7)
	Bars and blades	5	(36)
	Total	14	

A. gigas

C 3 Limestone. Thick bedded - massive bedded, some slaty horizons. Red streaks continue; dolomisation widespread and variable. Less fossiliferous upward (south). at 260'

Wt. 4 kg. Conodont:	Simple polygnathids	28	(59)
Yield: 12 / kg.	Icriodids	4	(9)
	Bars and blades	15	(32)
	Total	47	

135 x - ditto - "Egg cases". at 310'

Wt. 2 kg. Conodonts:	Simple Cones	1	(5.5)
Yield: 9 / kg.	Simple polygnathids	5	(28)
	Icriodids	2	(11)
	Nothognathellids	4	(22.5)
	Bars and blades	6	(33)
		18	

136. South of fort wall. - ditto -. Some detrital quartz. at 390'
Obscure fossils.
Wt. 1.7 kg. Conodonts: Simple polygnathids 1
Yield: 2/ kg. Po. asymmetricus gp. 1
Palmatolepids 1
Bars and blades 1
Total 4

C 1. Far south. Extremely dolomitised white limestone. at 440'
Wt. 2 kg. Conodonts: Bars and blades 1

Taylor (1950, p.153) records Prismatophyllum = Hexagonaria cf. hexagonum, Favosites spp., Alveolites spp., and Stromatopora spp. from "quarries and on the foreshore". Ussher (1912, p.56) records Stromatopora and "Stromatactis" from the Barn Pool limestones.

West Cremyl

141/Cn. Upstanding white weathered limestone blocks. Pale grey, fine-med. grained, much re-crystallised.
Wt. 0.7 kg. Conodonts: None

140. Mount Edgecumbe Farm Qy. Small overgrown quarry. Loose blocks of heavily calcite veined, dark grey, med. grained limestone. Pellets, crinoid ossicles, shell fragments, bryozoans, coral fragments, calcispheres and forams (after Braithwaite 1966, p. 184).
Wt. 0.5 kg. Conodonts: Linguiformid gp. 1
Yield: 2 / kg.

Po. linguiformis

Botus Fleming
(Fig. 16)

Lane section east south-east of Botus Fleming. Shales, in part calcareous, with limestone lenticles. Dip, near vertical northward.

Grey black shale 14'

BF1 Flaggy argillaceous limestone. Microgastropods, ostracods, Nowakia.
Wt. 0.9 kg. Conodonts: Bars and Blades 3
Yield: 3/kg.

Shale 1'

BF2 Lenticular argillaceous limestone. Fauna as BF1 and 'egg cases'.
Wt. 0.75 kg. Conodonts: Simple cones 17 (55)
Yield: 40/kg. Simple polygnathids 1 (3)
Bars and blades 13 (42)
Total 31

Shale 2'

Po. aff. Po. rhenanus, Belodella sp. (t,r,d), (O_1, N, A_2, A_3)

BF3 Coarse, crinoidal limestone. Irregular lenses. Microgastropods, ostracods, Nowakia, small tabulates, bryozoans, 'egg cases'.
Wt. 2.4 kg. Conodonts: Simple cones 23 (44)
Yield: 22/kg. Linguiformid gp. 6 (11·5)
Simple polygnathids 6 (11·5)
Spathognathodids 1 (2)
Bars and blades 16 (31)
Total 52

Po. aff. Po. rhenanus, Po. rhenanus, Po. cf. Po. xylus, S. brevis, Po. l. linguiformis γ morphotype, Belodella sp. (t,r,d), (O_1,N,A_2,A_3)

Shale 15'

BF4 Calcareous shale with thin limestone layers. Ferruginous criconarids.
Wt. 0.25 kg. Conodonts: None

Shale 8'

BF5 Calcareous shale with thin limestone layers. Ferruginous criconarids.
Wt. 0.2 kg. Conodonts: None.

Neal (Nail) Point

(Fig. 16)

NP0 Southernmost point, northern shore of Kingsmill Lake. Green and purple variegated slates with small calcareous nodules and friable, ferruginous (decalcified) lenses.

Wt. 0.3 kg. Conodonts: None

Southern side of Neal Point. Fault complex.

NP1 Pale grey, fine grained, argillaceous limestone interbedded with micaceous buff shale.

Wt. 1.8 kg. Conodonts:

Polygnathids	9	(12)
Spathognathodids	2	(3)
Nothognathellids	1	(1)
Icriodids	2	(3)
Palatolepids	34	(43)
Bars and blades	30	(38)
Total	78	

Pa. glabra distorta, Pa. g. pectinata, Pa. g. prima, Pa. perlobata perlobata, Pa. marginata, Po. glabra, Po. diversa.

NP2 Dark grey, medium grained, argillaceous limestone. Black shale partings. Ostracods, Nowakia, bryozoans.

Wt. 2.8 kg. Conodonts: Yield: 14/kg.

Simple cones	6	(16)
Linguiformid gp.	5	(14)
Simple polygnathids	5	(14)
Icriodids	11	(28)
Wide plated polygnathids	2	(5)
Bars and blades	9	(23)
Total	38	

I. cf. I. regularicrescens, Po. latus, Po. cf. Po. pseudofoliatus, Po. l. linguiformis γ morphotype, I. expansus-nodosus gp., Belodella sp. Coelocerodontus sp., Panderodus sp., (N,A,)

Neal Point itself is inaccessible. Section continues southernmost point in first bay north of Neal Point.

NP3 Pale grey limestone, thin beds and lenticles within green buff shale.
Wt. 2.0 kg. Conodonts: Yield: 369/kg.

Polygnathids	66	(9)
Spathognathodids	20	(3)
Nothognathellids	1	(-)
Icriodids	1	(-)
Palmatolepids	450	(61)
Bars and blades	200	(27)
Total	738	

Palmatolepis glabra prima, Pa. g. pectinata, Pa. g.aff. acuta Pa. distorta, Pa. tenuipunctata, Pa. perlobata perlobata, Pa. minuta minuta, Pa. quadrantinodosa.
Falcodus variabilis, Scutella bipennata, S. venusta, Palmatodella delicatula, Prioniodina smithi, Apatognathus varians, Po. glabra, Po. brevilamina.

- Fault -

NP6 Thin bedded, argillaceous, dark grey limestone.
Wt. 0.2 kg. Conodonts: None
Grey shale 5'

NP7 Thicker, more persistent limestones.
Wt. 0.2 kg. Conodonts: None
Grey shale 9'

NP8 Thicker,more persistent limestones.
Wt. 0.2 kg. Conodonts: Bars and blades 1
Grey shale in part calcareous, slatey 10'

NP9 Slatey limestone. Ostracods.
Wt. 0.2 kg. Conodonts: None

- Fault ? -
Grey green shales 5'
Slate with thin inpersistent limestone 8'

NP10 Wt. 0.3 kg. Conodonts: None 12'

NP11 Wt. 0.2 kg. Conodonts: None
More calcareous massive limestone 20'

NP12 Wt. 1.5 kg. Conodonts: None

Limestone as above 10'

Grey green shales with impersistent limestone in lower part 10'

Shale 10'

NP13 Shale becoming calcareous northwards. Irregularly bedded. Pyritic

Wt. 0.8 kg. Conodonts: Yield: 33/kg.

Simple cones	8	(30)
Linguiformid gp.	2	(8)
Simple polygnathids	5	(20)
Bars and blade	11	(42)
Total	26	

Po. cf. Po. linguiformis, Po. cf. Po. pseudofoliatus, Belodella sp.(r), Panderodus sp., (O_1, N, A_1, B)

NP14 - ditto -

Wt. 0.2 kg. Conodonts: None 10'

NP15 Shale and flaggy limestones. Dark grey and pyritic, In part decalcified. Bryozoans, microgastropods, 'egg cases', Nowakia, ostracods. 20'

Wt. 3.7 kg. Conodonts:

Simple cones	37	(41)
Linguiformid gp.	6	(6)
Simple polygnathids	13	(13)
Icriodids	12	(11)
Bars and blades	28	(29)
Total	96	

Po. cf. Po. xylus, Po. cf. timorensis, Po. aff. Po. costatus, Po. linguiformis, Po. l. linguiformis γ morphotype, I n.sp. b, I: expansus-nodosus gp. morphotype 3, S. bipennatus, Belodella sp. (t,r), Coelocerodontus sp., (O_1, N, A_1, A_2, A_3, B).

Shale and thin limestone 20'

NP16 Wt. 0.2 kg. Conodonts: None

Shale and slatey limestone 20'

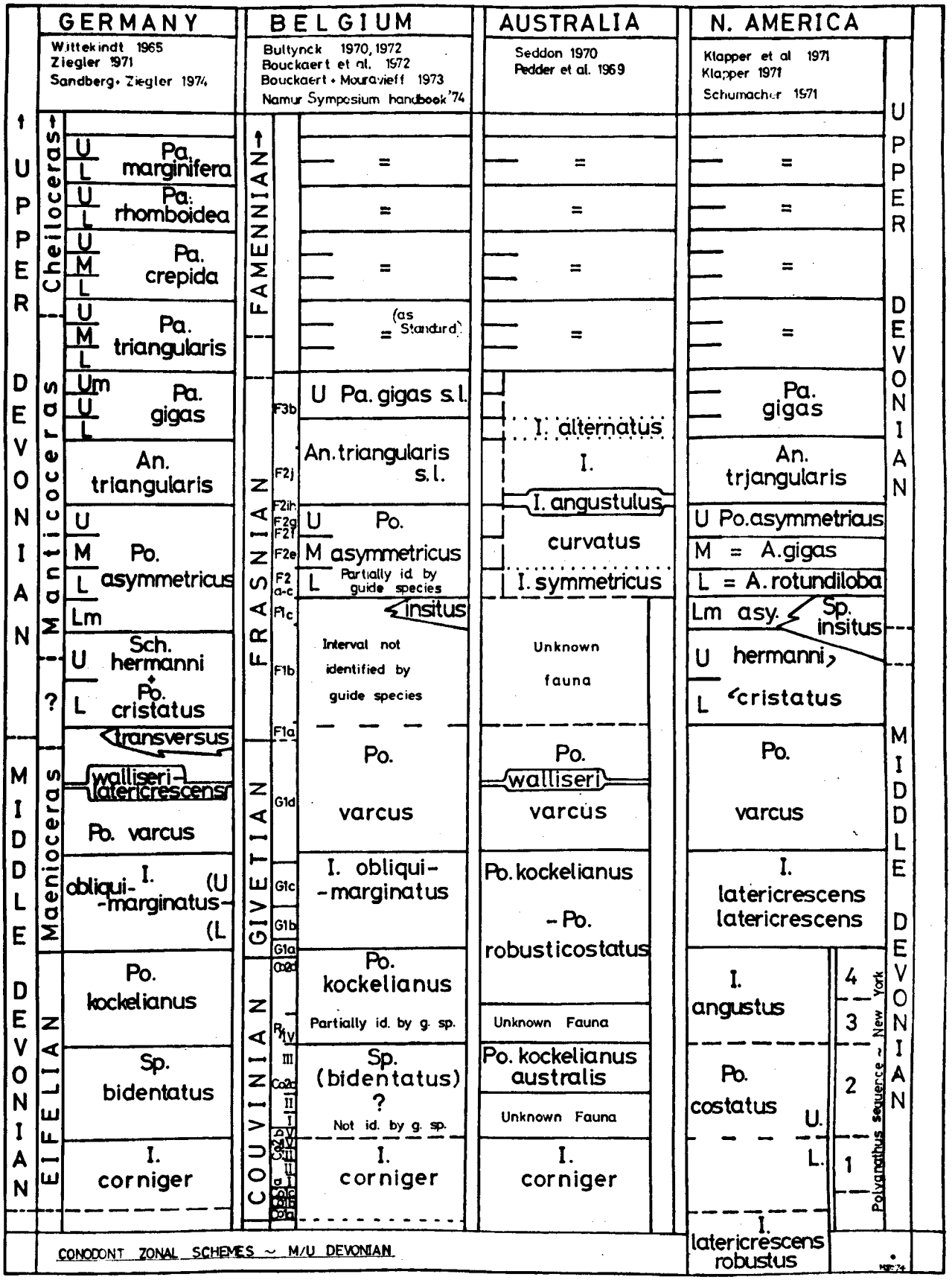
NP17 (S)

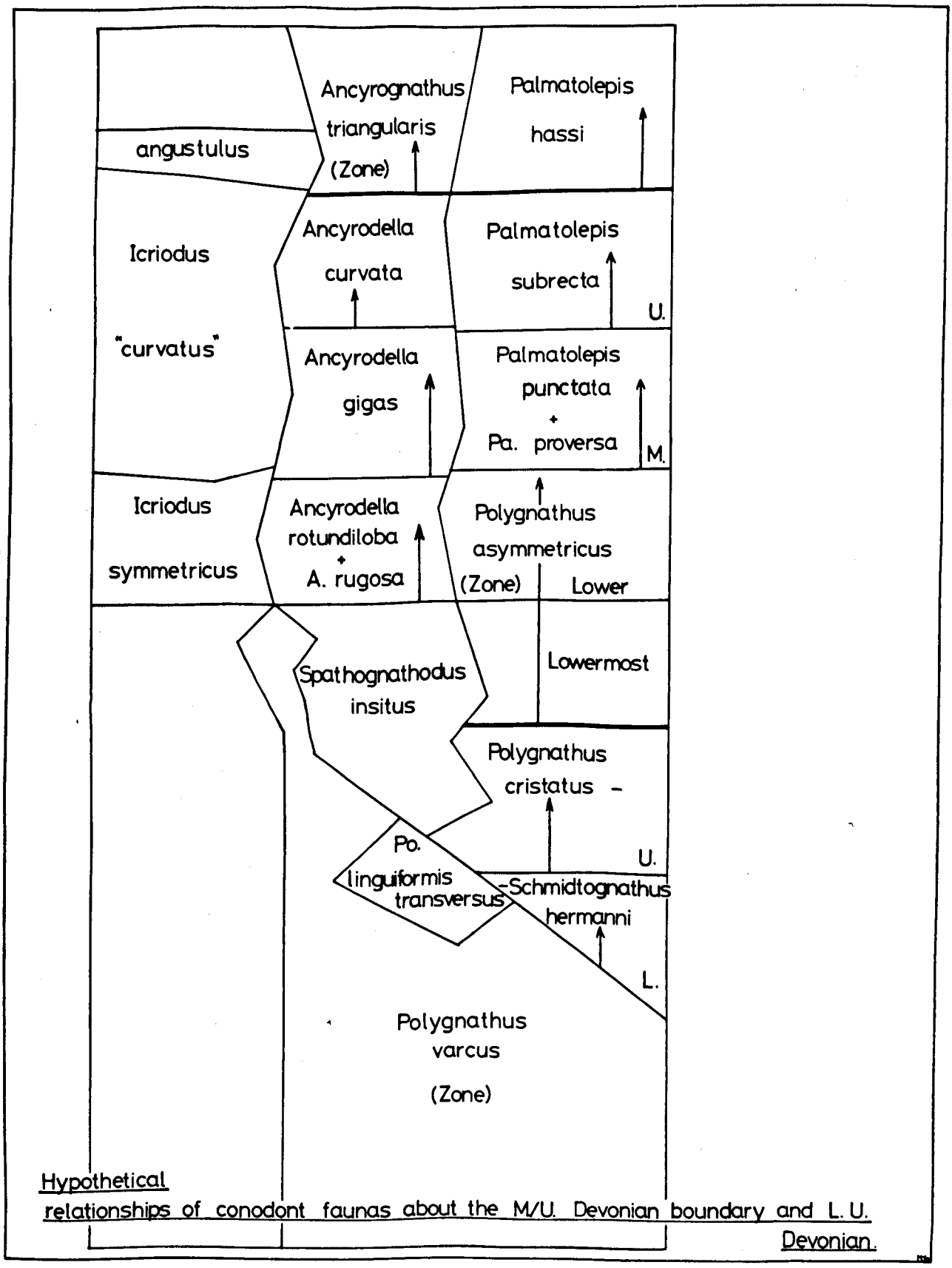
Wt. 2.0 kg. Conodonts: None

- Fault _

From these Neal Point limestones, Ussher (1907, p. 78) recorded Alveolites and Stromatopora, and from the slates Styliolina, and Buchiola restrostriata. Matthews 1962 (p.27) has previously recorded the following conodonts from Neal Point: Po. eifelia, Po. linguiformis, Po. webbi (=?Po. costatus), Po. xylus.

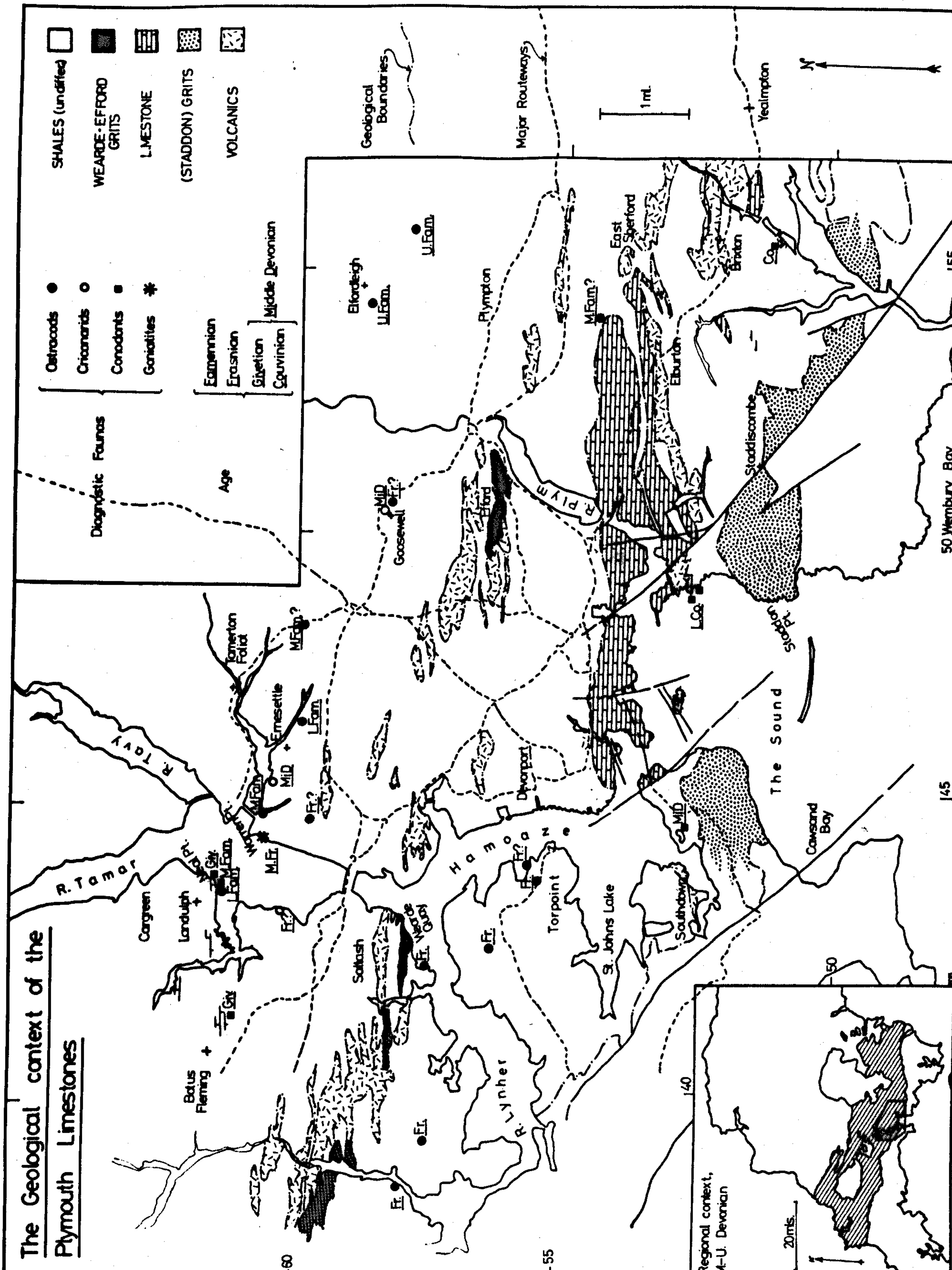
Fig. 1


GERMANY
Wittekindt 1965
Ziegler 1971
Sandberg + Ziegler 1974
BELGIUM
Bultynck 1970, 1972
Bouckaert et al. 1972
Bouckaert + Mouravieff 1973
Namur Symposium handbook '74
AUSTRALIA
Seddon 1970
Pedder et al. 1969
N. AMERICA
Klapper et al 1971
Klapper 1971
Schumacher 1971
UPPER DEVONIAN
MIDDLE DEVONIAN
Cheiloceras
Manticoceras
Maenioceras
FAMENNIAN
FRASNIAN
GIVETIAN
EIFELIAN
COUVINIAN
Pa. marginifera
Pa. rhomboidea
Pa. crepida
Pa. triangularis
Pa. gigas
An. triangularis
Po. asymmetricus
Sch. hermanni
Po. cristatus
transversus
walliseri-latericrescens
Po. varcus
I. obliqui-marginatus (U-(L
Po. kockelianus
Sp. bidentatus
I. corniger
(as Standard)
U Pa. gigas s.l.
An. triangularis s.l.
U Po. M asymmetricus
L Partially id. by guide species
insitus
Interval not identified by guide species
Po. varcus
I. obliqui-marginatus
Po. kockelianus
Partially id. by g. sp.
Sp. (bidentatus) ?
Not id. by g. sp.
I. corniger
I. alternatus
I. angustulus
curvatus
I. symmetricus
Unknown fauna
Po. walliseri varcus
Po. kockelianus - Po. robusticostatus
Unknown Fauna
Po. kockelianus australis
Unknown Fauna
I. corniger
Pa. gigas
An. trjangularis
U Po. asymmetricus
M = A. gigas
L = A. rotundiloba
Lm asy. Sp. insitus
U hermanni, L cristatus
Po. varcus
I. latericrescens latericrescens
I. angustus
Po. costatus U. L.
I. latericrescens robustus
4
3
2
1
Polygnathus sequence ~ New York
CONODONT ZONAL SCHEMES ~ M/U DEVONIAN



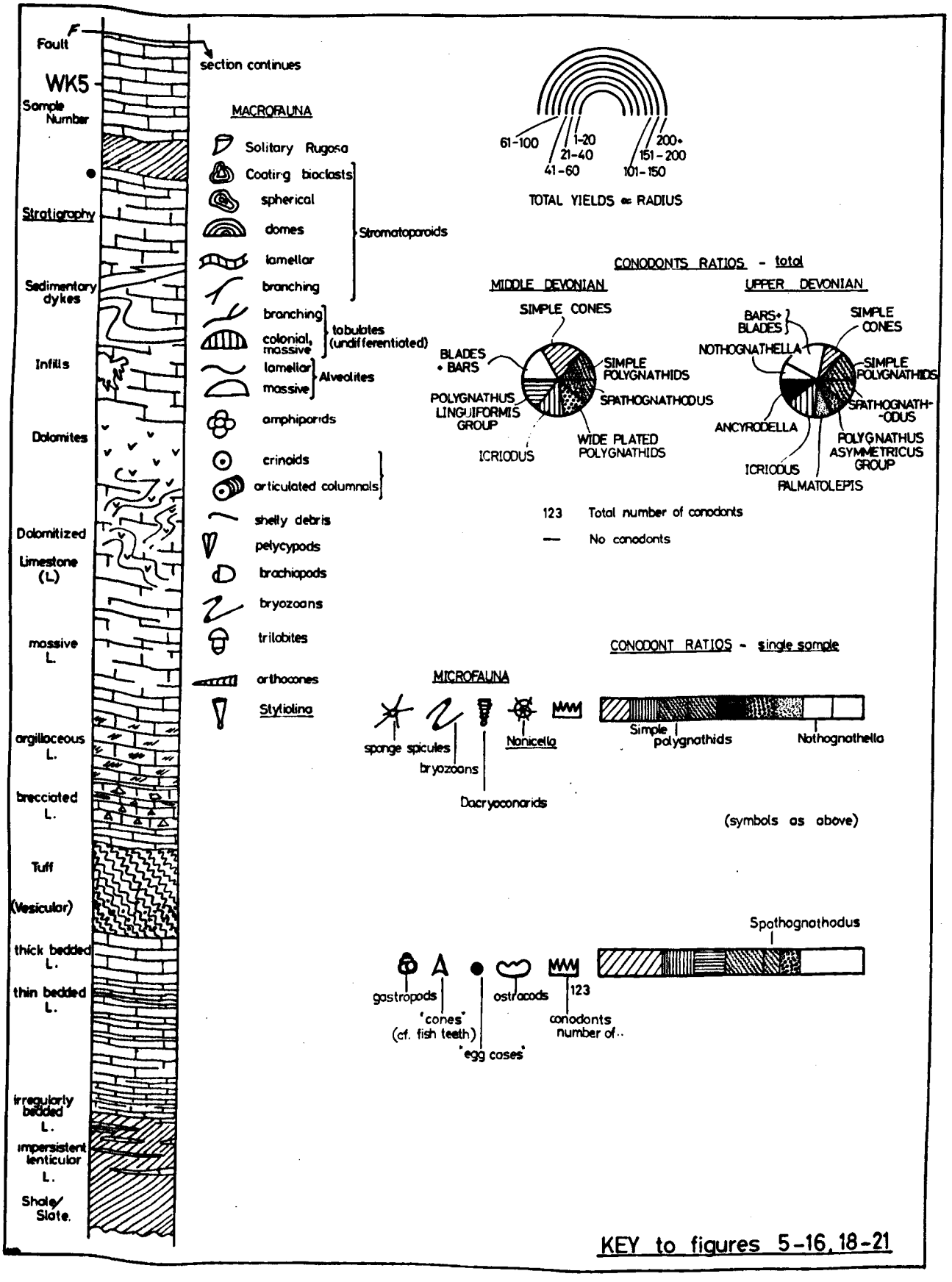
Hypothetical relationships of conodont faunas about the M/U. Devonian boundary and L. U. Devonian.

Fig. 3



The Geological context of the Plymouth Limestones
SHALES (undiff'd)
WEARDE-EFFORD GRITS
LIMESTONE
(STADDON) GRITS
VOLCANICS
Diagnostic Faunas
Ostracods
Cricoconarids
Conodonts
Goniatites
Age
Famennian
Frasnian
Givetian
Couvinian
Middle Devonian
Geological Boundaries
Major Routeways
1 ml.
Yealmpton
N
R. Tamar
R. Tavy
R. Plym
R. Lynher
Hamoaze
The Sound
Wembury Bay
Cawsand Bay
Staddon Pt.
Staddiscombe
Elburton
Brixton
East Sherford
Plympton
Efford
Efordleigh
Goosewell
Tamerton Foliot
Ernesettle
Devonport
Torpoint
St. Johns Lake
Southdown
Saltash
Wearde Quay
Landulph
Cargreen
Botus Fleming
U.Fam.
M.Fam.?
M.Fam.
L.Fam.
MiD
Fr.
Fr.?
M.Fr.
Giv.
L.Co.
Co.
60
55
45
50
55
140
145
50
Regional context, M-U. Devonian
20mls.

Fig. 4



KEY to figures 5-16, 18-21

Fig. 5

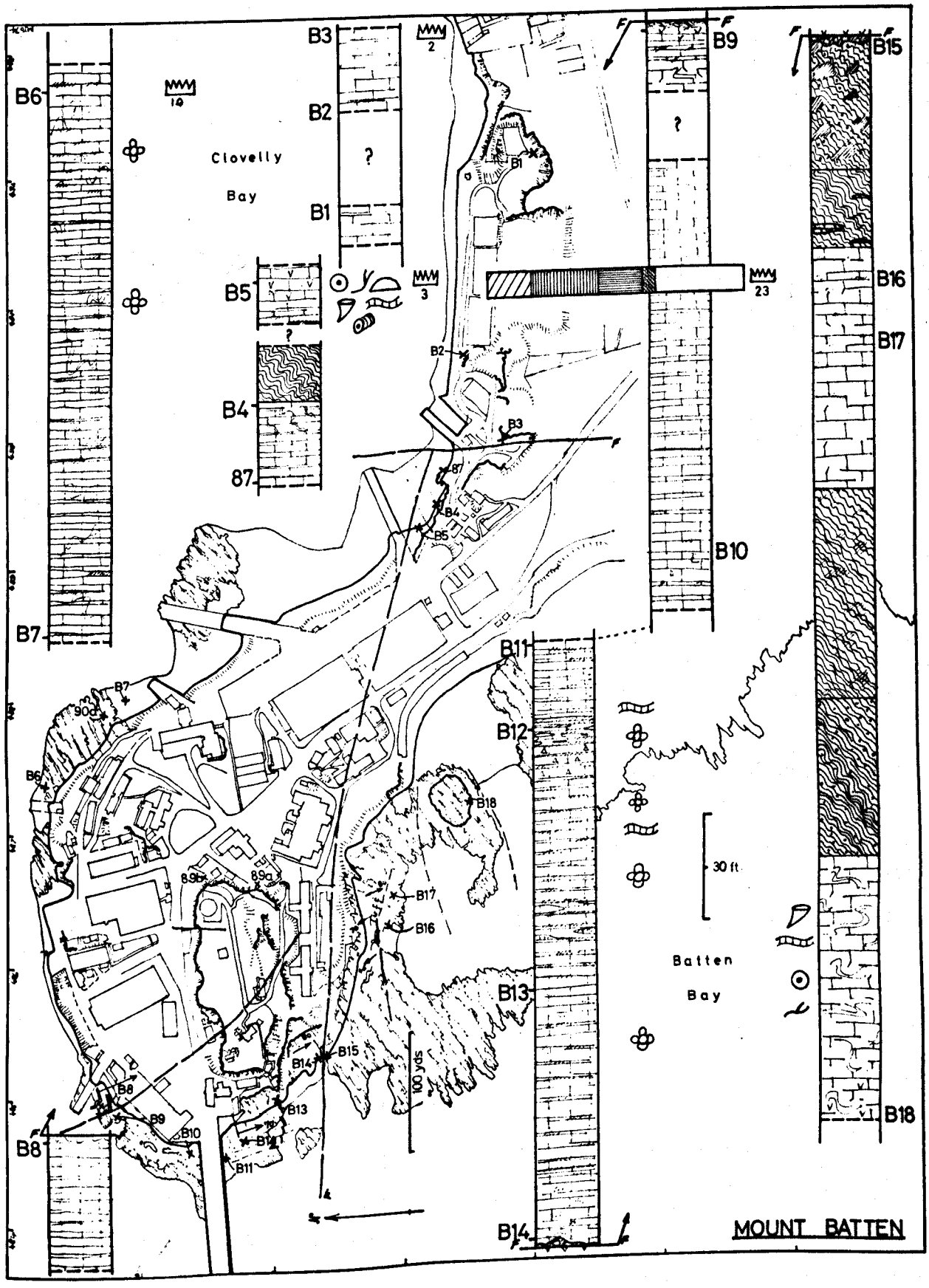

B6
B3
B2
B1
B5
B4
87
B7
B9
B15
B16
B17
B10
B11
B12
B18
B13
B14
B8
Clovelly
Bay
Batten
Bay
30 ft
100 yds
MOUNT BATTEN

Fig. 6

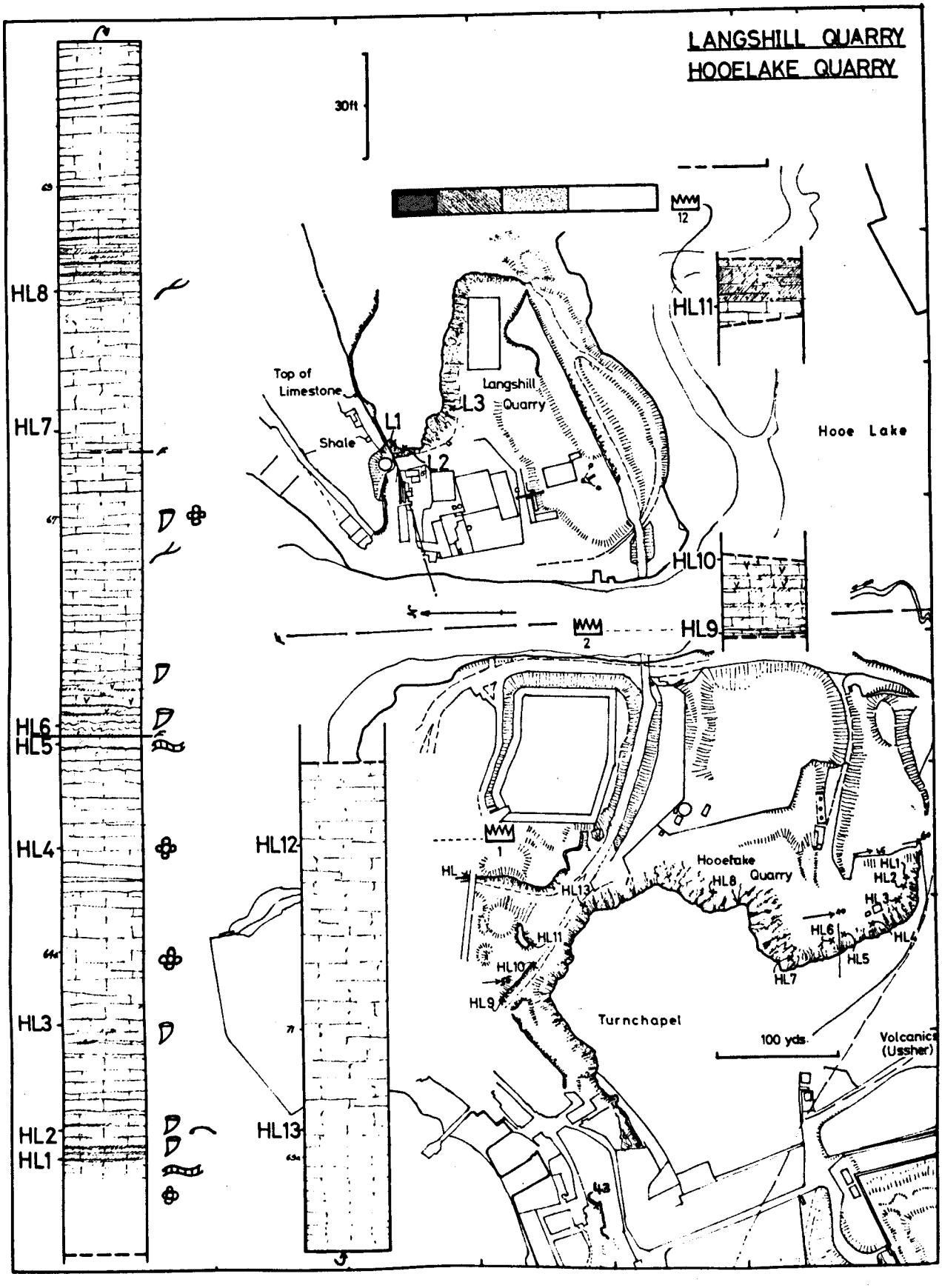

LANGSHILL QUARRY
HOOELAKE QUARRY
30ft
HL8
HL7
HL6
HL5
HL4
HL3
HL2
HL1
HL12
HL13
HL11
HL10
HL9
Top of Limestone
Shale
L1
L2
L3
Langshill Quarry
Hooe Lake
Hooefake Quarry
Turnchapel
100 yds.
Volcanics (Ussher)

Fig. 7

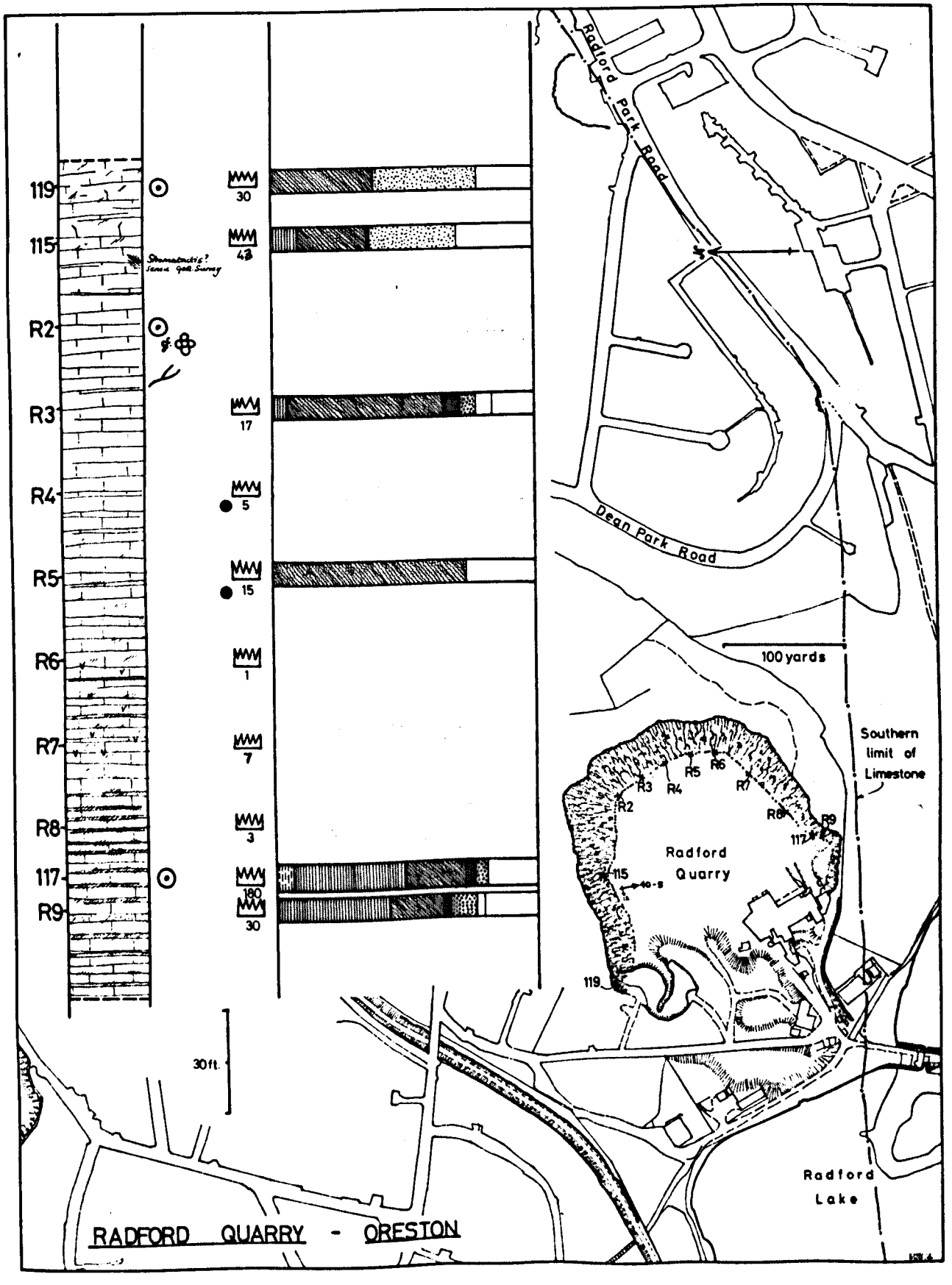
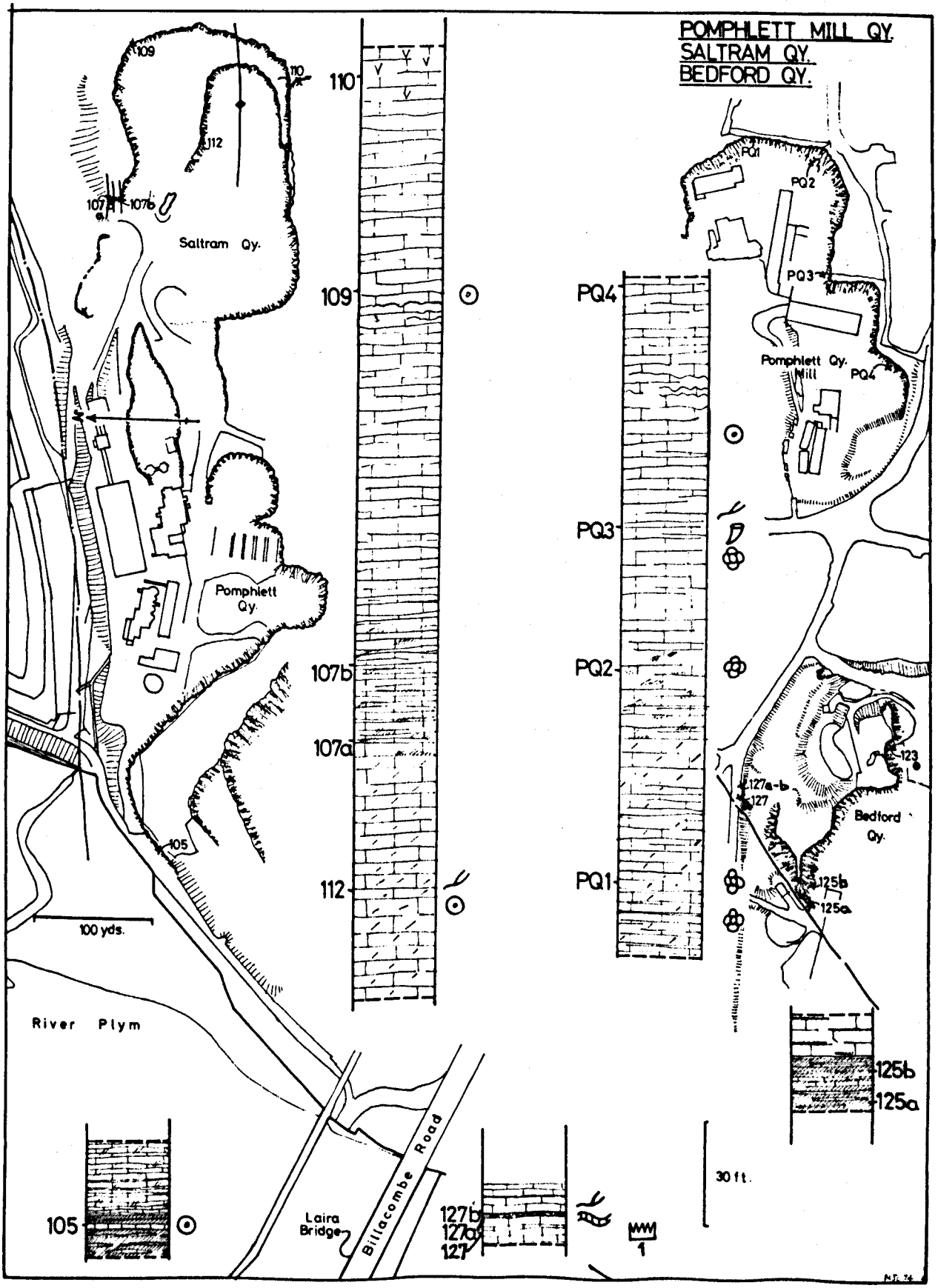

119
115
R2
R3
R4
R5
R6
R7
R8
117
R9
30
43
17
5
15
1
7
3
180
30
30ft.
Radford Park Road
Dean Park Road
100 yards
Southern limit of Limestone
Radford Quarry
Radford Lake
RADFORD QUARRY - ORESTON

Fig. 8


POMPHLETT MILL QY.
SALTRAM QY.
BEDFORD QY.
109
110
J12
107a
107b
Saltram Qy.
Pomphlett Qy.
105
100 yds.
River Plym
Laira Bridge
Billacombe Road
110
109
107b
107a
112
105
PQ1
PQ2
PQ3
PQ4
Pomphlett Qy. Mill
123
127a-b
127
Bedford Qy.
125b
125a
127b
127a
127
30 ft.
WWI

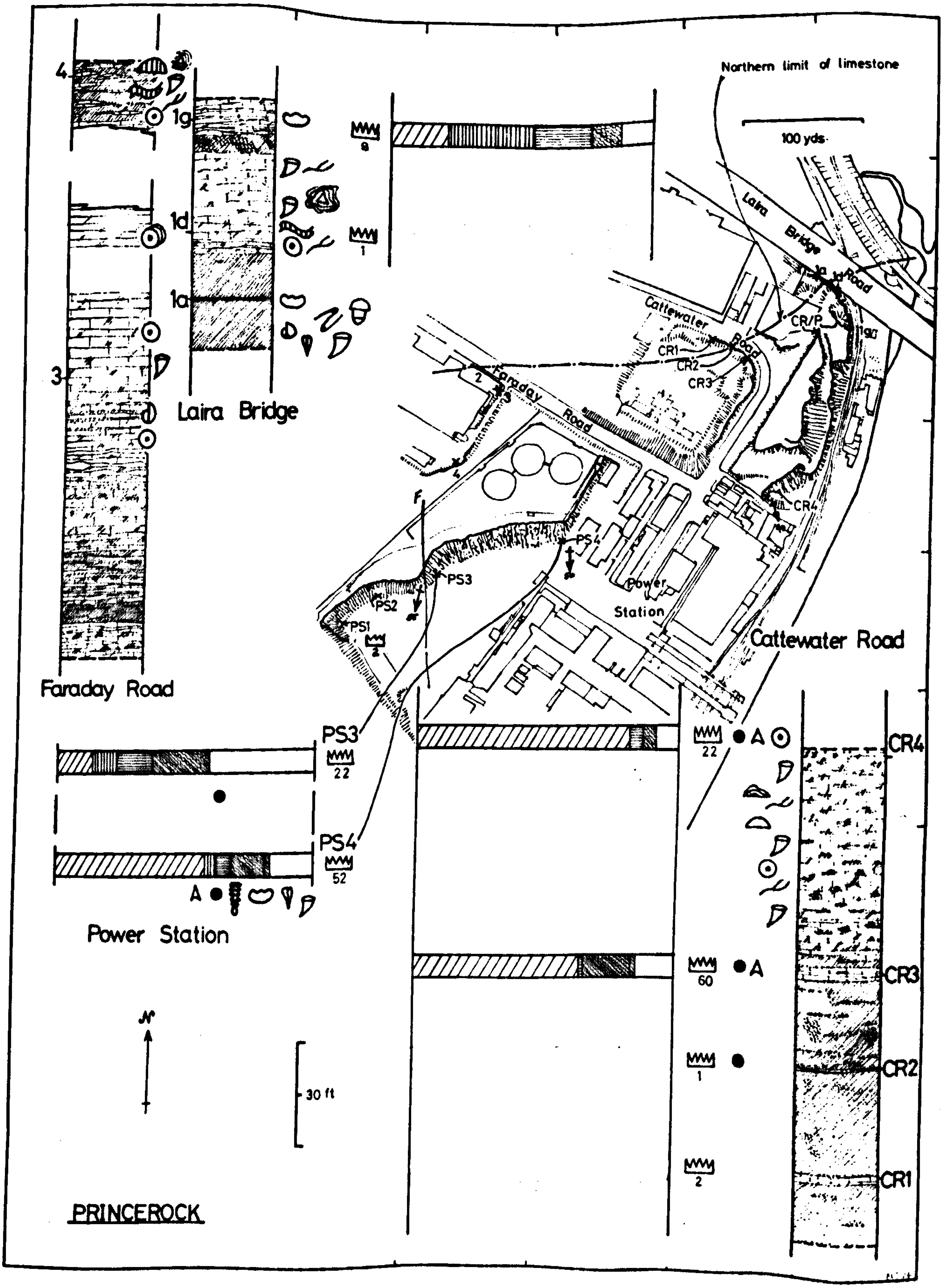
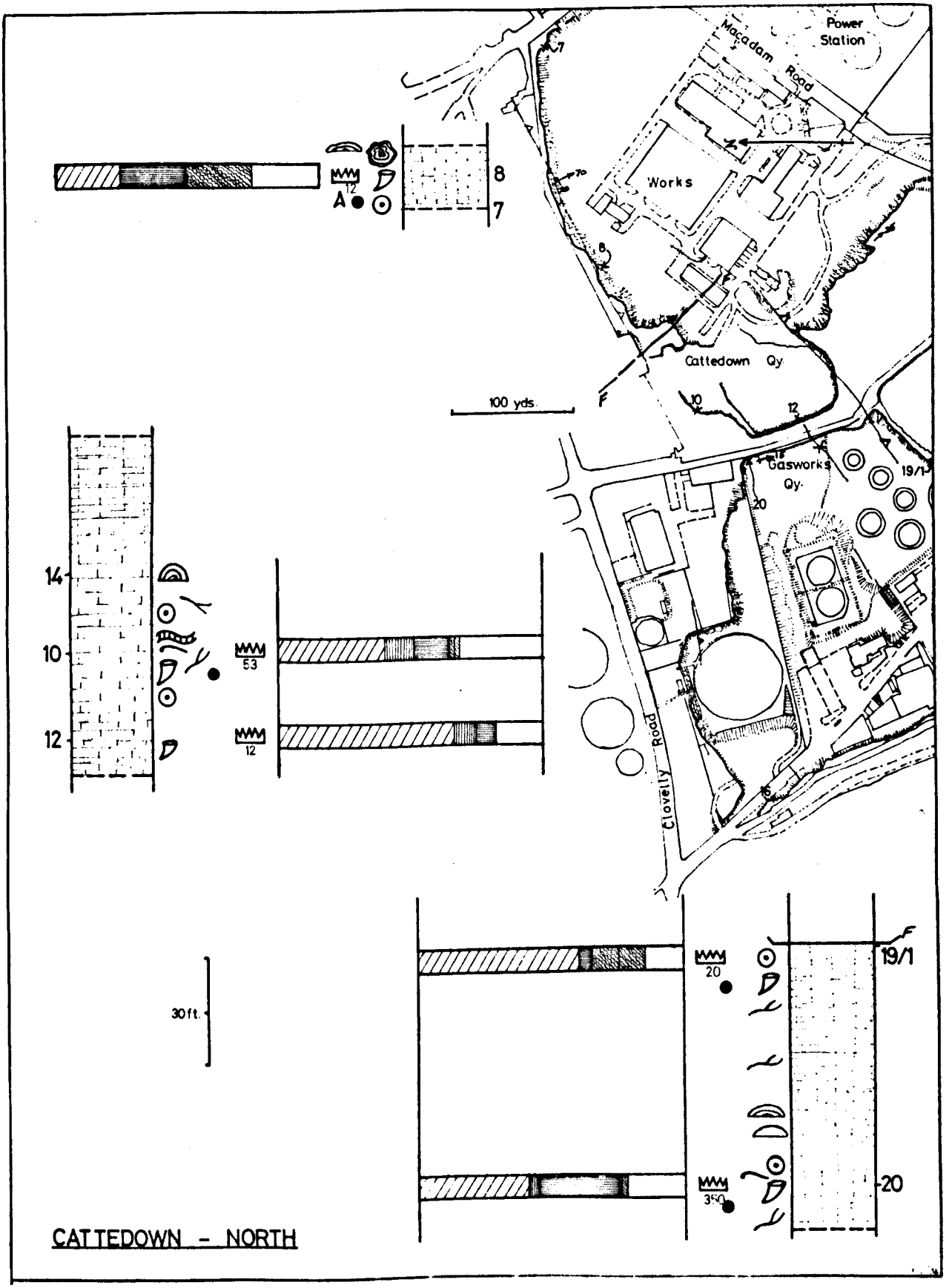
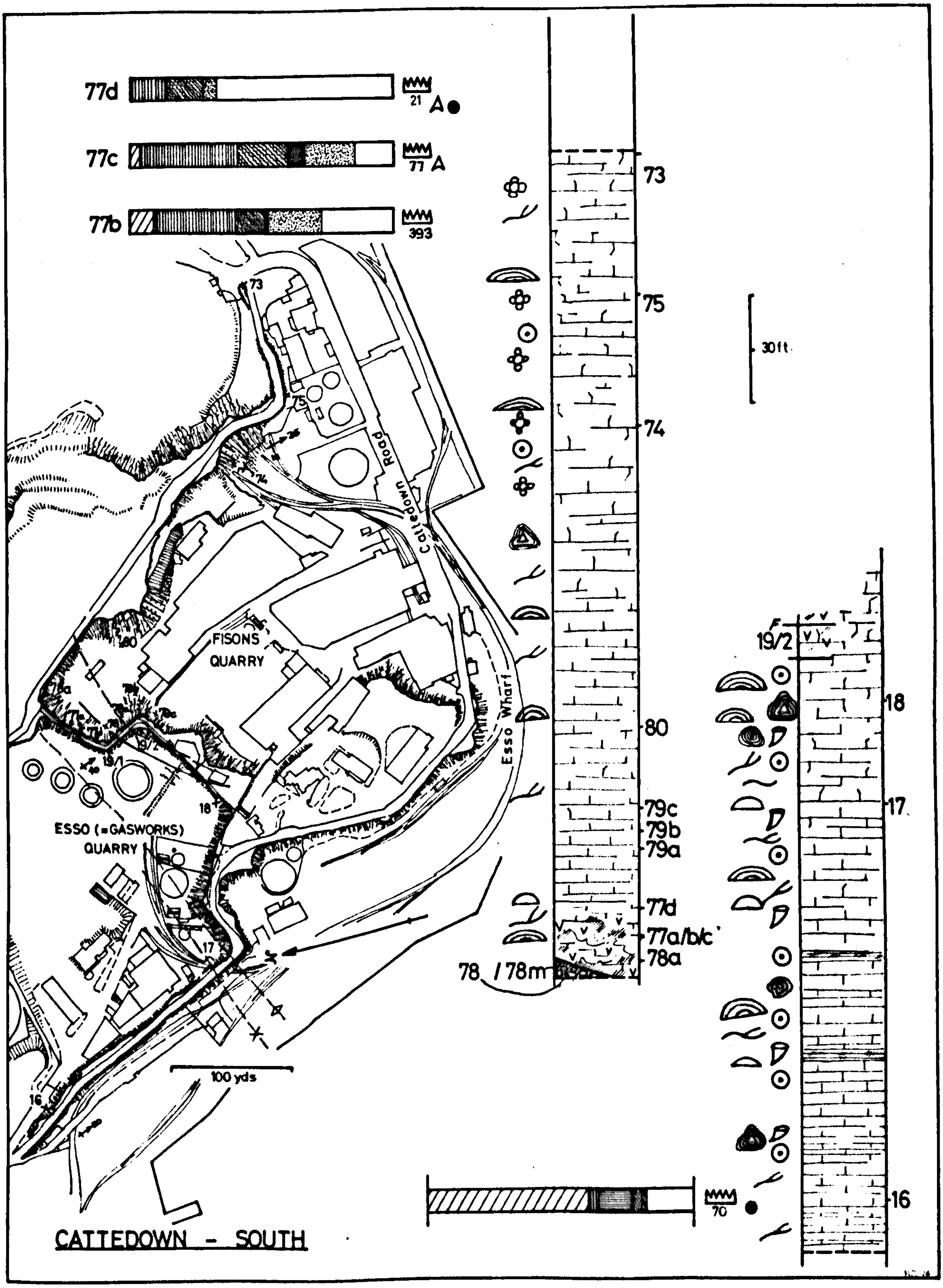

Northern limit of limestone
100 yds
Laira Bridge Road
Cattewater Road
Faraday Road
CR/P
CR1
CR2
CR3
CR4
PS1
PS2
PS3
PS4
Power Station
Cattewater Road
4
1g
1d
1a
3
Laira Bridge
Faraday Road
PS3
22
PS4
52
A
Power Station
30 ft
N
22
A
60
A
1
2
CR4
CR3
CR2
CR1
PRINCEROCK

Fig. 10


Power Station
Macadam Road
Works
Cattedown Qy.
100 yds.
Gasworks Qy.
Clovelly Road
30 ft.
CATTEDOWN - NORTH



77d
21 A
77c
77 A
77b
393
73
75
74
80
79c
79b
79a
77d
77a/b/c
78a
78 / 78m
30ft
19/2
18
17
16
70
FISONS QUARRY
ESSO (=GASWORKS) QUARRY
Cattedown Road
Esso Wharf
19/1
100 yds
CATTEDOWN - SOUTH

Fig. 12

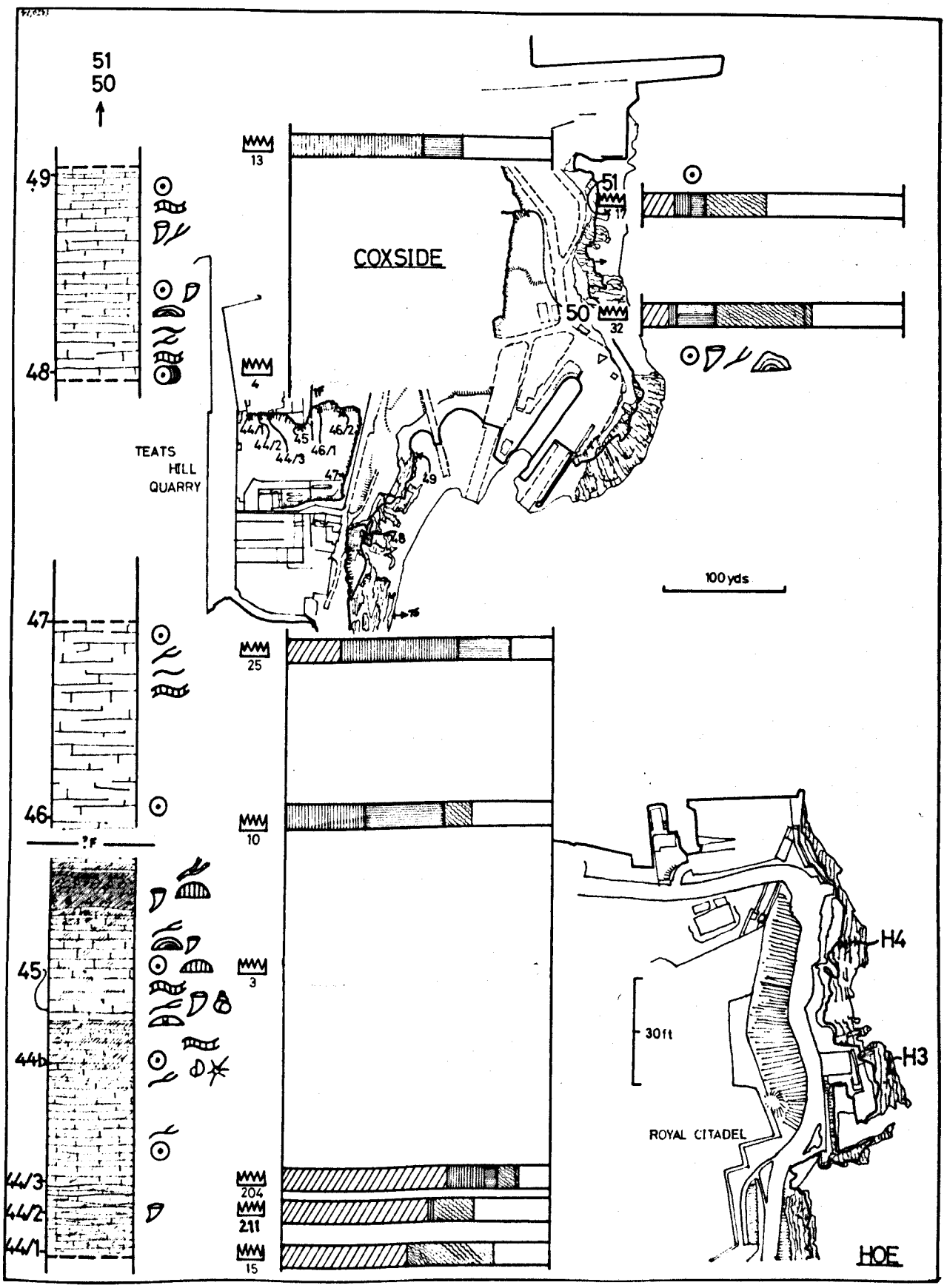

51
50
49
48
47
46
45
44b
44/3
44/2
44/1
13
4
25
10
3
204
211
15
51
17
50
32
COXSIDE
TEATS HILL QUARRY
44/1
44/2
44/3
45
46/1
46/2
47
49
48
100 yds
H4
H3
30ft
ROYAL CITADEL
HOE

Fig. 13

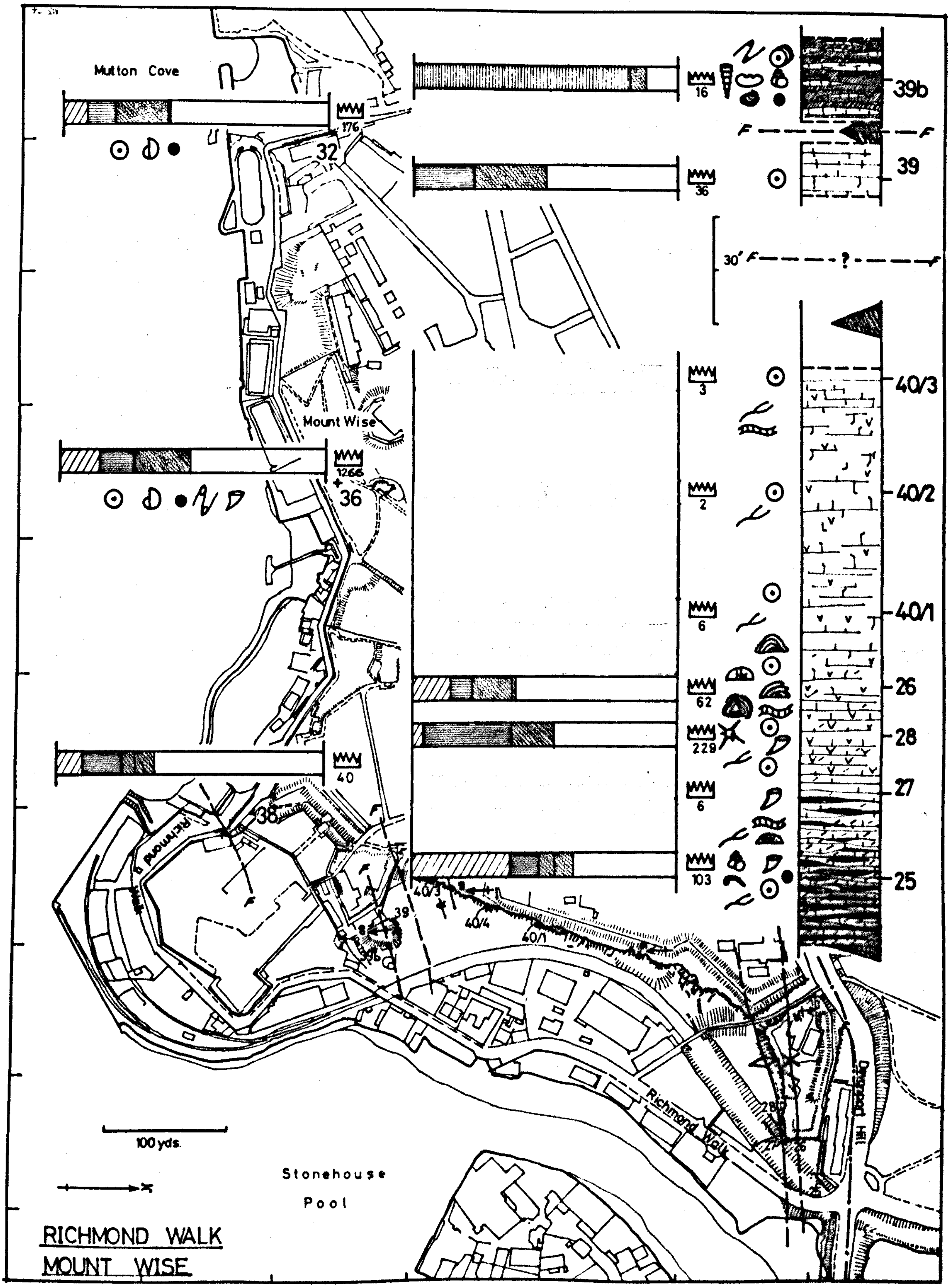

Mutton Cove
176
32
16
39b
39
36
30'
?
Mount Wise
1266
36
3
40/3
2
40/2
6
40/1
62
26
229
28
40
38
27
6
103
25
40/3
40/4
40/1
39
Richmond Walk
Richmond Walk
100 yds.
Stonehouse
Pool
RICHMOND WALK
MOUNT WISE

Fig. 14

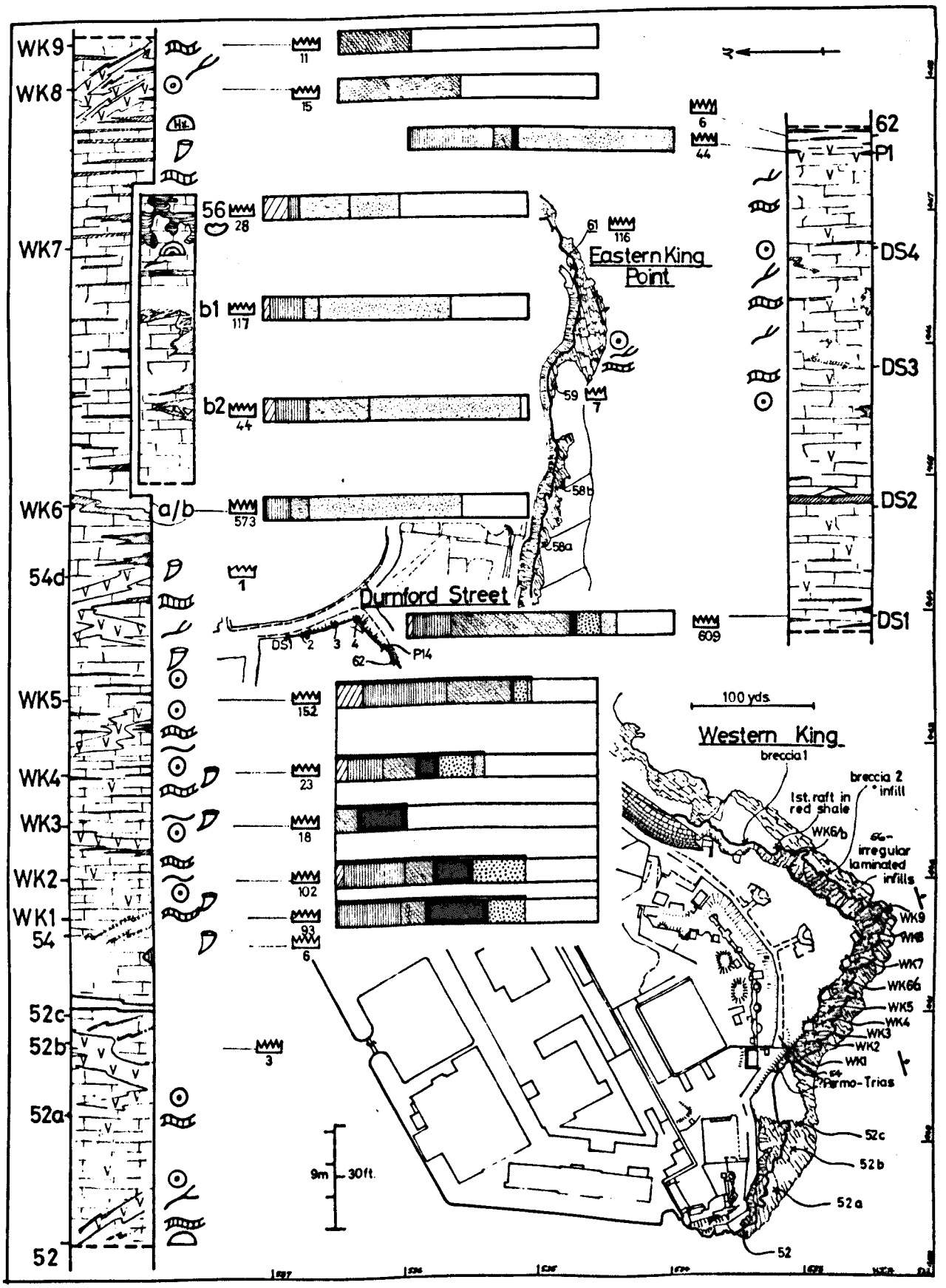
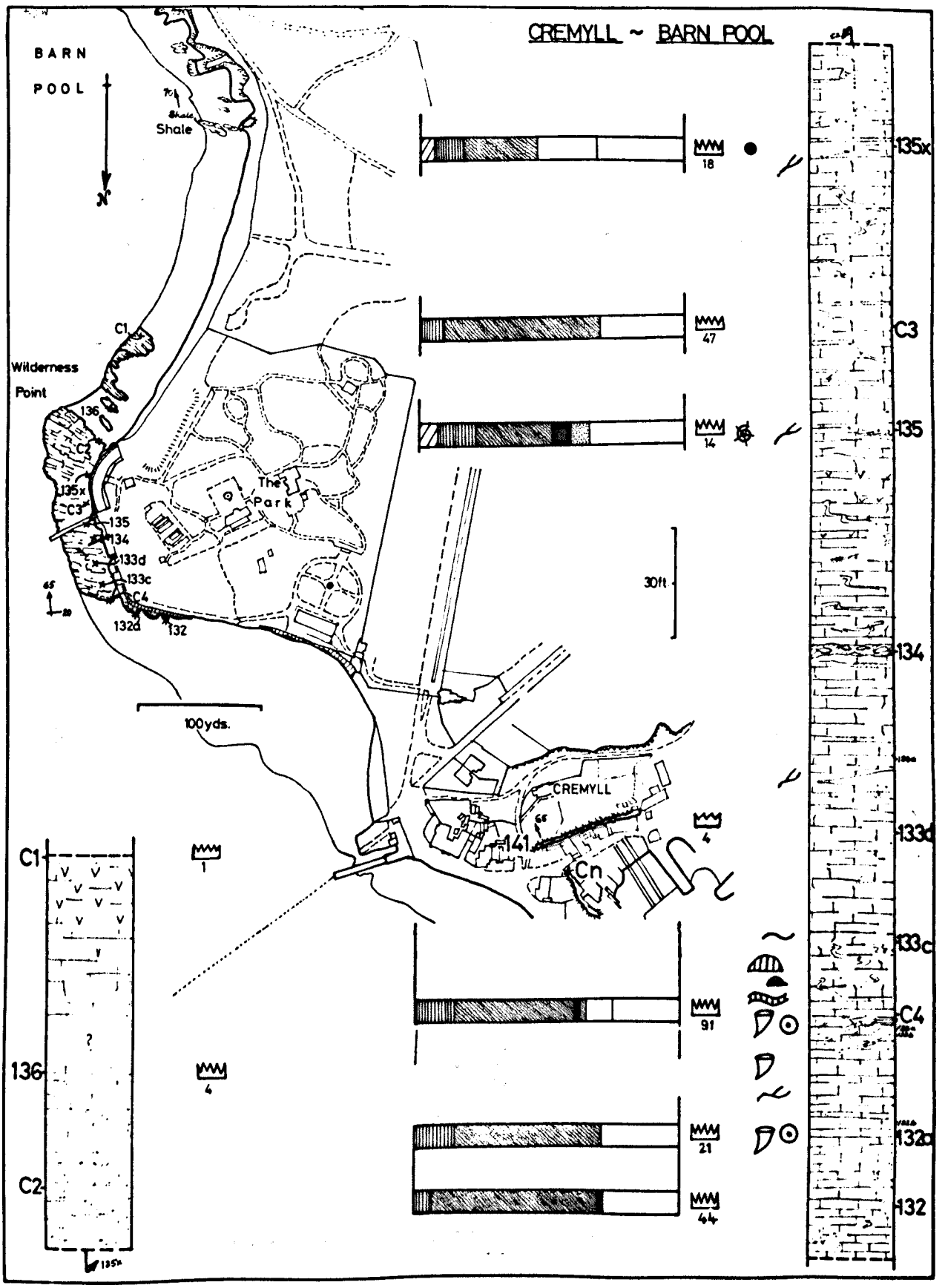

WK9
WK8
WK7
WK6
54d
WK5
WK4
WK3
WK2
WK1
54
52c
52b
52a
52
56
b1
b2
a/b
11
15
28
117
44
573
1
152
23
18
102
93
6
3
6
44
62
P1
DS4
DS3
DS2
DS1
609
61
116
Eastern King Point
59
7
58b
58a
Dumford Street
DS1 2 3 4
P14
100 yds
Western King
breccia 1
breccia 2 infill
1st. raft in red shale
WK6/b
66- irregular laminated infills
WK7
WK66
WK5
WK4
WK3
WK2
WK1
?Permo-Trias
52c
52b
52a
52
9m 30ft.

Fig. 15


CREMYLL ~ BARN POOL
BARN
POOL
Shale
C1
Wilderness
Point
136
C2
135x
C3
135
134
133d
133c
C4
132d
132
The
Park
30ft
100yds.
CREMYLL
141
Cn
18
47
14
4
91
21
44
1
4
C1
136
C2
135x
135x
C3
135
134
133d
133c
C4
132d
132

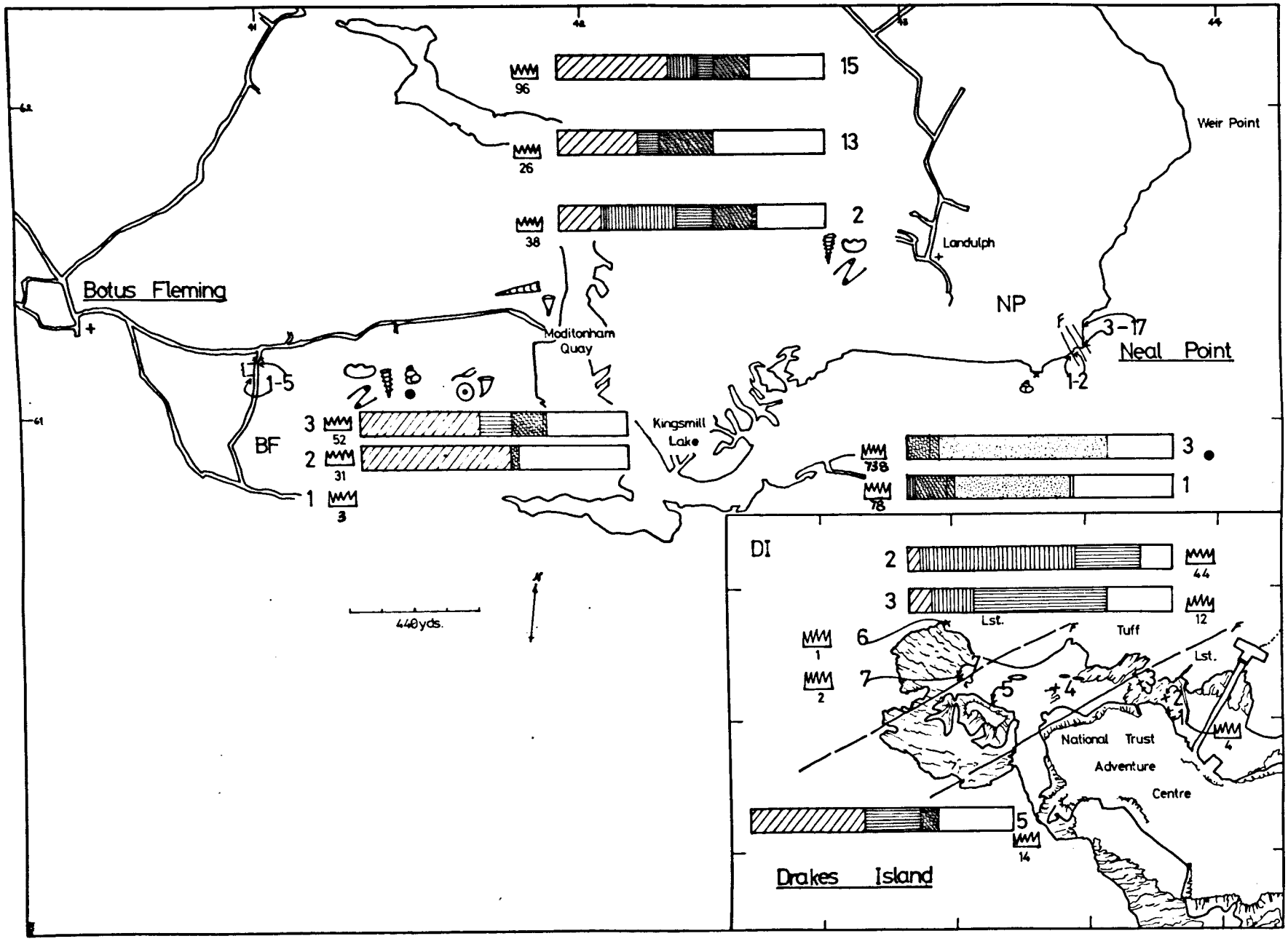

Botus Fleming
Moditonham Quay
Kingsmill Lake
Weir Point
Landulph
NP
Neal Point
3-17
1-2
1-5
BF
DI
Drakes Island
Lst.
Tuff
National Trust Adventure Centre
440yds.
15
13
2
3
1
96
26
38
52
31
3
738
78
44
12
14

Fig. 16

Notes on Figure 17 : Correlation

The small exposure in Richmond Walk may be better equated with a higher Eifelian zone.

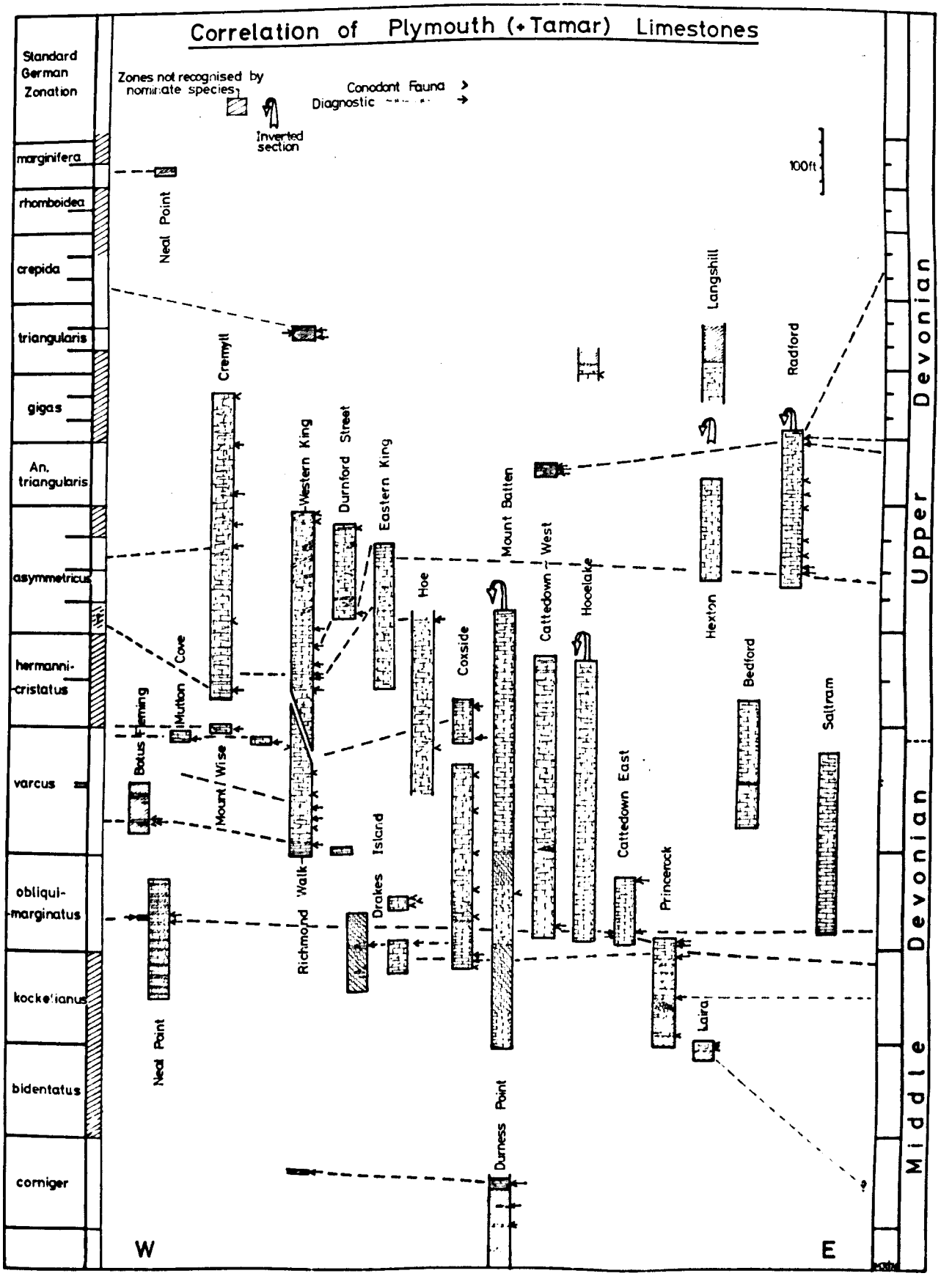
Some of the Neal Point limestones may date from the *varcus* Zone.

The Hexton Quarry section might equally belong in the Givetian.

The Neal Point Famennian fauna is perhaps better equated with a level low in the Upper *marginifera* Zone.

The Western King red shale faunas indicate a high Frasnian and low Famennian history too.

Fig. 17


Correlation of Plymouth (+Tamar) Limestones
Standard German Zonation
Zones not recognised by nominate species
Conodont Fauna
Diagnostic
Inverted section
100ft
marginifera
rhomboidea
crepida
triangularis
gigas
An. triangularis
asymmetricus
hermanni-cristatus
varcus
obliqui-marginatus
kockelianus
bidentatus
corniger
Neal Point
Cremyll
Western King
Durnford Street
Eastern King
Mount Batten
Langshill
Radford
Hexton
Bedford
Saltram
Cove
Mutton
Fleming
Botus
Mount Wise
Hoe
Coxside
Cattedown West
Hooelake
Cattedown East
Princerock
Laira
Walk
Island
Drakes
Richmond
Point
Durnes
W
E
Middle Devonian
Upper Devonian

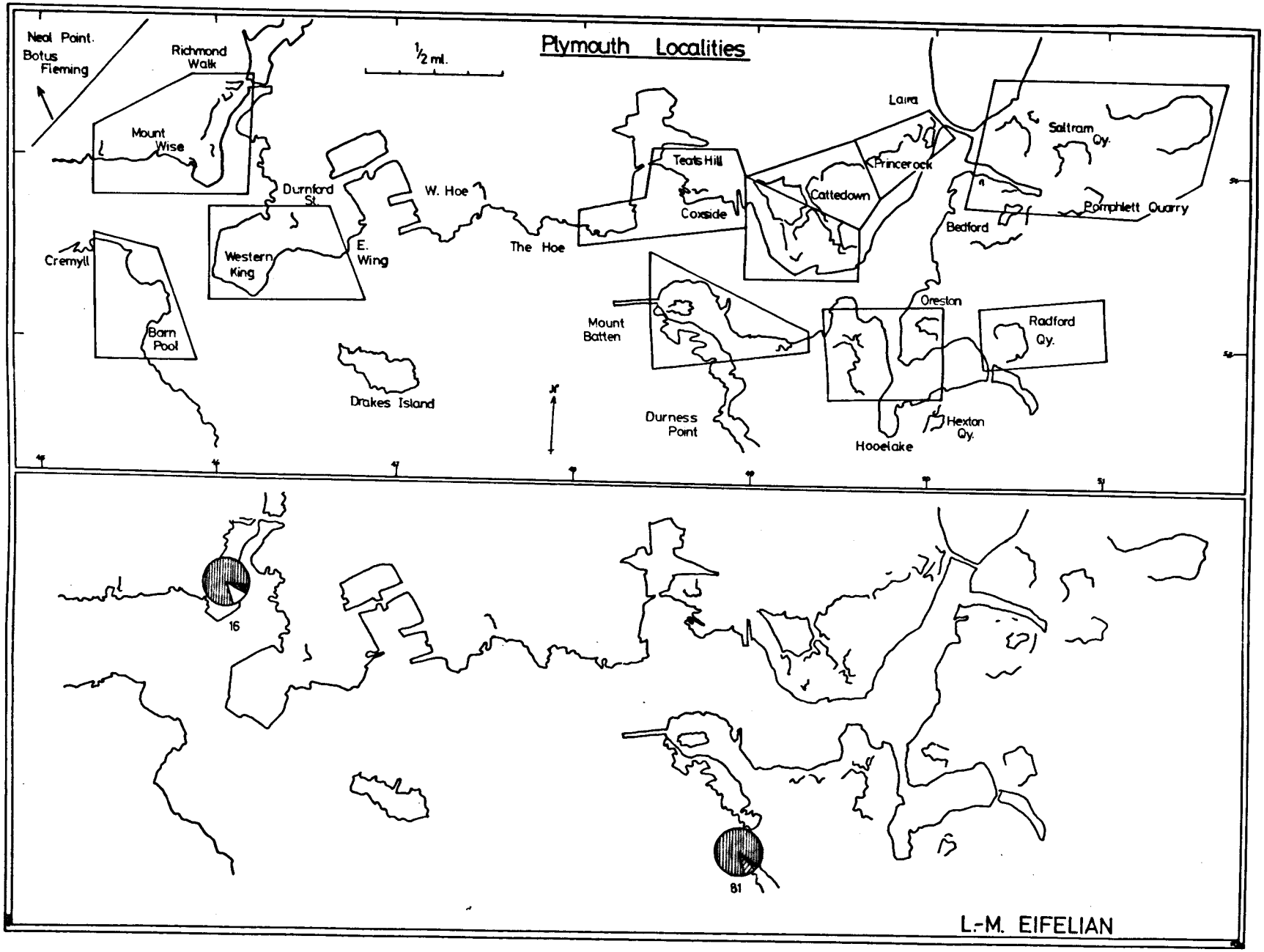

Plymouth Localities
½ ml.
Neal Point.
Botus Fleming
Richmond Walk
Mount Wise
Durnford St.
W. Hoe
The Hoe
E. Wing
Western King
Cremyll
Barn Pool
Drakes Island
Mount Batten
Durness Point
Teats Hill
Coxside
Laira
Princerock
Cattedown
Saltram Qy.
Pomphlett Quarry
Bedford
Oreston
Radford Qy.
Hexton Qy.
Hooelake
16
81
L.-M. EIFELIAN

Fig. 18a,b

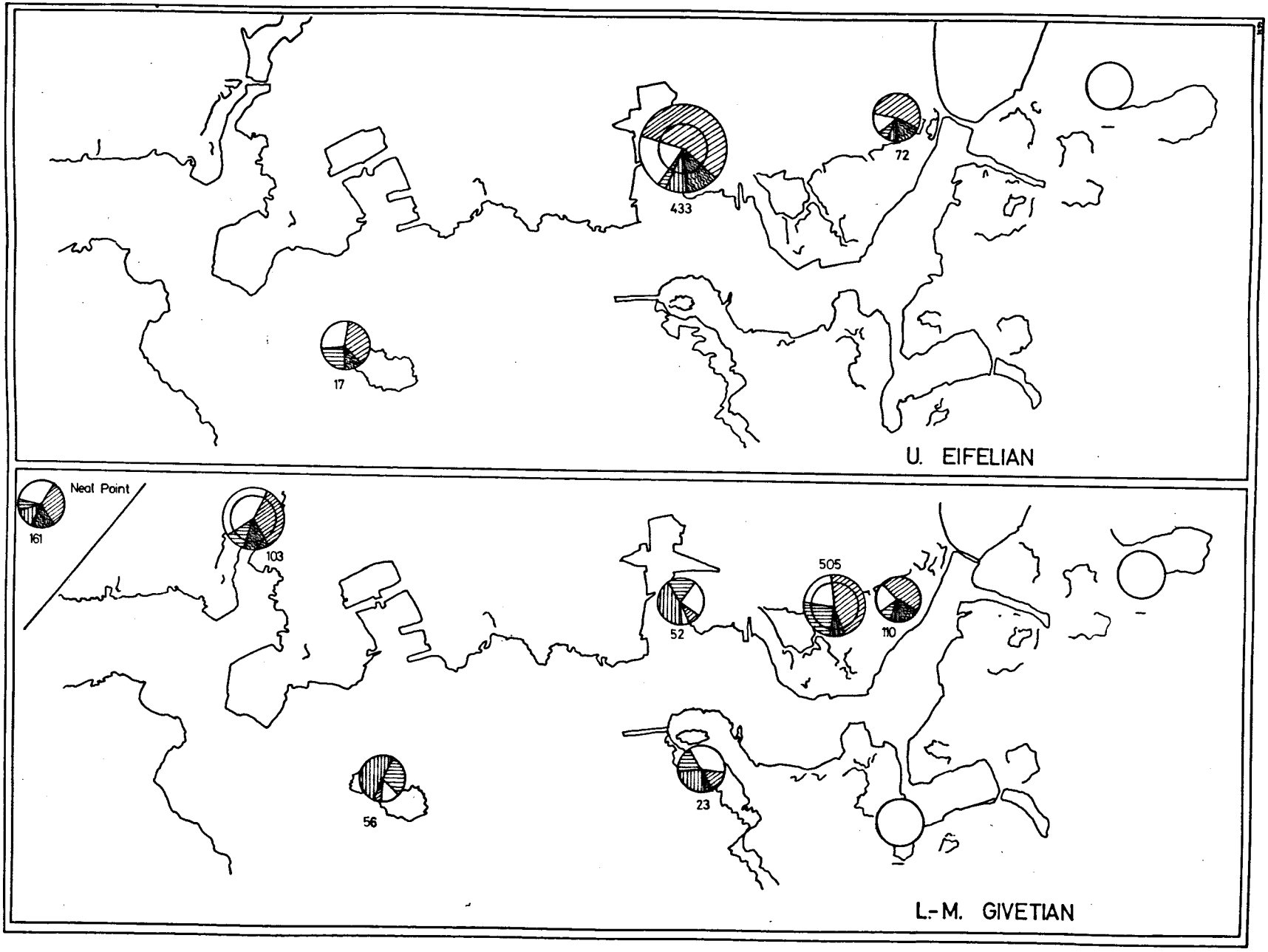
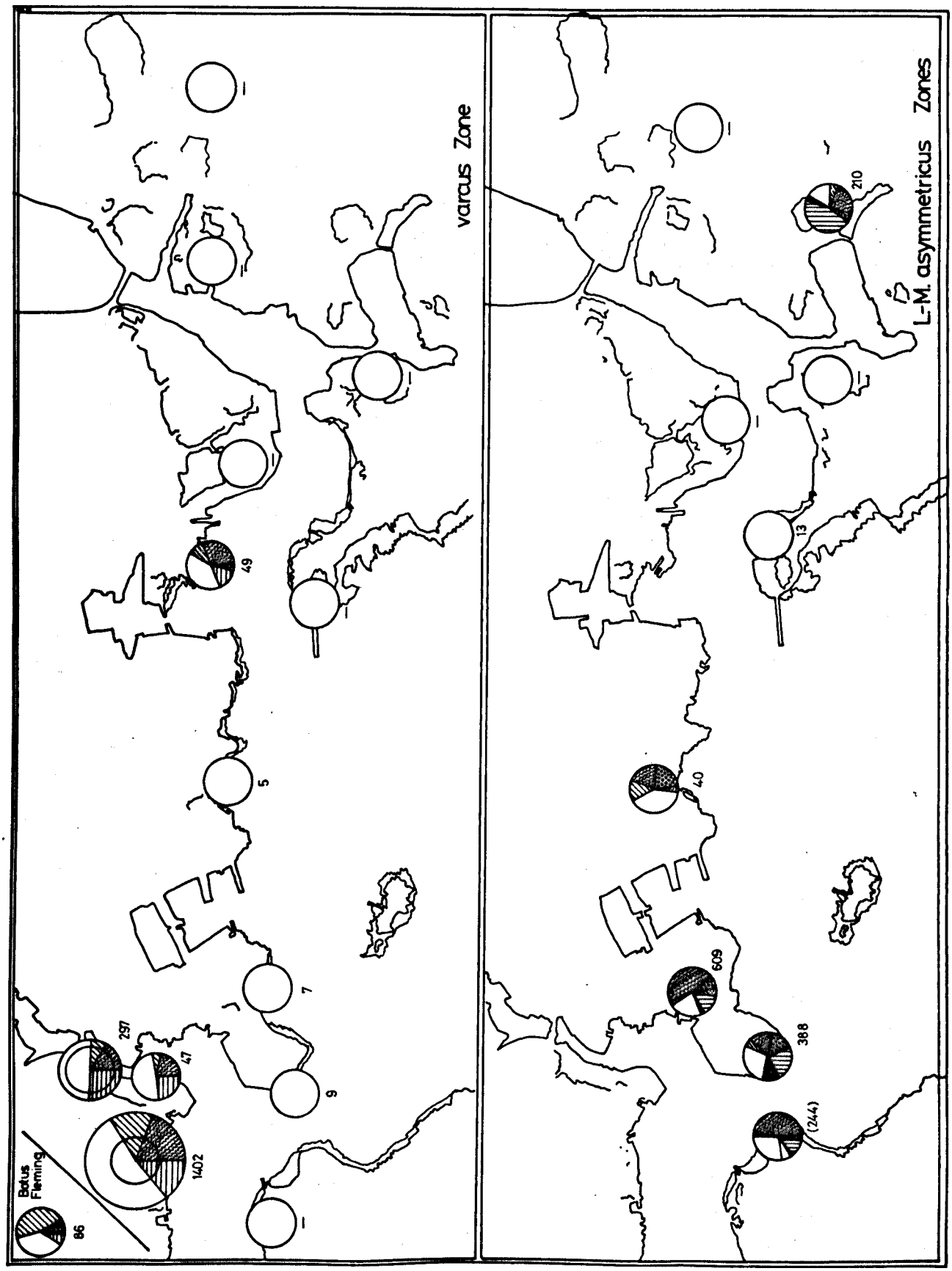

433
72
17
U. EIFELIAN
Neal Point
161
103
505
52
110
56
23
L.-M. GIVETIAN

Fig. 19a,b

Fig. 20a,b


varcus Zone
L-M. asymmetricus Zones
Botus Fleming
86
1402
47
297
9
7
5
49
(244)
388
609
40
13
210

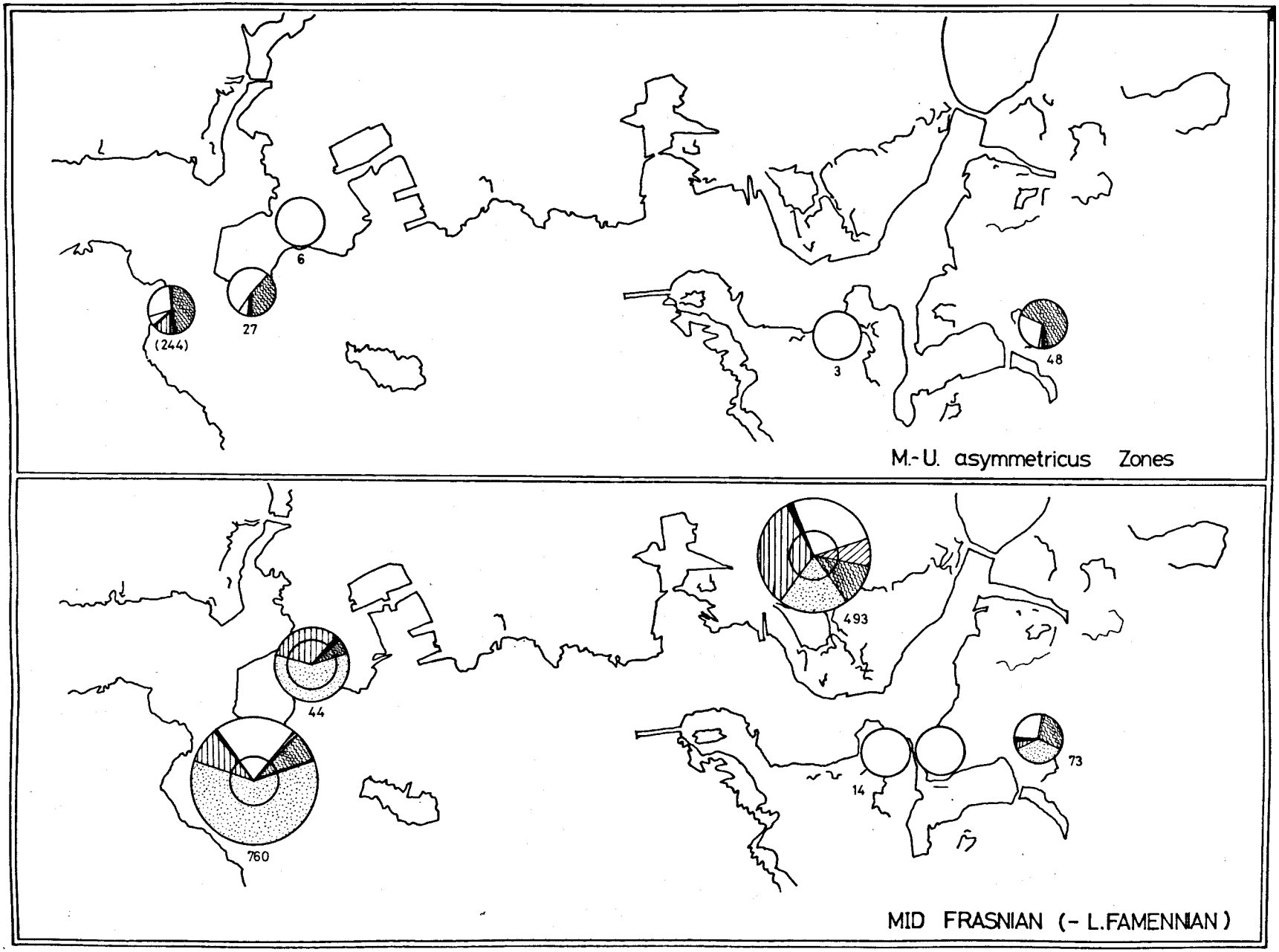

6
27
(244)
3
48
M.-U. asymmetricus Zones
493
44
760
14
73
MID FRASNIAN (- L.FAMENNIAN)

Fig. 21a,b

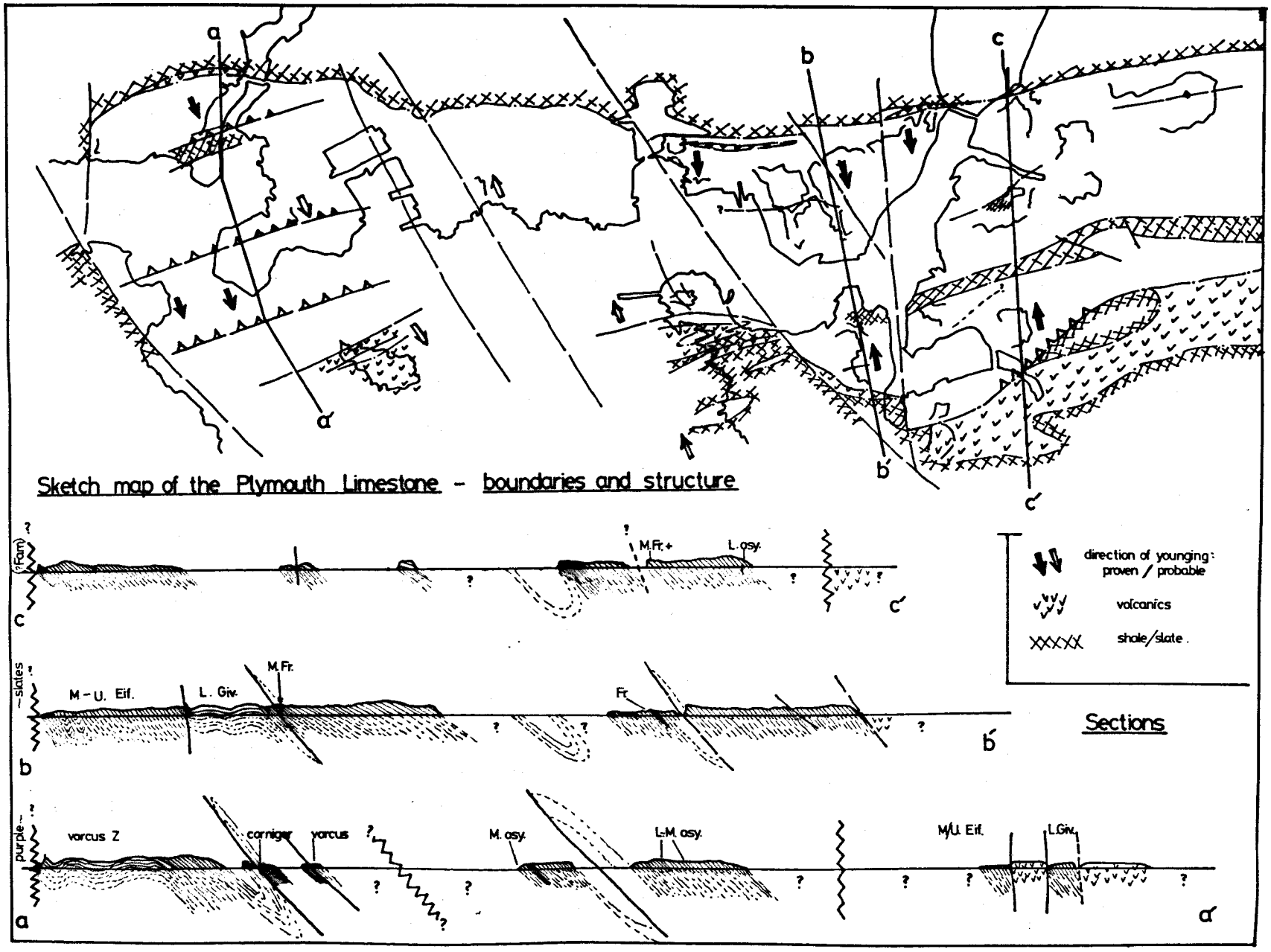

a
a'
b
b'
c
c'
Sketch map of the Plymouth Limestone - boundaries and structure
(?Fam)
M.Fr.+
L.osy.
direction of younging: proven / probable
volcanics
shale/slate.
~slates
M-U. Eif.
L. Giv.
M.Fr.
Fr.
Sections
purple~
vorcus Z
corniger
vorcus
M. osy.
L-M. osy.
M/U. Eif.
L.Giv.

Fig. 22

PLATES 1 - 36

Foreword

The plate figures are arranged in more or less stratigraphical sequence, from low Eifelian (Plate 1) through to mid Famennian (Plate 34); representative, non-platform elements are illustrated on Plates 35 and 36.

Illustrations of a single specimen bear a single number and standard views are referred to thus:-

1 - (oral view)
1 = (aboral view)
1 ≡ (lateral view)

In the plate descriptions, the author's reference number of each of the specimens, and the locality from whence it comes, follows the figure number and, in the case of a single figure, the name. For example:

Figs. 1, 2. *Polygnathus* sp. A

1. MB6/1, Mount Batten
2. 25/7, Richmond Walk

Fig. 3. *Polygnathus* sp.B. 44(3)/52, Teat's Hill Quarry, Coxside

The letter(s) and/or number(s) immediately to the left of the oblique, is the sample number, and for it's location one is referred to Figures 4 - 16 and 18. In the above example, sample MB6 can be located on the Mount Batten figure (see contents),i.e. Figure 5.

The figured specimens are deposited in the Department of Geology, The University of Hull.

PLATE 1

Icriodus (x 40)

Fig. 2. Icriodus cf. I. fusiformis CARLS & GANDL 1969.
JB19/14 Rum Bay, South of Durness Point.

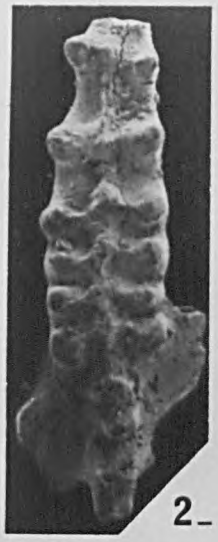
Figs.1,3,4,6,7,8. Icriodus cf. (I. corniger - I. curvirostratus - I. introlevatus) assemblage BULTYNCK 1972.
All MB23, Durness Point.

1. MB23/4 Large specimen having characters transitional to I. retrodepressus.
3. MB23/10 I. cf. I. corniger WITTEKINDT 1965.
4. MB23/12 I. cf. I. corniger WITTEKINDT 1965.
6. MB23/3 I. cf. (I. curvirostratus - I. introlevatus) BULTYNCK 1970.
7. MB23/7 Juvenile.
8. MB23/9 Juvenile.

Fig. 5. Icriodus retrodepressus BULTYNCK 1970. MB23/6, Durness Point.

1_

1=



2_

2=

1≡

2≡

4≡

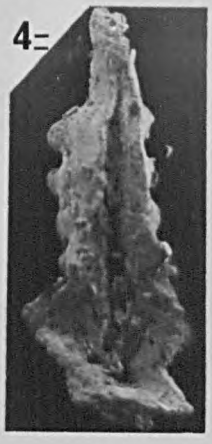
3_

3=

5_

5=

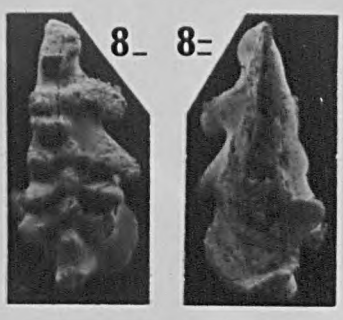
4_



4=

6≡

7≡

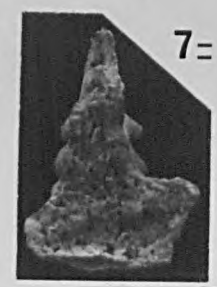


8_ 8=

6_

6=

7_



7=

8≡

PLATE 2

Middle Devonian *Icriodus* (x 45, except figs. 1, 2 = x40)

Fig. 1. *Icriodus corniger* WITTEKINDT 1965. MB23/11, Durness Point.

Fig. 2. *Icriodus* cf. *I. corniger* WITTEKINDT 1965. MB23/8, Durness Point.

Fig. 3. *Icriodus* cf. *I. corniger* WITTEKINDT 1965. 39½40, Richmond Walk (South).

Figs.4,6. *Icriodus expansus* BRANSON & MEHL 1934- *Icriodus nodosus* (HUDDLE 1934) group, morphotype 1. 39½37, Richmond Walk (South).

Figs. 5,7,9,10. *Icriodus* n. sp. a

5,9. PS4/1, 2, Princerock Quarry.

7,10. PS3/7,8, Princerock Quarry.

Fig. 8. *Icriodus* cf. *I. corniger* WITTEKINDT 1965. MB16/1, Mount Batten (southwest).

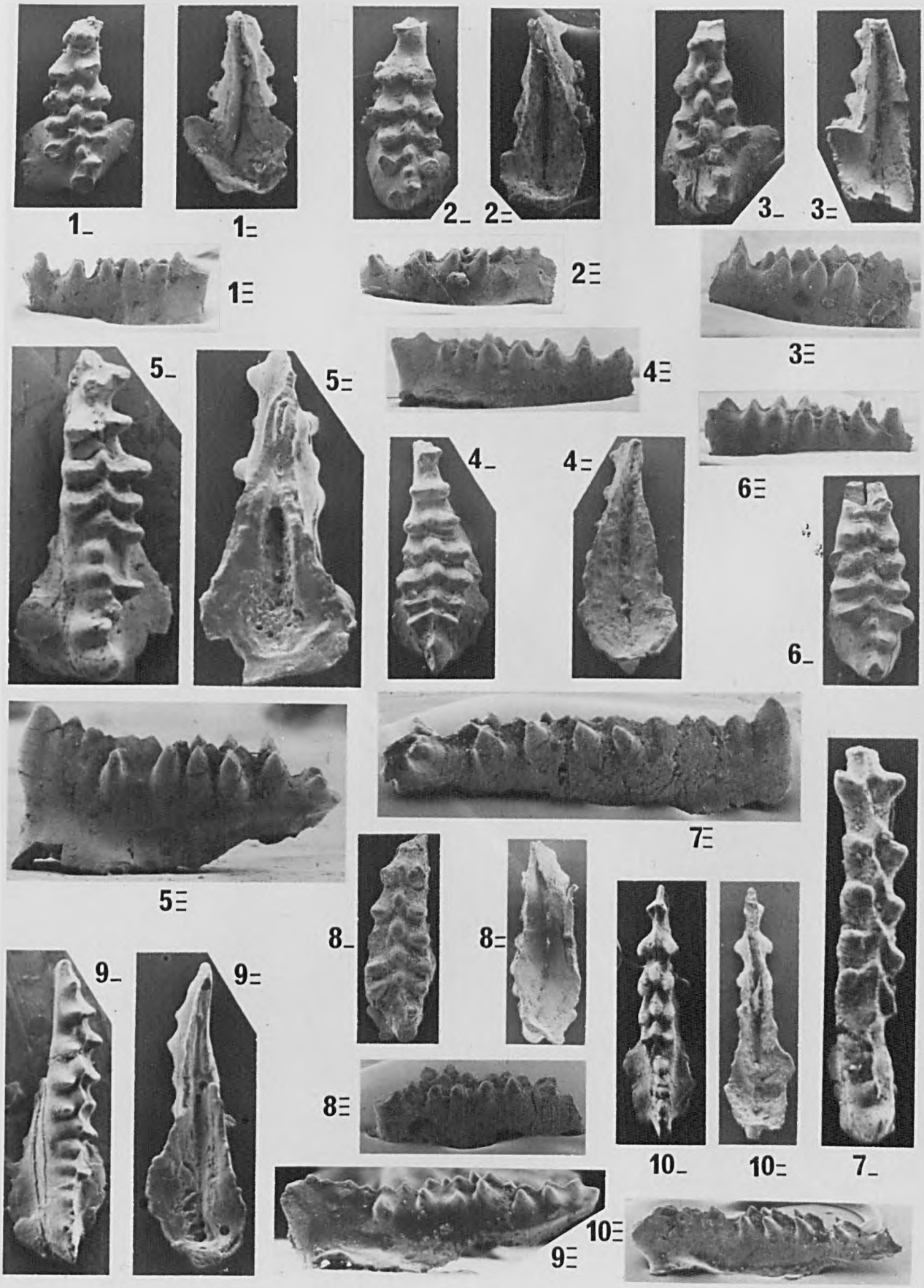

1_
1=
1Ξ
2_
2=
2Ξ
3_
3=
3Ξ
4_
4=
4Ξ
5_
5=
5Ξ
6_
6Ξ
7_
7Ξ
8_
8=
8Ξ
9_
9=
9Ξ
10_
10=
10Ξ

PLATE 3

Middle Devonian *Icriodus* (x 40)

Figs. 1 - 6,8,9. *Icriodus regularicrescens* BULTYNCK 1970. Teat's Hill Quarry, Coxside.

1. 44(3)/16. Specimen demonstrating affinity with *I. corniger* in development of posterio-lateral aboral projection.
2. 44(3)/14.
3. 44(3)/15.
4. 44(3)/36.
5. 44(3)/18. Specimen with inclined posterior border. Affinities with *I. obliquimarginatus*.
6. 44(3)/45. Juvenile specimen.
8. 44(2)/20. Juvenile specimen.
9. 44(3)/25. Unusual specimen with regularly convex blade with discrete denticles. Affinities with *I. obliquimarginatus*.

Fig. 7. *Icriodus* aff. *I. obliquimarginatus* BISCHOFF & ZIEGLER 1957. 44(3)/24, Teat's Hill Quarry. Specimen is transitional from *I. regularicrescens*. Intercalated median denticles is characteristic.

Fig. 10. *Icriodus obliquimarginatus* BISCHOFF & ZIEGLER 1957. 20/3, Esso Quarry, Cattedown. Juvenile specimen with very long, high blade.

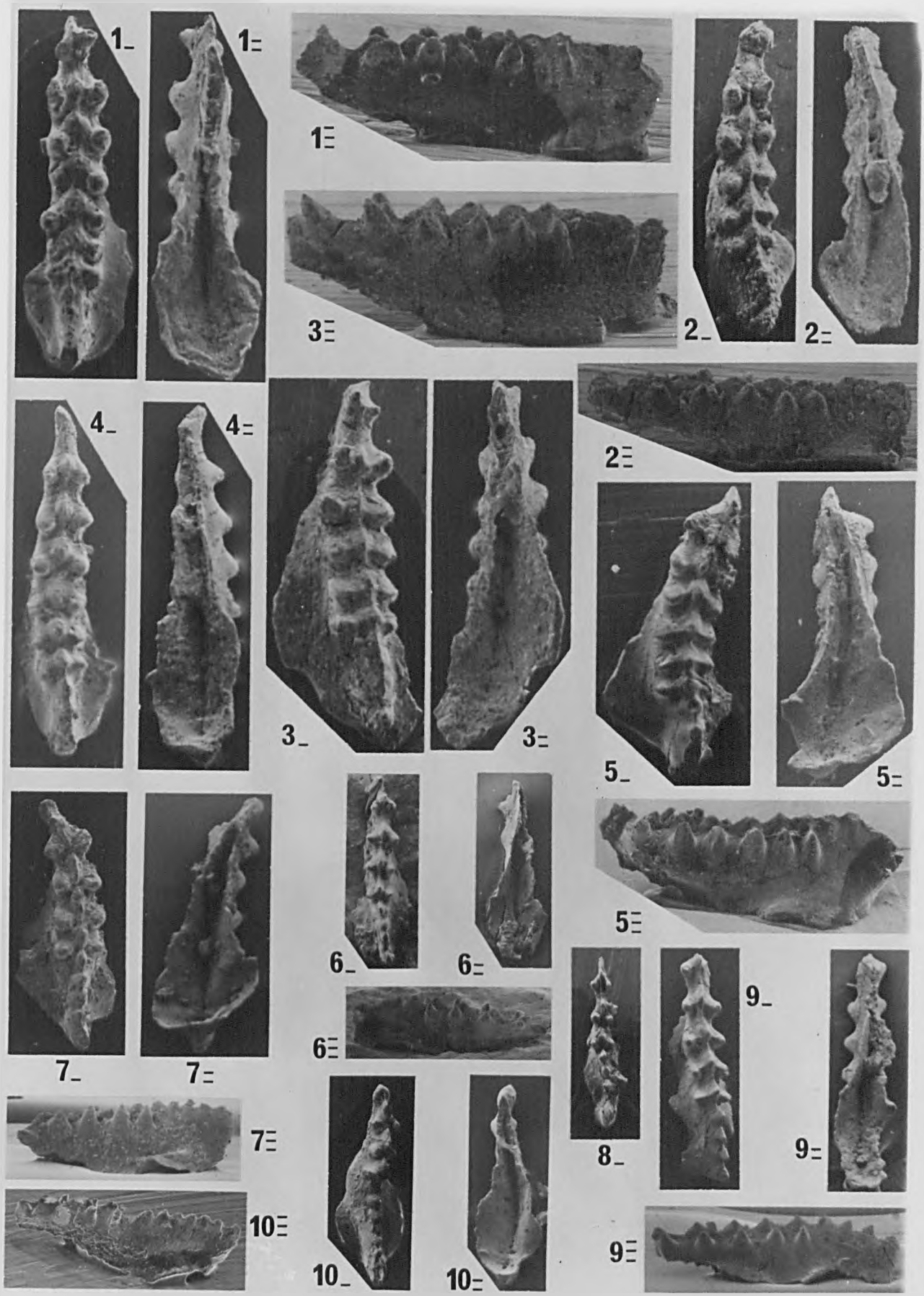

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PLATE 4

Middle Devonian *Icriodus* (x 45)

Figs. 1, 2, 4, 5, 8, 10-12.. *Icriodus expansus* BRANSON & MEHL 1934 - Icriodus nodosus (HUDDLE 1934)group , morphotype 2.

1. CRI/10, Cattewater Road, Princerock .
2. 19/12,Laira Bridge Cutting, Laira .
4. 47/9, Teat's Hill Quarry, Coxside .
5. 47/11b,Teat's Hill Quarry, Coxside .
8. 47/10, Teat's Hill Quarry, Coxside .
10. 47/13, Teat's Hill Quarry, Coxside .
11. 47/12, Teat's Hill Quarry, Coxside .
12. 47/7, Teat's Hill Quarry, Coxside .

Fig. 3. *Icriodus* sp. a. 10/11, Cattedown Quarry, Cattedown .

Figs. 6, 7. *Icriodus* cf. *I. regularicrescens* BULTYNCK 1970 .

6. 16/13, Gasworks Quarry, Cattedown .
7. NP2/07, Neal Point, nr. Landulph, E. Cornwall .

Fig. 9. *Icriodus* cf. *Icriodus* sp. a BULTYNCK 1972. 16/1, Gasworks Quarry, Cattedown.

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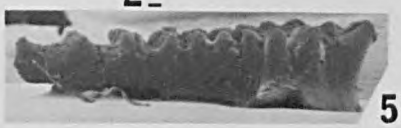

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PLATE 5

Middle Devonian *Icriodus* (x 45)

Figs. 2, 3, 6, 13 cf. 1, 9. *Icriodus* n.sp. b

2. NP15/04 Neal Point, nr. Landulph, E. Cornwall.

3. NP15/06 Neal Point, nr. Landulph, E. Cornwall. Specimen with high blade and inclined posterior border.

6. NP15/03 Neal Point, nr. Landulph, E. Cornwall, Specimen with straight posterior border.

13. 44(3)/22 Teat's Hill Quarry, Coxside .

cf. 1. NP15/01 Neal Point. Large specimen with oral surface partly obscured.

cf. 9. 44(3)/21 Teat's Hill Quarry, Coxside. Specimen with blade missing.

Figs. 4, 7, 12, cf. 5,aff.8. *Icriodus expansus* - *nodosus* group, morphotype 3

4. 20/4 Gasworks Quarry, Cattedown .

7. 20/6 Gasworks Quarry, Cattedown .

12. 20/9 Gasworks Quarry, Cattedown .

cf. 5. NP15/02 Neal Point, nr. Landulph .

aff. 8. 44(3)/33 Teat's Hill Quarry, Coxside.

Fig. 10. *Icriodus* cf. *I. regularicrescens* BULTYNCK 1970. 44 (2) / 29, Teat's Hill Quarry, Coxside.

Fig. 11. *Icriodus* sp. 46/14, Teat's Hill Quarry, Coxside. Icriodid with long median denticle row extending far anterior of laterals.

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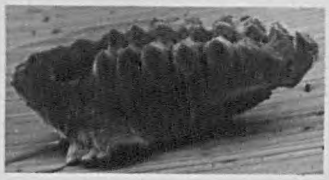

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PLATE 6

Middle Devonian *Icriodus* (x 45)

Figs. 1-6, 8-10. *Icriodus expansus* BRANSON & MEHL 1934 - *Icriodus nodosus* (HUDDLE 1934) group, morphotype 2.

1. DI 2/3 Drakes Island.
2. DI 2/31 Drakes Island.
3. DI 2/1 Drakes Island.
4. DI 2/2 Drakes Island.
5. DI 2/6b Drakes Island (Specimen coated with glue).
6. DI 2/32 Drakes Island.
9. DI 2/5 Drakes Island.
10. DI 2/6a Drakes Island. Juvenile. Note discrete denticles.
8. 49/27 Sutton Pool, Coxside.

Fig. 7. *Icriodus* sp. 49/26, Sutton Pool, Coxside. Poorly preserved specimen. Compare with fig. 8 - same sample.

Fig. 11. *Icriodus* n. sp. c. 50/28, Dead Man's Pool, Coxside.

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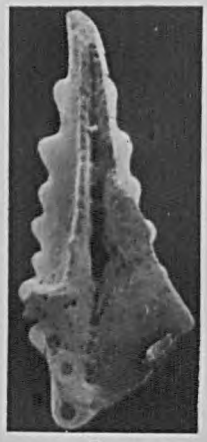

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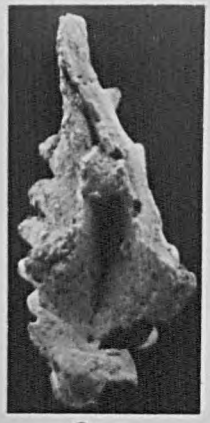

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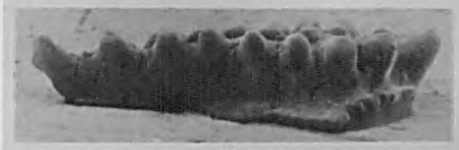

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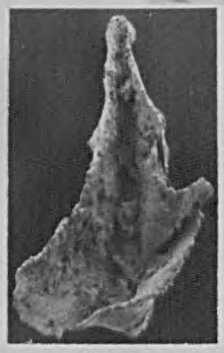

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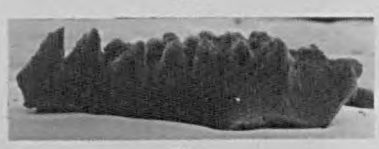

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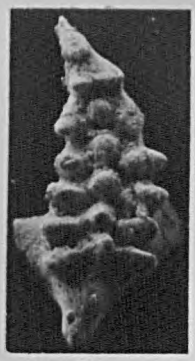

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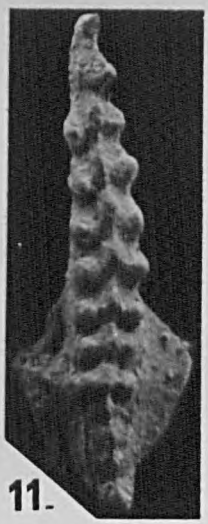

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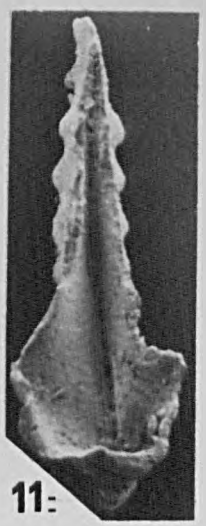

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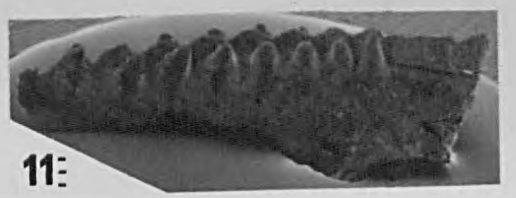

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PLATE 7

Middle Devonian *Spathognathodus et al.* (various magnifications)

Figs. 1-4, 6, 7. *Spathognathodus brevis* BISCHOFF & ZIEGLER 1957.

1. 25/9 x55 Richmond Walk (North).
3. 25/6 x65 Richmond Walk (North).
4. 25/11 x65 Richmond Walk (North).
2. BF3/1 x55 Lane section near Botus Fleming, Cornwall.
6. 50/4 x65 Coxside (east). Broken, dolomitised specimen.
7. 36/12 x55 Mount Wise.

Fig. 14. *Spathognathodus* aff. *S. brevis* BISCHOFF & ZIEGLER 1957. CR3/1 x55, Cattewater Road, Princerock.

Figs. 5,9. *Spathognathodus bidentatus* BISCHOFF & ZIEGLER 1957.

5. 44(3)/3 x55, Teat's Hill Quarry, Coxside. Deformed specimen.
9. 19(1)/6 x55, Gasworks Quarry, Cattedown.

Fig. 8. *Spathognathodus* cf. *S. bidentatus* BISCHOFF & ZIEGLER 1957. PS4/8 x80, Power Station, Princerock. Juvenile specimen.

Fig. 10. *Spathognathodus* ?sp. 44(3)/4 x55, Teat's Hill Quarry, Coxside.

Fig. 11. *Prioniodina aversa* STAUFFER *sensu* BISCHOFF & ZIEGLER 1957. 28/4 x30, Richmond Walk (O_2 element *sensu* Klapper & Philip 1971).

Fig. 12. *Ozarkodina* cf. *O. kutcheri* BISCHOFF & ZIEGLER 1957. 20/2 x 55, Gasworks Quarry, Cattedown.

Fig. 13. *Lonchodiniform* ? element. 20/5 x30, Gasworks Quarry, Cattedown.

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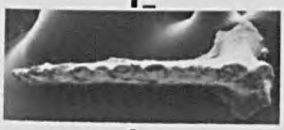

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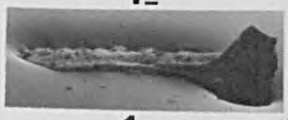

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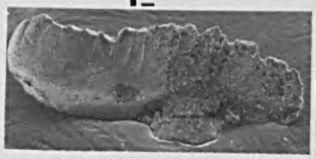

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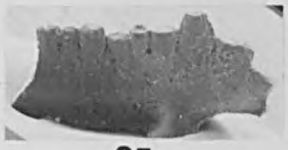

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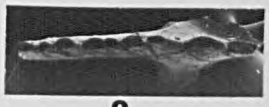

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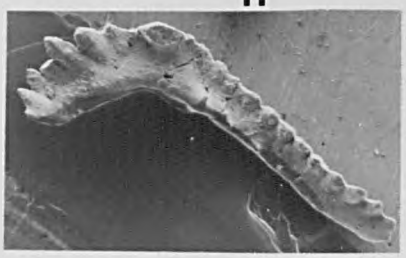

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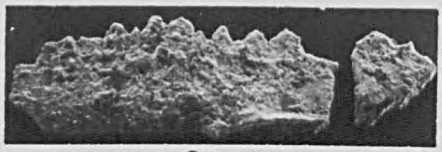

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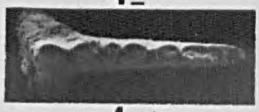

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PLATE 8

Middle Devonian Spathognathodus, (x30), O elements (x30) and simple cones (x 35, unless qualified)

Figs. 1, 2, 4. Spathognathodus planus BISCHOFF & ZIEGLER 1957.

1. 36/107 Mount Wise, Plymouth.
2. 36/102 Mount Wise, Plymouth.
4. 36/114 Mount Wise, Plymouth.

Fig. 7. Spathognathodus aff. S. planus 36/103 Mount Wise, Plymouth.

Figs. 3, 5, 8, 10, 11. O_1 elements

6. D12/172 Drakes Island.
8. PS4/51 Princerock Quarry. O. congesta STAUFFER.
3. 36/106 Mount Wise.
5. 36/117 Mount Wise.
10. 36/4 Mount Wise. } O. lata BISCHOFF & ZIEGLER 1957
11. 36/33 Mount Wise. }

Fig. 9. Bryantodiform element. 43/20 Gasworks Quarry, Cattedown.

Figs. 12, 13, 14, 16. Acodiniform elements.

12. WK5/21 Western King.
16. WK5/24 x50 Western King.
14. 117/22 x50 Radford Quarry.
13. MB23/29 x50 Durness Point.

Fig. 15. Belodella ? sp. 20, Gasworks Quarry, Cattedown.

Figs. 17-21, 23, 30, 32. Belodelliform elements.

21. 28/10 Richmond Walk. } Oval aboral outline= "B. devonicus".
30. 36/1 Mount Wise. }
20. 16/15 Gasworks Quarry, Cattedown. } Triangular aboral outline = "B. triangularis".
32. 36/8 Mount Wise. }
19. 36/9 Mount Wise. }
17. 36/4 Mount Wise. } Transitional = "B. resimus".
18. 36/5 Mount Wise. }
23. 36/3 Mount Wise. }

Figs. 22, 28, 29, 31. Coelocerodontiform elements.

22. 36/11	Mount Wise.	'Tear drop' shaped aboral outline.
31. 36/12	"	
29. 20/17	Gasworks Quarry Cattedown.	
28. 20/16	Gasworks Quarry Cattedown.	- apparently subquadrate outline.

Figs. 24-27 . Panderodiform elements.

26. 44(2)/13	Teat's Hill Quarry, Coxside.
27. 51/7	Dead Man's Bay, Coxside.
24. NP2/2	Neal Point.
25. NP13/6	Neal Point.

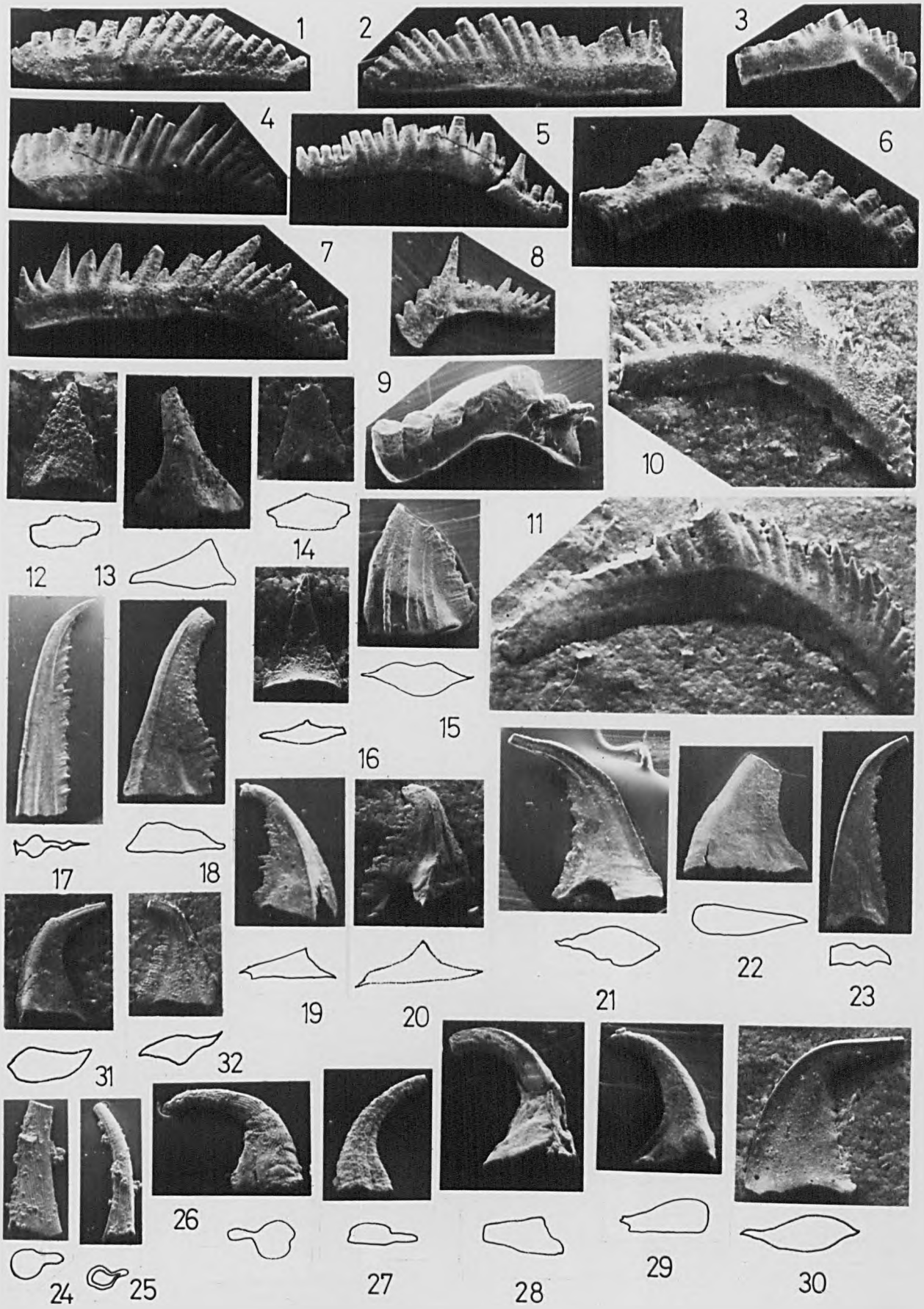
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PLATE 9

Middle Devonian Polygnathus (x40, unless qualified)

Figs. 2, 3. Polygnathus latus WITTEKINDT 1965.

2. NP2/6, Neal Point, nr. Landulph, East Cornwall.

3. NP2/7, Neal Point, nr. Landulph, East Cornwall.

Fig. 1. Polygnathus aff. Po. latus WITTEKINDT 1965. 20/8, Gasworks Quarry, Cattedown.

Figs. 4, 8, 10. Polygnathus angustipennatus BISCHOFF & ZIEGLER 1957.

4. 10/54 x50, Cattedown Quarry. Blade missing; squarish platform.

8. DI6/14 x5I, Drakes Island (West). Blade broken, oval platform.

10. DI5/13, Drakes Island (1st. raft in tuffs). Squarish, strongly denticulate platform.

Fig. 6. Polygnathus n.sp. aff. Po. porcillus STAUFFER 1940. 39b/26, Richmond Walk (South).

Figs. 5,9,11,12. Polygnathus cf. Po. xylus STAUFFER 1940.

5. BF3/22, Lane section near Botus Fleming, Cornwall.

9. NP15/9 x55, Neal Point, nr. Landulph, East Cornwall. Juvenile.

11. NP15/2 Neal Point, nr. Landulph, East Cornwall.

12. NP15/10 x55, Neal Point, nr. Landulph, East Cornwall. Juvenile.

Fig. 13. Polygnathus aff. Po. xylus STAUFFER 1940. CR3/12 x55, Cattewater Road, Princerock. Juvenile specimen with asymmetrical platform.

7. Polygnathus cf. Po. dubius (Bryant 1921). 36/2, Mount Wise.


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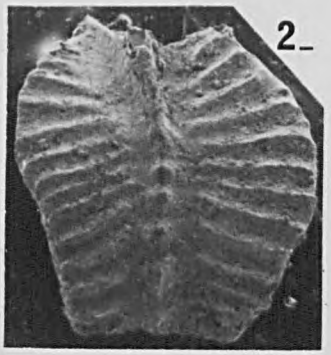
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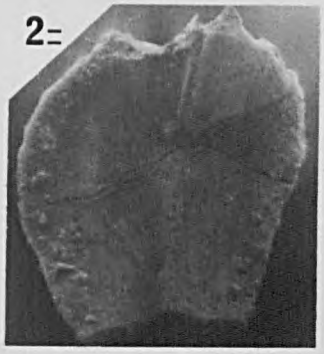
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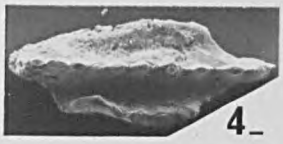
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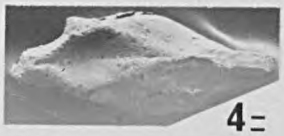
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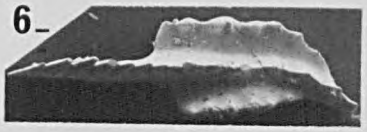
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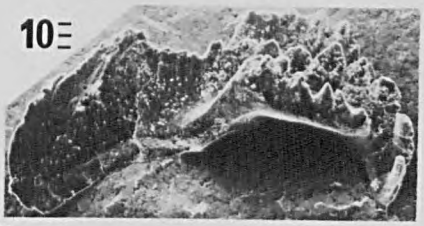
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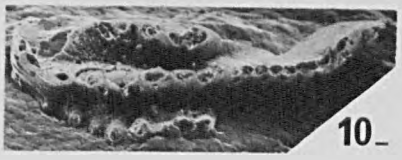
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PLATE 10

Middle Devonian Polygnathus (x40, unless qualified)

Figs. 1-10, 14, 17. Polygnathus pseudofoliatus WITTEKINDT 1965.

1. PS4/14, Princerock Quarry.
Note denticulate anterior platform margins.

8. PS4/47, Princerock Quarry.

17. PS3/46, Princerock Quarry.
Specimen with broken anterior inner platform.

2. CR3/13, Cattewater Road, Princerock.

14. CR3/11, Cattewater Road, Princerock.

3. 44(3)/39, Teat's Hill Quarry, Coxside.

4. 44(3)/25 Teat's Hill Quarry, Coxside.
Note longitudinal alignment of fine granules.

5. 44(1)/1, Teat's Hill Quarry, Coxside.
Specimen deformed anteriorly.

6. 44(1)/21, Teat's Hill Quarry, Coxside.

7. 44(3)/23, Teat's Hill Quarry, Coxside.

9. 44(1)/20, Teat's Hill Quarry, Coxside.
Strong anterior platform nodes.

10. 44(1)/19, Teat's Hill Quarry, Coxside.
Asymmetrical anterior platform margins.

Figs. 11, 12, 15. Polygnathus cf. Po. costatus KLAPPER 1971.

11. NP15/7, Neal Point, nr. Landulph, East Cornwall.

12. NP15/4, Neal Point, nr. Landulph, East Cornwall.

15. NP15/1, Neal Point, nr. Landulph, East Cornwall.

Fig. 13. Polygnathus xylus STAUFFER 1940. 20/38 x45,
Gasworks Quarry, Cattedown.

Fig. 16. Polygnathus aff. Po. xylus STAUFFER 1940.
PS4/15, Plymouth Power Station, Princerock.
Specimen with asymmetrical platform.

Figs. 18,19. Polygnathus rhenanus KLAPPER, PHILIP & JACKSON 1970.

18. BF3/33 x 45, Lane Section nr. Botus Fleming, Cornwall.

19. 25/34, Richmond Walk (North).

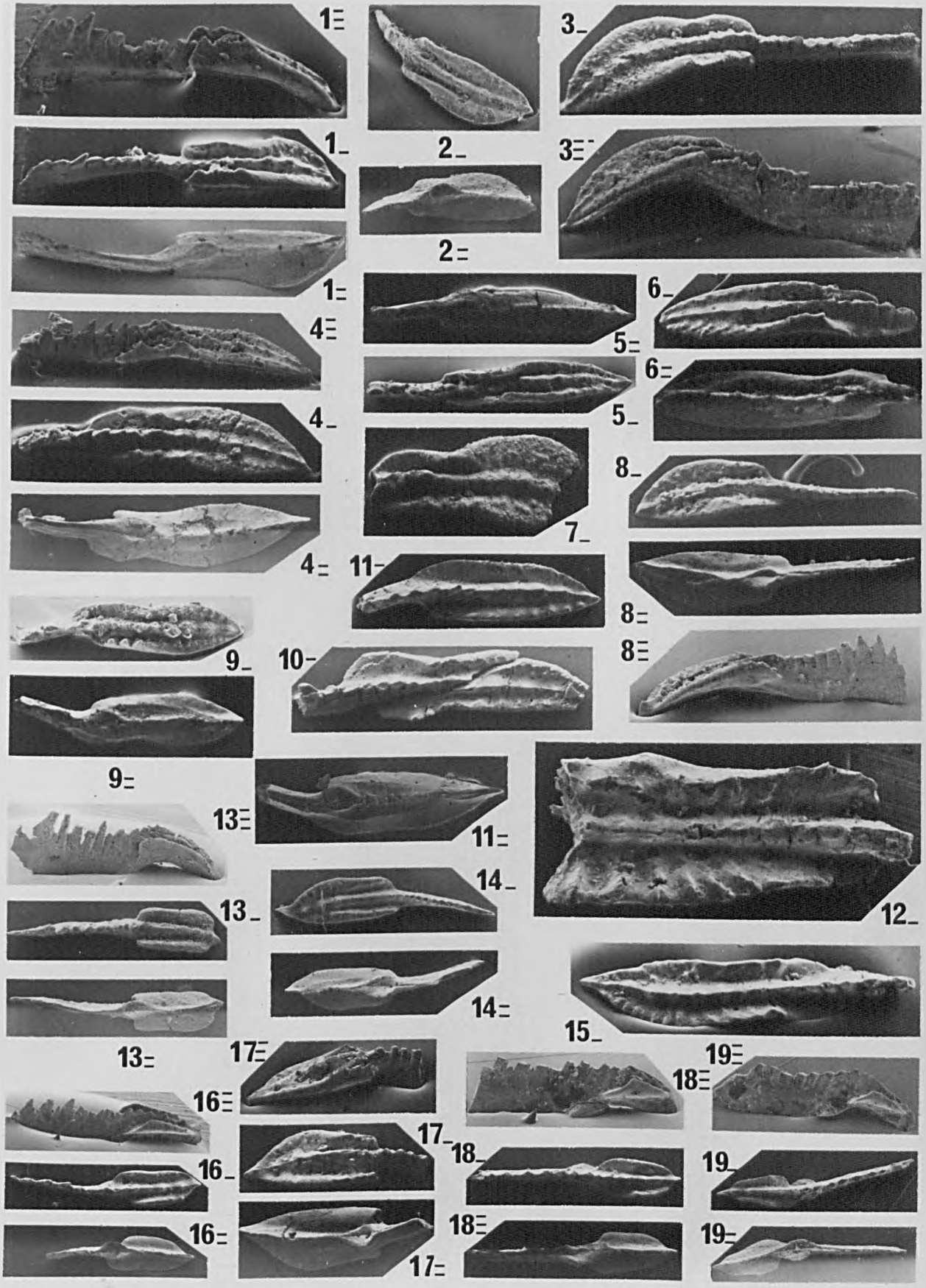
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PLATE 11

Middle Devonian Polygnathus (x40)

Figs. 1, 3-5, 10. Polygnathus aff. Po. rhenanus KLAPPER, PHILIP & JACKSON 1970.

1. BF3/40 Lane section, near Botus Fleming, Cornwall.
5. BF2/31 Lane section, near Botus Fleming, Cornwall.
10. 28/36 Richmond Walk.
3. 36/19 Mount Wise.
4. 36/36 Mount Wise.

Fig. 2. Polygnathus aff. Po. timorensis KLAPPER, PHILIP & JACKSON 1970. 32/4, Mutton Cove.

Figs. 6, 7, 9. Polygnathus varcus STAUFFER 1940 group. Three unusual specimens, each with at least one strongly denticulate margin near geniculation points.

6. 26/38 Richmond Walk. Specimen with basal attachment.
9. 25/29 Richmond Walk. Specimen with strongly asymmetrical platform and high geniculation points.
7. 36/12 Mount Wise. Bluntly terminated specimen.

Fig. 8. Polygnathus xylus STAUFFER 1940. 28/35, Richmond Walk. Strongly denticulate specimen.


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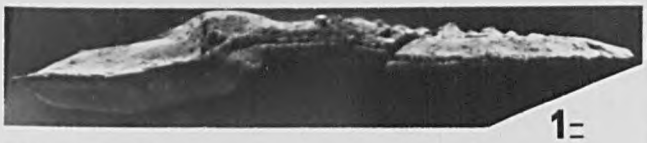
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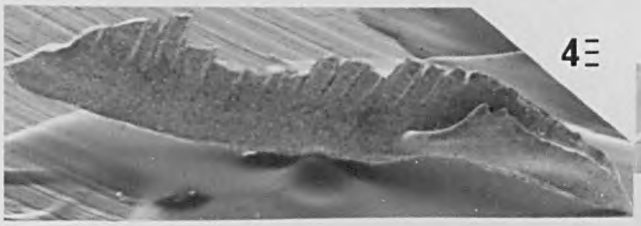
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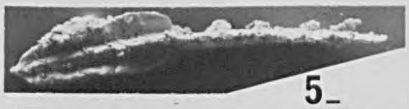
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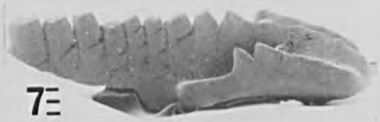
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PLATE 12

Middle Devonian Polygnathus varcus group (x40, unless qualified)
All from Mount Wise

Figs. 1, 2, 10. Polygnathus aff. Po. rhenanus KLAPPER, PHILIP & JACKSON 1970.

1. 36/39 Basal cavity posterior of platform/blade junction.
2. 36/32 Near-symmetrical anterior platform development. (= Po. varcus)
10. 36/13 Note position of geniculation points.

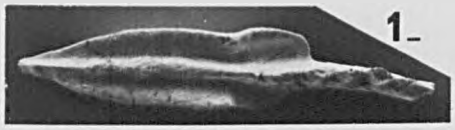
Fig. 9. Polygnathus cf. Po. rhenanus. 36/1
Posterior platform missing.

Figs. 3-6,?8. Polygnathus varcus STAUFFER 1940.

3. 36/44 Note position of basal cavity and relative length of blade, relative position of geniculation points.
4. 36/54 Small specimen.
5. 36/47 Juvenile.
6. 36/31 Note anterior trough development (→ Po. rhenanus), relative position of geniculation points.
8. 36/15 x65. Very young growth stage. Note reticulate platform margin.

Figs. 7, 11. Polygnathus timorensis KLAPPER, PHILIP & JACKSON 1970.
Juveniles. Note curved axes.

7. 36/3 x55
11. 36/10 x45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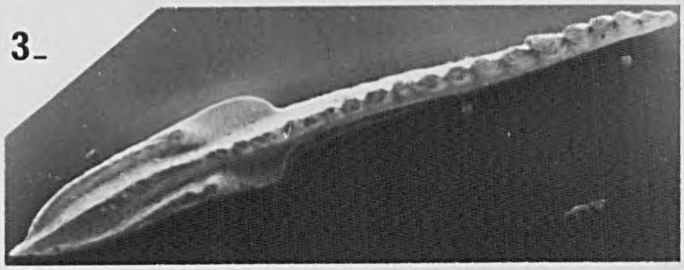
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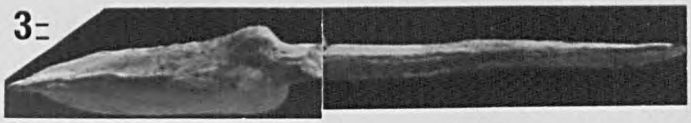
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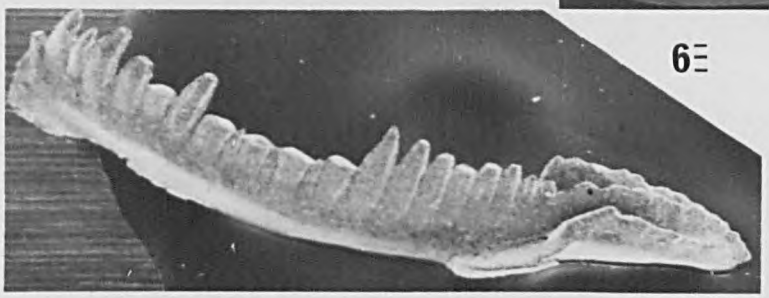
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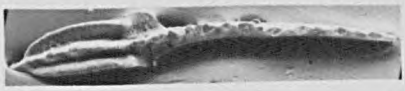
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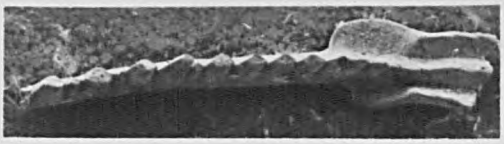
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PLATE 13

Polygnathus varcus group (x40)
All from Mount Wise, except fig. 3

Figs. 1-11. *Polygnathus timorensis* KLAPPER, PHILIP & JACKSON 1970

1. 36/63 Note relative length of blade.
2. 36/61
3. NP15/58 Neal Point, near Landulph, East Cornwall.
4. 36/60
5. 36/18
6. 36/60
7. 36/52 Note anterior position of basal cavity.
8. 36/20
9. 36/56 Specimen with broadly expanded symmetrical anterior troughs and a carina which terminates in front of anterior tip.
10. 36/33 Specimen very close to types.
11. 36/35

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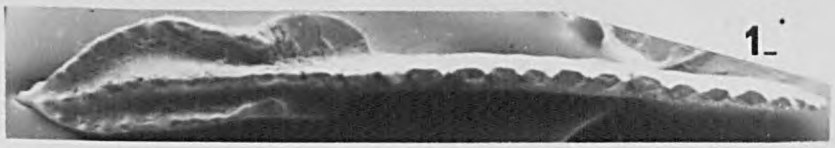

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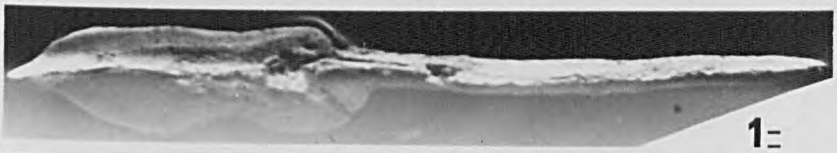

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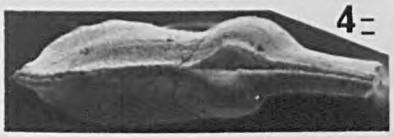

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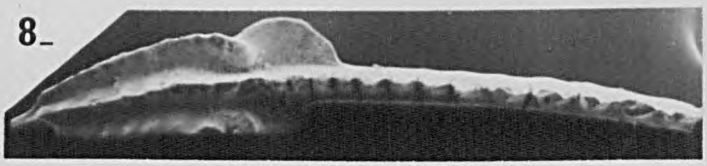

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PLATE 14

Polygnathus varcus group (x40, except fig.9)

All from Mount Wise

Figs. 1-3,5,7,8,10. *Polygnathus biconvex* sp. nov.

1. 36/59
2. 36/63 Note strong marginal nodes.
3. 36/34 Specimen with high fused carina.
5. 36/49
7. 36/58 Specimen with high (?inner) geniculation point.
8. 36/24 Carina terminates in front of posterior end.
10. 36/22

Figs. 4, 6. *Polygnathus timorensis* KLAPPER, PHILIP & JACKSON 1970.

4. 36/40 Note slightly asymmetrical basal cavity.
6. 36/35 Strongly asymmetrical anterior trough development.

Fig. 9. *Polygnathus varcus* group ?.

36/4 x50. Posterior platform of a specimen with bifurcated carina and keel.

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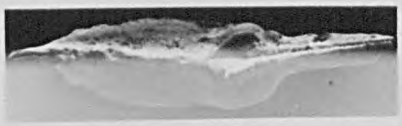

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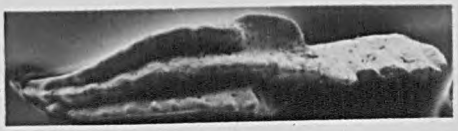

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PLATE 15

Polygnathus varcus group (x40)
All from Mount Wise, except Fig. 9

Figs. 1, 4. Polygnathus aff. Po. rhenanus KLAPPER, PHILIP & JACKSON 1970.

1. 36/53 } Note subdued nodes and relative position of
4. 36/7 } geniculation points.

Figs. 2, 3, 7, 8. Polygnathus timorensis KLAPPER, PHILIP & JACKSON 1970.

2. 36/68 Blade denticles strongly inclined anteriorly.
3. 36.51 Blade denticles strongly inclined posteriorly.
7. 36/30 As fig. 3.
8. 36/39 As fig. 3.

Fig. 5, 6. Polygnathus biconvex sp. nov. Two specimens with unusual platform ornament in the posterior platform.

5. 36/42
6. 36/5

Fig. 9. Polygnathus aff. Po. costatus KLAPPER 1971.
NP15/6, Neal Point, near Landulph.
Note inclined blade denticles.

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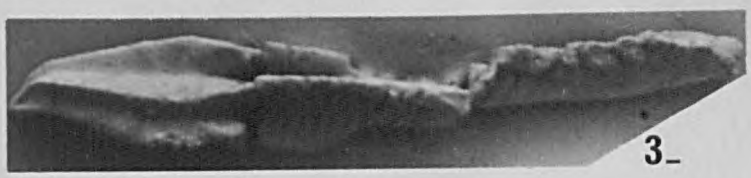

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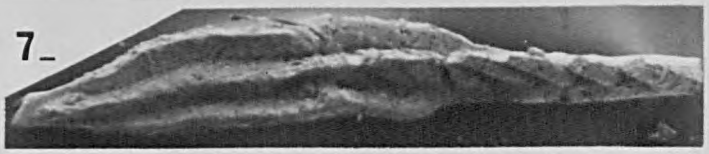

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PLATE 16

Polygnathus varcus group (x40)
All from Mount Wise, except Fig. 9

Fig. 1. *Polygnathus timorensis* KLAPPER, PHILIP & JACKSON 1970. 36/48

Figs. 2-4. *Polygnathus* aff. *Po. timorensis*. Specimens with irregular ornament of nodes and ridges on posterior platform.

2. 36/6 Specimen with adcarinal node and high anterior carina.

3. 36/8

4. 36/11

Fig. 5. *Polygnathus varcus* group. Juvenile 36/57

Figs. 6, 7, 8, 10. *Polygnathus biconvex* sp. nov. Variation.

6. 36/21 Long posterior carina extension. Inclined blade denticles.

7. 36/46 Blunt posteriorly.

8. 36/33 Etched specimen.

10. 36/10 Specimen in which the carina ends abruptly in front of a rounded posterior tip.

Fig. 9. *Polygnathus* aff. *Po. rhenanus* KLAPPER, PHILIP & JACKSON 1970. NP15/5, Neal Point, near Landulph. Specimen with marginal platform ornament, but otherwise identical to *Po. rhenanus*.

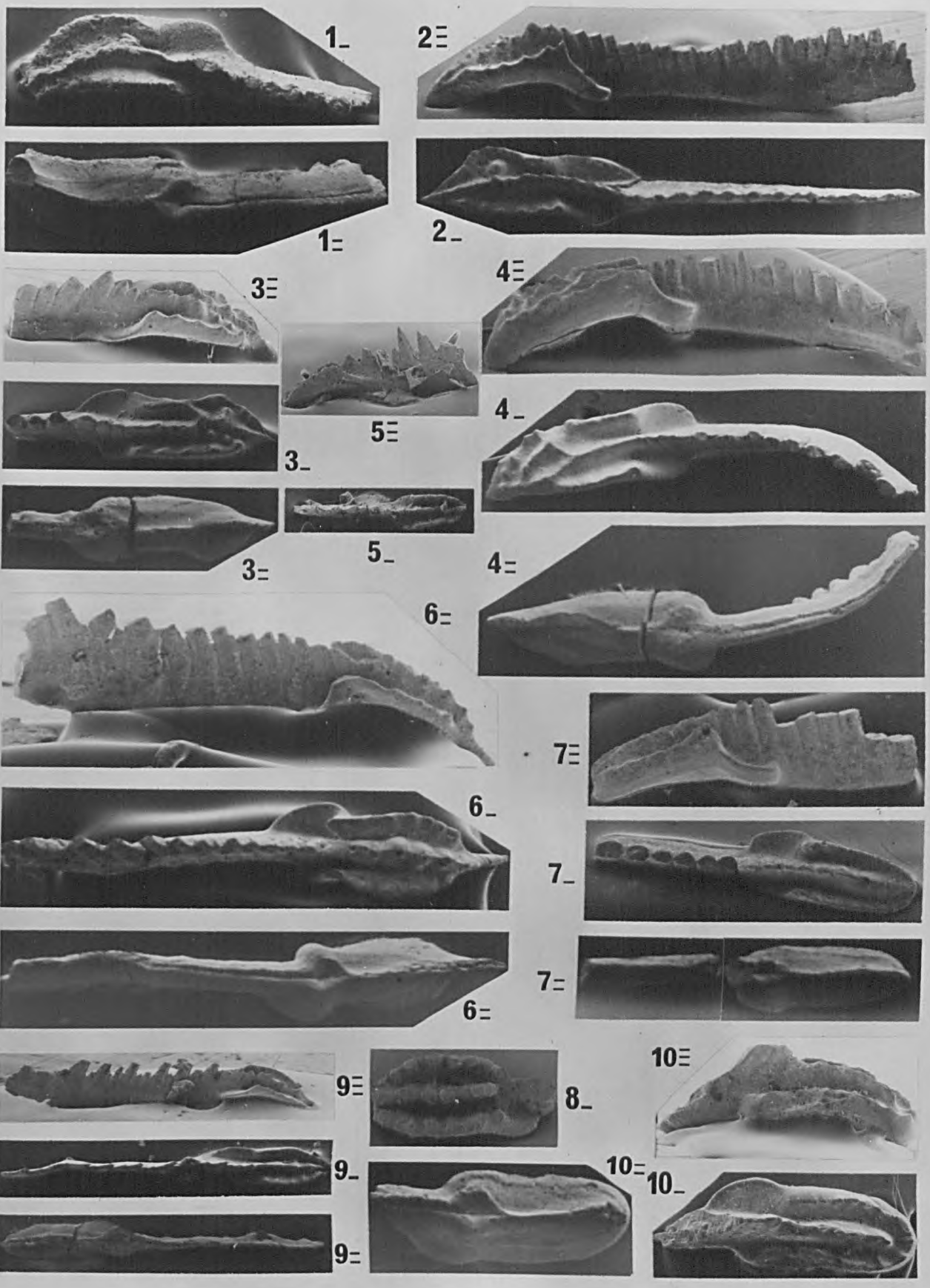
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PLATE 17

Middle Devonian 'Linguiformid'group (x30)

Figs. 1-5. *Polygnathus cattedowni* sp. nov.

1. 20/15 Gasworks Quarry, Cattedown.
3. 20/1 Gasworks Quarry, Cattedown.
4. 20/2 Gasworks Quarry, Cattedown.
5. 20/3 Gasworks Quarry, Cattedown. Note twisted posterior.
2. PS4/4 Plymouth Power Station, Princerock.


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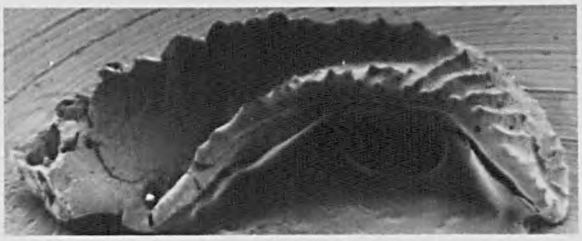
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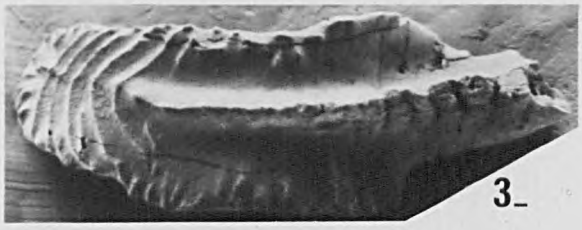
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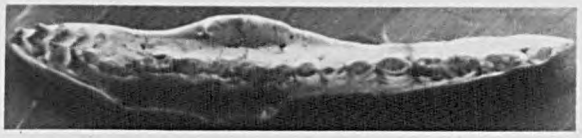
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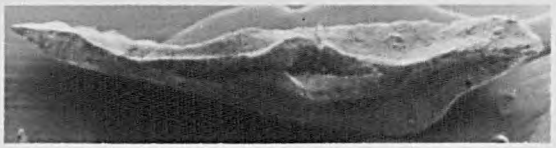
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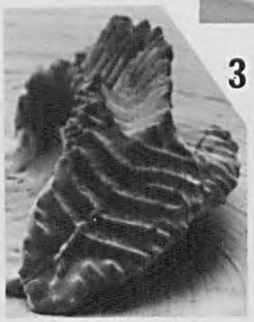
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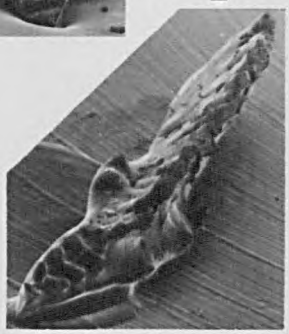
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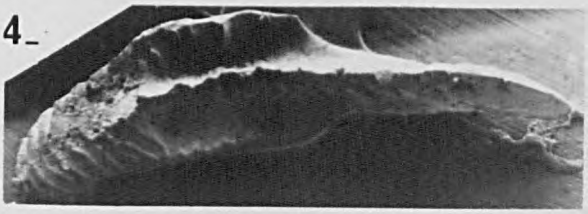
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PLATE 18

Middle Devonian 'linguiformid' group (x40 unless qualified)

Small and Juvenile specimens

Figs. 1-8, 10, 13. *Polygnathus linguiformis linguiformis* HINDE 1879 ♂ morphotype BULTYNCK 1970

1. 1d/1 Laira Bridge cutting, Laira.
2. NP15/3 Neal Point, near Landulph, East Cornwall.
3. 25/10 Richmond Walk (North).
6. 26/7 Richmond Walk (North).
10. 25/9 Richmond Walk (North).
4. 36/5 x50 Mount Wise. Juvenile.
5. 36/13 Mount Wise.
7. 36/11 x65 Mount Wise. Juvenile.
8. 36/16 x50 Mount Wise. Juvenile.
13. 36/18

Figs. 11, 12, 17, 19. *Polygnathus linguiformis* aff. nova forma 1. Forms with serrate outer platform margins.

11. PS3/1 Plymouth Power Station, Princerock.
19. PS4/2 Neal Point, nr. Landulph, East Cornwall. Specimen with broken tongue.
12. 10/6 Cattedown Quarry, Cattedown.
17. NP15/11 Neal Point, nr. Landulph, East Cornwall.

Figs. 9, 14. *Polygnathus* cf. *Po. linguiformis*.

9. 44(3)/5 Teat's Hill Quarry, Coxside.
14. MB24/13 Durness Point.

Fig. 15. *Polygnathus* aff. *Po. linguiformis*. CR4/12, Cattewater Road, Princerock. Specimen with basal attachment (?) or expanded cavity.

Fig. 16. *Polygnathus linguiformis*. 36/10, Mount Wise. Unusual specimen with narrow anterior platform and a strong outer lateral flate posteriorly.

Fig. 18. *Polygnathus* cf. *mucronatus*. 25/8, Richmond Walk (North).

Fig. 20. *Polygnathus linguiformis linguiformis*. D12/18, Drakes Island. Specimen with broad platform.

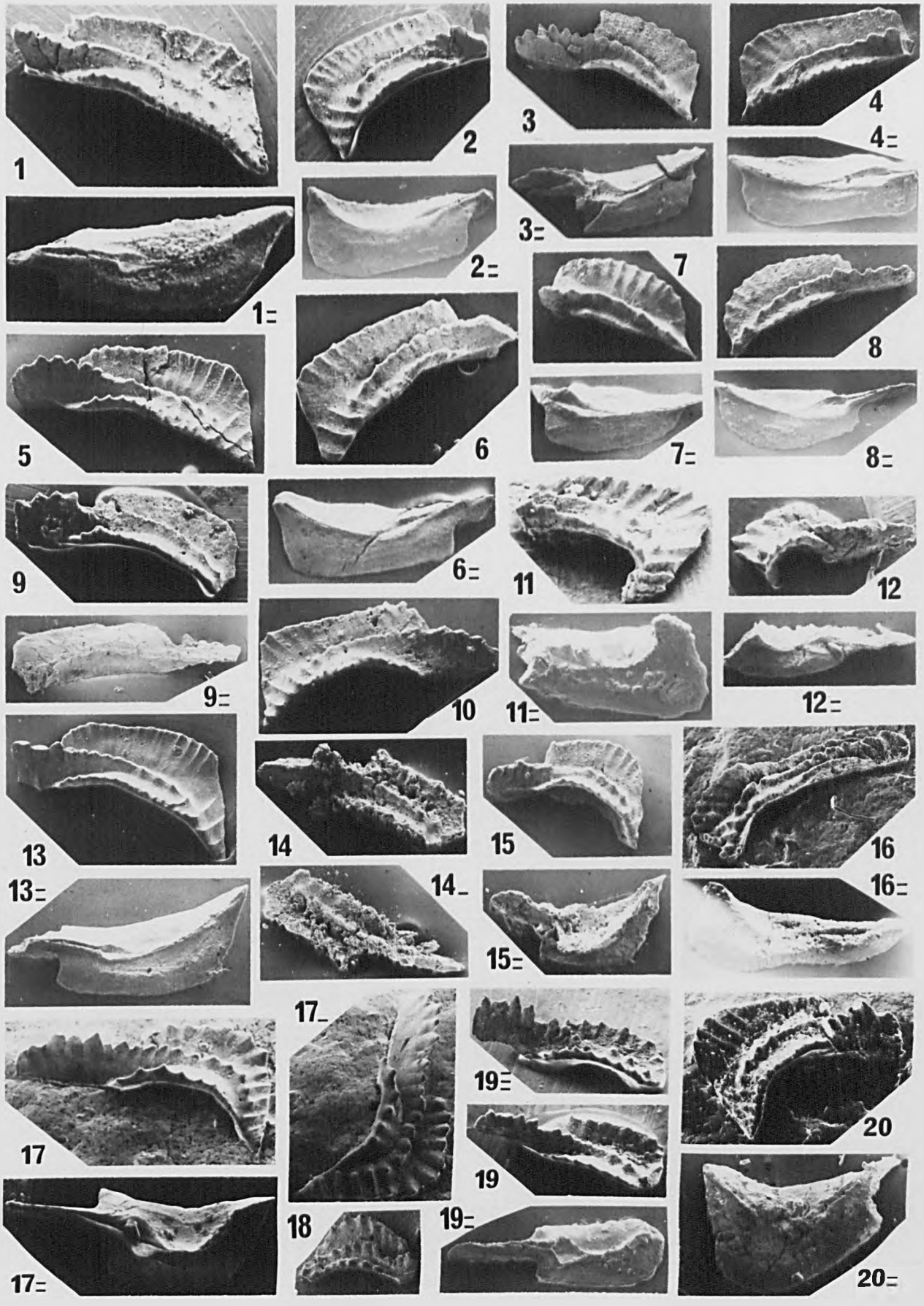
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PLATE 19

Middle Devonian 'linguiformid' group (x30 unless qualified)

Figs. 1-5, 7-12. Polygnathus linguiformis linguiformis HINDE 1879 γ morphotype BULTYNCK 1970.

1. 20/7 Gasworks Quarry, Cattedown. Angular tongue deflection.
2. 20/14 Gasworks Quarry, Cattedown. Unusual blade.
7. 20/11 Gasworks Quarry, Cattedown.
9. 20/16 Gasworks Quarry, Cattedown.
10. 20/12 Gasworks Quarry, Cattedown.
5. 16/5 x40. Gasworks Quarry (west) Cattedown. Aboral view of juvenile.
3. 44(3)/26. Teat's Hill Quarry, Coxside. Angular tongue deflection and somewhat flattened anterior platform margins.
4. 28/20 Richmond Walk. Thickened platform margins and irregular transverse ridge development.
11. 28/1 Richmond Walk.
12. 28/2 Richmond Walk. Flattened anterior platform margins.

Fig. 6. Polygnathus cf. Po. linguiformis. D12/2 x40. Specimen from strongly dolomitised limestone.


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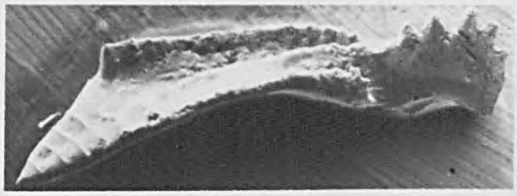
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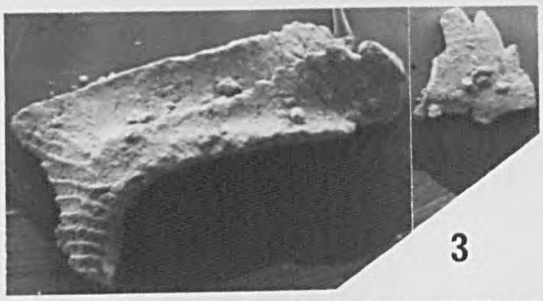
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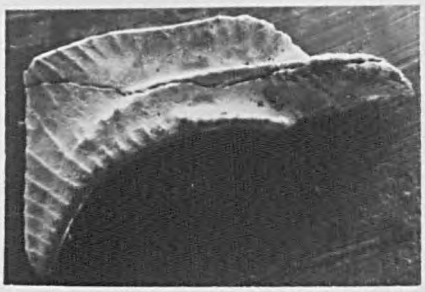
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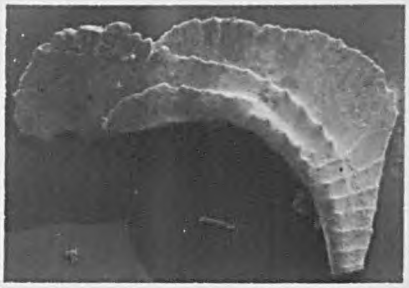
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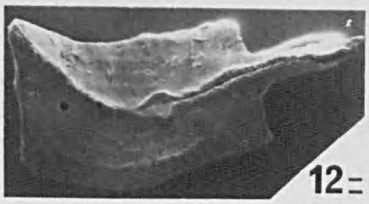
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PLATE 20

Polygnathus linguiformis (x30 unless qualified)

Figs. 1, 3-5, 7. Polygnathus linguiformis HINDE 1879 nova forma 1.
11. 32/5 Mutton Cove.
4. 32/1 Mutton Cove.
7. 32/22 Mutton Cove.
3. 28/2 Richmond Walk.
5. 26/3 Richmond Walk.

Fig. 2. Polygnathus linguiformis HINDE 1879 aff. nova forma 1. 20/10 x25, Gasworks Quarry, Cattedown. Specimen in which tongue is turned strongly inward, but less strongly downward.

Fig. 6. Polygnathus linguiformis linguiformis HINDE 1879 morphotype ♂ BULTYNCK. 36/21, Mount Wise.

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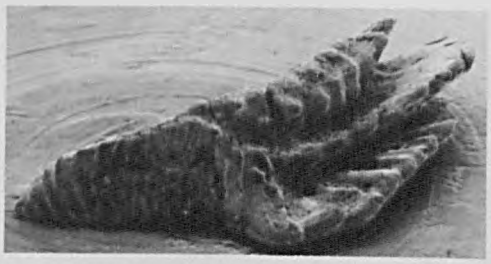

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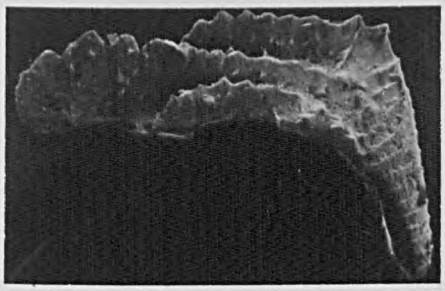

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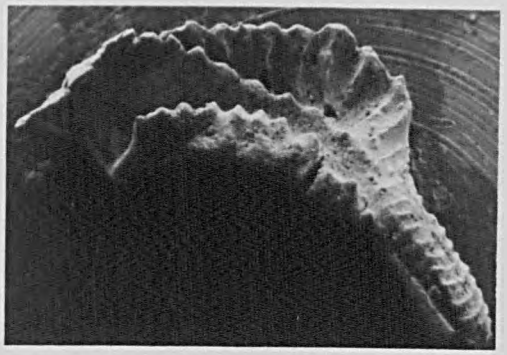

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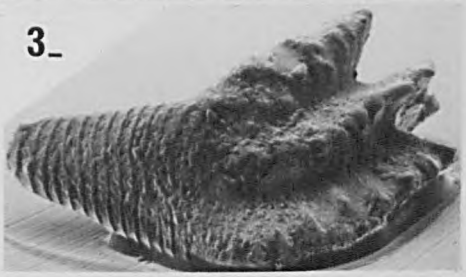

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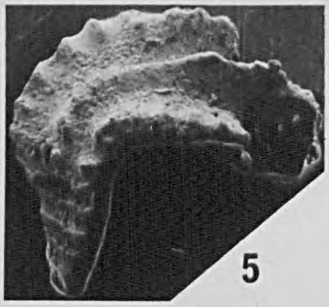

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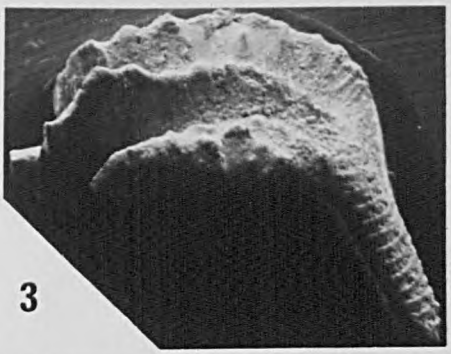

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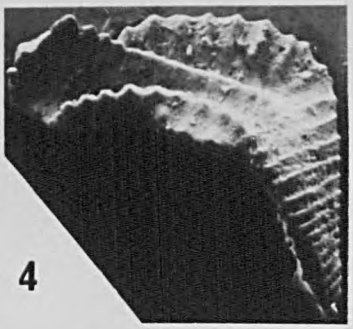

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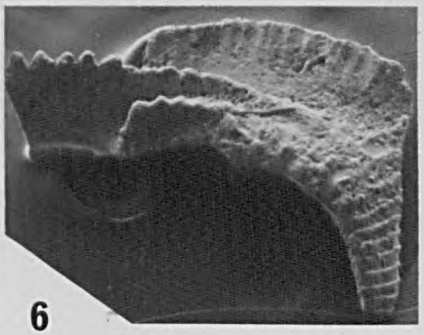

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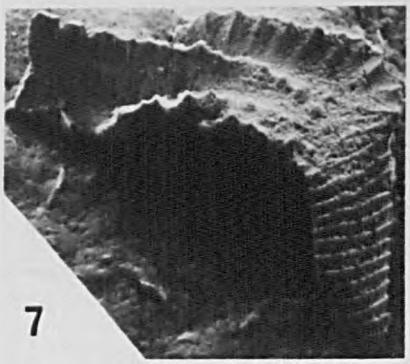

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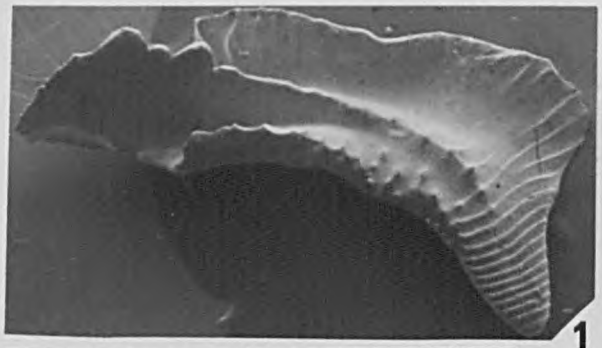
PLATE 21

Polygnathus linguiformis (x30)
All from Mount Wise

Figs. 1 - 11. Polygnathus linguiformis linguiformis HINDE 1879 γ morphotype BULTYNCK 1970. Variation.

1. 36/14
2. 36/6
3. 36/15
4. 36/16
5. 36/24
6. 36/10
7. 36/22
8. 36/11
9. 36/19
10. 36/9
11. 36/23



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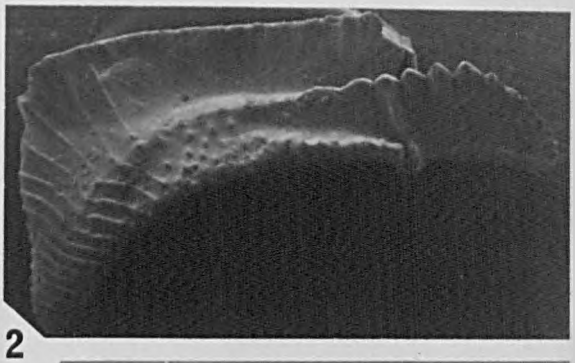

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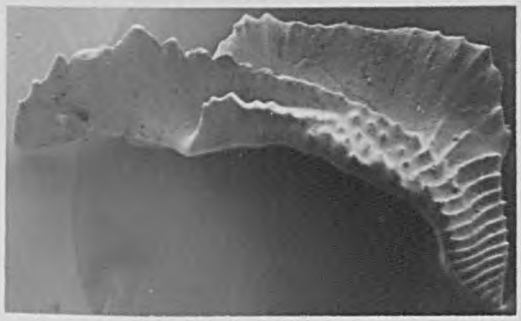

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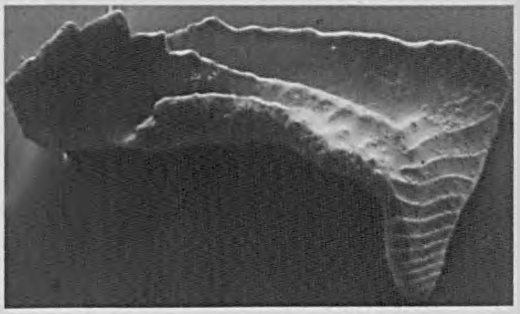

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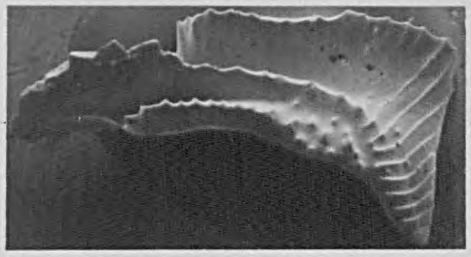

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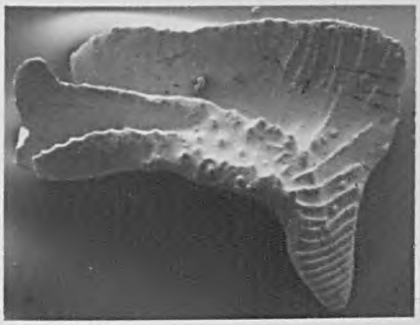

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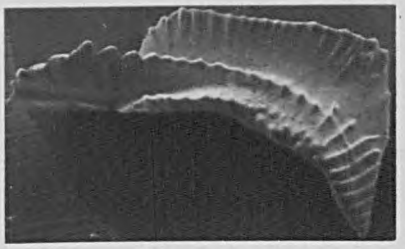

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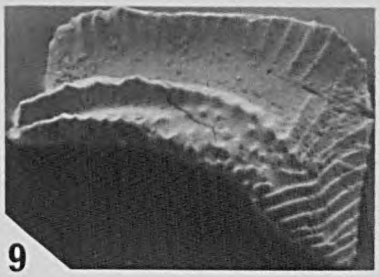

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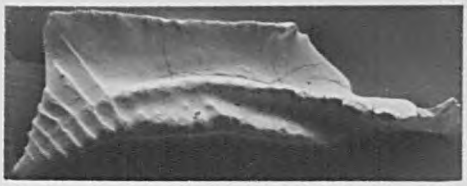

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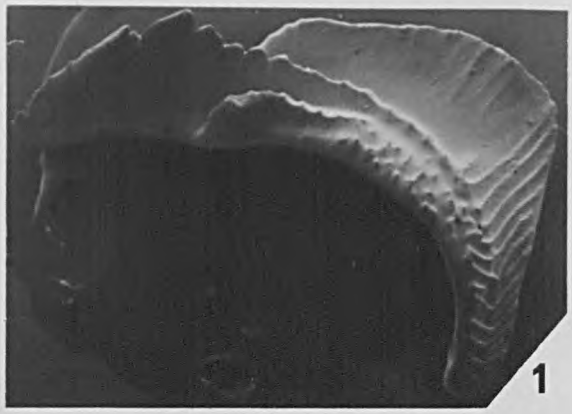
PLATE 22

Polygnathus linguiformis (x30)

All from Mount Wise

Figs. 1 - 8. Polygnathus linguiformis linguiformis HINDE 1879 morphotype BULTYNCK 1970. Variation.

1. 36/13
2. 36/8
3. 36/5
4. 36/20
5. 36/12
6. 36/3
7. 36/21 Unusual specimen with strongly flared inner platform and narrow tongue.
8. 36/4 Specimen with thickened outer platform margin.



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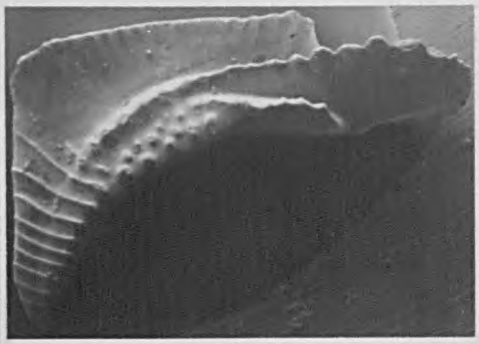

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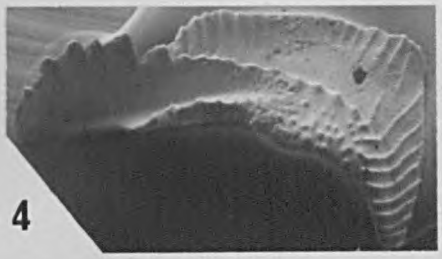

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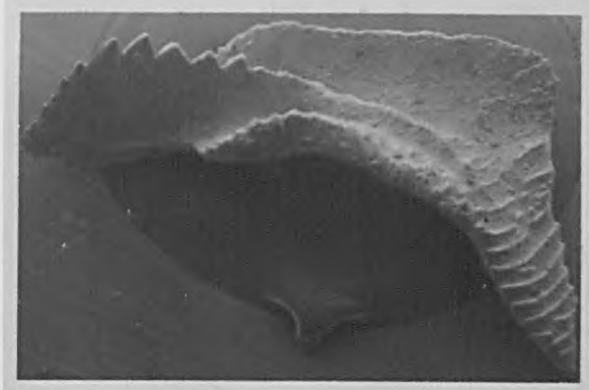

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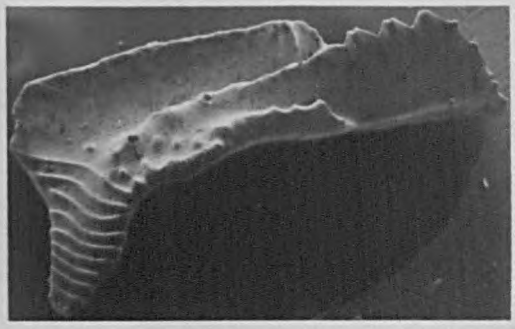

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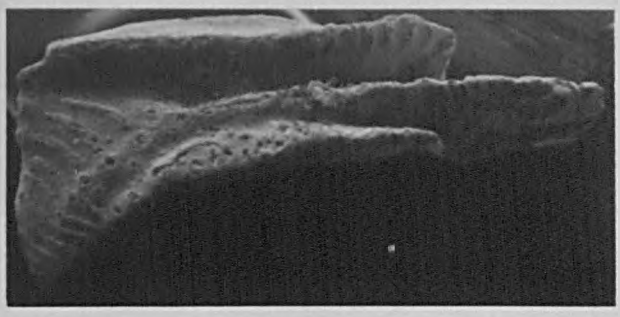

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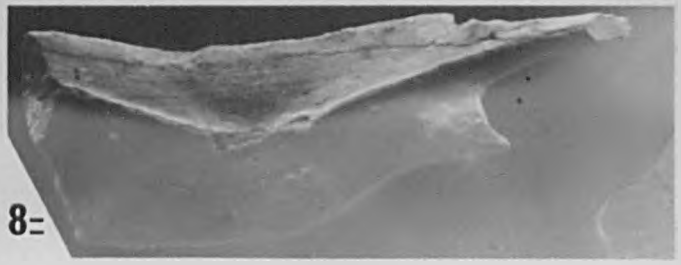

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PLATE 23

Polygnathus linguiformis group (x30)

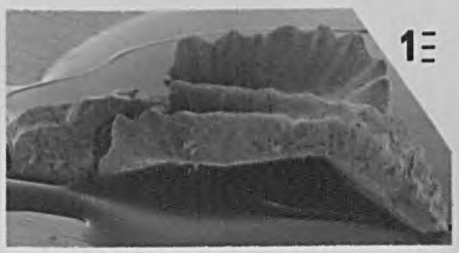
Figs. 1, 3, 4, 5. *Polygnathus mucronatus* WITTEKINDT 1965.

1. 36/6 Mount Wise. Narrow constricted tongue.
3. 36/9 Mount Wise. Specimen with carina development.
4. 36/8 Mount Wise. Form with short tongue.
5. 36/26 Mount Wise. Very narrow tongue with incipient carina.

Fig. 2. *Polygnathus serratus* sp. nov. 36/28, Mount Wise. Specimen with incipient carina.

Fig. 6, 7. *Polygnathus linguiformis* forma nova 2.

6. 28/32 Richmond Walk. Specimen with incipient carina.
7. 28/31 Richmond Walk. Note smoothly curved outer margin.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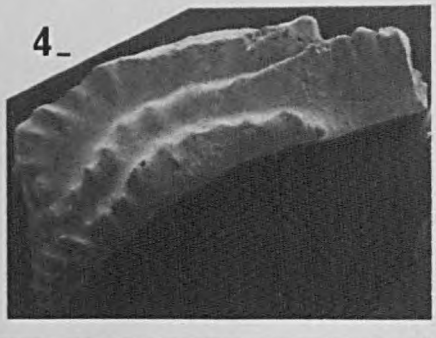
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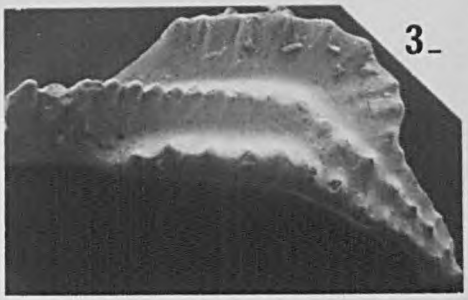
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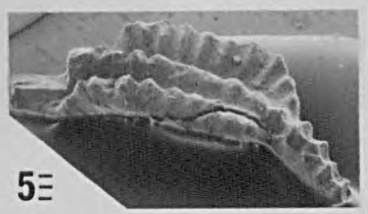
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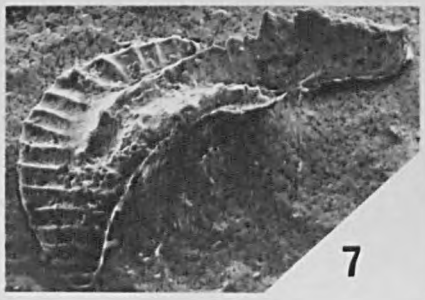
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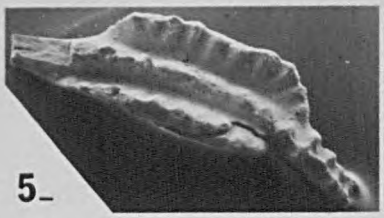
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PLATE 24

All from Mount Wise (x30)

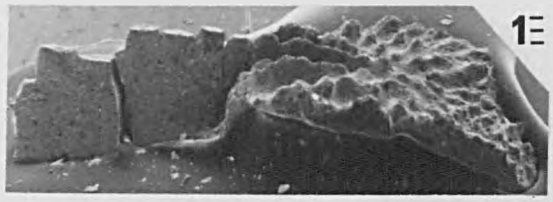
Figs. 1, 4. Polygnathus tuberculatus HINDE 1879.
1. 36/28
4. 36/19

Fig. 3. Polygnathus aff. Po. mucronatus WITTEKINDT 1965. 36/27. Specimen with thickened inner platform, smooth (broken) tongue and long, low (broken) blade.

Fig. 2. Polygnathus aff. Po. aspera HUDDLE 1934. 36/11.

Fig. 5. Polygnathus aff. Po. transversus WITTEKINDT 1965. 36/25. Specimen has long blade, and carina development.

Fig. 6, 7. Polygnathus serratus sp. nov.
6. 36/23 Specimen with carina development.
7. 36/24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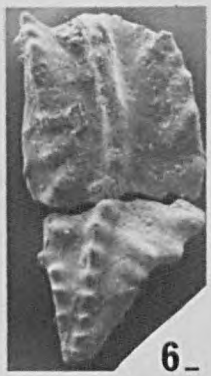
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PLATE 25

Ancyro Group (x40)

All from Western King, Plymouth

Figs. 1, 4. Ancyrodella cf. A. rugosa BRANSON & MEHL 1934 sensu lato.

1. WK2/32
4. WK2/34 Note strong, anteriorly directed keels.

Figs. 2, 3, 5-11. Ancyrodella rotundiloba alata GLENISTER & KLAPPER 1966.

2, 3, 5, 8. Show affinities to A. r. rotundiloba in the more triangular platform outline, and small secondary keel development.

2. WK1/15
3. WK1/16
5. WK1/32
8. WK1/2
6. WK2/33 Juvenile form with laterally expanded lobes.
7. WK1/22
9. WK1/3
10. WK3/39 Typical alate outline.
11. WK1/18 Juvenile form. As fig. 6.

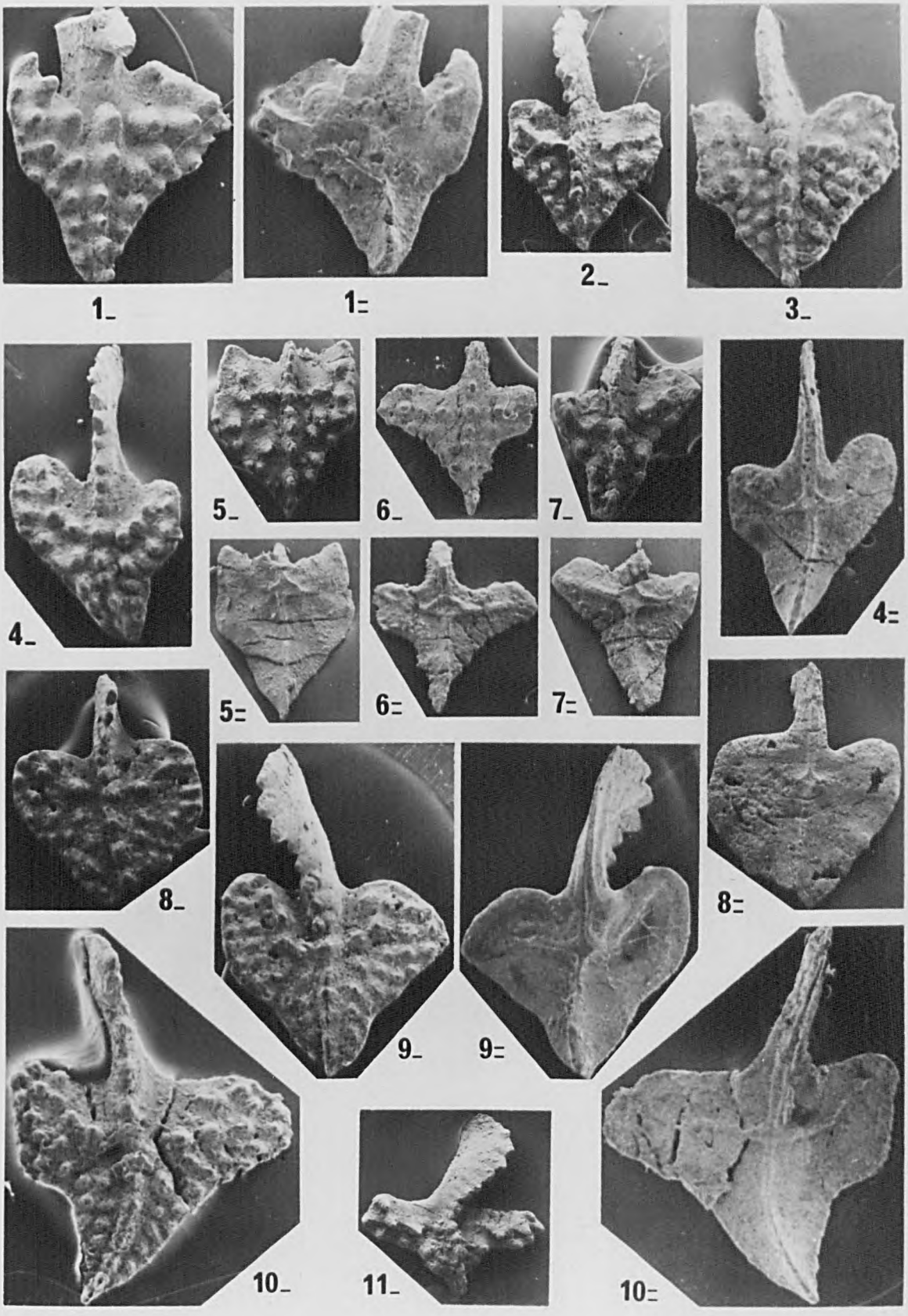
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PLATE 26

Ancyro Group (x40 except fig. 4)

Figs. 1, 3, 4, 9, 12. Ancyrodella gigas YOUNGQUIST 1947 sensu lato.

1. 135/1 Cremyl (South). Specimen close to type.
3. DS1/13 Durnford Street, Stonehouse.
4. DS1/12 x45. Durnford Street, Stonehouse.
9. DS1/9 Durnford Street, Stonehouse.
12. DS1/10 Durnford Street, Stonehouse.

Figs. 3, 4, 9, 12 have equi-triangular platforms.

Figs. 2, 7. Ancyrodella cf. A. rugosa BRANSON & MEHL 1934 sensu lato.

2. DS1/7 Durnford Street, Stonehouse. Note large basal cavity.
7. 54d/38 Western King.

Figs. 5, 6. Ancyrodella rotundiloba alata GLENISTER & KLAPPER 1966.

5. WK2/55
6. WK2/1 Affinity with A.r. rotundiloba.

Fig. 8. Ancyrodella cf. A. rotundiloba (BRYANT 1921). WK2/36. Specimen with nodes becoming fused into ridges. Secondary keel suggests tendency to A. rugosa.

Figs. 10, 11, 13. Ancyrodella curvata (BRANSON & MEHL 1934). Three small specimens.

10. 77c/28 Fisons Quarry (conglomerate matrix), Cattedown.
11. 77b/24 Fisons Quarry (conglomerate matrix), Cattedown.
13. WK6a Western King.

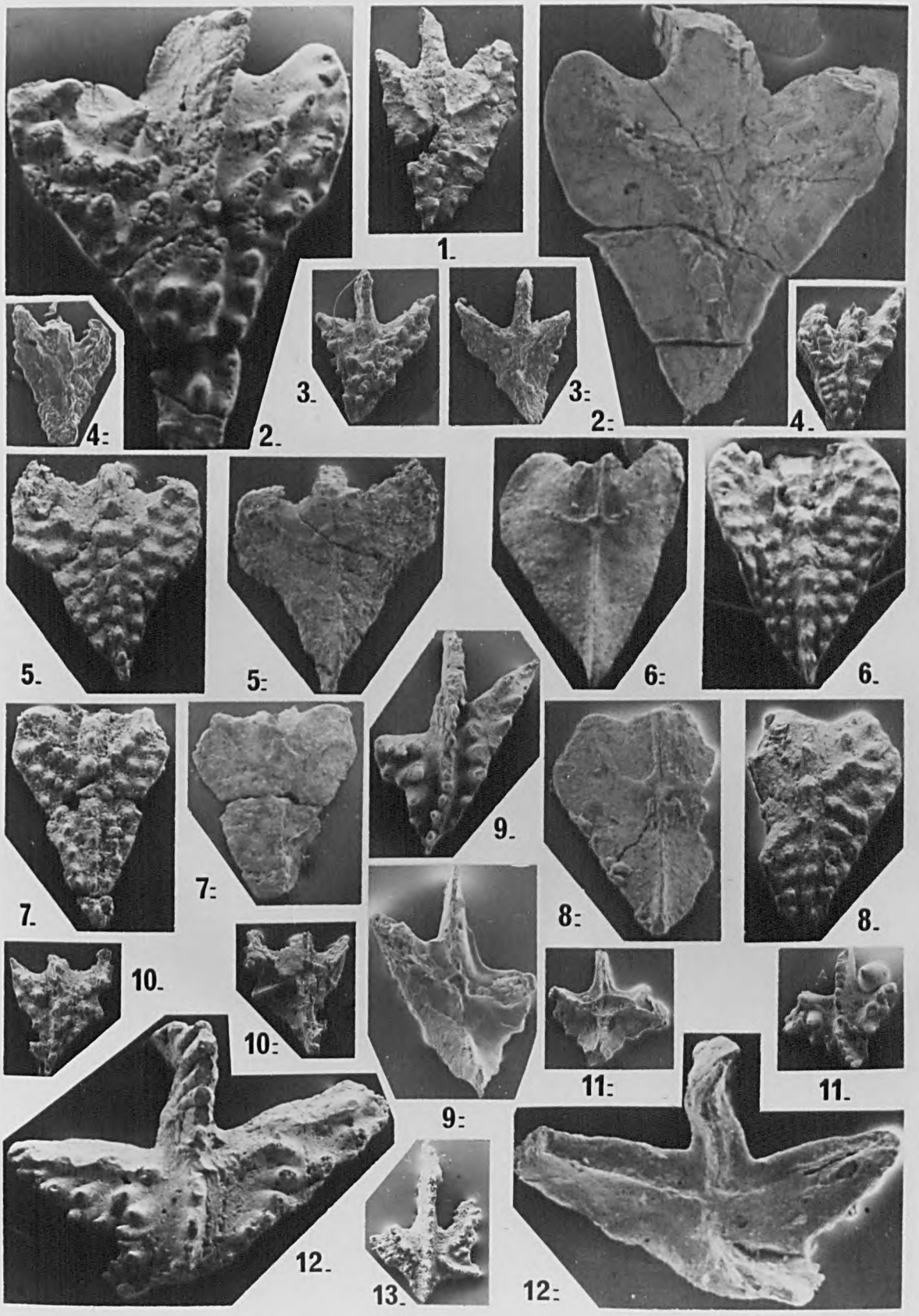
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PLATE 27

Ancyro Group (x40)

Fig. 1. Ancyrodella aff. A. rotundiloba (BRYANT 1921). 117/6, Radford Quarry. Unusual elongate specimen with one strongly developed keel.

Figs. 2,9. Ancyrodella rotundiloba alata GLENISTER & KLAPPER 1966.
2. WK1/18, Western King.
9. WK1/20, Western King. Juvenile.

Figs. 3,8. Ancyrodella gigas YOUNGQUIST 1947 sensu lato.
3. 36/40, Mount Wise (stratigraphical leak).
8. DS1/14, Durnford Street, Stonehouse.

Figs. 4,5. Ancyrognathus cryptus ZIEGLER 1962.
4. WK6a/43, Western King.
5. WKb2/42, Western King.

Fig. 6. Ancyrodella curvata (BRANSON & MEHL 1934). WKb1/29, Western King (breccia matrix).

Fig. 7. Ancyrodella nodosa ULRICH & BASSLER 1926. 56/31, Western King (infill).

Fig. 10. Ancyrognathus triangularis YOUNGQUIST 1945. 77b/5, Fisons Quarry, Cattedown.


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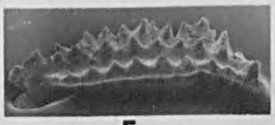
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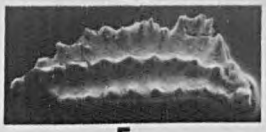
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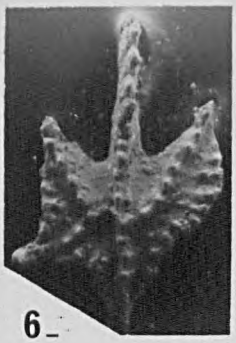
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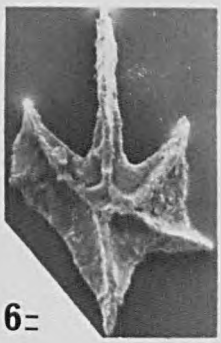
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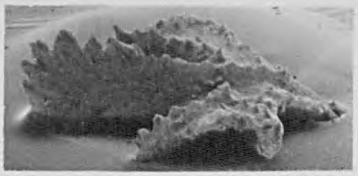
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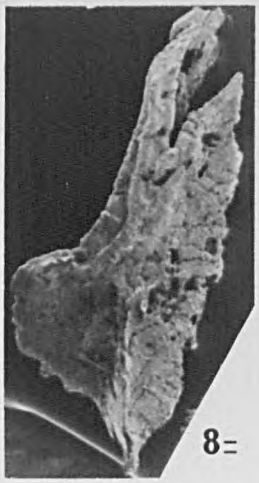
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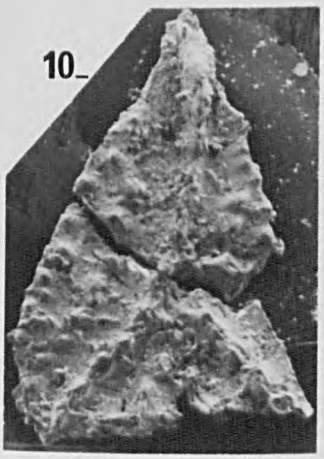
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Upper Devonian broad Polygnathus (x40)

Figs. 1-5, 7-10, 12-18.	Polygnathus asymmetricus
Figs. 1-5, 7-10, 12-14.	Polygnathus asymmetricus ovalis ZIEGLER & KLAPPER 1964.
1. WK2/14	Western King.
3. WK2/35	Western King.
4. WK1/31	Western King.
5. WK2/45	Western King.
7. WK2/5	Western King.
8. WK2/15	Western King.
9. WK1/29	Western King.
10. WK2/29	Western King.
12. WK1/44	Western King.
14. WK2/11	Western King.
2. 117/36	Radford Quarry.
Figs. 16, cf. 13.	Polygnathus asymmetricus asymmetricus BISCHOFF & ZIEGLER 1957.
16. 117/40	Radford Quarry. Aboral view.
cf.13. DS1/18	Durnford Street, Stonehouse. Broken specimen with suggested quadrate outline.
Figs. 17, 18.	Polygnathus asymmetricus
17. DS1/3	Durnford Street, Stonehouse.
18. DS1/19	Durnford Street, Stonehouse.
Fig. 15.	Polygnathus aff. Po. asymmetricus ovalis WK1/30, Western King. Specimen with trough shaped platform (questionably due to deformation) and posterior carina extension.
Figs. 19,cf. 11.	Polygnathus dengleri BISCHOFF & ZIEGLER 1957.
19. WK2/34	Western King.
cf.11. WK2/16 x45	Western King. Small, broken specimen.
Fig. 20.	Polygnathus ? sp. DS1/26 x45. Small, strongly deformed specimen.

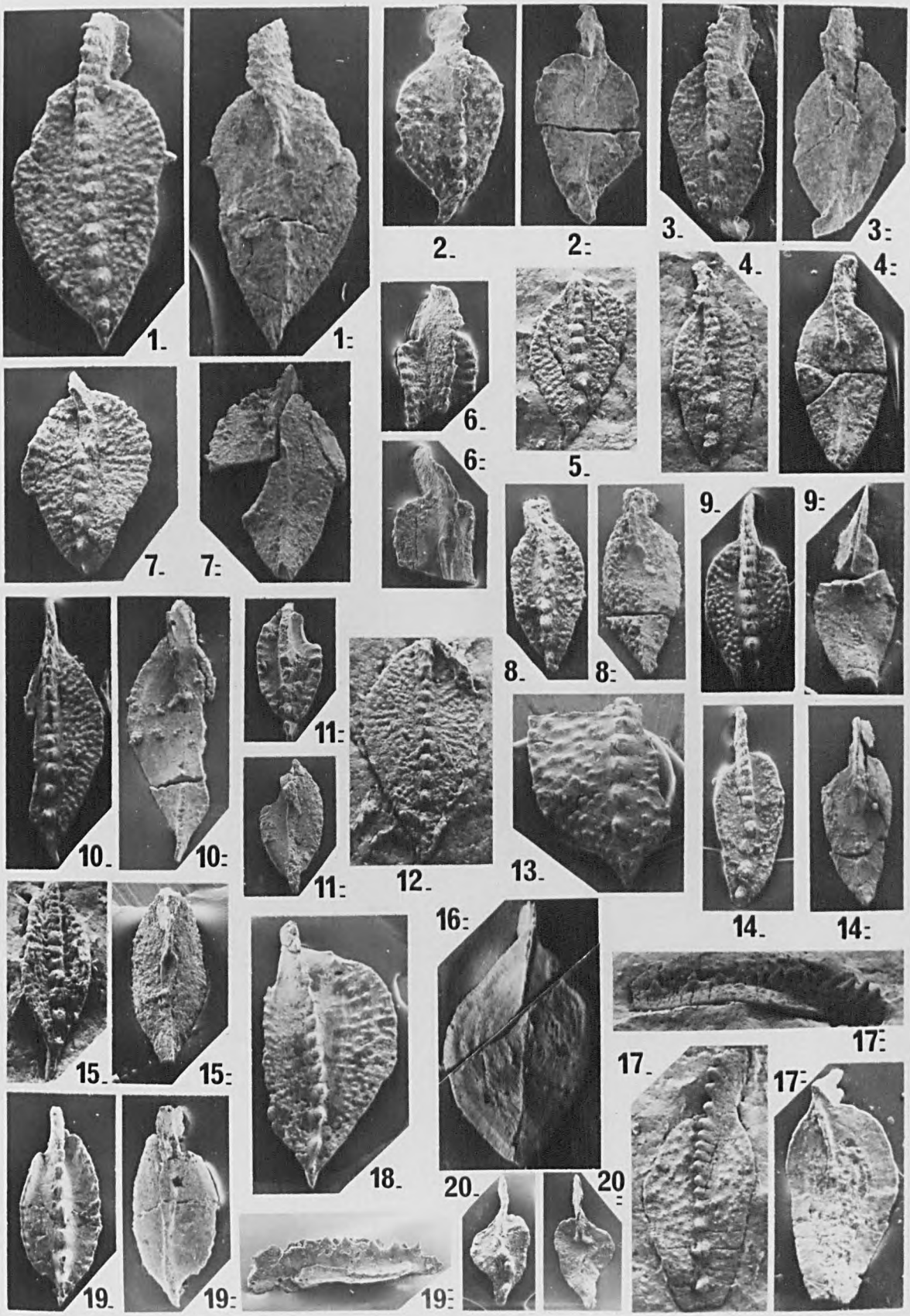
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PLATE 29

Upper Devonian broad Polygnathus (x40)

Figs. 1, 2, 5, cf. 17. Palmatolepis ? durnfordi sp. nov.
All from Durnford Street.

1. DS1/21 x45 Lobe differentiation exaggerated by deformation (?).
2. DS1/1 Lobe tip broken.
5. DS1/38
cf.17. DS1/6 Anterior platform and blade missing.

Figs. 3, 4, 6, 11-15, cf. 16. Polygnathus nismi sp. nov.
All from Durnford Street.

3. DS1/7
4. DS1/38
6. DS1/5
11. DS1/27
12. DS1/8
13. DS1/20
14. DS1/22
15. DS1/4
cf. 16. DS1/17

Fig. 7. Polygnathus asymmetricus. DS1/22 x45. Durnford Street. Strongly deformed specimen.

Fig. 8. Palmatolepis aff. Pa. transitans MULLER 1956. WK5/2, Western King. Juvenile specimen.

Fig. 9. Polygnathus cf. Po. cristatus HINDE 1879. H1/35, West Hoe.

Fig. 10. Palmatolepis ? n. sp. H1/32, West Hoe. Note peculiar basal cavity.

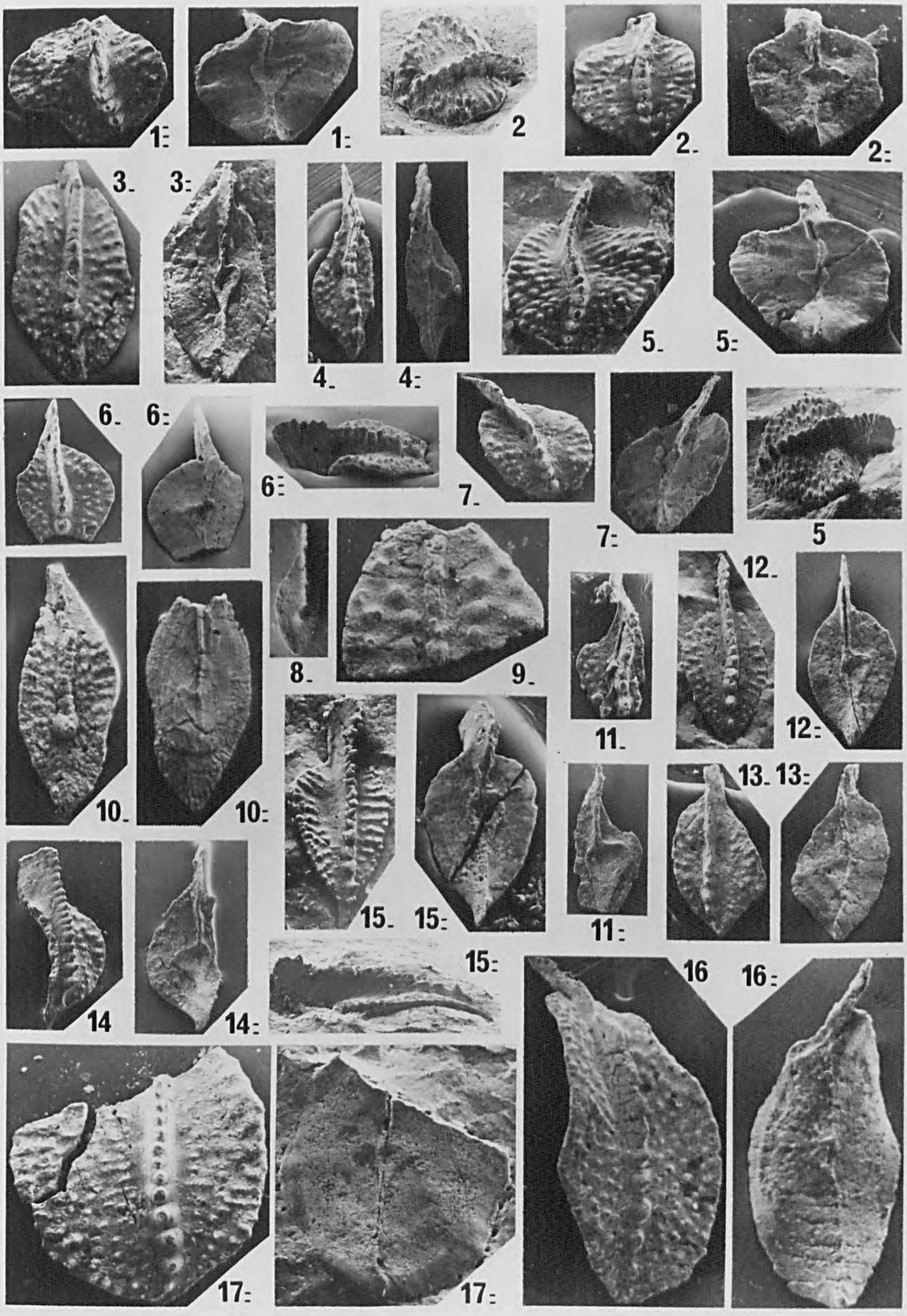
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TABLE 30

Palmatolepis (x40)

Figs. 1-3, 5, 6, 12-14. Palmatolepis subrecta MULLER & YOUNGQUIST 1947. Large specimen with typical ornament.

3.	77b/23	Fisons Quarry, Cattedown	Specimens from dolomitised sample.
1.	77b/26	Fisons Quarry, Cattedown	Growth series showing greater differentiation of outer lobe during ontogeny.
2.	77b/25	Fisons Quarry, Cattedown	
12.	77b/27	Fisons Quarry, Cattedown	
13.	77b/28	Fisons Quarry, Cattedown	
5.	77c/22	Fisons Quarry, Cattedown	
14.	77c/20	Fisons Quarry, Cattedown	

Fig. 4. Palmatolepis aff. Pa. ? durnfordi sp. nov. DS1/2, Durnford Street. Large, broken specimen with strong ornament of radial ribs. Note azygous node. Basal cavity obscured by basal attachment.

Fig. 6. Palmatolepis sp. Juvenile. 56/1, Western King. Resembles early growth stage of Pa. perlobata.

Figs. 7-9, 27. Palmatolepis aff. Pa. subrecta. Elongate forms.

7.	DS1/2	Durnford Street.	Oblique posterior oral view of specimen with high anterior blade (as fig. 8 too).
8.	DS1/1	Durnford Street	Specimen without carina development posterior of azygous node.
9.	DS1/3	Durnford Street	Specimen identical to 8 except carina developed posterior of central node.
27.	115/18	Radford Quarry	As 9. Rather fractured specimen.

Fig. 10. Palmatolepis cf. Pa. subrecta DS1/8. Durnford Street. Poorly preserved specimen with a carina terminating at central node.

Fig. 11. Palmatolepis cf. Pa. subperlobata BRANSON & MEHL 1934. DS1/13, Durnford Street.

Fig. 15. Palmatolepis sp. 115/15, Radford Quarry. Specimen with anterior part missing. Platform shape suggests strongly expanded lobe indicative of Pa. gigas, perhaps Pa. subrecta or Pa. hassi.

Fig. 16, 17. Palmatolepis sp. Deformed juveniles. Strongly expanded (broken) lobes suggest Pa. gigas.

16. DS1/6 Durnford Street.

17. DS1/5 Durnford Street.

Fig. 18. Palmatolepis termini SANNEMANN 1955. 119/14, Radford Quarry.

Figs. 19-21, 26. Palmatolepis gracilis gracilis BRANSON & MEHL 1934. NP3/42, 45, 43, 44, Neal Point.

Fig. 22. Palmatolepis glabra ULRICH & BASSLER 1926. NP1/1, Neal Point.

Figs. 23, 25. Palmatolepis perlobata perlobata SANNEMANN 1955. NP3/37, 38, Neal Point.

Fig. 24. Palmatolepis cf. Pa. helmsi ZIEGLER 1962. NP3/41, Neal Point.

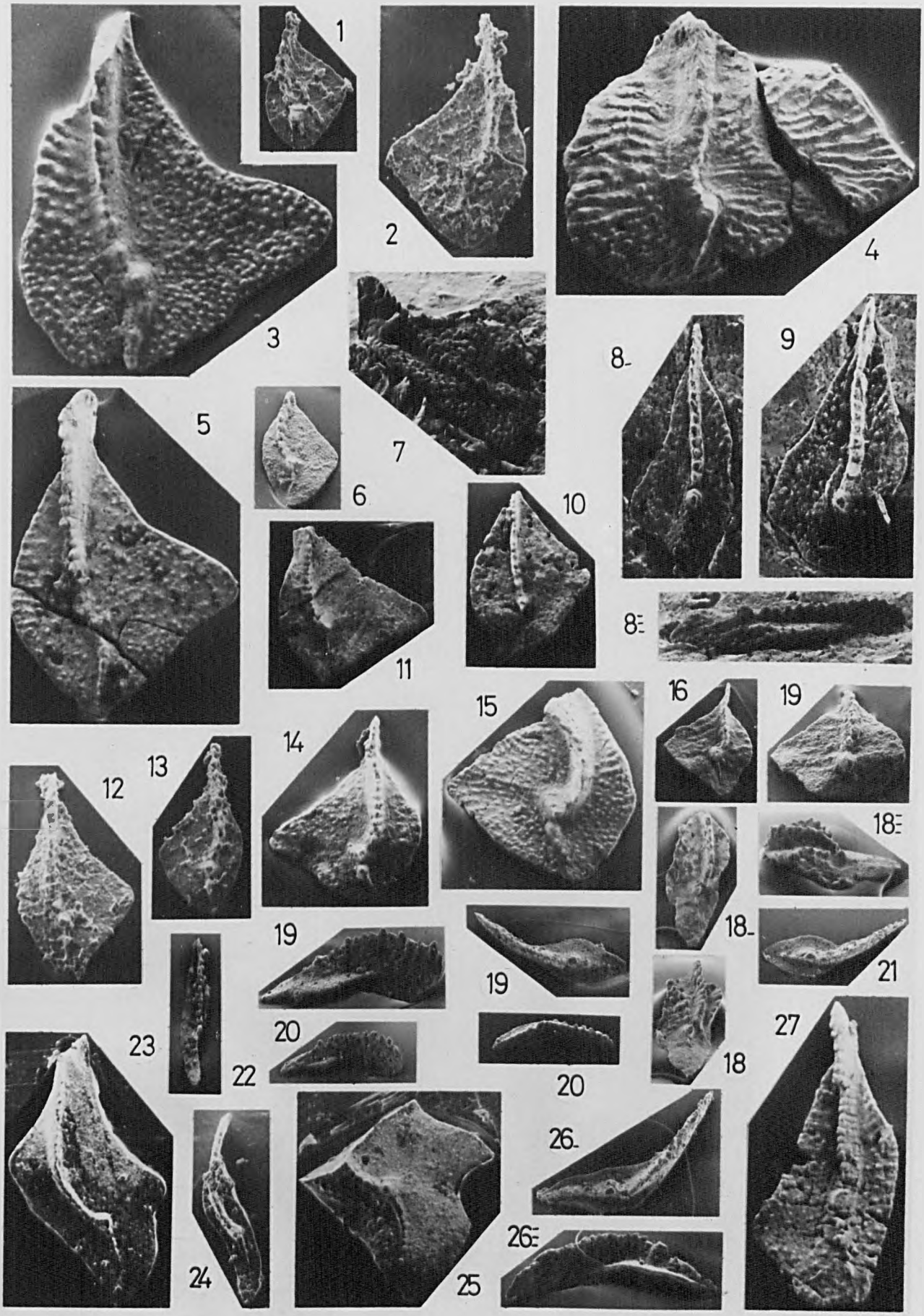
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PLATE 31

Palmatolepis (x40)

All from Western King

Fig. 1. Palmatolepis delicatula clarki, ZIEGLER 1962. WKb2. Specimen lies close to Pa. d. protorhomboidea in loss of platform ornament and tendency toward parapet development.

Figs. 2, 6, 9, 13, 14, 18, 19, 21. Palmatolepis delicatula delicatula BRANSON & MEHL 1934.

2. WKb2
13. WKb2
19. WKb2
6. WKb1
9. WKb1
14. WKb1
18. WKb1
21. WKb1

Figs. 3, 4. Palmatolepis aff. Pa. gigas

3. WKb1 Specimen with long, pointed lobe and long free blade.
4. WKb2

Figs. 5, 16, 26. Palmatolepis cf. Pa. triangularis SANNEMANN 1955.

5. WKb1 Similar to holotype.
16. WK6a Elongate specimen with small blunt lobe.
26. WK6a Triangular specimen with distinct lobe.

Figs. 7, 8, 30. Palmatolepis subperlobata BRANSON & MEHL 1934.

7. WKb1
8. WKb1
30. WK6a

Figs. 10, 11, 12, 15, 17, 20, 24.
Palmatolepis aff. Pa. subperlobata BRANSON & MEHL 1934.

10. WKb1
15. WKb1 Specimen with tendency toward nodose inner anterior platform (see fig. 25).
20. WKb1
11. 56
12. WKb2 Specimen with lobe in far anterior position.
17. WK6a As fig. 15.
24. WK6a Specimen with platform shape of fig. 12, but note nodose anterior inner platform.

Figs. 22, 29. Palmatolepis tenuipunctata SANNEMANN 1955.

22. WKb1
29. WK6a

Figs. 23, 28. Palmatolepis minuta minuta BRANSON & MEHL 1934.

23. WKb1
28. WKb1

Fig. 25. Palmatolepis quadrantinodosalobata SANNEMANN 1955. WK6a

Fig. 27. Palmatolepis cf. Pa. subrecta MILLER & YOUNGQUIST 1947. Juvenile. WK6a

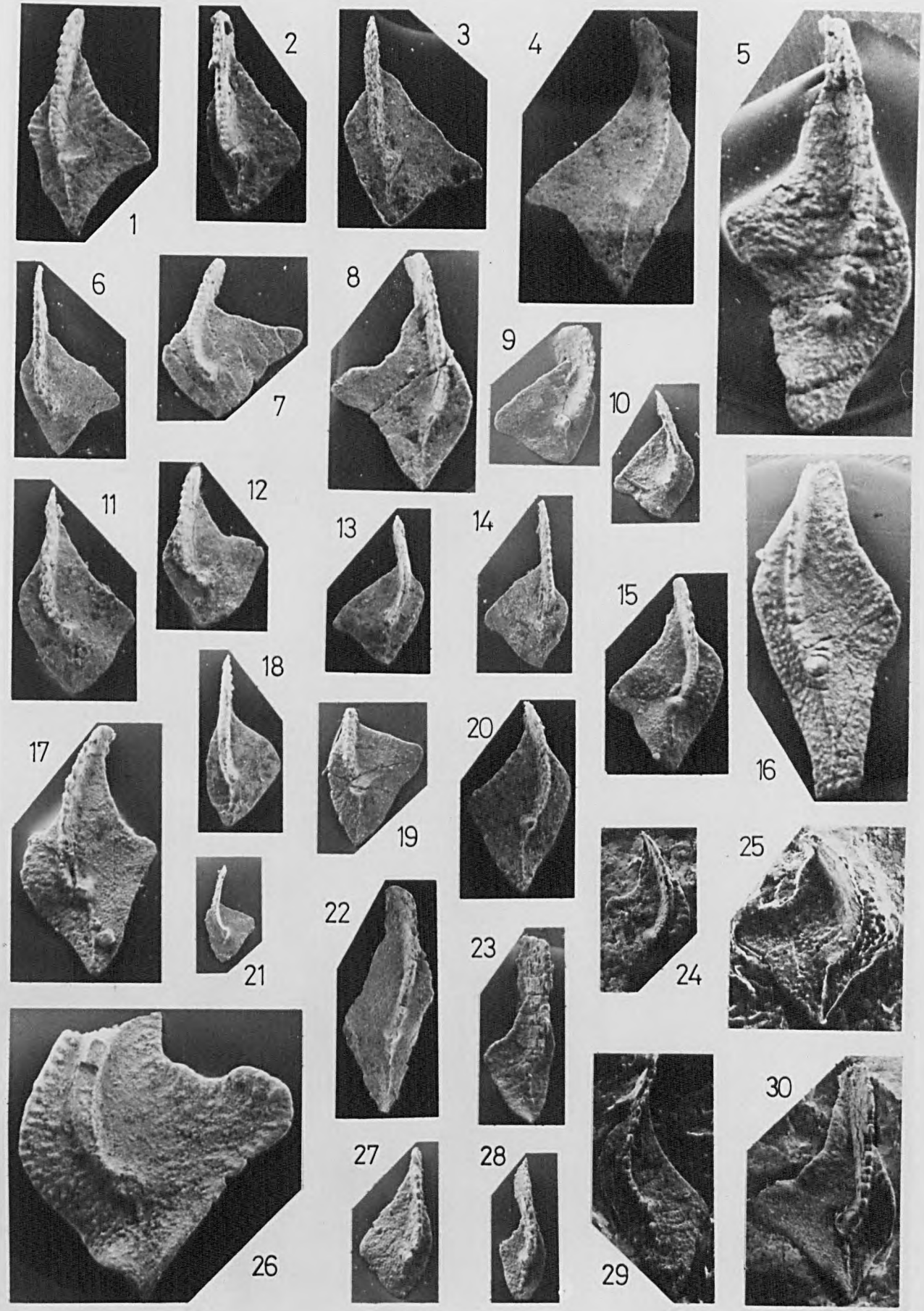
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PLATE 32

Famennian *Palmatolepis* (x40)

All from Neal Point

Fig. 1. *Palmatolepis inflexoidea* ZIEGLER 1962.

Figs.2,3,5,6. *Palmatolepis marginifera marginifera* HELMS 1959.

Fig. 2. NP3/5 Specimen with nodose parapet.

3. NP3/9

5. NP3/4 Typical specimen.

6. NP3/3 Specimen with platform shape of *Pa. stoppeli*.

Fig. 4. *Palmatolepis stoppeli* SANDBERG & ZIEGLER 1973.

Figs.7-9. *Palmatolepis* cf. *inflexa* MULLER 1956. ⟶ *Pa. inflexoidea* ZIEGLER 1962. NP3/14, 13.

Fig. 10. *Palmatolepis* aff. Pa. inflexoidea. ZIEGLER 1962. NP3/35.

Figs.11,12. *Palmatolepis* n.sp. aff. *Pa. inflexa* MULLER 1956.

NP3/11, 10. Forms with strongly sigmoidal platforms and short free blades.

Figs.13-15. *Palmatolepis* cf. *inflexa* MULLER 1956. NP3/6,8,7.

Figs.16-20. *Palmatolepis glabra prima* ZIEGLER & HUDDLE 1969.

16. NP3/18

17. NP3/16

18. NP3/17

20. NP3/15

19. NP3/19 Morphotype 1 *sensu* SANDBERG & ZIEGLER 1973.

Fig. 21. *Palmatolepis minuta minuta* BRANSON & MEHL 1934.

Figs.22, 23, 25. *Palmatolepis quadrantinodosa* BRANSON & MEHL 1934. morphotype 1 *sensu* DUSAR & DREESEN 1974.

22. NP3/34

23. NP3/32

25. NP3/33

Figs.24,29. *Palmatolepis perlobata perlobata* ULRICH & BASSLER 1926. NP3/39, 40.

Figs. 26-28. Palmatolepis distorta BRANSON & MEHL 1934.
NP3/25, 27, 28.

Fig. 30. Palmatolepis aff. Pa. tenuipunctata SANNEMANN 1955.
NP3/36. Form lying close to Pa. glabra,
but having incipient lobe development.

Figs. 31-35. Palmatolepis glabra pectinata ZIEGLER 1962.
NP3/ 24, 23, 22, 21, 20.

Figs. 36,37. Palmatolepis glabra aff. acuta HELMS 1963.

36. NP3/28 Form transitional from Pa. distorta.

37. NP3/29 Form transitional from Pa. g. pectinata.


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PLATE 33

Upper Devonian *Icriodus* (x 40)

Figs. 1-7, 11-12. *Icriodus* aff. *I. alternatus*.

1. WKb2/8 Western King (breccia matrix).
2. WK6a/31 Western King (shale).
3. WK6a/28 Western King.
4. WK6a/34 Western King.
5. WK6a/39 Western King.
6. WK6a/33 Western King.
7. WK6a/35 Western King.
11. WK6a/30 Western King.
12. WK6a/40 Western King. Large specimen with strongly inclined cusp-like blade. Tendency to *I. cornutus*.

Figs. 8, 9. *Icriodus* aff. *brevis brevis* STAUFFER 1940. Specimens transitional from I. symmetricus.

8. DS1/4 Durnford Street. Note laterally displaced blade denticles.
9. 117/21 Radford Quarry.

Figs. 10, 14-16, 22, 23. *Icriodus* n. sp. aff. *I. alternatus*.

10. WK2/79 Western King.
14. WK2/80 Western King. Specimen with high blade.
15. WK1/54 Western King.
16. WK2/51 Western King.
22. WK1/52 Western King.
23. WK1/55 Western King.

Figs. 13, 18-21. *Icriodus expansus* BRANSON & MEHL 1934 - *I nodosus* (HUDDLE 1934) group.

13. DS1/68 Durnford Street.
19. DS1/61 Durnford Street.
21. DS1/64 Durnford Street.
18. P9/1 Radford Quarry.
20. C4/11 Barn Pool, Cremyl.

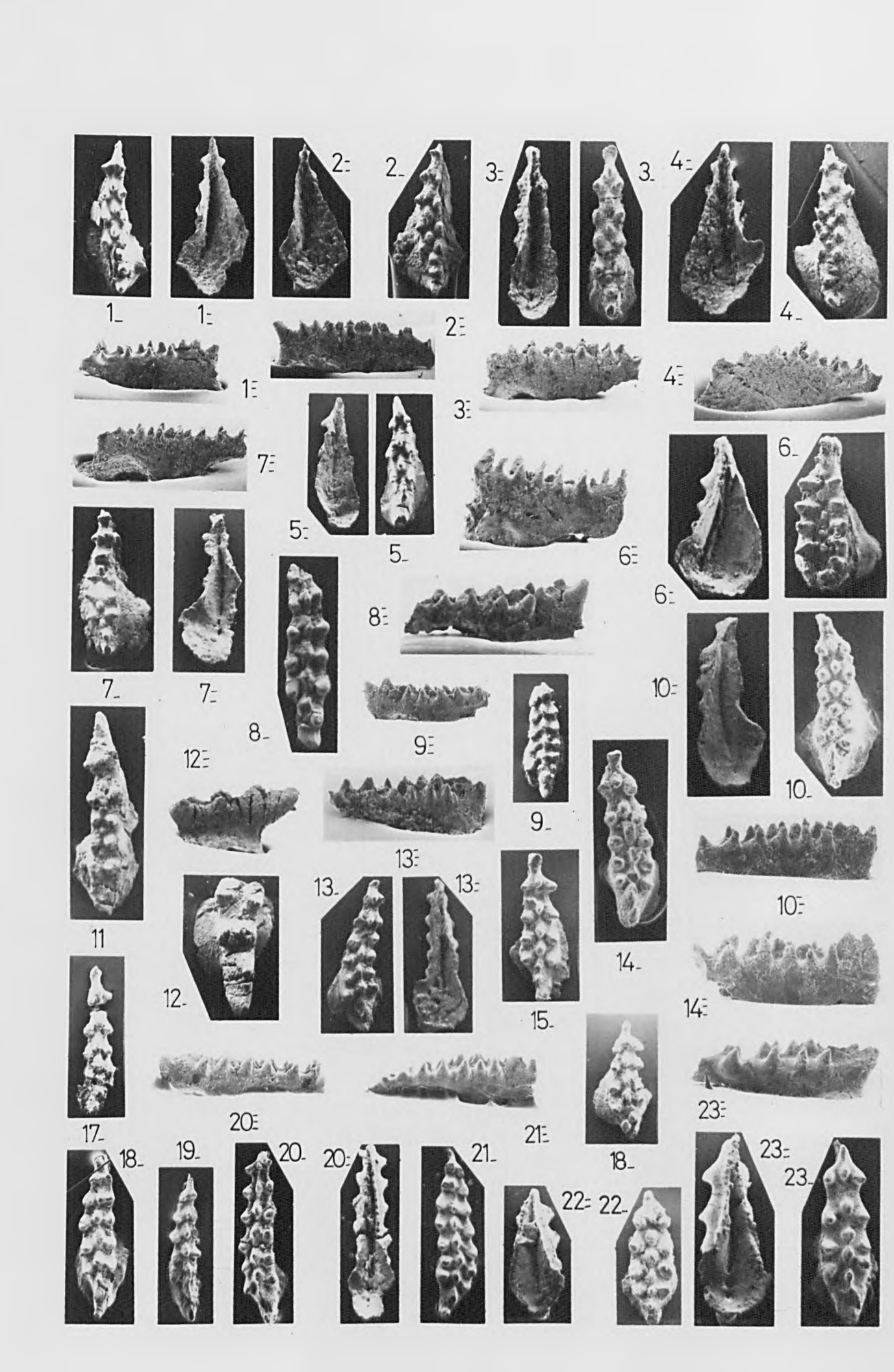
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PLATE 34

Upper Devonian Icriodus (x40)

Figs. 1-13, 20. Icriodus symmetricus BRANSON & MEHL 1934.

1-5, 11-13, 20. Morphotype 1.

11. 117/21, Radford Quarry.
12. 117/22, Radford Quarry.
13. 117/24, Radford Quarry.
20. 117/25, Radford Quarry.

Small forms with straight axis. No. 12 - specimen with 'expansiform' platform.

2. C4/9. Barn Pool, Cremyl.
4. 77C/77, Fisons Quarry, Cattedown.
1. DS1/56, Durnford Street, Stonehouse.
3. DS1/69, Durnford Street, Stonehouse.
5. DS1/58, Durnford Street, Stonehouse.

Larger forms with curved axes.

Figs. 6-10. Morphotype 2 (aff. 'Icriodus curvatus').

6. 77c/70 Fisons Quarry, Cattedown.
7. 77c/72 Fisons Quarry, Cattedown.
8. 77c/71 Fisons Quarry, Cattedown.
9. 77c/84 Fisons Quarry, Cattedown.
10. 77c/75 Fisons Quarry, Cattedown.

Figs. 14 -19, 21. Icriodus expansus - nodosus group.

14. WK5/44, Western King.
15. WK5/43, Western King.
16. WK5/49, Western King.
17. WK5/45, Western King.

Gerontic specimen with 'retrodepressiform tendency. (Slight oblique - anterior view

18. WK4/3, Western King.
19. WK5/47, Western King.
21. WK5/48, Western King.

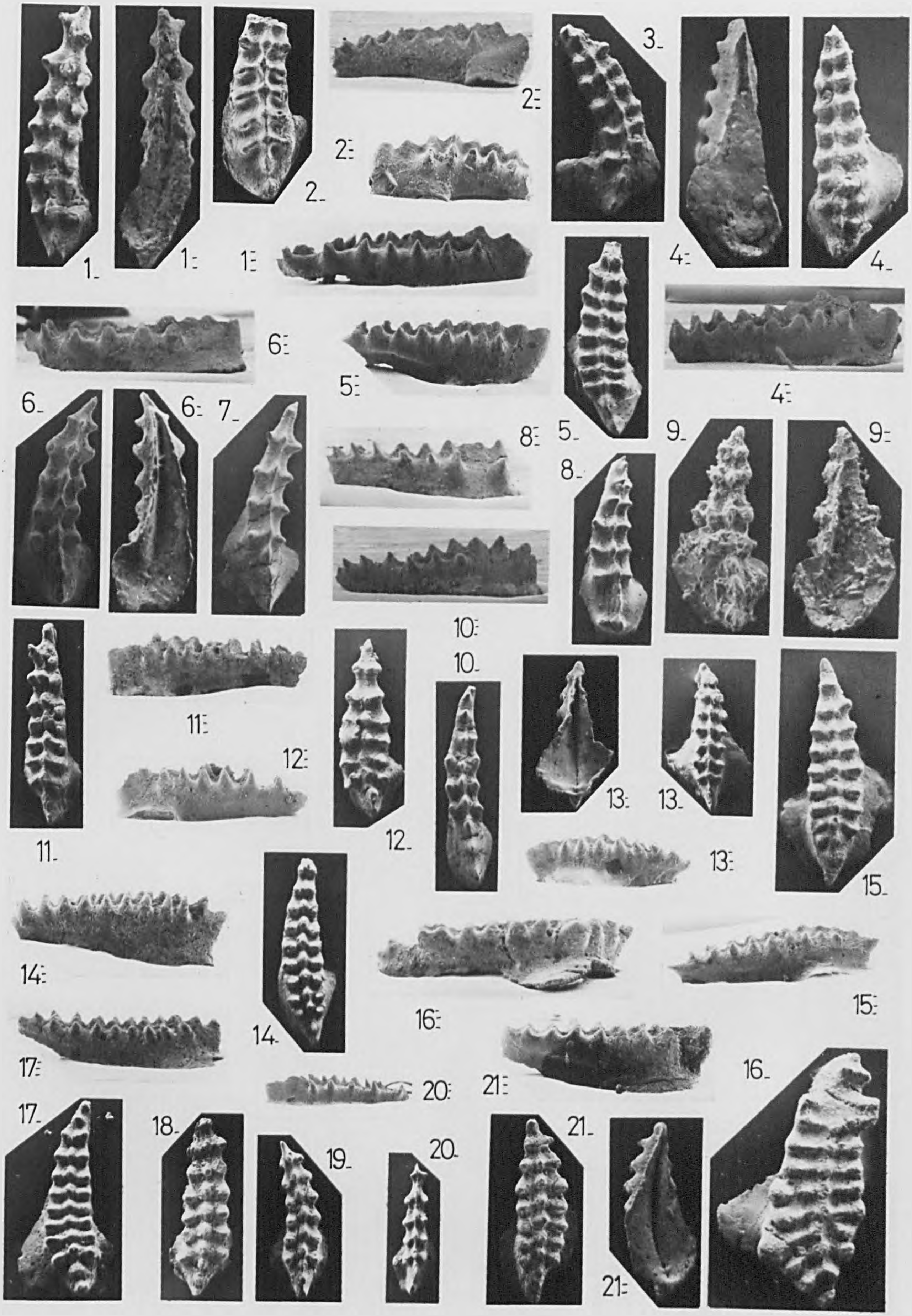

TABLE 35

Bars and blades ('A elements') et al. (x30)

Figs. 1-3, 5, 6. Angulodiform (A_2) elements.

2. 36/96 Mount Wise.

5. 36/87 Mount Wise.

1. 36/92 Mount Wise.

3. 36/90 Mount Wise.

6. 20/50 Gasworks Quarry, Cattedown. Angulodus demissus HUDDLE 1934.

Figs. 4, 7-14, 18. Hindeodelliform (A_1) elements.

4. 28/61 Richmond Walk.

18. 36/1 Mount Wise.

9. 36/147 Mount Wise.

10. 36/151 Mount Wise.

7. 36/150 Mount Wise.

8. 36/148 Mount Wise.

14. NP15/24 Neal Point.

11. 36/95 Mount Wise.

13. 36/93 Mount Wise.

12. 36/94 Mount Wise.

Figs. 16, 19, 22. A_3 elements.

16. 44(3)/74 Teat Hill Quarry, Coxside. Trichonodelliform.

19. 36/34 Mount Wise)
22. 36/32 Mount Wise) Diplodelliform.

Figs. 15, 24. Synprioniodiniform (N) elements.

15. 36/13 Mount Wise.

24. 36/11 Mount Wise. Synprioniodina alternata

Fig. 20. Pelekysgnathus planus SANNEMANN 1955. WK6a/14 (x55), Western King.

Figs. 17, 21, 23, 25. Unusual forms having additional processes. All from Mount Wise.

17. 36/98 (x60) Part of posterior process of a ?hibbardelliform.

21. 36/133 N element transitional to A_3 element ?

23. 36/168 Part of posterior process of A_1 element ?

25. 36/164 ?Prioniodiniform with incipient lateral process.

Fig. 26. ?Bryantodiform ($?O_1$) element. 20/19 (x20), Gasworks Quarry.


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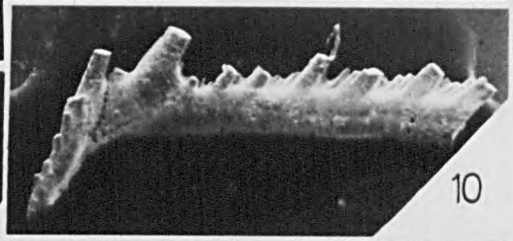
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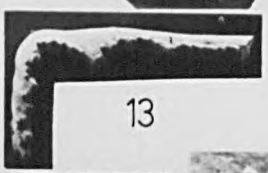
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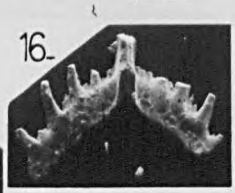
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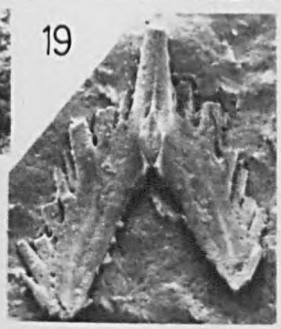
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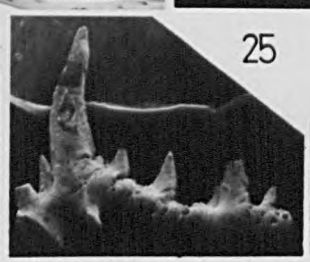
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PLATE 36

Bars and blades ('B elements') et al.(x30)

Figs. 1, 2, 8. Ligonodiniform (B_1) elements. Mount Wise.

1. 36/125, Ligonodina robusta BRANSON & MEHL 1934.
2. 36/123
8. 36/128

Figs. 11, 14, 10. Lonchodiniform elements. Mount Wise.

11. 36/122 Lonchodina discreta ULRICH & BASSLER 1926.
14. 36/127 (B_2)
10. 36/130 (? B_{1-2})

Figs. 4, 6, 9. Neoprioniodiniform (N) elements.

4. PS4/53, Princerock Quarry.
6. 36/165, Mount Wise.
9. 28/56, Richmond Walk.

Figs. 5, 12, 13, 15. Hibbardelliform (B_3) elements.

5. 20/44, Gasworks Quarry.
12. 36/121, Mount Wise.
13. 36/120, Mount Wise. Hibbardella wildungensis BISCHOFF & ZIEGLER 1957.
15. 25/63, Richmond Walk.

Figs. 3, 7. Aversiform (O_2) elements.

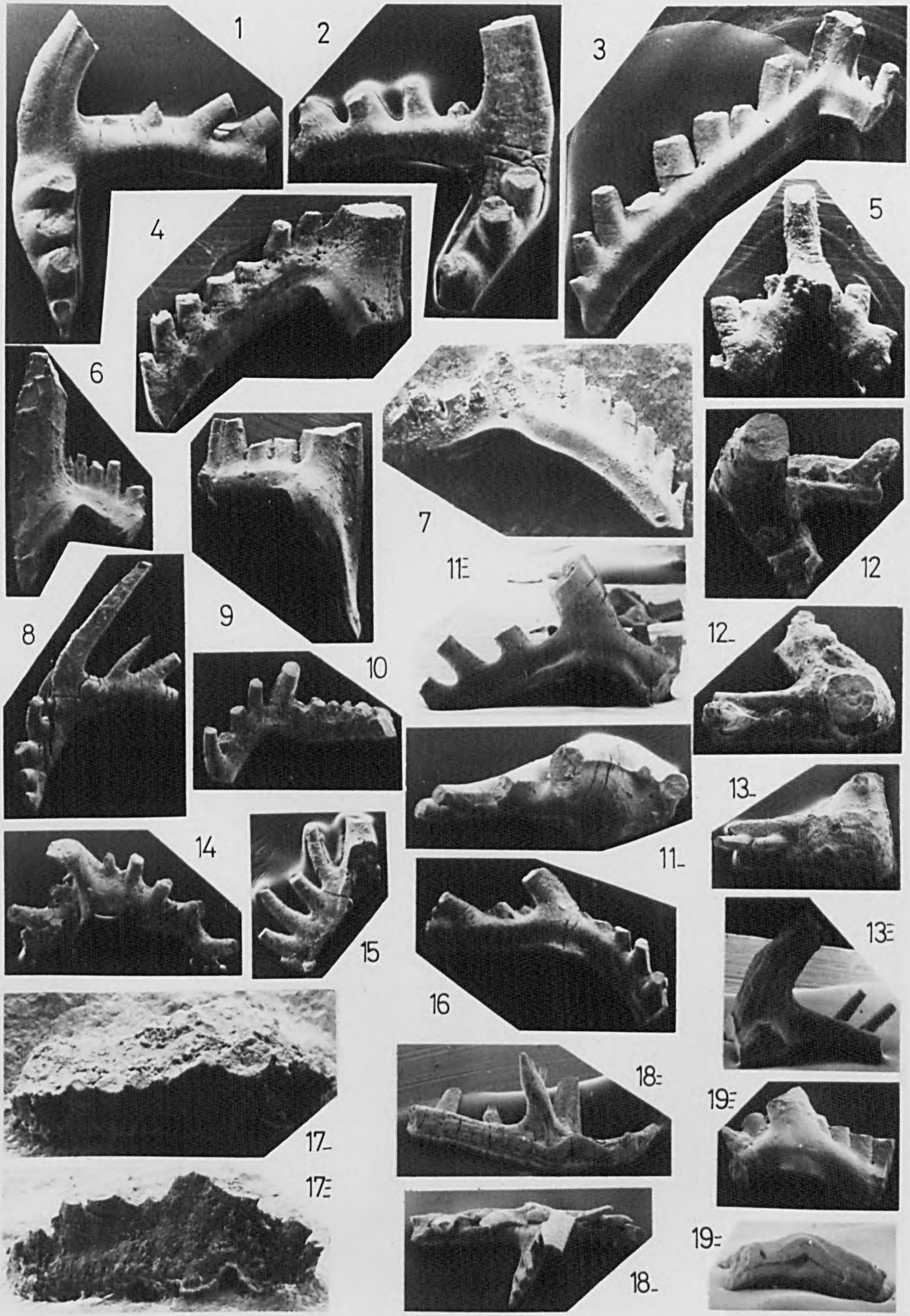
3. 36/124, Mount Wise.
7. BF3/31, near Botus Fleming.

Fig. 16. Angulodiform ? element. 36/149, Mount Wise.

Fig. 17. Bryantodus cf. colliqatus (BRYANT 1921). 25/18, Richmond Walk. (Polygnathellus ?).

Fig. 18. Unusual element with three processes none of which are symmetrically developed, and one of which (? the posterior) rises from the side of another and is unrelated to the position of the basal cavity. 36/85, Mount Wise.

Fig. 19. Bryantodiform element. 20/118, Gasworks Quarry, Cattedown.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