Field Meeting in the Sherborne–Yeovil District

22–23 April 1967

Report by H. S. TORRENS

with an Appendix on New Inferior Oolite Sections

by J. WHICHER

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THE GEOLOGICAL INTEREST of the whole area is considerable, and the Middle Jurassic beds in this neighbourhood are world renowned. The fine development of Upper Toarcian strata in the Yeovil area, in Yeovil Sands facies, has given us the name for the Upper Toarcian Substage (Yeovilian). The famous fossil beds in the Inferior Oolite of the Sherborne–Bradford Abbas region have yielded perhaps the best preserved molluscan faunas known from British Jurassic beds, described and monographed since the days of J. and J. de C. Sowerby. Some of the stratigraphical principles and zonal names we now accept as standard were evolved after detailed study of this formation by J. and S. S. Buckman and others.

The interest of the region also extends to the Bathonian sediments. The Fuller's Earth Rock, named near Bath and traced by William Smith as far south as Sherborne, is the richest repository of the rather unusual Middle Bathonian ammonites in western Europe. This horizon at Troll Quarry, one of the localities visited by the party, has yielded a fauna which is in fact still unique, if only now in quantity.

The Geologists' Association has held meetings in the area in 1871, 1885, 1911 and 1939. At the last meeting, in 1939, officers of the Geological Survey (Kellaway & Wilson, 1941b) were able to demonstrate the results of their revision of the 1-in. Yeovil Sheet (312) (Wilson, Welch, Robbie & Green, 1958). Members were then able, in the four days available, to examine the full succession of Jurassic formations from the Lower Lias up to the Cornbrash.

For the present meeting the Mermaid Hotel, Yeovil, was the headquarters, where on the evening of 21 April about twenty-five members and Dr. Hahn, of the Geologisches Landesamt, Freiburg-im-Breisgau, assembled to hear H. Prudden and H. S. Torrens give brief outlines of the geology and geomorphology of the district. One of the main objects of the Field Meeting was to demonstrate recent work on the Yeovil Sands by D. K. Davies (1968, 1969) and H. C. Prudden (1967), and on the topmost

Inferior Oolite and Fuller's Earth Rock by H. S. Torrens (1966), of which much is still unpublished. A printed programme, prepared for the meeting, was distributed, together with sketch-maps of localities and illustrative diagrams.

Saturday, 22 April

The day was spent visiting localities in the Yeovil Sands and Inferior Oolite.

TABLE I. **Zonal Division of the Bajocian and Toarcian stages in the Yeovil area**

(Modified slightly from works by Arkell, and Dean, Donovan & Howarth)

Stages	Zones	Sub-zones	Formations
BATHONIAN	*Zigzagiceras zigzag*	see Fig. 2	
UPPER BAJOCIAN	*Parkinsonia parkinsoni*	*P. bomfordi* *P. parkinsoni* *Strigoceras truellei*	Upper Inferior Oolite
	Garantiana garantiana *Strenoceras subfurcatum*		
MIDDLE BAJOCIAN	*Stephanoceras humphriesianum*	*Teloceras blagdeni* *S. humphriesianum*	Middle Inferior Oolite
	Sonninia sowerbyi[1]	*Otoites sauzei* *Witchellia laeviuscula* *Shirbuirnia trigonalis* *Hyperlioceras discites*	
LOWER BAJOCIAN OR AALENIAN	*Graphoceras concavum*		Lower Inferior Oolite
	Ludwigia murchisonae[1]	*Brasilia bradfordensis* *Ludwigia murchisonae* *Ancolioceras spp.*	
	Tmetoceras scissum *Leioceras opalinum*		
UPPER TOARCIAN OR YEOVILIAN	*Dumortieria levesquei*	*Pleydellia aalensis*	Normally absent but in Yeovil Sands facies when present
		Dumortieria moorei *Dumortieria levesquei* *Phlyseogrammoceras dispansum*	Yeovil Sands
	Grammoceras thouarsense		↑
LOWER TOARCIAN			Junction Bed (condensed) ↓

[1] Doubt exists about the distinction and position of the sub-zones of these zones.

The importance of this area for study of the stratigraphy of the Upper Toarcian is considerable, for it is the type-area for the Yeovil Sands and for the Yeovilian Substage (Howarth, 1964) (see Table I). The detailed ammonite succession in these strata is, however, still badly known, although fossils and especially ammonites are abundant at some levels.

(1) East Chinnock

Leaving Yeovil by the Crewkerne road (A30), the party first visited the deep holloway just to the north-east of East Chinnock (ST 499135), where a fine section cut down through the Yeovil Sands can be seen. Attention was especially focused on two bands of fossiliferous calcareous sandstone, 0.30–0.45 m. apart, occurring at road level about 100 m. from the north end of the holloway. The following fossils were collected here[1]:

UPPER LAYER, UPPER LIAS, *DUMORTIERIA LEVESQUEI* ZONE, *D. MOOREI* SUB-ZONE (all H. P. Collection)

Homoeorhynchia cynocephala (Richard)
Myophorella formosa (Lycett)
Pholadomya cf. *ovulum* L. Agassiz
Variamussium sp.
Dumortieria costula (Reinecke)
D. moorei (Lycett)
D. pseudoradiosa (Branco)
D. sp. indet.

LOWER LAYER, UPPER LIAS, *DUMORTIERIA LEVESQUEI* ZONE, *D. MOOREI* SUB-ZONE

Astarte elegans J. Sowerby (H.P.)
Entolium liasianum (Nyst) (H.P.)
Lima (*Plagiostoma*) *sp.* (G.S.M. Zr 1074)
Mactromya cardioides (Phillips) (G.S.M. Zr 1073, and H.P.)
Myophorella formosa (Lycett) (G.S.M. Zr 1072, and H.P.)
Pseudolimea sp. (G.S.M. Zr 1071)
Variamussium sp. (G.S.M. Zr 1073)
Procerithium (*Rhabdocolpus*) *undulatum* (Deslongchamps) (G.S.M. Zr 1077)
Dumortieria moorei (Lycett) (G.S.M. Zr 1075, and H.P.)
D. pseudoradiosa (Branco) (G.S.M. Zr 1076)

The presence of numerous bioturbated trace-fossils in the Sands themselves was noted by Mr. A. Horton, and some interesting discussion on their possible origin followed.

[1] Specimens with reference letters and numbers are in the following collections:

G.S.M.	Institute of Geological Sciences Museum, London.
B.M.	British Museum (Natural History), London.
S.M.	Sedgwick Museum, Cambridge.
O.U.M.	Oxford University Museum.
H.P.	Hugh Prudden Collection, Yeovil.

All numbered specimens without prefix are in the H. Torrens (H.T.) collection.

(2) Furringdon's Cross

The party then moved to Furringdon's Cross, south-east of Merriott (ST 44851185). Here a temporary exposure on the north-west verge had exposed, not long before the visit, the beds at the junction of the Inferior Oolite and Yeovil Sands. This junction is of interest, for normally in this region the basal Inferior Oolite (down to the *Leioceras opalinum* Zone) rests on the Yeovil Sands (*D. levesquei* Zone, *D. moorei* Sub-zone) with the *Pleydellia aalensis* Sub-zone absent (but see p. 307 and Table I). However, at Haselbury Mill, about one mile (1.6 km.) south-east of Furringdon's Cross, the *aalensis* Sub-zone fauna has been recorded (Kellaway & Wilson, 1941b, 180; Dean, Donovan & Howarth, 1961, pl. 74, fig. 4).

At Furringdon's Cross ammonites were common in the irregular limestone beds below the main part of the Inferior Oolite at the temporary section, which appeared to dip north. The majority of the fauna collected belongs to the *Leioceras opalinum* Zone, but *L. bifidatum* (=*L. comptum*, Rieber, 1963, 34) indicates the *Tmetoceras scissum* Zone above (=*L. comptum* Sub-zone of Rieber).

The following fauna was collected here in the Yeovil Sands–Inferior Oolite junction beds (all unnumbered specimens in H.P.).

Serpulid fragments
Montlivaltia sp.
Homoeorhynchia cynocephala (Richard)
Astarte (*Coelastarte*) *sp.* (juvenile form)
Myophorella sp.
Opis (*Trigonopis*) *sp.*
Tancredia? (G.S.M. Zm 9947)
Leioceras cf. *costosum* (Quenstedt) (G.S.M. Zm 9948)
L. opalinum (Reinecke) (G.S.M. Zm 9943)
L. bifidatum S. Buckman (=*L. comptum*, Rieber, 1963, 34)
Cyclicoceras undatum S. Buckman
Pleurolytoceras cf. *hircinum* (Schlotheim) (G.S.M. Zm 9947, and H.P. (2))

Three specimens of the rather unusual ammonite *Pleurolytoceras* were found. *P. hircinum* (Schlotheim) may not after all be restricted to the *aalensis* Sub-zone, as suggested by Dean, Donovan & Howarth (1961, 493).

(3) Ham Hill Quarry

The next locality to be visited was one of the famous Ham Hill Stone quarries (ST 482162). The Ham Hill Stone has been extensively quarried on Hamdon Hill plateau for use as a freestone since Roman times and has been used in many beautiful buildings in the area, as was noted by W. G. Maton (1797, 26). The Ham Hill Stone itself is a remarkable deposit, being a brown shelly ironshot limestone, which is the lateral equivalent of

normal Yeovil Sands elsewhere in the area. As Arkell (1933, 169) has noted, the limestone facies appears abruptly and within a few kilometres has attained a thickness of over 15 m., and equally quickly thins again to 0.6 m.

The quarry visited by the party lies at 245° 1650 m. from Montacute Church and a similar distance at 150° from Stoke sub Hamdon Church. It is that illustrated by Richardson (1919, 169 and pl. 16) and Fowler (1938, 12), when the quarry was in work. Production has long ceased, but the following section is visible:

	m.
6. Shelly limestone cutting down into Bed 5	1.5
— — — — — — — — — — ?erosion surface — — — — — — — — — —	
5. Sand and shelly limestone	6.1
4. Sand	1.5
3. Ham Hill Stone	3.0
2. Clay–sand parting	0.23–0.30
1. Ham Hill Stone	11.0+

There are several interesting features. Especially interesting is the base of bed 6, which is ?conglomeratic, and may mark a period of erosion between beds 5 and 6.

In the main Ham Hill Stone itself (bed 1) one of the party found a specimen of *Dumortieria sp.* indet. (inner whorls). But the main palaeontological interest at this section is the recent discovery by Mr. H. Prudden of a brachiopod bed in bed 5, 1.80 m. below the erosion surface at the base of bed 6. R. Brand also collected a *Dumortieria sp.* from this bed. Ager (1967, 158–61, pl. XIII, figs. 8, 9 and 10) has described the brachiopods of this bed as *Homoeorhynchia cynocephala meridionalis* (E. Deslongschamps), Geol. Surv. Coll. Zm 9685–88 (H. Prudden Coll.), Zm 9935–40 (H. Ivimey-Cook Coll.), and B.M. BB 45510–29. It was formerly called *Rhynchonelloidea cynica* (Buckman). This variable species is not rare, in fact, in the Sherborne–Yeovil area and it is commonly found in North Dorset, especially at the locality whence it was figured by Kellaway & Wilson (1941a, pl. 9, figs. 7 and 8) on Charlock Hill, north of Sherborne. It also occurs at the locality called Coombe Lane, 2.8 km. north-west of Sherborne Station (*Directory of British Fossiliferous Localities*, 1954, 28), where it is frequent in a bed about half-way up the section. Richardson (1932, 37) has recorded its common occurrence nearer Yeovil, near East Farm, Bradford Abbas. At all these localities it seems to occur toward the middle of the *D. moorei* Sub-zone. But at Severals housing site, Crewkerne (ST 446090), H. Prudden has collected numerous slightly smaller forms of the same species only 1 m. below the base of the Inferior Oolite.

(4) Hedgecock Hill

After lunch had been taken in the Prince of Wales Inn close to the quarry, the party walked through the woods eastward to Hedgecock Hill to examine a newly re-excavated section exposed along the footpath eastward (ST 481168).

This showed a small thickness of Yeovil Sands overlain by the basal beds of the Ham Hill Stone, of which about 1.5 m. were exposed. The basal 0.30–0.60 m. of the Ham Hill Stone is a conglomeratic bed with numerous worn and rolled ammonites and other fossils. From this basal bed (cf. Long Lane, Wilson and others 1958, 66) the following were collected:

DUMORTIERIA LEVESQUEI ZONE, *D. MOOREI* SUB-ZONE

Lima (*Plagiostoma*) cf. *schimperi* Branco (H.P.)
Dumortieria moorei (Lycett) (H.P.)
D. pseudoradiosa (Branco) (H.P.)
D. sp. indet. (G.S.M. Zr 1078–82)

These show that the base is to be assigned to the *moorei* Sub-zone and that the whole of the Ham Hill Stone belongs in this sub-zone.

(5) Babylon Hill

The last localities visited on the first day were the new sections now exposed along the A30 road east of Yeovil toward Sherborne. The first of them is in the upper part of the Yeovil Sands and is exposed as a result of recent road widening operations to build the new dual carriageway at the top of Babylon Hill (ST 580160). H. Prudden measured the following section here:

		m.
16.	Soil	
	YEOVIL SANDS	
15.	Yellow well bedded sand	2.1
14.	Thin calcareous shaly layer with broken shell material on top ...	0.30
13.	Yellow sand	0.30
12.	Massive calcareous dogger	0.30
11.	Yellow sand	2.1
10.	Massive calcareous dogger with broken shell material and ammonites. Ferruginous in places...	0.60–0.90
9.	Yellow sand with occasional cannon-ball shaped doggers ...	3.4–3.7
8.	Calcareous dogger, ferruginous in places	0.60
7.	Yellow sand	1.20
6.	Line of intermittent rounded calcareous doggers	0.15–0.30
5.	Yellow sand	0.60
4.	Thin regular calcareous band	0.15–0.30
3.	Yellow sand	0.15
2.	Thin regular calcareous band	0.15–0.30
1.	Yellow sand down to road level	0.90

However on Babylon Hill toward Yeovil there is a second section in the lower part of the Yeovil Sands immediately below a layby (using part of the original Sherborne–Yeovil road). This second section on the west side of the road was measured by Mr. H. Prudden and is as follows:

	m.
13. Soil	
YEOVIL SANDS	
12. Small dogger band	0.15
11. Yellow sand	0.60
10. Thin flattened intermittent dogger	0.15
9. Yellow sand	0.30
8. Dogger band with numerous clusters of ammonites	0.15
7. Yellow sand	0.30
6. Dogger	0.15
5. Yellow sand	0.30
4. Dogger	0.15
3. Yellow sand	0.90
2. Thick fissile fairly continuous hard band of calcareous sandstone	0.23
1. Yellow sand down to road level	1.5

The base and top of these two sections are separated by between 6 m. to 9 m. of rather badly exposed Yeovil Sands with bands of doggers. The two sections show a large part of the Yeovil Sands sequence which is about 61 m. thick near Yeovil (Wilson and others, 1958, 61).

The following ammonites were collected by H. Prudden and were identified by Dr. M. K. Howarth:

UPPER SECTION BED 12 (H.P.)

Pleydellia of the *aalensis* (Zieten) group (1) and *P. sp.*
Bed 12 or 14
P. cf. *fluens* S. S. Buckman (1) and another specimen loose near the top of this section.

LOWER SECTION BED 8 (H.P.)

Dumortieria moorei (Lycett) (occasional)
D. pseudoradiosa (Branco) } frequent
D. costula (Reinecke) }

The brachiopod *Homoeorhynchia* was conspicuous by its absence at these two sections (p. 305).

The fauna from the top section shows that the *Pleydellia aalensis* Sub-zone is present in the top 3 m. of the Yeovil Sands of the topmost section. This fauna was thought to be normally absent in the Yeovil area. Further search may reveal its more widespread occurrence at this horizon.

The fauna from bed 8 of the lower section indicates the presence of the *D. moorei* Sub-zone and probably its lower part to judge by the predominance of coarse-ribbed *Dumortieria* over the fine-ribbed sub-zonal index.

Wilson and others (1958, 67) recorded single specimens of two coarse-ribbed species of *Dumortieria* from this locality and took them to indicate the *D. levesquei* Sub-zone here also. It is impossible to say on the basis of only these two specimens whether they come from the same horizon as that of bed 8 of the lower section, or an even lower horizon.

It is difficult to distinguish faunas from the *moorei* and *levesquei* Sub-zones, unless adequate sample are available (Prudden, 1967) to show the proportion of fine- and coarse-ribbed forms.

(6) Halfway House

Farther east along the A30 road toward Sherborne lies Halfway House (ST 603163), a classic locality for the Inferior Oolite and its fossils, whence the party moved for the last localities of the day.

The first to note the sections at Halfway House appears to have been Thomas Wright (1856, 309–10), who mistakenly considered at first that the famous Fossil Bed here (*Parkinsonia parkinsoni* Zone, *Strigoceras truellei* Sub-zone) was the equivalent of the Toarcian Cephalopod Bed of the Cotswolds.

Wright described from here a giant species of *Parkinsonia*, *P.* (*Durotrigensia*) *dorsetensis*—lectotype later figured by Buckman (*Type Ammonites*, 1928, 7, pl. DCCLXVII, A, B). Specimens of this ammonite, extremely characteristic of the *S. truellei* Sub-zone, were formerly cut and polished for sale as ornaments.

Buckman (1893, 486–8) gave complete sections of the various sections then visible here and divided the strata up in remarkable detail into zones. The *truellei* Sub-zone was first recognised by Buckman here (as a Zone) in 1891 (see Table I).

At or near Halfway House there are or have been six different quarries or road sections in the Inferior Oolite (Fig. 1). Of these, that marked as 1 on Fig. 1 south of the A30 road has been completely filled in and obliterated as a result of the road-widening. This quarry—Richardson's number 18 (1932, 66)—was one of the few localities where the Crackment Limestones could be seen and collected (Arkell, 1951–9, 10, and Torrens, 1966, E91).

The quarry (2) on the opposite side of the road, which is Richardson's

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EXPLANATION OF FIGURE 1.

KEY

1. Quarry. Richardson (1932), No. 18. Filled in
2. Chapel Quarry. Richardson (1932), No. 17a. Partly filled in
3. New road-cutting. Section 3 of Appendix
4. Rock Cottage Quarry. Richardson (1932), No. 17
5. New road-cutting. Section 5 of Appendix, now largely overgrown
6. Louse Hill Quarry. Richardson (1932), No. 21

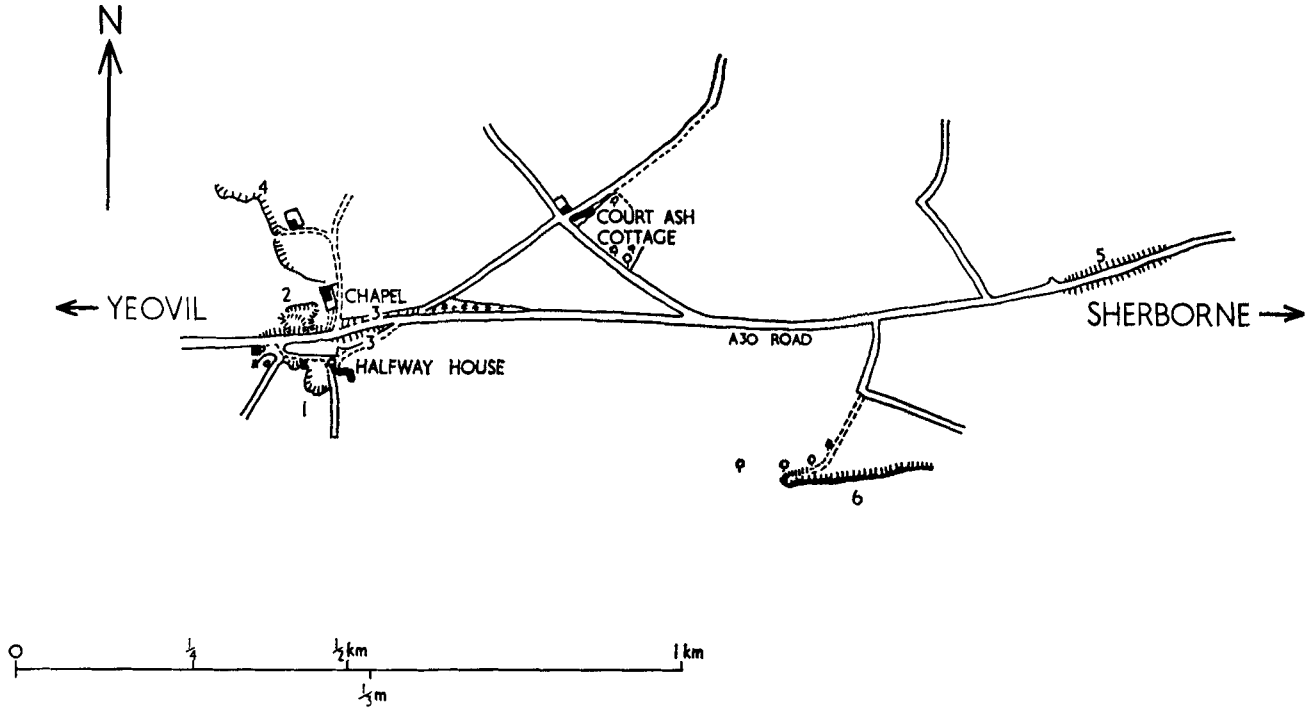

Fig. 1. Inferior Oolite localities near Halfway House, Sherborne (ST 603163)

Chapel Quarry, 17a (Wilson and others, 1958, 95), has been largely filled in with excavated material, but this is unimportant because identical strata can now be seen in the new road-cutting adjacent to it on either side of the dual carriageway (3, Fig. 1). This new section (ST 602163) has been scheduled for protection by the Nature Conservancy as a Site of Special Scientific Interest. It is briefly discussed in the Appendix (p. 329).

The party collected for some time at this new section and several interesting fossils were found. A fine section can still be seen of the greater part of the Inferior Oolite faulted against Yeovil Sands on the north-eastern side, the fault itself being clearly visible.

Finally the party visited the nearby quarry in the Inferior Oolite called Rock Cottage Quarry. This lies to the north of the last section (ST 603164) and is shown as locality 4, Fig. 1. It was originally described by Buckman (1893, 487–8) and later by Richardson (1932, 62, quarry 17). It still shows a reasonable exposure, but, as noted by Wilson and others (1958, 95), and confirmed by the party, higher beds than any seen by Richardson or Buckman are now visible here.

From the Fossil Bed (*Parkinsonia parkinsoni* Zone, *Strigoceras truellei* Sub-zone) some fine perisphinctids (*Prorsisphinctes*) were collected by members.

A further section near Halfway House in the Inferior Oolite must be noted. This was not visited by the Association party because it is now almost entirely grassed over. It lies farther east along A30 (locality 5, Fig. 1) and is described in detail in the Appendix. John Whicher studied it while it was being excavated in September 1962 (House, 1965, 38). He made accurate bed-by-bed collections from the top of the section and measurements of the whole section and, since his was the first accurate collecting in this classic area for over fifty years, his results are presented in full. This section lies at the point (ST 613164) where Richardson (1932, 70, locality 22) noted a section in the *P. parkinsoni* Zone which yielded abundant echinoids.

The party then returned to Yeovil.

Sunday, 23 April

The purpose of the day's excursion was to study some new and illuminating Bathonian and Bajocian exposures in the area, several of them temporary, and to show how they could be related to the standard Bajocian and Bathonian zonal sequences (Table I and Fig. 2).

(1) Troll Quarry

The first stop was made at this once celebrated exposure of the Fuller's Earth Rock near Thornford, Dorset (ST 594127), whence many ammonites

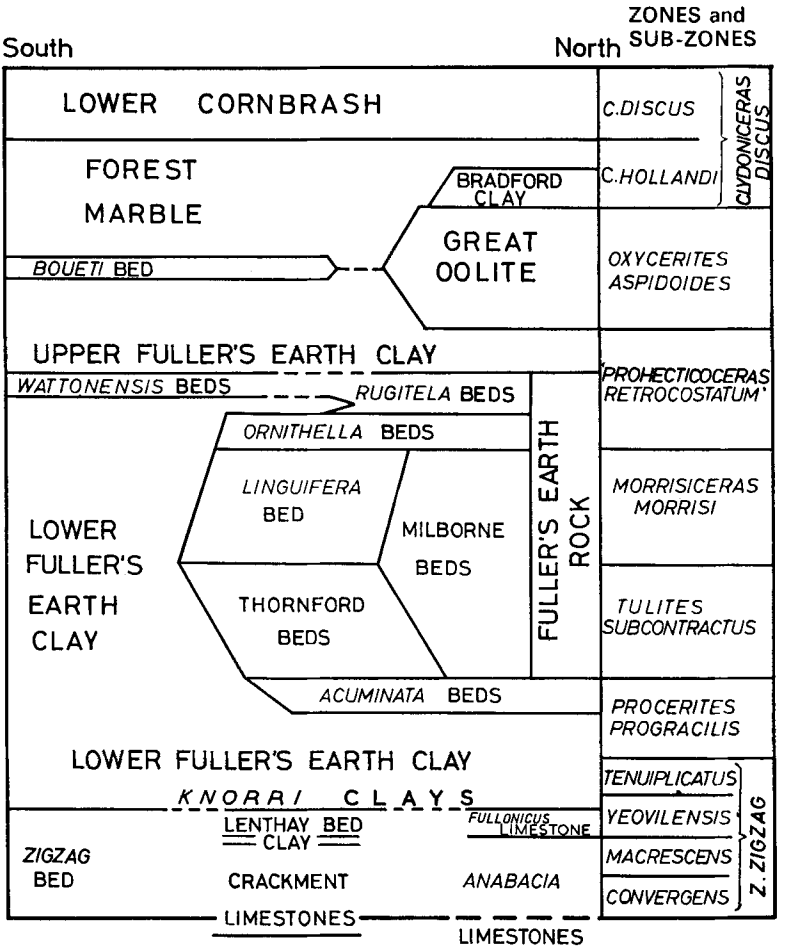

Fig. 2. Zonal subdivision of the Bathonian succession south of Bath, England. This correlation chart is based on ammonite records throughout the area. Further details of lithostratigraphic units used and the ammonites recorded will appear in a paper in preparation entitled 'The Stratigraphic Distribution of Bathonian Ammonites South of Bath, England'.

The Sub-zones of the *Zigzagiceras zigzag* Zone, indicated above, are *Parkinsonia convergens*, *Morphoceras macrescens*, *Oxycerites yeovilensis* and *Asphinctites tenuiplicatus*

were figured by S. Buckman (1909–30). The section has recently been re-opened during the installation of a new sewage farm in the quarry (Torrens, 1965b, 38).

The new exposure showed a thickness of 3.8 m. of rather monotonous cream to white chalky limestones and has yielded over a hundred ammonites (fourteen in situ). The entire thickness belongs in the *Tulites subcontractus* Zone (Fig. 2). Because of the relative faunal richness and historical associations, this locality has been proposed as a type-section of the *T. subcontractus* Zone (Torrens, 1967) and scheduled for protection by the Nature Conservancy as a Site of Special Scientific Interest.

Comparison with neighbouring localities shows that the section at Troll falls entirely in the Thornford Beds (Fig. 2) in the lower part of the Fuller's Earth Rock. Members of the party were able to collect the following species:

Tulites modiolaris (W. Smith) single crushed specimen (4940)
Ornithella haydonensis Muir-Wood (4941)
Rhynchonelloidella sp. (4942(2))
Camptonectes sp. (4943)
Pholadomya lirata (J. Sowerby) common (H.T.)

(2) Yetminster

The next halt was at a new roadside section in the Cornbrash at Yetminster, Dorset (ST 59201065). Douglas & Arkell (1928, 149) have described a quarry section in the Lower Cornbrash alone, west of the village. This is now totally filled in and obscured. The present section is to be seen in a cutting at the entrance to a new housing estate built over the quarry described by Douglas & Arkell, which lay only 50 metres away. The new section is similar to that in the quarry, with the addition of a small thickness of yellow, sandy Upper Cornbrash limestone at the top.

Most of the fossils collected by the party came from tips to the south-west of the roadside section. The following were obtained:

UPPER CORNBRASH
MACROCEPHALITES MACROCEPHALUS ZONE, *M. MACROCEPHALUS* SUB-ZONE

Macrocephalites (*M.*) aff. *macrocephalus* (Schlotheim) (G.S.M. Zg 445)
Macrocephalites sp. indet. (G.S.M. Zm 9951–52)
Digonella siddingtonensis (Walker) (B.M. BB 45490–93)

LOWER CORNBRASH
CLYDONICERAS DISCUS ZONE, *C. DISCUS* SUB-ZONE

Clydoniceras discus (J. Sowerby) frequent (10) (O.U.M. J30137–46)
C. (*?Delecticeras*) *?legayi* (Rigaux & Sauvage) (1) (O.U.M. J 30147) (identification tentative, inner whorls of subgenera *Clydoniceras* (M.) and *Delecticeras* (m.) are hard to distinguish)

Cererithyris intermedia (J. Sowerby) common (B.M. BB 45467–79)
Obovothyris obovata (J. Sowerby) (B.M. BB 45494–96) } frequent
O. magnobovata S. S. Buckman (B.M. BB 45480–89) }
Kallirhynchia yaxleyensis (Davidson) and vars. common (B.M. BB 45497–509)
Nucleolites clunicularis W. Smith (4)
Anisocardia caudata (Lycett) (1) (B.M. LL 18277)
A. islipensis (Lycett) (2) (B.M. LL 18278)
A. minima (J. Sowerby) (3) (B.M. LL 18279)
Astarte sp. (int. cast) (1) (B.M. LL 18280)
Camptonectes annulatus (J. de C. Sowerby) (1) (B.M. LL 18281)
Chlamys (Radulopecten) vagans J. de C. Sowerby (2) (B.M. LL 18282)
Eocallista antiopa (Thevenin) (1) (B.M. LL 18283)
Gresslya peregrina (Phillips) common (B.M. LL 18284)
Homomya gibbosa (J. Sowerby) (1) (B.M. LL 18285)
Lima (Pseudolimea) duplicata (J. Sowerby) (2) (B.M. LL 18286)
Liostrea sp. frequent (B.M. LL 18296)
Meleagrinella echinata (W. Smith) v. common (B.M. LL 18287)
Modiolus bipartitus J. Sowerby (3) (B.M. LL 18288)
Modiolus (Inoperna) plicatus J. Sowerby (2)
Oxytoma inaequivalve (J. Sowerby) (2)
Pholadomya deltoidea (J. Sowerby) frequent (B.M. LL 18289)
P. lirata (J. Sowerby) (3) (B.M. LL 18290)
Pleuromya uniformis (J. Sowerby) and *P. spp.* v. common (B.M. LL 18291)
Protocardia buckmani (Morris & Lycett) (2) (B.M. LL 18292)
Pseudotrapezium morrisi (Rollier) (1) (B.M. LL 18293)
Stegoconcha ampla (J. Sowerby) (1) (B.M. LL 18294)
Trigonia sp. (int. cast) (2) (B.M. LL 18295)
Serpula intestinalis (Phillips) v. common (B.M. A 10094)
S. sulcata J. de C. Sowerby (B.M. A 10095)

frequent	over 5 specimens
common	over 20 specimens
v. common	over 40 specimens

The list gives some indication of the richness and diversity of the Lower Cornbrash faunas in this region. Some bias was undoubtedly present toward the ammonites and brachiopods during the collecting because of their stratigraphic importance.

(3) Sherborne, South

The next locality visited showed a further section in the Fuller's Earth Rock. It lies on the west side of the rift valley running north–south below Honeycomb Wood, south of Sherborne (ST 634151). A thickness of 2.4 m. was seen of the same facies and age as that at Troll Quarry. The section is also entirely in the *Tulites subcontractus* Zone and will be described in detail elsewhere (in preparation). It yielded:

Tulites modiolaris (W. Smith) (4929–30 not in situ)
Ornithella haydonensis Muir-Wood frequent (H.T.)
Pholadomya lirata (J. Sowerby) frequent (H.T.)
Pleurotomaria sp. (4928)

(4) Sherborne, West

The party moved to the outskirts of Sherborne to see a fine temporary exposure in the rarely exposed Crackment Limestone which is known to straddle the Bajocian–Bathonian boundary (Fig. 2 and Torrens, 1967). It was exposed in a sewerage excavation for the new housing estates west of Horsecastles, Sherborne (ST 63051640). Here the following section was measured:

	m.
12. Topsoil	
11. Limestone (disturbed rubble) in subsoil	0.30
Pholadomya lirata J. Sowerby (4894)	
10. Thin bedded fissile limestone	0.23
9. Marl	0.30
8. Rubbly brown limestone	0.23–0.25
Pholadomya lirata (J. Sowerby) (4895)	
Thracia depressa (J. de C. Sowerby) (4896)	
Oxytoma cf. *costatum* (Townsend) (4897)	
Hibolites fusiformis (Parkinson) (4898)	
7. Marl	0.075–0.15
Pholadomya lirata (J. Sowerby) (4911)	
Pygorhytis ringens (Agassiz) (4944)	
6. Thin rubbly limestone	0.075
Procerites sp. indet (*subprocerus* S. S. Buckman group) (4899)	
Oxycerites cf. *yeovilensis* Rollier (4945)	
5. Yellow-brown marl parting	0.15
Parkinsonia pachypleura S. S. Buckman (4900)	
Pholadomya socialis Morris & Lycett (4901)	
Loboidothyris sp. cf. *latovalis* S. S. Buckman (4912)	
4. Rubbly yellow-brown limestone with abundant ammonites ...	0.23–0.30
Parkinsonia (*Gonolkites*) *subgaleata* S. S. Buckman (4902, 4946)	
P. (*G.*) *convergens* S. S. Buckman (4903)	
P. (*Parkinsonia*) cf. *pachypleura* S. S. Buckman (4904)	
Procerites sp. indet (4905)	
Planisphinctes cf. *dorni* auct. non Arkell (1951) (O.U.M. J 30149)	
Hibolites fusiformis (Parkinson) (4908)	
Pholadomya socialis Morris & Lycett (4907)	
3. Soft yellow-brown marl	0.38–0.46
Hibolites fusiformis (Parkinson) (4909–10, G.S.M. Zm 9949)	
Parkinsonia (*P.*) *pachypleura* S. S. Buckman (G.S.M. Zm 9950)	
2. Rubbly yellow-brown limestone	0.46
1. Yellow brown marl	0.23

The specimens of *Pholadomya* were often oriented in life position: also seen were horizontal thalassinoid burrows, length up to 0.23 m., width up to 25–50 mm., in some of the limestone beds.

The *Parkinsonia convergens* and *P. pachypleura* in beds 3–5 show that these beds, at least, and probably the majority of the section, belong in the *Zigzagiceras zigzag* Zone, *Parkinsonia convergens* Sub-zone (Fig. 2; Sturani,

1967; Torrens, 1967), of which they are typical. The *Planisphinctes* from bed 4 is mentioned further in the palaeontological notes below.

Further excavations immediately to the north-west of this site after the visit by the party showed the top of the Crackment Limestone and higher beds. This has been briefly recorded in House (1968, 5). Of especial interest was the demonstration of the Lenthay Bed in situ, full of *Sphaeroidothyris lenthayensis*, separated by 2.1 m. of clay from the top of the Crackment Limestone, as shown in Fig. 2.

The party then travelled up the fine Forest Marble escarpment lying to the south of the town. Arkell (1933, 255) already noted its pronounced effect upon the scenery for many miles around, although the claim that it is formed by the thickest Forest Marble succession in England needs modification after boreholes in South Dorset (Martin, 1967) showed over twice the thickness. The greatest thickness recorded is 284 ft. (86 m.).

(5) Honeycomb Wood

The final stop before lunch was made near the top of the escarpment to visit an exposure of the *boueti* Bed. This bed, long famous for its profuse brachiopod fauna on the Dorset coast at Herbury, near Weymouth, is also similarly developed in the Sherborne area. It is about 0.30–0.60 m. thick and lies at the junction of the Forest Marble and Upper Fuller's Earth Clay (Fig. 2).

Fowler (1957, 56) has given an extensive faunal list for this horizon based on collections made from the Thornford pipe-trench in Honeycomb Wood during 1955–6. This list is the most complete yet recorded and it seems worth adding the following species from this locality collected by the author in 1956 and not previously noted.

Catinula ancliffensis Cox & Arkell common
Astarte (*Trautscholdia*) *cordata* Trautschold
Digonella sp.

All specimens recorded from this locality here and by Fowler have now been presented to B.M. Collections.

Digonella sp., above, is a common but as yet undescribed form occurring throughout Dorset in the *boueti* Bed. It is closest to *D. digonoides* (S. S. Buckman) of a lower horizon but is distinct from this and even more so from *D. digona* (J. Sowerby) from the Bradford Clay above.

The specimen recorded as *Nucula* (*Palaeonucula*) *variabilis* (J. de C. Sowerby) in Fowler (1957, 56) was wrongly determined and proves to be *Lithophaga fabella* (J. Eudes-Desl.) (B.M.). It was collected with several others (H.T. 920) in borings in the top of the cementstone immediately below the *boueti* Bed, and its presence suggests that a period of erosion

preceded the deposition of the *boueti* Bed in this area. A total of four specimens of *Montlivaltia slatteri* Tomes and juveniles have been collected from the bed at this locality (B.M.). These and other specimens collected in the Sherborne area and south Dorset (Herbury; Cliff End, Burton Bradstock and Watton Cliff) show that simple corals are not infrequent at this horizon. *Isastraea limitata* (Lamouroux) (B.M.) has also been found at this horizon in Sherborne Park.

A similar faunal list has been recorded by Richardson (1909, 269) from the outcrop at Herbury in South Dorset.

The party on this occasion visited a small stream exposure in the top of Honeycomb Wood, south of Sherborne (ST 637141). Here the *boueti* Bed is well exposed overlying 1.5 m.–1.8 m. of white clays and cementstones of the Upper Fuller's Earth Clay.

The following species have been collected here:

*Goniorhynchia boueti** (T. Davidson) common
*Avonothyris langtonensis** (Walker)
*Digonella sp.**
Serpula cf. *intestinalis* (Phillips)
Camptonectes cf. *rigidus* (J. Sowerby)
Brachidontes (*Arcomytilus*) *asper* (J. Sowerby)
Acanthothiris bradfordensis (T. Davidson)
Modiolus imbricatus (J. Sowerby)
Trigonia elongata J. de C. Sowerby var. *lata* Lycett

Specimens starred were collected by the party; all other specimens recorded here are now in B.M. Collections.

After this brief stop lunch was taken in North Wootton.

(6) Goathill

The afternoon was devoted to two further localities, previously undescribed. The first was an exposure of the Upper Inferior Oolite near Goathill Farm, Goathill, Dorset. The section here lies about 100 metres west of the farm itself (ST 674172), on the upthrow side of the Poyntington Fault and immediately adjacent to it. Both the section and the fault are marked on the map in Fowler's paper (1944, 158).

The section shows a face about 30 metres long used as a silage-pit. The face is interrupted in the middle by a small fault, which complicates description of the section. This vertical fault trends at 155° south-east, that is, parallel with the main Poyntington Fault, which is of considerable importance in moulding the scenery of this region. The faulting is probably of one age.

The section may be described in two parts.

Face West of the Fault.

The Rubbly Beds of the Upper Inferior Oolite (*parkinsoni* Zone) were exposed but the exposure has now been filled in with silage. Nevertheless the party saw the following:

	m.
7. Soil	
6. Disturbed limestone rubble	1.1
Parkinsonia (*P*). *sp.* indet. fragments (4868, 4919)	
Acanthothiris spinosa (Linné) (4869)	
Rhactorhynchia cf. *difusa* S. S. Buckman (4870)	
Sphaeroidothyris gp. of *sphaeroidalis* (J. Sowerby) (1584, 4872–73)	
Limatula gibbosa (J. Sowerby) (4920)	
Pygorhytis ringens (Agassiz) (4871)	
5. Limestone ledge	0.23
4. Soft brown marly parting	0.050–0.10
Pholadomya lirata (J. Sowerby) (4874, 4876)	
Pleuromya sp. (1583)	
Entolium sp. (4877)	
Sphaeroidothyris gp. of *sphaeroidalis* (J. Sowerby) (1586)	
Pygomalus ovalis (Leske) (4875)	
Parkinsonia sp. indet. (nucleus) (4878)	
3. Brown rubbly, marly limestone	0.38
Pygorhytis ringens (Agassiz) (4879, 4922)	
Pygomalus ovalis (Leske) (4923)	
Holectypus hemisphaericus (Lamarck) (4921)	
2. Parting of soft brown, rubbly limestone with abundant ammonites.	0.10–0.15
Parkinsonia (*Gonolkites*) *sp.* (1585, 4737, 4880)	
P. (*P.*) *sp.* (4881, 4882)	
P (*P.*) *sp.* indet. (4738, 4883)	
Oxycerites cf. *yeovilensis* Rollier (4884)	
Hibolites? sp. indet. (4891)	
Pygorhytis ringens (Agassiz) (4893)	
Pygomalus ovalis (Leske) (4892, 4924–25)	
Hyboclypus gibberulus Agassiz (4927)	
Sphaeroidothyris gp. of *sphaeroidalis* (J. Sowerby) (4890(2), 4926)	
Pholadomya lirata (J. Sowerby) (4885–86)	
Pleuromya spp. (4888, 4889)	
Quenstedtia sp. (4887)	
1. Brown rubbly limestone seen below	0.40

The fauna of the Rubbly Beds is quite characteristic. Among the ammonites, bed 2 has yielded many *Parkinsonia* characteristic of the *Parkinsoni* Zone and the section is probably to be placed in the middle or lower part of the Zone. As in the Crackment Limestone faunas the *Parkinsonia* are dimorphic: Macroconchs *P.* (*Gonolkites*), microconchs *P.* (*Parkinsonia*). But no English specimens have been found which would indicate with certainty whether the microconchs bear lappets or not.

The echinoid fauna also distinguishes these beds: Richardson & Paris (1908, 167–8) have noted *Pygomalus ovalis* (Leske) and *Pygorhytis ringens* (Agassiz), which they regard as characteristic of the *parkinsoni* Zone.

The lithology of the Rubbly Beds is also of interest—a rubbly brown, somewhat chalky limestone, sparsely oolitic, and much iron-stained with limonite in places with thin marl partings. It is noticeably different from the limestone on the east side of the fault.

Face East of the Fault

The eastern section has been open only for the last few years, and is as follows:

	m.
10. Soil	
9. Brown marl or soft marly limestone	0.075–0.15
Morphoceras macrescens (S. Buckman) with peristome (O.U.M. J 30148)	
Pholadomya lirata (J. Sowerby) (4834)	
8. Hard thin brown limestone	0.075
Morphoceras sp. indet. (4951)	
7. Brown marl parting	0.025–0.050
Procerites sp. (4838)	
Planisphinctes sp. indet. (4837) (injury on whorl side)	
Pygomalus ovalis (Leske) (4836)	
6. Limestone	0.30
5. Soft light brown marl	0.40–0.46
Catinula knorri cf. *lotharingica* (de Grossouvre) (4917)	
Hibolites fusiformis (Parkinson) (4918)	
4. Prominent and continuous limestone ledge	0.30–0.38
3. Light brown marls	0.075–0.15
2. Limestone	0.23
1. Marl	seen

The lithology here is different from that of the western face and consists of light brown regular limestone beds with thick marl partings of the same colour. Iron-staining is conspicuously absent and the rock is never oolitic.

The section shows an exposure in the Inferior Oolite, some way above the Rubbly Beds. The specimen of *Morphoceras macrescens* from bed 9 shows that the section belongs in the upper part of the Crackment Limestone (*zigzag* Zone, *macrescens* Sub-zone). This is the only section of the Crackment Limestone (Fig. 2) known to have yielded fossils of this sub-zone in situ.

Ammonites recorded from this locality in the past are discussed in the palaeontological notes below.

(7) Cliff Hill Quarry, Shepton Montague

The final visit was made to a fine section in the Fuller's Earth Rock near Bruton. This was the main exposure on Cliff Hill, Shepton Montague (ST 684323). The section seen here is as follows. (All fossils recorded are in H.T. Collection.)

	m.
RUGITELA BEDS	
18. Soil and rubbly limestone seen in tree-roots *Rugitela bullata* (J. Sowerby), *Acanthothiris powerstockensis* (Buckman & Walker), *Trigonia sp.*, *Cucullaea sp*[1]., etc.	
Gap—strata obscured	
ORNITHELLA BEDS	
17. Soil and marl	
16. Limestone	seen 0.15–0.23
15. Marl	0.23
Rhynchonelloidella very common	
14. Rubbly limestone	0.46
13. Thick marl	0.30–0.36
Procerites sp., *Ornithella bathonica* (Rollier)	
12. Rubbly limestone	0.23–0.25
Procerites sp. or *spp.*, *O. bathonica* (main horizon)	
11. POLYZOA MARL. Soft marl producing cut-back	0.18
Procerites spp., *O. bathonica*, *Wattonithyris sp.*, lamellibranchs, echinoids, polyzoa (*Diastopora*)	
MILBORNE BEDS, *MORRISICERAS MORRISI* ZONE	
10. Prominent limestone	0.18–0.25
9. Variable clay/marl parting or rubbly limestone	0.05–0.15
8. Limestone of variable hardness	0.075–0.15
7. Parting (dies out at east end)	0–0.05
6. Limestone	0.15–0.23
Total	0.6
Morrisiceras morrisi (Oppel), *Lycetticeras sp.*, *?Berbericeras spp.*, *Wattonithyris sp.*,[2] and lamellibranchs.	
TULITES SUBCONTRACTUS ZONE	
5. Limestone	*c.* 0.23
4. Limestone with corals	*c.* 0.23
3. Sandy limestone with corals	0.36
2. Softer limestone	0.30
1. Limestone	seen 0.38
Total	1.5+

[1] This is an undescribed form recognised by the late L. R. Cox and occurring commonly in the *wattonensis* Beds of Dorset. It is the form recorded as *Cucullaea sp.* by Fowler (1957, 55) from the same horizon.

[2] A smaller species of *Wattonithyris* than any described from the Fuller's Earth Rock and one restricted to the *M. morrisi* Zone. It will be described by H. S. Torrens in a revision of Fuller's Earth Rock Brachiopoda now in preparation.

Tulites sp. or *spp.* (common in Bed 5), *Ornithella haydonensis* (Muir-Wood) (in partings 2–3, 3–4,) *Montlivaltia sp.*

Base of Milborne Beds not seen

OSTREA ACUMINATA BEDS not visible in situ but the index oyster can be collected in the field below the quarry.

Two specimens of *Tulites*, characteristic of the *T. subcontractus* Zone, were collected in situ by members of the party in bed 5 (4914) and bed 3 (4915). But no other ammonites were obtained to demonstrate the age of the higher parts of the Fuller's Earth Rock as shown in Fig. 2.

The upper part of the section was especially fossiliferous, with an extraordinary abundance of *Ornithella bathonica* (Rollier) in beds 11–13.

Some members also crossed the road to see the smaller but very similar section in the Fuller's Earth Rock exposed there (ST 685323).

PALAEONTOLOGICAL NOTES

(a) *Parkinsonia* from Goathill

Day 2, locality 6 (p. 316)

Arkell (1951–9, 150) records two specimens of *Parkinsonia* (*P.*) *pachypleura* S. S. Buckman from 'an old quarry close to the fault at Goathill'. Because limestones of two different ages can be seen at this locality and the age of the holotype of this species (Arkell 1951–9, 146) is disputed, these specimens need discussion.

The holotype was described by Buckman (*Type Ammonites*, 1925, pl. DCXII) from the '*Garantiana* Zone' (Table I), east of Oborne, near Sherborne. Arkell (1951–9, 146–8) later claimed that the correct horizon for this species was in fact the *Zigzagiceras zigzag* Zone. Examination of the holotype (Manchester Museum, L 11228) supports Arkell's claim, for in morphology and lithology the specimen agrees perfectly with the abundant material now known from the Crackment Limestone (*zigzag* Zone). Arkell accepted without reservation that the type-locality was the quarry east of Oborne, near Sherborne, described by S. S. Buckman (1893, 502). This is impossible, for the quarry section, still accessible, does not display beds higher than the Rubbly Beds which underlie the Crackment Limestone. The holotype can only have come from an unspecified locality east of Oborne, exposing the Crackment Limestone. The occurrence of these limestones near Oborne is borne out by Fowler's record (1944, 162) of *Ebrayiceras* and the specimen of *Zigzagiceras plenum* from near Oborne in Bristol City museum (No. Cb 4581) from the J. W. Tutcher collection.

The type of *Parkinsonia pachypleura* is thus a *zigzag* Zone species from the Crackment Limestone. Of the two Goathill specimens placed in this

species by Arkell, one (B.M. C 39733) also compares closely in lithology and morphology with those from the Crackment Limestone. Its label reads only 'Goathill' and since the only section close to the fault open when it was collected exposes the Rubbly Beds, it cannot have come from that site. An old road-cutting nearby immediately north-east of Goathill Farm (ST 677172) exposed the Crackment Limestone, and this specimen could well have come from here.

The second specimen (S.M. J 30111) is interesting. In lithology it compares remarkably closely with the lithology of the Rubbly Beds of the *Parkinsonia parkinsoni* Zone, being stained with limonite veins and with occasional ooliths in the matrix. Since it was collected by Arkell himself, there can be little doubt that it came from the Rubbly Beds quarry close to the fault, as he stated. In morphology the specimen is also close to *P. pachypleura* (size, shape, ribbing style) except for one important detail. The casts of the ribs of *P. pachypleura* from the *zigzag* Zone are rather blunt, those of this specimen very sharp. The species *P. rarecostata* of the *Garantiana garantiana* Zone is similar in this respect and that may well be a better name to apply to the specimen. It emphasises the need for a modern revision of *Parkinsonia* under stratigraphical control.

(b) *Planisphinctes* from the Crackment Limestone

Day 2, Locality 4 (p. 314)

The specimen of *Planisphinctes* (O.U.M. 30149) collected from bed 4 of the section in the Crackment Limestone of Horsecastles (*Parkinsonia convergens* Sub-zone) described on page 314 is important. It is beautifully preserved, with large spatulate lappets. It is identical with the English specimen figured by Arkell (1951–9, 151, pl. 19, fig. 7a, b) as *Parkinsonia* (*P.*) *dorni* Arkell. The type of this species is a Franconian specimen which may well be a true *Parkinsonia*. But, as Sturani (1967, 39) has also noted, the English specimens figured and listed by Arkell under this name belong to the genus *Planisphinctes*. Brigadier Bomford tells me (letter, 9. 11. 67) that Arkell was puzzled by the English specimens which he placed in *P. dorni*, considering them to be young *Procerites* until he saw the specimen with lappets which he figured in his monograph (1951–9, pl. 19, fig. 7a, b).

In view of the overwhelming evidence that most (if not all) Jurassic ammonites were (sexually) dimorphic, the relationships between the ammonites in this Crackment Limestone fauna are of interest.

The specimen of *Planisphinctes* (figured as *Parkinsonia dorni* Arkell, 1951–9, 151–2, pl. 19, fig. 7) was cited by Callomon (1963, 37) as the microconch form of the Macroconch genus *Parkinsonia* sensu stricto. If this were so, it would be remarkable to find among the ammonites of this horizon Parkinsoniidae of three separate groups and the certainly Macro-

conch *Procerites*, without its microconch counterpart, of the Perisphinctidae. With the recognition that the microconch species *dorni*—as interpreted by Arkell from English material—belongs to the perisphinctid genus *Planisphinctes*, the following dimorphic pairing at this horizon becomes obvious.

A. *PERISPHINCTIDAE*
Procerites of the *subprocerus* gp. (Macroconch)
Planisphinctes sp. (microconch)
B. *PARKINSONIIDAE*
Parkinsonia (*Gonolkites*) *convergens* (Macroconch)
Parkinsonia (*P.*) *pachypleura* (microconch)

The first pair are normal in that there is a difference in the form of the peristomes, only the microconch possessing lappets. Of the second pair, the peristome of *Gonolkites* (Macroconch) is certainly simple (Arkell, 1957, L 309). The microconch *Parkinsonia* (s.s.) probably possesses lappets, but that is not certain, only Wetzel (1911, 181, 188, 193, pl XV, fig. 1) having apparently noted them. Quenstedt's illustration of an ammonite with lappets (1886–7, pl. 71, fig. 16) Arkell (1951–9, 144) considered to represent a *Parkinsonia*, but it is certainly a crushed *Siemiradzkia* or *Planisphinctes* (confirmed by Dr. W. Hahn, Freiburg, who has studied the specimen).

The type-species of *Parkinsonia* s.s. (*P. parkinsoni* J. Sowerby) is also a microconch form and is accompanied in the *parkinsoni* Zone by normal Macroconch forms as in the *zigzag* Zone (p. 317).

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Dr. H. Ivimey-Cook kindly identified all Mollusca (except ammonites) and Brachiopoda collected from the Toarcian and Aalenian during the excursion. Dr. M. K. Howarth identified almost all the ammonites from these stages, Dr. N. Morton in addition identified a few ammonites from Furringdon's Cross. All Bajocian and Bathonian identifications are my own.

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APPENDIX

New Sections in the Inferior Oolite near Halfway House, Sherborne, Dorset

by JOHN WHICHER

INTRODUCTION

HALFWAY HOUSE lies midway between Sherborne and Yeovil on the A30 road. It is a classic region for the Inferior Oolite and its fossils since the work of Wright (1856) and Buckman (1893). (See References, on page 323.)

There are, or have been, six important sections in the Inferior Oolite in the neighbourhood. These are numbered one to six on the sketch-map (Fig. 1 of the Report). They are listed on page 308. Of the six, four (1, 2, 4 and 6) have been described previously and of them only the first is no longer visible, having been completely filled in. The remaining sections, 3 and 5, are new sections not previously described, and form the subject of this appendix (Table I, p. 325). They were exposed by road-widening operations during the construction of the dual carriageway (A30) now running between Sherborne and Yeovil. Section 5 was studied in greater detail than Section 3 and it is therefore the first to be described.