REVISION OF SOME LOWER LIAS OSTRACODA FROM YORKSHIRE

by ALAN LORD

ABSTRACT. Lower Liassic Ostracoda from Redcar, Hotham, and Cliffe are described and assigned to 17 species belonging to 9 genera. This work is substantially a revision of the ostracods described by T. R. Jones (1872) and J. F. Blake (1876).

British Lower Jurassic ostracod faunas have received remarkably little attention from palaeontologists, our total knowledge consisting of 5 papers. Jones (1872) described 4 species from the 'Infracal' of East Yorkshire in an appendix to a stratigraphic account by Blake, and Blake (1876) described 16 species, mainly from Redcar, including the 4 species of Jones. A more general account of Rhaetic and Liassic ostracods was given by Jones (1894). Anderson (1966) discussed some Lower Jurassic species in a description of Rhaetic ostracods and has attempted to clarify the confusion caused by Jones (1894), who had inadvertently described some Purbeckian forms with Lower Jurassic and Rhaetic taxa. Hettangian Cytherellidae from the Dorset coast were described by Field (1966). Redescription of the species described by Jones (1872) and Blake (1876), all of which are from Yorkshire, has become necessary in view of the frequent reference to these taxa which has been made, often erroneously, by continental workers; the taxonomic discussion will serve to illustrate this point. The species of Jones (1872) lacked illustrations but are nevertheless valid; this omission was remedied by Blake (1876) who illustrated his species, and those of Jones, by line drawings. Although these drawings are usually quite good they have rather stylized ornament, are frequently very small, and should therefore be used with caution.

It must be emphasized that this paper is in no way a full record of Yorkshire Lower Liassic ostracod faunas, but an account of the ostracods found in the 2 main areas from which Jones and Blake obtained their material. The excellent Lower Jurassic section in Robin Hood's Bay was not sampled.

Stratigraphy. Although the material described from Yorkshire by Jones and Blake came from a number of localities the majority of species came from 2 places: the foreshore scarp at Redcar, and the area of North and South Cliffe and Hotham, which lie along the line of the Lower Liassic escarpment between Market Weighton and the River Humber. Since no type specimens were defined, and since many of the species were recorded impartially from a number of places, it was felt that redescription from these 2 areas was justified by the large numbers of species which the sediments contained.

Samples were collected from sections between North Cliffe (SE 873370) and Hotham (SE 885353). The stratigraphy of the rocks in this area has been discussed by Blake (1872), Tate and Blake (1876), Fox-Strangways (1892), and Neale (in de Boer, Neale, and Penny 1958). Blake (1872, p. 140) figured a section showing the Cliffe area and indicating pits which exposed the lowest part of the Lower Liassic. Of the 6 pits numbered, only 2 can

now be identified with any certainty—Nos. 5 and 6 in the north-east and south-east angles of Hotham crossroads (SE 884342 and SE 885339). Traces can be seen at the present time of some 8 pits along the scarp slope between North Cave and North Cliffe, of which the 2 southernmost are pits 5 and 6 of Blake. The Hotham pits are somewhat overgrown but expose pre-planorbis and planorbis zone beds; poor exposure, together

with failure to find zonal ammonites, makes it difficult to say which zones are represented in the higher strata. In his section Blake recorded the zones of *Ammonites planorbis* and *Ammonites angulatus*, while Neale (1958, p. 161) mentioned 6 feet of beds belonging to the zone of *Schlotheimia angulata* as the highest strata cropping out in the Cliffe area. Samples were taken from the pits labelled on text-fig. 1 as 'a', 'b', 'g', and 'h'. Pit 'a' is at the crest of the scarp above North Cliffe and the sample from this locality would appear to be stratigraphically the highest taken in this area.

The scars at Redcar provide the best exposures of lowest Lower Liassic in the north of England. Unfortunately, this section has not been redescribed since the original account of Tate and Blake (1876), and when the samples were collected it was not found possible to follow their divisions. Professor D. T. Donovan and Mr. T. Getty are presently examining the *angulata* zone and have kindly commented upon the distribution of the samples. The beds belonging to the *angulata* zone are those to the south of 'Jenny
Leigh's Scar' from which samples R1 to R4 were taken, 'Jenny Leigh's Scar' marks the base of the bucklandi zone and the remaining samples (R5 to R11) are from this zone or higher. When sampling was carried out exposure was limited by beach cover over the scars, and the bucklandi beds were more readily visible because they form more prominent scars. It is to be hoped that a full revision of this fine section will not be long delayed.

The residues from the 2 sample areas were generally quite rich in microfossils; foraminifera, ostracods, and holothurian spicules were often abundant in the Cliff and Hotham material, while that from Redcar was usually moderately rich in foraminifera, ostracods, and (frequently) micro-gastropods. The microfauna of sample R7 was almost exclusively composed of micro-gastropods, and occurrences like this may suggest a possible brackish influence in the environment from time to time due to the proximity of a western land mass. The most common ostracods were members of the metacrepid genus Ogmocoecha, an ubiquitous faunal element in the Lower and Middle Liassic, which appears to have possessed the ability to tolerate a wide range of environment.

**SYSTEMATIC PALAEOLOGY**

Figured specimens are deposited in the collection of the Department of Geology, University of Hull, and bear the catalogue numbers of that collection. The classification employed is that of the several authors in Moore (1961, Treatise on Invertebrate Paleontology, part O).
Type species. Polycope orbicularis Sars 1866.

Polycope corasiia Blake 1876

1876 Polycope corasiia Blake, in Tate and Blake, p. 434, pl. 17, fig. 16.
1938 Ostracode (151), Wiicher, pl. 27, fig. 9.
1961 Polycope corasiia Tate and Blake; Fischer, p. 500, fig. 1.

Material. 2 (?3) carapaces, 2 valves.

Distribution. Redcar, samples R4, 5, 8, 11.

Dimensions (in mm). Length Height Width

| Valve       | HU.S2.I.1 | 0.33 | 0.34 | 0.10 |
| Carapace    | HU.S2.I.2 | 0.34 | 0.36 | 0.22 |

Diagnosis. As Blake (1876, p. 434).

Description. Shape sub-circular, slight cardinal angles on dorsal margin, anterior margin angled below mid-height at junction with ventral margin, other margins well rounded, although dorsal margin usually straight or only slightly convex. Valves uniformly inflated. Greatest height and width at about mid-height, greatest length at height of anteroventral angle. Details of hinge, muscle-scars, and marginal zone not observed. Ornament essentially reticulate, but frequently in centre of valve walls of reticulations are thickened so that ornament is almost punctate; reticulation shows sub-concentric arrangement with elongation parallel to circumference at valve margins. In carapace, ornamentation of the 2 valves may differ slightly in strength of reticulation.

Remarks. This species was described from the angulatus and bucklandi zones at Redcar, a distribution in accord with the present record. In the Blake collection in the British Museum (Natural History) there are 5 specimens labelled "Lower Liias, Redcar" which vary slightly. These specimens are supposedly syntypes and 1 could be selected as lectotype, but in view of the doubtful origin of this material it would be preferred to erect as neotype 1 of the specimens described above which was collected at Redcar, the only original locality.

Blake's original figure (1876, pl. 17, fig. 16) is misleading since it shows a perfectly round specimen with a coarsely punctate ornament and a marginal rim. On the specimens available from Redcar there was no trace of a marginal rim.

P. corasiia is distinguished from other Liassic species by its reticulate ornament; however, P. puncticua Apostolescu from the janusoni and davoi zones of the southern Paris Basin appears superficially similar in ornament from the illustration of the holotype (Apostolescu 1959, pl. 1, fig. 1). Further study might reveal a close relationship between the 2 species.
Order Podocepida Müller 1894
Suborder Platycopina Sars 1866
Family Cytherellidae Sars 1866
Genus Cytherella Jones 1849

Type species. Cytherina ovata Roemer 1840.

Cytherella drexleriæ Field 1967

1958 Cytherelloidea inflata Drexler, p. 304, pl. 21, fig. 4a-c.
1966 Cytherella inflata (Drexler); Field, p. 96, pl. 13, figs. 19-22.
1967 Cytherella drexleriæ Field, p. 534.

Material. 3 male valves.

Distribution. Redcar, R6, 9, 11.

Diagnosis. As Field (1966, p. 96).

Remarks. The material is closely comparable to that described from England by Field (1966). The species differs from Cytherella concentrica Field (1966) only in as far as the latter possesses a reticulate ornament, and it is thought likely that the 2 species are sub-species of the same species.

Cytherella concentrica Field 1966

Material. 3 carapaces, 1 valve.

Distribution. Redcar, samples R6, 8, 10, 11; North Cliffe, pit 'a'.

Dimensions (in mm).

<table>
<thead>
<tr>
<th>Carapace</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
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<tbody>
<tr>
<td>HU.52.J.3</td>
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<td>0.42</td>
<td>0.26</td>
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</table>

EXPLANATION OF PLATE 122

All figures × 50.
Figs. 1, 2. Polycope cerasia Blake. Carapace, HU.52.J.2, Redcar—R5; 1, left view; 2, dorsal view.
Figs. 3, 4. Cytherella concentrica Field. Carapace, HU.52.J.3, Redcar—R10; 3, right view; 4, dorsal view.
Figs. 5–7. Cytherelloidea pulchella Apostolescu. 5, 7, Carapace, female, HU.52.J.9, pit 'a'; 5, left view; 7, dorsal view; 6, right valve, female, HU.52.J.8, pit 'a', external view.
Figs. 8, 9. Cytherelloidea circumscripta (Blake). Carapace, female, HU.52.J.5, pit 'b'; 8, left view; 9, dorsal view.

Figs. 10–12. Bairdia aff. B. molestæ Apostolescu. 10, 12, Carapace, HU.52.J.11, pit 'b'; 10, right view; 12, dorsal view; 11, Right valve, HU.52.J.10, pit 'b', internal view.

Figs. 16, 17. Bairdiacephalus? surinamensis Donze. Left valve, HU.52.J.16, pit 'b'; 16, external view; 17, dorsal view.
Figs. 18–21. Klinglerella moorei (Jones). 18, 20, Left valve, HU.52.J.60, pit 'b'; 18, external view; 20, dorsal view. 19, 21, Right valve, HU.52.J.61, pit 'b'; 19, external view; 21, dorsal view.
Diagnosis and Description. As Field (1966, p. 97).

Remarks. Despite the presence of ornament, Field assigned this species to Cytherella on the grounds that in females there is only 1 posterior internal depression, whereas females of Cythereilloidea possess 2.

In certain respects the morphology of this species corresponds with the description of Cythere blakei Jones (1872) and it is possible that the 2 are synonymous.

C. concentrica was recorded from the angulata and bucklandi zones in Dorset but was found only in the bucklandi zone in Yorkshire. Blake (1876, p. 431) recorded Cythere blakei from the planorbis zone at Cliff and the angulatus zone at Redcar.

Genus Cythereilloidea Alexander 1929

Type species. Cythere (Cytherella) williamsoniana Jones 1849.

Cythereilloidea circumscripta (Blake 1876)

Plate 122, figs. 8, 9

1876 Cythereella circumscripta Blake, in Tate and Blake, p. 434, pl. 14, fig. 14.
1966 Cythereilloidea circumscripta (Blake); Field, pp. 88–93, pl. 11, figs. 1–8; pl. 12, figs. 9–13; text-fig. 2.
1966 Cythereilloidea circumscripta (Tate and Blake); Donze, p. 127, pl. 6, fig. 47.
1966 Cythereilloidea cf. circumscripta (Tate and Blake); Donze, pp. 127–128, pl. 6, fig. 46.

Material. 2 carapaces, 63 valves.

Distribution. Redcar, samples R2, 5, 10, 11. Hartley, pit 'h'. South Cliff, pit 'b'. North Cliff, pit 'a'

Dimensions (in mm).

<table>
<thead>
<tr>
<th></th>
<th>Left valve, female</th>
<th>Carapace, female</th>
<th>Left valve, male</th>
<th>Right valve, male</th>
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<tr>
<td>Width</td>
<td>0·75</td>
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<td>0·68</td>
<td>0·69</td>
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<tr>
<td>Height</td>
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<td>0·43</td>
<td>0·40</td>
<td>0·45</td>
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<tr>
<td>Length</td>
<td>0·16</td>
<td>0·26</td>
<td>0·11</td>
<td>0·12</td>
</tr>
</tbody>
</table>

Diagnosis and description. Description by Blake (1876, p. 434), short diagnosis and description as Field (1966, p. 89). See text-fig. 3.

Remarks. C. circumscripta was described and discussed in some detail by Field (1966), who found distinct stratigraphic variation in ornament in the species in the Lower Lias of the Dorset coast. Ornamental differences between specimens, including both males and females, from Redcar and East Yorkshire are shown in text-fig. 3. Female specimens from East Yorkshire resembled Field's Variant II but often showed traces of an antero-median rib which occurs in his Variant I and presumably represents an intermediate stage in development. Redcar specimens resembled Variant IV and all appeared to be female; they are certainly from a younger horizon than those from East Yorkshire. As Field noted, his Variant III most closely resembled the ostracod illustrated by Blake (1876, pl. 17, fig. 14). Sexual dimorphism is plainly discernible by ornamental differences and by the posterior inflation of the females, which is caused by 2 internal depressions, called 'brood cavities' by van Morkhoven (1963, p. 23).

Usbeck (1952, p. 404) placed this species in Cythereilloidea without any discussion. His specimens came from the Swabian Lias alpha 1–2 and from his figured specimen.
(pl. 18, fig. 58a) the assignment is correct, but his fig. 58b is *Cytlerelloidea pulchella* Apostolescu (1959). *Cytlerelloidea valspoldensis* Conti (1954) seems to be the same as *C. circumscripta*.

The species, originally described from the *angulatus* zone at Redcar, was recorded by Field (1966) from the *angulata* and *bucklandi* zones of the Dorset coast, while the Yorkshire material was found in the *planorbis, angulata*, and *bucklandi* zones. The Yorkshire distribution is comparable with that of material from Siebeldingen, Pfalz described by Drexler (1958).

![Image of Cytlerelloidea](image)

**TEXT-FIG. 3.** Ornamental variation in *Cytlerelloidea circumspecta* (Blake).

*Cytlerelloidea pulchella* Apostolescu 1959

Plate 122, figs. 5, 7

1959 *Cytlerelloidea pulchella* Apostolescu, p. 802, pl. 1, figs. 4–6.
1964 *Cytlerelloidea pulchella* Apostolescu; Contini and Pariwatvorn, p. 38, fig. 4.
1966 *Cytlerelloidea pulchella* Apostolescu; Field, pp. 93–96, pl. 12, figs. 14–18.
1966 *Cytlerelloidea bunsensis* Donze, pp. 126–127, pl. 6, figs. 35–45.

**Material.** 1 carapace, 7 valves.

**Distribution.** Redcar, Sample R2. North Cliffe, pit 'a'. South Cliffe, pit 'b'. Hotham, pit 'h'.

**Dimensions** (in mm).

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
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</thead>
<tbody>
<tr>
<td>Right valve, female</td>
<td>HU.52.1.8</td>
<td>0.61</td>
<td>0.36</td>
</tr>
<tr>
<td>Carapace, female</td>
<td>HU.52.1.9</td>
<td>0.65</td>
<td>0.38</td>
</tr>
</tbody>
</table>

**Diagnosis.** As Apostolescu (1959, p. 802).

**Description.** As Field (1966, p. 93).
Remarks. C. pulchella differs from C. circumscripta in its smaller size, more oval shape, and in the pattern of ornament—a feature more constant than in C. circumscripta, where ornament can vary with sex, valve, or horizon. The species has been recorded from the Rhaetic (Anderson 1964), Lias alpha (Usbeck 1952), planorbis zone (Donze 1966), angulata zone (Field 1966) and bucklandi zone (Apostolescu 1959). Donze's (1966, pp. 126–127) species C. suisensis differs in outline from the type and more closely resembles the illustration given by Anderson (pl. 13, figs. 74–78). These 2 records seem to represent a more primitive stage within the species. Anderson (p. 151) noted that this species may be the same as Cythere tergemiana Jones (1872), but it does not fit the original description and, as is described below, there is reason to suppose that specimens of Cythere tergemiana have been found in the type area.

It is tempting to identify C. pulchella with Blake's Cythere crepidula (see Field 1966, p. 94) and similarities in shape and ribbing exist if the original drawing of C. crepidula is regarded as being somewhat impressionistic. However, C. crepidula was only recorded from 1 locality and 1 horizon (the Ammonites capricornus zone at Huntcliff, near Staithes), and this leaves a gap of over 1 stage between the highest record of C. pulchella and the recorded occurrence of C. crepidula in Yorkshire. The validity of this comparison can only be tested when original or topotype material of Blake's species has been found. The original material is missing and in the course of this study no examples were found.

Suborder Podocopina Sars 1866
Superfamily Bairdiacea Sars 1888
Family Bairdiidae Sars 1888
Genus Bairdia M'Coy 1844

Type species. Bairdia curta M'Coy 1844.

Remarks. 36 specimens of this genus were found at Redcar. The species described below as Bairdia tatei Coryell (1963) was readily distinguishable, but the remaining specimens showed variation in shape and could not be assigned to existing species although, in certain respects, a few resembled Bairdia molesta Apostolescu (1959). Possibly 1 or 2 species are present and in view of their variation and poor state of preservation it is preferable to leave them under open nomenclature until more material is available. None of the specimens of Bairdia resembled Bairdia? hettangica Donze (1966) from the Hettangian of Ardèche.

Bairdia aff. B. molesta Apostolescu 1959

Plate 122, figs. 10–12

aff. 1959 Bairdia molesta Apostolescu, pp. 806–807, pl. 2, fig. 31.

Material. 1 carapace, 3 valves.

Distribution. South Cliffe, pit 'b'.

Dimensions (in mm). Length Height Width
Right valve HU.52.J.10 0·67 0·37 0·12
Carapace HU.52.J.11 0·72 0·41 0·29

Discussion. In shape the specimens are very similar to B. molesta, but have a slightly more rounded aspect. While some variation in shape is found in B. molesta through its
range (Lower Sinemurian to Domerian), these specimens seem to represent a pre-
B. molesta stage from which the species evolved during the late Hettangian, and they
are accordingly placed as B. aff. B. molesta.

*Bairdia* cf. *B. carinata* Drexler 1958

Plate 122, fig. 13

cf. 1958 *Bairdia carinata* Drexler, pp. 512-513, pl. 22, figs. 2a-c.

**Material.** 2 carapaces.

**Distribution.** Redcar, sample R11.

**Dimensions (in mm).**

<table>
<thead>
<tr>
<th>Carapace</th>
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<th>Height</th>
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</tr>
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<tbody>
<tr>
<td>HU.52.J.12</td>
<td>0·59</td>
<td>0·31</td>
<td>0·22</td>
</tr>
<tr>
<td>HU.52.J.13</td>
<td>0·55</td>
<td>0·31</td>
<td>0·24</td>
</tr>
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</table>

**Discussion.** Both specimens have an extended posterior end and most closely resemble
Drexler’s pl. 22, fig. 2b; they are somewhat smaller than Drexler’s specimens and may
perhaps be instars, perhaps the moult stage immediately preceding the adult, or the one
prior to that.

*Bairdia tatei* Coryell 1963

Plate 122, figs. 14, 15

1876 *Bairdia elongata* Blake, p. 431, pl. 17, fig. 5.
1963 *Bairdia tatei* Coryell, p. 462.
1966 *Isobythocypria? tatei* (Coryell); van den Bold, pp. 222-223.
1979 *? Isobythocypria elongata* (Tate and Blake); Apostolescu, p. 808, pl. 2, figs. 24, 25.
1984 *Pomocypria elongata* (Blake); Comini and Parawatvarn, figs. 4, 6, 8.
1986 *Isobythocypria elongata* (Blake); Magné and Obert, pp. 267, 271.
1958 *Bythocypris? cf. elongata* (Tate and Blake); Drexler, pp. 515-516, pl. 23, figs. 1a-f; pl. 24, 
figs. 7-9; pl. 27, figs. 1, 2.
1964 *Hungaritellina elongata* (Blake); Anderson, pp. 148, 149; pl. 15, figs. 118-121.

**Material.** 5 carapaces, 1 valve.

**Distribution.** Redcar, samples R4, 5, 8.

**Dimensions (in mm).**

<table>
<thead>
<tr>
<th>Carapace</th>
<th>Length</th>
<th>Height</th>
<th>Widht</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU.52.J.14</td>
<td>0·72</td>
<td>0·39</td>
<td>0·26</td>
</tr>
<tr>
<td>HU.52.J.15</td>
<td>0·78</td>
<td>0·39</td>
<td>0·27</td>
</tr>
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</table>

**Diagnosis.** As for *Bairdia elongata* Blake (1876, p. 431).

**Description.** Valves uniformly inflated with greatest width and height about mid-length,
and greatest length just below mid-height. Left valve larger than right, which is over-
lapped dorsally and along mid-part of ventral margin. Dorsal margin gently arched but
ventral margin straight with slight concavity just anterior of mid-length. Anterior
margin evenly rounded, but posterior short and low and dorsal margin curves steeply
down to meet it.

Internal details not seen, but on 1 carapace line of inner margin was visible, with
narrow vestibule at anterior end and a few straight marginal pore canals.

Details of muscle-scars and hingement not seen. Valve surface smooth and unornamented.
Remarks. The specimens described were most closely comparable to Blake's species *B. elongata*. This species seems to be a genuine *Bairdia*; the forms preceded by an interrogation mark in the synonymy, however, apparently do not belong in that genus, because, from the illustrations available, they differ in shape, especially posteriorly. Many of the species in the synonymy seem to belong to the group discussed below as *Pontocypris*, but the situation is confused and the exact position of *Isobythocypris* within this group of smooth elongate-oval ostracods is obscure.

Anderson (1964, pp. 148, 149) described a species from the ? basal Lower Lias as *Hungarella elongata* (Blake) and also figured (pl. 15, fig. 119) a specimen as lectotype (BMNH 103194, Blake Collection, bucklandi zone, Redcar). The evidence that this specimen is Blake's species is unconvincing, and it is unlike any species found from the Redcar samples, with the possible exception of *Ogmoconcha* sp. A. Comparison of Blake's figure (1876, pl. 17, fig. 5) with the lectotype, and with Anderson's figures (1964, pl. 15, figs. 118–121) of the lectotype and a specimen (GSM Mic J 285001) from the lowest Lower Lias of the Plattlane Borehole, Shropshire, is not sufficiently close to establish convincingly that they belong to the same species. Blake's figure shows a carapace which appears to be elongate-oval in shape with a straight dorsal margin which curves down to the low posterior; the ventral margin appears straight. The ventral and posterior margins merge into the dorsal margin, the anterior margin being essentially a continuation of the venter. The posterior end of the shell is rounded and rather acuminate, its most distal point being below mid-height. The larger left valve overlaps the right valve all round and no details of hingement, muscle-scars, or pore canals are visible. Blake's description (1876, p. 431) is vague: 'Carapace large, long, like a narrow bean; ends nearly alike, sharply curved; ventral side slightly concave, dorsal side greatly convex, not compressed.' The specimens described here are regarded as morphologically closer to *B. elongata* than the lectotype erected by Anderson. Anderson's figures show an ostracod which differs from *B. elongata* in possessing a more convex dorsal margin and differently shaped anterior and posterior ends. Admittedly, shape is not always a reliable criterion when knowledge of variation within the species is lacking, but in this case it provides the only evidence. Drexler (1958, pp. 515, 516) compared specimens from the Lias alpha 3 of Příbram with this species and placed them in the genus *Bythocypris*, but Apostolescu (1959, p. 808) considered the species as possibly belonging to his new genus *Isobythocypris*. Several authors in the Lias Colloque (1961) called this species *Pontocypris elongata* (Blake) and were followed by Oertli (1963) and Contini and Pariwatvorn (1964), although Magné and Obert (1966) followed Apostolescu and used the name *Isobythocypris elongata* (Blake) for ostracods from the oxynotum zone of Arbois and the Domerian of Andelot in eastern France.

A complication is that numerous homonyms exist for *Bairdia elongata* and *Bythocypris elongata*. As has been shown by Coryell (1963) and van den Bold (1966), *Bairdia elongata* Blake is a homonym of *Bairdia elongata* (Münster 1830) and as such is not available for use, so that Coryell's new name *Bairdia tatei* Coryell (1963, p. 462) has priority over *Hungarella elongata* (Blake) of Anderson (1964, p. 148).

**Genus Bairdiacypris** Bradford 1935

_Type species._ *Bairdiacypris deloi* Bradford 1935.
Bairdiacypris? sartriensis Donze 1966

Plate 122, figs. 16, 17

?1952 Ostracode 2, Usbeck, p. 404, pl. 18, fig. 60.


Material. 1 valve (adult), 1 carapace (instar).

Distribution. Hotham, pit 'h', planerbiis zone.

Dimensions (in mm). | Length | Height | Width
--- | --- | --- | ---
Left valve | HU.52.J.16 | 0.75 | 0.35 | 0.14
Holotype, carapace (from Donze) | 0.75 | 0.35 | —


Description. Oval–elongate in shape; tripartite dorsal margin, anterior section inclined antero-ventrally, median section inclined slightly towards posterior, and posterior section short, curving round to merge with rounded posterior margin. Anterior margin low, rounded. Ventral margin medianly concave, giving sinuous outline to valve. Left valve larger than right, and overlaps it at anterior and posterior ends of dorsal margin and along mid-part of ventral margin. Greatest height at anterior end of mid-part of dorsal margin in larvae, but at about mid-length in adult; greatest length at mid-height and greatest width close to posterior end. Valve surface smooth, unornamented. Hinge in adult simple, adont. No details of muscle-scar pattern seen.

Remarks. The left valve was encrusted internally with small calcite crystals which obliterated any trace of muscle scars; the duplicature seemed to be very narrow, suggesting that the species does not belong to the family Bairdiidae.

The 2 specimens are closely comparable to the original figures of Donze (1966, pl. 7, figs. 81–86) and the adult has the same dimensions as the holotype (p. 131). The assignment of this species to Bairdiacypris may be correct; certainly it compares quite well with illustrations of the type species B. deloi from the Carboniferous, but it differs in its possession of a more rounded posterior margin.

Bairdia dispersa Blake (1876) may be the same as this species, although it comes from a higher horizon than any from which B.? sartriensis has been recorded. Ostracods from the Hoganas Series of Scania were placed in B. dispersa by Troedsson (1951, p. 245) but the validity of the assignment is questionable.

Superfamily CYPRIDACEA Baird 1845
Family PARACYPRIDIDAE Sars 1923
Genus PARACYPRIS Sars 1866

Type species. Paracypris polita Sars 1866.

Paracypris cf. P.? semidisca Drexler 1958

cf. 1958 Paracypris? semidisca Drexler, pp. 519, 520, pl. 23, figs. 4a–d.

1966 Paracypris? cf. semidisca Drexler; Donze, p. 132, pl. 7, figs. 69–74.

Material. 1 left valve.

Distribution. Redcar, sample R8.
Discussion. A single, poorly preserved, left valve with a broken posterior end. Dorsal margin convex, curving down to a low rounded anterior margin and to the acuminate posterior. Ventral margin almost rectilinear. Surface smooth and unornamented. No other details visible. Apparently belonging to *Paracypris*, this specimen most closely resembles *Drexler*’s *P. semidiscata*. In her synonymy *Drexler* tentatively included *Bairdia lacrimae* Blake (miss-spelling for *B. lacryma*) but this differs in shape especially with regard to the posterior margin, which is distally extended in the original figure (Blake 1876, pl. 17, fig. 3). The identification of *B. lacryma* with *P. semidiscata* is a possibility but one which for the moment must remain unsettled. *Barbieri* (1964) compared ostracods from the top of the Catgian of Sicily with *B. lacryma* but from his illustration the identification seems doubtful.

**Genus Pontocyprilla** Lyubimova 1955

*Type species.* *Bairdia harrisi*ana Jones 1849.

A number of poor specimens from Redcar resemble in shape, overlap, and smooth valve surface the species *Pontocyprilla aureola* Lyubimova 1955 or *Pontocyprilla actagena* Mandelstam 1956; they resemble the type species less closely. More than 1 genus is represented by the species which have been placed in *Pontocyprilla*. As in other cases cited previously, any definitive naming of the material is precluded by the small number of poor specimens.

**Superfamily Cytheracea** Baird 1850

**Family Progonocytheridae** Sylvester-Bradley 1948

**Genus Klinglerella** Anderson 1964

*Type species.* *Procytheridea glabellata* Klingler and Neuwiler 1959.

**Remarks.** *Klinglerella* was first described by Anderson (1964, p. 141), who questionably placed 2 Rhaetic species in the genus. However, in his discussion of the genus, Anderson noted a number of *Procytheridea* species, including many of those described by Klingler and Neuwiler (1959), which he believed to belong to *Klinglerella*. The genus appears to represent a varied and important Lower Lias group of ostracods, many of the species of which have been erroneously placed in *Procytheridea* in the past. The problem of *Procytheridea* will be discussed elsewhere; suffice it to say that *Procytheridea* does not occur in the Lower Jurassic or, probably, anywhere in Europe.

*Klinglerella moorei* (Jones 1872)

*Plate 122, figs. 18-21*

1872 *Cythere moorei*, G. S. Brady MS, Jones, p. 146.

1908 *Bairdia moorei* Jones; J. Bluck, p. 95, fig. 343, non 344.

1952 *Ostracode 4*, Usbeck, pp. 404, 405, pl. 18, fig. 61b, non 61a, c, d.

1959 *Procytheridea luxuriosa* Apostolescu, pp. 808, 809, pl. 2, figs. 33-36.

1966 *Procytheridea praecox* Donze, pp. 133, 134, pl. 7, figs. 87-91.

*Material.* 2 carapaces, 17 valves.

*Distribution.* South Cliffe, pit ‘b’.
Dimensions (in mm).

<table>
<thead>
<tr>
<th>Valve</th>
<th>Width</th>
<th>Height</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left valve</td>
<td>0.49</td>
<td>0.30</td>
<td>HU.52.1.58</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.52</td>
<td>0.31</td>
<td>HU.52.1.59</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.50</td>
<td>0.28</td>
<td>HU.52.1.60</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.53</td>
<td>0.26</td>
<td>HU.52.1.61</td>
</tr>
</tbody>
</table>


Description. Shape oval. Dorsal margin straight or slightly convex and gently inclined towards posterior; posterior low and rounded, anterior margin almost straight and gently inclined downwards for short distance from anterior cardinal angle, then broadly rounded; ventral margin straight or slightly convex with median sulcation groove evident in some specimens. In side view ventral margin hidden by ventral inflation. Valves inflated, with low rim bordering anterior margin, which is ornamented with a weak peripheral rib. This frequently has minor ribs running into it causing rim to be split up into small sections.

Left valve larger and higher than right. Greatest length at mid-valve height, greatest height at anterior cardinal angle, and greatest width medianly or postero-medially. Valve surfaces ornamented with pattern of ribs which is essentially triangular, basal set being longitudinal with minor ribs and in center an area of reticulate ornament produced by intersection of different rib trends. Ribs on ventral side of shell and on ventral surface of inflation are longitudinal. Posterior margin low, unornamented.

Hinge merodont; in left valve an anterior loculate groove with 6 sockets, median bar, and posterior loculate groove with 6 sockets; and in right valve an anterior dentate ridge, median groove, and posterior dentate ridge. Marginal zone moderately wide, inner margin and line of concrescence coincide. Marginal pore canals simple and straight. No sexual dimorphism evident.

Remarks. The species corresponds well with that described by Jones (1872). Blake (1876) quoted Jones in his re-description but added that the ornament was '...like parallel irregularly curved furrows', and his illustration (pl. 17, fig. 9) does not really match the original description. It seems likely that Blake described a form which is close to, or identical with, the species described by Apostolescu (1959) as Procytheridea luxuriosa, from the Sinemurian (bucklandi and semicostatum zones) of the Paris Basin. 1 specimen close to this latter species was found at Redcar in the youngest fossiliferous horizon sampled (sample R11, left valve, HU.52.1.62, length 0.62 mm, height 0.35 mm, width 0.17 mm). At the type area (South Cliffe) P. luxuriosa was not found and the species described above, which fits Jones's original description, must be taken as Cythere moorei. Cythere moorei is thought to be closely related to P. luxuriosa.

Klinglerella moorei is thought to be closely related to P. luxuriosa.

In the 'Colloque sur le Lias Francais' (1961) ostracods have been compared with this species by G. Bizon and Oertli (p. 116), G. Bizon (p. 436), Champeau (p. 438), and J. J. Bizon (p. 452). Their forms, illustrated by drawings and without descriptions, appear to show a significant similarity in outline and ornament to each other and to the species which is regarded here as Cythere moorei. The ostracod illustrated by Usbeck (1952, pl. 18, fig. 61b) from the Lias alpha of Swabia may well be C. moorei, but Usbeck's photograph is poor and no firm decision is possible. Issler (1908, p. 95) placed the species in Bairdia, and Apostolescu (1959, p. 808) tentatively included it in Procytheridea luxuriosa.
**Klinglerella aff. K. triebechi** (Klingler and Neuweiler 1959)

Plate 123, figs. 1-3

aff. 1959 *Procytheridea triebechi* Klingler and Neuweiler, pp. 381, 382, pl. 13, figs. 11-16; pl. 14, figs. 17, 18.

**Material.** 4 carapaces, 34 valves.

**Distribution.** South Cliffe, pit ‘b’. Redear, sample R6.

<table>
<thead>
<tr>
<th>Dimensions (in mm)</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left valve, male</td>
<td>HU.52.J.17</td>
<td>0.59</td>
<td>0.33</td>
</tr>
<tr>
<td>Right valve, male</td>
<td>HU.52.J.18</td>
<td>0.61</td>
<td>0.32</td>
</tr>
<tr>
<td>Left valve, female</td>
<td>HU.52.J.19</td>
<td>0.50</td>
<td>0.31</td>
</tr>
<tr>
<td>Right valve, female</td>
<td>HU.52.J.20</td>
<td>0.51</td>
<td>0.29</td>
</tr>
<tr>
<td>Carapace, female</td>
<td>HU.52.J.21</td>
<td>0.53</td>
<td>0.32</td>
</tr>
</tbody>
</table>

**Description.** Shape oval; dorsal margin straight but inclined posteriorly; from dorsal cardinal angle anterior margin is straight and moderately inclined, then curves down, becoming rounded but slightly asymmetric. At its posterior end dorsal margin joins rounded posterior margin which in turn joins ventral margin; latter has median concavity and selvage groove. Shape of right, or smaller, valve differs a little from that of left, particularly in males which have rather more strongly angled dorsal margin. Left valve larger than right. Greatest length at, or just below, mid-height; maximum height just anterior of mid-length and maximum width medianly or just a little to posterior.

Slight ventral inflation evident. Sexual dimorphism present; presumed females shorter, higher, and appear more rounded than males. Anterior and posterior margins possess narrow bordering rims, rest of valve being inflated except for short groove which runs from near anterior end of dorsal margin for short distance in direction of anteroventral margin. This groove may be weakly or strongly developed. Surface of valves ornamented with ribs forming an open reticulate pattern of 4 or 5 sided cells. Some ribs are rather strong and may be traced across valve. Towards margins ornament becomes weaker and may degenerate into weak punctation. By nature of their preservation some specimens show little ornament even when stained.

Hinge hemimerodont; in left valve an anterior loculate groove, (?) smooth median bar, and posterior loculate groove, matched in right valve by an anterior dentate ridge, median furrow, and posterior dentate ridge. Median bar in left valve and median furrow in right valve may be respectively denticulate and locellate, but this is difficult to ascertain due to preservation and may mean that hinge is antimerodont rather than hemimerodont. Adductor muscle scar pattern a vertical row of 4 scars, largest being the central 2, with a single V-shaped frontal scar.

Normal pore canals simple, about 45 in number, fairly evenly distributed over valve surface. Marginal pore canals few, short, straight. Marginal zone quite wide anteriorly, less so on ventral and posterior margins; line of concrescence and inner margin coincident. Sexual dimorphism apparent.

**Remarks.** This record is from an horizon lower than that given for *K. triebechi* by Klingler and Neuweiler (1959). The specimens are also smaller than the type material. For these reasons and also because of the poor ornamentation on some of the specimens, these ostracods are regarded as *K. aff. K. triebechi* rather than *Klinglerella triebechi* [sensu stricto].
The smooth nature of some of the specimens may suggest a comparison with *Cythere blakei* Jones despite differences from the original description.

This group of ostracods differs from *Klinglerella moorei* in shape, ornament and the presence of dimorphism.

The specimens from Redcar are more inflated than those from Cliffe and may not belong to the same taxon.

*Klinglerella? translucens* (Blake 1876)

Plate 123, figs. 4, 5

1876 *Cythere translucens* Blake, pp. 432, 433, pl. 17, fig. 10.

1908 *Baetella translucens* (Tate and Blake); Pratje, p. 253.


Dimensions (in mm).

<table>
<thead>
<tr>
<th>Carapace</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU.52.J.22</td>
<td>0.62</td>
<td>0.34</td>
<td>0.28</td>
</tr>
<tr>
<td>HU.52.J.23</td>
<td>0.65</td>
<td>0.34</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Diagnosis. Blake (1876, pp. 432, 433).

Description. Shape elongate, oval-triangular. Dorsal margin rectilinear and inclined posteriorly from anterior margin. Ventral margin straight, but obscured in lateral view by weak ventral inflation. Posterior margin short, rounded, slightly asymmetric. Anterior and posterior margins have bordering rims, while rest of valve is gently inflated with exception of flatter area in antero-dorsal position.

Left valve larger than right. Position of greatest height at anterior cardinal angle, of greatest length slightly below mid-height, and of greatest width posteriorly. Valve surfaces irregular with no distinct ornament discernible except on ventral sides of ventral inflations where weak longitudinal ribs may be observed. Some surface irregularities may be expression of normal pore canals. No internal features observed.

**EXPLANATION OF PLATE 123**


Remarks. The weak or indeterminate ornament precludes a firm specific identification since the original description mentions a network of distinct ribs. Nevertheless, the original figure shows an ostracod with an irregular surface, and whilst the original figure and description may not be reliable, for the present these specimens are placed in *C. translucens* because of their similarity to the original figure and their occurrence in the *bucklandi* zone at Redcar. The material differs from any of the species described by Klingler and Neumeyer (1959). Issler (1908, p. 94) assigned this species to the genus *Bairdia*.

Family Uncertain

Remarks. The species described below is considered to belong to a new and undescribed genus. Since only 2 specimens were found the original nomenclature of Jones (1872) has been retained pending collection of more material.

*Cythere* terquemiana Jones 1872

Plate 123, figs. 6-8

1872 *Cythere terquemiana* Jones, p. 147.
1876 *Cythere terquemiana* Jones; Blake, p. 432, pl. 17, fig. 7.

Material. 2 valves.

Distribution. South Cliffe.

Dimensions (in mm).

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left valve</td>
<td>HU.52.J.24</td>
<td>0.45</td>
<td>0.24</td>
</tr>
<tr>
<td>Left valve</td>
<td>HU.52.J.25</td>
<td>0.45+</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Diagnosis. Jones (1872, p. 147).

Description. Shape sub-rectangular. Dorsal margin concave, margin being highest at anterior cardinal angle; anterior margin broadly rounded; ventral margin slightly concave; posterior rounded with an angulation at mid-height. Anterior and posterior margins bordered by low flat rims. Anterior marginal rim has low peripheral rib with minor ribs running from it in posterior direction, thus subdividing rim into approximately 9 small cells. Posterior rim is flat, unornamented. Rest of valve inflated, except for sulcus, which starts from antero-median part of dorsal margin, behind inflated and raised area at anterior cardinal angle, and runs down to antero-median area of valve. Surface of inflated area irregular, with tubercle at postero-ventral extremity, whilst traces of another (which does not appear to be an eye-spot) exist at anterior cardinal angle, and postero-dorsal area is a complex ridged region which is in part tuberculatate. Larger of 2 valves studied was more developed and showed signs of tubercles in median and ventral areas also. Surfaces of valves and postero-ventral tubercles were covered with coarse and irregular reticulate pattern.

Internal features poorly preserved. Hinge tripartite, and in left valve has terminal sockets and median (?) smooth bar; impossible to say whether the hinge is lophodont or hemimerodont.

Remarks. To the original description Blake (1876, p. 432) added 'Elevated on the anterior and postero-ventral portions', which matches the most inflated parts of the specimens described here.
The genus is reminiscent of Lophodendrma, from which it differs in shape, especially posteriorly, and in its tuberculate character. The 2 may well be closely related, although how closely is not possible to say without more details of the internal features. The resemblance to Trachycythere is also striking in shape and ornament in that both possess tubercles and reticulation, although of different strength. Sohn (1968, p. 14) postulated an evolutionary sequence of Cornigella-Judahella-Trachycythere-Orthonotocythere based on shape, size, ornament, and a suggested hinge development. It is conceivable that the species here described belongs to, or is an offshoot from, the lineage proposed by Sohn, but it is impossible to be certain. It is also possible that the Lower Rhaetic Trachycythere? tuberosa Anderson is also closely linked; however, on balance it would seem unlikely that Anderson’s species belongs in Trachycythere [sensu stricto].

The material closely resembles Cythere terqueimiana in its original description and in the original figure, which is an impression rather than an accurate representation, and the identification is regarded as fairly certain.

Suborder METACOPINA Sylvester-Bradley 1961
Superfamily HEALDIACEA Harlton 1933
Family HEALDIIDAE Harlton 1933
Genus OGMOCONCHA Triebel 1941

Type species. Ogmoconica contractula Triebel 1941.

Remarks. It is inappropriate to discuss the details of the possible synonymy of the Lower Jurassic Ogmoconica with the Triassic genus Hungarella Méhes (1911), and it is intended to examine this problem elsewhere. The name Ogmoconica is employed because the genus was described from the Lower Jurassic and represents an important group of Lias ostracods to which the species described below certainly belong.

Ogmoconica ellipsoidea (Jones 1872)

Plate 123, figs. 9-13

1872 Balbilia (?) ellipsoidea G. S. Brady MS, Jones, p. 146.
1876 Balbilia denticula Brodie; Blake, p. 430, pl. 17, fig. 1.
1938 Ostracode (521), Wicher, pl. 27, fig. 1.
1952 Ogmoconica sp. (1), Usbeck, pp. 404, pl. 18, figs. 59a, b.
1954 Cytheridea ellipsoidea (Jones, Brady MS) var. reducta Conil, p. 228, pl. 12, figs. 1-5.
1954 Cytheridea ellipsoidea (Jones); Conil, p. 229, pl. 12, figs. 6-8.
1958 Heildia aspinata Drexler, pp. 505, 506, pl. 21, figs. 5a-e; pl. 25, figs. 1-4.
1959 Ostracoda B, Apostoleseu, p. 817, pl. 2, figs. 20-23.
1961 Ostracoda B, Apostoleseu; Cousin and Apostoleseu, p. 428, table 1.

7par. 1961 Hungarella sp. B (Apostoleseu); G. Bizon, p. 433, table 2.
7par. 1961 Hungarella sp. B (Apostoleseu); J. J. Bizon, pp. 452, 455, table 5.
1962 Heildia aspinata Drexler; Klingler, p. 79, table 7, pl. 12, figs. 1, 2.
1964 Ogmoconica aspinata (Drexler); Gründel, pp. 470, 477, figs. 5-7.
1964 Hungarella ovicchepensis Anderson, pp. 147, 148, pl. 14, figs. 96-101.

Material. 97 carapaces, 518 valves.

<table>
<thead>
<tr>
<th>Dimensions (in mm)</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
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<tr>
<td><strong>Hodham, pit ‘h’</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left valve</td>
<td>0.58</td>
<td>0.43</td>
<td>0.18</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.59</td>
<td>0.32</td>
<td>0.13</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.59</td>
<td>0.25</td>
<td>0.12</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.32</td>
<td>0.19</td>
<td>0.07</td>
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<tr>
<td><strong>Hodham pit ‘g’</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Carapace</td>
<td>0.59</td>
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<td>0.32</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.54</td>
<td>0.39</td>
<td>0.18</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.55</td>
<td>0.39</td>
<td>0.17</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.54</td>
<td>0.35</td>
<td>0.15</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.52</td>
<td>0.34</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>North Cliffe, pit ‘a’</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Left valve</td>
<td>0.59</td>
<td>0.42</td>
<td>0.18</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.59</td>
<td>0.43</td>
<td>0.19</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.55</td>
<td>0.36</td>
<td>0.14</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.56</td>
<td>0.36</td>
<td>0.14</td>
</tr>
<tr>
<td><strong>Redcar, sample R11</strong></td>
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<td></td>
<td></td>
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<tr>
<td>Carapace</td>
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<td>0.38</td>
<td>0.31</td>
</tr>
<tr>
<td>Left valve</td>
<td>0.59</td>
<td>0.43</td>
<td>0.19</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.59</td>
<td>0.39</td>
<td>0.17</td>
</tr>
<tr>
<td>Right valve</td>
<td>0.53</td>
<td>0.35</td>
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</tr>
<tr>
<td>Right valve</td>
<td>0.48</td>
<td>0.29</td>
<td>0.14</td>
</tr>
</tbody>
</table>

*Diagnosis.* Jones (1872, p. 146).

*Description.* Shape triangular, ovate. Dorsal margin asymmetrically arched with highest point posterior of mid-length; both anterior and posterior margins evenly rounded although slight angle may be evident at posterior ends of dorsal margin; ventral margin straight. Greatest height posterior of mid-length, greatest length at mid-height, and greatest width close to posterior end. Valves inflated. Shape of right valve differs slightly from that of left described above in that it is less high and anterior portion of dorsal margin is inclined more steeply so that anterior margin is lower and more sharply rounded. Some variation in shape within species can be seen in degree of asymmetry of shell. Left valve larger than right, with strong overlap. Valve surface smooth. Valves normally thick and heavily calcified.

Muscle-scar pattern situated at, or just posterior of, mid-length; composed of 6 scars, which tend to be triangular in shape, within ring of 12 smaller scars. Inner lamella not properly known. Crenulated selvage of smaller (right) valve fits into prominent peripheral groove in larger valve. This contact groove is particularly well developed beneath anterior and posterior ends of dorsal margin, thus giving appearance of sockets in hinge structure, although the 2 strongly developed portions are joined by a weaker groove. Contact groove particularly weak anteriorly, just below junction of dorsal and anterior margins, and also in middle of ventral margin. Sexual dimorphism not observed. Pore canals not visible. A few instars possess weak postero-ventral spines.

*Remarks.* The name *Bairdia iassica* is derived from Brodie (1845, p. 80), who mentioned *‘Cypris iassica’*, but since this species was not described or figured it is therefore void.
according to Anderson (1964, p. 133). Blake (1876, p. 430) considered Bairdia elliptosidea Jones (1872) a synonym of his species B. iassica. Since ‘Cypris iassica’ is a nomen nudum and the species described by Blake is synonymous with B. elliptosidea Jones, Blake’s name is incorrect and that of Jones has priority. Cypris iassica as described by Terquem (1854) from near Metz is the true species of this name and may be identical with the species regarded as B. elliptosidea Jones in this work. It must be stressed that these conclusions are purely bibliographic; the problem of the actual similarity of B. iassica Blake and B. elliptosidea Jones is discussed below. Although Blake considered B. elliptosidea synonymous with B. iassica, to judge from the horizons at which Blake found B. iassica (1876, p. 430) it seems probable that he used the name for any vaguely rounded, triangular species of Ogmococcha. The original material of B. elliptosidea described by Jones was without doubt from the Hettangian of Yorkshire.

Troedsson (1951, p. 245) regarded B. iassica as synonymous with Bairdia amathelii (Quenstedt) (= Cypris amathelii Quenstedt 1858 = Ogmococcha amathelii (Quenstedt) of Triebel 1950), and seems to have been unaware of Triebel’s (1950) paper and his designation of a lectotype.

Jones’s (1894, p. 164) description of Cytheridea elliptosidea includes the following synonymy:

Bairdia ? elliptosidea (G. S. Brody, MS) Jones 1872, p. 146,
Bairdia iassica (not Brodie’s sp.) Blake 1876, p. 430, pl. 17, figs. 1 and 1a.

It is debatable whether Bairdia iassica (of Blake 1876) = Bairdia (?) elliptosidea Jones 1872, is the same as Cytheridea elliptosidea (Jones). The published illustrations show similarly shaped valves, but inspection of the material in the British Museum (Natural History) revealed that the specimen of C. elliptosidea (Lower Lias, Westbury-on-Severn, Brodie Collection, 16090) is unlike those of B. iassica (Blake Collection, D, no locality given; 3 carapaces and 1 valve).

The material described here is from the Hettangian of the area from which Jones described Bairdia (?) elliptosidea, i.e. Cliffe, and is very closely comparable with both the original description (although Jones incorrectly orientated his specimens) and with the illustration given by Blake (1876, pl. 17, fig. 1). There is no doubt that this was the species described by Jones. A few specimens from Hotham (pit ‘g’) were slightly more rounded and show more similarity to one of Blake’s illustrations (pl. 17, fig. 12) than to the other.

From the synonymy it will be clear that 2 other species may also belong to this species. Neulidia aspinita Drexler 1958 is at present the only species which Gründel (1964, pp. 469, 470) considered to belong in his genus Ogmococcha, which is differentiated from Neulidia and Ogmococcha on muscle-scar patterns. The difference between the pattern of Ogmococcha and Gründel’s (1964, p. 477, fig. 7) drawing of the pattern in Ogmococcha is in terms of the central group of muscle-scars which lie, in both cases, within a ring of small scars. In the latter genus the central scars are rounded, while in Ogmococcha these scars may also be rounded but are frequently triangular. The central scars in O. elliptosidea are of Ogmococcha type, and tend to be triangular in shape. The author believes that the differences between the 2 patterns are insufficient to warrant splitting the genus. Ogmococcha aspinita is from the Lias alpha of Germany and may well belong to O. elliptosidea. Another species of similar form is Hungarella owithorpeus
Anderson (1964) from the English Rhaetic, in which is included ‘Ostracoda B’ Apostolescu (1959) from the Lower Lias of the Paris Basin. Anderson gave dimensions for the holotype only (L: 0.625 mm; H: 0.450 mm; W: 0.380 mm), which is larger than the present material of *O. ellipsoides*. *H. owithorpsensis* is differentiated from *B. liassica* in that the latter possesses a ‘faintly punctate surface’ (Anderson 1964, p. 148), but the material of *O. ellipsoides* Jones (= *B. liassica*) from East Yorkshire is, in fact, quite smooth. *H. owithorpsensis*, in the original figures, appears more inflated and possesses a more marked degree of overlap than *O. ellipsoides*.

Some of the records quoted in synonymy from the Lias Colloquium (1961) have a range from Hettangian to top Pliensbachian and are clearly omomnibus records without great significance.

Apart from the species discussed above, *O. ellipsoides* can be distinguished from other species of the genus by its shape, position of highest point on dorsal margin, degree of overlap, and degree of inflation.

*Ognoconcha hagenowi* Drexler 1958

Plate 123, figs. 14-16

1952 Baideria sp. (9), Usbeck, p. 406, pl. 19, fig. 68.
1958 *Ognoconcha hagenowi* Drexler, pp. 308-310, pl. 21, figs. 8a-f; pl. 26, figs. 1, 2.
1959 Ostracoidea A, Apostolescu, p. 816, pl. 1, figs. 9-11.
1961 Hungurella hagenowi (Drexler); Pietrzynik, p. 88.
1962 *Ognoconcha hagenowi* Drexler; Klöpfer, p. 80, table 7; pl. 12, fig. 4.
1963 *Hungurella hagenowi* (Drexler); Oertli, pl. 7, fig. 2; pl. 8, figs. 1, 2.

Material. 224 carapaces, 508 valves.

**Distribution.** Redcar, samples R2, 3, 4, 5, 7, 8, 9, 10, 11.

**Dimensions (in mm).**

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carapace</td>
<td>HU.52.44</td>
<td>0.73</td>
<td>0.56</td>
</tr>
<tr>
<td>Right valve</td>
<td>HU.52.45</td>
<td>0.68</td>
<td>0.48</td>
</tr>
<tr>
<td>Carapace</td>
<td>HU.52.46</td>
<td>0.54</td>
<td>0.38</td>
</tr>
<tr>
<td>Carapace</td>
<td>HU.52.47</td>
<td>0.48</td>
<td>0.34</td>
</tr>
<tr>
<td>Carapace</td>
<td>HU.52.48</td>
<td>0.43</td>
<td>0.28</td>
</tr>
<tr>
<td>Right valve</td>
<td>HU.52.49</td>
<td>0.69</td>
<td>0.50</td>
</tr>
<tr>
<td>Left valve</td>
<td>HU.52.50</td>
<td>0.73</td>
<td>0.55</td>
</tr>
<tr>
<td>Right valve</td>
<td>HU.52.51</td>
<td>0.67</td>
<td>0.48</td>
</tr>
<tr>
<td>Left valve</td>
<td>HU.52.52</td>
<td>0.70</td>
<td>0.50</td>
</tr>
</tbody>
</table>

**Diagnosis.** Drexler (1958, p. 509).

**Description.** Shape rounded, triangular. Dorsal margin strongly arched with highest point at, or anterior to, mid-length; anterior margin evenly rounded, merging without modification into dorsal margin and into convex ventral margin; posterior margin rounded but may show slight asymmetry. Left valve distinctly larger than right, overlap fairly strong, but weak posteriorly and anteriorly. Position of greatest length at, or just below, mid-height, position of greatest height antero-medianly, and position of greatest width close to posterior end. Valve surface smooth, unornamented. In left (larger) valve there is a strong, crenulated contact furrow which received selvage of right valve. This contact groove strongest beneath crest of dorsal margin. Above contact groove on dorsal margin of left valve another...
slight furrow is present and may represent an accommodation groove or ligament pit. Details of muscle-scars and pore canals not observed. No sexual dimorphism observed.

Remarks. Despite the abundant material, internal features were largely unobserved because the valves were invariably filled with sediment, and efforts to clean the interiors of valves by ultrasonic or other physical means failed. On the margins of the specimens examined pore canals were not observed. No marginal denticles as figured by Drexler (1958, pl. 21, fig. 8b) were seen. This species is easy to distinguish from other species of the genus by means of its strongly triangular and convex shape, and by the position of the highest point on the dorsal margin.

The species has also been recorded from France and Germany:

- Drexler (1958) Lias alpha 1, 2, 3.
- Usbeck (1952) Lias alpha 2.
- Oertli (1963) Lias alpha 2, 3, 3a.
- Klingler (1962) Lower Sinemurian (Lias alpha 3).
- Pietzenik (1961) Lias alpha 2, 3; Lias beta 1, 2.
- *Ogmoconcha* sp. A bucklandi to obtusum zones = Lias alpha 3a, b; and Lias beta 1a, b.

Material. 35 carapaces, 34 valves.

Distribution. Redcar, samples R6, 7, 11.

<table>
<thead>
<tr>
<th>Dimensions (in mm)</th>
<th>Length</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carapace</td>
<td>HU.52.J.53</td>
<td>0.61</td>
<td>0.41</td>
</tr>
<tr>
<td>Carapace</td>
<td>HU.52.J.54</td>
<td>0.60</td>
<td>0.40</td>
</tr>
<tr>
<td>Left valve</td>
<td>HU.52.J.55</td>
<td>0.60</td>
<td>0.41</td>
</tr>
<tr>
<td>Right valve</td>
<td>HU.52.J.56</td>
<td>0.34</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Description. Shape oval, almost symmetrical about mid-length; dorsal margin convex, highest point being at mid-length, posterior and anterior margins almost identically and symmetrically curved, ventral margin gently convex. Greatest length at mid-height, greatest height at mid-length, and greatest width at posterior end. Left valve larger than right and overlaps it all round, but not strongly. Selvage of smaller valve fits contact groove in left valve; contact groove most strongly developed beneath dorsal margin. Valve surface smooth, unornamented. Internal features not observed because of sediment infilling valves. No sexual dimorphism apparent.

Remarks. This species is distinguished from the 2 species described above as follows:

<table>
<thead>
<tr>
<th>Shape</th>
<th><em>O. ellipsoida</em></th>
<th><em>O. hagensi</em></th>
<th><em>O. sp. A</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>rounded, asymmetrical</td>
<td>triangular</td>
<td>rounded, symmetrical at mid-length</td>
<td></td>
</tr>
<tr>
<td>Position of highest point on dorsal margin</td>
<td>posterior of mid-length</td>
<td>anterior of mid-length</td>
<td></td>
</tr>
<tr>
<td>Degree of overlap</td>
<td>strong</td>
<td>fairly strong, weak at anterior and posterior</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>weak, especially at anterior and posterior</td>
<td></td>
</tr>
</tbody>
</table>
Since some of the material is poorly preserved the species is left under open nomenclature.

An instar, apparently belonging to this species, had a small postero-ventral, backwardly directed spine base and also a tiny spine on the mid-part of the anterior margin of the right valve. In shape, spinosity, and size this specimen resembles *Hungirella cattata* Anderson (1964) from the Rhetic. Anderson’s right valve holotype (GSM Mk (J) 266001) was 0.450 mm long and 0.275 mm high, whilst the present carapace (instar H.U.S.I.52.J.57) measures 0.470 mm by 0.290 mm. *H. cattata* is similar to Ostracod Nr. 5 of Klingler (1962, p. 83, table 7, pl. 12, fig. 8) but the latter ranges from Lias beta to upper delta and has the following dimensions (calculated from the original figure): length 0.583 mm, height 0.350 mm. One cannot state definitely that the spinose instar belongs to *Ogmocornecha* sp. A, but spinose instars of smooth adults are not an unknown phenomenon. Oertli (1957), for example, in his work on Upper Jurassic ostracods from the Paris Basin sondage Vernon 1, described and illustrated (pp. 676, 677, pl. 7, figs. 229–233) Indet. gen. (*Progonocytherinarum*?) sp. A, a smooth form as an adult but with spinose instars. If the author’s interpretation is correct, this suggests that *Ogmocornecha* sp. A is, in fact, *Ogmocornecha cattata* (Anderson) and that this species was based on an immature specimen.

**TABLE 1. Distribution of Lower Lias Ostracoda in Yorkshire.**

<table>
<thead>
<tr>
<th>Species</th>
<th>Redcar</th>
<th>North Cliff</th>
<th>South Cliff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycope ceratia BLAKE 1876</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Cypriella dextera LIFF 1867</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>C. canicrinita LIFF 1866</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>C. crassicornis LIFF 1866</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>C. crucifer LIFF 1866</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>C. pucheria APOSTOLESKU 1959</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>B. taki CORYELL 1963</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Bairdia pseudoseltneriana DONZE 1966</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>K. &amp; N. trebei (BLAKE 1876)</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Cyprideis arctica JONES 1972</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Ogmocornecha elliptoides JONES 1872</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>Ogmocornecha elliptoides JONES 1872</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>O. hapkenewi DREXLER 1958</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
<tr>
<td>O. sp. A</td>
<td>![Image]</td>
<td>![Image]</td>
<td>![Image]</td>
</tr>
</tbody>
</table>

**Text-fig. 4.** Distribution of Lower Lias Ostracoda in Yorkshire.

Besides the species described above reference has been made by later workers to other Yorkshire species: *Bairdia redcarensis* Blake (1876) possibly belongs to the genus *Paracypris* according to Apostolescu (1959, p. 806). *Cythere arcaformis* Blake (1876) was called *Bairdia arcaformis* by Pratje (1923, p. 253). As in the case of Issler’s (1908)
placing of C. moorei and C. translucens in Bairdia, this assignment is probably erroneous; C. moorei and C. translucens do not belong in Bairdia and it is unlikely that this species does either. Cythere blakei Jones (1872) was placed by Coryell (1963, pp. 621, 877) in the synonymy of Darwinula liassica, which would seem to be incorrect.

Of the 16 Yorkshire Lias ostracods described by Jones and by Blake (allowing for the synonymy of Bairdia eliptoidea with B. liassica) only three species, Cythere triangulata Blake, C. recaurenis Blake, and Cytherella pauperula Blake have gone unremarked since their original description, and the present work throw no light on these 3 species.

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A. LORD: LIAS OSTRACODA 665


— 1894. On the Rhaetic and some Liassic Ostracoda of Britain. Ibid. 50, 156–169.


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LORD, Lower Lias Ostracoda
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