

J.S.H. COLLINS &amp; ANDRZEJ WIERZBOWSKI

## Crabs from the Oxfordian sponge megafacies of Poland

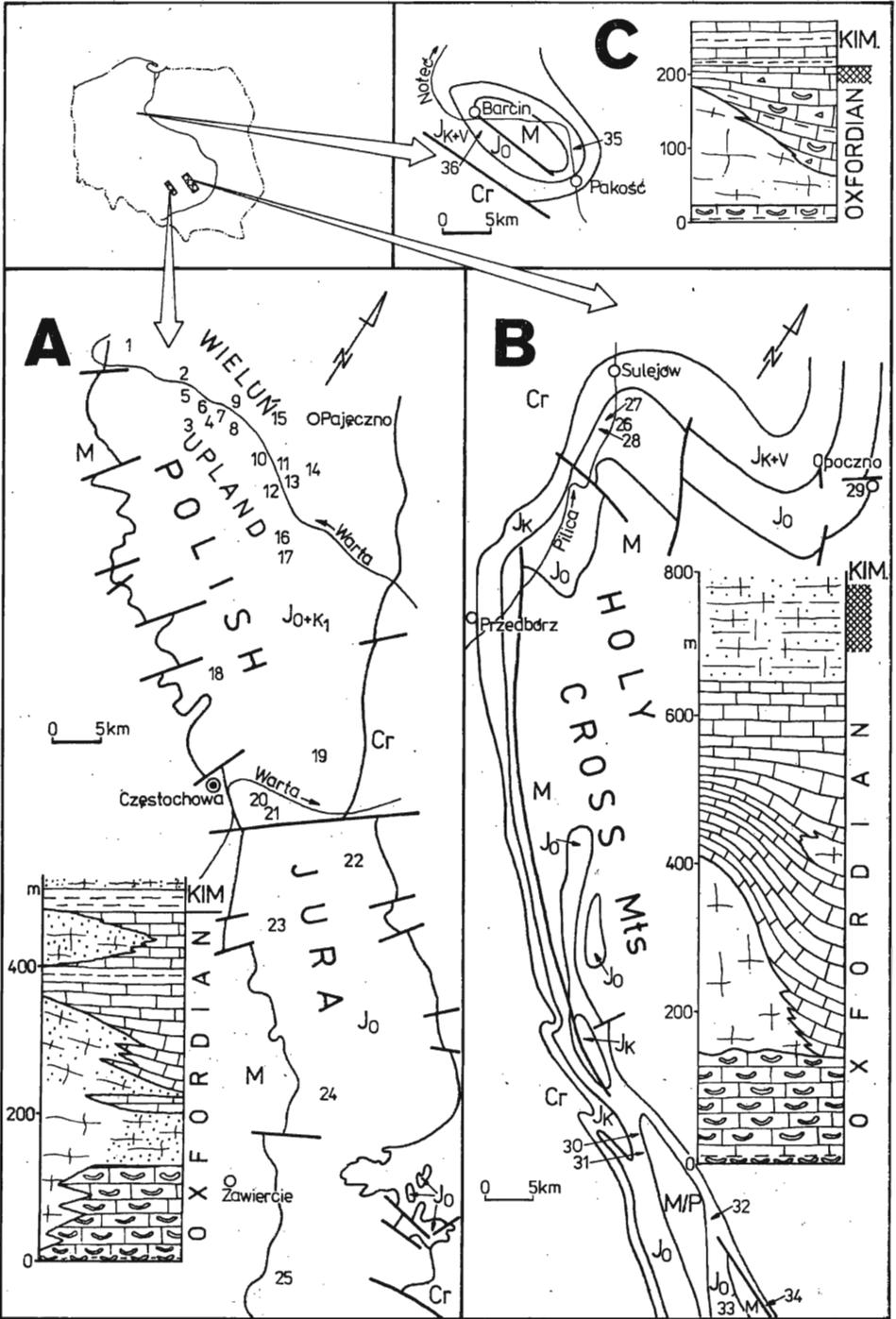
**ABSTRACT:** From the sponge deposits of the Oxfordian strata exposed in Poland, four new species of crabs are described: *Nodoprosopon circinatum* COLLINS, sp. n., *N. echinorum* COLLINS, sp. n., *N. ordinatum* COLLINS, sp. n., *Coelopus etalloni* COLLINS, sp. n. Five other species: *Nodoprosopon spinosum* (von MEYER), *Pithonoton aequilatum* (von MEYER), *P. insigne* (von MEYER), *P. serratum* (BEURLEN) and *Laeviprosopon laeve* (von MEYER) are recorded from these deposits for the first time; of these species the stratigraphic range of *P. aequilatum* and *P. insigne* has been extended. Additional locality and zonal recordings are made for *Nodoprosopon heydeni* (von MEYER), but the previous record for *N. torosum* (von MEYER) remains unchanged.

### INTRODUCTION

The first mention of crabs from the Upper Jurassic of Poland appears to be that of ROEMER (1879) who described and figured "*Prosopon rostratum* v. MEYER" from the Upper Oxfordian deposits at Olsztyn, near Częstochowa. SIEMIRADZKI (1891) and BEURLEN (1929) also discussed Oxfordian species from the Polish Jura. No attempt had been made to recognize the crabs from the Polish Oxfordian, however, until BARCZYK (1961) in his survey of the Upper Jurassic deposits around Sulejów in the Holy Cross Mts recorded and illustrated four species from the bimammatum Zone. Other authors, e.g. DMOCH (1958), WIERZBOWSKI (1966), WIŚNIEWSKA-ŻELICHOWSKA (1971), MERTA (1972) have noted the presence of crabs from several new localities in the Holy Cross Mountains and in the Polish Jura and a notable contribution by RADWAŃSKI on Oxfordian crabs infested with the isopod *Bopyrus* appeared in 1972.

Since then numerous crabs from the Oxfordian limestones of Poland have been added to the palaeontological collections of the University of Warsaw.

All the crabs studied come from the well-bedded sponge-tuberolitic limestones and the algal-spongy bioherms and biostromes. These deposits, widely distributed in the Oxfordian of Poland, belong to the sponge megafacies, which occurs also in other European areas, representing always the deep-neritic environment of the northern Tethyan margin. The common fossils are: siliceous sponges, bryozoans,



serpulids, brachiopods and ammonites, as well as the calcareous incrustations and stromatolites of possible blue-green-algal origin. In the lower part of the sequence (see Text-fig. 1) there usually occur well-bedded sponge-tuberolitic limestones but with small algal-sponge bioherms, whereas in the upper part of the sequence observed is a marked development of the sponge-algal buildups which resulted in origin of the serious seafloor relief. Due to the latter feature, at the top of the buildups, in the more shallow environment, there appeared the hermatypic corals.

The authors had at their disposal 140 specimens which come from the collections of W. BARCZYK from the environs of Sulejów, and of T. MERTA and A. RADWAŃSKI from Opoczno, both from the Holy Cross Mts, a small collection of B.A. MATYJA from the Oxfordian of south-western margin of the Holy Cross Mts, the collection of A. WIERZBOWSKI from the Wieluń Upland (northern Polish Jura), some specimens from the vicinity of Częstochowa and southern parts of the Polish Jura, collected by W. BROCHWICZ-LEWIŃSKI, J. HASE, J. SADKIEWICZ, A. MACHELSKI due to their M. Sc. dissertations, as well as a few specimens collected by B.A. MATYJA and A. WIERZBOWSKI in the Barcin quarries of the Kujawy region in north Central Poland (see Text-fig. 1). All specimens are housed at the Institute of Geology, University of Warsaw (abbreviated as *IGPUW*).

Within the collections the greater number of specimens belong to the Prosopidae, subfamily Pithonotinae (125 specimens — 89.3% of the total); four species are here recognized — *Pithonoton aequilatum* (von MEYER), *P. insigne* (von MEYER), *P. serratum* (BEURLIN) and *Coelopus etalloni* COLLINS, sp. n., among which *P. serratum* predominates (98 specimens — 70% of the total). None of the foregoing species *sensu stricto* has previously been recorded from the Oxfordian of Poland. However, BARCZYK (1961, Pl. 3. Figs 1—2; see also 1980, Pl. 163. Figs 1—2) confused both *P. marginatum* (von MEYER) and *P. rostratum* (von MEYER) for *P. serratum*, and the specimens figured by RADWAŃSKI (1972, Pl. 1, Figs 1, 4 and Pl. 2, Figs 1—3) as *P. marginatum* also belong to *P. serratum*. The genus *Coelopus* was erected by ETALLON (1861) for pithonotons with a subrectangular

Fig. 1

Geological maps of the studied localities (after OSIKA & al. 1972; inset shows location of the areas in Poland)

A — Polish Jura (stratigraphical sequence after WIERZBOWSKI, MATYJA & ŚLUSARCZYK-RADWAN 1983): 1 — Kamion, 2 — Sensów, 3 — Wapiennik, 4 — Korkusy, 5 — Draby, 6 — Lisowice, 7 — Raciszyn, 8 — Zalesiaki, 9 — Działoszyn, 10 — Antonie, 11 — Niwiska Dolne, 12 — Wąsosz Dolny, 13 — Patrzyków-Garbacze, 14 — Czerkiesy, 15 — Tębaczew, 16 — Nowa Wieś, 17 — Borowa, 18 — Kamyk, 19 — Rudniki, 20 — Mirów, 21 — Osona, 22 — Mokrzysz, 23 — Biskupice, 24 — Bobolice, 25 — Podzamcze

B — south-western margin of the Holy Cross Mts (stratigraphical sequence after MATYJA 1977): 26 — Ostrów, 27 — Kuźnice, 28 — Biała, 29 — Opoczno, 30 — Wolica, 31 — Siedlec, 32 — Brzeziny, 33 — Piotrkowice, 34 — Maleszowa

C — Barcin vicinity in the Kujawy region (stratigraphical sequence after MATYJA & WIERZBOWSKI 1981): 35 — Zalesie, 36 — Barcin

LITHOLOGY: 1 — bedded sponge-tuberolitic limestones, 2 — massive algal-sponge limestones, 3 — massive and bedded chalky limestones, 4 — micritic limestones, 5 — detrital limestones, 6 — marls and marly limestones

Abbreviations in the maps: P — Paleozoic, M — Mesozoic (older than Oxfordian), J<sub>O</sub> — Oxfordian, J<sub>K</sub> (J<sub>K1</sub>) — Kimmeridgian (Lower Kimmeridgian), J<sub>V</sub> — Volgian, Cr — Cretaceous

outline, no sharp marginal edges and deep orbital grooves, and of the previously included two species, *C. bigoti* HÉE, Bathonian, Normandy, and *C. jolyi* ETALLON from the Lusitanian of Nièvre, the new species is perhaps closer to *C. jolyi*. The species *C. pustulosus* (von MEYER) is here regarded as a synonym of *P. aequilatum* (von MEYER).

The subfamily Prosopinae is represented by six species of *Nodoprosopon* (11 specimens — 7.85% of the total), three of them new, *N. circinatum*, *N. echinorum* and *N. ordinatum*; two, *N. heydeni* (von MEYER) and *N. torosum* (von MEYER) were correctly assigned by BARCZYK (1961), while the sixth species, *N. spinosum* (von MEYER), was hitherto known from the Oxfordian of Hersbruck (KÜHN 1936) and the Tithonian of elsewhere.

The genus *Laeviprosopon* was included by PATRULIUS (1966) in the Homolidae and the genus is represented in the present collection by *L. laeve* (von MEYER); only 4 specimens — 2.85% of the total.

Unfortunately all von MEYER's types in Munich were lost during the war. Accordingly, references nowadays can be made only to his written descriptions and/or figures — the former sometimes wanting in critical detail, the latter subject to doubts of idealism; until adequate and satisfactory topotype material can be collected, individual identification remains more often a matter of logical conclusion rather than concrete fact. Attempts by one of us (JSHC) to utilize ratios have met with a certain amount of success (*q.v.* *P. aequilatum* and *P. serratum*), but because of the paucity and state of preservation of some species it might be hazardous to place too much reliance on the constant application of ratios, especially in relation to old, established text figures.

The palaeontological descriptions in the present paper have been prepared by J.S.H. COLLINS whereas A. WIERZBOWSKI is responsible for the stratigraphical background.

## SYSTEMATIC ACCOUNT

(by J. S. H. COLLINS)

Infraorder **Brachyura** LATREILLE, 1803

Section **Dromiacea** de HAAN, 1833

Superfamily **Dromioidea** de HAAN, 1833

Family **Prosopidae** von MEYER, 1860

Subfamily **Prosopinae** von MEYER, 1860

Genus *Nodoprosopon* BEURLIN, 1928

**TYPE SPECIES:** *Prosopon ornatum* von MEYER, 1860, by original designation.

**RANGE:** Upper Jurassic.

*Nodoprosopon circinatum* COLLINS, sp. n.

(Pl. 1, Fig. 1)

**HOLOTYPE:** The internal mould of a carapace lacking the front and posterior margin, presented in Pl. 1, Fig. 1, housed at the Institute of Geology, University of Warsaw (numbered IGPW/C/1/1).

**TYPE LOCALITY:** Osona at Częstochowa, Polish Jura (see Text-fig. 1).

**TYPE HORIZON:** hypselum Subzone of the bimammatum Zone, Upper Oxfordian.

**DERIVATION OF NAME:** Alluding to the ring of tubercles on the gastric region.

**DIAGNOSIS:** Carapace with well marked cervical and branchiocardiac furrows, and a circle of seven even-sized tubercles on the gastric region.

**DESCRIPTION:** The carapace is about one third longer than broad, with the lateral margins diverging gently until the widest part at the middle of the metabranchial region when they curve to join the posterior margin. It is broadly rounded in transverse section and gently convex in side view. Details of the front are not preserved. The hepatic region is tumid and has a short, stout marginal spine. A similar spine, indicated by a basal scar, occupies the somewhat shorter margin of the protogastric lobe and there is another short spine on the lateral margin. The cervical and branchiocardiac furrows are broad and deep; the cervical is acutely V-shaped through its course, although slightly deflected and in part overhung by a tubercle on the protogastric lobe; it crosses the margin in a broad notch at rather less than half the distance from the front. The branchiocardiac furrow curves towards the margin at a rather more acute angle; at the base of the cardiac region it turns abruptly towards the posterior margin and separates the metabranchial lobes.

The gastric region is well marked by an almost perfect circle of seven more or less even-sized tubercles of which the two foremost correspond to the epigastric lobes. The other tubercles are arranged: two on each protogastric lobe (in addition to that bordering the cervical furrow) and one forming the apex of three set triangularly on the small, lozenge-shaped mesogastric lobe; a similar tubercle on the anterior mesogastric process is set at the centre of the circle. The urogastric lobe is separated from the cardiac region by deep grooves terminating in a pit on either side of the midline, and although depressed medially is barely penetrated by an extension of the cardiac region. At the widest part of the elongated shield-shaped cardiac region a transverse pair of tubercles is surrounded by fine granules and there is a smaller tubercle posteriorly; its sides are indented by short, ridged mesobranchial lobes and there is a tubercle halfway those and the one on the lateral margin. Very fine granules are scattered between the gastric tubercles and the granulation becomes coarser posteriorly; those on the metabranchial lobes tending to form rows parallel to the branchiocardiac furrow.

**DISCUSSION:** The arrangement of the surface ornament at once distinguishes *N. circinatum* COLLINS, sp. n., from other known members of the genus. This species is reminiscent of the Cretaceous genus *Vectis* particularly the Upper Aptian form *V. echinorum* WRIGHT & COLLINS; it differs however, in having smaller, ridged mesobranchial lobes, no clearly defined intestinal lobe as well as details of the surface ornament.

### *Nodoprosopon echinorum* COLLINS, sp. n.

(Pl. 1, Fig. 2)

**HOLOTYPE:** The internal mould of a carapace, presented in Pl. 1, Fig. 2; housed at the Institute of Geology, University of Warsaw (numbered IGPUW/C/1/2).

**TYPE LOCALITY:** Niwiska Dolne in Wieluń Upland, Polish Jura (see Text-fig. 1).

**TYPE HORIZON:** Niwiska chalky limestones, planula Zone, Upper Oxfordian.

**DERIVATION OF NAME:** Alluding to the spiny ornament.

**DIAGNOSIS:** Carapace subpentagonal with numerous spiny tubercles medially and bilaterally arranged with others scattered randomly over the dorsal surface.

**DESCRIPTION:** Carapace subpentagonal in outline, about four fifths longer than broad; rather steeply arched transversely and in longitudinal section it is downcurved more steeply in front of the cervical furrow than behind. The anterolateral margins are well rounded towards the front, details of which are not preserved. The lateral margins are more gently rounded and diverge slightly towards the posterior margin which is broadly concave. The conspicuously deep and wide cervical furrow is broadly V-shaped throughout most of its length, but almost imperceptibly reclining back

along the base of the hepatic regions. The branchiocardiac furrow runs more or less parallel with the cervical furrow and, while nearly as deep is considerably narrower.

The gastric lobes are poorly differentiated; the anterior mesogastric process is narrow, tapering only at its tip which extends well between rounded epigastric lobes; the mesogastric lobe is lozenge-shaped and from near its basal a faint groove delimiting the hepatic region curves forward and outward to the margin. A narrow projection from the shield-shaped cardiac region bisects the urogastric lobe which is confluent with the epibranchial lobes. A line of four spinules represents the otherwise undifferentiated mesobranchial lobes.

The surface ornament consists of sharp spinules and granules; these occur either medially, or for the most part bilaterally, although others are randomly scattered in between. Of the three spinules on each protogastric lobe, one is marginal, the smallest equidistant between that and one on the anterior mesogastric process while the largest is set close to the mesogastric lobe; the one on the anterior mesogastric process is closely followed distally by a minute granule. On the mesogastric lobe three spinules are arranged in a triangle with a granule just in front of each basal one. Two spinules on each epibranchial lobe form a line with two of similar size on the urogastric lobe and the latter flank a minute granule on the midline. On the cardiac region a robust spinule is surrounded by granules forming a crude circle. Numerous spinules and granules of various diameters are scattered over the metabranchial region.

**DISCUSSION:** The new species, *N. echinorum* COLLINS, sp. n., appears to have some affinity to *N. ornatum* (von MEYER) particularly in the boldness of the cervical furrow, the poorly differentiated lobes and surface granulation. There are, however, significant differences in the distribution of the latter, together with a marked difference in the length/width proportion of the carapace to justify the new species.

Von MEYER figured (1860, Pl. 23, Figs 25—26) two individuals as *N. ornatum* (of these Fig. 26 was inadvertently excluded by GLAESSNER, 1929). The specimen of Fig. 26 is apparently twice the size of Fig. 25 and the difference in ornament depicted would appear to be acceptable within possible changes occurring during growth. The new species is more or less equal in size to von MEYER's Fig. 26 and although it shares details of ornament present on both Fig. 25 and 26, it has in addition the group of three prominent mesogastric spinules, extra hepatic, urogastric and cardiac ornament as well as considerably coarser ornament on the metabranchial lobes. The carapace width of *N. ornatum*, Fig. 26, is about three fourths the length, whereas that of *N. echinorum* is about five sixths. The subspecies, *N. o. carpaticum* PATRULIUS, Lower Tithonian, Woźniki, lacks granules on the urogastric and epibranchial lobes and has three granules on the cardiac region.

*Nodoprosopon heydeni* (von MEYER, 1860)  
(Pl. 1, Figs 3—4)

1860. *Prosopon Heydeni* von MEYER; von MEYER, p. 212, Pl. 23, Figs 27—28.

1929. *Nodoprosopon Heydeni* (von MEYER); GLAESSNER, p. 271.

1961. *Nodoprosopon heydeni* (von MEYER); BARCZYK, p. 67, Pl. 3, Fig. 4.

1972. *Nodoprosopon heydeni* (von MEYER); RADWAŃSKI, p. 501, Pl. 1, Fig. 3.

1980. *Nodoprosopon heydeni* (von MEYER); BARCZYK, p. 500, Pl. 163, Fig. 4.

**RANGE:** Middle Oxfordian to Tithonian.

**MATERIAL:** 5 carapaces (IGPUW/C/1/3—5, IGPUW/C/1/132—133) from the Holy Cross Mts (localities Wolica, Stedlec, and Kuźnice at Sulejów) and the Polish Jura (Patrzyków-Garbacze in the Wieluń Upland, and Biskupice); Middle Oxfordian (transversarium Zone) — Upper Oxfordian (bimammatum Zone and planula Zone).

**REMARKS:** Perhaps the best known of the Oxfordian nodoprosopons, little can be added to von MEYER's original description (of which BARCZYK, 1961, and 1980, provided a Polish description) with regards this species, except to draw attention to the presently known zonal distribution in the Oxfordian, and additional localities from whence it has been found.

*Nodoprosopon ordinatum* COLLINS, sp. n.

(Pl. 1, Fig. 5)

**HOLOTYPE:** The decorticated carapace, presented in Pl. 1, Fig. 5, housed at the Institute of Geology, University of Warsaw (numbered IGPUW/C/1/6).

**PARATYPE:** The anterior portion of a carapace (numbered IGPUW/C/1/7).

**TYPE LOCALITY:** Podzamcze at Zawiercie, Polish Jura (see Text-fig. 1).

**TYPE HORIZON:** hypselum Subzone of the bimammatum Zone, Upper Oxfordian.

**DERIVATION OF NAME:** From the regularly arranged branchial ornament.

**DIAGNOSIS:** Carapace with regions well defined, dorsal surface finely and regularly granulated.

**DESCRIPTION:** Carapace width about one third the length, subpyriform in outline and much produced in front; it is moderately curved both in longitudinal and transverse section, in side view the highest point occurs slightly in advance of the cervical furrow. The somewhat attenuated rostrum follows the general longitudinal curvature, its rounded margins are upturned and the bilobed tip is rounded on either side of a shallow furrow running back between small, elongate granulated epigastric lobes. A small marginal spine, set level with the mid-length of the anterior mesogastric process, is followed by a larger spine taking up the marginal portion of the protogastric lobe. Another spine immediately behind the cervical furrow forms the widest part of the carapace; the lateral margins are gently convex and the posterior angles fairly sharp, although the somewhat overhanging branchial region presents a well rounded appearance. The posterior margin is about as wide as the rostrum.

From the furrow delimiting the mesogastric lobe a protohepatic furrow runs forward and outward and terminates at a low ridge on the side. The equally wide, but deeper cervical furrow is broadly V-shaped medially, passing forward it curves round the hepatic region then resumes its straight course for a short distance to the margin. The branchiocardiac furrow is about as broad and deep as the cervical and is interrupted at the midline by a narrow projection of the cardiac region. The anterior process of the lozenge-shaped mesogastric lobe extends to the base of the epigastric lobes and has a minute tubercle about midlength. The medially divided urogastric lobe is tumid and separated from the epibranchial lobes more by elevation than by a distinct groove; both areas are minutely granulated. The cardiac region is pentagonal, there is a small granule in each of its „corners”, others are scattered randomly but with a tendency for the median ones to form a circle; its attenuated posterior is capped by a single granule. The surface ornament on the gastric region is better preserved on the paratype; granules of several diameters are randomly scattered over the protogastric and hepatic lobes, although there is a tendency for those lining the perimeters of the lobes to be larger. On the mesogastric lobe a circllet of medium sized granules surrounds a median pair and smaller granules are interspersed. Very small, ovate mesobranchial lobes are set close to the anterior angles of the cardiac region. Large granules on the posteriorly divided lobes are arranged in four more or less parallel rows composed of four granules in the anterior row, five and six in the second and third rows respectively, with an extra one opposite the hindmost cardiac granule, while the fourth row, bordering the posterior margin, has five or six granules. A few minute granules are scattered among the rows.

**DISCUSSION:** There is a close affinity to *N. beurleni* KÜHN, particularly in the broadness of the urogastric lobe weakly differentiated from the epibranchial lobes, but *N. ordinatum* COLLINS, sp. n., may readily be distinguished by the presence of distinct mesobranchial lobes and in having a shield-shaped, distinctly granulate, rather than an ovate, punctate cardiac region. The new species may also be compared with *N. torosum* (von MEYER), but the latter lacks a differentiated mesobranchial lobe, has no marked frontal lobes, and in being devoid of both anterior and axial ornament, while the granules on the metabranchial lobes are scattered randomly with no sign of lineation.

*Nodoprosopon spinosum* (von MEYER, 1842)

(Pl. 1, Fig. 6)

1842. *Prosopon spinosum* von MEYER; von MEYER, p. 71, Pl. 15, Figs 1—2.1860. *Prosopon spinosum* von MEYER; von MEYER, p. 196, Pl. 23, Figs 6—7.1929. *Nodoprosopon spinosum* (von MEYER); GLAESSNER, p. 273 (see also for intermediate synonymy).1936. *Nodoprosopon spinosum* (von MEYER); KÜHN, p. 122.

RANGE: Oxfordian to Portlandian.

MATERIAL: Anterior portion of a carapace (IGPUW/C/1/8) from the Polish Jura (locality Osona at Częstochowa), Upper Oxfordian, hypselum Subzone of the bimammatum Zone.

REMARKS: The present specimen, a fragmentary internal mould of the anterior portion of a carapace, is an individual of much the same size as that figured by von MEYER (1860, Pl. 23, Fig. 7). The greater transverse convexity and deeply incised furrows, together with the arrangement of the dorsal tubercles readily distinguishes this species from the foregoing. A line of seven or eight spinous tubercles on the protogastric lobe runs almost parallel with the furrow separating that lobe from the anterior mesogastric process which is well defined to subcarinate. In side view the marginal spine on the epibranchial lobe is extended vertically downwards, the edge bordering the cervical furrow being much the sharper.

The species is also known from the Oxfordian of the French Alps from which FÖRSTER (1969) figures a carapace with a swelling typical of *Bopyrus*.

*Nodoprosopon torosum* (von MEYER, 1860)

(Pl. 1, Fig. 7)

1857. *Prosopon torosum* von MEYER; von MEYER, p. 556.1860. *Prosopon torosum* von MEYER; von MEYER, p. 214, Pl. 23, Fig. 30.1929. *Nodoprosopon torosum* (von MEYER); GLAESSNER, p. 273 (see also for intermediate synonymy).1961. *Nodoprosopon torosum* (von MEYER); BARCZYK, p. 68, Pl. 3, Fig. 3.1980. *Nodoprosopon torosum* (von MEYER); BARCZYK, p. 501, Pl. 163, Fig. 3.

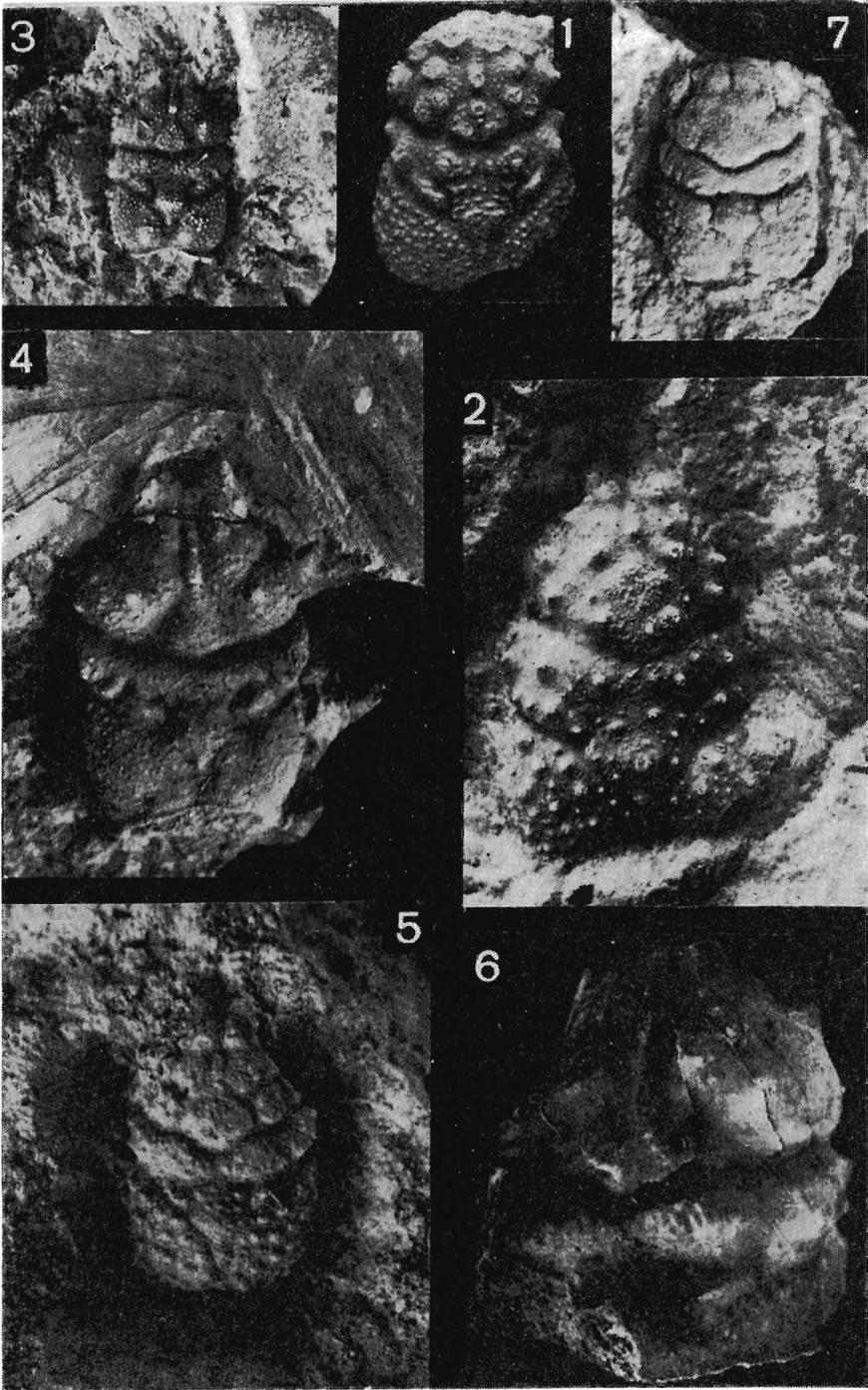
RANGE: Upper Oxfordian to Tithonian.

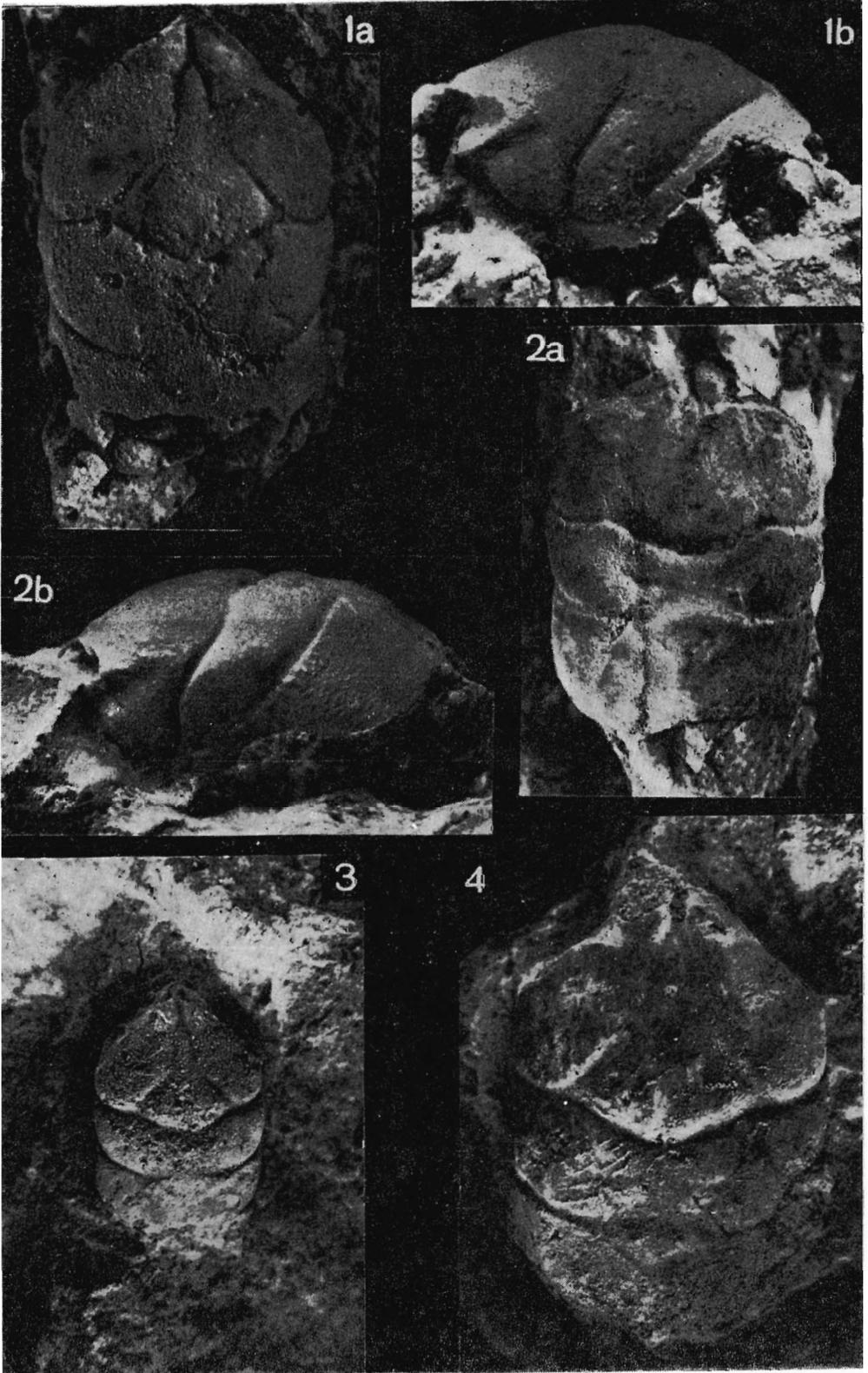
REMARKS: The specimen (IGPUW/C/1/9) figured by BARCZYK (1961, Pl. 3, Fig. 3; 1980, Pl. 163, Fig. 3) from the Holy Cross Mts (locality Biała at Sulejów) remains the only member

## PLATE 1

- 1 — *Nodoprosopon circinatum* COLLINS, sp. n.; holotype, top view (specimen No. IGPUW/C/1/1), Osona
- 2 — *Nodoprosopon echinorum* COLLINS, sp. n.; holotype, top view (specimen No. IGPUW/C/1/2), Niwiska Dolne
- 3 — *Nodoprosopon heydeni* (von MEYER); top view (specimen No. IGPUW/C/1/4), Patrzyków-Garbacze
- 4 — *Nodoprosopon heydeni* (von MEYER); top view (specimen No. IGPUW/C/1/3), Kuźnice at Sulejów (figured by BARCZYK 1961, Pl. 3, Fig. 4)
- 5 — *Nodoprosopon ordinatum* COLLINS, sp. n.; holotype, top view (specimen No. IGPUW/C/1/6), Podzamcze
- 6 — *Nodoprosopon spinosum* (von MEYER); top view (specimen No. IGPUW/C/1/8), Osona
- 7 — *Nodoprosopon torosum* (von MEYER); top view (specimen No. IGPUW/C/1/9), Biała at Sulejów (figured by BARCZYK 1961, Pl. 3, Fig. 3)

All specimens  $\times 5$





of the species known from the Oxfordian of Poland. Although somewhat abraded it is clearly comparable to von MEYER's (1860, Pl. 23, Fig. 30) description and figure which approximates in size.

The large triangular mesogastric lobe reaching almost to the epigastric lobes (with subsequent shortening of the anterior mesogastric process), and absence of clearly defined mesobranchial lobes readily distinguishes it from the foregoing species.

Subfamily *Pithonotinae* GLAESSNER, 1933

Genus *Coelopus* ETALLON, 1861

TYPE SPECIES: *Coelopus jolyi* ETALLON, 1861, by original designation.

RANGE: Middle to Upper Jurassic.

*Coelopus etalloni* COLLINS, sp. n.

(Pl. 2, Fig. 1a—b)

HOLOTYPE: The internal mould presented in Pl. 2, Fig. 1a—b, housed at the Institute of Geology, University of Warsaw (numbered IGPUW/C/1/10).

TYPE LOCALITY: Raciszyn in Wieluń Upland, Polish Jura (see Text-fig. 1).

TYPE HORIZON: Zalesiaki massive limestones, planula Zone, Upper Oxfordian.

DERIVATION OF NAME: In recognition of A. ETALLON.

DIAGNOSIS: Carapace subpentagonal with cervical furrow crossing the midline at the posterior third.

DESCRIPTION: The carapace is about twice as long as broad and elongate-pentagonal. In longitudinal section it is steeply curved with the highest point at the base of the mesogastric lobe, in transverse section it is strongly rounded with the margins curving smoothly into rather deep sides. The rostrum is produced, sharply pointed and follows the longitudinal curvature. The orbits are moderately deep and transversely oval, each about one fourth of the carapace width, the upper rim thin and sharp; the lower rim projecting only at the outer angle which is slightly thickened, giving the appearance of an incipient marginal ridge accentuated below by a groove bounding the subhepatic lobe. The margin becomes smoothly rounded to the cervical furrow and continues thus to the posterior margin. The sides, although vertical, continue the transverse curvature and the areas from the posterior margin to the branchiocardiac furrow, between the furrows as well as the subhepatic lobe are somewhat inflated. The subhepatic lobe is ovoid, the narrower part inclined toward the inner orbital angle; it is delimited behind by the cervical furrow from which a fine hepatic furrow passes forward towards the lower orbital rim. The cervical and branchiocardiac furrows are of about equal depth; the cervical commences at a pit on either side of the midline some two thirds distant from the front, it is obtusely V-shaped to the outer mesogastric angles and weakly concave to the

PLATE 2

- 1 — *Coelopus etalloni* COLLINS, sp. n.; holotype, 1a — top view, 1b — left side view (specimen No. IGPUW/C/1/10), Raciszyn
- 2 — *Pithonoton aequilatum* (von MEYER); 2a — top view, 2b — left side view (specimen No. IGPUW/C/1/11), Holy Cross Mts, unknown locality
- 3 — *Pithonoton insigne* (von MEYER); top view (specimen No. IGPUW/C/1/12), Opoczno
- 4 — *Pithonoton insigne* (von MEYER); top view (specimen No. IGPUW/C/1/13), Opoczno

All specimens  $\times 5$

margins, below the margin it runs obliquely forward then turns sharply down and joins the branchio-cardiac furrow. Dorsally the branchio-cardiac furrow curves parallel to the median portion of the cervical. The epigastric lobes are slightly tumid, divided medially by a deep furrow terminating at the tip of the slender, parallel-sided anterior process of the mesogastric lobe. The latter is trapezoidal with low, weakly scabrous subovate tumid areas posteriorly. The urogastric lobe is obscurely defined, not quite the width of the mesogastric lobe, V-shaped and barely separated from the pentagonal cardiac region which has a transverse pair of feeble tubercles. Although the dorsal surface has a glossy appearance the anterior regions are densely and minutely granulated.

**DISCUSSION:** In having a pointed rostrum, rounded margins and parallel furrows the new species fulfils most of the requirements for the genus (GLAESSNER 1969, R486); the orbits, as stated above, are regarded as „moderately deep” as opposed to „deep” — a distinction engendered as much by preservation of the orbital rims, as a possible specific character.

The posterior position of the cervical furrow immediately distinguishes *C. etalloni* from both *C. jolyi* and *C. bigoti* HÉE, in both of which it crosses the midline at about half the carapace length and in *C. bigoti* it extends well forward before crossing the margin. The latter species has a more prominent rostrum and a more or less well defined shield-shaped cardiac region, which in *C. jolyi* is apparently rather poorly developed.

### Genus *Pithonoton* von MEYER, 1842

**TYPE SPECIES:** *Pithonoton marginatum*, by subsequent designation of BEURLEN (1928).  
**RANGE:** Middle Jurassic to Upper Cretaceous.

### *Pithonoton aequilatum* (von MEYER, 1860) (Pl. 2, Fig. 2a—b)

1842. *Prosopon rostratum* von MEYER; von MEYER, p. 74, Pl. 15, Fig. 5.  
1859. *Pithonoton rostratum* von MEYER; REUSS, p. 71, Pl. 24, Fig. 2.  
1860. *Prosopon aequilatum* von MEYER; von MEYER, p. 194, Pl. 23, Fig. 5.  
1860. *Prosopon pustulosum* von MEYER; von MEYER, p. 195.  
1925. *Coelopus rostratus* (von MEYER); van STRAELEN, p. 360.  
1929. *Coelopus pustulosus* (von MEYER); GLAESSNER, p. 123.  
1929. *Prosopon aequilatum* (von MEYER); GLAESSNER, p. 391.  
1969. *Coelopus pustulosus* (von MEYER); GLAESSNER, R486.

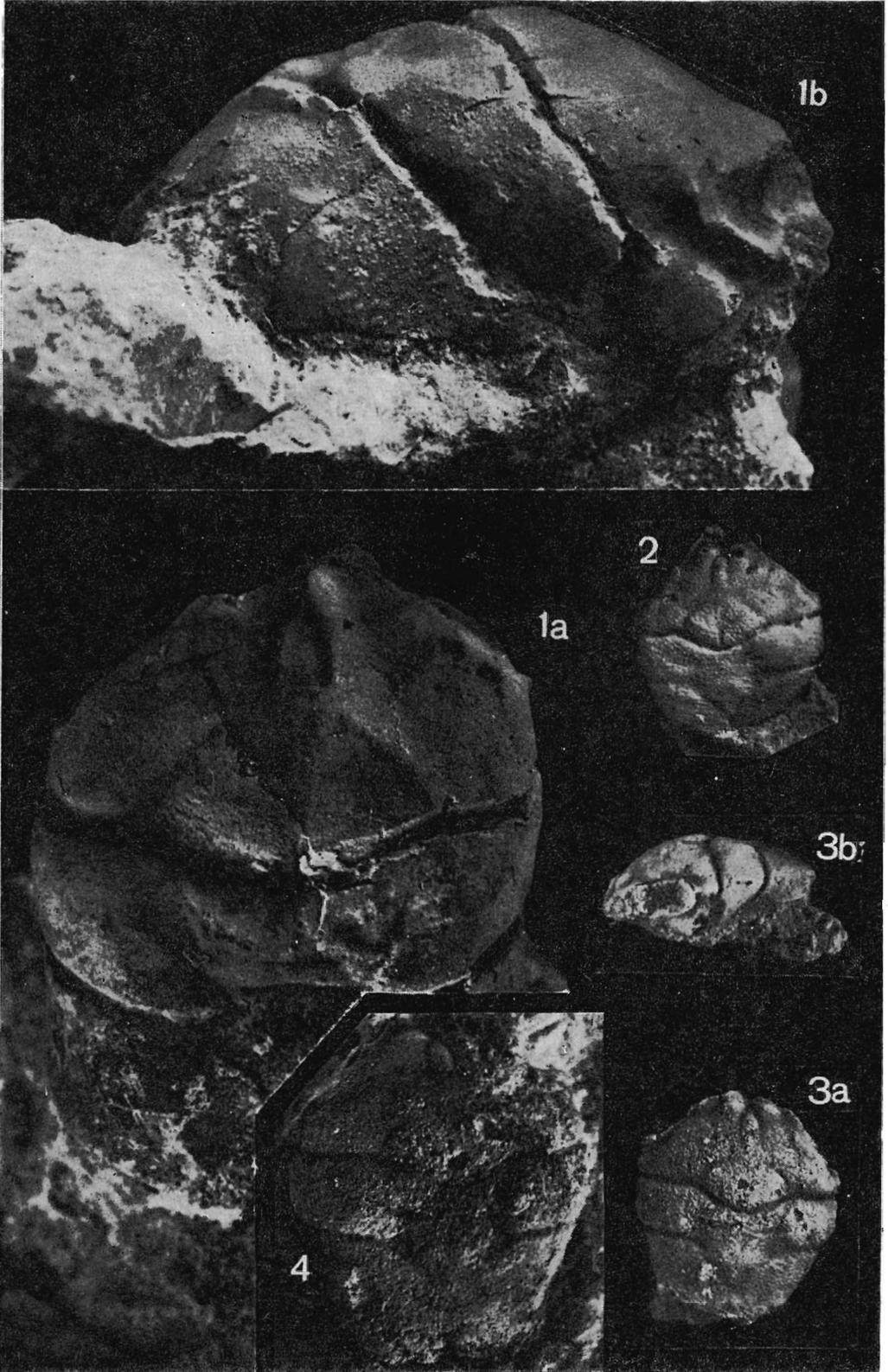
**RANGE:** Oxfordian to Portlandian.

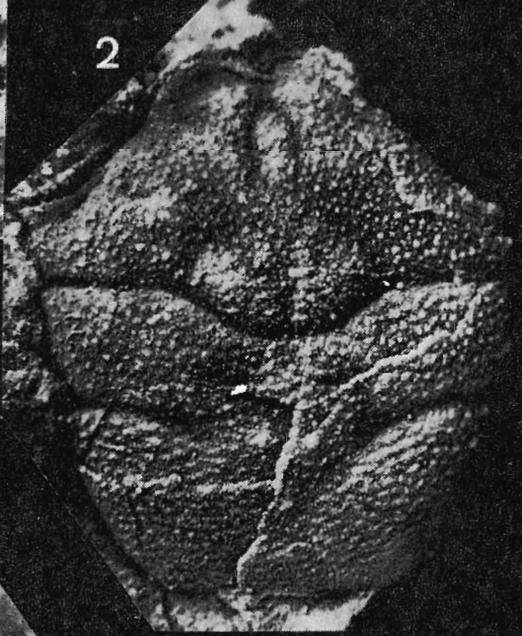
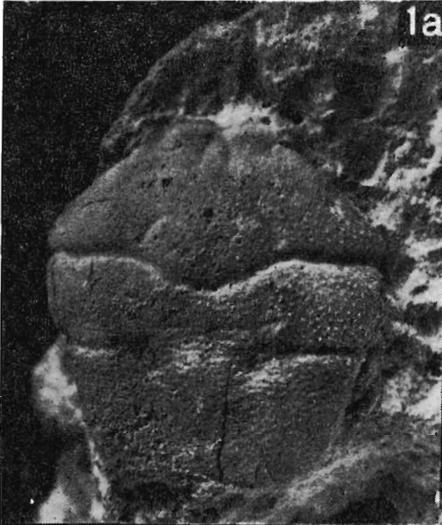
**MATERIAL:** An internal mould (IGPUW/C/1/11) from the Oxfordian of the Holy Cross Mts (unknown locality).

### PLATE 3

- 1 — *Pithonoton insigne* (von MEYER); 1a — top view, 1b — right side view (specimen No. IGPUW/C/1/30), Polish Jura Chain, unknown locality
- 2 — *Pithonoton serratum* (BEURLEN); top view (specimen No. IGPUW/C/1/34), Patrzyków-Garbacze
- 3 — *Pithonoton serratum* (BEURLEN); 3a — top view, 3b — left side view (specimen No. IGPUW/C/1/36), Działoszyn
- 4 — *Pithonoton serratum* (BEURLEN); top view (specimen No. IGPUW/C/1/35), Działoszyn

All specimens  $\times 5$





REMARKS: This specimen agrees favourably in the disposition of dorsal characters with the carapace figured as *Pithonoton rostratum* by REUSS (1859, Pl. 24, Fig. 2), long regarded as synonymous with *Prosopon pustulosum* von MEYER. A marked conformity of details also exists between the studied specimen and the figure of *Prosopon rostratum* von MEYER (von MEYER 1842, Pl. 15, Fig. 5, refigured as *Prosopon aequilatum* in 1860, Pl. 23, Fig. 5). There is a strong resemblance between von MEYER's Pl. 23, Fig. 5 and REUSS' Pl. 24, Fig. 2, but when ratios of both these and the studied specimen are compared, it becomes apparent that more than a superficial similarity prevails and *Prosopon pustulosum* is here considered synonymous with *Pithonoton aequilatum*. The measurements were taken as follows: specimen No. IGPUW/C/1/11 (width 100: length 139: distance of cervical furrow from front 67: distance of branchiocardiac furrow from front 93), REUSS 1859, PL. 24, Fig. 2 (100:133:63:91), von MEYER 1860, PL. 23, Fig. 5 (100:131:68:95).

REUSS (1859) did not include a side view, but von MEYER (1860) showed a rather deep side-wall with the union of the cervical and branchiocardiac furrows more or less beneath the cervical notch, a groove below the lower orbital margin and a rudimentary ridge extending part way on the lateral margin. In side view the studied specimen has a distinctly ridged anterolateral margin formed by fine, even-sized close set granules extending from a thickened outer orbital angle to the cervical furrow and the lateral margin has a rounded ridge, accentuated on the side by a shallow concavity, almost as far as the branchiocardiac furrow. The cervical furrow runs obliquely forward a short distance before turning almost vertically down to unite with the branchiocardiac furrow slightly anterior to the cervical notch.

The flatly tumid subhepatic region is pear-shaped, its „apex” directed upwards toward the cervical notch; it is well delineated behind and below by the cervical furrow and above a shallow groove separates it from the lower orbital margin to just behind the orbital angle where the groove becomes markedly shallower.

Numerous very fine granules of several diameters crowd the left-hand side on the otherwise somewhat abraded dorsal surface of the studied specimen.

Van STRAELEN (1925) included „*Pithonoton rostratum* REUSS” in *Coelopus*, but the presence of ridges on the anterolateral and lateral margins clearly removes this species from that genus in which there is, „no sharp lateral margin” (GLAESSNER 1969, p. R486).

*Pithonoton insigne* (von MEYER, 1860)  
(Pl. 2, Figs 3—4 and Pl. 3, Fig. 1a—b)

1857. *Prosopon insigne* von MEYER; von MEYER, p. 556.

1860. *Prosopon insigne* von MEYER; von MEYER, p. 193, Pl. 23, Fig. 4.

1929. *Prosopon insigne* von MEYER; GLAESSNER, p. 321 (see also for intermediate synonymy).

RANGE: Middle Oxfordian to Tithonian.

MATERIAL: 18 carapaces (IGPUW/C/1/12—30) from the Holy Cross Mts (locality Opoczno) and the Polish Jura (Bobolice, Mirów and Mokrzysz at Częstochowa; Czerkiesy, Patrzyków-Garbacze, Antonie, Zalesiaki, Raciszyn, Lisowice in the Wieluń Upland); Middle Oxfordian (transversarium Zone, bifurcatus Zone), Upper Oxfordian (bimammatum Zone and planula Zone).

PLATE 4

- 1 — *Pithonoton serratum* (BEURLEN); 1a — top view, 1b — left side view (specimen No. IGPUW/C/1/38), Wąsosz Dolny
- 2 — *Pithonoton serratum* (BEURLEN); top view (specimen No. IGPUW/C/1/37), Patrzyków-Garbacze
- 3 — *Laeviprosopon laeve* (von MEYER); top view (specimen No. IGPUW/C/1/128), Rudniki at Częstochowa
- 4 — *Laeviprosopon laeve* (von MEYER); top view (specimen No. IGPUW/C/1/129), Niwiska Dolne

All specimens  $\times 5$ ; except of Fig. 2 taken  $\times 10$

REMARKS: This species is characterised by its rectangular carapace, a prominent, weakly sinuous almost transverse cervical furrow, a narrower but nonetheless well defined branchiocardiac furrow and a clearly defined mesogastric lobe. Other characters detailed by von MEYER (1860, Pl. 23, Fig. 4) are three small triangularly arranged granules on the cardiac region and a minute median granule on the urogastric lobe, the latter unique among all the species figured by von MEYER on his Plate 23.

The assigned specimens in the present collection conform in all respects; they range in length from 4 mm to 22 mm, none reaching the size of von MEYER's Figure 4. The width varies slightly in relation to length from about 2:3 to 4:5, but this would appear to be no more in excess of that encountered among other pithonotons. As preserved on specimen IGPUW/C/1/12 (Pl. 2, Fig. 3), the rostrum (not seen in von MEYER's figure) is narrow and sharply pointed, it follows the longitudinal curvature of the carapace and is produced a little beyond the lower orbital rim. On all the specimens the anterolateral edges have a short line of granules reducing in size posteriorly, forming an incipient ridge in an otherwise rounded surface. The sides are fairly deep and the moderately tumid subhepatic lobe occurs a little below the lower orbital rim leaving a narrow but distinct groove which is not nearly so prominent as that in *P. rostratum*, nor does it extend so far back towards the cervical furrow. In *P. grande* this groove also extends as far as the cervical furrow, furthermore *P. grande* is much broader in relation to length, has a more rounded outline and a poorly differentiated mesogastric lobe. The closely related species, *P. richardsoni* (H. WOODWARD) from the Bajocian of Somerset, England, has more definitely rounded posterolateral margins and lacks the granule on the urogastric lobe.

*Pithonoton serratum* (BEURLEN, 1929)  
(Pl. 3, Figs 2—4 and Pl. 4, Figs 1—2)

?1879. *Prosopeon rostratum* von MEYER; ROEMER, Pl. 25, Fig. 29.

1929. *Goniodromites serratus* BEURLEN; BEURLEN, p. 130, Fig. 4.

1961. *Pithonoton marginatum* (von MEYER); BARCZYK, p. 65, Pl. 3, Fig. 1.

1961. *Pithonoton rostratum* (von MEYER); BARCZYK, p. 66, Pl. 3, Fig. 2.

?1971. *Pithonoton marginatum* (von MEYER); WIŚNIEWSKA-ZELICHOWSKA, p. 54, Pl. 32, Figs 1—3.

1972. *Pithonoton marginatum* (von MEYER); MERTA, p. 34.

1972. *Pithonoton marginatum* (von MEYER); RADWAŃSKI, p. 501, Pl. 1, Figs 1—2 & Pl. 2, Figs 1—3.

1980. *Pithonoton marginatum* (von MEYER); BARCZYK, p. 501, Pl. 163, Fig. 1.

1980. *Pithonoton rostratum* (von MEYER); BARCZYK, p. 502, Pl. 163, Fig. 2.

RANGE: Middle — Upper Oxfordian.

MATERIAL: 96 carapaces (IGPUW/C/1/31—124, IGPUW/C/1/134—135) from the Holy Cross Mts (localities Kuźnice, Ostrów and Biała at Sulejów, Opoczno, Wolica, Brzeziny, Maleszowa, Piotrkowice), the Polish Jura (Smoleń, Kamyk at Częstochowa; Kamion, Sensów, Draby, Wapiennik, Korkusy, Lisowice, Raciszyn, Działczyn, Trębaczew, Wąsosz Dolny, Patrzyków-Garbacz, Nowa Wieś and Borowa in the Wieluń Upland), and the Kujawy region (Barcin); Middle Oxfordian (bifurcatus Zone), and Upper Oxfordian (bimammatum Zone and planula Zone).

REMARKS: Two specimens of *P. bidentatum* illustrated by PATRULIUS (1966, Pl. 31, Figs 19—20) had constant ratios, the length of both being nearly equal to width (98%, 95%); the relative length of the type on the other hand (REUSS 1859, Pl. 24, Fig. 5) was a little larger (109%), but the distance of the cervical (46.9%—57.8%) and branchiocardiac furrows (61.0%—74.6%) from the front in relation to width was fairly constant in all three specimens.

Three figures of *P. marginatum* (von MEYER) measured showed considerable variation in the relation of length to width (121%—133%). Of these the highest figure was obtained from the type being a line drawing. On the whole, the ratios for the cervical (64.1%—67.2%) and branchiocardiac furrows (79.5%—87.3%) in relation to width of the figured specimens of *P. bidentatum* indicate that they are more anteriorly placed than are those of *P. marginatum* and this is amply confirmed by measurements of a single carapace (BMNH 46412) of *P. marginatum* from the Tithonian of Stramberg.

The original illustration of the Oxfordian species *P. serratum* (BEURLEN) is a line figure (BEURLEN 1929, Fig. 4); the length to width ratio of 109% is a little low for the average *P. marginatum* considered above — although it agrees with that of REUSS' *P. bidentatum* (1859, Pl. 24, Fig. 5) — the ratios for the cervical (64%) and branchiocardiac furrows (80.4%) fall comfortably within the range of all measured examples of *P. marginatum* rather than *P. bidentatum*. It would seem therefore that *P. serratum* should be considered as a distinct species with intermediate characters between *P. marginatum* and *P. bidentatum*.

Five carapaces chosen at random from the Polish collection showed no less inconsistent results with regard the length/width ratio which varied from 112%—121%, but in every instance the ratios for the cervical (65.2%—77.8%) and branchiocardiac furrows (80.9%—89.5%) closely approximate those obtained for *P. serratum*.

The close proximity, however, of the outline of the Polish specimens — with the spine on the anterolateral and the five spines on the lateral margins, the definition of the mesogastric lobe and cardiac region with three tubercles, together with the comparable ratios (given a little artistic licence for the enlarged figure of *P. serratum*) clearly relates them to *P. serratum*.

This species, first described from a single carapace from the Upper Oxfordian of Savonniers, Lorraine, France, is a fairly common crab in the Polish Oxfordian. It was figured by BARCZYK (1961, Pl. 3, Figs 1—2; refigured 1980, Pl. 163, Figs 1—2) as *P. marginatum* and *P. rostratum* respectively, and as *P. marginatum* by RADWAŃSKI (1972).

The species *P. serratum* differs largely from *P. marginatum* in having a single spine on each anterolateral margin, four evenly spaced spines on the lateral margin between the cervical and branchiocardiac furrows and another just behind the branchiocardiac furrow. Of the four on the lateral margin the first and third generally develop more strongly during growth, with the third invariably, the most prominent. All the spines are very fragile and break easily and while they are not always readily seen in dorsal aspect they are clearly discernable when the carapace is viewed from the side. The majority of specimens in the present collection are internal moulds and most have three small cardiac tubercles arranged in an inverted triangle; on some, however, the basal one is not developed, while in a few instances they are absent altogether. The dorsal surface is finely and evenly granulated, those on the branchial regions tending to broaden transversely and become loosely arranged in rows curving parallel with the branchiocardiac furrow. One specimen (IGPUW/C/1/37; see Pl. 4, Fig. 2) has the very fine granules lining the frontal and upper orbital margins preserved as pits in the adjacent matrix.

These characters are close to those for *P. bidentatum* (REUSS) as defined by PATRULIUS (1966) in his discussion of specimens from the Lower Tithonian of the Polish Carpathians. Only the anterolateral spines are included in REUSS' (1859) figure of *P. bidentatum*, which also lacks cardiac tubercles.

None of the specimens in the present collection shows the extra tubercular ornament figured by REUSS (1859, Pl. 24, Figs 4 and 7) on the internal mould of the closely allied Upper Tithonian species, *P. polyodon* (REUSS). Ratios taken from the line illustration of the better preserved carapace (Fig. 4) fall well within the limits for *P. bidentatum*.

A figure presented by RADWAŃSKI (1972, Pl. 2, Fig. 2) with a bopyric inflation on the left side, has the whole of that side wider than the right and the other ratios are also affected to a greater or lesser degree.

An internal mould (IGPUW/C/1/35; see Pl. 3, Fig. 4) from the planula Zone of Działoszyn, has on the right-hand mesobranchial lobe a tubercle like eminence rising from a cratered depression, the base of which is somewhat scarified. A plausible explanation is that it is the infilling of a puncture, caused by a possible predator, penetrating the original shell-layer of the carapace. This would appear to be comparable to punctures on a carapace of a *Raminella* sp. described by BISHOP, 1973 (= *R. oahaheensis* BISHOP, 1978).

Family **Homolidae** BELL, 1863  
Genus *Laeviprosopon* GLAESSNER, 1933

TYPE SPECIES: *Prosopon laeve* von MEYER, 1860, by original designation.  
RANGE: Oxfordian to Turonian.

*Laeviprosopon laeve* (von MEYER, 1860)  
(Pl. 4, Figs 3—4)

1857. *Prosopon laeve* von MEYER; von MEYER, p. 556.  
1860. *Prosopon laeve* von MEYER; von MEYER, p. 209, Pl. 23, Fig. 21.  
1929. *Prosopon laeve* von MEYER; GLAESSNER, p. 343 (see also for intermediate synonymy).  
1933. *Laeviprosopon laeve* (von MEYER); GLAESSNER, p. 30.  
1966. *Laeviprosopon laeve* (von MEYER); PATRULIUS, p. 506, Pl. 30, Fig. 7, Text-figs 2A, 4.  
1969. *Laeviprosopon laeve* (von MEYER); GLAESSNER, R484.

RANGE: Oxfordian to Tithonian.

MATERIAL: Four incomplete internal moulds (IGPUW/C/1/128—131) from the Polish Jura (Rudniki at Częstochowa, and Niwiska Dolne in the Wieluń Upland), Upper Oxfordian, planula Zone, and from the Kujawy region (localities Barcin and Zalesie), Upper Oxfordian.

REMARKS: From structural details of the front well preserved on a carapace of *Laeviprosopon laeve* from the Tithonian of Woźniki, together with *lineae homolicae* observed on specimens of *L. fraasi* (MOERICKE), PATRULIUS (1966) concluded that *Laeviprosopon* should be included in the Homolidae instead of the Prosopidae. This view was supported by WRIGHT & COLLINS (1972) who also gave reasons for maintaining the family in the Dromiacea without division into superfamilies as proposed by ALCOCK (1899) and adopted by GLAESSNER (1969).

By and large the present specimens share characters featured by von MEYER (1860, Pl. 23, Figs 21 and 23) for his two species, *Prosopon laeve* and *P. punctatum*, the latter relegated to sub-specific status (GLAESSNER 1929), but on the whole, they are closer to the carapace figured by PATRULIUS (1966, Pl. 30, Fig. 7, Text-figs 2A, 4) as *Laeviprosopon laeve*.

As figured by von MEYER (1860, Pl. 23, Fig. 23), *P. punctatum* is about one third the length of *P. laeve*; it differs largely in having a broader cardiac region devoid of tubercles, the urogastric lobe lacks a median cleft, there are weak marginal tubercles on the hepatic and subhepatic regions and the dorsal surface is granulate, all of which could be accounted for by differences in growth size and/or state of preservation.

Of the Polish specimens, the specimen IGPUW/C/1/129 (figured in Pl. 4, Fig. 4) is approximate in size to von MEYER's Fig. 21. Neither displays tubercles on a comparatively small, subpentagonal cardiac region and the urogastric lobe is divided medially; the tubercle on the hepatic region is subduced to an oblique rounded eminence. There is no indication of a tubercle on the subhepatic region, but instead a fine spine projects slightly downwards from the ventral angle of the frontal margin. The margin immediately above is shortly convex then sharply angulated before becoming more or less straight to the lower orbital margin. The Polish specimens agree favourably with PATRULIUS's figures, on one of which (1966, Text-fig. 4) the „sharp angulation” on the frontal margin mentioned above, is shown at the base of the dotted line pending from the lower orbital margin. The lower spine preserved on the Polish carapaces was presumably broken off the Woźniki specimen.

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### KRABY Z MEGAFACJI GĄBKOWEJ OKSFORDU POLSKI

#### (Streszczenie)

Przedmiotem pracy jest opis systematyczny 11 gatunków krabów występujących w utworach megafacji gąbkowej i pochodzących z obszarów Jury Polskiej, zachodniego obrzeżenia mezozoicznego Gór Świętokrzyskich oraz z okolic Barcina na Kujawach (*patrz* fig. 1 oraz pl. 1-4).

Najliczniej reprezentowane są kraby z podrodziny Pithonitinae rodziny Prosopidae (125 okazów — 89,3% kolekcji), w tym zwłaszcza gatunek *Pithonoton serratum* (BEURLEN), obejmujący w rzeczywistości przeważającą część form opisywanych dotychczas z oksfordu Polski jako *Pithonoton marginatum* (von MEYER) i *P. rostratum* (von MEYER); innymi gatunkami z tej podrodziny stwierdzonymi w badanym materiale są: *Pithonoton aequilatum* (von MEYER), *P. insigne* (von MEYER) oraz *Coelopus etalloni* COLLINS, sp. n. Znacznie mniej liczne są kraby z podrodziny Prosopinae rodziny Prosopidae, należące wyłącznie do rodzaju *Nodoprosopon*. Występują tu gatunki: *Nodoprosopon heydeni* (von MEYER), *N. torosum* (von MEYER), *N. spinosum* (von MEYER) oraz trzy nowe, *Nodoprosopon circinatum* COLLINS, sp. n., *N. echinorum* COLLINS, sp. n., *N. ordinatum* COLLINS, sp. n. W badanym materiale stwierdzono również obecność rodziny Homolidae, reprezentowanej przez gatunek *Laeviprosopon laeve* (von MEYER).

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