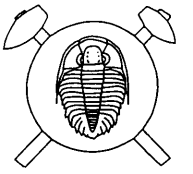
Perissopyge, a new trilobite from the Lower Cambrian of Greenland and North America



Perissopyge, nový trilobit ze spodního kambria Grónska a Severní Ameriky (Czech summary)

(7 text-figs)

MARK R. BLAKER[1] - CLEMENS A. NELSON[2] - JOHN S. PEEL[3]

[1]*Department of Geology, The University, Keele, Staffs ST6 5BG, U.K.*
[2]*University of California, White Mountain Research Station, 3000 East Line Street, Bishop, California 93514, U.S.A.*
[3]*Department of Historical Geology and Palaeontology, Institute of Earth Sciences, Uppsala University, Norbyvägen 22, S-752 36 Uppsala, Sweden (address for correspondence)*

Perissopyge, a new Lower Cambrian trilobite genus of uncertain affinity, is described from the lower part of the Henson Gletscher Formation of central North Greenland and the basal beds of the Harkless Formation of western Nevada; it also is known to occur within the Sekwi Formation of the Mackenzie Mountains, north-west Canada. The type species is *Perissopyge phenax* sp. n. from North Greenland; *P. triangulata* sp. n. is described from Nevada.

Key words: Trilobite, *Perissopyge*, Lower Cambrian, Greenland, Nevada

Introduction

Perissopyge is an unusual trilobite first recognised some 40 years ago from the Lower Cambrian of California. The present description was stimulated by the more recent discovery of well preserved, although disarticulated, remains in the Lower Cambrian of Peary Land, central North Greenland. As the specific component of the name of the type species *P. phenax* implies, casual inspection reveals a pygidium that is deceptively reminiscent of much younger trilobites. The impression, however, is transient and *P. phenax* is firmly rooted in the Lower Cambrian where it occurs in association with olenellids.

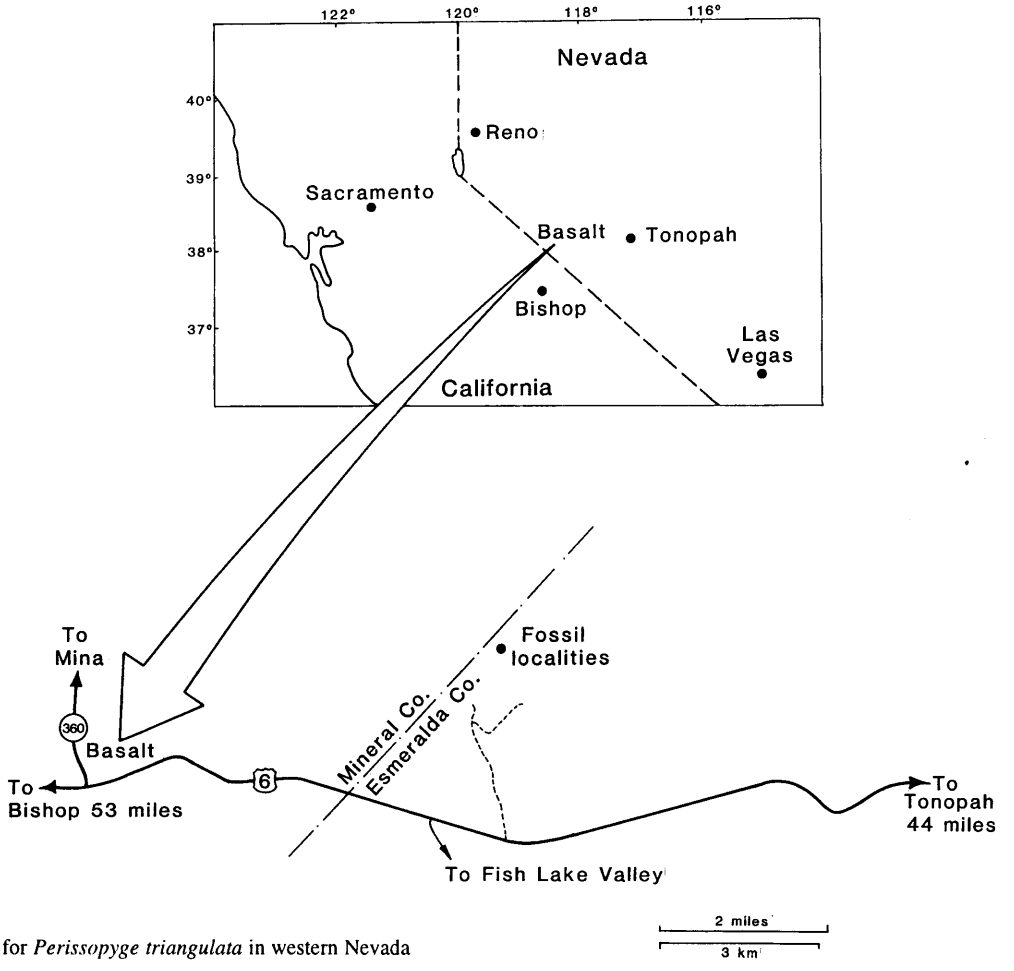


Fig. 1. Collection localities for *Perissopyge triangulata* in western Nevada

History of research

In 1956 Donald C. Ross collected an unusual Lower Cambrian trilobite fauna from the upper part of what was then called the Miller Mountain Formation in western Nevada, U.S.A. (written communication to Nelson, 1957; Fig. 1). Nelson subsequently collected the fauna, recognising that the formation contained most of the elements of the Lower Cambrian succession in the White/Inyo range of eastern California. The fauna occurs in a restricted interval, together with species of *Ogygopsis* and *Olenellus*. At the instigation of Nelson, Wilson (1961) undertook a study of the palaeontology and stratigraphy of the Miller Mountain area. At this stage, the interval containing the Protolenid-like fauna was incorrectly interpreted as equivalent to the uppermost Mule Spring Limestone and the Lower "Cadiz" (Monola) Formation (Nelson 1963).

Several visits to the Miller Mountain locality in following years by Moore (1976) and Nelson, and detailed mapping by Stewart (1979), have firmly established that the succession is equivalent to that of the White/Inyo range (Nelson 1976, 1978). The trilobites here referred to *Perissopyge triangulata* gen. et sp. n. are now known to be specifically from the basal beds of the Harkless Formation (Fig. 2).

Perissopyge phenax gen. et sp. n., the type species of *Perissopyge,* was first collected in Løndal, southern Peary Land, central North Greenland (Fig. 3) by Peel and Peter Frykman in 1978 from strata which subsequently came to be known as the Henson Gletscher Formation of the Brønlund Fjord Group (Peel and Sønderholm 1991; Ineson and Peel 1996; Figs 3, 4). The section has been revisited on several occasions in connection with The North Greenland Project (1978-80), a massive mapping and regional geological programme launched by the Geological Survey of Greenland (now incorporated into the Geological Survey of Denmark and Greenland). Løndal remains the only locality in Greenland yielding *Perissopyge* but the species has also been identified in collections from the Sekwi Formation of north-west Canada made by W. H. Fritz (Geological Survey of Canada). In Greenland, *P. phenax* is associated with *Olenellus* and *Kootenia,* indicating a Late Early Cambrian age, *Olenellus* zone (Blaker and Peel, in press).

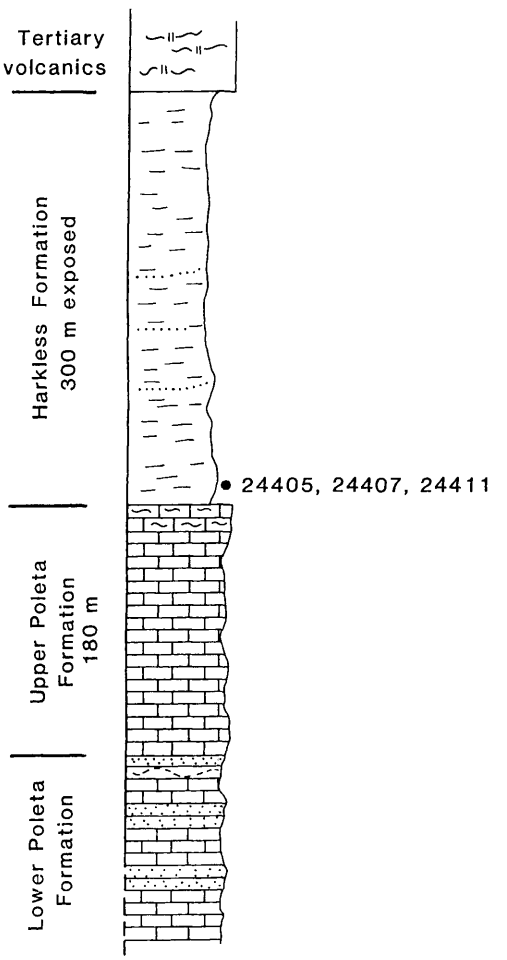


Fig. 2. Collection horizon for *Perissopyge triangulata* in the basal beds of the Lower Cambrian Harkless Formation. Sample numbers refer to Nelson collections deposited in Los Angeles County Museum. For location of section see Fig. 1

Systematic description

Family uncertain
Genus: *Perissopyge* gen. n.

Type species: *Perissopyge phenax* gen. et sp. n. from the Henson Gletscher Formation of Løndal, southern Peary Land, central North Greenland.

Derivation of name: From the Greek *perissos,* 'strange', and *pyge* 'tail'.

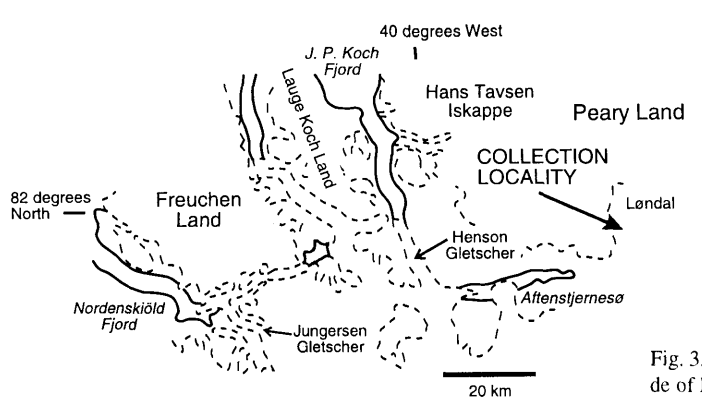


Fig. 3. Collection locality for *Perissopyge phenax* on the western side of Løndal, southern Peary Land, central North Greenland

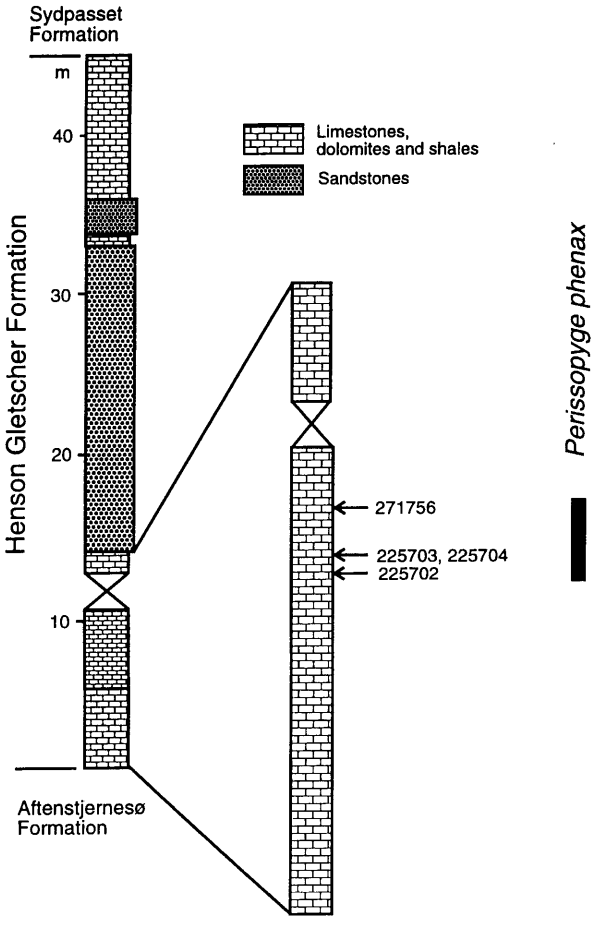


Fig. 4. Distribution of *Perissopyge phenax* in the Lower Cambrian Henson Gletscher Formation. Sample numbers indicate GGU collections. For location of section see Fig. 3

Diagnosis: Glabella with concave sides. Preglabellar field present. Palpebral areas very wide (tr.); long, gently curved ocular ridges and short (exsag.) palpebral lobes. Hypostome fused to rostral plate; anterior lobe of middle body with median swelling. Thorax of seven segments. Large, triangulate pygidium with long (sag.) axis of up to 14 rings. Pleural regions crossed by up to 10 pairs of interpleural furrows. Very narrow border. Granular sculpture on all exoskeletal parts except hypostome.

Discussion: The cranidium of *Perissopyge* is similar to that of *Aldonaia* Lermontova, 1940, with the latter differing in glabellar furrows that are very poorly-impressed or absent, an anterior glabellar lobe that is expanded (tr.) and a shorter (sag.) preglabellar field. The type species, *Aldonaia ornata* Lermontova, 1940 from the Lower Cambrian of Siberia, is known from cranidia alone, but it was noted by Öpik (1975, p. 16) that *A. ornata* is close to *A. tersa* Suvorova *in* Chernysheva, 1960; the two are possibly conspecific. If *A. tersa* is accepted as being representative of the genus then a number of important differences with *Perissopyge* are observed. Most notable is the contrast in pygidial morphology, for that of *A. tersa* is reminiscent of Lower Cambrian ptychoparioids, being small, semielliptical and with an axis of only two or three rings. The free cheek of *A. tersa* is also different, being described by Öpik (1975, p. 16) as "...semicircular, with an advanced, deflected and transmarginal genal spine." The free cheek of *Perissopyge* does not have the genal spine in an advanced position and it is confluent with the lateral border. The overall shape of the free cheek is subquadrate.

Although unknown for the type species *Perissopyge phenax* sp. n., the thorax of *Perissopyge* is known from a second species, herein described as *P. triangulata,* from the Harkless Formation at Miller Mountain, western Nevada, U.S.A.. The thorax of this species is formed of seven segments, none of which is macropleural. Although the number of segments is uncertain for *A. tersa,* the thorax differs from the Miller Mountain material of *Perissopyge* in that it is characterised by a macropleural segment with exceptionally long pleural spines.

It has been suggested that *Perissopyge* may belong to the Aldoniidae Hupé, 1953 (A. W. A. Rushton, written communication to Blaker, 1987). Henningsmoen (*in* Moore 1959, p. 212) considered this taxon to be a subfamily, questionably placing it in the Protolenidae Richter et Richter, 1948. Subsequently, the family was revived and rediagnosed by Repina (1966), who also revised the included genera. In her opinion, in addition to *Aldonaia,* the family included *Tuvanella* Pokrovskaya, 1959, *Eleganolimba* Pokrovskaya, 1959, *Volonellus* Ivshin, 1953, *Planaspis* Repina, 1960 and *Rinconia* Hupé, 1953. *Aldonaia* is apparently the only representative of the family for which exoskeletal elements other than the cranidium have been illustrated.

Although the cranidial morphology of *Aldonaia* and *Perissopyge* are similar, there are considerable differences in the form of the thorax and pygidium. It is concluded, therefore, that *Perissopyge* is not closely related to *Aldonaia* and *Perissopyge* is not included within the Aldonaiidae. Indeed, *Perissopyge* does not appear to belong to any known family.

Even the higher level classification of *Perissopyge* presents difficulties. The presence of a preglabellar field like that of *Perissopyge* is typical of ptychoparioids; in primitive ptychoparioids the hypostome is generally separated from the rostrum by a definite gap, so that the hypostome was free. *Perissopyge* has developed a preglabellar field whilst maintaining the hypostome in contact with the rostrum. The genus is therefore excluded from that group on the basis of a fused hypostome and rostral plate. This strategy of hypostomal development is typical of corynexochids, and it is open to debate as to whether *Perissopyge* is an advanced ptychoparioid or an unusual corynexochid.

Perissopyge phenax sp. n.

Fig. 5, 6

Holotype: Pygidium; MGUH 23584 from GGU collection 271756, Henson Gletscher Formation, west side of Løndal, southern Peary Land, central North Greenland (Figs 3, 4).

Figured paratype: Cranidium; MGUH 23585-23586 from GGU 271756, MGUH 23587-23589 from GGU collection 225703. Free cheek; MGUH 23590 from GGU collection 271756. Hypostome; MGUH 23591 from GGU collection 225703. Pygidium; MGUH 23592-93 from GGU collection 271756, MGUH 23594 from GGU collection 225703. Same locality and formation as the holotype.

Derivation of name: From *phenax,* the Greek for a 'cheat' or 'imposter', referring to its similarity to taxa of a considerably younger age.

Other material: GGU collections 225702-225704, 271756 (abundant). Same locality and formation as the holotype.

Description: Cranidium subquadrate in outline, very gently convex (tr. and sag.). Glabella sides taper very gently forwards to S3, frontal lobe expands gently forwards, anteriorly slightly curved. Preglabellar fi-

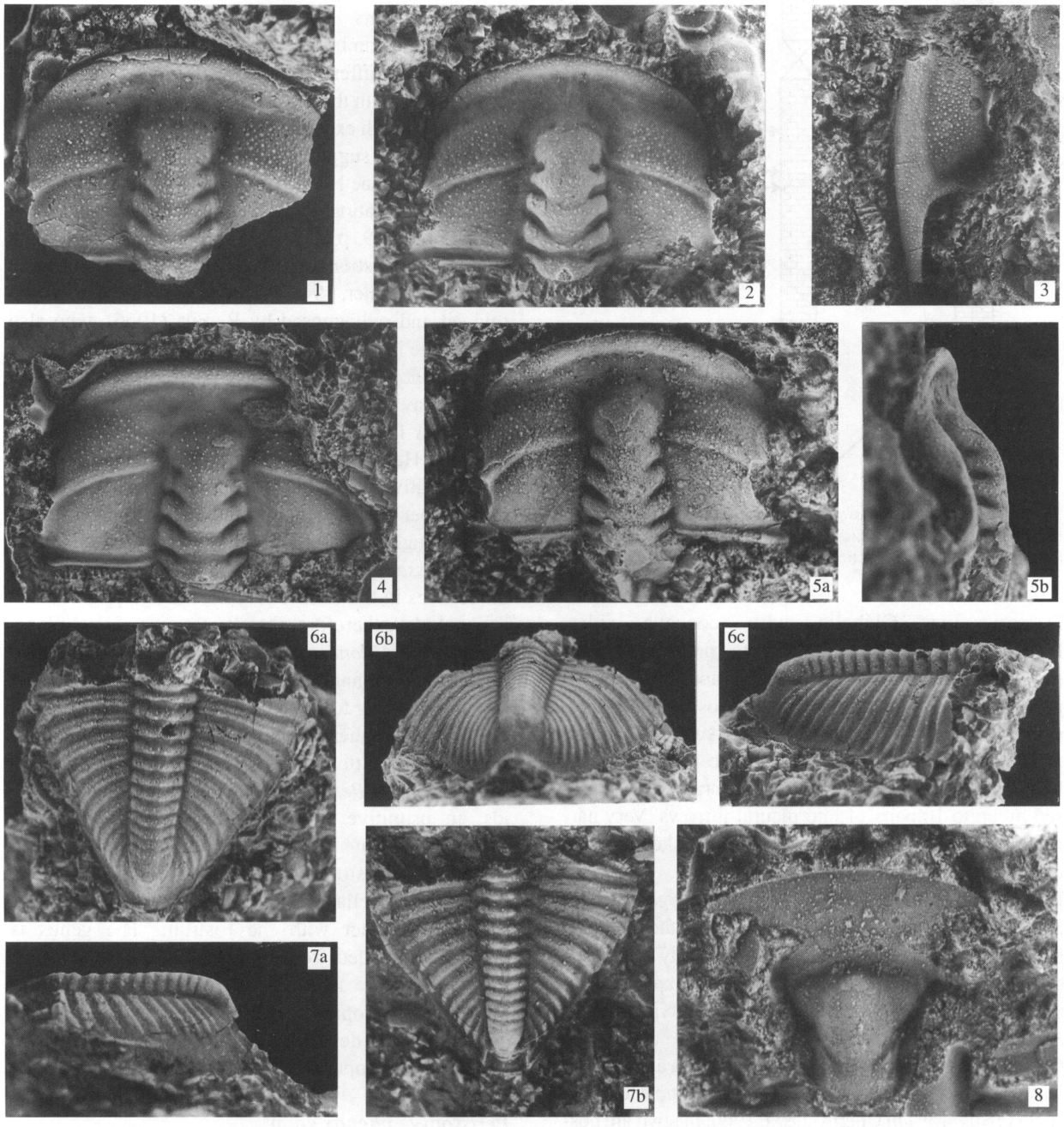


Fig. 5. *Perissopyge phenax* gen. et sp. nov. Henson Gletscher Formation, North Greenland
1 - paratype, damaged cranidium, partially exfoliated, dorsal view, MGUH 23585 from GGU collection 271756, x4; 2 - cranidium, paratype, internal mould, dorsal view, MGUH 23589 from GGU collection 225703, x4; 3 - free cheek, paratype, dorsal view, MGUH 23590 from GGU collection 271756, x3; 4 - cranidium, paratype, latex of external mould, dorsal view, MGUH 23587 from GGU collection 225703, x4; 5a, b - cranidium, paratype, partially exfoliated, dorsal and lateral views, MGUH 23586 from GGU collection 271756, x4; 6a-c - pygidium, paratype, internal mould, dorsal, posterior and lateral views, MGUH 23594 from GGU collection 225703, x3; 7a, b - pygidium, paratype, internal mould, lateral and dorsal views, MGUH 23592 from GGU collection 271756, x7; 8 - hypostome and rostral plate, paratype, ventral view, MGUH 23591 from GGU collection 225703, x7

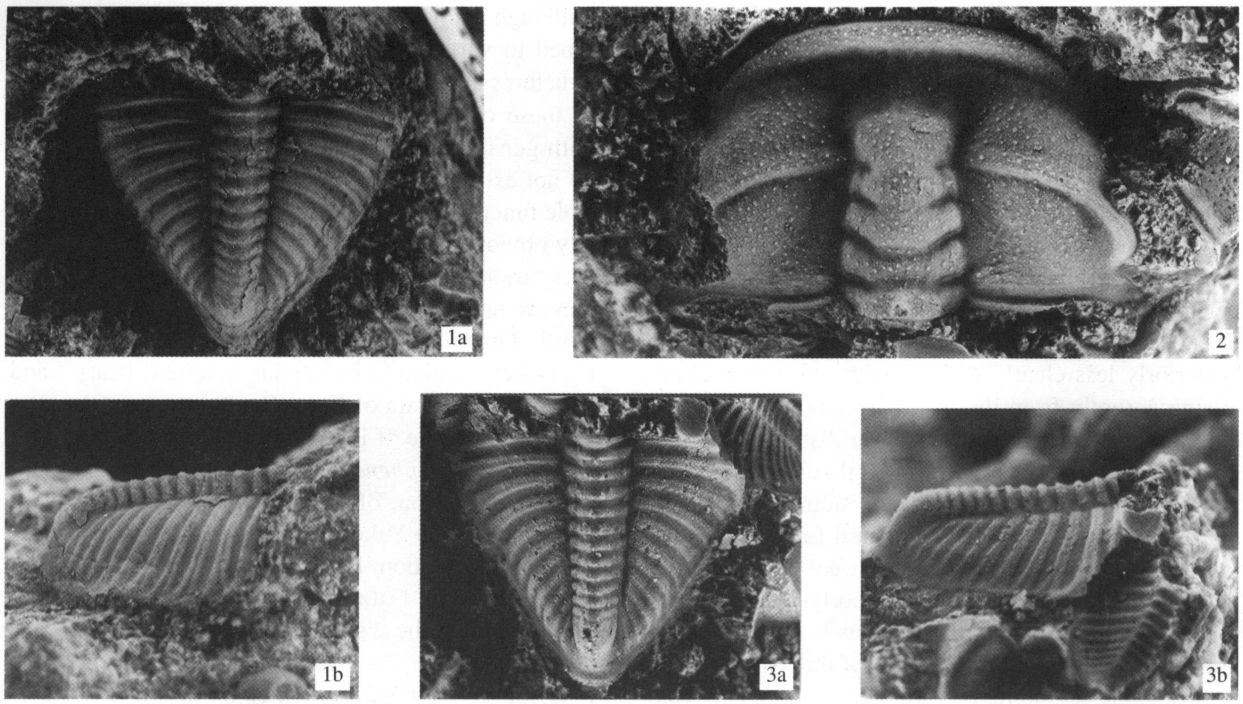


Fig. 6. *Perissopyge phenax* gen. et sp. nov. Henson Gletscher Formation, North Greenland
1a, b - pygidium, holotype, partially exfoliated, dorsal and lateral views, MGUH 23584 from GGU collection 271756, x2.5; 2 - damaged cranidium, paratype, internal mould, dorsal view, MGUH 23588 from GGU collection 225703, x4; 3a, b - pygidium, paratype, internal mould, dorsal and lateral views, MGUH 23593 from GGU collection 271756, x4

eld with sagittal length about one-fifth that of glabella. Axial furrow ill-defined and narrow (tr.) to level of S3, frontal lobe defined laterally and anterolaterally by broad, shallow furrow. Glabella with three pairs of furrows; S1 deep, gently curved and directed backwards at an angle of about 45 degrees to an exsagittal line, connected across glabella by shallower transverse furrow. S2 shorter than S1, of approximately equal depth and orientation and connected across glabella by furrow that is very shallow. S3 generally reaching to axial furrow though occasionally isolated from it, formed of deep pits or short slots that are directed gently backwards. Rarely S3 is connected across the glabella. On some specimens a longitudinal furrow connects the midpoint of S2 with S3, and may also extend across the whole, or part of L2. Anterior glabellar lobe frequently has development of a median indentation. S0 represented distally by deep incisions directed weakly backwards, and axially by a shallow transverse furrow, that is occasionally gently concave posteriorly, but more commonly is convex anteriorly and widest sagittally. Narrow (sag.) occipital ring has sagittal length that is one-seventh that of glabella, with a small, posteriorly-directed spine situated close to the posterior margin. Palpebral areas broad (tr.), transverse width being slightly greater than basal glabellar width. Palpebral areas slope in towards the axial furrow, and are transversely gently convex. Palpebral lobes short (exsag.), centred at level of S1. Ocular ridges very long, defined along posterior margin by shallow furrow, anteriorly by change in exoskeletal slope. Preocular cheek slopes down strongly anterolaterally to the anterior border furrow. Anterior border gently to moderately curved, upturned and convex in lateral profile. Anterior border defined axially by shallow furrow or exoskeletal slope change, abaxially by deepening furrow. Posterior border furrow gently curved, narrow and deepening distally. Posterior border very narrow adaxially, and directed weakly posterolaterally, distally downturned. Anterior sections of facial suture long, initially gently curved to border furrow, then directed sharply axially over border. Posterior sections almost straight and strongly divergent.

Free cheek wide (tr.) with gently convex ocular platform that anteriorly slopes gently outwards, and posteriorly slopes backwards. Gently convex (tr.) lateral border moderately wide (tr.) with increasing width towards the genal spine. Lateral border well defined by shallow furrow that is continuous with that defining short posterior border. Genal spine long, slender gently curved and directed posteriorly.

Hypostome and rostral plate fused; rostral plate long (sag.), very slightly convex and separated from anterior cranidial margin by curved marginal suture, and from middle body of hypostome by broad furrow of moderate depth. Overall shape of hypostome subquadrate with transverse width between anterior wings about equal to sagittal length. Anterior lobe gently convex sagittally, moderately to strongly convex transversely. Sagittal length of anterior lobe about three-fifths that of hypostome. Anterior lobe with median swelling, prominent maculae and separated from small posterior lobe by shallow transverse furrow. Posterior lobe gently convex (tr. and sag.), below level

of anterior lobe. Border furrow narrow and shallow posteriorly, deepening and widening posterolaterally. Narrow posterior border almost straight, without spines.

Pygidium triangulate in outline, highly convex transversely, gently convex sagittally, except at posterior. Long, slender axis tapers very gradually posteriorly being formed of eleven or twelve clearly-defined rings and a terminal piece. On some specimens a further one or two rings are faintly defined. Axis laterally defined by narrow furrow from anterior to tenth ring, posteriorly less clearly defined with terminal section arising abruptly from the pygidial margin. Pleural fields slope strongly downwards over distal two-thirds, crossed by ten interpleural furrows that are very wide and of moderate depth, almost extending to pygidial margin. Anteriormost pairs of pleural furrows are very narrow and posteriorly become weakly impressed. Pygidial border very narrow and poorly-defined anterolaterally, posteriorly border widens being at its maximum width around the posterior of the axis.

Cranidial sculpture is variable; some specimens have closely-spaced granules on the glabella, anterior border and preocular cheek, but not on the preglabellar field, whilst the palpebral areas and posterior border have scattered coarse granules within predominantly fine granules, with closely-spaced fine granules in the posterior border furrow. Other specimens have an even distribution of coarse granules on all parts with closely-spaced fine granules on the palpebral areas. The density of coarse granules is also extremely variable between individual specimens and many of these coarse granules have median perforations. Some cranidia have very few coarse granules on the glabella and palpebral areas with a far greater density anteriorly of the ocular ridges, and on the anterior border, with an unsculptured preglabellar field. These extremes of cranidial sculpture have been obtained from a single collection, and there is no apparent relationship to size. The specimens are interpeted as representing a single species which has considerable sculptural variation. The free cheek has terrace ridges along the outer margin of the lateral border, densely-spaced coarse and fine granules on the ocular platform, whilst the inner lateral border and posterior border have a sculpture of more widely-spaced coarse and fine granules. No sculpture has been observed on the hypostome, whilst the pygidium has scattered fine granules on the axis, particularly on the posterior few rings and terminal piece.

On some cranidia the preglabellar field and preocular cheek have irregular markings. These either radiate out from the anterior glabellar lobe, or have an apparently random distribution. They form low convex ridges on the dorsal surface, and are variable in number, length, curvature and direction (see Fig. 5.1, 2). They also commonly appear on the palpebral areas with some ridges extending onto the glabella. Although many specimens possess such features developed to varying degrees, specimens devoid of such structures also occur. The apparently total randomness of these ridges does not lend itself to a comparison with genal caecae for such structures have order, and do not extend onto the glabella (Öpik 1961). No possible function for these unusual structures is immediately obvious.

Discussion: Complete specimens of the type species are not known, neither is the thorax preserved. In North Greenland *P. phenax* occurs in the Henson Gletscher Formation in Løndal, southern Peary Land (Figs 3, 4) in strata of Early Cambrian age, *Olenellus* Zone in the sense of Palmer and Repina (1993).

Perissopyge phenax is also identified from an undescribed section of the Lower Cambrian Sekwi Formation in the Yukon Territory, Canada (GSC locality 99785, section FN 83-5, Selwyn Basin; Fritz 1976). Dr W. H. Fritz (Geological Survey of Canada) kindly brought these specimens to our attention.

Perissopyge triangulata gen. et sp. n.

Fig. 7

Holotype: Complete specimen, LACMIP 7716, from the basal Harkless Formation near Basalt, western Nevada (Figs 1, 2).

Figured paratypes: Incomplete carapaces: LACMIP 7415, 7417, 7418, 11382, 11385; partial thorax and pygidium, LACMIP 11384; cranidia: LACMIP 7419, 7420. Same locality and formation as the holotype.

Derivation of name: From the triangular pygidium.

Description: Dorsal exoskeleton isopygous, small, substriangular and relatively flat. Cephalon semicircular, with free cheeks noticeably wider than thorax, border convex, broad, with distinct border furrow. Glabella rectangular, frontal lobe slightly rounded and preglabellar furrow distinct; glabella with three or four pairs of distinct lateral glabellar furrows; preglabellar field broad, bisected by a preglabellar median ridge running from the anterior lobe of the glabella to the anterior border. Facial suture with the anterior section directed inward across the border to the ocular ridge and around the palpebral lobe; posterior section directed outward from the posterior end of the palpebral lobe to inside the genal angle. Ocular ridge prominent, springing from the axial furrow opposite the most anterior lateral glabellar furrow and set at a moderate to large angle to the median line. The fixed cheeks are narrow to moderate in width, palpebral lobes are distinct; palpebral furrow distinct. The occipital furrow is faint.

Free cheeks are of moderate size, crescentic, terminating with a moderately short genal spine.

Hypostome unknown.

Thorax rectangular, with seven segments; axial lobe of medium width, tapering slightly posteriorly; axial nodes are present or absent. The axial furrow is distinct; pleurae wide, terminating in minute posteriorly directed spines and with wide pleural furrows.

Pygidium triangular, large, with seven to nine axial rings; pleural segments concave, interpleural fur-

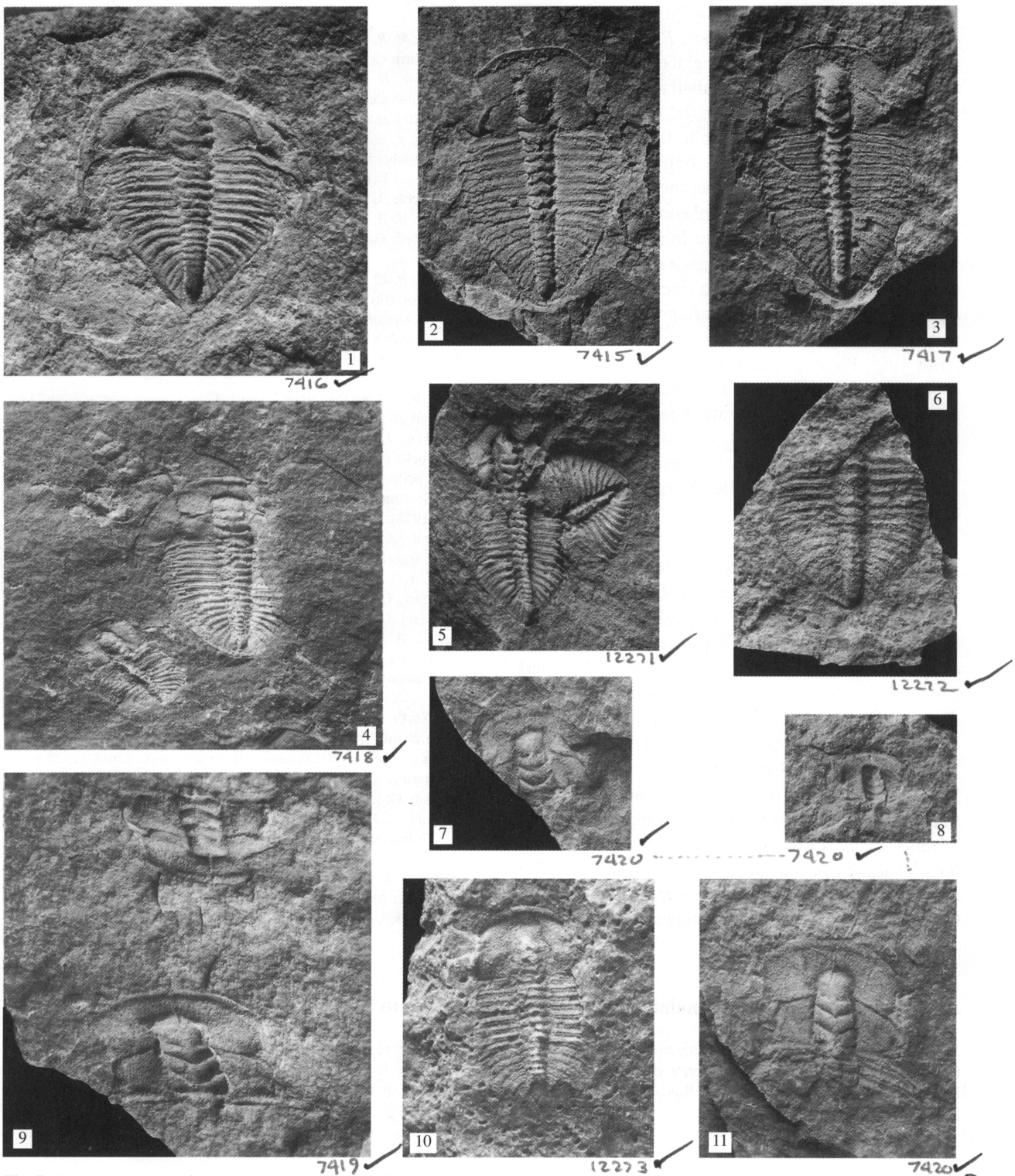


Fig. 7. *Perissopyge triangulata* gen. et sp. nov. Harkless Formation, Nevada
1 - complete carapace, holotype, dorsal view, LACMIP 7416 from locality 24407, x2; 2 - incomplete carapace, paratype, dorsal view, LACMIP 7415 from locality 24411, x2; 3 - incomplete carapace, paratype, dorsal view, LACMIP 7417 from locality 24411, x2; 4 - two incomplete carapaces, paratypes, dorsal views, LACMIP 7418 from locality 24405, x2; 5 - incomplete carapace and pygidium, paratype, dorsal views, LACMIP 11382 from locality 24405, x2; 6 - partial thorax and pygidium, paratype, dorsal views, LACMIP 11384 from locality 24405, x2; 7, 8 - incomplete cranidia, paratypes, dorsal view, LACMIP 7420 from locality 24405, x2; 9 - cranidia, paratype, dorsal views, LACMIP 7419 from locality 24405, x2; 10 - incomplete carapace, paratype, dorsal view, LACMIP 11385 from locality 24405, x2; 11 - cranidium and partial thorax, paratype, dorsal view, same slab as 7 and 8, x2

Clem has?

LACMIP 11382 → Paratype, 12271 fig 5
11384 → Paratype 12272 fig 6
11385 → Paratype 12273 fig 10
new numbers

rows distinct; pleurae separate near border; backward curvature of pleurae is much stronger than in the thorax and pleural furrows are broad. The border is raised, narrow, with a distinct border furrow; its margin is entire.

Discussion: Cranidia of the North American species differ from the type species, *P. phenax,* in frequently having a narrow (tr.) preglabellar median ridge. In addition, all the pairs of glabellar furrows in *P. triangulata* are relatively longer (tr.). The pygidium of the latter species is distinctive in that the axis is formed of up to nine rings with a long (sag.) terminal piece, and all rings have a distinct median node.

Complete specimens of *P. phenax,* the type species of *Perissopyge,* are not known. In *P. triangulata,* however, the thorax consists of seven segments, with the thorax of about constant width over the anterior five, tapering gently over the posterior two. The thoracic axis is narrow (tr.) and tapers backwards from the anterior ring. Pleurae are wide (tr.), and terminate in short, posterolaterally directed spines. Pleural furrows are wide (exsag.), of moderate depth and extended to the pleural spine bases.

Perissopyge triangulata is known only from the Harkless Formation of Miller Mountain, Nevada, of Early Cambrian age.

Acknowledgements. GGU denotes sample collections from Greenland of the Geological Survey of Denmark and Greenland, Copenhagen, Denmark. MGUH denotes specimens deposited in the type series of the Geological Museum, Copenhagen, Denmark. LACMIP denotes collections deposited at the Los Angeles County Museum, California, U.S.A. Mark Blaker gratefully acknowledges the award of a N.E.R.C. Research Studentship at the University of Keele, Staffs., U.K., under the guidance of Dr P. D. Lane. John Peel acknowledges support from the Natural Sciences Research Council (NFR) of Sweden. Both of these authors record their gratitude to fellow participants in the North Greenland Project. Ivo Chlupáč kindly reviewed the manuscript which was prepared for publication with the help of Radvan J. Horný. Publication is approved by the Director, Geological Survey of Denmark and Greenland.

Submitted December 13, 1996

References

Blaker, M. R. - Peel, J. S. (in press): Lower Cambrian trilobites from North Greenland. - Meddr Grønl., Geosci. Bull. København.

Fritz, W. H. (1976): Ten stratigraphic sections from the Lower Cambrian Sekwi Excavation. MacKenzie Mountains, northwestern Canada. - Geol. Surv. Pap., 76-22, 1-42. Ottawa.

Ineson, J. R. (1985): The stratigraphy and sedimentology of the Brønlund Fjord and Tavsens Iskappe Groups (Cambrian) of Peary Land, eastern North Greenland. - MS. Ph.D thesis, Univ. Keele, U.K., 1-310.

Ineson, J. R. - Peel, J. S. (1996): Cambrian shelf stratigraphy of North Greenland. - Geol. Surv. Denmark Greenland Bull., in press.

Moore, R. C. (1959): Arthropoda 1 - Arthropoda, general features; Protarthropoda; Euarthropoda, general features; Trilobitomorpha, Part O. Treatise on invertebrate paleontology. - Geol. Soc. Amer. and Kansas Univ. Press, 1-560.

Nelson, C. A. (1963): Stratigraphic range of *Ogygopsis.* - J. Paleont., 37, 244-248. Tulsa.

- (1976): Late Precambrian-Early Cambrian stratigraphic and faunal succession of eastern California *In: J. N. Moore - A. E. Fritsche* (ed.) Depositional environments of Lower Paleozoic rocks in the White Inyo Mountains, Inyo County, California. - Pacific Coast Paleogeography Field Guide 1, 31-41. The Pacific Section, Soc. Econ. Palaeont. Mineral. Los Angeles.

- (1978): Late Precambrian-Early Cambrian stratigraphic and faunal succession of eastern California and the Precambrian-Cambrian boundary. - Geol. Mag., 115, 121-126. Cambridge.

Öpik, A. A. (1975): Cymbric Vale fauna of New South Wales and Early Cambrian biostratigraphy. - Bulletin (Bur. miner. Resour. Geol. Geophys. Bull.), 159, 1-78. Canberra.

Palmer, A. R. - Repina, L. N. (1993): Through a glass darkly: taxonomy, phylogeny, and biostratigraphy of the Olenellina. Paleont. Contr., 3, 1-35. Lawrence.

Peel, J. S. - Sønderholm, M. (ed.) (1991): Sedimentary basins of North Greenland. - Grønl. geol. Unders. Bull., 160, 1-164. København.

Repina, L. N. (1966): Trilobites from the Lower Cambrian of southern Siberia (Superfamily Redlichioidea Part 1). - Izd. Nauka, Sib. Otdel., 1-203. Novosibirsk.

Stewart, J. H. (1979): Geological map of Miller Mountain and Columbus Quadrangles, Mineral and Esmeralda Counties, Nevada. - US. Geol. Surv., Open File Rept., 79-1145.

Wilson, J. S. (1961): Cambrian paleontology and stratigraphy of the Miller Mountain area, Esmeralda County, Nevada. - MS. M.Sc. thesis, Univ. California, 1-108. Los Angeles.

Perissopyge, nový trilobit ze spodního kambria Grónska a Severní Ameriky

Perissopyge, nový spodnokambrický trilobitový rod nejistého příbuzenství, je popsán ze spodní části souvrství Henson Gletscher ze střední části severního Grónska a z bazálních vrstev souvrství Harkless ze západní Nevady. Je známo, že se vyskytuje rovněž v souvrství Sekwi v Mackenzie Mountains v severozápadní Kanadě. Typický druh, *Perissopyge phenax* sp. n., pochází ze severního Grónska; *P. triangulata* sp. n. je popsán z Nevady.