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An Upper Llandovery conodont fauna from Eastern Hall Land, North Greenland

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ABSTRACT — A conodont fauna of Early Silurian age (Llandovery) has been recorded from eastern Hall Land, North Greenland. The faunal association comprises Apsidognathus tuberculatus *Walliser,* Carniodus carnulus *Walliser,* Distomodus *sp. and some species of* Panderodus. *The multielement apparatus of* Ozarkodina hadra *(Nicoll and Rexroad) is proposed here and a new species of* Pterospathodus *is described.*

RIASSUNTO — [Una fauna a conodonti del Llandoveriano superiore di Hall Land, Groenlandia settentrionale] *— Viene descritta una fauna a conodonti del Siluriano inferiore (Llandoveriano), proveniente dalla parte orientale di Hall Land, nella Groenlandia settentrionale. L'associazione faunistica comprende* Apsidognathus tuberculatus *Walliser,* Carniodus carnulus *Walliser,* Distomodus *sp. ed alcune specie di* Panderodus. *Viene proposto l'apparato a più elementi di* Ozarkodina hadra *(Nicoll and Rexroad) e viene descritta una nuova specie di* Pterospathodus.

INTRODUCTION

Silurian conodonts from North Greenland were described only by Aldridge (1979), and mentioned by Hurst (1980b). The present paper focuses on the taxonomic description of a new Lower Silurian conodont fauna from eastern Hall Land, North Greenland (Text-fig. 1).

Lower Silurian rocks are exposed in a broad east-west trending belt across North Greenland (Dawes 1971, 1976; Hurst 1980a, b; Hurst and Surlyk 1983) from Peary Land in the east to Washington Land in the west. The Silurian sequence continues further to the west into the Canadian Arctic (Dawes 1976; Hurst 1980a, b; Hurst and Surlyk 1983).

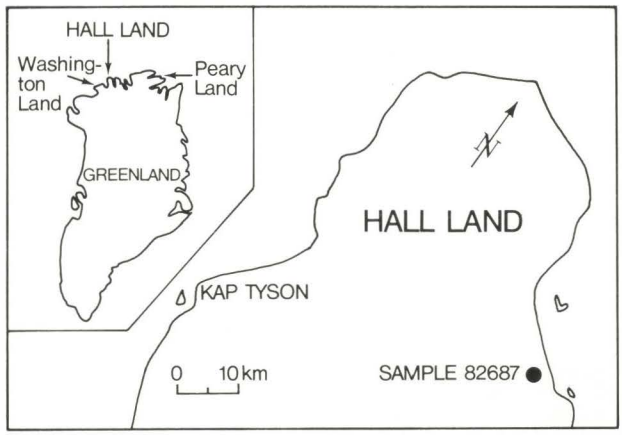
The Silurian strata are underlain by Cambro-Ordovician carbonate shelf deposits which are exposed south of Kap Tyson whereas northwards shales, cherts and turbidites were deposited on the slope. At Llandovery-Wenlock time, the platform foundered and slope facies migrated towards the south depositing onto the former platform area (Hurst and Surlyk 1983). The lower Silurian sequence includes carbonate buildups which extends east-west in a sinuous pattern along the margin of the North Greenland platform (Dawes 1976; Hurst 1980a, b; Hurst and Surlyk 1983).

The studied sample (GGU 82687) is a brown grey grainstone. It was collected from platey limestones which represents the fore-reef facies of the Kap Tyson Reef (Dawes 1976).

Previous paleontological evidences (Poulsen 1941, 1943, 1974; Norford 1972; Peel 1979; Boucot and Johnson 1979; Bjerreskov 1981) suggested a Late Llandovery age for laterally equivalent strata of Kap Tyson. Conodonts previously recorded from Kap Tyson (Hurst 1980b) indicate that the *celloni/amorphognathoides* Zones of Walliser (1964) (Llandovery-Wenlock) are represented.

CONODONT FAUNA

The conodonts from GGU 82687 are well preserved, although broken elements are common. The fauna has CAI value of 3, and hence the heating of the host sediments did not exceed 200°C (Epstein *et al.,* 1977). The material includes platform and simple cone genera, the latter of which predominantly belong to species of the genus *Panderodus*. The platform species including *Apsidognathus tuberculatus* Walliser,



Text-fig. 1 - Location of GGU Sample 82687 from eastern Hall Land, North Greenland.

Carniodus carnulus Walliser, *Distomodus* sp., *Ozarkodina hadra* (Nicoll and Rexroad), *Pterospathodus pennatus procerus* (Walliser) and *Pterospathodus* n. sp. A are indicative of *celloni/amorphognathoides* Zones of Walliser (1964) (Upper Llandovery-Lower Wenlock). The absence of *Pterospathodus amorphognathoides,* which straddles the Llandovery-Wenlock boundary (Aldridge 1975; Cooper 1980), if confirmed, would exclude a Wenlock age.

In summary, the present conodont fauna from eastern Hall Land would indicate a latest Llandovery age. This age is confirmed by graptolites of the *Monograptus spiralis* Zone recorded in laterally equivalent strata (Bjerreskov 1981).

SYSTEMATIC PALEONTOLOGY

In describing the conodont fauna, multielement taxonomy is applied. The designation of the single element within the platform multielement apparatuses follows Sweet and Schönlaub (1975) where it is possible. The formgenus name with suffix -iform is applied for the elements whose position is uncertain. When referring to an original single-element-based taxon we follow the recommendations of Jeppsson and Merrill (1982) by using *sensu*, the name of the author and the year.

Panderodus serratus Rexroad (*sensu* Cooper 1975), *P. spassovi* Drygant (*sensu* Barrick 1977) and *Walliserodus curvatus* (Branson and Branson) are only illustrated because they occur in insufficient numbers to allow new taxonomic interpretation and to provide new descriptive information.

All the illustrated elements are deposited at the Geological Museum, Copenhagen (MGUH); other GGU specimens are retained in the Geological Survey of Greenland, Copenhagen.

Platform apparatuses

Gen. APSIDOGNATHUS Walliser 1964

Type species — Apsidognathus tuberculatus Walliser 1964.

APSIDOGNATHUS TUBERCULATUS Walliser

Pl. 1, figs. 7-10

Pa element

1964 *Apsidognathus tuberculatus* n. sp. - WALLISER, pp. 29-30, pl. 5, fig. 1; pl. 12, figs. 16-22; pl. 13, figs. 1-5.

Pb element

1964 *Ambalodus galerus* n. sp. - WALLISER, p. 27, pl. 6, fig. 1; pl. 12, figs. 1-7.

Pygodiform element

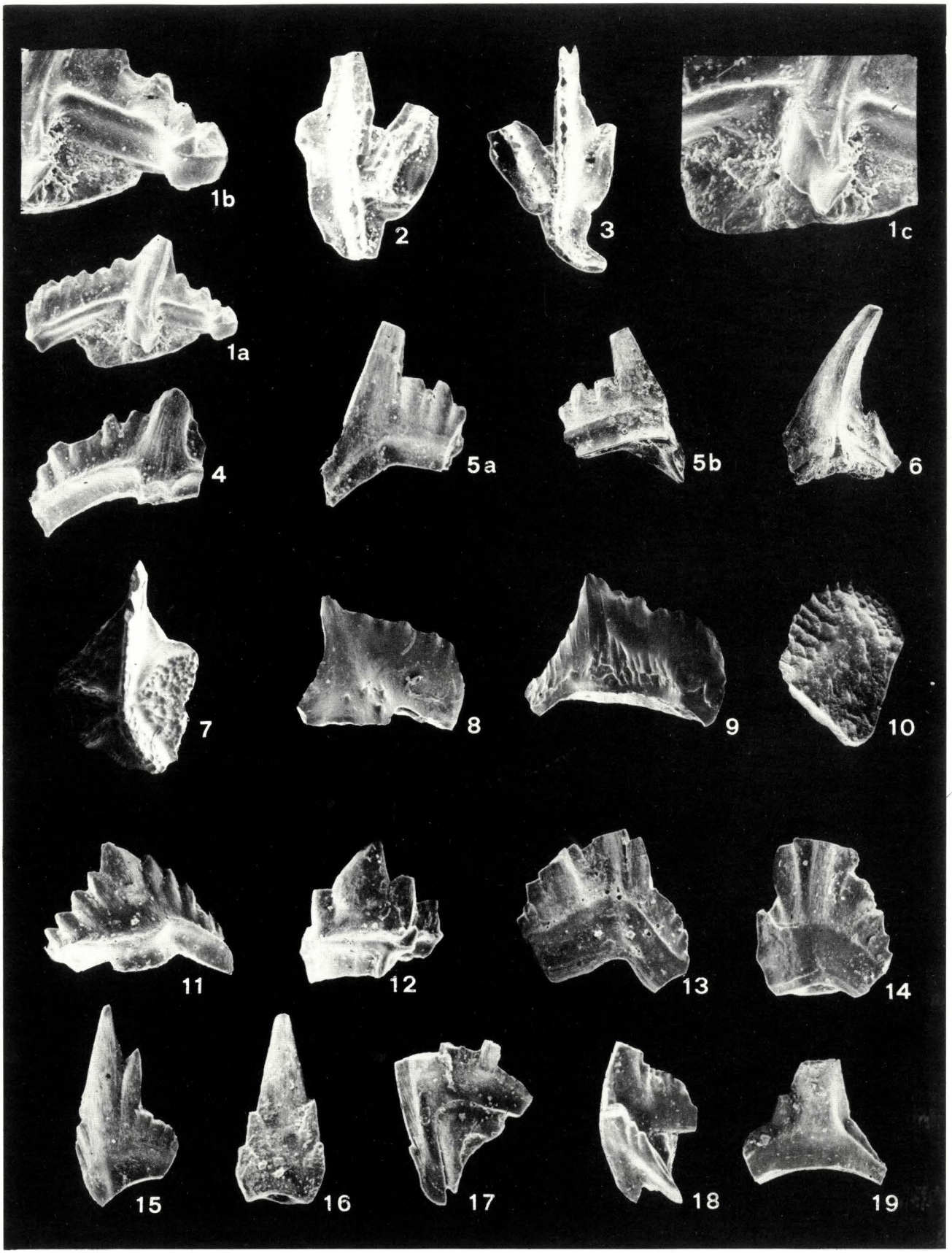
1964 *Pygodus lyra* n. sp. - WALLISER, p. 68, pl. 5, fig. 5; pl. 12, figs. 8-14.

EXPLANATION OF PLATE 1

Figs. 1 - 6 - *Pterospathodus* n. sp. A
1a, b, c) Pb element: 1a) lateral view, x 40; 1b) detail of the posterior process, x 100; 1c) detail of the apical lip, x 100; MGUH 16175. 2) Pa element, upper view, x 30, MGUH 16177. 3) Pa element, upper view, x 30, MGUH 16178. 4) Pb element, lateral view, x 60, MGUH 16176. 5a, b) S element, inner (x 80) and outer (x 75) views, MGUH 16179. 6) M element, lateral view, x 80, MGUH 16180.

Figs. 7 - 10 - *Apsidognathus tuberculatus* Walliser.
7) Pa element, upper view, x 30, MGUH 16171. 8) Pb element, lateral view, x 60, MGUH 16173. 9) Pb element, lateral view, x 30, MGUH 16172. 10) pygodiform element, upper view, x 50, MGUH 16174.

Figs. 11 - 19 - *Carniodus carnulus* Walliser.
11) Pb element, lateral view, x 90, MGUH 16190. 12) Pb element, lateral view, x 90, MGUH 16186. 13) Sb element, lateral view, x 80, MGUH 16188. 14) Pa element, lateral view, x 90, MGUH 16187. 15) Pa element, lateral view, x 80, MGUH 16191. 16) Pa element, lateral view, x 90, MGUH 16192. 17) Sc element, lateral view, x 90, MGUH 16193. 18) Sa element, antero-lateral view, x 90, MGUH 16194. 19) M element, lateral view, x 90, MGUH 16195.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Multielement

1972 *Apsidognathus tuberculatus* Walliser - WALLISER, p. 76.
1975 *Apsidognathus tuberculatus* Walliser - ALDRIDGE, pl. 1, figs. 1-2.
1981 *Apsidognathus tuberculatus* Walliser - NOWLAN, pl. 7, figs. 7, 12-14, 17.
1981 *Apsidognathus tuberculatus* Walliser - UYENO and BARNES, pl. 1, figs. 14, ?15, ?16, ?17.

Remarks — Walliser (1972) indicated that the multielement genus *Apsidognathus* based on *A. tuberculatus* Walliser, consists of an apsidognathiform and a pygodiform. Aldridge (1974) suggested that *Ambalodus galerus sensu* Walliser 1964 belonged to *Apsidognathus*.

In this paper we accept that three elements form the apparatus of *A. tuberculatus, i.e.* Pa, Pb and pygodiform, because these elements are well represented in our material. Additional elements which have been informally included in the apparatus of *Apsidognathus* (Uyeno and Barnes 1981; Aldridge and Mohamed 1982) are not considered herein, because of the lack of these elements in our material. If more elements belong to the apparatus of *Apsidognathus*, descriptions of the new elements should be provided (see Uyeno and Barnes 1981; Aldridge and Mohamed 1982).

The Greenland specimens fit with the original descriptions of the elements (Walliser 1964) included in *A. tuberculatus* in this paper.

Material — Pa:12; Pb:9; Pygodiform:2.

Repository — MGUH 16171 - 16174.

APSIDOGNATHUS sp. A
Pl. 2, fig. 22

Description — The Pa element consists of a main denticle row, two inner-lateral and two outer-lateral denticulated processes. The anterior part of the main denticle row becomes distally a free blade. The main denticle row has a sinuous outline. It bears 15 erect denticles, which are subcircular in cross section. The outer antero-lateral denticle row extends anteriorly as a free process which forms an angle of 60° with the main denticle row. The other lateral denticle rows form short processes which are marked by indentations of the platform. The aboral surface of the unit is deeply excavated.

Remarks — *Apsidognathus* sp. A differs from the Pa element of *Apsidognathus tuberculatus* Walliser by the presence of the antero-lateral outer process and because the surface of the platform between the denticle rows is smooth. Only Pa elements were recovered in our material.

Material — Pa:2.

Repository — MGUH 16198.

EXPLANATION OF PLATE 2

Figs. 1 - 5 - *Oulodus* sp.
1) Pa element, lateral view, x 30, MGUH 16201. 2) Sc element, lateral view, x 45, MGUH 16203. 3) Sb element, lateral view, x 45, MGUH 16204. 4) Sa element, posterior view, x 45, MGUH 16205. 5) M element, lateral view, x 40, MGUH 16202.

Figs. 6 - 13 - *Ozarkodina hadra* (Nicoll and Rexroad).
6) Pa element, lateral view, x 30, MGUH 16206. 7) M element, lateral view, x 45, MGUH 16208. 8) Pb element, lateral view, x 50, MGUH 16212. 9) Sb element, lateral view, x 50, MGUH 16210. 10) Sa element, posterior view, x 50, MGUH 16211. 11) Pa element, lateral view, x 30, MGUH 16207. 12) Sc element, lateral view, x 50, MGUH 16213. 13) Sc element, lateral view, x 50, MGUH 16209.

Figs. 14 - 17 - *Pterospathodus pennatus procerus* (Walliser).
14a, b) Pa element, upper lateral and lateral view, x 60, MGUH 16182. 15) Pa element, basal view, x 50, MGUH 16181. 16) Pa element, upper view, x 60, MGUH 16183. 17) Pb element, lateral view, x 80 MGUH 16184.

Figs. 18 - 19 - *Distomodus* sp.
18) Sc element, lateral view, x 60, MGUH 16197. 19) Sb element, postero-lateral view, x 50, MGUH 16196.

Fig. 20 - Gen. et sp. indet. B, outer (x 70) and inner (x 75) view, MGUH 16199.

Fig. 21 - Gen. et sp. indet. A, upper view, x 50, MGUH 16200.

Fig. 22 - *Apsidognathus* sp. A, upper view, x 50, MGUH 16198.

Figs. 23 - 27 - *Panderodus serratus* Rexroad.
23) simplexiform element, lateral view, x 20, MGUH 16214. 24) simplexiform element, lateral view, x 40, MGUH 16215. 25, 26) costate elements, lateral view, x 50, MGUH 16217, 16218. 27) serrated element, lateral view, x 100, MGUH 16216.

Figs. 28 - 32 - *Panderodus spassovi* Drygant.
28, 29, 31) costate elements, lateral view, x 50, MGUH 16222, 16220, 16219. 30) costate element, lateral view, x 80, MGUH 16221. 32) simplexiform element, lateral view, x 50, MGUH 16223.

Fig. 33 - *Walliserodus curvatus* (Branson and Branson), lateral view, x 50, MGUH 16224.


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Gen. CARNIODUS Walliser 1964

Type species — *Carniodus carnulus* Walliser 1964.

CARNIODUS CARNULUS Walliser

Pl. 1, figs. 11-19

Multielement

1976 *Carniodus carnulus* Walliser - BARRICK and KLAPPER, pp. 68-69, pl. 1, figs. 1, 2, 6-8, 12-14 (Synonymy through 1976).
1981 *Carniodus carnulus* Walliser - NOWLAN, pl. 7, figs. 8-11.
1981 *Carniodus carnulus* Walliser - UYENO and BARNES, pl. 1, figs. 18-19.
1982 *Carniodus carnulus* Walliser - ALDRIDGE and MOHAMED, pl. 2, figs. 17-24.

Remarks — Walliser (1964) reconstructed the apparatus: Conodonten-Apparatus D comprising *Carniodus carnulus sensu* Walliser, 1964, *Carniodus carnus sensu* Walliser, 1964, *?Carniodus carinthiacus sensu* Walliser, 1964 and *Neoprioniodus subcarnus sensu* Walliser, 1964, which he later (Walliser, 1972) referred to the multielement genus *Carniodus* Walliser. Aldridge (1972, 1974) found that *Roundya latialata sensu* Walliser, 1964 should be included in *Carniodus*. Barrick and Klapper (1976) in their formal revision of *Carniodus* as a multielement genus also added *Carniodus carnicus sensu* Walliser, 1964.

We adopt the concept of *Carniodus* as reconstructed by Barrick and Klapper (1976). We do, however, point out that *?Carniodus carinthiacus sensu* Walliser, 1964, which possesses a platform-like ledge and develops additional denticles on the narrow platform (see pl. 1, fig. 12), may have affinities with *Pterospathodus*.

Material — Pa:10; Pb:6; M:2; Sc:2; Sb:1; Sa:2.

Repository — MGUH 16186 - 16188, 16190 - 16195,
MGUH 16185, 16189 (not figured).

Gen. DISTOMODUS Branson and Branson 1947

Type species — *Distomodus kentuckiensis* Branson and Branson 1947.

DISTOMODUS sp.

Pl. 2, figs. 18, 19

Remarks — Only fragmentary Sb and Sc elements have been recorded and identification at specific level is not possible.

Material — Sb:1; Sc:2.

Repository — MGUH 16196 - 16197.

Gen. OULODUS Branson and Mehl 1933
(emend. Sweet and Schönlaub, 1975)

Type species — *Oulodus serratus* (Stauffer, 1930) (=senior subjective synonym of *Oulodus mediocris* Branson and Mehl, 1933, the originally designated type species - see Sweet and Schönlaub, 1975).

OULODUS? sp.

Pl. 2, figs. 1-5

Description — In all the elements the cross-section of the cusp is almost triangular with two keels. The denticles are discrete and laterally compressed. White matter is present in the denticles and has a cloudy appearence.

Remarks — *Oulodus?* sp. includes five elements which are mostly broken, and therefore cannot be safely identified with previously described *Oulodus* species. Because the distinctive oulodiform or Pb element is missing the generic assignment is querried.

Material — Pa:2; M:2; Sa:4; Sb:3; Sc:3.

Repository — MGUH 16201 - 16205.

Gen. OZARKODINA Branson and Mehl 1933

Type species — *Ozarkodina confluens* (Branson and Mehl, 1933) (=*Ozarkodina typica* Branson and Mehl, 1933).

OZARKODINA HADRA (Nicoll and Rexroad, 1969)

Pl. 2, figs. 6-13

Pa element

1969 *Spathognathodus hadros* n. sp. - NICOLL and REXROAD, pp. 59-60, pl. 2, figs. 17-18.
1975 *Ozarkodina hadra* (Nicoll and Rexroad) - KLAPPER and MURPHY, pp. 37-38, pl. 8, figs. 5-6.
1976 *Ozarkodina hadra* (Nicoll and Rexroad) - BARRICK and KLAPPER, p. 79, pl. 1, fig. 18.

M element

1964 *Neoprioniodus planus* n. sp. - WALLISER, p. 51, pl. 4, fig. 10; pl. 6, fig. 3; pl. 29, figs. 12, 13, 15.

Sa element

1964 *?Roundya trichonodelloides* n. sp. - WALLISER, p. 72, pl. 6, fig. 2; pl. 31, figs. ?22, 23, 24, ?25.
1972 *Hibbardella? trichonodelloides* (Walliser) - ALDRIDGE, p.182, pl. 6, fig. 17 (only).

Sb element

1964 *Lonchodina fluegeli* n. sp. - WALLISER, p. 44, pl. 6, fig. 4; pl. 32, figs. 23-24.
1972 *Lonchodina detorta* Walliser - ALDRIDGE, p. 190, pl. 8, fig. 6.
1972 *Lonchodina fluegeli* Walliser - ALDRIDGE, pp. 190-191, pl. 8, fig. 7.

Sc element

1964 *Lonchodina fluegeli* n. sp. - WALLISER, p. 44, pl. 32, fig. 22 only.

Multielement

1979 *Oulodus? fluegeli* (Walliser) - ALDRIDGE (*partim*), pp. 14-15, pl. 2, figs. 6, 8, ?9.

Description — The elements of *Ozarkodina hadra* (Nicoll and Rexroad) are characterized by a shallow basal cavity, which continues as a groove beneath the processes, by their high blade and blade-like processes and in being very compressed laterally. The denticles are fused at the base and white matter is present only in the denticles. The ramiforms are all strongly bent laterally and/or are strongly laterally twisted.

The Pa element is *Spathognathodus hadros sensu* Nicoll and Rexroad, 1969. The unit is slightly twisted.

The Pb element is arched and bent. The posterior process is twisted and distally becomes sub-horizontal.

The M element was formerly referred to *Neoprioniodus planus sensu* Walliser, 1964. The unit is arched and bent laterally. The antero-basal corner is pointed. The inner side of the cusp has a broad postero-lateral carina which extends to the base. The outer side is flat to slightly convex.

The Sa element is *?Roundya trichonodelloides sensu* Walliser; 1964. The processes are sinuous and bear 3-4 denticles. Only lateral denticulated processes are present.

The Sb element is *Lonchodina fluegeli sensu* Walliser, 1964. The specimens show different degrees of bending. In some specimens the curvature of the posterior process is very abrupt and it is marked by a projecting denticle (pl. 2, fig. 9). The denticles of the posterior process distally increase in size.

The Sc element is straight, but the posterior process is distally bended 90° inwards. The denticles become distally larger on the anterior process.

The Sc elements are very close to the less bent variety noted by Walliser (1964) in *Lonchodina fluegeli.*

Remarks — *Oulodus? fluegeli* (Walliser) *sensu* Aldridge, 1979 includes the Pb (pl. 2, fig. 6), the M (pl. 2, fig. 8) and perhaps the Sa element (pl. 2, fig. 9) of *Ozarkodina hadra* as it is interpreted herein. The other elements of *Oulodus? fluegeli* (Walliser) *sensu* Aldridge, 1979 have a basal cavity which is larger than the elements of *O. hadra,* and probably they belong to another multielement genus.

Material — Pa:10; Pb:1; M:4; Sa:7, Sb:5; Sc:3.

Repository — MGUH 16206 - 16213.

Gen. PTEROSPATHODUS Walliser 1964

Type species — *Pterospathodus amorphognathoides* Walliser 1964.

PTEROSPATHODUS PENNATUS PROCERUS (Walliser)

Pl. 2, figs. 14-17

Pa element

1964 *Spathognathodus pennatus procerus* n. ssp. - WALLISER, p. 80, pl. 15, figs. 2-6, ?7, 8, text-fig. 1e.

1972 *Neospathognathodus pennatus* (Walliser) - ALDRIDGE, p. 197, pl. 3, fig. 15 (only).

1976 *Pterospathodus pennatus procerus* (Walliser) - BARRICK and KLAPPER, p. 83, pl. 1, fig. 19.

1979 *Pterospathodus pennatus procerus* (Walliser) - JEPPSSON, pp. 235-238, fig. 71, n. ?1, ?2, 3, 4 (only).

Pb element

1964 *Ozarkodina adiutricis* n. sp. - WALLISER, p. 54, pl. 4, fig. 14; pl. 27, figs. 1-10, text-figs. 1a, 7h-m.

Remarks — We found only Pa and Pb elements. Thus, it is likely that the apparatus of *Pterospathodus pennatus procerus*, as indicated here, is incomplete.

All the specimens available are very consistent in their morphology. The Pa element illustrated by Walliser (1964) shows a degree of variability beyond that displayed by the present material. The denticulation and development of the lateral ridge of the elements in this material is identical with the type element (=*Spathognathodus pennatus procerus sensu* Walliser, 1964, pl. 15, fig. 5) from the *amorphognathoides* Zone. No outer-lateral process has been observed. The Pb element seems identical with *O. adiutricis sensu* Walliser, 1964.

Material — Pa:9; Pb:3.

Repository — MGUH 16181 - 16184.

PTEROSPATHODUS n. sp. A

Pl. 1, figs. 1-6

Pb element

1964 *Ozarkodina gaertneri* n. sp. - WALLISER, p. 57, pl. 6, fig. 6; pl. 27, figs. 12-19, text-fig. 1g.

M element

1964 *Neoprioniodus triangularis tenuirameus* n. ssp. - WALLISER, p. 52, pl. 6, fig. 13; pl. 28, figs. 25-30, text-figs. 6d-f.

S element

1964 *Neoprioniodus costatus costatus* n. ssp. - WALLISER, p. 48, pl. 6, fig. 14; pl. 28, figs. 36-41, text-figs. 6l-n.

Description — The Pa element consists of a straight blade which is bended inwards at the posterior end and an outer and inner processes. The blade is laterally tickened and has platform ledges on both

sides along the blade and the processes. The denticles are laterally compressed and the main denticle row is bordered by a narrow trough on each side. The denticles are decreasing in size toward the posterior end.

The unit has an inner non-denticulated process situated approximately at the mid-length. The inner process is developed as an extension of the thickened blade. In large specimens, a ridge or a single knob is present distally.

An outer process is situated slightly posterior of the inner process. The outer process is directed anteriorly forming an angle of approximately 40° with the blade. The outer process carries a row of laterally compressed denticles. In large specimens, additional denticles are present on the outer side of the process.

The basal cavity is wide and deep at the mid-length the unit. It continues anteriorly and posteriorly as a groove. Basal matter commonly underlies the blade and the lateral processes.

The Pb element conforms with the original description of *Ozarkodina gaertneri sensu* Walliser, 1964, but specimens which bear additional denticles on the prominent lip and/or at the posterior end (pl. 1, figs. 1 a-c) are also present.

The M and S elements conform with *Neoprioniodus triangularis triangularis sensu* Walliser, 1964, and *Neoprioniodus costatus costatus sensu* Walliser, 1964, respectively.

Remarks — The apparatus of *Pterospathodus* n. sp. A is similar to the apparatus of *Pterospathodus amorphognathoides* Walliser, as suggested by Barrick and Klapper (1976). The Pa element of *P.* n. sp. A differs from the Pa element of *P. amorphognathoides* by its more widely developed platform and outer process. The bifurcation of the inner process, which is characteristic for *P. amorphognathoides* is not present in *P.* n. sp. A.

The outline of the outer process of the Pa element resembles the lateral process of *P. pennatus angulatus sensu* Walliser, 1964. It is likely that *P.* n. sp. A evolved from the older *P. pennatus angulatus.*

Material — Pa:10; Pb:10; M:4; S:2.

Repository — MGUH 16175 - 16180.

Residual elements

GEN. ET SP. INDET. A
Pl. 2, fig. 21

Description — This single specimen has a blade and two lateral processes which are separated from the blade by a trough. The lateral processes form a low angle with the blade and each one carries three denticles. The anterior part of the blade is broken, and it curves posteriorly. The denticles on the blade are laterally compressed and the cusp is indistinct. The basal cavity is wide beneath the processes and it continues anteriorly and posteriorly as a narrow groove.

Remarks — The element resembles Pa elements of either *Aulacognathus, Pterospathodus* or *Kockelella,* but a generic assignment is not possible for this specimen, because of the fragmental preservation.

Material — 1 specimen.

Repository — MGUH 16200.

GEN. ET SP. INDET. B
Pl. 2, figs. 20a, b

? 1982 *Apsidognathus walmsleyi* Aldridge - ALDRIDGE and MOHAMED, (*partim*), pl. 2, fig. 33 (only).

Description — The specimen has antero-posterior denticulated processes about equal length. The denticles are small and fused at the base. They become smaller distally. The unit is strongly arched in lateral view. The unit has a short inner lateral denticulated process forming an angle of 90° with the blade. On the outer side a small bulge is situated opposite the inner lateral process. The basal cavity is wide and deep and it narrows beneath the processes. White matter is restricted to the denticles. A small ridge runs along the unit at the base of the denticles. Next to and posterior of the inner lateral process a wide, laterally compressed and broken cusp is present. An additional inner lateral denticle row extends from the cusp to the ridge.

Remarks — The astrognathiform of *Apsidognathus walmsleyi* Aldridge *sensu* Aldridge and Mohamed, 1982 is similar to Gen. et sp. indet. B when seen in lateral view. Aldridge and Mohamed (1982), however, did not provide the description of their specimen which prevents a confident identification. Apparently Gen. et sp. indet. B differs from the astrognathiform element of *A. walmsleyi* by its smaller angle between the antero-posterior processes when seen in lateral view and by the presence of the additional inner lateral denticle row of the former.

Material — 1 specimen.

Repository — MGUH 16199.

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