

**GEOLOGICAL
SURVEY
OF
CANADA**

DEPARTMENT OF ENERGY,
MINES AND RESOURCES

PAPER 72-26

**A NEW RHYNCHONELLOID BRACHIOPOD
FROM THE UPPER JURASSIC ROCKS
OF BRITISH COLUMBIA**

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(Report, 1 plate and 4 figures)

E. F. Owen

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ABSTRACT

The rhynchonelloid brachiopod described in this paper as *Ptilorhynchia jeletzkyi* sp. nov. was previously cited as "*Rhynchonella*" ex aff. *schucherti* Stanton and comes from shales of the Relay Mountain Group in the Taseko Lakes area of southwestern British Columbia. The stratigraphy of the area was described by Jeletzky and Tipper, and the strata containing the specimens described here belong to the *Buchia fischeriana* and *B. piochii* Zones of the uppermost (?) Portlandian and Upper Tithonian Stages.

RÉSUMÉ

Le brachiopode rhinocelloïde appelé *Ptilorhynchia jeletzkyi* (sp. nov.) dans le présent exposé avait déjà été appelé "*Rhynchonella*" ex aff. *schucherti* Stanton et provient des schistes argileux du groupe de Relay Mountain dans la région des lacs Taseko, dans le sud-ouest de la Colombie-Britannique. La stratigraphie de la région a été décrite par Jeletzky et Tipper et les couches renfermant les spécimens décrits dans le présent exposé appartiennent aux zones des *Buchia fischeriana* et *B. piochii* des étages supérieurs (?) du Portlandien et du Tithonien supérieur.

A NEW RHYNCHONELLOID BRACHIOPOD FROM THE
UPPER JURASSIC ROCKS OF BRITISH COLUMBIA

INTRODUCTION

The presence of a rhynchonelloid brachiopod in the Upper Jurassic rocks of the United States was noted by Stanton (1895, p. 31) who collected samples from a small limestone lens 3,000 feet below the top of the Knoxville beds in Paskenta, California and described the species as *Rhynchonella schucherti*. Stanton's species is one of the few rhynchonelloid brachiopods of Mesozoic age to be described from North America and this led Jeletzky and Tipper (1968, p. 164) to refer material from British Columbia very broadly to Stanton's form. From the description and illustrations of *R. schucherti* given by Stanton (1895, p. 31, Pl. 1, figs. 1-4) it seems likely that his species is comparable to *Rhynchonella decipiens* d'Orbigny (1848, p. 25), described originally from Barême, southern France, and is neither conspecific nor congeneric with the species under discussion here.

Later Crickmay (1933, p. 877) described a rhynchonelloid brachiopod genus from the Hinchman Formation, Upper Jurassic, of Mount Jura, California as *Ptilorhynchia*, giving *P. plumasensis* as the type species. The latter closely resembles the British Columbia species in both external morphology and in having a strong median septum in the ventral valve. Although no material of *Ptilorhynchia plumasensis* Crickmay has been available for comparison in the present study, it is nevertheless considered that the two forms are congeneric.

SYSTEMATIC DESCRIPTION

Family RHYNCHONELLIDAE Gray, 1848

Subfamily CYCLOTHYRIDINAE Makridin, 1955

Genus *Ptilorhynchia* Crickmay, 1933

Type species: *Ptilorhynchia plumasensis* Crickmay, 1933, by original designation.

Ptilorhynchia jeletzkyi sp. nov.

Plate 1, figures 1-4, Text-figs. 1-4

Rhynchonella ex aff. *schucherti* Stanton; Jeletzky and Tipper, 1968, p. 164.

Holotype. GSC 31652 (Pl. 1, figs. 1a-c).

Paratypes. GSC 31653 (Pl. 1, fig. 2), GSC 31654 (Pl. 1, fig. 3), GSC 31655 (Pl. 1, fig. 4), GSC 31656-31679.

Locality and Horizon. The locality (GSC Loc. 62533) from which all the type material was collected by Dr. J.A. Jeletzky in 1964 forms part of what Jeletzky and Tipper (1968, p. 95, 164) described as an "impure coquina limestone" 220 feet below the top of Unit No. 6 at Section No. 14, located in British Columbia at 51°09'N and 122°57'W, some 125 miles north of Vancouver. The rocks form part of the Relay Mountain Group and were assigned to the lower part of the *Buchia fischeriana* Zone and *B. piochii* Zone, said to be of Upper Tithonian and (?) uppermost Portlandian age.

Description. External Morphology. *Ptilorhynchia* with an average shell length of 20 mm, breadth 20.4 mm and thickness of 25 mm. Broadly subtriangular to pentangular in general outline, it is distinctly subglobose or acutely biconvex in lateral aspect.

The shell surface is smooth, exhibiting no sign of striae, but often developing strong marginal plicae which originate midway between the umbones and anterior commissure. These plicae vary in number from one to four, the variants with a single plication usually exhibiting a slight anterior marginal sulcus high in the centre of the brachial fold, giving rise to a broadly M-shaped anterior margin.

The sharp, suberect, hypothyriddid beak tends to become slightly incurved and often obscures the delthyrium. Short but distinct beak-ridges border a small, poorly developed interarea.

A median septum is clearly visible at the umbonal end of the brachial valve and extends for just under half the length of the shell. On the surface of well-preserved internal moulds, four subtriangular muscle marks can be seen, each pair flanking the terminal half of the median septum and extending anteriorly just beyond its limit.

Internal Morphology. From a series of sixteen transverse serial sections through the umbo of a specimen (Fig. 1) it can be seen that the dental lamellae in the pedicle valve begin as two distinct divergent plates free of the wall of the valve and become subparallel to slightly convergent anteriorly. They support strong, subquadrate hinge-teeth which are deeply inserted and deflected inwards towards the umbonal cavity. A shallow septalium is developed from the wide hinge-plates supported by a high, strong, persistent median septum. The crura are given off from the hinge-plates as two almost flat projections with a subangular concave dorsal surface which develops anteriorly. A cross-section through the distal ends of the crura (Fig. 2C) vaguely assumes the appearance of a letter L. This type of crus is difficult to classify in accordance with Ager (1965, p. H 599) but may be a modification of the *radulifer*-type so often found in representative genera within the Cyclothyridinae. The crura can be compared to those observed in the Recent genus *Hemithiris* and an example of this form from British coastal waters has been included (Pl. 1, figs. 7, 8) for comparison with the reconstruction of the crura of *P. jeletskyi* given in Fig. 2A, B. Ager (1968, p. 58) noted a similar crural development in the Upper Triassic genus *Timorhynchia* which he described from Portuguese Timor. He remarked in his diagnosis that *Timorhynchia* had "gutter-shaped crura extending into the ventral valve". Previously, Makridin (1964, p. 191) had shown the same sort of development of the crura in a rhynchonellid without a septalium. He described the form, which occurs in the Upper Jurassic of the Russian Platform, as *Cyclothyris ulaganica* but no such crural development occurs in the type species of the genus *Cyclothyris* (Owen, 1962).

Dimensions (in mm).

GSC NO.	LENGTH	BREADTH	THICKNESS
31652	21.0	22.0	12.5
31653	20.0	22.0	12.0
31654	19.0	20.0	13.0
31655	19.0	18.0	12.0
31656	21.0	22.0	13.0

Discussion. It is not possible to be certain about the assignment of a species of rhynchonelloid brachiopod to a particular genus until all the data regarding its internal structures have been evaluated. In the case of *P. jeletskyi* careful consideration has been given to the information supplied

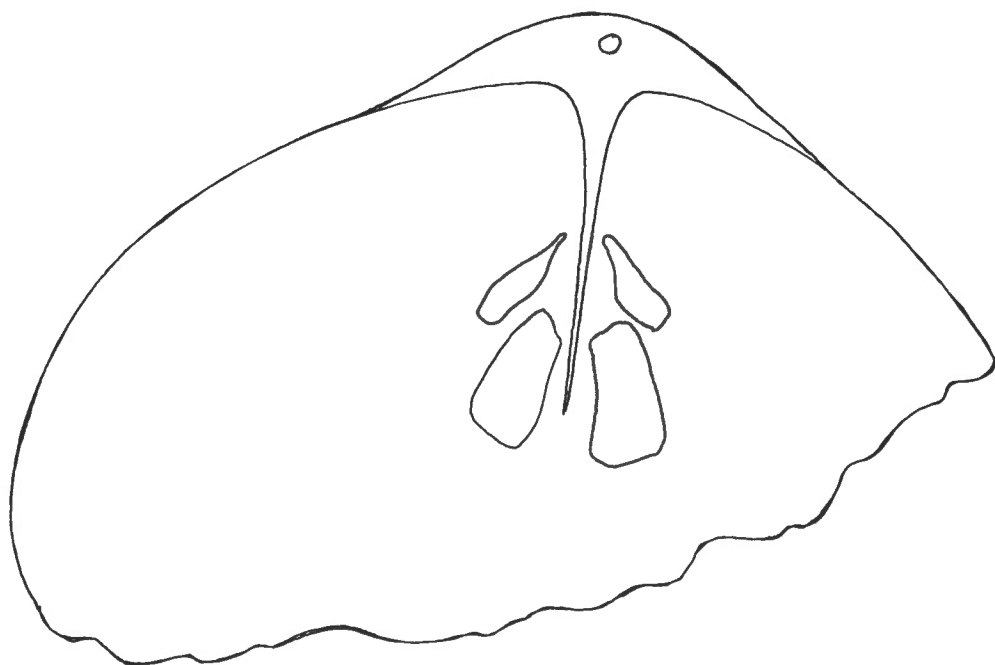


Figure 3. Diagram illustrating the adductor and diductor muscle-scars on the surface of an internal mould of *Ptilorhynchia jeletskyi* sp. nov. for comparison with those of *P. plumasensis* Crickmay. X6.

by Crickmay in his original description of *Ptilorhynchia*. Although he based his description largely upon external morphological details, he described also impressions of muscle-scars and septum on an internal mould of the type species. These appear to agree with the scars seen on moulds of *P. jeletskyi* (Fig. 3).

In many respects *P. jeletskyi* is also comparable to "*Rhynchonella*" *cherennensis* var. *moutoniiformis* described by Jacob and Fallot (1913, p. 38, Pl. 4, figs. 17-21) from the Sanatorium des Enfants à Leysin, Switzerland, and also of Upper Portlandian age. Both forms have the same general outline, smooth shell surface and show similar patterns of variation. They differ, however, in their anterior aspect. The Swiss form shows the predominance of a strong uniplication with asymmetrical anterior commissure, whereas *P. jeletskyi* has from one to four plicae within the main fold. The internal characters of "*R.*" *cherennensis* var. *moutoniiformis* were not described by Jacob and Fallot and data concerning the exact form and type of crura are unpublished.

Dagys (1968, p. 57) described seven new rhynchonelloid species, ranging in age from Bajocian to Hauterivian in Central Siberia, which he assigned to *Ptilorhynchia*. Of these, only two species, *Ptilorhynchia seducta* (Pl. 4, figs. 1, 2) from the Valanginian and *P. obscuricostata* (Pl. 5, figs. 6, 7) from the Lower Volgian, bear more than a superficial resemblance to *P. jeletskyi*. They differ, however, in having a less produced umbo and more inflated brachial valve, and in the absence of plicae within the main anterior fold and sulcus. Internally they differ from *P. jeletskyi* in having a lower, less persistent septum in the brachial valve and in lacking the typical "gutter-shaped" terminal ends of the crura.

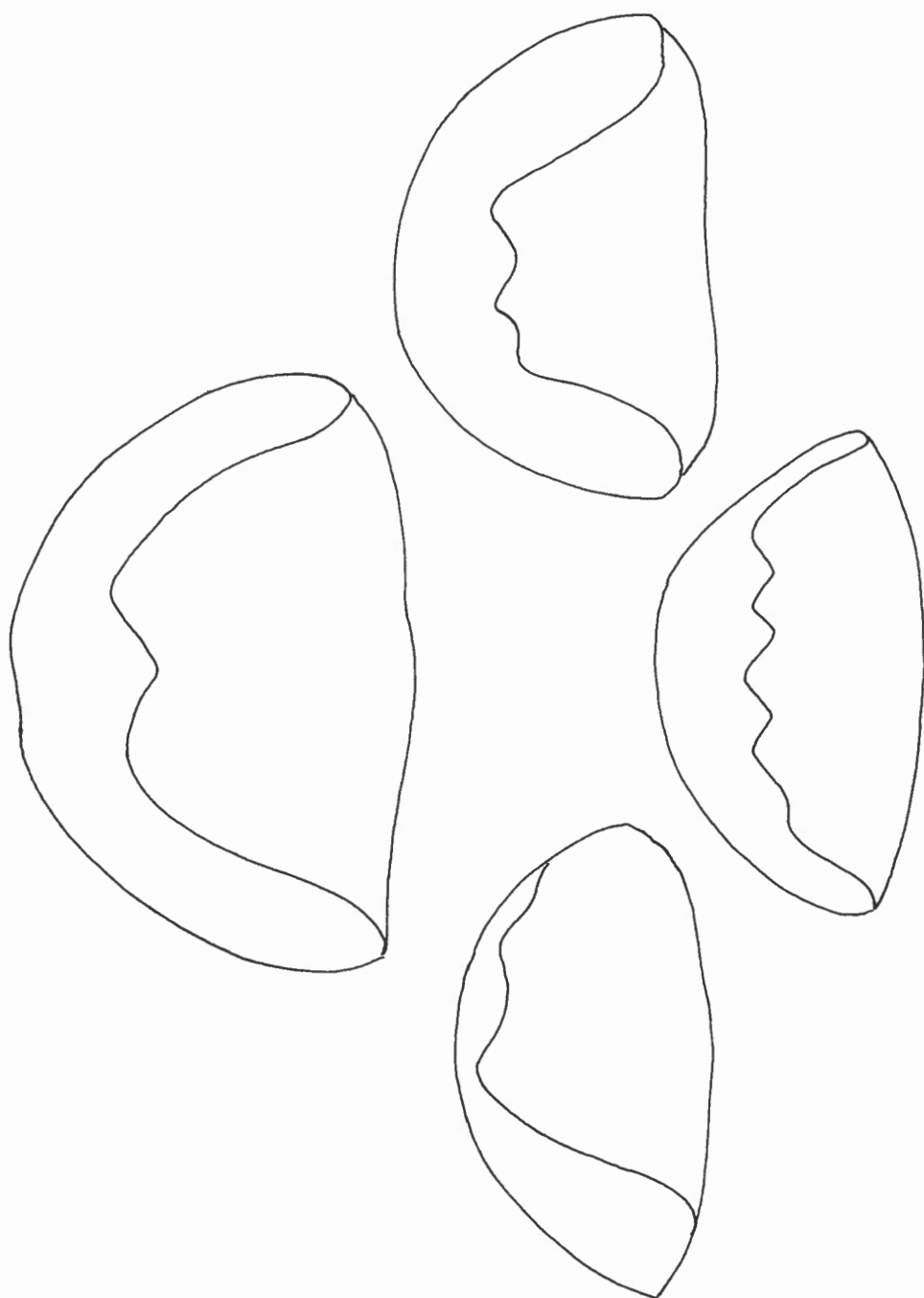


Figure 4. Outline diagrams of the anterior commissure of three variants of *Ptilorhynchia jeletskii*. X3.

CONCLUSIONS

Jones, *et al.*, (1969) in their work on the stratigraphic significance of the *Buchia* zones of Paskenta, California, gave an account of the history of the Knoxville Series and (p. A 3) acknowledged the occurrence of beds of Berriasian age within this series, a fact which they stated was supported by ammonite evidence. Stanton's *Rhynchonella schucherti* was, as already explained, described from within 3,000 feet of the top of the Knoxville Series in California and was, presumably, well within the Berriasian zones of that area. This species, therefore, probably represents a completely different generic stock from that of *Ptilorhynchia* while at the same time exhibiting some of the external morphological features found in *P. jeletzkyi*. These features, which amount to a smooth shell and similar broad fold and sulcus, are almost certainly a result of similar ecological conditions. So far, there are no records of a rhynchonelloid brachiopod from beds of known Berriasian age in British Columbia.

Two further brachiopod genera found in association with *P. jeletzkyi* are too poorly preserved and too fragmentary for accurate description but it is hoped that more material will become available in time. One of these is an inarticulate genus which can be broadly assigned to "*Orbiculoidea*" sp. It is a small, acutely conical shell with a base diameter of approximately 5 mm. The other genus is represented by three flat, oval terebratuloids approximately 20-25 mm in length and 17-20 mm in width. The umbonal region appears to be slightly inflated and the anterior commissure is broadly uniplicate.

PLATE I

Prefix GSC denotes specimens in the collections of the Geological Survey of Canada, Ottawa. Specimens prefixed BM are in the British Museum (Natural History), London. Photographs are natural size unless otherwise stated.

Ptilorhynchia jeletzkyi sp. nov.

GSC Locality 62533

- Figures 1a-c. Plan, right lateral and anterior views of holotype, GSC 31652.
- Figure 2. Anterior commissure of a paratype GSC 31653 showing four plicae developed within the main fold and sulcus.
- Figure 3. Paratype GSC 31654 showing double plicae and fairly extensive linguiform extension.
- Figure 4. Anterior view of paratype GSC 31655 showing the asymmetrical anterior commissure.

Lacunosella guerini (d'Orbigny)

- Figures 5a-c. Plan, right lateral and anterior views of specimen from the Lower Cretaceous, Berriasian Stage, of Castellane, Basses Alpes, France. The specimen has been included to illustrate the degree of homoeomorphy apparent in some forms. BM. B.8209.

Rhynchonella decipiens d'Orbigny

- Figures 6a-c. Plan, right lateral and anterior views of specimen from the Lower Cretaceous, Berriasian Stage, Cheiron, Basses Alpes, France. BM. B.8211.

Hemithiris psittacea (Gmelin)

- Figures 7, 8. Ventral and dorsal views of the crura of a specimen from Recent seas. The figures are included to illustrate the type of crura developed in *Ptilorhynchia jeletzkyi* sp. nov. X 8.

Plate 1



1a



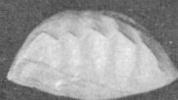
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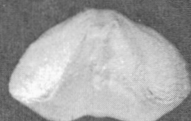
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1b



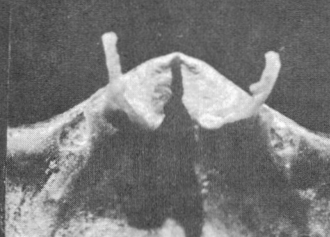
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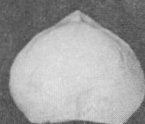
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1c



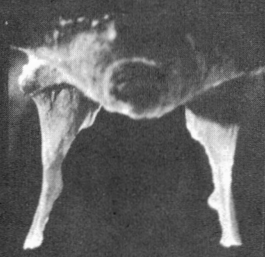
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6a



3



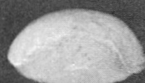
8



6b



4



6c

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