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Charles D. and Mary Vaux Walcott
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A NEW SPECIES OF THE JURASSIC
BRACHIOPOD GENUS SEPTIRHYNCHIA

(WITH TWO PLATES)

BY

HELEN M. MUIR-WOOD

British Museum (Natural History), London

AND

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(PUBLICATION 4047)

CITY OF WASHINGTON
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The specimens described herein were collected by Dr. Barnum Brown while on the Dudley Expedition of the Anglo-American Oil Co., which was organized in 1920 to examine part of Harrar Province, Abyssinia. Some of the brachiopod material collected by this expedition is silicified and yielded well-preserved interiors of species of *Pseudoglossothyris* and *Somalirhynchia*, as well as of the rare *Septirhynchia*. The attention of collectors in this portion of Africa is drawn to fossils having this type of preservation.

The preparation of the specimens was made by dissolving away the matrix in dilute hydrochloric acid. This yielded two fragmentary pedicle valves of *Septirhynchia* from Ab-Uqua-Kurtcha and a complete specimen from Ego-Gambo with both valves in contact representing a new species. The latter produced a nearly perfect interior, which was photographed with the valves intact. After the valves were photographed, they were pried apart to facilitate further study and illustration. Present information on the interior of *Septirhynchia* was obtained by sectioning the pedicle beak. The interior details of the brachial valve were hitherto little known.

The genus *Septirhynchia* was originally described by Muir-Wood (1935, p. 106, pl. 9, figs. 3 a-c, 4; text fig. 11) with *Rhynchonella azaisi* Cottreau as type species. This species was described in 1924 by Cottreau from Lower Kimmeridgian rocks of Harrar, Abyssinia. Basse (1930, p. 117) recorded this species from the Kimmeridgian of Cabenaoua, south of Harrar. The silicified specimen figured in Weir's earlier paper (1925, p. 83, pl. 12, fig. 26) as *Stolmorhynchia*

cf. *S. nobilis* (Sowerby) from the base of the Jurassic (?Kimmeridgian) of Hamud, western British Somaliland, corresponds with Cottreau's figures of *R. azäisi*. Weir's specimen is said to be 53 mm. wide and 60 mm. thick and to have 12 to 16 costae.

Septirhynchia azäisi is found in a grayish limestone weathered to a reddish brown. The shell is usually preserved in beekite. This limestone bed can be traced from Harrar, Abyssinia, through Hamud, western Somaliland, to Ida Kabeita and Ambal, central Somaliland, and thence to Anole Issa, Italian Somaliland. It is possible that this limestone is of Callovian and not Kimmeridgian age, according to Dr. Migliorini (personal communication to Muir-Wood). The age of the other three species originally assigned to the genus is: *Rhynchonella budulcaensis* Stefanini, Kimmeridgian, Italian Somaliland; *Septirhynchia mogharaensis* Muir-Wood (= *Rhynchonella decorata* Cossman, 1925), Callovian of Sinai Peninsula; and *S. madashonensis* Muir-Wood, Callovian of eastern British Somaliland.

The original diagnosis of this genus given by Muir-Wood is—

Shell large, pentameroid in contour; median fold low, median sinus shallow; ventral umbo long, produced and incurved, concealing foramen and deltidial plates in adult; hypothyril, deltidial plates conjunct. Dental lamellae strong, uniting with base of ventral median septum posteriorly. Ventral septum extending for two-thirds of length of pedicle valve. Dorsal median septum low. Two slightly divergent septal plates extend across posterior part of dorsal umbonal cavity. Interareas large and flattened. Pedicle collar developed. Shell thick, ornamented with coarse, prominent, subangular costae.

A study of the silicified material has shown that this diagnosis requires to be emended, since the "divergent septal plates" are actually the long, curved radulifer crura. Comparison of our specimens with descriptions of described forms shows that the silicified complete specimen is a new species.

SEPTIRHYNCHIA PULCHRA, new species

Plate 1, figs. 1-5, 11, 12; plate 2, figs. 1-6

Diagnosis of species.—Species small for the genus: length 36.5 mm. (incomplete), brachial length 31 mm., width 30 mm., thickness 32 mm., longer than wide, with the pedicle valve slightly deeper than the brachial valve; fold and sulcus poorly defined; anterior commissure not preserved; costae continuous from umbo to anterior margin, broadly rounded, and numbering about 13. Costae crowded and narrow posteriorly, but increasing in width anteriorly and lacking on the umbonal slopes. Beak of pedicle valve strongly incurved, overhanging and en-

closing the incurved umbo of the brachial valve. Areolae broad and smooth.

Description of interior.—The interior of the pedicle valve is characterized by a median septum extending just beyond the half length of the shell and dividing the delthyrial cavity. Dental lamellae developed as thin vertical plates on either side of the septum and approaching it posteriorly and equal to its length anteriorly. The portion of the dental plates near the teeth is bowed in a median direction. These dental plates decrease in height anteriorly and support long, slender teeth or articulating processes, which project posteriorly above the shell margin in the separated valves and are separated from the margin by a narrow furrow. The foramen is small and hypothryid and passes inwardly into a short pedicle collar. The deltidial plates are conjunct posteriorly but form a henidium anteriorly. Muscle scars were not distinguishable.

The crura are curved (radulifer type, i.e., of uniform width and without terminal hooks), 4.5 mm. long, projecting anteriorly with their ends curved strongly toward the pedicle valve. These are directly continuous with and are given off from the anterior ends of divided hinge-plates, which are broad umbonally but decrease rapidly in width. Crura are not well demarcated from the inner socket-ridges, which bound narrow, deeply inserted hinge-sockets. The septalium is partially concealed by the incurvature of the umbo. The septalial plates are thin and delicate and unite with the bladeliike median septum, which extends more than half the shell length and is most elevated at its center. The cardinal process is small and knoblike, terminating in a short spike, and, because of the curvature of the umbo, projects anteriorly. Muscle marks are obliterated by silicification.

Holotype.—U.S.N.M. No. 103961.

Locality and horizon.—?Callovian of Ego Gambo, Harrar Province, Abyssinia.

Discussion.—*Septirhynchia pulchra* differs from *S. azäisi* (Cottreau) by its smaller dimensions, narrower shell, and fewer costae, 13 as compared with 16 in Cottreau's species. The internal characters of *S. pulchra* also differ from those of two pedicle valves described below, which are here referred to *S. azäisi*.

The dimensions of *S. pulchra* appear to be nearer to those of *S. budulcaensis* (Stefanini) from the Middle Oolites of Bur Budulca, southern Somaliland. There are, however, 24 to 28 costae in *S. budulcaensis*, while in *S. pulchra* there are only 13 in each valve, with 4 on the depressed median fold and 3 in the sulcus of the pedicle valve.

Stefanini assigned Weir's *Stolmorhynchia* ? *azaïsi* var. from Jubaland (Weir, 1929, p. 36, pl. 4, fig. 5) to his species *R. budulcaensis*.

Septirhynchia mogharaensis Muir-Wood, the type of which was figured by Cossman as *Rhynchonella decorata* (1925, p. 326, pl. 7, fig. 9 a-c) from the Callovian of Darb-el-Cheikh, Moghara Massif, Isthmus of Suez, is larger than *S. pulchra* and has a length of 45 mm., width 40 mm., and thickness 45 mm., with a well-defined median fold and sulcus. From the figures the type specimen appears to have about 17 prominent, rounded costae. The anterior portion of the pedicle valve tapers and forms a short linguliform extension.

The small specimen figured by Stefanini (1932, pl. 6, fig. 9 a, b) as *R. azaïsi* from the Middle Oolites of Anole Issa, southern Somaliland, corresponds in dimensions and general shell outline with those of *S. pulchra*, but the costae appear to be slightly coarser and less numerous (11 costae) in the Somaliland specimen. It should, however, be identified as *S. pulchra* var. rather than *S. azaïsi*. The dimensions of this specimen from the figures are: length 40 mm., width 34 mm., and thickness 31.5 mm. A suggestion is here made to collectors in Africa that other rhynchonellid genera resemble *Septirhynchia* in the strongly curved umbo and costae but differ markedly internally. A silicified fragmentary specimen from Jigjiga (U.S.N.M. No. 107067) at 7,150 feet, shows both valves and has similar dimensions and beak characters to those of *S. pulchra*, but the median fold is scarcely defined and the costae are more numerous (19). The septum of the pedicle valve is developed only as a low ridge. Otherwise the internal characters, teeth and dental lamellae, are similar. A cardinal process occurs in the brachial valve. The crura are not preserved and the hinge-plates are imperfect.

A fragmentary specimen (U.S.N.M. No. 107068) from Dire Daoua (from base of 2- to 10-foot beds above the conglomeratic limestone that overlies the sandstone) with the two valves in contact and showing internal structure appears to be distinct. It lacks the cardinal process and septum of the pedicle valve so characteristic of *S. pulchra*. The interior has 20 costae, which are less coarse, and flattened areolae are not developed on the flanks. The foramen is larger than that of *S. pulchra*, and the deltidial plates as preserved are not conjunct.

SEPTIRHYNCHIA AZAÏSI (Cottreau)

Plate 1, figs. 6-10

For full synonymy see Muir-Wood, 1935.

Two fragmentary pedicle valves from Ab-uqua-Kurtcha show the septum and dental lamellae uniting about 5 mm. anterior to the umbo.

The posterior part of the umbonal cavity is occupied by a tubular pedicle collar about 4 mm. long in specimen (U.S.N.M. No. 107066a).

The median septum is a knifelike ridge which increases gradually in height anteriorly and extends for a length of 28 mm. The dental lamellae are also knifelike plates 11 mm. in length in both specimens and unlike those of *S. pulchra* considerably shorter than the median septum of the pedicle valve. The lateral cavities between the dental lamellae and the inner shell wall are very narrow. The deltidial plates are conjunct with the line of junction traceable interiorly. They are continued farther anteriorly as a single plate (henidium of Cloud, 1942, p. 12), which is externally concave and depressed below the margins of the delthyrium. The teeth are not preserved.

The external shell characters, ornament, and outline agree well with those of *S. azäisi* (Cottreau). The original description of *R. azäisi* (Cottreau, 1924, p. 581, pl. 17, figs. 1-4) gives the dimensions as length 64 mm., width 56 mm., thickness 56 mm. There are, as a rule, 16 subangular costae, some 6 mm. wide. A low median fold and shallow sulcus are developed. The internal characters are not mentioned by Cottreau, but his longitudinal section (fig. 4 b) appears to show one radulifer crus and part of the median septum.

The relationships of this remarkable genus are still unknown. The development of a median septum in the pedicle valve as well as a cardinal process in the brachial valve are exceptional characters in Jurassic rhynchonellids. A new family Septirhynchiidae is therefore proposed for this genus. Its distribution, as at present known, is restricted to the Ethiopian province of the Upper Jurassic.

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EXPLANATION OF PLATES

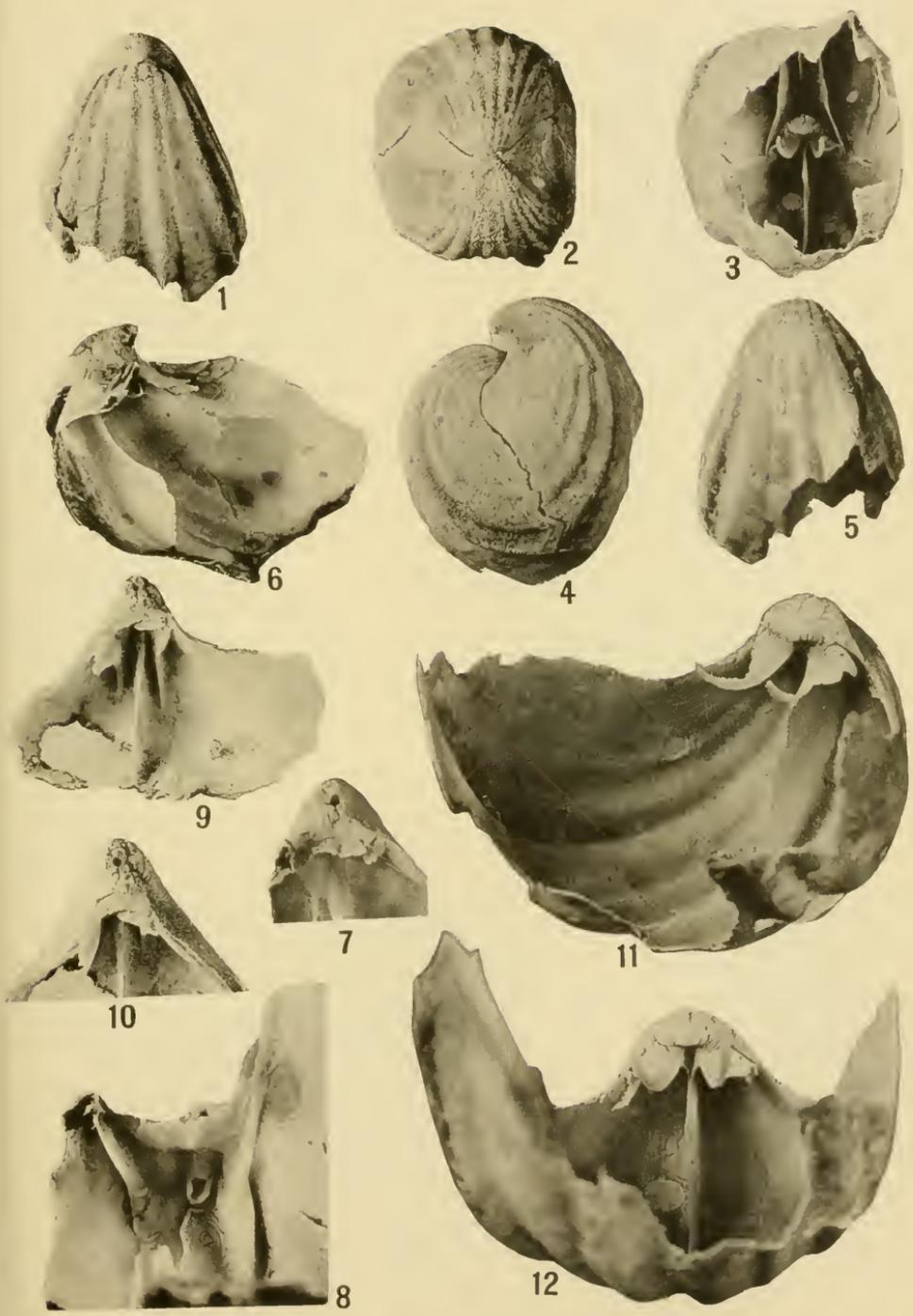
PLATE I

Figs. 1-5, 11, 12, *Septirhynchia pulchra*, new species, Upper Jurassic (?Callovian), Ego-Gambo, Harrar Province, Abyssinia: 1, 2, 4, 5, Brachial, posterior, lateral, and pedicle views, respectively, of the complete specimen, $\times 1$, holotype (U.S.N.M. No. 103961); 3, anterior view of the same specimen showing anterior profile and interior, $\times 1$; 11, 12, brachial valve of holotype looking directly into the interior and showing the median septum, hinge-plates, crura, and septalium.

Figs. 6-10, *Septirhynchia azaisi* (Cottreau), Upper Jurassic (?Callovian) of Ab-Uqua-Kurtcha, Harrar Province, Abyssinia: 6, Pedicle valve showing interior from side, hypotype (U.S.N.M. No. 107066a); 7, beak of preceding, showing small foramen and henidium, $\times 2$; 8, interior of delthyrial cavity of same hypotype showing dental plates, pedicle collar, and henidium, $\times 2$; 9, interior of pedicle valve showing long septum and short dental plates, $\times 1$ (U.S.N.M. No. 107066b); 10, beak of the same specimen showing conjunct deltidial plates, henidium, and small foramen, $\times 2$.

PLATE 2

Figs. 1-6, *Septirhynchia pulchra*, new species, Upper Jurassic (?Callovian), Ego-Gambo, Harrar Province, Abyssinia: 1, 2, Pedicle valve of holotype (U.S.N.M. No. 103961) showing interior, and tilted to show dental plates, septum, and teeth, $\times 2$; 3-5, views of the brachial interior of the holotype showing septalium, septum, and details of the crura and hinge-plates, $\times 2$; 6, holotype with both valves in contact showing deep insertion of brachial umbo into the delthyrial cavity of the pedicle valve, $\times 2$.



SEPTIRHYNCHIA

(SEE EXPLANATION OF PLATES AT END OF TEXT.)



3



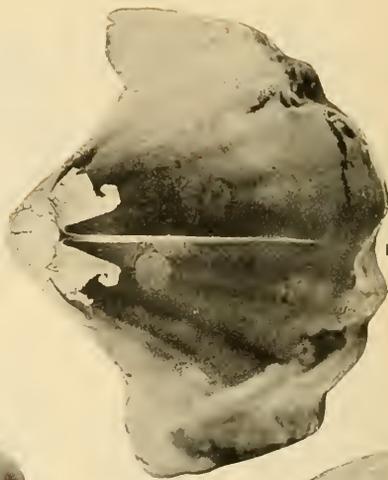
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