UNITED STATES DEPARTMENT OF THE INTERIOR
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A FIELD GUIDE TO SOME COMMON MEGAFOSSILS FROM POST-CALLOVIAN MESOZOIC ROCKS OF THE ALASKA PENINSULA

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A field guide to some common megafossils from post-Callovian Mesozoic rocks of the Alaska Peninsula

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Upper Jurassic and Cretaceous fossils from the Alaska Peninsula are extremely useful in distinguishing in the field rock units of lithologic similarity. For example, parts of the Upper Jurassic Naknek Formation are lithologically similar to the Upper Cretaceous Kaguyak Formation, and where juxtaposed, fossils are essential for discriminating the two units. Various species of the pelecypod genus Buchia are the most common and useful stratigraphic fossils in post-Callovian Jurassic as well as Berriasian to Valanginian Cretaceous rocks of the Alaska Peninsula, although occasionally cephalopods and other genera of pelecypods also are found in these units.

Buchia concentrica (pl. 1, figs. 16-25) is found in rocks deposited during late Oxfordian time but it also overlaps Buchia rugosa (pl. 1, figs. 1, 3-7) in rocks of the Kimmeridgian stage. Buchia rugosa also frequently occurs with Buchia mosquensis (pl. 1, figs. 2, 8-15) in rocks of middle Kimmeridgian to middle Tithonian age. These three species are found in the Naknek Formation and, except for Buchia concentrica, the lower part of the Staniukovich Formation. Buchia piochii (pl. 2, figs. 1-7) of late Tithonian age, Buchia uncitoides (pl. 2, figs. 8-17), and Buchia crassicollis solida (pl. 2, figs. 20, 28-31) of Berriasian and Valanginian age (Early Cretaceous) also occur in the Staniukovich Formation.

Cephalopods and the pelecypod genus Inoceramus are useful in refining the age of other Cretaceous rocks in the Alaska Peninsula.

The belemnite Acroteuthis sp. (pl. 3, figs. 3, 5) and Inoceramus ovatoides (pl. 3, fig. 5) occur in an unnamed Hauterivian-Barremian (Early Cretaceous) unit in the Katmai River area, and in the Kamishak Hills. This unit may be equivalent to the Herendeen Limestone at Port Moller (Jones and Detterman, 1966).

Desmoceras (Pseudoughligella) dawsoni (pl. 3, figs. 1, 2) of late Albian age has been found in the Katmai River area (Miller, Detterman, and Case, 1981). No lithologic unit of this age has yet been mapped on the Alaska Peninsula and the extent of Albian rocks in this area is unknown. Marshallites cumshewaensis (pl. 3, fig. 4) also occurs in these rocks.

The Inoceramus schmidti Zone and the Pachydiscus (Pachydiscus) kamishakensis Zone of Jones (1963) are characteristic of Upper Cretaceous (Campanian and Maestrichtian) rocks of the Alaska Peninsula.

Inoceramus schmidti (pl. 4, fig. 6) is abundant in the Chignik Formation which also commonly has Inoceramus orientalis (pl. 4, fig. 4) and Canadoceras newberryanum (pl. 5, fig. 3). Jones (1963) has assigned the Chignik Formation to the Inoceramus schmidti Zone of Campanian age.

The Kaguyak Formation contains Pachydiscus (Pachydiscus) kamishakensis (pl. 5, fig. 4), Inoceramus balticus var. kuminiensis (pl. 4, fig. 7), Inoceramus kusiraensis (pl. 4, fig. 2) and several other ammonites and species of Inoceramus. Jones (1963) has assigned the Kaguyak Formation to the Pachydiscus (Pachydiscus) kamishakensis Zone of probable latest Campanian and early Maestrichtian age.

Plates 1 through 5 illustrate the most common fossils from the Alaska Peninsula and figure 1 indicates their probable age ranges and geographic distribution in the area. Photography of specimens is by Kenji Sakamoto.

Glossy prints of plates 1 through 5 can be obtained for a charge through U.S. Geological Survey Library, Photolibrary, Stop 914, Box 25046, Denver Federal Center, Denver, Colorado 80225.

U.S. Geological Survey Open-File Map 76-76 (Jones and Miller, 1976) and MF-1053-N (Detterman, Yount, and Case, 1981) shows USGS post-Callovian Mesozoic fossil localities, Menlo Park, California.

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Plate 1

All localities are in the USGS Mesozoic locality register, Menlo Park, California.

Figures 1, 3-7. *Buchia rugosa* (Fischer).

1, 3. Left valve. USGS Mesozoic locality M2965. Crow Point. Lat 55°45.2' N., long 160°20.7' W. Staniukovich Formation. Standard Oil Co., date unknown.

4. Left valve. USGS Mesozoic locality M5356. South shore of Kamishak Bay, west of mouth of Douglas River. Lat 59°03.75' N., long 153°49.65' W. Naknek Formation. Standard Oil Co., 1966.

5, 7. Left valves. USGS Mesozoic loc. M2076. Lake Grosvenor. 7 miles N. 28° W. of outlet. Lat 58°40' N., long 155°09' W. Naknek Formation. R. L. Detterman, 1963.

6. Left valve. USGS Mesozoic loc. M2678. Mt. Katolinat. Lat 58°28.4' N., long 155°22.9' W. Naknek Formation. B.P. Company, date unknown.

Plate 1--continued

Figures 2, 8-15. *Buchia mosquensis* (von Buch).

2. Right valve. USGS Mesozoic loc. M1199. West shore of the east arm of Herendeen Bay, south of Bold Bluff. Naknek Formation. C. A. Burke, 1962.

8, 9. Left and right valves. USGS Mesozoic loc. M5240. Lat 58°58' N., long 154°00.2' W. Naknek Formation. Standard Oil Co., 1967.

10-13. Left valve, posterior view, left and right valves. USGS Mesozoic loc. M5231. Lat 58°48.6' N., long 154°04.2' W. Naknek Formation. Standard Oil Co., 1967.

14, 15. Right and left valves. USGS Mesozoic loc. M5767. Mt. Katmai 1:250,000 quad. Measured section at NE end of Kamishak Hills. Naknek Formation. S. McCoy, 1968.

16-25. *Buchia concentrica* J. de C. Sowerby.

16, 20-21. Left valve posterior view, right valve. USGS Mesozoic loc. M5212. North shore of Chignik Lagoon. Lat 59°19.6' N., long 158°34.5' W. Naknek Formation. Standard Oil Co., 1967.

17. Left valve. USGS Mesozoic loc. M5195. Lat 57°15.5' N., long 156°48.35' W. Naknek Formation. Standard Oil Co., 1967.

18. Left valve. USGS Mesozoic loc. M1135. Black Hills. Lat 55°42.8' N., long 162°32' W. Naknek Formation. M. C. Lachenbruch, 1961.

Plate 1--continued

Figures 16-25. Buchia concentrica J. de C. Sowerby--continued

19. Right valve. USGS Mesozoic loc. M1131. Mine Harbor. Lat 55°44.8' N., long 160°43.5' W. Naknek Formation. M. C. Lachenbruch, 1961.

22. Left valve. USGS Mesozoic loc. M2968. Lat 56°48.9' N., long 158°12.5' W. Naknek Formation. Standard Oil Co., 1967.

23. Left valve. USGS Mesozoic loc. M5336. Karluk 1:250,000 quad. 5.3 miles N. 75° W. of cabin on Kashvik Bay. Naknek Formation. Standard Oil Co., 1967.

24. Right valve. USGS Mesozoic loc. M5194. Lat 57°15.4' N., long 156°48' W. Naknek Formation. Standard Oil Co., 1967.

25. Right valve. USGS Mesozoic locality M5188. Lat 57°01.6' N., long 157°16.7' W. Naknek Formation. Standard Oil Co., 1967.

Plate 2

All localities are in the USGS Mesozoic locality register, Menlo Park, California, except as indicated. All figures natural size.

Figures 1-7. Buchia piochii (Gabb).

1-5. Left and right valves, left, right, left valves. USGS Mesozoic loc. M1086. North flank of Pinnacle Mountain. Lat 55°44.3' N., long 160°43.5' W. Staniukovich Formation. M. C. Lachenbruch, 1961.

6, 7. Right and left valves. USGS Mesozoic loc. M5221. Northwest flank of Staniukovich Mountain. Lat 55°49.8' N., long 160°37.3' W. Staniukovich Formation. Standard Oil Co., 1967.

8-17. Buchia uncitoides (Pavlow).

8-10. Left valves. USGS Mesozoic loc. M5282. Shingle Point on southeast coast of Herendeen Bay. Staniukovich Formation. Standard Oil Co., 1967.

11, 15-17. Left valve, left valve, left and right valves and posterior view. USGS Mesozoic loc. M5220. South flank of Staniukovich Mountain. Lat 55°49.3' N., long 160°36.8' W. Staniukovich Formation. Standard Oil Co., 1967.

12, 14. Left valves. USGS Mesozoic loc. M5219. South flank of Staniukovich Mountain. Lat 55°49.1' N., long 160°36.5' W. Staniukovich Formation. Standard Oil Co., 1967.

Plate 2--continued

Figures 8-17. Buchia uncitoides (Pavlow)--continued

13. Left valve. USGS Mesozoic loc. M1094. Marble Point, Herendeen Bay. Lat 55°47.3' N., long 160°45.1' W. Staniukovich Formation. M. C. Lachenbruch, 1961.

18-19, 23-24. Buchia sublaevis Keyserling.

Left and right valves. USGS Mesozoic loc. 5575 (USGS Washington, D.C., register). Just south of Shingle Point, Herendeen Bay. Near coal beds stratigraphically. Precise locality not known. W. W. Atwood, 1908.

21-22, 25-27. Buchia okensis Pavlow.

21-22, 26. Right valve and left valves. USGS Mesozoic loc. M5913. Coal Valley. 2.1 miles N., 1.5 miles W. of lat 55°45' N., long 160°30' W. Herendeen Limestone. A. Mangus, 1964.

25. Left valve. USGS Mesozoic loc. M5924. Braided Creek. 3.7 miles N., 0.6 mile E. of lat 56°30' N., long 158°30' W. Staniukovich Formation. A. Mangus, 1964.

27. Left and right valves on a slab. USGS Mesozoic loc. M5917. Trader Mountain. 1.3 miles N., 3.8 miles E. of lat 55°45' N., long 162°00' W. Staniukovich Formation. A. Mangus, 1964.

Plate 2--continued

Figures 20, 28-31. *Buchia crassicollis solida* (Lahusen).

20, 28-30. Left valve, right valve, posterior and left valve. USGS Mesozoic loc. M1095. Marble Point. Lat 55°46.7' N., long 160°44.9' W. Staniukovich Formation. M. C. Lachenbruch, 1961.

31. Left valve. USGS Mesozoic loc. M5288. Point 4.3 miles S. 44° E. of Harbor Point. Staniukovich Formation. Standard Oil Co.,1966.

Plate 3

All localities are in the USGS Mesozoic locality register, Menlo Park, California. All figures natural size.

Figures 1, 7. Desmoceras (Pseudouhligella) dawsoni (Whiteaves).

Lateral and ventral views. USGS Mesozoic loc. M7260. Lat 58°00' N., long 57°47.5' W. T. N. Smith, 1979. Unnamed Albian unit. Illustrated by Miller, Detterman, and Case (1981).

2, 3. Acroteuthis sp.

Ventral and lateral views of specimen with deep furrow. USGS Mesozoic loc. M2930. Kamishak Hills. Lat 58°49' N., long 154°03.3' W. D. L. Jones, 1965. Herendeen Limestone equivalent. Illustrated by Jones and Detterman (1966).

4. Marshallites cumshewaensis (Whiteaves).

Lateral view, rubber cast. USGS Mesozoic loc. M7373. Lat 58°00' N., long. 57°47.5' W. J. E. Case, R. L. Detterman, and J. W. Miller, 1980. Unnamed Albian unit. Illustrated by Miller, Detterman, and Case (1981).

5, 6. Calliphylloceras cf. C. aldersoni (Anderson).

Lateral and dorsal views. USGS Mesozoic loc. M7373. Unnamed Albian unit. Illustrated by Miller, Detterman, and Case (1981).

Plate 3--continued

Figures 8. *Inoceramus ovatoides* Anderson.

Slab of calcarenite with shell fragments. USGS Mesozoic loc. M2935. Kamishak Hills. Lat 58°50' N., long 154°02.75' W. D. L. Jones, 1965. Herendeen Limestone equivalent. Illustrated by Jones and Detterman (1966).

Plate 4

All localities are in the USGS Mesozoic locality register, Menlo Park, California. All figures natural size except as indicated.

Figures 1. *Inoceramus* cf. *I. yokoyamai* Nagao and Matsumoto.

USGS Mesozoic locality M1232. Lat 55°36.3' N., long 160°50.6' W. Hoodoo Formation. C. A. Burke, 1962.

2. *Inoceramus kusiroensis* Nagao and Matsumoto.

USGS Mesozoic locality M2926. Lat 58°48.8' N., long 154°02.55' W. Kaguyak Formation. D. L. Jones, 1965.

3. *Inoceramus subundatus* Meek.

USGS Mesozoic locality M2927. Lat 58°48.85' N., long 154°02.55' W. Kaguyak Formation. D. L. Jones, 1965.

4. *Inoceramus* cf. *I. orientalis* Sokolow.

USGS Mesozoic locality M768. Lat 55°42.3' N., long 160°51.5' W. Chignik Formation. M. C. Lachenbruch, 1959.

5. *Inoceramus vancouverensis* Shumard.

USGS Mesozoic locality M5201. Lat 56°09.3' N., long 158°41.8' W. Chignik Formation. Standard Oil Co., 1967. X 3/5.

6. *Inoceramus schmidti* (Michael).

USGS Mesozoic locality M768. Lat 55°42.3' N., long 160°51.5' W. Chignik Formation. M. C. Lachenbruch, 1959. X 3/5.

7. *Inoceramus balticus* var. *kunimiensis* Nagao and Matsumoto.

USGS Mesozoic locality M2929. Lat 58°49' N., long 154°03.3' W. Kaguyak Formation. D. L. Jones, 1965.

Plate 5

All figures are in the USGS Mesozoic locality register, Menlo Park, California, except as indicated. All figures natural size.

Figures 1. Nostoceras sp.

USGS Mesozoic locality M2928. Lat 58°48.9' N., long 154°03.9' W. Kamishak Hills. East of South Fork Kamishak River. Kaguyak Formation. D. L. Jones, 1965.

2. Neophylloceras hetonaise Matsumoto.

USGS Mesozoic locality M2925. Lat 58°45.5' N., long 154°03.3' W. Kamishak Hills. East of South Fork Kamishak River, elev. 2,600 ft. Kaguyak Formation. D. L. Jones, 1965.

3. Canadoceras newberryanum (Meek).

USGS Mesozoic locality 25707 (Washington, D.C., Mesozoic locality register). North side of Chignik Lagoon. From 100 feet of massive to thin-bedded sandstone about 750 feet above base of Chignik Formation. A. S. Keller and J. T. Cass, 1955.

4. Pachydiscus (Pachydiscus) kamishakensis Jones.

USGS Mesozoic locality 25856 (Washington, D.C., Mesozoic locality register). Lat 58°51.6' N., long 154°3.6' W. Kamishak Hills between South Fork Kamishak River and Douglas River. Kaguyak Formation. C. E. Kirschner, 1955. Illustrated by Jones (1963).

Figure 1. Correlation chart of the Alaska Peninsula.

Plate 1

Plate 2

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Plate 3

Plate 4

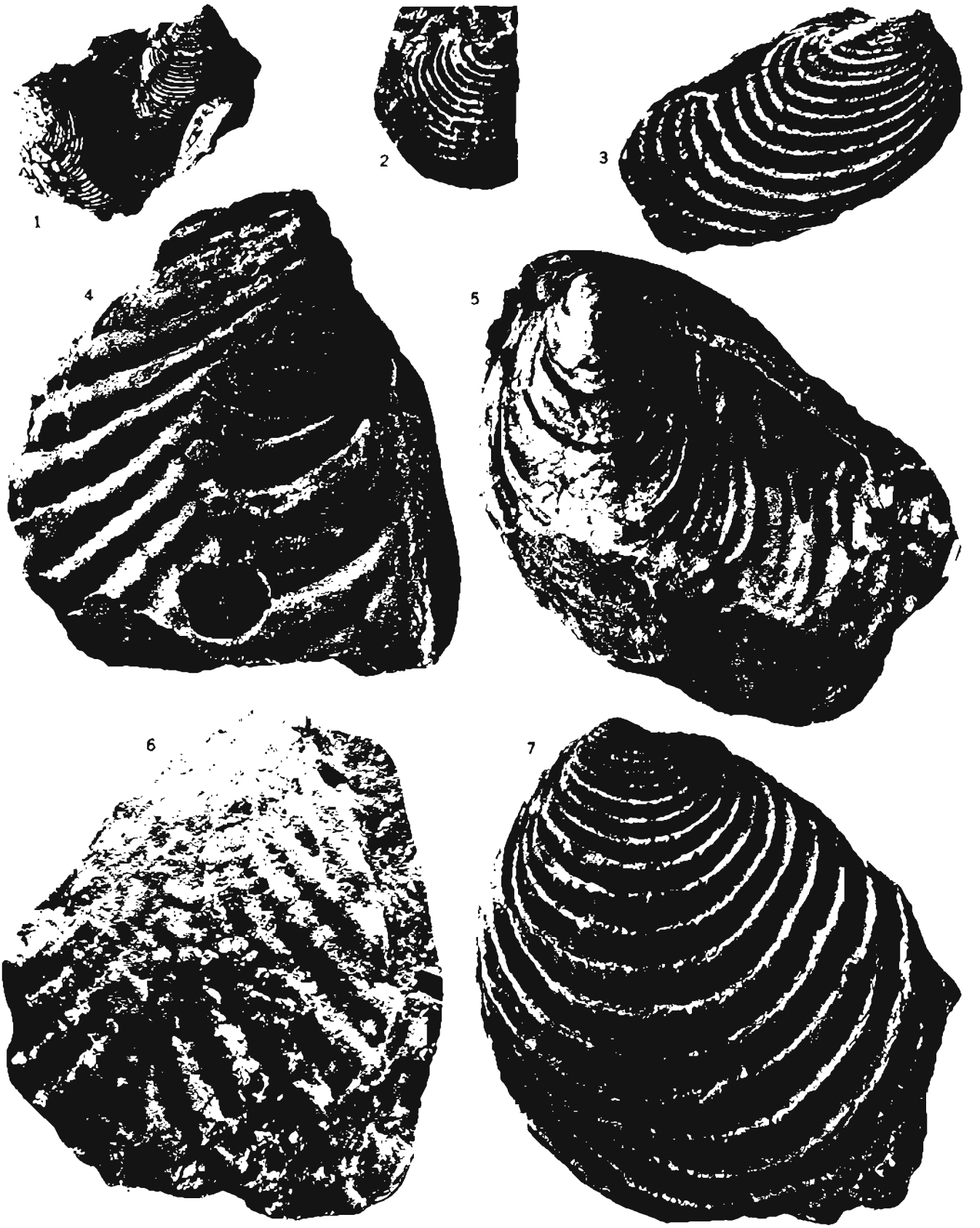
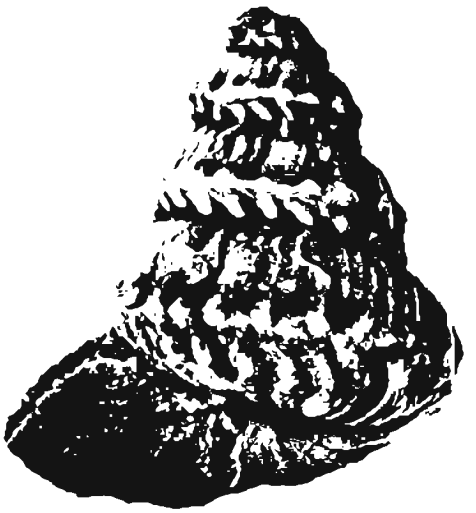


Plate 5



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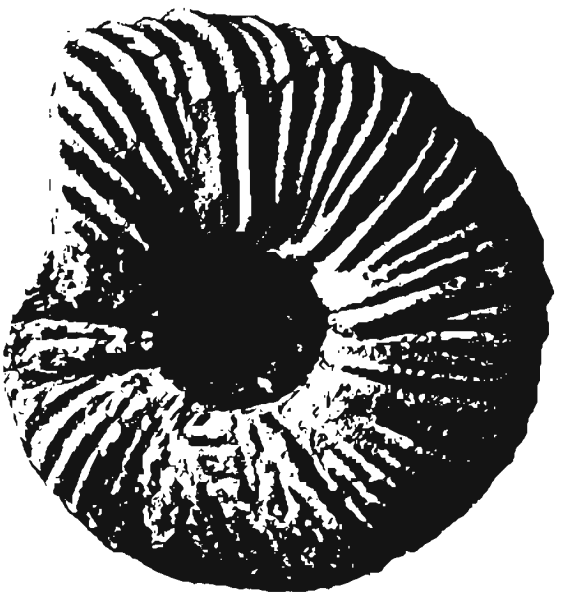

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