

200 cc. of 10 per cent Na_2CO_3 . The separated oil rapidly solidified and was recrystallized from 50 per cent ethyl alcohol. Yield 9.0 gms.

After crystallization from 50 per cent alcohol it was obtained in colorless glistening needles melting at 103°C . (corr.) to a clear colorless oil.

Analysis (Parrbomb): 0.2111 gm. gave 0.1540 gm. AgCl equivalent to 18.05 per cent Cl . Theory for $\text{C}_9\text{H}_8\text{O}_2\text{NCl}$ is 17.95 per cent Cl .

5-Chloro-veratric acid (3, 4-dimethoxy-5-chloro benzoic acid).—Five gms. of the crude nitrile was boiled for 1 hour with 50 cc. of 20 per cent NaOH . The nitrile formed an oil which disappeared after 10 minutes boiling and ammonia was detected issuing from the condenser. After cooling the acid was precipitated as a white solid by addition of 100 cc. of 1:4 HCl , filtered, washed with H_2O , and recrystallized from 50 per cent ethyl alcohol. The yield was 4.1 gms.

The acid was obtained as soft silky brilliant needles, melting at 191°C . (corr.) to a clear colorless oil.

Analysis: 0.2234 gm. consumed 10.27 cc. 0.1 N NaOH . Theory for $\text{C}_9\text{H}_9\text{O}_4\text{Cl}$ is 10.32 cc.

SUMMARY

5-Chloro-veratric aldehyde has been converted to 3, 4-dimethoxy-5-chloro benzoic acid through acetylation of its syn-aldoxime to form the benzonitrile and subsequent alkaline hydrolysis.

Certain other intermediate derivatives in this series of reactions have been isolated and described.

PALEONTOLOGY.—*A new species of Pecten from the Oligocene near Duncan Church, Washington County, Florida.*¹ WENDELL C. MANSFIELD, Geological Survey.

Specimens of orbitoid foraminifera from a limestone near Duncan Church, Washington County, Florida, were described recently by Dr. W. Storrs Cole,² and were determined to be of the age of the Glendon formation, a middle Oligocene limestone. Cooke and Mossom³ had previously referred the limestone near Duncan Church to the Eocene.

At the time that Mr. Gerald M. Ponton of the Florida Geological

¹ Published by permission of the Director of the U. S. Geological Survey. Received May 8, 1934.

² COLE, W. STORRS. *Oligocene orbitoids from near Duncan Church, Washington County, Florida*. Jour. Paleont. 8: 21-28, pls. 3, 4. 1934.

³ COOKE, C. W., and MOSSOM, STUART. *Geology of Florida*. Florida Geol. Survey Ann. Rept. 20: 61. 1929.

Survey collected the orbitoids which were studied by Doctor Cole, Mr. Ponton and the writer obtained several fairly good specimens of a species of *Pecten* from the same limestone. The *Pecten* is believed to represent a new species and is described and figured in this paper under the name, *Pecten duncanensis*. In addition to the *Pecten*, fragments of an echinoid, which may be *Clypeaster rogersi* (Morton), an Oligocene species, were collected.

The *Pecten* corroborates Cole's opinion that the limestone is of Glendon age. The limestone appears to be of the same age as fossiliferous silicified chert exposed on Flint River at Bainbridge, Ga., which has been correlated with the Glendon.

The writer also visited a sink on the A. L. Parish Farm, $3\frac{1}{2}$ miles southeast of Wausau, Washington County, Florida, where 20 feet of limestone is exposed. The limestone is separable into two beds, the lower of which is believed to be of the same age as that of the limestone exposed at Duncan Church. The upper bed carries an abundant fauna which, according to Cooke and Mossom,⁴ appears to be of Tampa age. However, this fauna has not been studied sufficiently to determine definitely its relationship to the Tampa fauna.

***Pecten* (*Lyropecten*) *duncanensis* Mansfield, n.sp.**

Figures 1, 2, 3

Shell small, rather thin, inequilateral, weakly inflated, the left valve more convex than the right. Right anterior ear with a moderately deep notch and sculptured with five rather strong radials, the innermost of which lies close to the submargin, and with transverse closely-spaced imbrications; right posterior ear with six strong, imbricated radials. Disk of right valve sculptured with 23 to 25 (24 on holotype) squarish, scabrous and imbricated ribs, separated by intervals of about the same width as the ribs. The early portion of each rib is narrowly rounded and the later portion nearly square; the latter is undercut on the sides and is ornamented on the top with three scabrous threads, the medial one of which is the strongest. The interrarial spaces on the smaller specimens are either without a radial or, if present, it is only faintly indicated. A fragment of a larger shell (fig. 1, U.S.N.M. No. 373056) shows one interrarial thread of moderate strength in each space. Ribs and interspaces crossed by imbrications whose edges are about one millimeter apart. Left valve sculptured similarly to the right, except that the interrarial thread appears to be more strongly developed. Submargins low and marked with faint radials.

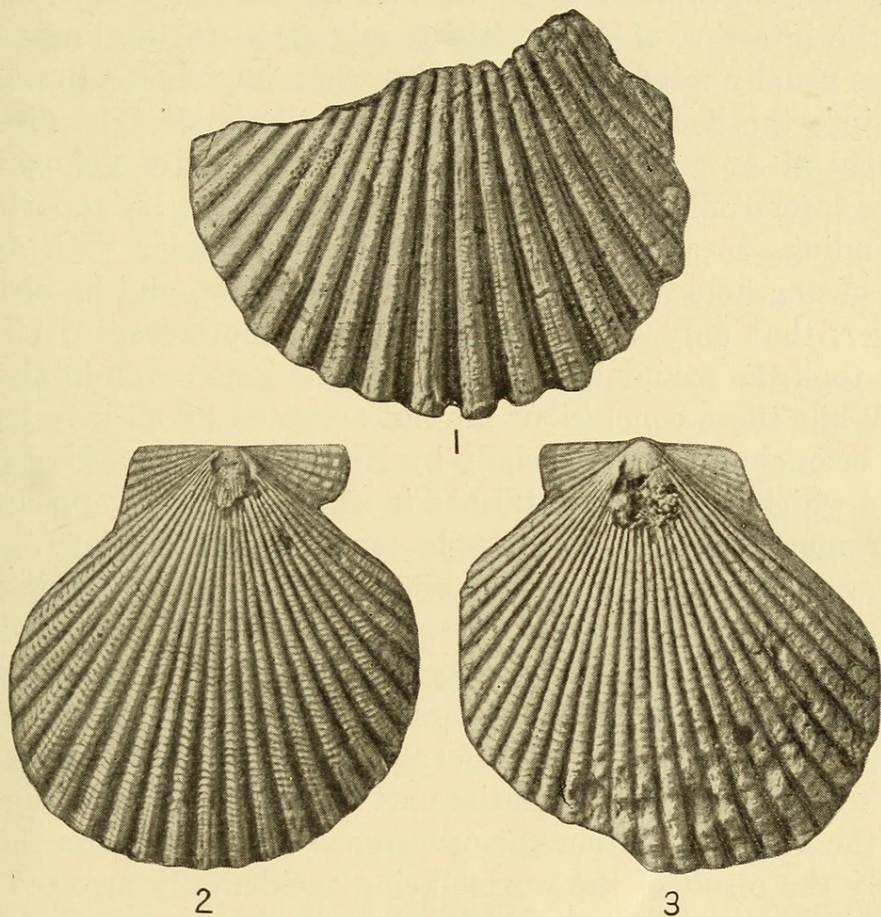
Dimensions of holotype (U.S.N.M. cat. no. 373055): Right valve, length 22.5 mm.; height, 23 mm.; convexity, 4 mm. Paratype (U.S.N.M. cat. no. 373056): Left valve (not entire), length 23+ mm.; height 23+ mm.

Type locality: Station 12724, old quarry near Duncan Church, Washington County, Florida.

Geologic horizon: Oligocene, Glendon formation.

⁴ Idem., p. 96.

Pecten duncanensis is closely allied to, if not the same as, specimens figured and incorrectly referred by Dall⁵ to *Pecten suwaneënsis* Dall, from the Glendon chert at Bainbridge, Ga. Cooke⁶ recognized that the Bainbridge material represented a new species which, however, he did not name. *P. duncanensis* differs from *P. suwaneënsis*, an Eocene Ocala limestone spe-



Figs. 1-3.—*Pecten* (*Lyropecten*) *duncanensis* Mansfield. Figs. 1, 3.—Paratypes $\times 2$. Fig. 2.—Holotype $\times 2$.

cies, in having a higher left valve and squarer ribs which instead of being rounded are ornamented on top with tricarinate radial sculpture. There are four specimens (U.S.N.M. cat. no. 115777) in the U. S. National Museum designated as types of *P. suwaneënsis*. The matrix adhering to these specimens carry foraminifera which have been examined by Mr. Lloyd G. Henbest of the U. S. Geological Survey, who identifies with comparative certainty *Operculina floridensis* Cushman and *O. vauhani* Cushman, both of Ocala, Eocene, age.

The type of *P. suwaneënsis* does not appear to have been figured.

⁵ DALL, W. H. Proc. U. S. Nat. Museum, 51: 492, pl. 83, figs. 2, 3, 4. 1916.

⁶ COOKE, C. W. U. S. Geol. Survey Prof. Paper 133: 5. 1923.



1934. "A new species of Pecten from the Oligocene near Duncan Church, Washington County, Florida." *Journal of the Washington Academy of Sciences* 24, 331–333.

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