

DEVONIAN MICROFOSSILS, ANDREWS COUNTY, TEXAS

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ABSTRACT. A fossiliferous interval containing conodonts and questionable trochiliscids (Charophyta) from the lowest Devonian rocks of the Three-Bar field, Andrews County, Texas, is interpreted as a stratigraphic admixture of Devonian age. This is evidence indicating a Devonian age for the pay zone of the Three-Bar field.

CONODONTS and questionable trochiliscids (charophyte oogonia) occur in a thin, glauconitic sandstone at the base of the Devonian chert in the Three-Bar field, southwestern Andrews County, Texas. These fossils were first recognized in cuttings from depths of 8470 to 8480 feet in the Stanolind Oil and Gas Company's University No. 2 "AG". Larger quantities of fossiliferous material, obtained subsequently by diamond coring in the Stanolind Oil and Gas Company's University No. 4 "AJ", permitted a more thorough study of the fossils, which disclosed important evidence regarding the age of the pay zone of the Three-Bar field.

The Stanolind Oil and Gas Company's University No. 4 "AJ" is located 660 feet from the north and west lines of section 9, block 11, University Lands Survey, Andrews County, Texas. The description of the core recovered from depths of 8281 to 8286 feet is as follows:

Devonian	Feet	Inches
Smoky-gray, dense, vitreous chert with irregular masses of buff chalky chert	0	7.75
Green, glauconitic sandstone; interstices filled with iron sulfides, calcite, and pale green clay. Contains conodonts, conical fish teeth or scales, and tentatively identified internal molds of trochiliscids	0	1.25
Silurian		
Pale gray to green shaly limestone ..	4	0
Total depth 8286 feet.		

When the glauconitic sandstone from the base of the Devonian was immersed in water and boiled, it disintegrated and the microfossils were freed. The fossils were concentrated by

hand-picking with a small moist brush under a wide-field binocular microscope. All the fossils are amber-colored and the tentatively identified trochiliscids are soluble in acetic acid.

The general geographic and stratigraphic setting of the fossiliferous sandstone is shown in figures 1 and 2. It is immediately below the pay zone of the Three-Bar field and above a gray to green shaly limestone assigned to the Silurian on the basis of lithology and local usage. The fossils are illustrated on plate 1 and are listed as follows:

Conodonts

Icriodus expansus Branson and Mehl (platform)

Icriodus sp. (platform)

Oistodus sp. (simple cone)

Acontiodus sp. (simple cone)

Cordylodus sp. (simple cone)

Fish Remains

Small, low, conical fish teeth or scales.

Algae (Charophyta)

Questionable internal molds of trochiliscid oogonia.

Ninety per cent of the specimens found belong to the conodont genus *Icriodus*. Slightly less than 10 per cent of the specimens are questionable trochiliscids and a minor number are simple cone conodonts and low, conical fish teeth or scales. The simple cone conodonts are fragmentary and show evidence of abrasion. The low, conical fish teeth possess a distinct layer of enamel on their exterior.

The interpretation of the age of these fossils is based mainly on conodonts. *Icriodus expansus* Branson and Mehl is recorded from strata of Middle and Upper Devonian in the United States and the stratigraphic range of the genus *Icriodus* is recognized as being Middle and Upper Devonian (Branson and Mehl, 1938, pp. 156-161). A gap occurs in the knowledge of conodont faunas in the Lower Devonian because none have been described from that part of the system. The possibility that *Icriodus* may range into Lower Devonian, therefore, cannot be completely eliminated. The forms illustrated here are not similar to the genus *Icriodina*, which occurs in the Silurian of Kentucky (Branson and Branson, 1947, pp. 550-551).

The simple cone conodonts are interpreted as Silurian or Ordovician forms, reworked, and included in the glauconitic sandstone. There were ample source beds of Silurian or Ordo-

vician age to supply these reworked specimens. The low, conical fish teeth or scales are not known to have any value as age indicators.

The tentatively identified internal molds of trochiliscids are important in that trochiliscids are known only from the Middle and Upper Devonian and Lower Mississippian beds in the United States (Peck, 1934, p. 97). Their lowest stratigraphic occurrence is near the base of the Middle Devonian. However, trochiliscids are like conodonts, in that Lower Devonian occurrences are not known but the possibility of their existence in that part of the system cannot be ruled out.

The specimens shown on plate 1, figures 1-6, compare favor-

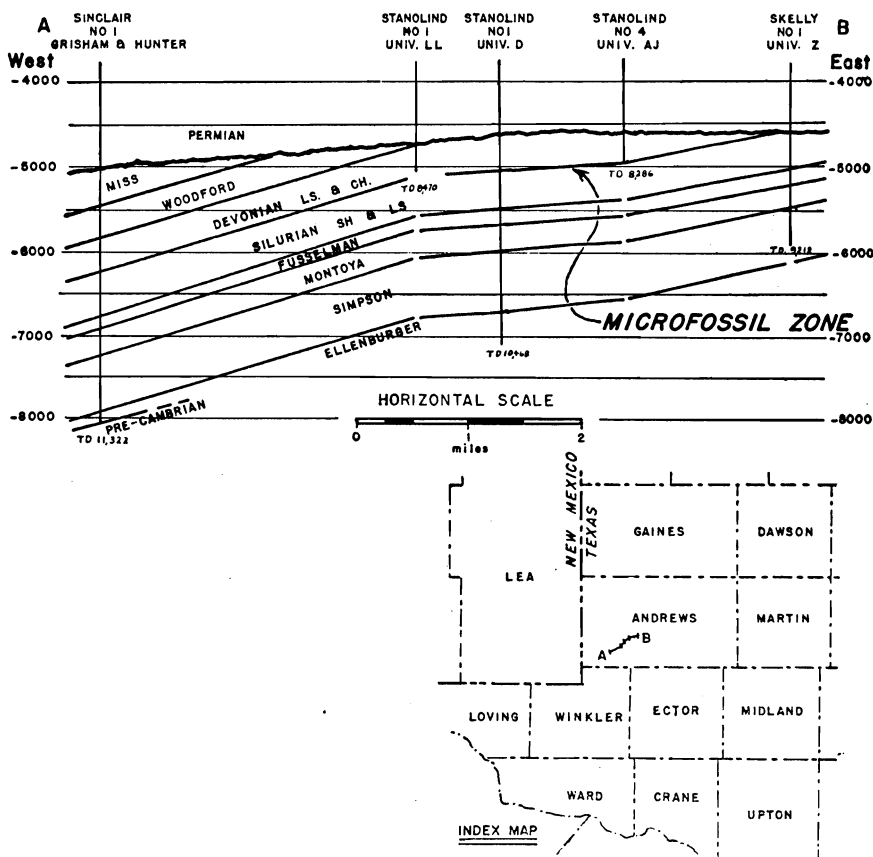


Figure 1. Geographic and stratigraphic setting of the Devonian microfossils.

ably with Peck's (1934, plate 12, figures 1-3) illustrations of internal molds in all respects except size: Peck's specimens are approximately three times as large. After examining the Three-Bar specimens, Peck wrote that they "do look like the internal molds of trochiliscids that I figured some time ago. I compared your material with the figured material and the resemblance except for size is remarkably close. The material I figured was from the Bushberg and the Devonian trochiliscids are much smaller. The size differential should not mean much. My means of identification of the material I figured was association and inference. The material you sent is unquestionably organic and I would not know where else to place it. At the same time, I could not possibly prove the material to be internal molds of trochiliscids" (personal communication, January 3, 1950).

In summary, the data and interpretations made above show this assemblage of microfossils to be a stratigraphic admixture of Devonian age. Silurian or Ordovician simple cone conodonts

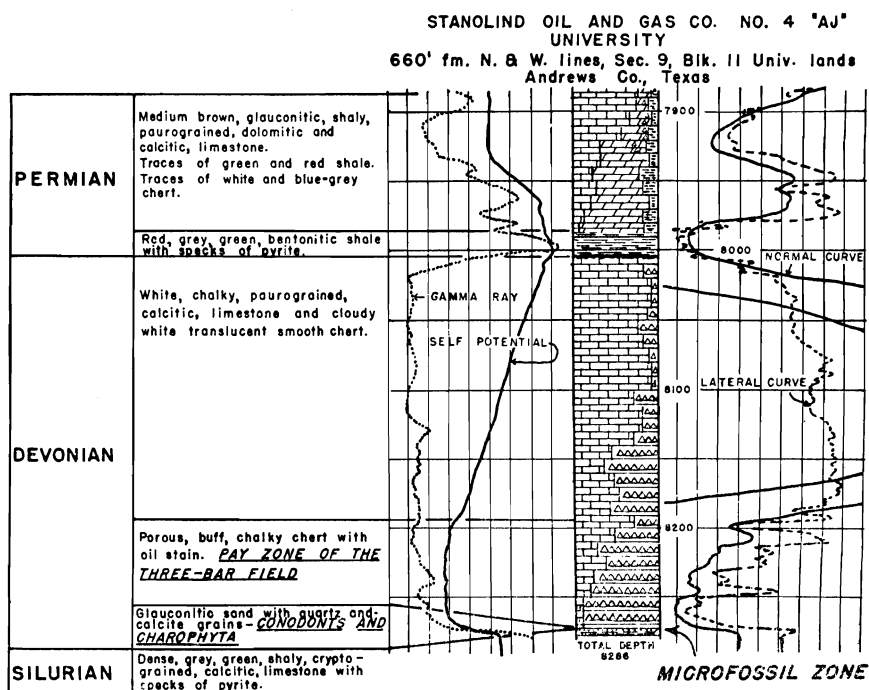


Figure 2. Detail of Stanolind well No. 4 (see fig. 1).

have been reworked and deposited in a basal sandstone containing Devonian conodonts and trochiliscids. Correlations with other faunas and floras in the United States indicate an age of Middle and Upper Devonian. However, a Lower Devonian age cannot be ruled out because of the lack of knowledge concerning Lower Devonian conodonts and trochiliscids. In any case, the interpretation given is evidence for assigning a Devonian age to the Three-Bar pay zone, which is immediately above the fossiliferous sandstone.

Acknowledgment is made to The Stanolind Oil and Gas Company for permission to publish the report; to R. E. Peck for examining the trochiliscids and for permission to quote his personal communication; to Mrs. Alberta Early for picking the specimens; and to A. H. Deen, R. K. DeFord, and J. T. Lonsdale for suggestions and criticisms of the manuscript. The photographs of the fossils were made with the financial aid of grant number 276 of the University of Texas Research Institute. The figured specimens are deposited in the paleontological collection of the University of Texas Bureau of Economic Geology.

Explanation of plate 1

All figures magnified 30x

All specimens from the Stanolind Oil and Gas Company's University No. 4 "AJ", southwestern Andrews County, Texas, at depths from 8281 to 8282 feet.

Figures 1 - 7. Questionable internal molds of trochiliscids (Charophyte oogonia). University of Texas Bureau of Economic Geol. No. 19293.

Figures 8 - 13. Unidentified fish teeth or scales. University of Texas Bureau of Economic Geol. No. 19294.

Figures 14 - 15. *Acontiodus* sp. University of Texas Bureau of Economic Geol. Nos. 19295, 19296.

Figures 16, 17, 21. *Oistodus* sp. University of Texas Bureau of Economic Geol. Nos. 19297, 19298, 19299.

Figures 18 - 20. *Cordylodus* sp. University of Texas Bureau of Economic Geol. Nos. 19300, 19301, 19302.

Figures 22 - 28, 31, 33. *Icriodus* sp. University of Texas Bureau of Economic Geol. Nos. 19303 to 19311.

Figures 29, 30, 32, 34, 35. *Icriodus expansus* Branson and Mehl, University of Texas Bureau of Economic Geol. Nos. 19312 to 19316.



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REFERENCES

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