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## Iowa Devonian Ammonoids

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IOWA DEVONIAN AMMONOIDS

A. K. MILLER

Goniatites are rare in the Devonian strata of Iowa, but a few have been found in the Independence, the Cedar Valley, and the Lime Creek formations. In view of the superiority of ammonoids for purposes of detailed correlation, and because of the uncertainty that exists in regard to the exact age of some of the Devonian beds of Iowa, it seemed to me that a summary of our present knowledge of Iowa Devonian ammonoids should be compiled and made readily available. It is hoped that this summary will help, either directly or indirectly, with some of the stratigraphic problems that are now pending, and that, in addition, it will stimulate Iowa geologists to look for more and better preserved goniatites in our Devonian rocks.

The oldest goniatites that have been found in Iowa came from beds near Brandon and Amana which Dr. M. A. Stainbrook regards as part of the Independence formation. Near Brandon Dr. Stainbrook obtained a single small specimen which is truly unique for it is the only representative of the genus *Ponticeras* known from America. That genus is not rare in central Europe where it is confined stratigraphically to the lower portion of the Upper Devonian, the so-called "*Manticoceras*-Stufe" or "Oberdevonstufe I." I have coined the name *Ponticeras stainbrookii* [nomen nudum] for the Iowa form. Near Amana Mr. H. H. Belanski found a single representative of the genus *Tornoceras*, and both Dr. Stainbrook and Mr. Belanski have obtained representatives of the genus *Manticoceras* at the same locality. None of these specimens is very well preserved, and it is hardly possible to identify any of them specifically. Still, insofar as I can tell, the former is probably referable to *Tornoceras* (*Tornoceras*) *uniangulare* (Conrad) and the latter to *Manticoceras regulare* Fenton and Fenton. *T. uniangulare* has a long range within the Devonian system, but *M. regulare* has been found previously in only the Lime Creek formation of Iowa — similar forms, however, occur all over the world in the lower portion of the Upper Devonian, to which horizon the genus is restricted.

The Cedar Valley formation has yielded two goniatites. Both

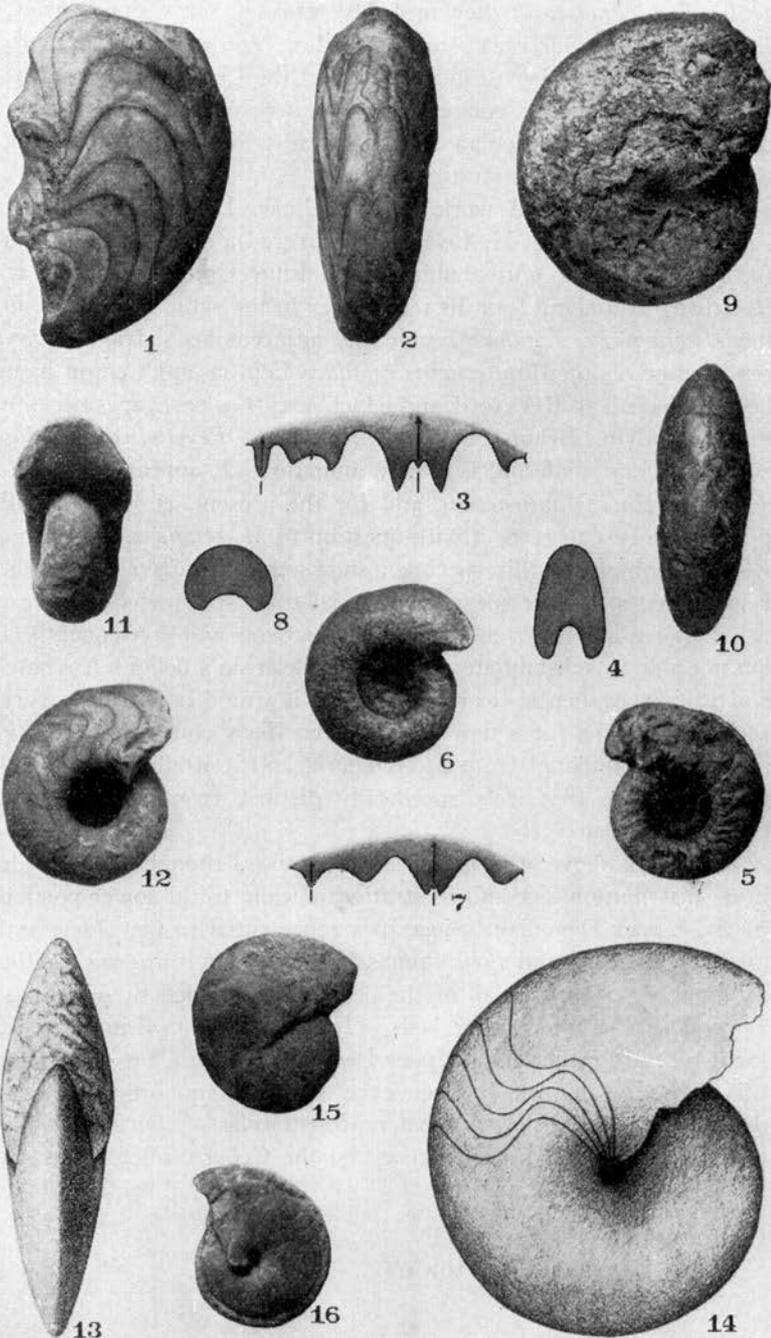
*Note:* Descriptions of the forms indicated by the *nomina nuda* are to be published in a forthcoming monograph on the Devonian ammonoids of America.

EXPLANATION OF PLATE I

*Iowa Devonian Ammonoids*

- Figs. 1-4—*Manticoceras regulare* Fenton and Fenton. Lateral and ventral views,  $\times 2$ , of a small and incomplete but well preserved topotype from the *Manticoceras regulare* zonule of the Lime Creek formation at Rockford, Iowa; and a diagrammatic representation of a suture and a diagrammatic cross section of the conch, both  $\times 2$ , of the same specimen.
- Figs. 5-8—*Ponticeras stainbrooki* Miller [nomen nudum]. Two lateral views, a diagrammatic representation of an adoral suture, and a diagrammatic cross section of the conch of the holotype, all  $\times 5$ ; from the Independence formation at Brandon, Iowa.
- Figs. 9, 10—*Tornoceras (Tornoceras) iowaense* Miller [nomen nudum]? Lateral and ventral views,  $\times 1$ , of a worn specimen from the “*macfarlanii* faunule of the *A. independensis* zone” in the Cedar Valley formation of eastern Iowa.
- Figs. 11, 12—*Manticoceras regulare* Fenton and Fenton? Ventral and lateral views,  $\times 4$ , of a small, immature specimen from the *Ptyctodus calceolus* zonule of the Lime Creek formation at Rockford, Iowa.
- Figs. 13-15—*Tornoceras (Tornoceras) iowaense* Miller [nomen nudum]. Ventral and lateral views (restorations),  $\times 1$ , and an unretouched photograph,  $\times \frac{1}{2}$ , of the holotype; from the Cedar Valley formation in Otter Creek Township, Linn County, Iowa.
- Fig. 16—*Tornoceras (Tornoceras) uniangulare* (Conrad)? Lateral view,  $\times 4$ , of a small crushed specimen from the Independence formation near Amana, Iowa.

Miller: Iowa Devonian Ammonoids  
Plate I.



are rather poorly preserved but they are clearly referable to the genus *Tornoceras* and they probably represent only one species, *Tornoceras (Tornoceras) iowaense* Miller [nomen nudum]. Since this species has not been found outside of the Cedar Valley formation, and since similar, congeneric forms are known to have a long range within the Devonian system, these two specimens are not particularly significant stratigraphically.

During his detailed work on the Upper Devonian strata of Iowa, the late Mr. C. H. Belanski discovered a single goniatite in the *Ptyctodus calceolus* zonule of the Lime Creek formation at Rockford, and about 9 or 10 feet higher in the same formation, in the *Manticoceras regulare* zonule and adjacent beds, fragmentary representatives of *Manticoceras regulare* Fenton and Fenton have been collected at Rockford and Hackberry Grove ever since the time of Calvin. Belanski's specimen from the *Ptyctodus calceolus* zonule is very small and is clearly immature. It appears to represent the genus *Manticoceras*, and for the present, at least, it will perhaps be best to refer it with question to *M. regulare*. The label which accompanies this specimen shows that Belanski thought it represented a distinct species, but equal-sized specimens of typical *M. regulare* are not available for comparison and consequently I am not able to substantiate or disprove Belanski's belief. Anyhow, since this specimen is clearly immature, it would not make a very satisfactory type for a new species, even if we could show that it should be eliminated from *M. regulare*, and it would not be possible to prove that it is specifically distinct from all described congeneric forms.

As stated above, the genus *Manticoceras*, though world-wide in its distribution, is confined stratigraphically to the lower portion of the Upper Devonian. Since it is represented in the oldest and in the youngest ammonoid faunas known from Iowa, we can be reasonably certain that all of the beds which yielded these faunas, as well as the intervening beds, (Independence to Lime Creek, inclusive) are rather early Upper Devonian in age. The occurrence of *Ponticeras* in the Independence strongly supports this age-determination, and the fact that representatives of *Tornoceras* are to be found in the Independence and the Cedar Valley is, to say the least, compatible with it.

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