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**Article VII.—NOTES ON SOME JURASSIC FOSSILS FROM
FRANZ JOSEF LAND, BROUGHT BY A MEMBER
OF THE ZIEGLER EXPLORING EXPEDITION.**

By R. P. WHITFIELD.

PLATES XVIII AND XIX.

On October 19 the Museum received a small number of Jurassic fossils from Dr. J. Colin Vaughan, a member of the late Ziegler Northern Exploring Expedition, which he collected at and around Cape Flora, Franz Josef Land, during the years 1904 and 1905 while awaiting their relief ship.

In working these over for incorporation in the Museum catalogue, I find among them representatives of several of the Ammonites described and figured by Messrs. Newton and Teall (Quart. Jour. Geol. Soc. London, Vol. LIII, Dec. 1897, p. 496, pll. 39 and 40).

These authors have identified their specimens with species described by Schlotheim, von Keiserling, and D'Orbigny and have given no new names to them, except a varietal one under Keiserling's *Ammonites ishmæ*.

This is so greatly at variance with the modern method of many palæontologists and other workers in natural history as to make it quite remarkable, for the prevailing practice is to put a new name to everything coming from a new locality, both generic and specific, irrespective of what has been done by previous workers. Still it seems to me that in the present instance the opposite principle has been carried a step too far, for, judging from the specimens in the possession of the Museum, the forms *Am. schefkini* (?), *Am. macrocephalus* var., and *Am. ishmæ* var. *arcticus* are merely representatives of age-stages of one and the same species, and none of them represents the adult form of the Franz Josef Land species, or at any rate of that found abundantly at Cape Flora. The forms cited above represent the quite young; that of a further development; a middle stage, and a more advanced stage (*Am. ishmæ* var. *arcticus*) which still lacks the outer or adult volution.

At the adult stage the final features of the species are attained and the form differs in character from the less advanced stages. In the adult, the outer volution is nearly or quite smooth, without any of the strong corrugations characteristic of middle age or of the young. It has, moreover, a strong marginal or submarginal rib, thickened on the inside, running a little back from the edge of the

aperture across the volution from the umbilicus outward. The final lip is produced in front on the peripheral part of the shell into a thickened rounded lip. The thickened rib just back of the margin of the aperture, as shown on our most perfect specimen, is fully half an inch broad at the umbilicus and extends to the periphery of the volution, with a rather strong forward flexure, amounting to about one fourth of the circle of the volution. This corresponds well to the flexure of the corrugations as seen on the quite young shells, although the flexure is much less, as seen faintly at the inner end of the body whorl, where the ribs are indistinctly marked. On another specimen of the outer volution, the marginal thickened rib is still more inclined forward, while on the inside of the same fragment, which represents the outer half of the previous volution, the ridges extend almost directly across the shell from the umbilicus to the dorsum and show the bifurcation and interstitial addition, just as they do in the most strongly corrugated middle-aged specimen (= *Am. ishmæ* var. *arcticus*).

To this adult form of the Franz Josef Land type I propose to restrict the varietal name *arcticus* and apply it to the whole species irrespective of the other names applied to those of the younger or immature stages of growth.

Since writing the above my attention has been called to a later article than Messrs. Newton and Teall's, above referred to, by J. F. Pompeckj in the Norwegian North Pole Expedition, 1893-1896, where the division into species and genera is carried still further than by Newton and Teall, making seven species and referring them to three distinct genera. From the study of their material as represented by the figures given on their Plate II, I can see no valid reason for considering them other than as individual differences of one and the same species. Consequently I must still hold to the opinion above expressed and conclude that they ought to be all placed as one under the name *Cadoceras arcticus*. I am thoroughly convinced that it is a perversion of the principle underlying the science of palæontology and natural history to multiply specific names to so great an extent.

Besides the Ammonites there are a few plants on a blackish shale containing several impressions of pine needles, pine seeds with the impression of the wing, one of *Ginkgo reiniformis* as identified in the work above cited, two or three *Ginkgo sibirica*, probably one *Ginkgo polaris* with short divisions looking very much like a Coal Measure *Sphenophyllum*, one *Podozamites* (?), some fragments of

coniferous wood, a fragment of an *Equisetum*, and a single pinnule of a fern.

There are also several mollusks, one of which is identical with Pompeckj's *Macrodon schonrouski*; another may be identical with his *Pseudomonotis jacksoni*, but which I had considered as a species of *Halobia*; a pectenoid shell, possibly a *Camptonectes*, and probably equal to his *Pecten lindstromi*; *Eumicrotis curta* Hall, a nuculoid shell; a small *Yoldia*; an *Edmondia* (?); one small *Amberleya capatanaca* (Munst.) as identified by Pompeckj (p. 69, *ibid.*); several examples probably identical with *Leda*, sp. *nuda* (Von Keys.) Pomp., but which I had supposed represented the aptychus of an Ammonite. Also, one small rhynchonelloid Brachiopod, and a number of broken specimens of *Belemnites*, which I had considered as *B. densus* Meek.

Among the shells mentioned, there is one brachiopod (*Rhynchonella*?), one *Yoldia*, a *Nucula*, an *Arca*, and what I suppose to be *Camptonectes*, also one *Eumicrotis* and a *Turbo*(?).

There are also several fragments of *Belemnites* like those figured by Messrs. Newton and Teall, but which I should have identified with *B. densus* Meek, rather than with *B. panderi* D'Orb., and some four or five objects which I take to be the opercula or aptychi of Ammonites, and most likely belonging to *Ammonites arcticus* as herein recognized. There is also a rather imperfect specimen of a new form of bivalve crustacean somewhat allied to *Ceratiocaris* and its congeners.

Among many of the Ammonites of Mesozoic age, but more particularly among those of the more aberrant genera such as *Helicoceras* and *Heteroceras*, we know of a number that show the most extravagant development of individual differences in their old-age characters, for instance, *Heteroceras stevensoni*, of the Fox Hills group and Fort Pierre beds, as I have shown in the Museum 'Bulletin,' Vol. XVI, pp. 67-72, Pl. XXIII-XXVII, and also among those of the Japanese Cretaceous rocks as shown by H. Yabe in the 'Journal' of the Imperial University of Tokio, Japan, Vol. XX, Article 2.

Among the true forms of Ammonites, variations are not so marked, and yet among those of the Black Hills of Dakota Jurassic, as seen in the Museum collection, in a series of *Am. cordiformis* Meek and Hayden, there is noticed a much greater change between the very young, the middle-aged, and the adult individual than is shown among the specimens from Franz Josef Land. In young specimens the shell is comparatively thin through the umbilical region and the ridges flexuose and very distinct, features which increase or are

maintained during early and middle life, when the back is strongly serrate with deeply cut teeth, while in the adult form all of these features are lost and the outer volution becomes smooth and the dorsum is only distantly irregularly nodose. The specimen measures $7\frac{3}{4}$ inches in its longest diameter and is fully 4 inches through the umbilical diameter, or more than half of the opposite diameter.

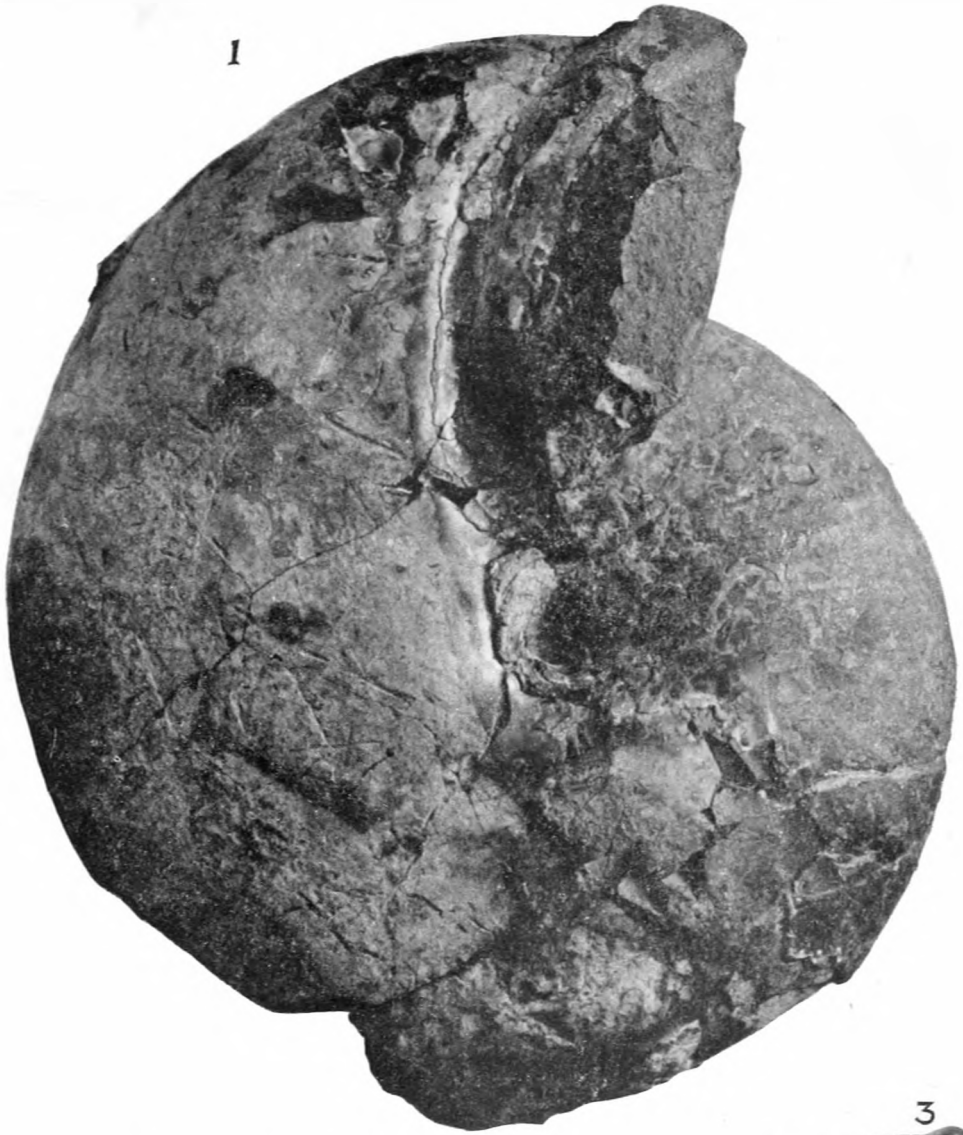
EXPLANATION OF PLATE XVIII.

- FIG. 1.—The adult form here described, for which the name *Ammonites* (*Cadoceras*) *arcticus* is suggested. The imprint of the thickened marginal ridge is seen passing upward from the small umbilicus to the thickened lip-like extension in front, on the top of the figure.
- FIG. 2.—The form given by Messrs. Newton and Teall as *A.* (*Macrocephalites*) *ishmæ* var. *arcticus*, and we now suggest the use of this varietal name for the species as found at this locality.

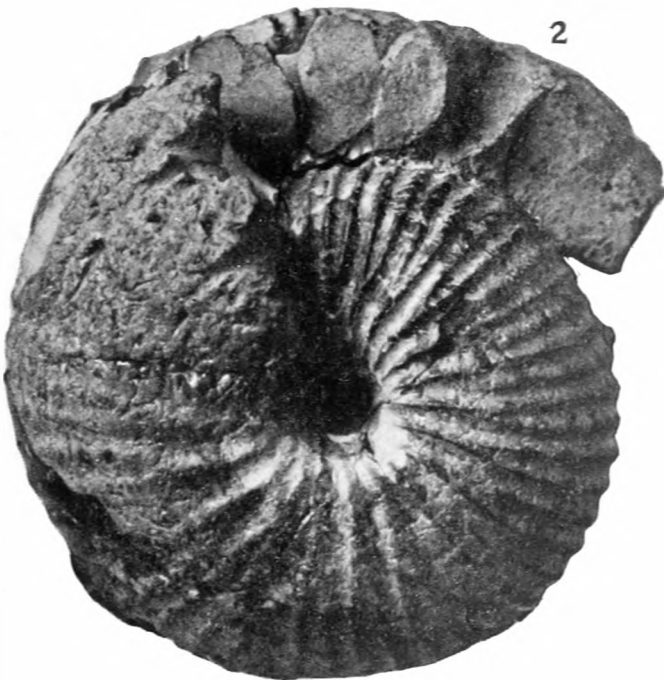
EXPLANATION OF PLATE XIX.

- FIGS. 1. and 2.—The form referred by Messrs. Newton and Teall to *Am.* (*Cadoceras*) *zechfkini* D'Orb., a species from Russia.
- FIG. 3.—A specimen representing the form referred to *Am.* (*Macrocephalites*) *macrocephalus* Schlotheim, a very variable form and quite cosmopolitan in its distribution in Jurassic rocks.
- FIG. 4.—A fragment of the outer adult volution of another specimen similar to that of Fig. 1 on Plate XVIII, showing the smooth surface of the adult and the trace of the thickened rib near the aperture.
- FIG. 5.—View of an impression in wax from the under-side of the specimen shown in Fig. 4, to show the corrugations of the inner volution, presenting the characters of *Amm.* (*Cadoceras*) *ishmæ* var. *arcticus* as given by Messrs. Newton & Teall, *loc. cit.* = *M. kættiltzi* Pompeckj.
- FIGS. 6. and 7.—Views of two specimens of the Belemnites which Messrs. Newton and Teall referred to *B. panderi* of D'Orb., and by J. F. Pompeckj to *B. subextensus* Nik. (= *panderi* D'Orb.), *B. beyrichi* Opp., and *B. sp. undet*; Fig. 7, a specimen split longitudinally and weathered, showing the prevailing features of *B. densus* Meek and Hayden.

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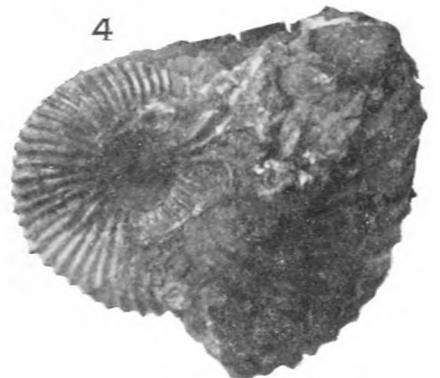
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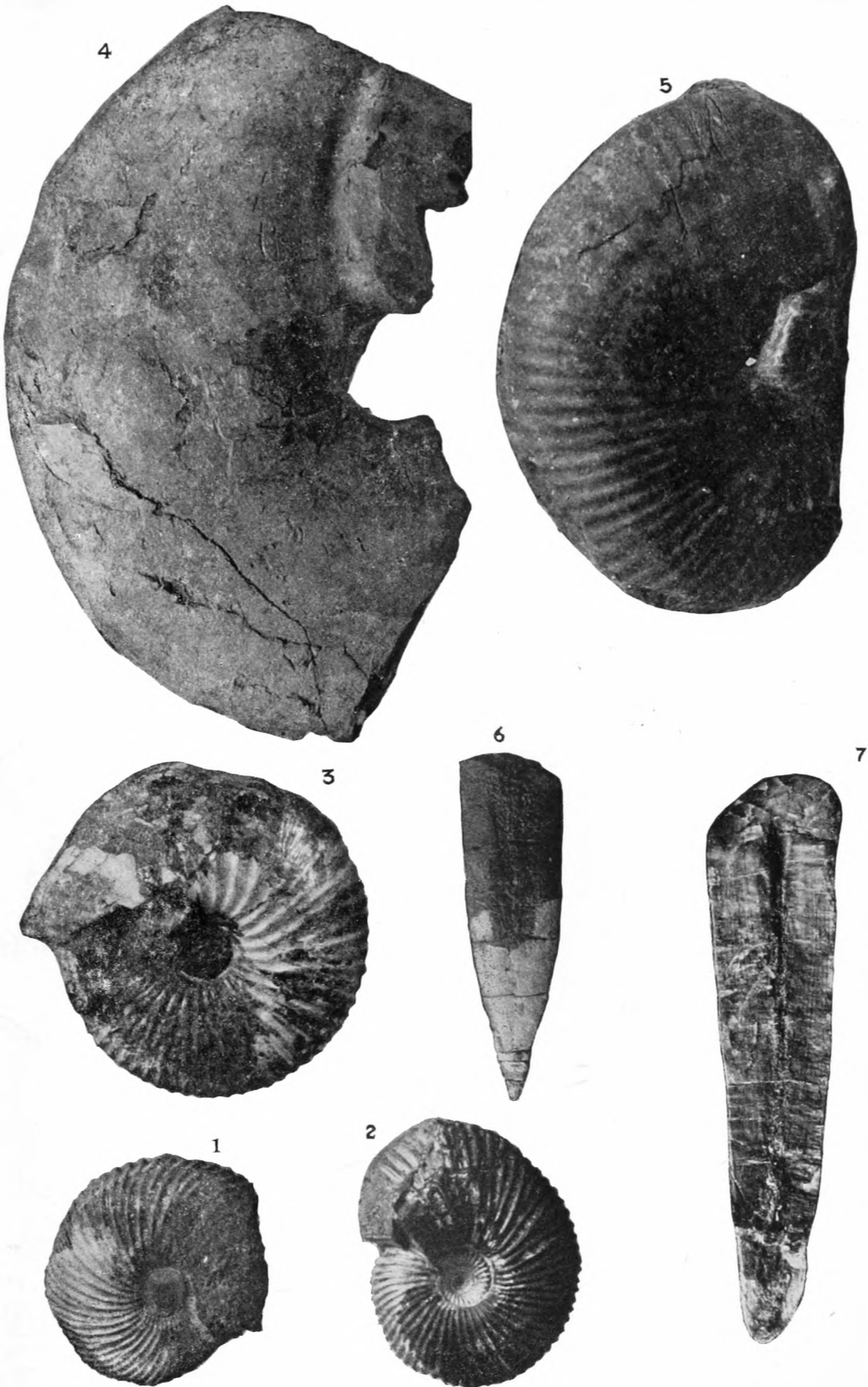
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JURASSIC FOSSILS FROM FRANZ JOSEF LAND.



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