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A TRIASSIC AMMONITE FROM THE HINDUBAGH REGION, BALUCHISTAN, WEST PAKISTAN

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Ammonites are extremely rare in the thick development of Triassic strata between Quetta and Hindubagh in West Pakistan. Only five specimens, mostly very poorly preserved, have been reported to date. Because of their rarity the documentation of one additional specimen of rather good preservation is warranted.

The first record of Triassic ammonites from this region of Baluchistan was by Mojsisovics (1896, p. 611; 1899, p. 44) who described a single specimen, collected by C. L. Griesbach from a loose block, 7 miles south of Hindubagh. This specimen was described as *Didymites afghanicus* Mojsisovics (1896; 1899, pl. 20, fig. 9) and assigned a Norian age. Vredenburg (1904), on the basis of surveys carried out in the summer of 1901, contributed some regional, stratigraphic, and paleontological data on these Triassic formations. This author reported the presence of *Monotis* cf. *salinaria* in fair abundance at a few horizons and localities and illustrated one specimen. In addition, he illustrated an ammonite-*Halorites* sp. The specimen was not found in place but from local conditions Vredenburg concluded that it had not been transported very far. These specimens plus others collected by Vredenburg were submitted to C. Diener who published his results in 1906. In this small collection Diener (1906) was able to recognize the following forms:

Monotis salinaria Schlotheim

Halorites sp. ind. aff. *subcatenato* Mojsisovics

Celtites sp. ind. (group of ? *acuteplicati*)

Paratibetites sp. ind. ex aff. *tornquisti* Mojsisovics

Dittmarites or *Distichites* ? sp. ind.

Rhacophyllites vredenburgi Diener

The generally poor state of preservation of the specimens available to Diener is well reflected in the uncertainty in the identifications. Of these specimens only *Monotis salinaria* and *Halorites* sp. ind. aff. *subcatenato* were obtained from the spot where they probably weathered out. All the rest of the specimens were picked up amongst transported boulders from the beds of rivers within the Triassic outcrop area. On the basis of this scanty data, both Vredenburg and Diener concluded that the strata enclosing these fossils are of Norian age. Additional geological observations on the Triassic formations of the Quetta-Hindubagh area have been made by Gee (in Heron, 1939, p. 26-27), by Williams (1959), and by the Colombo Plan Project (1961), but in these reports there is little additional paleontological data.

I have had the opportunity to spend a few days in the region between Quetta and Hindubagh examining these Triassic formations but was not successful in finding any fossils. Mr. S. A. Bilgrami entrusted to the writer a specimen found in a stream bed near a mine of the Pakistan Chrome Ltd., two miles east of Gwal Railway Station. This specimen is fairly well preserved and can be assigned with confidence to *Arietoceltites arietitoides* Diener, a species first described from the *Tropites* limestone exposed at Kalapani, Byans, in the Himalayas. This new specimen thus provides an additional link in the correlation of these Triassic formations of Baluchistan with the much better documented Himalayan sequence. The *Tropites* limestone of Byans has yielded 168 species of invertebrates of which 155 are ammonites. The fauna as a whole shows very strong affinities to the Upper Triassic faunas of the Mediterranean region. All of the fossil species were collected from a three foot bed of limestone; of special interest is the mixture in this bed of typical Carnian and Norian ammonite species. Since *Arietoceltites arietitoides* was a unique species previously known only in Byans, and its presence in a mixed fauna at that, it does not help in refining the age determination of the Baluchistan Triassic formations. Diener's (1912, p. 150) final words on the age of these Triassic rocks were that they were Norian in age.

SYSTEMATIC DESCRIPTION

Family TROPICELTITIDAE Spath, 1951

Genus ARIETOCELTITES Diener, 1916

ARIETOCELTITES ARIETITOIDES (Diener)

Figures 1a, b

Tropiceltites arietitoides Diener, 1906, p. 156, pl. 3, fig. 12; Diener, 1912, p. 125; Diener, 1916, p. 101; Spath, 1951, p. 94; Kummel, *in* Arkell, 1957, p. L171, fig. 201, 4.

This species is represented by a single specimen of 56.5 mm in diameter, 13.1 mm for the height of the adoral whorl, 13.8 mm for the width, and 35 mm for the diameter of the umbilicus. In degree of involution and general proportion, this specimen is very much like the type specimen. There are slight differences in ornamentation: in the Baluchistan specimen the ribs are rusiradiate in the adoral 1.5 volutions, whereas in the Byans specimen the ribs are more radial. In both specimens the ribs turn strongly forward on approaching the marginal furrows aligning the median keel. I do not believe that these differences in ornamentation are of any taxonomic significance. The Byans material available to Diener (1906) consisted of the type specimen plus a few fragments. With this one additional specimen there is insufficient data available to evaluate the range of variability in these features. However, on the basis of experience with populations of comparable forms, one should expect a range of variability that would include that expressed by these two specimens. The suture was only partially exposed on Diener's type specimen and is not preserved in the specimen recorded here.

Occurrence. — From stream bed near mine of Pakistan Chrome Mines Ltd., two miles east of railway station at Gwal, presumably from Alozai group, between Quetta and Hindubagh, West Pakistan.

Repository. — Geological Survey of Pakistan, Quetta, West Pakistan.

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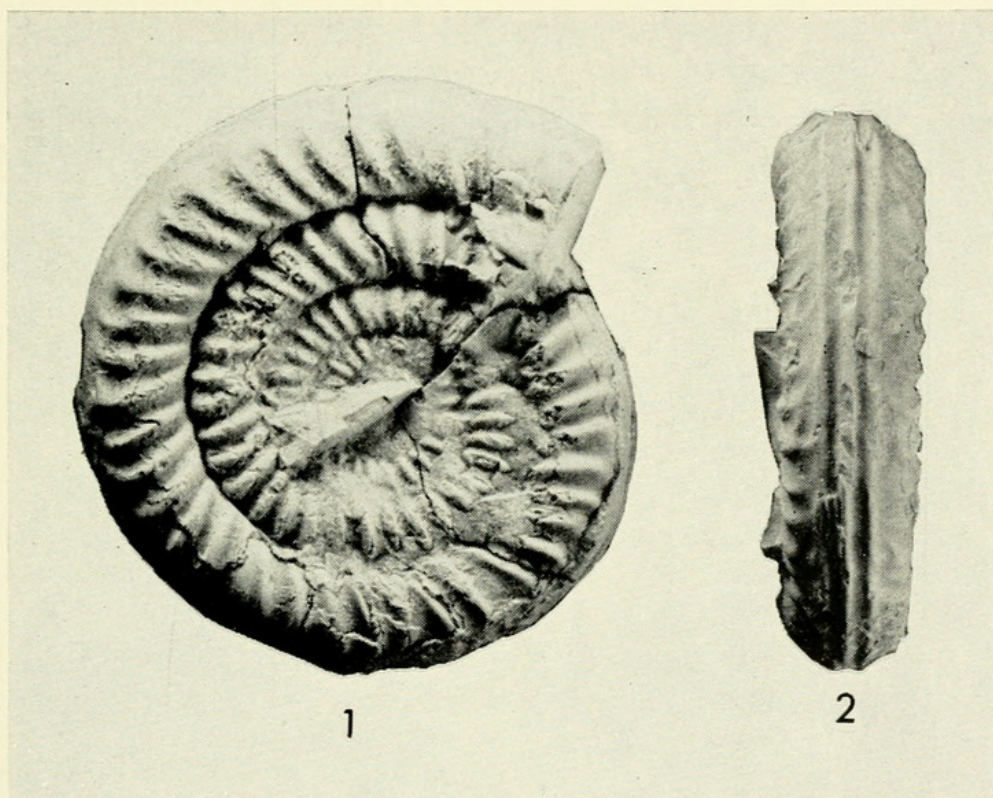


Figure 1. Side and ventral view of *Arietocellites arietitoides* (Diener) from Triassic formation near Hindubagh, West Pakistan. $\times 1$.



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