Volume, 54(1)

JOURNAL
OF THE
PALAEONTOLOGICAL SOCIETY OF INDIA

THE PALAEONTOLOGICAL SOCIETY OF INDIA
CENTRE OF ADVANCED STUDY IN GEOLOGY
UNIVERSITY OF LUCKNOW
LUCKNOW
Published June 30, 2009

Price: Inland: Rs. 1500.00
Foreign: U.S. $ 50.00

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Journal of the Palaeontological Society of India
Volume, 54(1), June 2009: 1-18

ISSN 0522-9630

A NEW LATE TITHONIAN AMMONITE ASSEMBLAGE FROM KUTCH, WESTERN INDIA

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ABSTRACT

Kutch was previously believed to be impoverished in the Late Jurassic ammonite diversity. Recent intensive sampling yielded several new records of genera of different taxonomic affinities. Results of this research are presented here, based on the description of *Corongoceras* cf. *lotenoense* , *C.* sp. A; *Himalayites sp.*; *Durangites* cf. *heilprini*, *D.* sp. A and *D.* sp. B; *Tithopeltoceras lakhaparense*, *Blanfordiceras* sp. A and *Pterolytoceras sutile*. Additionally, we also present a systematic revision of *Micracanthoceras* Spath,1925, *Aulacosphinctes* Uhlig, 1910 and *Umiaites* Spath, 1931. All previously described Kutch species of *Micracanthoceras* have been found to belong to the type species, *M. micrcanthus*. *Umiaites*. Previously known as endemic only to Kutch, it appears to be the macroconch of the better known *Proniceras* Burckhardt, 1919.

Kutch thus, appears to be taxonomically more diverse than previously assumed during the Late Tithonian.

Keywords: Late Jurassic, Tithonian, Ammonite, Kutch, Palaeobiogeography

INTRODUCTION

The Jurassic-Cretaceous transition witnessed major sea-level changes and ammonite turnovers. Ammonite endemism reached its peak during the latest Jurassic, which made interprovincial biostratigraphic correlation difficult. Any new ammonite assemblage described may be important in understanding the Late Tithonian marine scenario. Study of the diversity and biogeographic distribution of the Late Tithonian ammonites is also important because many of them became extinct at the Jurassic-Creataceous boundary (for details see Bardhan *et al.*, 2007), which marks arguably a mass extinction event (Raup and Sepkoski, 1986, but for opposite view see Hallam, 1986; Hallam and Wignall, 1997). Systematic revision and palaeobiogeographical studies of the Late Tithonian ammonites of different provinces have recently been carried out (Fatmi, 1972; Leanza and Olóriz, 1987; Riccardi, 1991; Enay and Cariou, 1997; Cecca, 1999; Olóriz *et al.*, 2000; Yin and Enay, 2004). During the Late Jurassic, major continental shelves of the world experienced fluctuating sea levels (Hallam, 1984) and many marine platforms and basins including Kutch were punctuated by sharp regressive phases (Haq *et al.*, 1987). These local transgressive-regressive couplets were controlled by tectonics. Thus, when India, during the Late Jurassic experienced steep fall in sea level due to regression coupled with the regional tectonics (Biswas, 1991), in Madagascar open marine conditions predominated as suggested by the more complete ammonite sequences (Collignon, 1960; Cecca, 1999). Many of the Tithonian faunal provinces show marked endemism (Cecca, 1999). During eustatic high stands, increased faunal exchanges help in global biostratigraphic correlation (Riccardi, 1991). A latest Tithonian global flooding (Haq *et al.*, 1988; Bardhan *et al.*, 1989) enabled many ammonites to achieve near circum-global distributions.

The present paper considers ammonites of several time-diagnostic genera of the latest Tithonian sampled from a single bed, which were hitherto unknown from the Kutch basin. Their description will be useful for biostratigraphic correlation of the Kutch Tithonian faunal assemblage and biogeographic analysis. They are *Durangites* Burckhardt, 1912; *Corongoceras* Spath, 1925; *Himalayites* Uhlig, 1910; *Tithopeltoceras* Arkell, 1953 belonging to the subfamily Himalayaitinae and *Blanfordiceras* Cossman, 1907 of the Berriasellinae and *Pterolytoceras* Spath, 1927 of the Lytoceratinae. *Durangites* is represented by *D.* cf. *heilprini* Tavera, 1985, *D.* sp. A. and *D.* sp. B; *Corongoceras* by *C.* cf. *lotenoense* Haupt, 1907 and *C.* sp. A; *Himalayites* by *H.* sp.; *Tithopeltoceras* by an endemic *T. lakhaparense* (Shome, Bardhan and De, 2005). *Blanfordiceras* sp. A a fragmentary specimen. Thus it appears that some of the species are endemic into the Indo-Madagascan Province while others have wide biogeographic distribution.

Most previously described species by Spath (1927-33) lack adequate stratigraphic information. We have surveyed all known geological sections that yield Tithonian horizons. Our results indicate that *Micracanthoceras*, *Aulacosphinctes* and *Umiaites* Spath, 1931 have locally long stratigraphic ranges and older collections were made only from the lower assemblage, in association with *Virgatosphinctes* gr. *denseplicatus*. These genera range up into the latest Tithonian, which locally consists of a condensed horizon.

Pterolytoceras Spath, 1927 belongs to the leiostracans, which are believed to be oceanic and cosmopolitan (Westermann, 1990). However, *Pterolytoceras* could have been endemic into the Indo-Madagascan Province (Shome and Roy, 2006).

STRATIGRAPHIC FRAMEWORK

Kutch is famous over the world for its Jurassic ammonites, especially of the Bathonian-Callovian interval. The marine beds of Kutch range in age from the Bajocian to Aptian and were deposited in a shallow shelf environment (Biswas, 1977; Fürsich and Oschmann, 1993). The Mesozoic rocks were first described by Wynne (1872). Waagen (1875) subdivided these rocks into four divisions, viz. Patcham, Chari, Katrol and Umia in ascending order. Subsequent stratigraphic revisions have

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