

ANIMAL REMAINS FROM THE BHUBAN FORMATION OF THE LUNGLEI DISTRICT, MIZORAM

B.D. MANDAOKAR¹, RAJEEV UPADHYAY² and R.C. MEHROTRA¹

¹Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow - 226 007

²Department of Geology, Kumaun University, Nainital - 263 002, Uttaranchal

Email: rcmethrotra@yahoo.com

This note reports the occurrence of an annelid and a few molluscan fossils from the upper Bhuban Formation of a new fossil locality Tlabung, Lunglei District, Mizoram. Their presence indicates low intertidal to very shallow marine conditions in the region during the period of deposition.

Introduction

The general stratigraphy of Mizoram, a state lying in the easternmost part of India, is given by Karunakaran (1974) and Ganju (1975). Three groups, viz., Barail (Oligocene), Surma (upper Oligocene to middle Miocene) and Tipam (late Miocene to early Pliocene) are present in the region. The Surma Group is further divided into two formations, namely Bhuban and Bokabil, the former again subdivided into lower, middle and upper units. The main rock types in the region are sandstones, shales, mudstones and their

admixture in various proportions. The contact between these stratigraphic units are transitional in nature (Table 1).

In order to enrich the record of flora and fauna of Mizoram, a field trip was planned by one of us (BDM) to collect the plant and animal remains from various Tertiary exposures of the state. Many micro- and mega-remains were collected from there. A coral and a few foraminifers of marine origin have already been reported from there by Jauhri et al. (2003), while the study of the rest of the forms are in progress. In the present communication, poorly preserved internal moulds of four molluscan remains and an annelid form are being reported from the fossil locality Tlabung (23°02' N; 92°28' E), Lunglei District, Mizoram. The location of the fossil locality, along with the litholog has been depicted in Fig.1. Tiwari and Kachhara (2003) have confirmed the presence of the upper Bhuban Formation in the Lunglei District of Mizoram. The age of this formation

Table 1. Generalised scheme of the stratigraphic succession in Mizoram (after Karunakaran, 1974; Ganju, 1975)

Age	Group	Subgroup	Formation	Thickness (m)	Generalised Lithology
Recent Alluvium					Silt, clay and gravel
-----Unconformity-----					
Early Pliocene - Late Miocene	Tipam			+900	Friable sandstones with occasional clay bands
-----Conformable and transitional contact-----					
		Bokabil		+950	Shales with siltstones and sandstones
					-----Conformable and transitional contact-----
Miocene to Upper Oligocene	S U R M A		Upper Bhuban	+1100	Arenaceous with sandstones, shales and siltstones
					-----Conformable and transitional contact-----
			Middle Bhuban	+3000	Argillaceous with shales, siltstones
					-----Conformable and transitional contact-----
			Lower Bhuban	+900	Arenaceous with sandstones and silty shales
-----Unconformity obliterated by fault-----					
Oligocene	B a r a i l			+3000	Shales, siltstones and sandstones
-----Lower contact not seen-----					

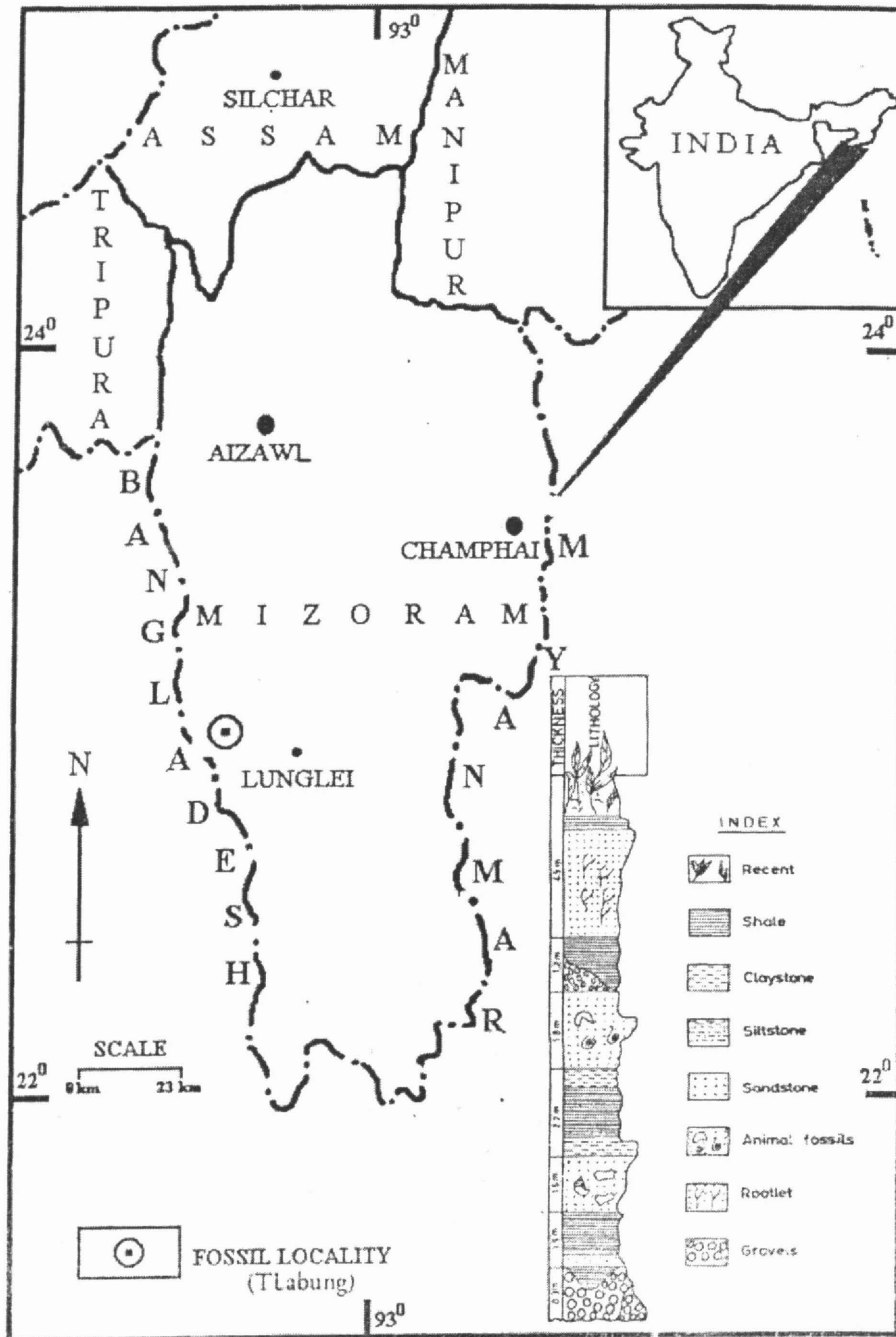


Fig.1. Map of India showing the fossil locality and litholog of the area.

is considered as Aquitanian-Burdigalian (Lower Miocene) on the basis of its fauna of bivalves, gastropods, echinoids and crabs (Tiwari and Kachhara, 2000).

La Touche (1891) first recorded an echinoid fossil, *Schizaster* sp., from the Lunglei area. Since then a number of workers reported many animal remains such as foraminifers, ostracodes, echinoids, crabs, bivalves, gastropods, corals, shark teeth etc. from Mizoram (Das

Gupta, 1977; Tiwari, Barman and Satsangi, 1977; Tiwari and Satsangi, 1988; Tiwari, Mishra and Lyngdoh, 1998; Tiwari and Kachhara, 2000, 2003; Tiwari and Bannikov, 2001; Jauhri et al. 2003).

The preliminary description of the presently recorded invertebrate fossil specimens is based mainly on Moore (1971), Murray (1985), Lorenz and Hubert (1993) and Dayle (1999-2003). The fossil specimens have been deposited in

the museum of the Birbal Sahni Institute of Palaeobotany, Lucknow.

SYSTEMATIC DESCRIPTION

Phylum: Annelida
 Class: Polychaeta
 Order: Sabellida
 Family: Serpulidae
 (Fig.2a)

This is a Serpulid worm tube and looks similar to *Serpula*. The tube is hard, calcareous, appearing segmented and is about 5 mm in diameter and 10 cm in length, if uncoiled. The anterior prostomium is broken, while the posterior pygidium could not be observed due to the coiling of the tube. The base of the tube is attached to the hard substrate made up of coralline algae and the feeding end growing up, presumably above the substrate into the water. *Serpula* represents estuarine as well as coastal environment and can also be found in low intertidal zone. The family has a world wide distribution (except polar seas) in sheltered sites.

Figured Specimen: Museum No. BSIP 39116.

Phylum: Mollusca
 Class: Gastropoda
 Subclass: Prosobranchia
 Order: Mesogastropoda
 Super Family: Cypraeacea
 Family: Cypraeidae
 (Fig.2c)

Body whorl is usually involute and completely enclosed by the final whorl, aperture slit-like and shell oval and smooth, about 2.8 cm in diameter. It appears to be an internal mould of a gastropod of the family Cypraeidae which ranges in age from Upper Cretaceous to Recent. The members of it are mainly herbivores and usually found in the tropical and subtropical shallow marine environment. However, there are some forms which prefer shallow to relatively deep water habitat.

Figured Specimen: Museum No. BSIP 39117

Super Family Cerithiacea
 Family Turritellidae
 (Fig.2b)

Multiwhorled shell with strong spiral ribs, four whorls visible, about 4 cm in length and 2 cm in width; aperture broken but appearing simple. This is an internal mould of

the Turritellid gastropod. It is also marine and can be very common in/on soft substrates. The family is known from the Indo-Pacific and Mediterranean regions and ranges in age from Cretaceous to Recent.

Figured Specimen: Museum No. BSIP 39118.

Class Bivalvia
 Subclass Pteriomorpha
 Order Pterioida
 Super Family Ostreacea
 Family Ostreidae
 (Fig.2f)

Shell is hard, calcareous and the outline is variable and flattish with tooth-like projections at the margins. The shell is about 5 cm in length and ranges 3-3.5 cm in width. It is an oyster which belongs to the bivalve of the family Ostreidae. Taxa of the family range in age from Cretaceous to Recent and are distributed in Southeast Asia, Australia and the Indian Ocean. They are intertidal on rocks and prefer shallow marine relatively high energy environment.

Figured Specimen: Museum No. BSIP 39119.

Subclass Heterodonta
 Order Veneroidea
 Super Family Veneracea
 Family Veneridae
 (Fig.2d, e)

Shells inequilateral, subtrigonal to trigonally suboval with possible central teeth pivotal, exterior smooth and about 5 cm in size. They belong to the internal mould of an infaunal bivalve of the family Veneridae and range in age from Eocene to Recent. They are typical for soft substrates and are burrowing forms that live a few centimetres underneath the surface and colonize the sandy bottom. The family Veneridae has over 400 living species.

Figured Specimens: Museum Nos BSIP 39120 and 39121.

Based on the above taxa and the already known animal remains from Mizoram it could be suggested that an estuarine and low intertidal to shallow marine conditions existed there during the period of deposition. The above interpretation gets further support from the finding of a coastal palm *Nypa* (Mehrotra et al. 2003) and an ichnofossil *Teredolites clavatus* (Mehrotra et al. 2001) from the Upper Bhuban Formation of Mizoram that indicate warm water, shallow marine transgressive phase of deposition of the Surma sediments in the region.

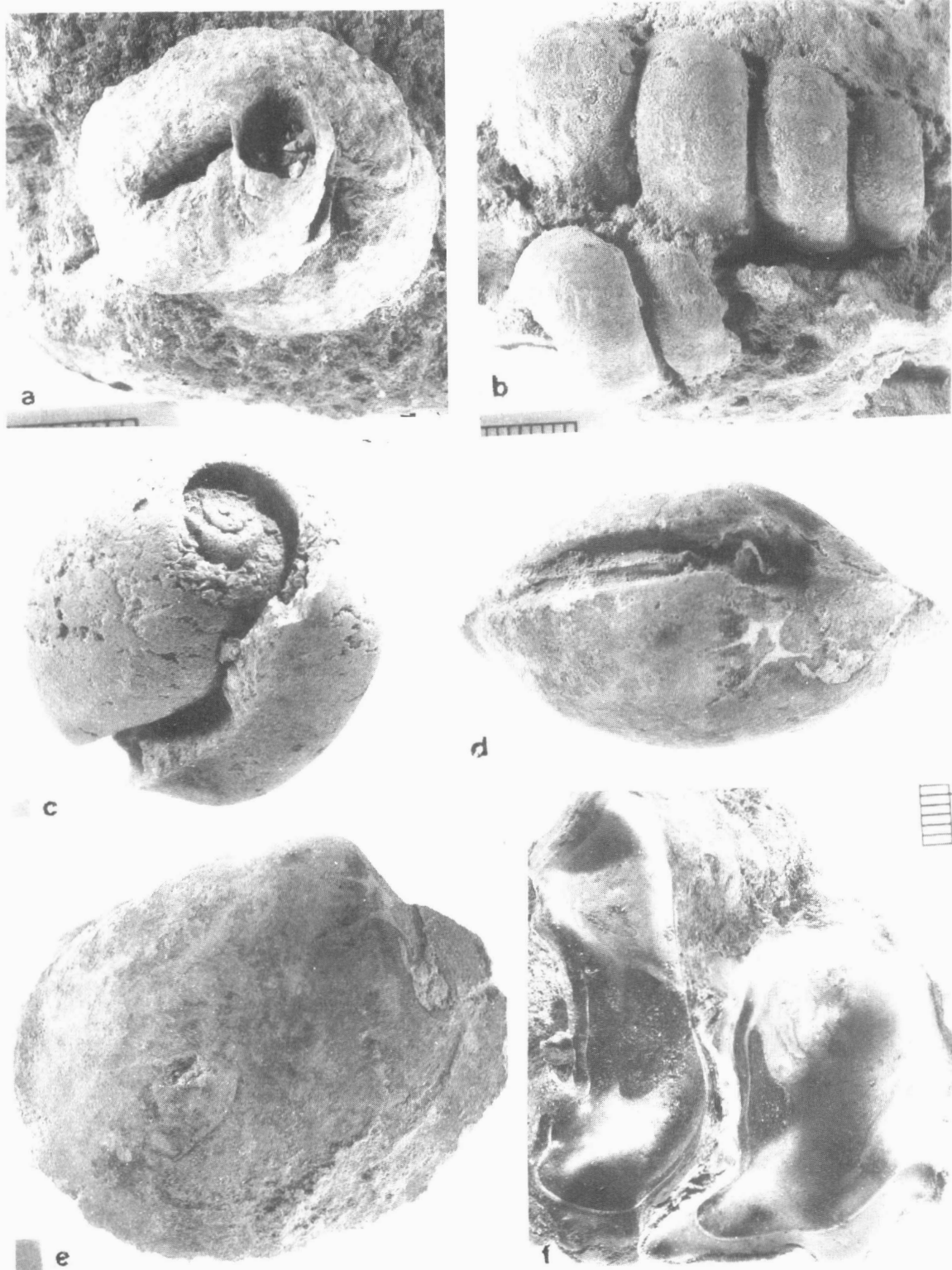


Fig.2. (a) A serpulid worm tube. x 1.3; (b) An internal mould of Turritellid gastropod. x 1.7; (c) An internal mould of a gastropod of possible family Cypræidae. x 1.9; (d) Internal mould of an infaunal bivalve of the family Veneridae. x 1.8; (e) Internal mould of another infaunal bivalve of the same family. x 1.6; (f) An oyster. x 1.5.

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