

A RECORD OF *BACTRYLLIUM* HEER FROM THE LOWER TRIASSIC ROCKS AT KHREW, KASHMIR HIMALAYA

PREM N. AGARWAL

Department of Geology, Kanpur University, at PPN College, Kanpur

Abstract

The paper describes specimens believed to be coprolites and referred to genus *Bactryllium* Heer from the Lower Triassic rocks at Temple Hill, Khrew, Kashmir Himalaya. These bodies of excrement appear close to some pelecypod fecal pellets, and may be inferred as coprolites produced by pelecypods. A fair number of micro-pelecypod shells occur with these coprolites, in association with ostracodes, foraminiferids, microgastropods, microvertebrates and age-diagnostic conodont species.

Introduction

The Temple Hill at Khrew (34°01' : 75°04') in Anantnag District, about 20 km east-southeast of Srinagar, Kashmir Himalaya (Fig. 1) shows development of the uppermost part of the Lower Triassic and the Middle and the Upper Triassic. The author investigated, for microfossils, a sequence comprising the uppermost part of the Lower Triassic and the lower part of the Middle Triassic. This consists of about 50 m thick grey limestone, followed by 35 m thick alternating limestone and shale and 24 m thick nodular limestone. This sequence is involved in an anticlinally folded cliff. The axis of this fold trends NNE-SSW, and its core shows basal beds of the sequence on the wsw face of the temple. Middlemiss (1910) regarded this sequence as Muschelkalk, but Chhabra and Sahni (1981) assigned an uppermost Lower Triassic age on the basis of conodont occurrences.

A diversified microfauna, comprising ostracodes, foraminiferids, micromolluscs, microvertebrates and age-diagnostic conodont species, has been separated with N/10 solution of glacial acetic acid from the limestone samples of the above sequence (see Agarwal and Singh, 1981). In the course of sorting and separating the microfauna from the residue, the author came across a fair occurrence of certain forms that appeared to be fossil excrement or coprolites which are herein tentatively referred to the genus *Bactryllium* Heer.

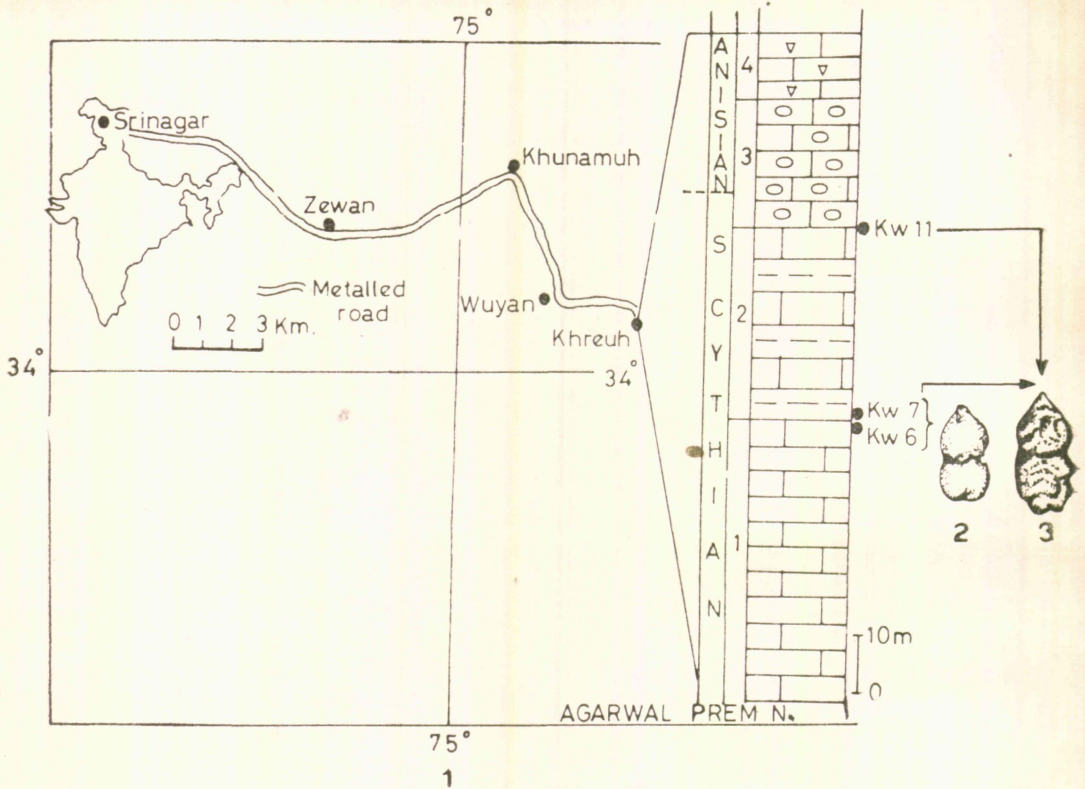
It has earlier been observed (Agarwal, 1979) that at the boundary of the grey limestone and the alternating limestone and shale members, as well as the latter and the overlying nodular limestone member, samples showed a sudden concentration of shells of microgastropods and micropelecypods, together with fish microremains, probably due to a changed palaeoecological environment. A fairly good number of the present specimens were found associated with the above microfauna.

Systematic Palaeontology

Genus *Bactryllium* Heer, 1853

Bactryllium sp. A (Fig. 2)

Material, horizon and locality : A fair number of specimens from the uppermost Lower Triassic (Spathian) at the boundaries of grey limestone and the alternating limestone and shale members, as well as the latter and the overlying Nodular Limestone Member, at Temple Hill, Khrew, 20 km ESE of Srinagar, Kashmir Himalaya.

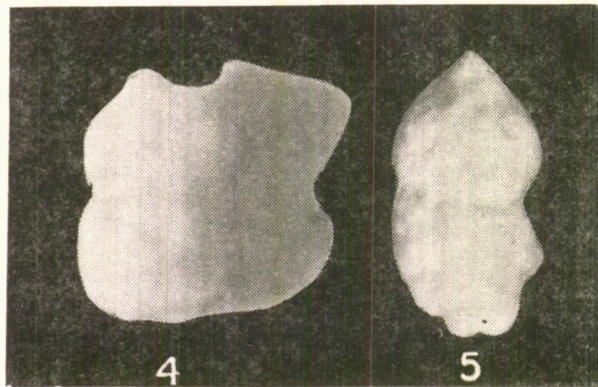


Figures 1 to 3.

Figure 1. 1. Geographical map of a part of Kashmir Valley showing location of Khrew (local : Khreuh) and stratigraphical column there, representing lithological succession of the Scythian and a part of Anisian strata ; 1 - grey limestone, 2 - alternating limestone and shale, 3 - nodular limestone, 4 - earthy limestone

Figure 2. *Bactryllium* sp. A $\times 50$ approximately

Figure 3. *Bactryllium* sp. B $\times 50$ approximately



Figures 4 and 5. Photoprints of *Bactryllium* sp. A and *Bactryllium* sp. B respectively $\times 75$ approximately.

Description : Forms relatively short, measuring 0.27-0.30 mm in length and 0.17-0.21 mm in width, and comprising two globular chambers being separated from each other by a transverse and more or less horizontal furrow. The base of the lower chamber is flatly rounded, but the upper chamber is produced into a short and bluntly pointed neck-like structure. The outer surface appears nearly smooth.

Remarks : The present specimens show some resemblance, in having a smooth external surface, with *Bacryllium elongatum* Gazdzicki, 1974 reported from the Lower Rhaetian of Mt. Maly Kopieniec, the Tatra Mts. (Poland) by Gazdzicki (1977), but the latter forms are longer (2.85-3.52 mm in length), elongate, arcuate or bent in S-like manner, rounded at both ends with smooth external surface.

Bacryllium sp. B (Fig. 3)

Material, horizon and locality : A fair number of specimens from the same horizon and locality as those for *Bacryllium* sp. A given above.

Description : The specimens resemble *Bacryllium* sp. A in shape but differ in being longer and wider (0.41-0.45 mm in length and 0.21-0.24 mm in width). They are also two-chambered with a transverse but slightly oblique furrow separating the two chambers from each other. The lower chamber is flatly rounded but the upper one is produced into a relatively longer and pointed neck-like structure. The outer surface is not smooth.

Remarks : The present specimens show some affinity, in possessing an oblique transverse furrow in between two chambers with their outer surface not smooth, with *Bacryllium ornatum* Gazdzicki, 1974 described from the Lower Rhaetian, Mt. Maly Kopieniec, the Tatra Mts. (Poland) by Gazdzicki (1977). However, the latter forms are only 1.5-2.0 mm in length, cylindrical, commonly straight, rounded at both ends with 8-10 somewhat oblique transverse furrows.

The present specimens have been recovered by acid extraction method which has probably rendered them fragile and the forms possibly represent fragments of relatively longer ones. It is not possible to infer their probable or near possible composition, but they, however, appear to consist of 4-5 chambers which show mainly two types of arrangement and external surface; (i) with more or less smooth external surface, and separated from each other by a transverse and nearly horizontal furrow, herein referred to *Bacryllium* sp. A (Fig. 2) and (ii) wider with external surface not appearing smooth, and separated from each other by a transverse but slightly oblique furrow, herein referred to *Bacryllium* sp. B (Fig. 3). It appears that the lower 2-3 chambers were separated from the main specimens during maceration process. It is also not possible to say whether they were straight or bent forms. They are, therefore, left open to specific nomenclature.

The forms described above somewhat resemble certain fecal pellets of pelecypods (Moore, 1931) and possibly represent fossil excrements of pelecypods. This surmise gets strengthened from the fact that these bodies occur with a fair number of micropelecypod shells.

The smaller size of the present specimens may possibly be due to the fact that they were produced by micropelecypods, which occur in fair number with these bodies, whereas *Bacryllium ornatum* and *B. elongatum* are thought to have been produced by megapelecypod *Megalodon* (Gazdzicki, 1977).

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