no. DHZ1, DHZ2 (ref. 10)). OPX is of iron–magnesium variety (Table 1, Spot nos. 003 and 012) having molecular formula of $Fe_{1.31}Mg_{0.64}Si_{1.98}O_6$ (cf. Table 1, DHZ3; ferrohypersthene[11]). Other minerals present are troilite ($Fe_{1.09}S_{1.13}$), pyrite ($Fe_{0.83}S_{1.66}$), ilmenite ($Fe_{0.97}Ti_{0.99}O_3$) (Tables 2 and 3, ref. 12), magnetite, and a few specs of native iron.

The Pipliya meteorite is an achondritic (stony) meteorite that is a product of extensive chemical differentiation within its parent body. Its basaltic composition and genomictic welded brecciated structure suggests eucritic association (refs 1, 13). The meteorite has a very traumatic history because it was subjected to cosmic fragmentation (welded breccia), atmosphere-entry and ablation-induced fragmentation (plural incandescent sightings) and fragmentation by human beings! But all these events have provided us with a rare cosmic sample for its geological study.

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A piscean egg clutch from the Late Triassic of South Rewa Gondwana basin, M.P., India

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A microscopic egg clutch of probable piscean origin is reported for the first time from the Late Triassic Gondwana Supergroup. It was recovered from a red calcareous mudstone from the Tiki Formation of the South Rewa Gondwana basin, Madhya Pradesh. This find is unique because this provides the only example of fossilized micro-eggs which presumably had soft, parchment-like shells without hard calcareous layer, and also the earliest known fossil egg known so far.

FOSSIL eggs of vertebrates have been reported from almost all the continents except Antarctica. Geological

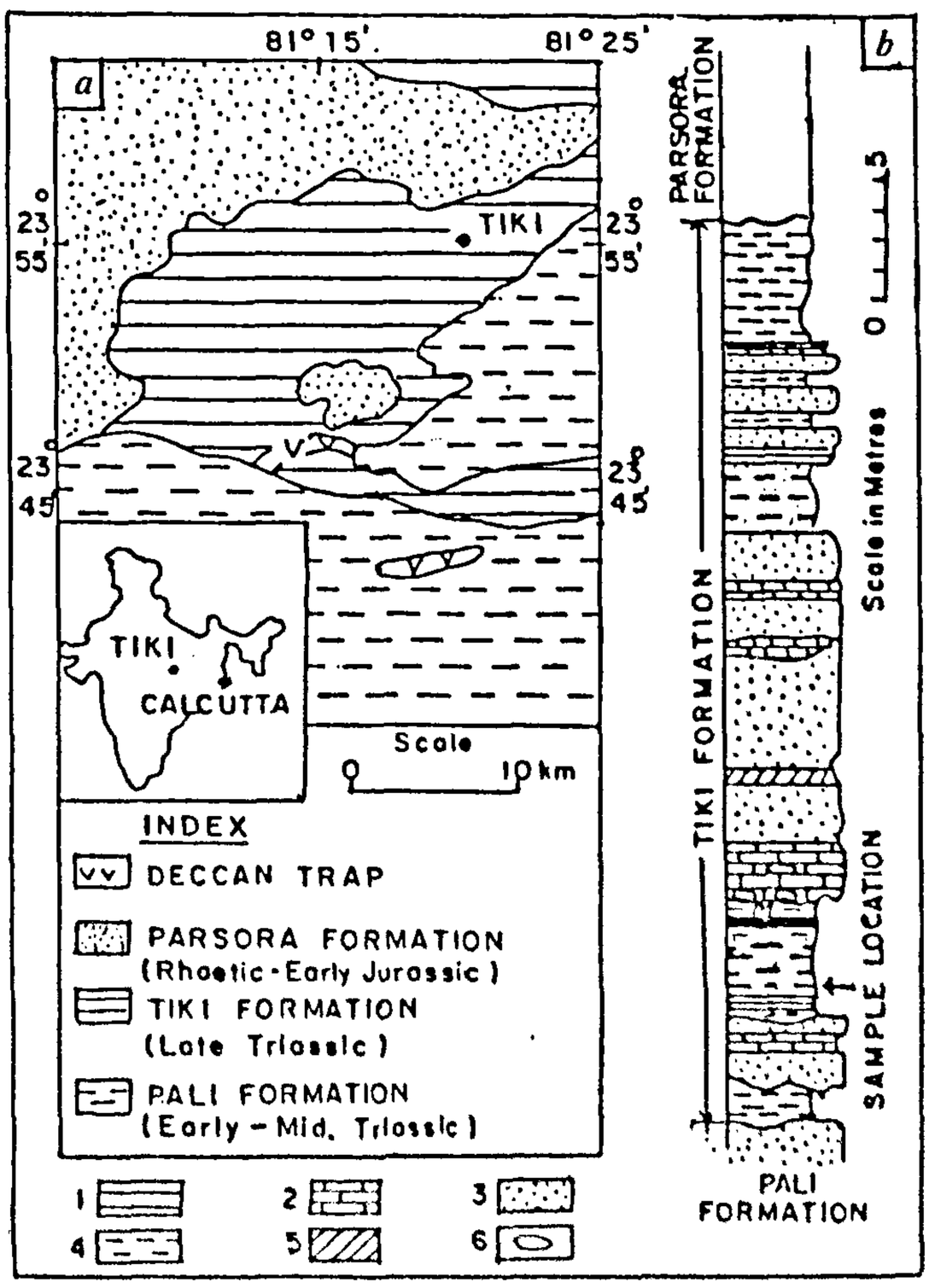

Figure 1. *a*, Geological map of the area around Tiki; *b*, Stratigraphic section showing lithology of the Tiki Formation and sample location. 1, Thinly laminated silstone; 2, Limestone/ calcareous sandstone; 3, Sandstone; 4, Mudstone with occasional mottling; 5, Marl; 6, Calcareous nodules.

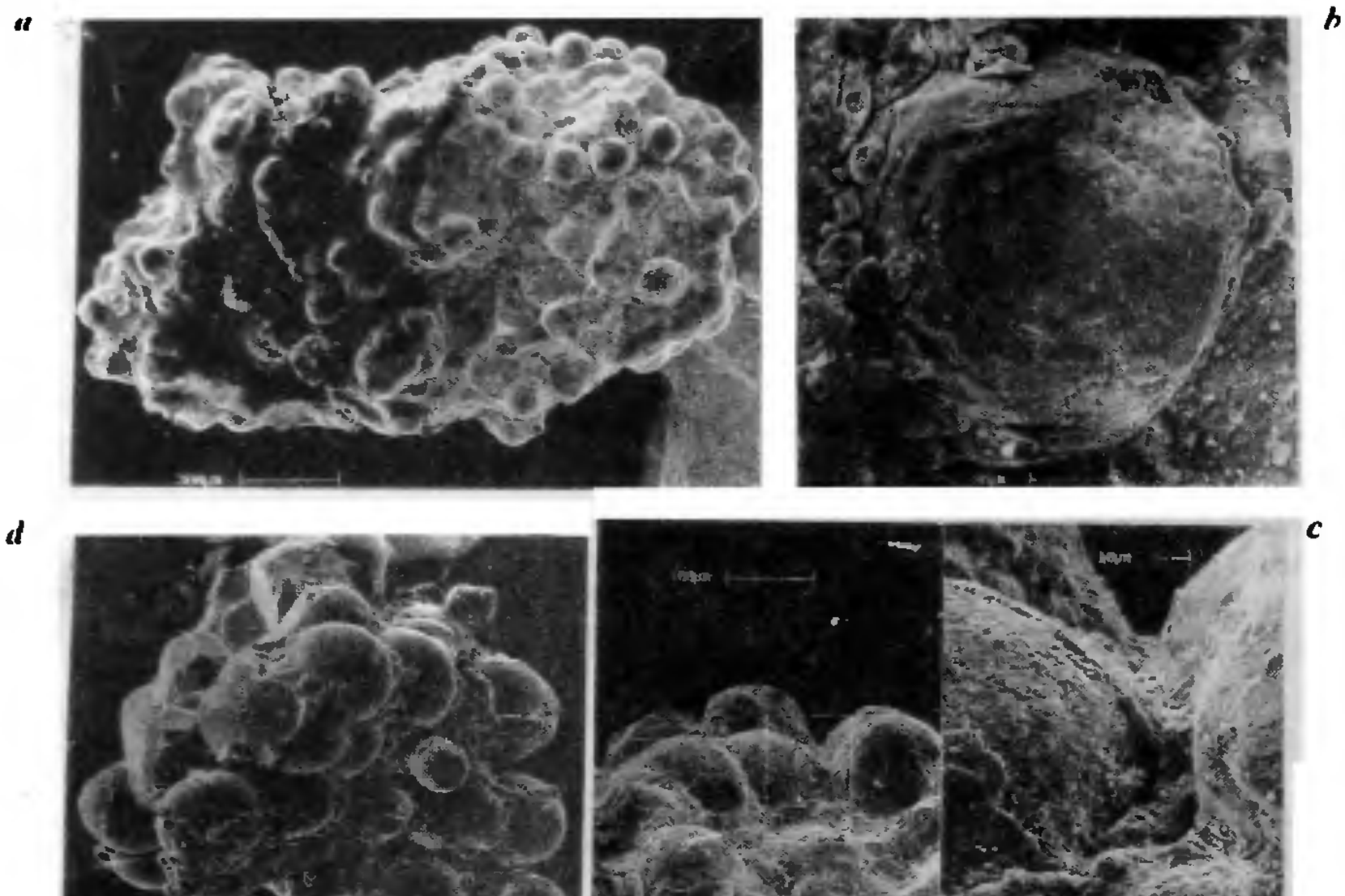

Figure 2. ***a***, The egg clutch showing spheroidal eggs; ***b***, Individual spheroid shows discontinuous wrinkles probably due to diagenetic contraction; ***c***, Enlarged view of a broken egg showing outer shell and inner cloudy mass; ***d***, Extant piscean egg clutch (*Amblypharyngodon mola*); ***e***, Thin section of eggs of *Amblypharynogodon mola*; outer membrane visible at places. (All SEM photographs)

age of the known fossil 'verterovata' of various vertebrate taxa, viz. dinosaurian, avian, chelonian, crocodilian and geckoids ranges in age from Upper Triassic to Upper Pliocene and probably Pleistocene[1,2]. All the fossil eggs reported so far were rigid-shelled macroscopic eggs, and fossil record of soft-shelled micro-eggs was previously not known. The present specimen was recovered from a bulk sample collected from a locality about 2 km southwest of Tiki village (Figure 1 *a*). The lithostratigraphy of the Tiki Formation and the sample location is shown in Figure 1 *b*. On the basis of the faunal content[3–5] and palynofloral assemblage[6], the Tiki Formation has been assigned a Carnian age.

The specimen GSI Type No. 20694 is deposited in the Curatorial Division, GSI, Calcutta. It consists of a set of micro-spheroid shaped eggs, ranging in size from 65 µm to 135 µm in diameter (Figure 2 *a*). On higher magnification, surface of each spheroid shows granulose structure and few concentric but discontinuous wrinkles which might be due to diagenetic contraction (Figure 2 *b*). A broken biomineralized spheroid shows an outer shell enclosing a cloudy mass apparently without any regular histomorphological arrangement. Fingerprint EDX analysis of the internal mass reveals Ca, P and O as the major elements (Figure 3) in order of decreasing abundance. The outer shell also shows Ca, P and O as the major elements followed by Fe, Si, Al, K and Mg in decreasing order of abundance (Figure 4). On the other hand, the matrix which holds the micro-spheroids shows preponderance of Si followed by Ca, Fe, O, K, Al and very little P and Mg (Figure 5).

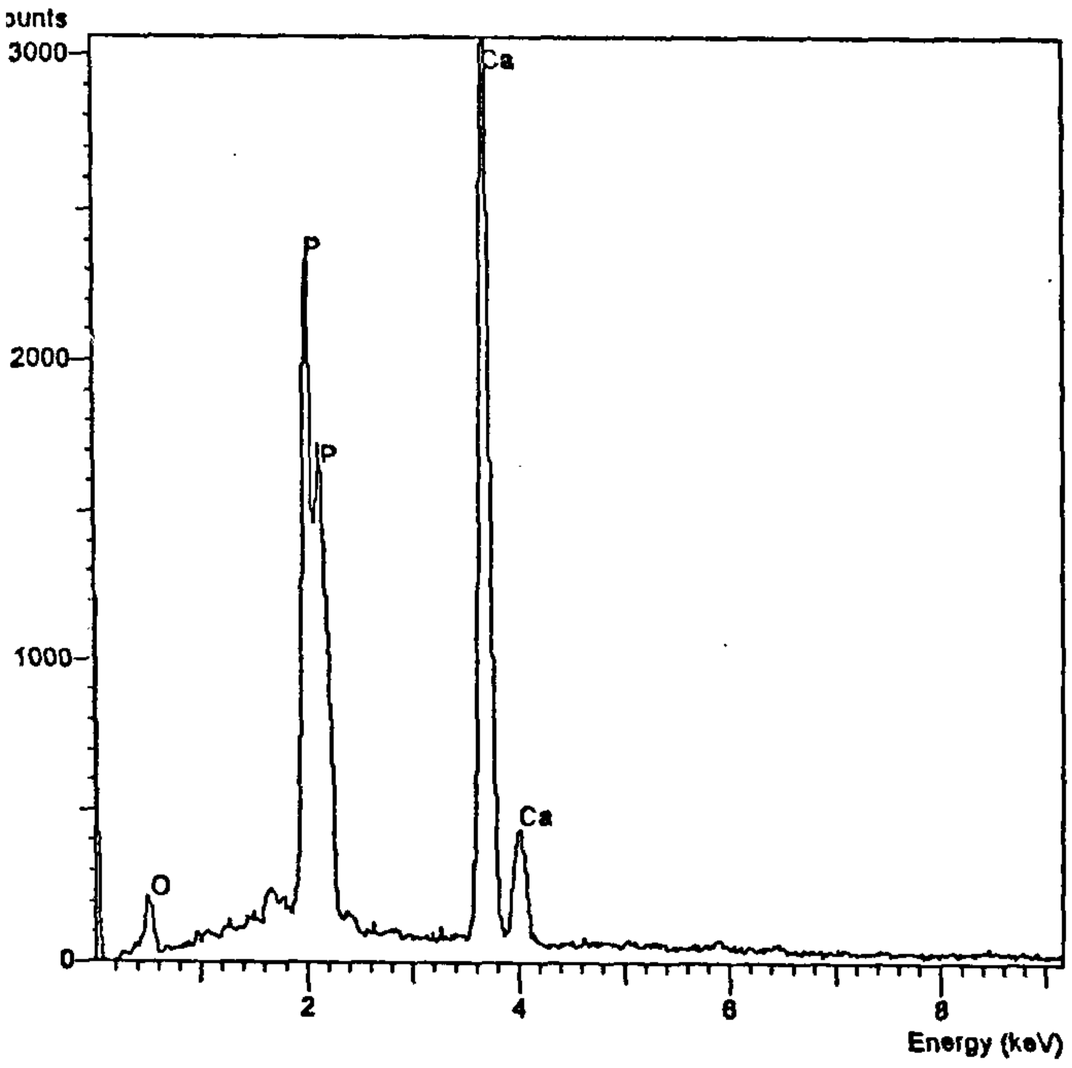

Figure 3. Fingerprint composition (EDX analysis) of the internal mass of the fossil egg.

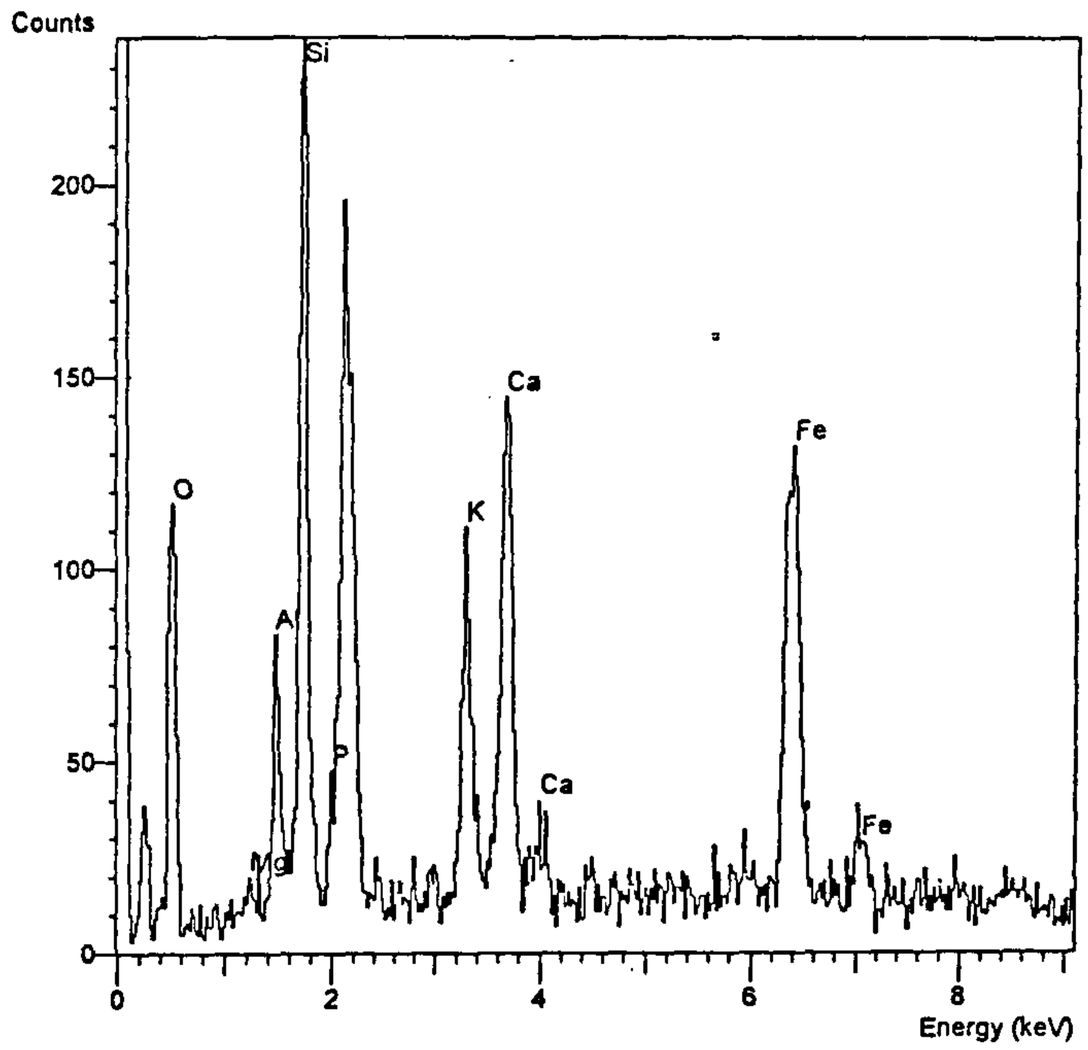

Figure 5. Fingerprint composition (EDX analysis) of the matrix. The unmarked peak adjacent to the Si-peak represents the coating material (gold).

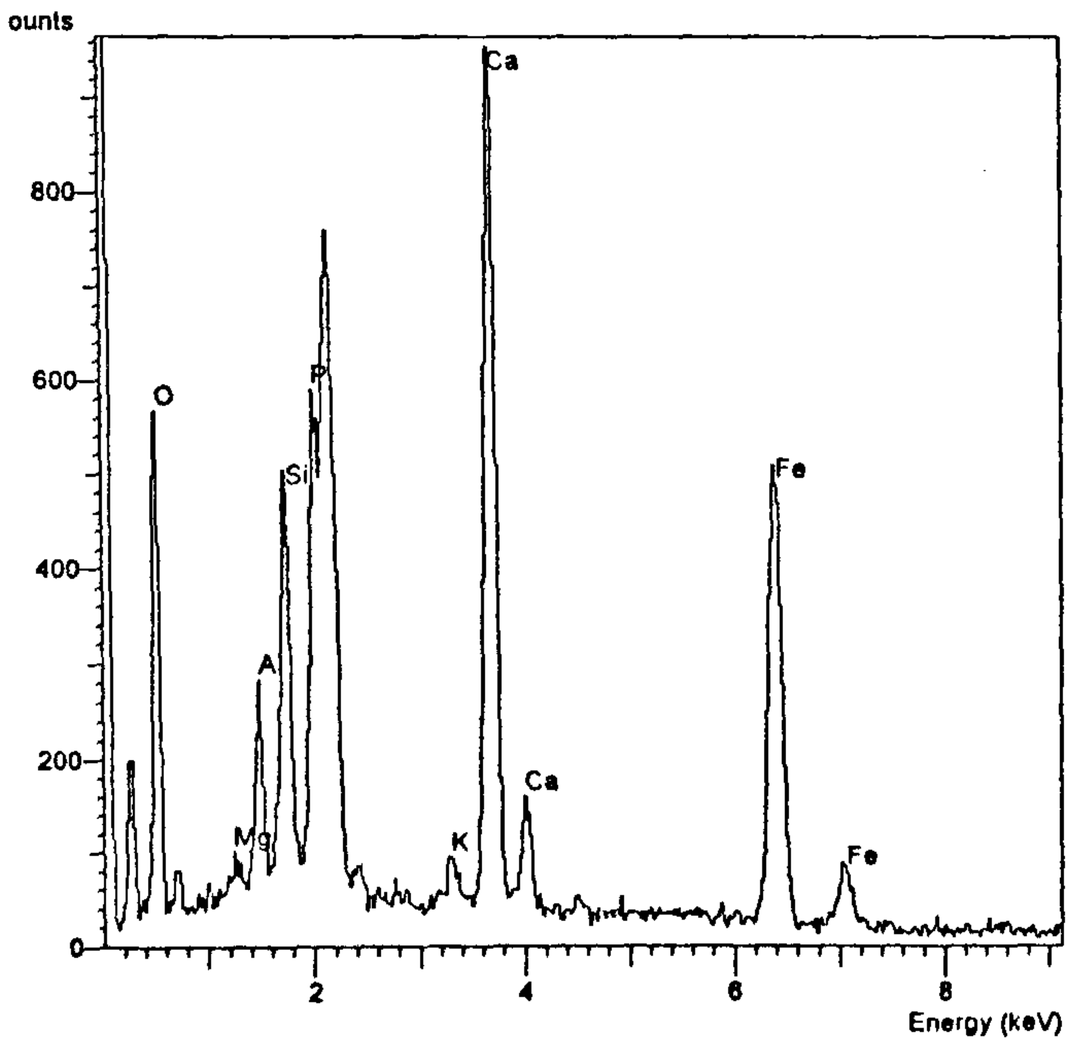

Figure 4. Fingerprint composition (EDX analysis) of the outer shell.

Absence of comparative materials of piscean egg fossil and lack of literature on microstructure of recent fish eggs are limiting factors for comparative study of the Tiki specimen. The other factors which make the identification of the present specimen difficult are lack of specific histomorphological structure and any embryonic characters as may be found in amniotic eggs. However, its mode of occurrence, natural association with numerous subholostean fish remains and remarkable resemblance with Recent fish eggs make a strong case in favour of the specimen being an egg clutch of piscean origin. For comparison, ovary of a Recent fish *Amblypharyngodon mola* was extracted and treated with lukewarm weak alkaline solution. An alkaline solution was used in the experiment because the palaeosols of the Tiki Formation, containing calcareous globules and gypsum crystals indicated an oxidizing alkaline ambience. The treated specimen was studied under SEM (Figure 2 *d*). The Recent fish eggs like the fossilized one do not show any specific histomorphological structure but the remarkable similarity in external morphology and shape between the fossil and the Recent one is notable although the fossilized eggs are somewhat smaller. The size factor, however, is not so important because inter and intra-specific variations in respect of size and shape of eggs are known to be common[2] in all vertebrates.

Since in oviparous fishes, fertilization takes place externally and the present specimen lacks embryonic character, it is argued that it represents an unfertilized matured ovary which, in all probability, got fossilized along with the animal. Subsequently, the carapace might have been disarticulated during bulk processing of

samples by wet washing. The SEM–EDX study indicates that the original organic matter has been replaced by calcium phosphate during post-mortem alternation. As the host sediments do not contain any phosphate, it is most likely that the fish bones were the source of Ca and P. Introduction of Fe, Si, Al, K and Mg might have taken place at the late diagenetic stage.

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Errata

Bioleaching of copper from ferromanganese sea nodule of Indian Ocean

Seema Khan, Rani Gupta and Rajendra Kumar Saxena

[*Curr. Sci.*, 1997, 73, 602–605]

1. Page 605, line 6: Read 'citric acid' instead of 'oxalic acid'. Corrected form: Ninety-one per cent leaching could be achieved with 2% (w/v) citric acid.
2. Page 605. The three types of bars in Figure 2 signify varying incubation periods, i.e. 24 h, 48 h and 72 h.

An improved method for the isolation of supercoiled plasmid DNA

G. Jegadeesh Babu and C. Rajamanickam

[*Curr. Sci.*, 1998, 74, 572–573]

We regret that Figure 1 has been printed upside down. We reproduce the figure as it should correctly appear.

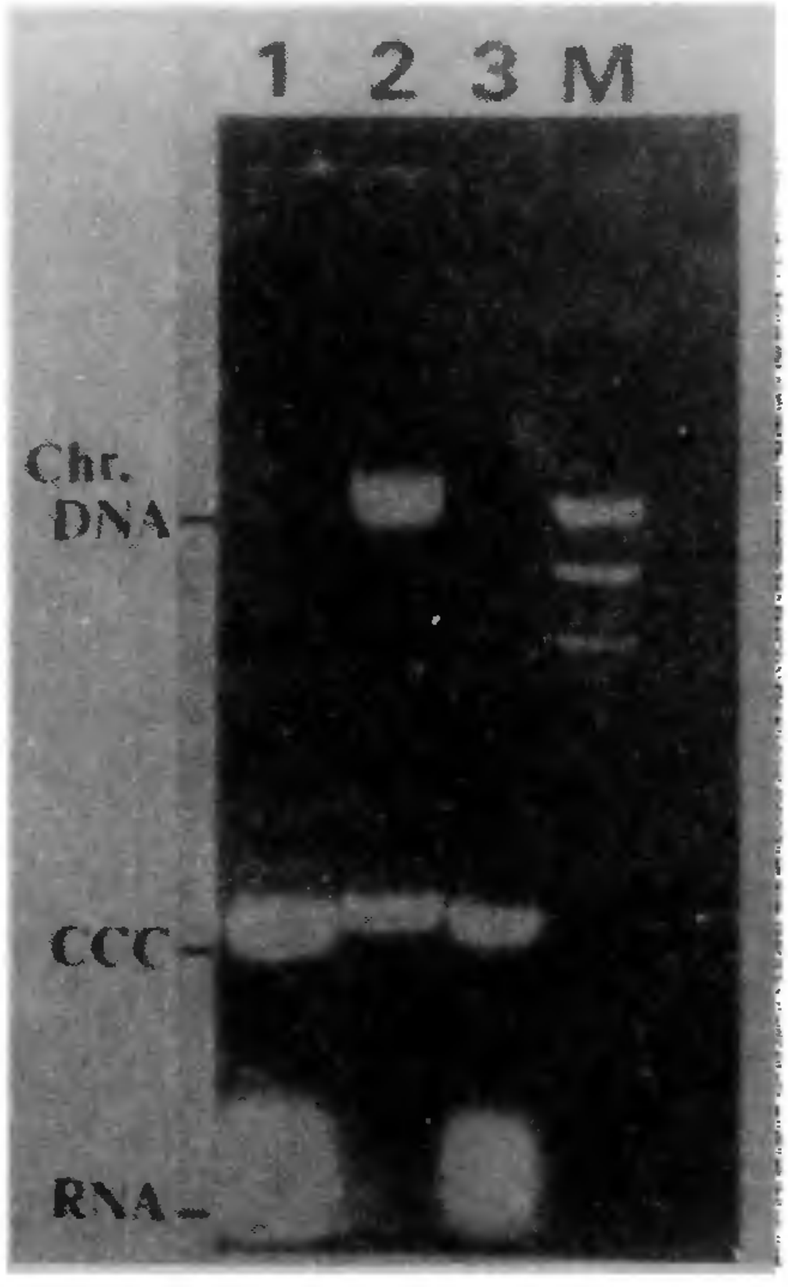

Figure 1. Mini-preparations of pUC 18 plasmid DNA. Plasmids isolated from 1.5 ml culture following different methods were suspended in 30 µl TE and 5 µl from each isolate was analysed on 0.7% agarose gel. The lane marked M contains *Hin*dIII cleaved λ DNA as molecular weight markers. Lane 1, Alkaline lysis method; Lane 2, Boiling method; Lane 3, Method described in this paper.