Figure 1. *a*, *Enicostemma axillare* (Lam.) Raynal leaf explant showing the shoot buds; *b*, Leaf explant with cluster of plantlets.

subcultured on the same media with BA produced 18–20 adventitious shoot buds. Roots were induced on the media containing 0.054–0.54 μM NAA after 30 days in culture.

This study provides a protocol for the adventitious shoot bud regeneration from leaf explants of *Enicostemma axillare* for mass propagation. MS media supplemented with 8.9 μM BA induced shoot bud regeneration on several plants[6,7]. In the present study, leaf explants showed higher morphogenetic potential in MS media containing BA than media containing BA in combination with low concentration (0.54 μM) of NAA. Frequent isolation and subculture of the shoot buds enhanced the multiplication rate of the shoot buds. The shoot buds maintained for a longer period in the media with BA showed vitrification[8]. This problem was solved by reducing the concentration of BA in the multiplication stage and frequent subculturing (once in 15 days) in fresh media. Plantlets acclimatized inside the growth chamber for 20–30 days showed 100% survival in the greenhouse. Thus, it is possible to develop an efficient *in vitro* propagation system of the medicinal plant *Enicostemma axillare* which can be successfully mass produced, thereby providing a source for the extraction of drugs, and also ensuring conservation of this species in nature.

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Electron-probe micro analysis study of the Pipliya meteorite

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A meteorite fell in an uncultivated field near Pipliya–Kalan, Rajasthan, at about 8.30 p.m. on 20 June 1996. The meteorite is an aggregate of welded angular fragments of basaltic rock of variable granularity. Its basaltic composition and genomictic welded brecciated structure implies eucritic association. We give here a concise geological information report (GIR) of the meteorite with its electron-probe data.

'SHOOTING' stars are commonly observed nearly every night. The sight of a noctilucent meteorite evokes awe and amazement amongst its viewers. To the scientists, especially meteoriticists, a meteorite provides an invaluable, rather a unique, sample of material of the earliest stages of formation of the solar system[1–3]. One of the

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Table 1. Quantitative electron probe micro analysis of silicates in the Pipliya meteorite

Spot no. / Minerals ⇒ / Elements ⇓	001 Albite	DHZ1 Albite	002 Bytownite	013 Bytownite	DHZ2 Bytownite	003 Pyroxene	012 Pyroxene	DHZ3 Pyroxene
SiO_2	68.57	68.30	44.69	46.09	46.34	48.18	48.97	48.21
TiO_2	00.00	00.00	00.03	00.04	–	00.08	00.03	00.17
Al_2O_3	19.40	19.64	32.77	34.54	33.36	00.15	00.01	01.37
Cr_2O_3	00.00	nd	00.25	00.00	nd	00.04	00.12	–
FeO	00.01	00.08	00.23	00.21	–	38.36	38.55	36.90
Fe_2O_3	–	–	–	–	00.54	–	–	01.46
MnO	00.02	00.00	00.09	00.00	–	01.07	01.31	00.68
MgO	00.01	00.00	00.03	00.01	00.38	10.34	10.10	10.45
CaO	00.08	00.03	16.93	17.46	17.31	00.89	00.93	00.43
Na_2O	11.87	11.65	01.50	01.51	01.55	00.04	00.00	00.00
K_2O	00.15	00.08	00.07	00.12	00.05	00.00	00.00	00.00
Total	100.11	100.07	96.59	99.98	99.53	99.15	99.11	99.67

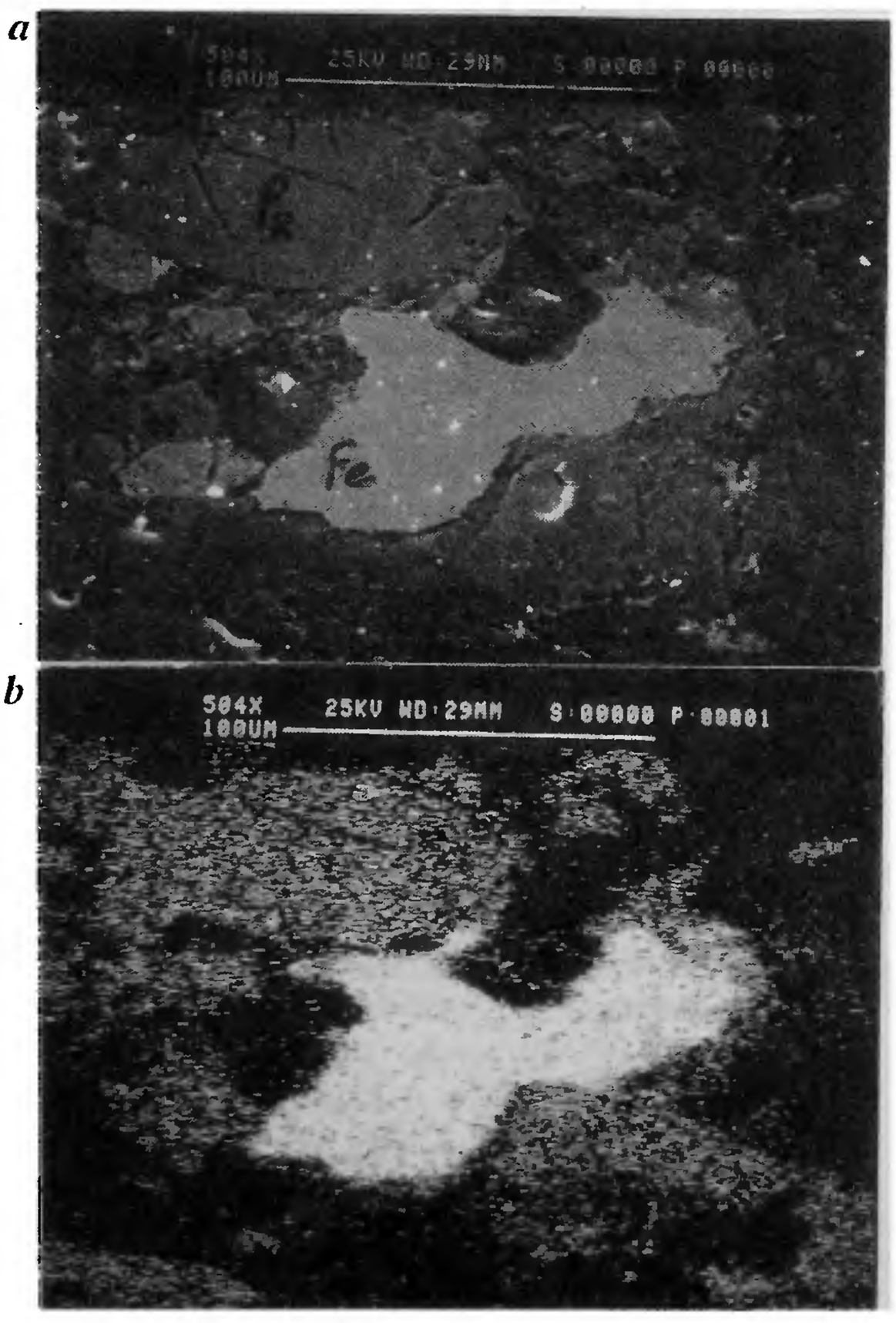

Figure 1. *a*, SEM photomicrograph, under incident light, of a polished section showing an irregular grain of native iron occurring in association with an aggregate of pyroxene and plagioclase. Also seen are smaller grains of ilmenite (IL) and chromite (Cr); *b*, Backscatter diagram for iron taken of the view at *a* on a (CAMBRIDGE) scanning electron microscope.

Table 2. Quantitative electron probe micro analysis of ilmenite in the Pipliya meteorite

Spot. no. ⇒ Mineral / Elements ⇓	004 Ilmenite	005 Ilmenite	015 Ilmenite	DHZ4 Ilmenite
SiO_2	00.07	01.06	00.07	–
TiO_2	53.11	52.35	53.70	52.73
Al_2O_3	00.04	00.00	00.05	–
Cr_2O_3	00.00	00.00	00.07	–
FeO	46.92	46.64	46.58	–
Fe_2O_3	–	–	–	45.83
MnO	00.94	00.95	01.06	–
MgO	00.52	00.52	00.48	01.25
CaO	00.07	00.05	00.03	–
Na_2O	00.01	00.00	00.08	–
K_2O	00.02	00.05	00.02	–
Total	101.70	101.62	102.24	99.81

main aims of this note is to acquaint the reader with meteorites, so that more cosmic samples that may have fallen in the past could be discovered. Looking at India's vast geographical extent and favourable weather throughout the year, it is surprising that very few 'finds' of meteorites are reported.

On the night of 20 June 1996 at about 8.30 p.m., a meteorite fell in an uncultivated field near the village Raipur (Marwar), District Pali, Rajasthan (74°01'30"E, 26°02'30"N, Survey of India Toposheet No. 45J/16). The field belonged to Prabhulal Choudhari who saw an incandescent object shooting towards him – scared, he rushed into his house and soon heard a thud and a loud crackling sound. Within half an hour of its fall, Choudhari assisted by few other villagers located the meteorite in his field lying in a crater of about 60 cm diameter and nearly half a metre deep. The stone felt cold and therefore it was removed from the crater. The

Table 3. Quantitative electron probe micro analysis of sulphides in the Pipliya meteorite

Spot no. / Mineral ⇒	001 Pyrite	007 Pyrite	009 Pyrite	DHZ4 Pyrite	002 Troilite	003 Troilite	004 Troilite	005 Troilite	DHZ5 Pyrrhotite
Elements ⇓									
S	53.22	53.15	52.60	52.97	36.16	36.44	36.29	36.20	36.24
Fe	46.47	46.08	45.37	47.10	60.96	60.69	61.19	60.85	63.72
Cr	00.00	00.00	00.00	–	00.00	00.00	00.00	00.00	–
Ti	00.00	00.00	00.00	–	00.00	00.00	00.00	00.00	–
Ni	00.00	00.00	00.30	–	00.00	00.00	00.00	00.00	–
Total	99.69	99.23	98.27	100.07	97.12	97.13	97.48	97.05	99.96

(DHZ4, 5, ref. 12).

villagers started breaking it to satiate their curiosity. Soon the police from Raipur Thana arrived and took into custody the damaged 14 kg meteorite and a few kg of its fragments. These were finally handed over by the state government geologists to the Geological Survey of India, Western Region, Jaipur. Following the report of plural incandescent sighting on the night of 20 June, one more similar meteorite was discovered in the area on 25 June 1996, four more are yet to be located[4]. All of these meteorites are named as a single Pipliya meteorite[5].

This meteorite is a rare cosmic sample available for its geological study from the western Indian State of Rajasthan[6–8]. Its fragments are still available with the people of the area. We also obtained a sample from the people of the area who were generous enough to donate adequate samples, when they were persuaded to part with the cosmic souvenir for the benefit of science, specially for making people aware so that such 'find' of ancient meteorite could be made in Rajasthan in particular and India in general. A geologist or an administrator would not have dared to take out even a chip from the meteorite, but the layman's curiosity of the villagers has inadvertently yielded several samples, which otherwise would not have been possible for the people to obtain. These samples have given us a view of a very large surface area of the meteorite, which provides us better idea of its interior. The villagers of the area felt less guilty when they were shown the brecciated structure and explained that nature too had fragmented the meteorite!

The Pipliya meteorite is enveloped by a thin black fusion crust and has circular concave depressions on its surface; it has a rough microgranular surface. The thin fusion crust (≈150 to 700 μm) and the concave depressions have been formed due to ablation and friction-induced melting of the surface of the stone during its journey through the earth's atmosphere. Petrography of the fusion crust reveals that the dark brown glass contains very small vesicles and globules of less brown to clear glass. Under the black-fusion crust occurs light coloured, greenish-grey stone which exhibits agglomeratic structure comprising welded angular fragments of granular microgabbroic to fine-grained basaltic rock (see Figure 8 of ref. 9). The meteorite fragments show high ablation and fall-induced porosity and permeability – they noticeably absorb water.

Petrographic and electron-probe micro analysis (EPMA) study of thin and polished sections reveals that the meteorite is made up of welded fragments of gabbroic to basaltic rocks of variable granularity, but having similar mineralogy. Grains of pyroxenes and laths of plagioclase make up most of the thin sections and display granular to ophitic relationships. The minerals display bent and displaced twin lamellae, undulose extinction due to dynamic metamorphism and shock effect. The colourless to pinkish clinopyroxene (CPX) and orthopyroxene (OPX) show exsolution texture, while the coarser laths of calcic plagioclase rarely contain oriented short acicles of pyroxenes. A few grains of opaque minerals are also present. Study of the polished sections exhibits presence of light yellow to pinkish yellow grains of 'cosmic pyrrhotite' having high reflectivity and moderate anisotropism. It occurs as anhedral grains or as oriented inclusions in pyroxenes. Grains of pyrite, ilmenite, chromite, magnetite, and iron are also present (Figure 1).

Microprobe analyses were carried out for several spots on the thin and polished sections to confirm the mineralogy, especially of the suspected OPX and calcic and sodic plagioclases. The data were obtained on a CAMECA SX 50 Microprobe at the BRGM–CNRS Laboratory, Orleans, France. A focused electron beam of *ca.* 1 μm accelerated at 15 kV, and a 6 nA sample current with 10 seconds counting time were used. Synthetic end member standards were used for calibration and the routine analytical procedure was adopted. EPMA data are presented in Tables 1–3. The data show that the meteorite is made up of bytownite (Table 1, Spot no. 002 and 013) having the molecular formula of $Na_{0.13}$, $Ca_{0.86}$ $Al_{1.84}$, $Si_{2.13}O_8$. Surprisingly, one grain of albite was also identified; Table 1, Spot no. 001, molecular formula, $Na_{1.00}Al_{0.99}Si_{2.99}O_8$ (cf. Table 1, Spot

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

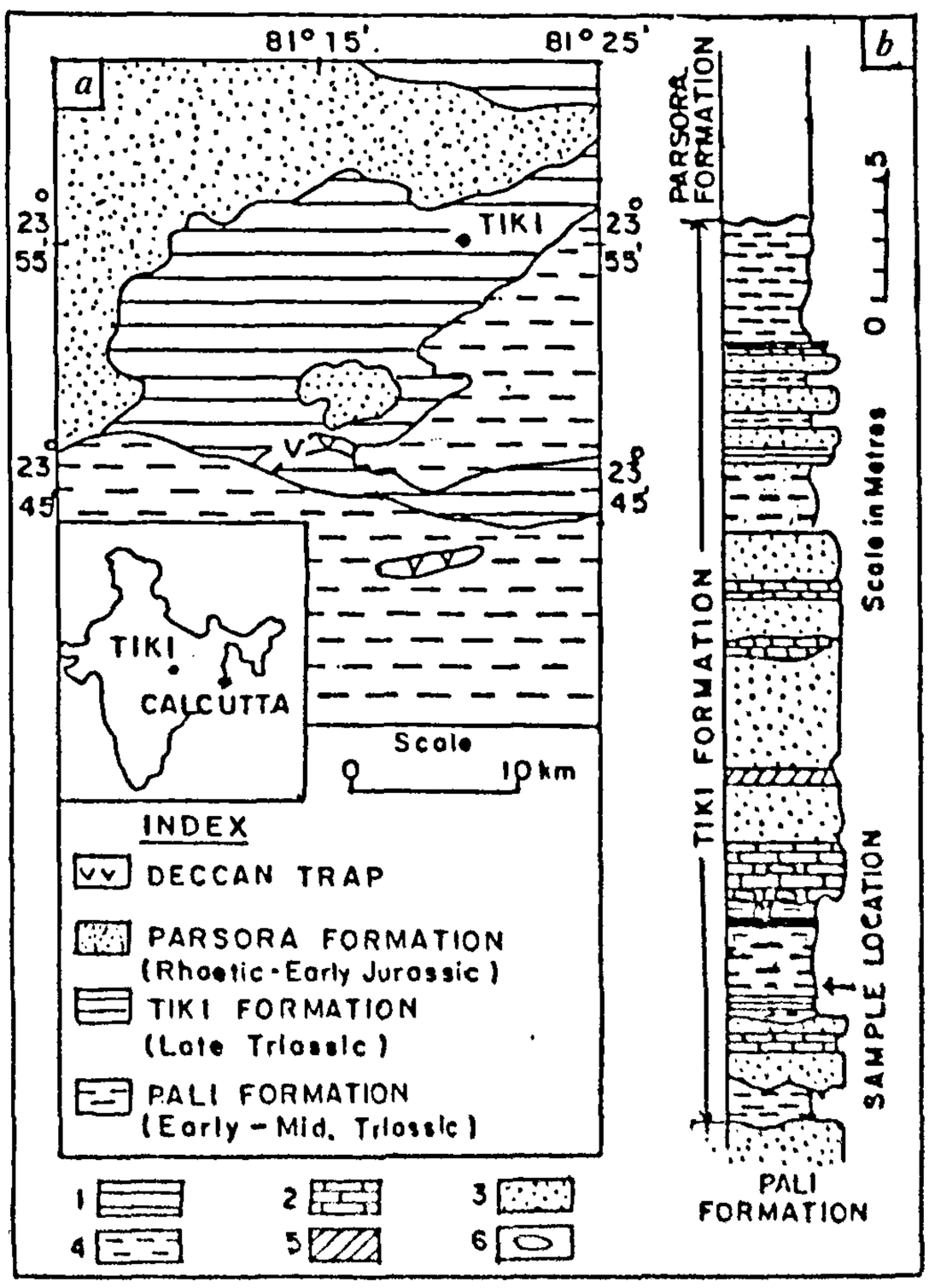

Figure 1. *a*, Geological map of the area around Tiki; *b*, Stratigraphic section showing lithology of the Tiki Formation and sample location. 1, Thinly laminated silstone; 2, Limestone/ calcareous sandstone; 3, Sandstone; 4, Mudstone with occasional mottling; 5, Marl; 6, Calcareous nodules.