matured Carboniferous sediments below the Deccan Trap, as also supported by available geophysical data and our own organic matter maturation studies, in view of its great significance explaining hidden oil pools.

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LATE CRETACEOUS - TERTIARY SEDIMENTS AND ASSOCIATED FAULTS IN SOUTHERN MEGHALAYA PLATEAU OF INDIA VIS-A-VIS SOUTH TIBET: THEIR INTERRELATIONSHIPS AND REGIONAL IMPLICATIONS by S. Nag, R.K. Gaur and Tapan Paul. Jour. Geol. Soc. India, 2001, v.57, no.4, pp.327-338.

S.N. Kak and **A.V. Subrahmanyam**, Atomic Minerals Directorate for Exploration and Research, Begumpet, Hyderabad - 500 016, comment:

We appreciate the authors for the documentation of the evidences for Dauki Fault being post-Eocene age and its reactivation in the later period. However, it is known that different formations along Dauki Fault, namely, Mahadek, Langpar and Shella Formations are juxtaposed, which are seen in the Shillong-Chirapunji-Shella and Shillong-Dauki-Muktapur section. The authors have assigned Late Cretaceous age for the Jadukata and Mahadek Formations and these were compared with that of Cretaceous Gamba Formation of Tibet. It could have been appreciated had authors given the setting of Gamba Formation in the paper.

While attributing the late Cretaceous age for the Jadukata and Mahadek Formations the following observations are relevant:

(a) The Mahadek Formation has been divided into Lower Mahadek of fluvial facies and Upper Mahadek of

marginal marine to marine facies by the scientists of AMDER (formerly known as AMD).

(b) Recently a discontinuity surface between Lower and Upper Mahadek Formations, pyroclastics and a dyke in the Mahadek Formation (Subrahmanyam et al. 2000) have been reported.

(c) Radha Das et al. (1998) have shown an apparent age of 95 Ma for uranium ore in the Lower Mahadek Formation from Domiasiat, which indicates that the Lower Mahadek Formation is older than 95 Ma.

These points suggest that the pre-Cretaceous Meghalaya plateau reflects a back arc setting with undulations, with Sylhet volcanism having commenced and pyroclastics ejected. In this backdrop, these sediments were deposited, punctuated by the pyroclastics of unknown time spans. The deepening of the basins continued, to allow thick sedimentation (Upper Mahadek). Later, marine transgression took place along the southern margin of the Meghalaya plateau and some of those deep depressions were filled with gauconitic subarkoses in the Upper Mahadek Formation during marine transgression. That is why the marine feature was not uniform throughout the Upper Mahadek Formation, as seen in the Chirapunji section.

Cretaceous stratigraphy is known for its cycles and these are not studied in the Mahadek Formation of Meghalaya. Since this volcanism has time span of 115-118 Ma (Baksi et al. 987) which punctuates the Lower Mahadek sediments, the age of the Lower Mahadek falls within this time span. Hence the age of Jadukata and Mahadek Formations may not be late Cretaceous but may range from early Cretaceous to late Cretaceous. In this context, it is pertinent to note that the surrounding Bengal basin also shows the same non-marine sediment history in the lower part, whose age is also imprecise. It appears that the sedimentary sections are either condensed or erosion may have over balanced them. Hence we differ with the authors in ascribing the late Cretaceous age for the entire Jadukata and Mahadek Formations.

S.Nag, Geological Survey of India, Sector E, Aliganj, Lucknow -226024 and **T. Pal,** Geological Survey of India, Kolkata reply:

We thank S.N. Kak and A.V. Subrahmanyam for their interest in our paper.

While discussing the linkage of Meghalaya and Tibetan plateaus, a brief discussion on broadly coeval lithofacies and biofacies assemblages has been made. In other words, we took the essence from the original 'hallmark' contribution of Willems et al. (1996) which is pertinent to our discussion. The Gamba Group (Upper Albian to Lower Santonian), named after the type area at Gamba in the east, is also exposed at Tingri in the west and here the lower part of the unit is more fossiliferous and more calcareous in nature.

The discontinuity surface between Lower and Upper Mahadek has not been documented by providing suitable reference(s). However, fluviatile sandstone in the lower part and fossiliferous marine sandstone in the upper part, is well known and this has been described in the present paper also. But a discontinuity surface as proposed by Kak and Subrahmanyam, was not apparent to the authors while carrying out mapping in the area under study. However, the discontinuity surface as proposed would be significant in specifying the change of environment.

The stratigraphic age of Mahadek Formation is based on fossil assemblage (cf. Murthy et al. 1976). A characteristic zone fossil Inoceramus has been reported by Das (1967). Stygmatophygus, a characteristic zone fossil, has been reported from the top of Mahadek sandstone. An apparent age of 95 Ma for the uranium ore in Lower Mahadek has been reported by Radha Das et al. (1998). The age determined is not very well constrained and it would be better to corroborate the same from fossil evidence too. It seems to the authors, therefore that the age of Lower Mahadek is not well constrained. The authors have followed the earlier stratigraphy of Murthy et al. (1976).

The rhyolitic tuff and dyke from Lower and Upper Mahadek (Subrahmanyam et al. 2000) is certainly a new and significant finding in the stratigraphy of Meghalaya. Eastern Gondwana witnessed volcanism during Late Cretaceous, e.g., Deccan volcanism which began in Maastrichitian and ended in Pleistocene (Jaiprakash et al. 1993) with peak activity during 66-65 Ma and ranging from 68.5-65 Ma (Sen, 1995; Bhandari et al.1995). The coeval volcanism either near or far from Meghalaya plateau took place during sedimentation of Mahadek Formation in Late Cretaceous time. The northward migration of India after break-up from Gondwanaland is well documented by palaeomagnetic studies. Preliminary palaeomagnetic estimates on sediments of Jadukata and Mahadek Formations led Poornachandra Rao et al. (1998) to infer a still younger age (Palaeocene-Eocene) for these sediments (we missed the reference at the time of writing the paper) and on which we have strong reservations. However, an exhaustive palaeomagnetic study on rocks of Jadukata and Mahadek Formations is in progress (Poornachandra Rao, *pers. comm.*, 2nd April, 2001) which will throw significant light on the subject.

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BOOK REVIEW

NATIONAL SEMINAR ON EXPLORATION AND SURVEY FOR NOBLE METALS AND PRECIOUS STONES. Special Publication no.58, Geological Survey of India, 2001, 679p., Price: Rs.390 (US$ 22.65; £13.70)

This is a pre-seminar volume brought out by the Southern Region of the Geological Survey of India (GSI) at the time of a National Seminar on Exploration and Survey for Noble Metals and Precious Stones held at Hyderabad on 22nd and 23rd May, 2001, as part of the 150th year celebrations of the Geological Survey of India. What distinguished the publication is the range, depth and authenticity of articles prepared by specialist geoscientists with long hands-on experience in the specific fields. We can see traditional work mainly guided by ancient mine workings in the early years giving place to the study of belts and districts with drainage surveys and heavy mineral studies aided by geochemistry. In more recent years the state-of-the-art technology has entered the picture with more sensitive analytical techniques, image processing, improved data validation and so on. With the grant of large area reconnaissance permits, prospecting licences and mining leases to private sector – both national and international – the subject of the seminar is attracting many investors. Therefore, the publication is timely and will find positive response from many quarters.

There are as many as 70 articles by 156 authors out of which except 10 from Hutti Gold Mines Co. Ltd., Bharat Gold Mines Ltd., National Geophysical Research Institute, National Metallurgical Laboratory, Wadia Institute of Himalayan Geology and Chofu (Japan), the rest are from the GSI. There are 41 articles on gold, 4 on platinum, 12 on diamond/kimberlite/lamproite, 2 on geophysics, 7 on analytical methods and validity of analyses and 4 on gemstones.

Gold

There are 20 articles covering nationwide/statewide/ regional aspects, 16 articles covering individual prospects and 6 articles covering exploration strategy.

In a synopsis of the gold exploration in the last few decades in India, S.K. Kar and S.K. Biswas trace how the earlier work was confined to known gold deposits/prospects – Kolar, Hutti, Ramagiri, Gadag, Chitradurga, Wynad, Lawa, Kundarkocha etc. (Second and Third five year plan periods) which was later extended to new areas apart from intensifying work in known belts (in the eighties and nineties) which resulted in identifying new belts (Jonnagiri, Gadwal,