

COMMENT

Lonar Lake and Co-linear Carbonatites of Western India

(A Comment on the paper by Satya Prakash Mishra, published in the Journal of the Geological Society of India, Vol. 29, No. 3, March 1987, pp. 344-348).

Mishra (1987) has attempted purely an empirical exercise by considering co-linearity of carbonatites of western India and several other geological features with the well-known meteorite impact crater at Lonar in Buldana District, Maharashtra State.

It needs to be realised that the Sarnu-Mundwara join extended to Lonar is just a geometric alignment on NW-SE line which is certainly not a lineament in the strict sense of the term. It is also not appropriate to use the term 'Lonar Lineament' because there is no supporting evidence to substantiate such a speculation. The deep tectonic significance of the Lonar Crater, therefore, is not justified.

It may be mentioned here that in June 1968, I had the opportunity, with Dr. G. R. Udas (then Visiting Fellow at the Centre of Advanced Study in Geology, University of Saugar, M.P.) to make a field trip to the Lonar Lake to ascertain whether it has any possible relation with a carbonatite plug. Our field studies, some auger drilling of the lake sediments and laboratory tests revealed that the Lonar lake had no connection whatsoever with a carbonatite plug.

There is also remarkable difference in the ages of the carbonatites and the Lonar Crater. The Mundwara carbonatite has an age of 56 ± 8 m.y. (Narayan Das *et al.* 1982) which is very close to that of the Deccan basalt eruption (i.e., Cretaceous to Eocene). However, the Lonar Crater located 655 km SE of Mundwara carbonatite has an age less than 50,000 years only (Fredriksson *et al.* 1973). Sengupta *et al.* (1984) using thermoluminescence technique, provided a mean age of 56,000 years for the impact glasses from the Lonar Crater. The great difference in the ages of these two features confirms beyond doubt that the Lonar Crater did not exist while the Mundwara carbonatite already existed since almost the Cretaceous times. As such any possibility of their correlation on a linear basis is ruled out. These young estimates support an impact origin for the formation of the crater, since there is no record of any active volcanism in the Deccan basalts during this period. Therefore, the isolation of the Lonar Crater should not be surprising. Recently, tektite-like glasses similar to those discovered by Nayak (1972), have been reported from the Lonar Crater (Murali *et al.* 1986). Iridium, which is considered a sensitive indicator element for any meteoritic contamination, is enriched in strongly shocked Lonar vesicular glasses (~ 0.03 ppb) as compared to the rather constant indigenous levels of 0.005 ± 0.001 ppb (reported by Morgan 1978 and quoted by Sengupta *et al.* 1984).

It is now evident that it is just fortuitous that the Lonar Crater falls on such a geometric imaginary line in NW-SE direction. However, because of the great age differences, high iridium content and convincing field and other data, the co-linear relationship of the very old Mundwara carbonatite and other features with the very young Lonar Crater, has really no genetic relevance whatsoever. One may ask as to

how such an empirical approach or thinking can help to contribute towards understanding the meteorite impact origin of the Lonar Crater, to which Mishra agrees in principle.

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