

Gold Mineralisation in Hinglaz Mata-Bharkundi Area, Dungarpur District - An Extension of Bhukia-Kundli Auriferous Tract, Rajasthan

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Preliminary sampling of old workings have indicated gold mineralisation in a geological set-up similar to Bhukia gold prospect. This find suggests a northward extension of the Bhukia-Kundli auriferous tract by at least 10 Km.

Gold mineralisation in the Precambrians of Bhukia area, Southeastern Rajasthan, has been reported earlier (Grover and Verma, 1993). Intensification of exploration in this part of the Precambrian terrain by using airphoto interpretation and followed by detailed field surveys has led to the discovery of yet another gold occurrence in the Hinglaz Mata area near Solaj extending upto Bharkundi in the eastern part of Dungarpur district.

Geological Setting: The main lithounits occurring in the area around Hinglaz Mata temple, include impure/amphibole-bearing marble and dolomite with associated thick interbands of quartzite (Fig.1). High ridges of these units are flanked by staurolite-bearing schists in the west and chlorite phyllite in the east. The general trend of bedding and foliation of the lithounits is northwest-southeast with steep westerly dips. The set-up extends upto Bharkundi and Deola Pal in the north. The entire litho-assemblage has been placed within the broad frame of the Aravalli Supergroup. The structural set-up of the area is complicated due to compound effects of multiple folding accompanied by intense shearing. The shear zones trend northwest-southeast, north northeast-south southwest and northeast-southwest and are characterised by the development of mylonites, silicified zones and talc at several places (Fig.2).

On aerial photographs, mylonite and shear zones appear as thin, long, linear bands of medium to dark grey tone in contrast to the light grey tone and smooth texture of the dolomitic marble units. Schist and phyllite units form highly dissected low hills. Quartzite and silicified zones within carbonate unit, are characterised by short, linear ridges and light grey tone. Good quality talc/soapstone is quarried at several places in the area, which are seen as very light to white-toned patches on the air photographs. Ancient mine workings for gold on the other hand, are smaller and could be picked up on these photos by their dark tone. A general correlation of soapstone development in dolomitic marble with air photo linears has been observed. Its relationship with gold is yet to be confirmed.

Gold Mineralisation: Gold in the form of fine specks and flakes (maximum size 0.7 x 0.2mm) are noticed in gossan debris excavated from old workings situated about 200 m north of Hinglaz Mata temple. The gossans cover dolomitic marble and quartzite. Quartzite is highly silicified. Gossan is generally reddish brown in colour, hard, massive silicified and is comprised of limonite, goethite, quartz, malachite, azurite and calcite. The ocherous or

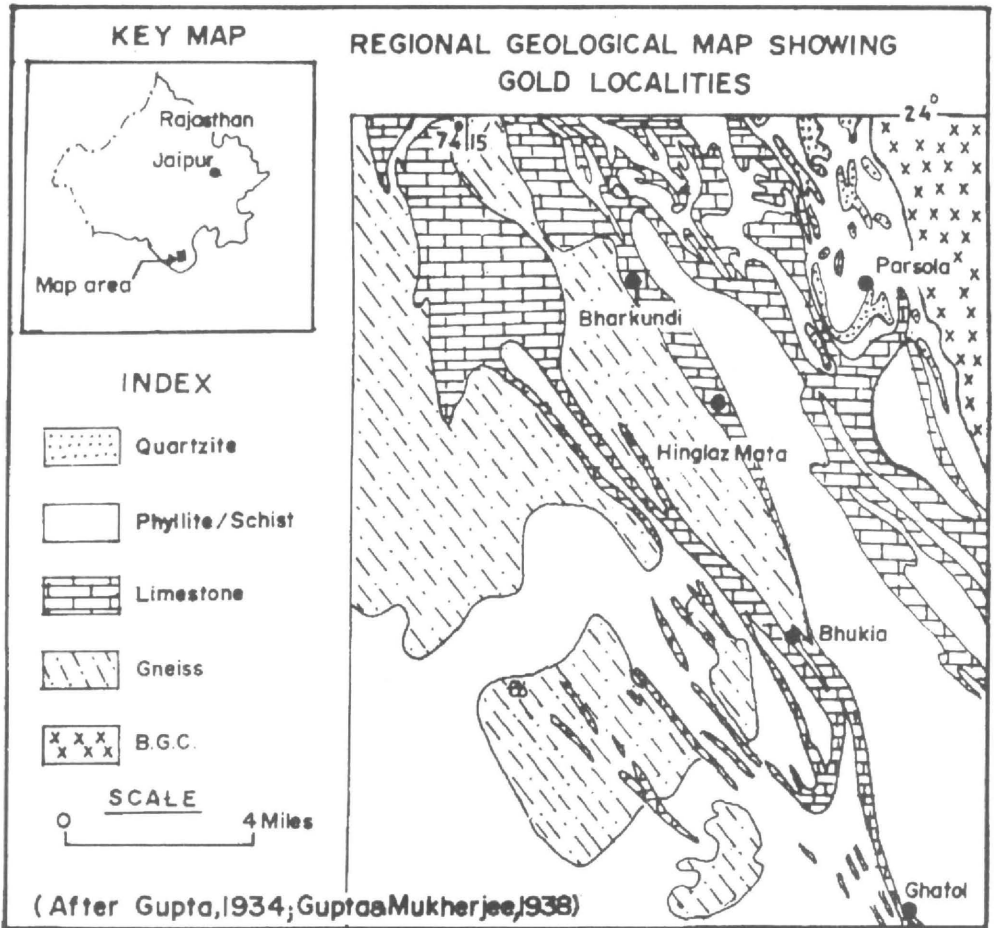


Fig. 1. Regional Geological set up of the study area in southeastern Rajasthan.

spongy gossan is rare. Fresh sulphide in the area is seen only in marble units and include pyrite, pyrrhotite and chalcopyrite, mostly as specks and rare stringers. Twenty six samples (14 from Hinglaz Mata, 7 from Bharkundi and 5 from Bhukia blocks) were collected during this preliminary survey. The lithounits sampled include oxidised sulphide veinlet (wall rock), gossan, gossanised marble, malachite bearing quartzites and mylonite. Some of the gossan samples are from the mine debris.

Analytical data indicate gold content in gossan ranging from 0.85 to 48.0 g/t and 0.9 to 10.2 g/t in malachite bearing quartzite samples. Away from old workings copper values range from (0.12 to 1.99%). Cobalt values (10 ppm to 0.12%) are quite anomalous. Surface samples collected from Bhukia prospect also showed higher contents of cobalt (100 ppm to 0.22%). Lead (< 10 to 150 ppm in Hinglaz Mata and < 10 to 235 ppm in Bharkundi), zinc (25 to 600 ppm) and nickel (25 to 250 ppm) are insignificant except in one sample (oxidised sulphide veinlet from wall-rock of old working). Silver values in Bhukia and Hinglaz Mata samples are less than 5 ppm. Samples from Bharkundi area, however, showed silver values upto 10 ppm. Lead (0.12%) and zinc (0.40%) values along with high gold and copper in

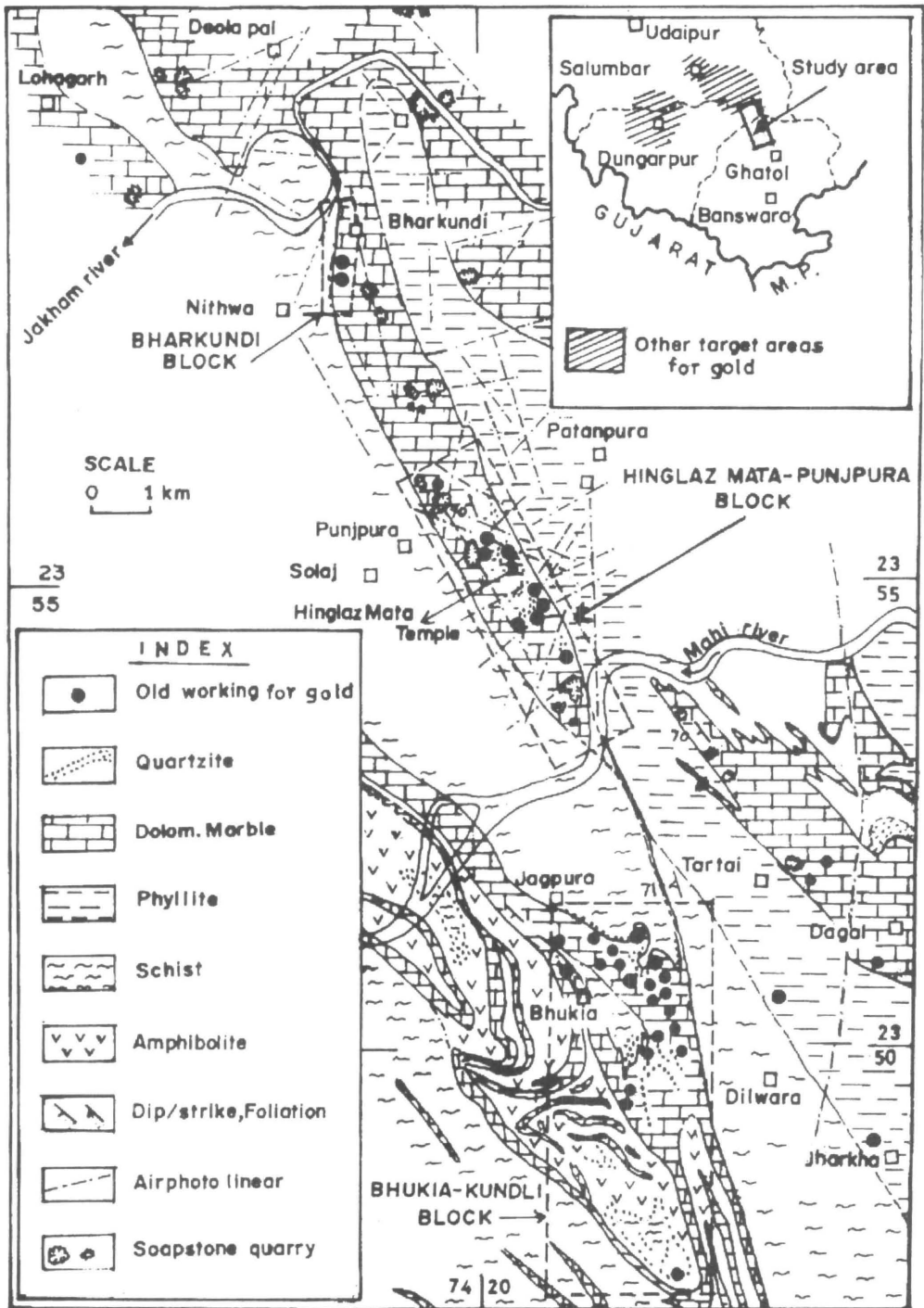


Fig. 2. Geological map of Bharkundi-Hinglaz Mata-Bhukia area, Southeastern Rajasthan.

a sample indicate multimetal nature of the prospect (Table I). Chemical correspondence of Au+Cu+Co(-Ag) in Hinglaz Mata-Bharkundi area appears to be analogous with the Bhukia Gold Prospect in Banswara district (Grover & Verma, 1993 and 1995). Based on these preliminary but highly encouraging results, detailed investigation of the area is being taken up.

Table I . Results of Chemical Analysis by AASPM (Value in ppm)

Sl. No.	Lithounit samples	Au ppb	Cu	Pb	Zn	Ni	Co	Ag	Cd
Hinglaz Mata area:									
1.	Sulphide veinlet (oxidised) with malachite stains	4,450	1.9%	0.12%	0.4%	75	75	< 5	n.a.
2.	Quartzite (wall rock)	80	400	50	75	50	25	< 5	n.a.
3.	Gossan	4,450	0.77%	75	100	75	600	<5	n.a.
4.	Gougy matter (wall rock quartzite)	80	450	50	25	25	25	< 5	n.a.
5.	Malchite bearing quartzite	900	0.23%	50	50	25	50	< 5	n.a.
6.	Gossan	6,650	1.16%	100	600	75	125	<5	n.a.
7.	Malachite bearing quartzite	8,000	1.92%	50	400	75	350	<5	25
8.	Gossan	850	0.55%	150	175	250	0.11%	<5	25
9.	Gossanised marble with vein quartz pieces	48,000	1.03%	50	200	100	0.12%	<5	25
10.	Gossan	4,500	1.35%	50	125	100	600	<5	25
11.	Malachite bearing quartzite	10,200	1.99%	50	150	50	350	<5	25
12.	Ferruginous quartzite	1,090	0.12%	10	75	45	125	<5	<5
13.	Gossan	8,200	595	< 10	35	25	250	<5	<5
14.	Slag	50	45	30	945	110	85	5	5
Bharkundi area:									
15.	Sulphide veinlet (oxidised) with malachite stains	510	1.76%	35	115	< 10	75	5	<5
16.	Mylonite	290	510	25	25	< 10	10	<5	<5
17.	Ferruginous dolomitic marble	230	1.75%	25	140	< 10	60	10	<5
18.	Dolomitic marble (wall rock)	100	0.48%	< 10	60	< 10	65	5	<5
19.	Dolomitic marble	20	165	< 10	25	<10	25	5	5
20.	Sulphide veinlet (oxidised)	3,850	1.37%	95	190	< 10	720	5	5
21.	Gossan	14,100	0.24%	235	70	< 10	175	5	5
Bhukia-Jaggura area:									
22.	Gossanised marble (South central Block)	1,720	800	<50	<25	50	200	<5	<5
23.	Gossanised marble (Eastern Block)	11,000	0.22%	75	<25	900	0.22%	<5	n.a.
24.	Gossan (Central Block)	3,000	0.15%	<50	50	50	100	<5	n.a.
25.	Ferruginous marble (Northern Block)	1,520	0.81%	75	25	50	250	<5	n.a.
26.	Ferruginous amphibole quartzite (Western Block)	650	0.44%	< 50	25	100	300	<5	n.a.

Gold is analysed by Zeeman modulated AAS (AAZ-2) at G.S.I. Chemical Laboratories at Jaipur and Faridabad.
n.a. = not analysed.

The Hinglaz Mata-Bharkundi gold find is located 10 km north of Bhukia Gold Prospect, Banswara district. There are over a dozen old workings spread over about six

sq km area around the Hinglaz Mata temple. Some of these workings are nearly 40 m long, 15 m wide and 25 m deep. Features of roof collapse noted at two places, indicate underground nature of these workings. In Bharkundi area located NNW of Hinglaz Mata, about half a dozen old workings are present.

The continuation of the favourable geological milieu, basemetal incidences (Saxena, 1989; Kanchan, 1989) often with old workings at Deola, Lohagarh, Kukra, Sanjela and Salumbar in the north, suggest the continuity of the auriferous sulphide zones. This view is further corroborated by locality names and temple names related to gold in the area, e.g. Sona Ghati near Kukra, Sonar Mata temple and Sunaria near Salumbar, Vasu (means gold) village north northeast of Salumbar and Beejawa (Hiranyabeejawa) temple east of Aspur etc.

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AWARDS : CALL FOR NOMINATIONS

The following awards of the Society are due for presentation at the next Annual General Meeting to be held at Chennai in October this year. The last day for receipt of nominations is 30th June 1997.

L. Rama Rao Birth Centenary Award : The award is to be given once in two years to a person who has made significant contribution to geological knowledge in the field of Indian Stratigraphy and Palaeontology. The value of the award is Rs. 10,000.

N.N. Chatterjee Award : Instituted by Professor D. Chandra, is to be given for the best contribution on Energy Resources.

JGSI – Radhakrishna Prize : This prize of the value of Rs. 10,000 instituted by the well wishers and admirers of B.P. Radhakrishna on his 75th birth day is to be given to the author or authors of the best paper published in the Journal of the Geological Society of India during 1996.

Nominations are invited from Fellows of good standing for the above mentioned three awards. The nominations must include (i) Biographical information of the nominee, (ii) Summary of the candidate's significant scientific contribution in justification for the award and, (iii) A selected bibliography of ten of the more important papers. The nominations should reach the Secretary, Geological Society of India, P.B.No.1922, Gavipuram P.O., Bangalore - 560 019, on or before 30th June 1997.