

TABLE I
Antiviral spectrum of 6-MFA

Virus	Treatment*	Survivors*	Survival(%)
Group A.			
encephalovirus :			
Semliki Forest ..	6-MFA	22/22	100
(100 LD ₅₀ , s/c)	control		
	(buffer saline)	0/22	0
Chikungunya ..	6-MFA	28/40	70
(10 LD ₅₀ , i/c) ..	control		
	(buffer saline)	5/40	12
Pox Virus:			
Neurovaccinia	6-MFA	10/23	43
IHD strain			
(100 LD ₅₀ i/c)	control		
	(buffer saline)	2/23	9
Group B.			
encephalovirus:			
Dengue Type 2 ..	6-MFA	3/20	15
(10 LD ₅₀ , i/c)	control		
	(buffer saline)	2/17	12

* 6-MFA 3 mg/mouse (175 mg/kg), maximum tolerated dose in mice about 30 mg/kg.

** Mice surviving total number.

70% of test mice when the controls showed 88% mortality. With the dose of neurovaccinia virus (100 LD₅₀, i.c, 0.03 ml.) that killed 91% mice in untreated infected control, 6-MFA treatment protected 43% of the test mice. No effect (antiviral activity) of 6-MFA was seen in mice challenged by dengue Type 2 virus (10 LD₅₀, i.c, 0.03 ml).

In conclusion it may be stated that maximum protection (100%) in mice treated with 6-MFA was seen against Semliki Forest virus, followed by Chikungunya and finally neurovaccinia, IHD. No antiviral activity was observed against dengue Type 2 virus.

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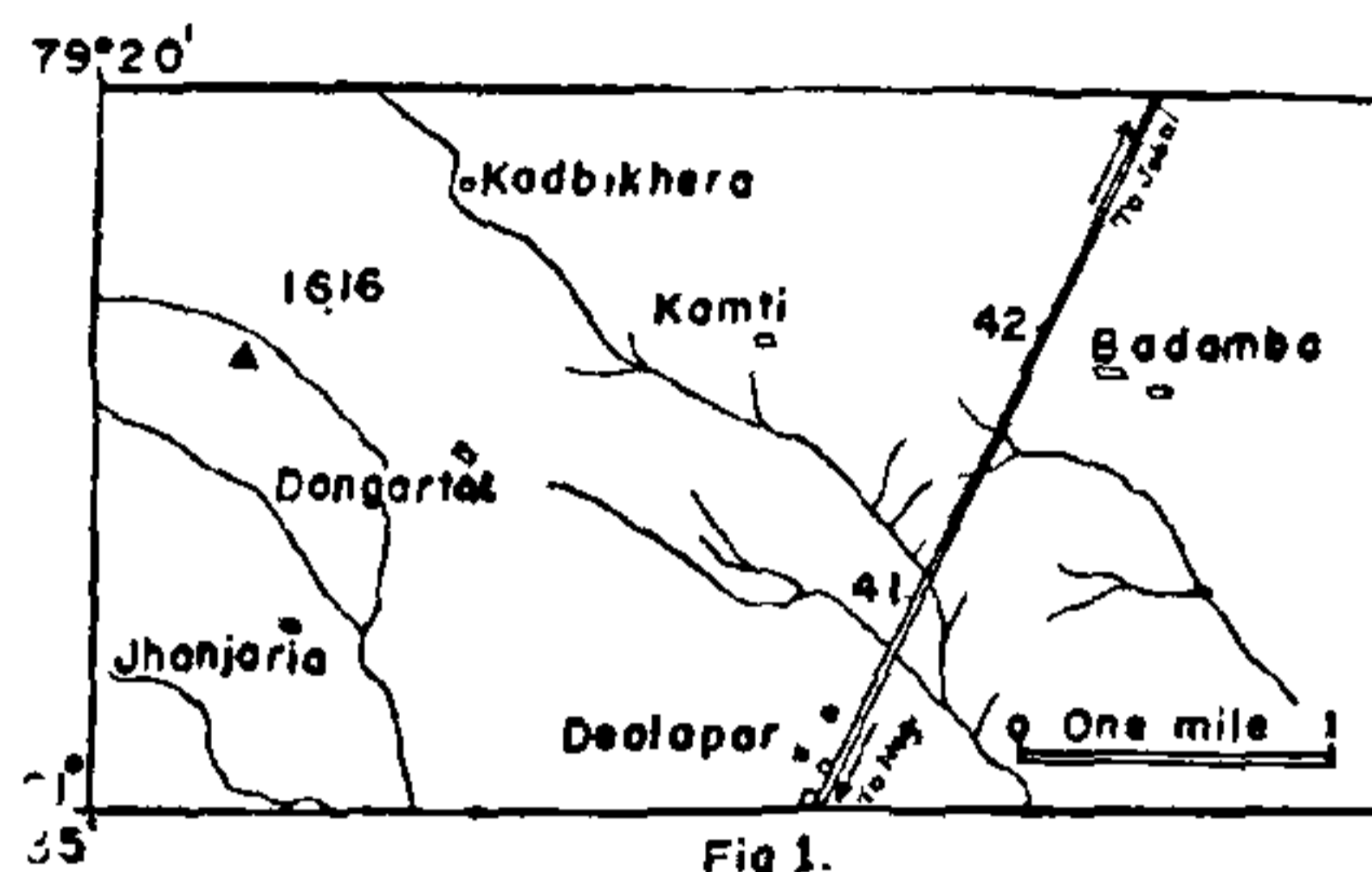
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SOME OBSERVATIONS ON THE SULPHIDE MINERALIZATION IN THE IMPURE BICHUA ROCKS, DEOLAPAR AREA

DURING investigation of the Impure Bichua rocks of the Sausar Series in the Deolapar Nappe area, Nagpur District, Maharashtra State, sulphide

mineralization was observed in quartzo-feldspathic veins which intrude into actinolite-schist and banded diopsidites. The specimens containing the sulphide minerals were collected from the broken blocks of these rocks being used for the construction of a dam situated about 1 mile WNW of the Dongartal village (Fig. 1). The structural and stratigraphic aspects of the area are well known from the significant contributions of Dr. West¹.



▲ SULPHIDE MINERALIZATION

The various sulphide minerals encountered are chalcopyrite, bornite, chalcocite and galena, while magnetite is sporadically distributed. In addition, secondary ore minerals recognized are malachite and azurite which generally occur as surface impregnations and along the schistosity planes of the rocks.

A mineragraphic examination confirmed the identification of chalcopyrite, bornite, chalcocite, galena and magnetite. Chalcopyrite is generally enclosed within bornite and rarely found as discrete grains. Under a high magnification in oil immersion, bornite shows blebs of chalcocite arranged in different patterns of eutectic intergrowths which are either along the cleavage directions (mostly in one and rarely in two directions), or a graphic intergrowth and sometimes even a tendency of segregation towards the margins of bornite. Considering the textural relationships, the following paragenetic sequence is suggested: crystallization of chalcopyrite was followed by simultaneous precipitation of bornite and chalcocite. Galena shows somewhat overlapping relations with the sulphide minerals, while magnetite disseminated in the same neighbourhood must have preceded the formation of all the ore minerals. Malachite and azurite are the secondary minerals formed by alteration of the primary sulphide minerals. The presence of chalcocite in a bladed triangular lattice intergrowth with bornite indicates slow cooling. From the occurrence and association, the sulphide

mineralization is attributed to an epithermal phase genetically related with the hydrothermal pegmatitic activity in the area. Obviously, the quartzo-feldspathic intrusions represent a post-Sausar event related to granites reported from around the area. Of particular interest is the presence of chalcocite which is formed in several ways, and according to Ramdohr² has a variable paragenetic position. Considering the nature of distribution of the primary and secondary sulphide ore minerals, their relationships with the intrusives and the host rocks, it is conjectured that the mineralization is of hydrothermal origin.

As far as known to the authors, this is the first report of the sulphide occurrence in the area. Further, it seems appropriate to mention here that recently extensive sulphide mineralization has been found in quartz-veins and granite intruding the rocks of the Chilpi Ghat Series at Malanjkhanda area, Balaghat District, Madhya Pradesh. According to Fermor³ the Chilpis represent a less metamorphosed facies of a large portion of the Sausar Series and he regarded them as two aspects of the same period of deposition. The two areas, although a few miles apart, can be compared and correlated to some extent. Considering more or less analogous ore mineralogy in the two series of rocks and their genetic relationships with the granites, pegmatites and quartz-veins, it should be a rewarding attempt to look into the possible existence of more sulphide deposit of economic value in the area under investigation in greater detail.

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BURIED SINKHOLE OF DHAMTARI IN THE CHARMURIA LIMESTONE OF RAIPUR DISTRICT IN MADHYA PRADESH AND ITS HYDROGEOLOGICAL SIGNIFICANCE

ABSTRACT

The studies in part of Chhattisgarh basin have revealed that the Purana limestones, both calcareous and magnesian are typically karstic. The contacts of limestone with sandstone and shale have come to be known as major zones of karstification with development of sinkholes of varied shapes and dimensions. Recent hydrogeological work has revealed the nature of one of the giant sinkholes in the Charmuria limestone, lying buried under the Mahanadi alluvium. The paper emphasizes need for detailed study in 200 km stretch of the Mahanadi alluvium with a view to locate several such buried sinkholes as they are found to be profusely rich in their groundwater potential.

The main saucer-shaped Purana basin of Chhattisgarh, covering about 37,000 sq km in areal extent, occupies the major part of Raipur, Durg, Bilaspur and Raigarh districts of Madhya Pradesh. This has been taken up for systematic hydrogeological study by the Geological Survey of India for the last four field seasons, covering about 10,000 sq km in eastern and southern parts of the basin in south Raipur and Durg districts.

The basin is all through fringed by coarse arenaceous sediments comprising conglomerates, quartzitic sandstones, shales and sub-arkoses of Chandarpur Stage, attaining a maximum thickness of 200 m and a maximum width of 20 km along the girdle of the fringe belt. They are overlain by calcareous sediments comprising flaggy limestones of Charmuria Stage, attaining a maximum thickness of 200 m and a width of 15 km along the inner girdle. They are in turn overlain by Gunderdehi shales (maximum thickness 300 m) and Raipur stromatolitic limestones (maximum thickness 200 m) towards the centre of the basin.

Recent study has revealed that the limestones, both calcareous and magnesian of Charmuria and Raipur Stages are typically karstic with beautiful karst topography strewn all over the limestone terrain of the basin. The contacts of limestone with the sandstone of Chandarpur Stage and the shale of Gunderdehi Stage, involving facies change along the outer and inner girdle respectively, have come to be recognised as major zones of karstification with development of great sinkholes of varied shapes and dimensions strewn all over the exposed limestone terrain.

The contact of flaggy Charmuria limestone with the quartzitic sandstone of Chandarpur Stage has been of particular significance in both eastern and