

### A Problem in the Correlation of Pre-Cambrian Granites of Danta State

DANTA STATE in Rajputana had been surveyed by me<sup>1</sup> about a decade back, and it has been re-surveyed recently by Dr. Heron.<sup>2</sup> The fundamental difference in the interpretation of the geology of this State between Dr. Heron and myself is as follows:—

(1) Dr. Heron regards the fine-grained, non-porphyrific, banded, streaky and foliated pink 'granite-gneiss' as sheet intrusions, almost contemporaneous with the coarse-grained, porphyritic, homogeneous and white or cream-coloured 'Erinpura granite'—Post-Delhi in age. On the other hand, I had regarded the 'granite-gneiss' as a Post-Aravalli but Pre-Delhi intrusion, and older than the Erinpura granite.

(2) Dr. Heron regards the metamorphosed calcareous series (consisting of calc-schist, calc-gneiss, crystalline limestone and marble) as Ajabgarhs (the uppermost series of the Delhi System), whereas I had regarded this series as Aravallis.

The above two problems are inter-connected with each other. If we assume that the calc-series belongs to the Delhi System, there is no other alternative left but to regard the granite-gneiss to be a post-Delhi intrusion, and consequently contemporaneous with Erinpura granite, as both the gneiss and the granite show intrusive relations to the calc-series, and there has been no other acid phase of igneous activity after the Delhis and before the intrusion of Erinpura magma. Conversely, if we regard the two intrusions of the granite-gneiss and the Erinpura granite of Danta State to be of two different ages—the granite-gneiss belonging to the phase of the acid igneous activity after the Aravallis and before the Delhis, which has been observed in north-east Rajputana<sup>3</sup> then the calc-series must be regarded as Aravallis and not Delhis.

The granite gneiss forms an almost continuous mass of intrusion in the central portion of the State, extending from north to south. Some of the highest hills and ridges, like 'Sur', 'Dhamanawa', 'Ritaro' and 'Ghori', are made up of this gneiss. This granite-gneiss also extends

further northwards along the Danta-Sirohee-Mewar Frontier, where it had been already mapped by Dr. Heron and his colleagues as Erinpura granite, before any of them studied it in its type area (Danta State). Intrusions of typical Erinpura granite are common in this central belt of granite-gneiss, towards its southern margin. The junction of Erinpura granite with the granite-gneiss is quite sharp. For example, at the southern extremity of the Danta State (north-west of Nedardi in the adjoining State of Bhalusana), a small *nala* marks the boundary of the granite (which is here characteristically of Erinpura type) and the granite-gneiss (which is here highly foliated). There is no gradation between the two types at this locality. Further north-eastwards of this locality (near hill 1932, S.E. of Navavas), a big tongue of typical Erinpura granite, from the main mass, cuts across a small ridge of finely foliated granite-gneiss, and there too no gradation is seen between the two types. Dr. Ghosh<sup>4</sup> who had surveyed the Umbri, Bhalusana and other smaller States at the southern boundary of the Danta State, also agreed with me in regarding this granite-gneiss to be definitely older than the Erinpura granite, as he had found the former occurring as inclusions in the latter. Dr. Heron himself regards the Danta State to be the "keystone in the arch" of the geology of Rajputana and northern Bombay.<sup>5</sup> For reasons indicated above, I am still of opinion that the granite-gneiss and the Erinpura granite of this State are not contemporaneous, and they represent two different intrusions. This conclusion will naturally affect very seriously the age of the calcareous series of Danta State and other sedimentaries of the adjoining areas, and ultimately the geological history of this portion of Rajputana.

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<sup>1</sup> *Q.I.G.M.M. Soc. Ind.*, 1931, III, 17-28.

<sup>2</sup> *Rec. G.S.I.*, 1938, 72, 367-412.

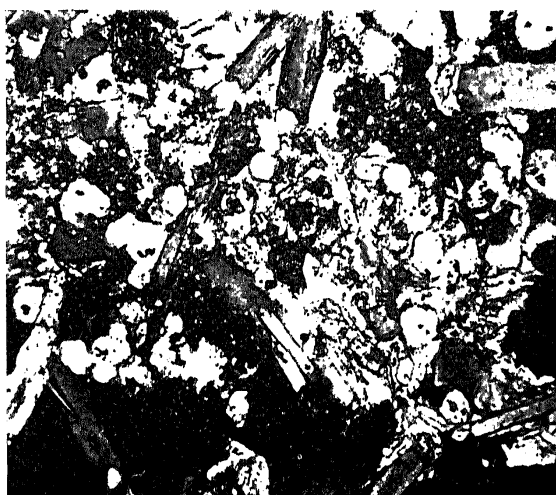
<sup>3</sup> *Mem. G.S.I.*, 1917, 45, 21.

<sup>4</sup> As cited by—*Rec. G.S.I.*, 1934, 68, 70.

<sup>5</sup> *Rec. G.S.I.*, 1936, 71, 69

Pseudomorphs after Leucite in the  
"Mica-trap" of Jharia Coalfield

WHILE studying the micro-sections of the 'mica-trap' from the Pathardih area of the Jharia Coalfield, I have found that its groundmass is made up of innumerable brownish turbid patches in case of the finer grained variety, and of water-clear patches in case of the coarser-grained one. These patches are strikingly polygonal or subrounded, and equidimensional. They are either isotropic, or are composed of weakly anisotropic material which is orthoclase feldspar showing brush extinction, or spherulitic intergrowth of feldspar and quartz. Sometimes cryptocrystalline quartz, calcite or limonite also forms a portion of the material of these patches. A few microscopic inclusions of opaque iron ore are observed arranged in the centre. The refractive index of the material forming these equidimensional grains is usually less than that of canada balsam. These patches cannot be originally of opal or of glass, as both the latter are amorphous and cannot show such hypidiomorphic outline. These grains occur in clusters in the groundmass and their refractive index is very low compared to that of apatite needles (present in the same slide), and is even lower



than that of canada balsam. Hence, these grains are not of apatite. The remarkable equidimensional sections of most of these grains and the absence of any longitudinal prismatic section amongst them in the whole slide, show that they were not originally of feldspar or quartz, which may have formed by replacing the groundmass or as amygdules in it. It is,

therefore, concluded that these crystals must have been of an isometric mineral—probably leucite—which has been replaced or altered by the felspathic material during the late magmatic changes undergone by the rock. These pseudomorphs are illustrated in the accompanying photomicrograph (ordinary light  $\times 60$ ), kindly taken by my friend, Mr. G. C. Chaterji.

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A Yellow-flowered Variety of *Gynura crepidioides* Bth.

RECENTLY some notes were inserted in this *Journal* concerning the rapid dispersal of *Gynura crepidioides* in Asia. Now I can report the appearance of a yellow-flowered sport in the advancing population.

We received a duplicate of a sheet collected in China, Kwantung Prov., W. T. Tsang 20763, collected at Chong Uen Shan near Kau Fung, Loh Ch'ang district, "Abundant on dry, steep, sandy slopes, in a meadow, weed 1 m. tall, flowers yellow, odorless". The specimen which was not identified was collected before 1932 for Lingnan Herbarium, Canton.

In June Mr. C. N. A. De Voogd, Forest Officer of Buitenzorg Res., collected SW. of Buitenzorg, in the neighbourhood of Djasinga at about 125 m. alt. amidst normally coloured plants, also some plants conspicuous by their golden yellow heads, anthocyanes apparently failing. No other distinctive characters against the normal red-brown flowered plants could be found.

I propose to name this yellow sport var. *lutea* nov. var.

In the Netherlands Indies the plant is still spreading eastward and is now also collected in Timor. I expect its appearance in Australia within a few years.

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Herbarium, Buitenzorg,

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<sup>1</sup> *Curr. Sci.*, 1938, 7, 21, 116, 385.