A PRELIMINARY REPORT ON THE HISTORY OF EVOLUTION OF THE BONAI GRANITIC COMPLEX

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ABSTRACT

The granitic massif around Bonai town in the eastern part of Sundargarh District is referred to as Bonai Granite in geological literature. It covers an area of about 700 sq. km. and is surrounded by metasedimentary rocks of different ages in all sides. Th massif is considered to be copmosed of three varieties of granitic rocks, namely, tonalite (T), porphyritic granite (PG) and medium grained granite (MGG) . Investigation reveals that the MGG is the dominant rock type in the area northwest of Bonai town. It is a dark grey coloured K-feldspar (microcline) granite. It is usually massive, except in areas cut across by faults and shear zones. In addition to the above three types, two other varieties of granite are present. Establishing the mutual relationship of the granitic units is of prime importance in understanding the history of evolution of the granitic massif.

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It is observed that large blocks of gneissic granite (GG) occur surrounded by MGG. The GG is intruded by veins and bands of basic rocks, now represented by meta-gabbro and amphibolite. The veins are co-folded with the gneissosity. Huge bands and strips of quartzite also occur as enclaves MGG around Darjing. MGG is intruded by a light grey granite (LGG) which is characterised by weakly developed compositional banding. It is inferred from the above relationship that the GG is the oldest among the granitic units and suffered a phase of deformation (with the development of gneissosit prior to intrusion by basic rocks During the next (i.e. second) phase of deformation the gneissosity as well as the basic rocks were co-folded. Possibly sedimentation took place over the GG basement and then both were defromed and intruded by the MGG during third phase of deformation dolerite dykes intude all the rock types mentioned above, and hence represent the last phase of deformation in the area of investigation. It can be concluded that the granitic massif around Bonai is a composite body and can be properly called as Bonai Granitic Complex. More detailed investigation is necessary to establish the exact number of granitic units present and understand the complex history of evolution.

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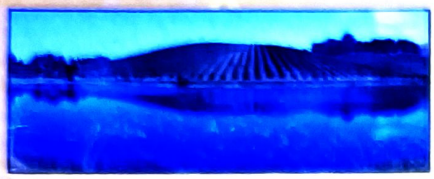

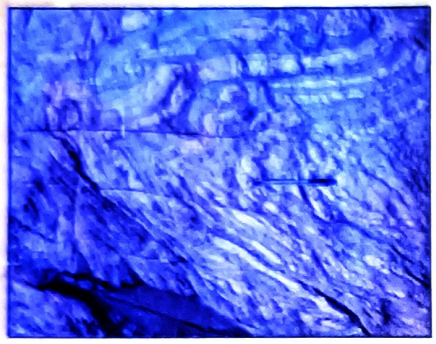

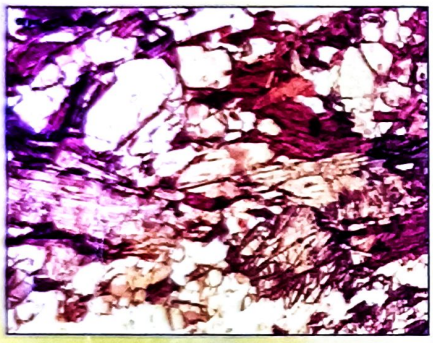

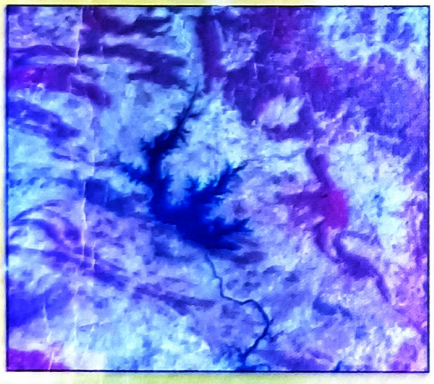

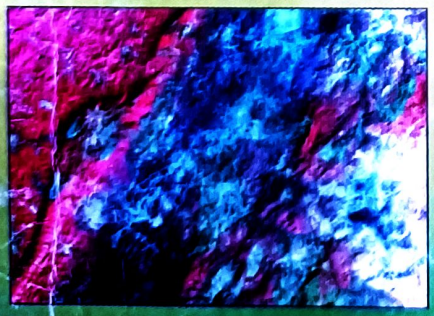

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