

CHAPTER-X

SUMMARY AND CONCLUSIONS

The area under study is nearly 744 square kilometers in extent. The rock types of this area are metasediments, basic and acid members of the Charnockite series, and their variants plagioclase amphibolites and dark grey granodiorite gneisses, pink granite and dolerite dykes.

The metasediments are the oldest rocks of the thesis area and are represented by the pelitic, semipelitic and ferruginous psammitic members. The calcareous members are absent. They are formed by the metamorphism under granulite facies conditions. The cordierite-garnet-spinel gneiss has been formed at $650 \pm 50^{\circ}\text{C}$ and $5.5 \pm 0.5 \text{ Kb}$.

The Charnockite series comprise the basic and acid members. The basic members are two-pyroxene granulites while the acid members are represented by enderbites. The basic members have resulted due to metamorphism of pre-existing basic igneous rocks under granulite facies conditions. Two-pyroxene geothermometry indicates their formation at $800-890^{\circ}\text{C}$. In places, they are converted to plagioclase amphibolites by retrogression due to emplacement of pink granites. The enderbite has formed from granodioritic magma owing to its consolidation under granulite facies conditions. They are converted to grey granodiorite

gneisses due to emplacement of pink granites which also imparted a gneissic texture to these rocks.

The pink granite is represented by both foliated and massive varieties. The field and petrological characteristics of pink granite suggest that granite magma was involved in its formation and it was emplaced under almandine-amphibolite facies conditions.

The dolerite dykes display variation in mineralogical composition from olivine dolerite to quartz dolerite. Their petrological characteristics indicate their probable formation due to fractional crystallisation-differentiation of tholeiitic magma.

The rock types of the area exhibit structural elements that suggest their folding as major antiforms and synforms whose axes trend in a NE-SW direction with a plunge of around 40° in the south-west direction. The minor structural elements are parallel to the axes of major folds. Granites and older rock types display two sets of vertical joints and, in places, sheet joints. The rocks were subjected to stresses after the formation of pink granite and were sheared in places.

The dolerites usually display a NW-SE trend and are parallel to the transverse joints developed in pink granite and older rocks. This suggests that the pre-existing transverse joints have controlled the intrusion of dolerite dykes in this area.