CHAPTER 11

SUMMARY AND CONCLUSIONS

In the preceding chapters of this thesis the author has given a detailed account of his investigations, observations and conclusions in respect of the Mesozoic rocks of the Wagad hills. He has been able to establish a detailed stratigraphic framework in relation to environments of deposition in the Wagad basin which formed a sub-basin of the regional Kutch basin that existed during the Mesozoic times.
To summarise:

(1) The author has successfully established a formal stratigraphic classification and regional correlation of the Wagad hills. He has designated the entire sequence as 'Wagad Group' which has been divided into three formations viz. the Washtawa Formation, Kanthkot Formation and the Gamdum Formation.

(2) He has found that the stratigraphic cross section of the Wagad Group shows a wedge shaped geometry with tapering end towards NE. The percentage of finer clastics gradually increases towards thicker end i.e. towards WSW and SW.

(3) The study reveals that the paleocurrent system remained stable throughout the deposition of the Wagad rocks. The prominent cross bedding directions are seen to be SW and WSW being sub-parallel to the paleoslope. The formational thickness show increase in the same direction.

(4) The grain size study shows that areally the mean grain size of sandstones of all the formations indicate a gradual decrease in size from E to W. This change corresponds well with the paleocurrent directions and in turn, reflects the direction of
transport. Vertically, the Washtawa and the Lower Kanthket Formations show 'upward coarsening' pattern of the mean grain size while the Upper Kanthket and the Gamdau Formations, show 'fining up' pattern.

5) The area is bounded by a high angled fault to the S with a regional E-W strike. This fault—the South Wagad fault and its branching faults, are associated with narrow linear asymmetrical flexure zones comprising domes and anticlines towards the upthrown side. These faults mark the fundamental basement fractures. The flexure zones described as 'fault folds' appear to be the results of differential uplift of basement blocks along the faults accompanied by bending or draping of the sediments over the fault scarps.

6) The Northern Range structures which are neither associated with any major fault nor show any preferred orientation are described as idiomorphic folds.

7) The main tectonic activity took place during post-Upper Kanthket and pre-Gamdau time.
The area is marked by two distinct cycles of marine regression followed by deltaic environments in the eastern parts. Western half experienced two cycles of marine regression followed by marine transgression and fluvial environments.

Stable shelf tectonic conditions coupled with mild subsidence prevailed over the northern parts of the basin while southern and south western parts experienced mildly unstable conditions which resulted into moderate subsidence. The northern half is marked by mild uplift, while the southern parts show moderate uplift. The uplift took place during post-Upper Kanthkot and pre-Gamdau time.

The author has worked out in far detail the stratigraphy of the area for the first time, and his results are summarised in the enclosed Table 11.1. The sedimentary model of the basin has been given in the Table 11.2.

The author has come to conclusion that the rocks of the Wagad basin to a great extent, contain in a nutshell, the various depositional events and characteristics of the regional Kutch basin. It would be most
Cross bedding, small to medium size, match well with the paleoslope. Asymmetrical ripple marks, subparallel to depositional strike.

Cross bedding, small to medium scale, generally subparallel to the paleoslope. Symmetrical and asymmetrical ripple marks.

Sandstones, quartz arenite to quartz wacke type, varying from 90% to 70%.

Shales, grey to dark grey, brownish, khaki, constitute rest of the amount.

Sandstones, quartz wacke to quartz arenite, occasionally micaceous, constitute about 75% to 30%.

Shales, grey to khaki, silty, constitute rest of the percentage.

Mainly longitudinal filling. Section shows sharp increase in thickness towards SW and WSW in the paleoslope direction. Higher shale percentage in the W.

Section expands towards WSW and SW along the paleoslope; shale percentage increase towards W.

Mainly longitudinal filling prevailed.
appropriate if similar studies are extended by future workers to the north and west, many complexities of stratigraphy and tectonics of Kutch basin will be adequately unravelled.