

C O N T E N T S

	<u>Page</u>
<u>Chapter I : INTRODUCTION</u>	1
Himalayas in General	3
Ramgarh-Mukteswar area	6
Scope of the present work	12
<u>Chapter II : PREVIOUS WORK</u>	14
<u>Chapter III : GEOLOGICAL SETTING</u>	23
Almora Nappe	25
Upper Schistose Group	25
Mukteswar Gneissic Group	28
Bhulmaria Schists and Phyllonites	31
Krol Nappe	34
Nathuakhan Quartzites and Phyllites	34
Sayalgad Limestone	37
Lusgaini Quartzites and Slaty Phyllites	41
Ramgarh Group	44
Titoli Quartzites	51
Discussion	53
<u>Chapter IV : PETROGRAPHY</u>	55
Rocks of Almora Nappe	55
Mica Schists	56
Gneisses	68
Flaggy Quartzites	75
Chlorite Schists	77
Phyllonites	80

Rocks of Krol Nappe	82
Quartzites	82
Phyllites	87
Limestone	93
Mylonitised Granitic Rocks	94
Epidiorites	100
Metabasalts	103
 <u>Chapter V : STRUCTURAL GEOLOGY</u>	 105
Structural elements of the rocks of Almora Nappe	109
Planar structures related to the isoclinal folding (F_1)	110
Linear structures related to the isoclinal folding (F_1)	112
Planar structures related to the South Almora thrust	114
Linear structures related to the South Almora thrust	114
Planar structures related to the folding of the Almora thrust (F_2)	115
Linear structures related to the folding of the Almora thrust (F_2)	115
Planar structures related to the NNE-SSW folding (F_4)	117
Linear structures related to the NNE-SSW folding (F_4)	117
Structural Analysis	117
Structural Synthesis	125
Structural Elements of the rocks of Krol Nappe	125
Planar structures related to the South Almora thrust	125
Linear structures related to the South Almora thrust	126

Planar structures related to the folding of Almora thrust	126
Linear structures related to the folding of Almora thrust	127
Planar structures related to the E-W folding (F_3)	127
Linear structures related to the E-W folding (F_3)	128
Planar structures related to the Ramgarh thrust	128
Linear structures related to the Ramgarh thrust	128
Planar structures related to the NNE-SSW to NE-SW folding (F_4)	130
Linear structures related to the NNE-SSW to NE-SW folding (F_4)	130
Structural Analysis	130
Structural Synthesis	136
Nature of the South Almora thrust	138
Nature of the Ramgarh thrust	141
Strain-slip (crenulation) cleavage in Almora and Krol Nappes	145
 <u>Chapter VI : METAMORPHISM AND MIGMATISATION</u>	 154
Metamorphism in Almora Nappe	155
Metamorphic Event I	155
Metamorphic Event II	163
Mineralogical changes brought about by the retrogression	164
Metamorphic Event III	165
Migmatisation in Almora Nappe	166
Evidences of Migmatisation	168
Chemical criteria	171

Probable mechanism of migmatisation	171
Migmatisation in relation to various deformational episodes	177
Metamorphism in Krol Nappe	179
Metamorphic Event I	180
Metamorphic Event II	182
Metamorphic Event III	182
Metamorphic Event IV	183
<u>Chapter VII : RESUME</u>	185
ACKNOWLEDGEMENTS	190
REFERENCES	191

LIST OF FIGURES

I.1	Location map	2
II.1	The crystalline thrust masses in the Kumaon Lower Himalayas Almora	19
II.2	Generalised tectonic map of Nainital-Almora-Kausani area.	21
III.1A	Geological map	At the back of the thesis
III.1B	Geological section	
V.1	Foliation map	
V.2	Lineation map	
V.3	Sketch map showing the sub-areas	119

V.4	Stereogram showing the relationship between L_3 and L_7 in the sub-area I	122
V.5	Stereograms showing the structure of the sub-area I	123
V.6	Stereograms showing the structure of the sub-area II	124
V.7	Stereograms showing the structure of the sub-area III	132
V.8	Stereograms showing the structure of the sub-area IV	134
V.9	Stereograms showing the structure of the sub-area V	135
V.10	Sketch diagram showing the sense of movement along the South Almora thrust	140
V.11	Sketch map showing how Ramgarh thrust is cutting F_3 structures	144
V.12	Stereograms showing the lineations related to Ramgarh thrust	146
V.13	Stereograms showing the axial planes of monoclinial flexures	147
V.14	Synoptic stereogram showing the relationship between S_5 , L_5 and L_6	148
V.15	Types of strain-slip cleavage	153
VI.1	Comparison diagram	158
VI.2	ACF diagram for mica schists	161
VI.3	Variation diagram for migmatites	173