

## CONTENTS

	Page
Preface -----	ii
Summary -----	<b>ix</b>
I. Introduction -----	1
Objectives -----	1
Mapping methods -----	1
Character of region -----	3
II. Regimen -----	5
Climatology -----	5
Weather shelters -----	5
Temperature -----	5
Radiation and cloud cover -----	9
Precipitation and humidity -----	11
Barometer and wind -----	12
Ablation -----	12
Observations -----	12
Toe of the ice cliff -----	15
Vertical ice cliff -----	16
Cliff calving -----	18
Glacier surface above -----	18
Evaporation -----	22
Drifted snow -----	23
Discharge of melt water -----	23
Lake level -----	23
Outlet flow -----	24
Rating curve -----	25
Diurnal cycling -----	25
Total discharge -----	28
Summary of glacier budget -----	29
III. Motion -----	31
Ice cliff surface -----	31
Observation stakes -----	31
Cryokinograph -----	32
Annual motion -----	33
Seasonal variation -----	36
Diurnal variation -----	38
Glacier surface -----	41
Measurements -----	41
Annual motion -----	42
Seasonal motion -----	44
Base of glacier -----	44
Tunneling -----	44
Peg positions -----	46
Micromotion wires -----	46
Forward motion -----	47
Shear at the base -----	48
Shear nearer the cliff front -----	52
Tilting -----	55
Summary of glacier flow -----	56

## CONTENTS (cont'd)

	Page
IV. Structure -----	57
Physical properties -----	57
Temperature -----	57
Ice densities -----	63
Foliation and fracture -----	64
Surface structure map -----	64
Plot of tunnel -----	65
Tension cracks -----	65
Foliation and bubbles -----	66
Dirt bands -----	68
Crystal distortion -----	71
Crystal fabric -----	71
Distortion of cores -----	73
Englacial strain -----	78
Closure measurements -----	78
Predicted closure -----	79
Summary of ice structure -----	82
V. History -----	84
Late glacial times -----	84
Geomorphological studies -----	84
Deduced glaciation -----	87
Deglaciation -----	88
Recent glacier activity -----	91
Botanical studies -----	91
Recent readvance -----	91
Continuing retreat of Greenland Ice Cap -----	93
Advance of North Ice Cap -----	94
Balance of present regimen -----	97
Photogrammetric surveys -----	97
Net gain in ice -----	101
Check with motion-ablation measurements -----	103
Summary of cliff changes -----	105
References -----	107
Appendix: Supplementary glacial studies, 1957 -----	A1