## **Contents**

1.	NATURE OF GROWTH	1
	Definition	1
	Processes of growth	3
	Cell division and differentiation	3
	Growth of intercellular matrix	12
	Results of cell function	14
	Phases of growth	14
	Growth curves	17
2.	GROWTH IN HEIGHT AND WEIGHT	23
	Growth in height	23
	Growth curves and growth charts	23
	Prediction of adult height	32
	Growth in weight	34
	Growth curves and growth charts	34
	Changes in body composition	42
	The merits of size	44
3.	GROWTH OF TISSUES	51
	Connective tissue	51
	Skin	54
	Muscle and tendon	55
	Nervous tissue	59
	Cartilage and bone	61
	Formation and growth of cartilage	61
	Ossification	62
	Growth of short bones	63
	Growth of long bones	64
	Growth of movable joints	72

## viii Contents

4.	GROWTH OF SYSTEMS	73
	Patterns of growth	73
	Lymphoid pattern	74
	Neural pattern	74
	Gonadal pattern	74
	Uterine pattern	74
	The skeleton	75
	The limbs	75
	Skull and mandible	77
	Vertebral column	84
	Nervous system	85
	Cardiovascular system	87
	Haemopoietic system	91
	Lymphatic system	92
	Respiratory system	93
	Digestive system	94
	Urinary system	95
	Reproductive system	97
	Endocrine system	99
5.	INDICES OF MATURITY	102
	Bone age	102
	Dental age	106
	Sexual age	109
	Estimation of chronological age from anatomical data	113
	Neural age	114
	Mental age	117
	Physiological age	119
	Late and early development	121
6.	CHANGES IN SHAPE AND POSTURE	123
	The allometry equation	123
	Shape of the infant	124
	Changes in shape with growth	126
	Classification of physique	131
	Changes in posture with growth	138
	Drawbacks of the erect posture	136
	Diamogens of the elect hostine	173

		Contents	ix
7.	FACTORS INFLUENCING GROWTH AND		
	MATURATION		148
	Genetic control		148
	Neural control		151
	Hormonal control		152
	Nutrition		158
	Secular		162
	Socio-economic class		165
	Season and climate		165
	Exercise		167
	Disease		167
	Antenatal insults		168
	Emotion		169
8.	GROWTH AND REPAIR		170
	Growth cycles: wear and tear		170
	Regeneration		177
	Repair of skin		179
	Repair of fractures		184
	Repair of other tissues and organs		187
	Regeneration of peripheral nerve		189
9.	DISTURBANCES OF GROWTH		195
	General disturbances		195
	Local disturbances		203
10.	OLD AGE		214
	Senescence		214
	Ageing of cells and tissues		216
	Changes in cells		216
	Degeneration		219
	Changes in tissue matrix		219
	Ageing of systems		221 221
	Locomotor system		221
	Nervous system		226
	Cardiovascular system		220
	Haemopoietic system		228
	Lymphatic system		228
	Respiratory system		220

## x Contents

Digestive system	230
Urinary and reproductive systems	230
Endocrine system	232
Skin	233
Theories of ageing	234
SUGGESTED FURTHER READING	239
INDEX	241