Contents

Preface to the Fourth Edition Preface to the First Edition	vii ix
1. General Considerations of Bone 1	Ossification 32
Properties 1	Applied anatomy 33
Functions 1	5. The Radius 36
Chemical composition 1 Structure of bone 1 Classification of bones 3 Parts of a young long bone 5 Features of bones 5	Side determination 36 Features and attachments 36 Ossification 40 Applied anatomy 40
	6. The Ulna 44
Blood supply of bones 6 Joints 7 Applied anatomy of bones 11	Side determination 44 Features and attachments 44 Ossification 49
2. The Clavicle 13	Applied anatomy 49
Side determination 13 Functions 13 Peculiarities of clavicle 13 Features and attachments 14 Ossification 15 Applied anatomy 16	7. The Carpal Bones 51 Carpus 51 Articulated carpal bones 51 Individual carpal bone 52 Ossification 55 Applied anatomy 56
3. The Scapula 18	8. The Metacarpal Bones 58
Side determination 18 Features and attachments 18 Ossification 24 Applied anatomy 25	Metacarpus 58 Identification of metacarpal bones 58 Features and attachments 59 Ossification 60
4. The Humerus 26	Applied anatomy 60
Side determination 26 Features and attachments 26 Caspular attachments 30 Angles 31	9. The Phalanges of the Hand Characteristics 61 Ossification 62 Applied anatomy 62

10.	The Hip Bone	64	reatures and attachments 103	
	Side determination 64 Normal anatomical position 64		Ossification 104 Applied anatomy 104	
	Features and attachments 65 Ossification 73		14. The Tibia	106
	Sexual dimorphism 73		Peculiarities 106 Side determination 106	
	The Bony Pelvis	74	Features and attachments 106	
	Pelvic girdle 74 Divisions of pelvis 74 Anatomical position 75 Boundaries of pelvic inlet 75 Boundaries of pelvic outlet 76 Boundaries of pelvic cavity 76 Pubic arch and subpubic angle 76 Functions of pelvis 76 Axes of pelvis 77 Pelvic segments 77 Posterior sagittal diameter of Klein 77 Pelvic inclination 78 Planes of pelvic dimensions 78 Conjugate diameters 78 Least diameter of pelvis 78 Types of pelvis 78 Diameters of pelvis 79 Sex differences in adult pelvis 80 Applied anatomy 81		Capsular attachments 113 Ossification 113 Applied anatomy 113	
			15. The Fibula	117
Bor Pul Fur Axe Pel Pos			Peculiarities 117 Side determination 117 Features and attachments 118 Ossification 122 Applied anatomy 122	
		77	16. The Tarsal Bones	124
			Tarsus 124 Identification of tarsal bones skeleton 124 Individual tarsal bones 124 The talus 124 The calcaneus 128 The navicular bone 131 The cuboid bone 133	in foo
12.	The Femur	87	The cuneiform bones 135	
	Side determination 87 Anatomical position 87 Angle of femoral torsion 88 Features and attachments 88 Sex differences 95 Ossification 95 Applied anatomy 96		17. The Metatarsal Bones Metatarsus 137 Identification of metatarsal bones Features and attachments 138 Ossification 139 Applied anatomy 139 18. The Phalanges of the Foot	137 137
13.	The Patella	102	Characteristics 140	170
	Peculiarities 102 Side determination 102		Ossification 140 Applied anatomy 141	

19.	The Vertebrae	142	22.	The Hyoid		198
	General considerations 142 Curvatures of vertebral column 143 Movements of vertebral column 143 Features of a typical vertebra 143			Location 198 Features and attachments 1 Ossification 200 Applied anatomy 200	98	
	Distinguishing features 144		23.	The Mandible		201
	Typical cervical vertebra 145 First cervical vertebra 147 Second cervical vertebra 149 Typical thoracic vertebra 151 Atypical thoracic vertebrae 153 Typical lumbar vertebra 154			Peculiarities 201 Features and attachments 2 Ossification 206 Age changes in mandible 20 Applied anatomy 207		
	Atypical (5th) lumbar vertebra 157		24.	The Maxillae		211
	Sacrum 157 Coccyx 162 Ossification of vertebrae 163 Applied anatomy 164	470		Location 211 Features and attachments 2 Ossification 214 Age changes in maxilla 214 Applied anatomy 214	11	
20.	The Sternum Terminology 176	176	25	The Parietal Bones		217
	Features and attachments 176 Manubrium (presternum or episternum) 176 Body (mesosternum or gladiolus) 176 Xiphoid process (xiphisternum or metasternum or ensiform	8		Side determination 217 Features and attachments 2 Ossification 219 Age changes 219 Applied anatomy 219	17	
	cartilage) 180		26.	The Frontal Bone		221
21.	Sex differences 180 Ossification 180 Applied anatomy 180 The Ribs	182		Location 221 Features and attachments 2 Frontal sinus 224 Ossification 224 Applied anatomy 224	21	
	General considerations 182					
	Classification of ribs 183 Typical rib 183 First rib 188 Second rib 190 Tenth rib 191 Eleventh rib 192 Twelfth rib 192 Ossification of ribs 193 Applied anatomy 194		27.	The Temporal Bones Side determination 226 Features and attachments 2 Spaces and canals 233 External acoustic meatus 23 Middle ear space (tympanic can be seen a space and canals 23) Mastoid antrum 236 Bony labyrinth (osseous labyring 239) Applied anatomy 239	33 avity)	226 234 237

28.	The Auditory Ossicles		241	34. The Interior Nasal Conchae	264
	Terminology 241 Features and attachments Malleus 241 Incus 242 Stapes 242 Ossification 242 Functions 242 Applied anatomy 243	241		Terminology 264 Location 264 Features and attachments 264 Ossification 265 Applied anatomy 265 35. The Vomer Terminology 266	266
29	The Occipital Bone		244	Location 266 Features and attachments 266	
20.	Location 244 Features and attachments Ossification 248	244	277	Ossification 267 Applied anatomy 267	000
	Applied anatomy 249			36. The Sphenoid Bone	269
30.	The Zygomatic Bones		250	Terminology 269 Anatomical position 269	
	Terminology 250 Features and attachments Ossification 252 Applied anatomy 252	250		Articulations 269 Features and attachments 269 Ossification 275 Applied anatomy 276	
31.	The Nasal Bones		254	37. The Palatine Bones	277
	Location 254 Features and attachments Ossification 255 Applied anatomy 255	254		Terminology 277 Location 277 Features and attachments 277 Ossification 280 Applied anatomy 280	
32.	The Lacrimal Bones		257	38. The Skull (General Features)	282
	Terminology 257 Peculiarities 257 Location 257 Features and attachments Ossification 258 Applied anatomy 258	257		Introduction 282 Neurocranium 283 Facial skeleton (viscerocranium or splanchnocranium) 283 Anatomical position of skull 283 Applied anatomy 284	202
33.	The Ethmoid Bone		260	39. The Exterior of the Skull	286
	Terminology 260 Location 260 Features and attachments Ossification 262 Applied anatomy 262	260		Norma verticalis 286 Norma occipitalis 288 Norma frontalis 290 Norma lateralis 294 Norma basalis 298	

40. The Orbital Cavity	308	Primary and secondary centres 332
Definition 308 Shape and parts 308 Bony contributions 308 Communications 309 Measurements 310 Features 311 Applied anatomy 313		Fusion of ossification centres 332 Fusion between adjacent bones 332 Epiphysis and diaphysis 332 Clinical significance 333 Cartilaginous nasal capsule 333 Appearance and Fusion of Ossification centres 333 Times of the fusion of epiphyses with
41. The Nasal Cavity	315	diaphysis (in years) 335 Ossification of clavicle 335
Features 315 Applied anatomy 317		Ossification of clavicle 333 Ossification of bones of upper limb (except clavicle) 336
42. Interior of the Cranial Vault	320	Ossification of bones of lower limb 337
Definition 320 Shape 320 Bones 320 Sutures 320 Features 320 Applied anatomy 321		Ossification of sternum, ribs and vertebrae 338 Ossification of mandible, hyoid, parietal bone and frontal bone 339 Ossification of occipital bone and sphenoid 340 Ossification of temporal bone, palatine
43. Interior of the Base of the Skull	322	bone, lacrimal bone, zygomatic bone and maxilla 341
Definition 322 Subdivisions 322		Fate of cartilaginous nasal capsule 342
Anterior cranial fossa 322 Middle cranial fossa 324 Posterior cranial fossa 327 Applied anatomy 330		45. Bony Landmarks in Human Body 343 Upper limb 343 Lower limb 345 Thorax 347
44. Ossification at a Glance	332	Abdomen and pelvis 348
Definition 332		Head and neck 349
Centre of ossification 332		Index 353