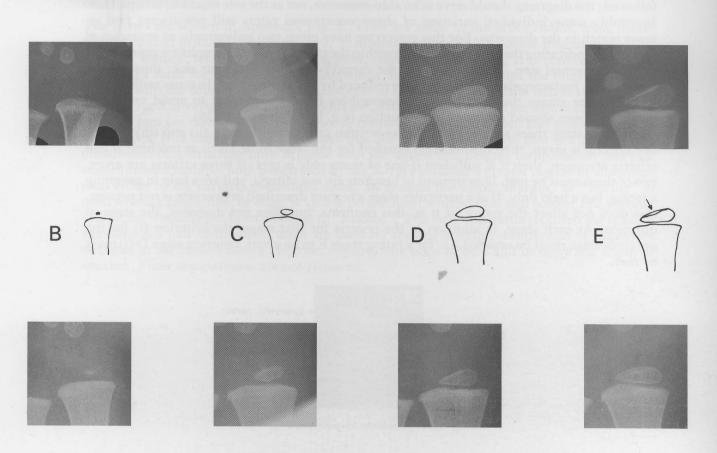
Radius

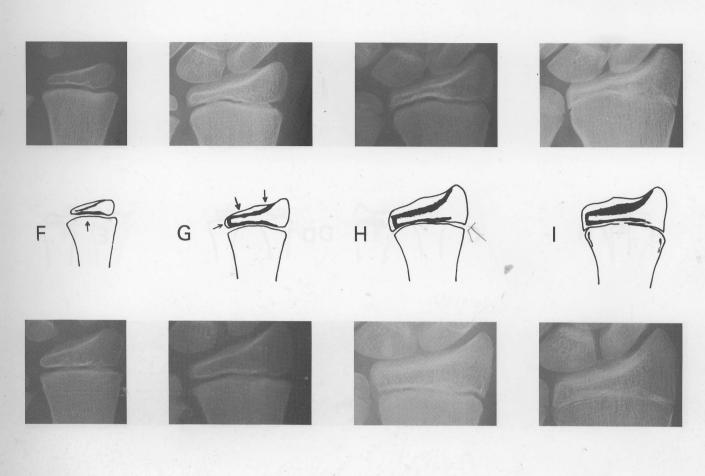
DISTAL MEDIAL \longleftrightarrow LATERAL PROXIMAL



Boys' Scores			Stage B		
TW2 15	RUS 16	(i)	The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.	TW2 17	RUS 23
TW2 17	RUS 21	· (i)	Stage C The centre is distinct in appearance and oval in shape with a smooth con- tinuous border. (The maximum diameter is less than half the width of the metaphysis.)	TW2 19	RUS 30
TW2 21	RUS 30	(ii)	Stage D The maximum diameter is half or more the width of the metaphysis. The epiphysis has broadened chiefly at its lateral side, so that this portion is thicker and more rounded, the medial portion more tapering. The centre third of the proximal surface is flat and slightly thickened and the gap between it and the radial metaphysis has narrowed to about a millimeter.	TW2 25	RUS 44
		/*>	Stage E		

TW2 RUS 27 39 (i) A thickened white line has appeared just inside the distal border of the epiphysis; this represents the edge of the palmar surface and the newly appeared bone distal to it is the edge of the dorsal surface.
 TW2 RUS 33 56

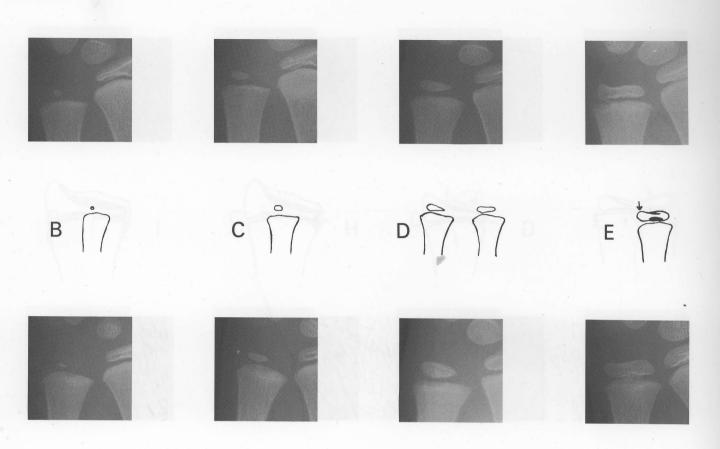
Radius



Bo Sco			Stage F		rls' pres
TW2 48	RUS 59		The proximal border of the epiphysis is now differentiated into palmar and dorsal surfaces; the palmar surface is visible as a broad irregularly thickened white line at the proximal edge of the epiphysis. Both ends of the epiphysis, but particularly the medial one, have grown outward and proximally since the last stage so that the proximal border now conforms to the shape of the metaphysis along most of its extent.	TW2 54	RUS 78
TW2 77	RUS 87		Stage G The dorsal surface now has distinct lunate and scaphoid articular edges joined at a small hump. Lateral to the scaphoid surface the styloid process carries the border distally in a distinct convexity. The medial border of the epiphysis has developed palmar and dorsal surfaces for articulation with the ulnar epiphysis; either palmar or dorsal surface may be the one which projects medially, depending on the position of the wrist. The proximal border of the epiphysis is now slightly concave.	₹W2 85	RUS 114
TW2 96	RUS 138	(i)	Stage H The epiphysis now caps the metaphysis on one (usually the medial) or both sides. (The styloid process is much further developed than in the last stage.) Stage I	TW2 99	RUS 160
TW2 106	RUS 213	(i)		TW2 106	RUS 218

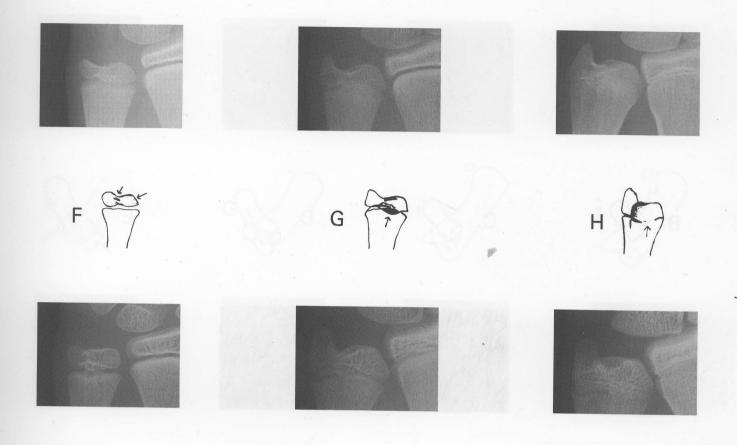
Ulna

DISTAL > LATERAL MEDIAL PROXIMAL



	oys' ores	,	Stage B	Gii Sco		
TW2 22	RUS 27	(i)			RUS 30	
			Stage C			
TW2 26	RUS 30	(i)	The centre is distinct in appearance, with a smooth continuous border. (The maximum diameter is less than half the width of the metaphysis.)	TW2 26	RUS 33	
			Stage D			
TW2 30	RUS 32 ^{\circ}	(i) (ii) (iii)	The maximum diameter is half or more the width of the metaphysis. The epiphysis is now elongated so that the transverse diameter is considerably greater than the longitudinal. Proximal and distal borders are both flattened, though not necessarily parallel.	TW2 30	RUS 37	
			(In many children at this stage the medial half of the epiphysis has broadened in the longitudinal direction more than the lateral half, so that the epiphysis is wedge-shaped with the point facing laterally.)			
			Stage E			
THE	DUIG	(i)	The styloid process is now visible as a distinct though small projection. In some cases it is more clearly distinguished from the head by a difference in density than by actual projection distally.			
TW2 39	RUS 40		(Apart from the styloid process, the epiphysis is once more approximately symmetrical about its longitudinal axis, the wedge-shape present in many	TW2 39	RUS 45	

(Apart from the styloid process, the epiphysis is once more approximately symmetrical about its longitudinal axis, the wedge-shape present in many children in the previous stage now having been eliminated through growth of the lateral half of the epiphysis).

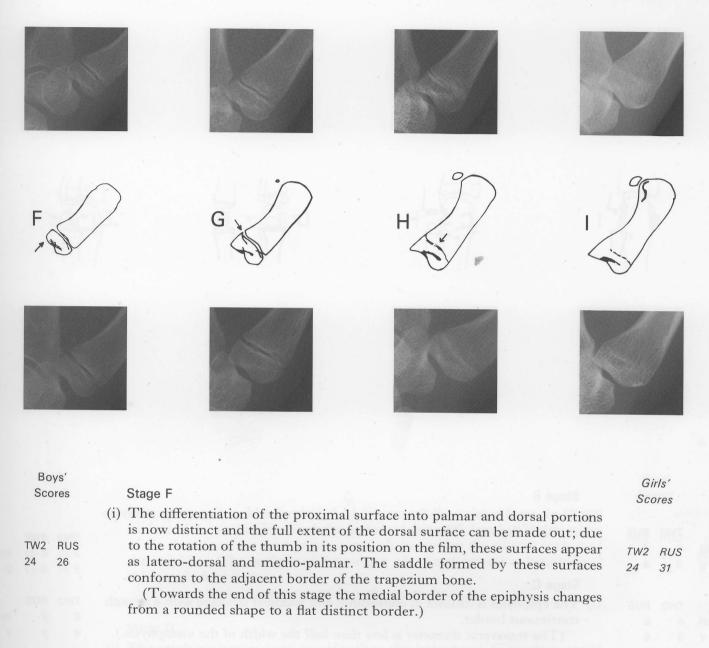


	ores		Stage F		rls' pres
TW2 56	RUS 58	(i) (ii)	The head of the ulna is now distinctly defined and denser than the styloid process. Its medial surface usually appears as a thickened white line dif- ferentiating it from the styloid process, and there is often a concavity of the proximal and or distal border of the epiphysis where the head and styloid meet. The border adjacent to the radial epiphysis is flattened.	, TW2 60	
TW2 73	RUS 107	(i) (ii)	Stage G The epiphysis is now as wide as the metaphysis. The proximal border of the epiphysis and the distal border of the metaphysis overlap in their central one-third. The metaphysis has a concavity or saddle into which the epiphyseal head appears to fit.	TW2 73	RUS 118
TW2 84	RUS 181	(i)	Stage H Fusion of epiphysis and metaphysis has begun. A line may be still visible composed partly of black areas where the epiphyseal cartilage remains, and partly of dense white areas where fusion is proceeding; or the line may have disappeared.	TW2 80	RUS 173

First Metacarpal

		Stage B		irls'
RUS 6	(i)	The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.		RUS 8
		Stage C		
RUS 9	(i)	The epiphysis is distinct in appearance and oval in shape, with a smooth continuous border. (The maximum diameter is less than half the width of the metaphysis.)	TW2 6	RUS 12
RUS 14	(i)	Stage D The maximum diameter is half or more the width of the metaphysis. (The distal surface has flattened so that it is less convex than the proximal surface. The base of the adjacent metaphysis has a central indentation.)	TW2 11	RUS 18
RUS 21	~ (i) (ii)	Stage E The epiphysis is as wide as the metaphysis. A concavity is present in the proximal border; this is due to the first appear- ance of palmar and dorsal surfaces of the epiphysis, though as yet these surfaces themselves are not distinct.	TW2 18	RUS 24
	6 RUS 9 RUS 14 RUS	rores RUS (i) 6 (i) RUS (i) RUS (i) RUS (ii)	stage B RUS (i) The centre is just visible as a single deposit of calcium, or more rarely as 6 in The centre is just visible as a single deposit of calcium, or more rarely as 6 multiple deposits. The border is frequently ill-defined. Stage C RUS (i) The epiphysis is distinct in appearance and oval in shape, with a smooth continuous border. (The maximum diameter is less than half the width of the metaphysis.) Stage D RUS (i) The maximum diameter is half or more the width of the metaphysis. (The distal surface has flattened so that it is less convex than the proximal surface. The base of the adjacent metaphysis has a central indentation.) Stage E (i) The epiphysis is as wide as the metaphysis. THe distal surface has flattened so that it is less convex than the proximal surface. The base of the adjacent metaphysis has a central indentation.) Stage E (ii) The epiphysis is as wide as the metaphysis. RUS (ii) A concavity is present in the proximal border; this is due to the first appear-ance of palmar and dorsal surfaces of the epiphysis, though as yet these	ores Stage B Sc RUS (i) The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined. 7W2 6 Stage C 5 RUS (i) The epiphysis is distinct in appearance and oval in shape, with a smooth continuous border. 7W2 9 (i) The epiphysis is distinct in appearance and oval in shape, with a smooth continuous border. 7W2 9 (i) The maximum diameter is less than half the width of the metaphysis.) 6 RUS (i) The maximum diameter is half or more the width of the metaphysis. 6 14 (i) The maximum diameter is half or more the width of the metaphysis. (The distal surface has flattened so that it is less convex than the proximal surface. The base of the adjacent metaphysis has a central indentation.) 7W2 14 (i) The epiphysis is as wide as the metaphysis. 7W2 14 (ii) A concavity is present in the proximal border; this is due to the first appearance of palmar and dorsal surfaces of the epiphysis, though as yet these 7W2

First Metacarpal



Stage G

		(i) The epiphysis caps the metaphysis on one or both sides; the capping is
TW2	RUS	usually seen better on the medial than on the lateral side, due to the rotation
28	36	of the thumb in positioning the hand.
		(The medial border of the epiphysis usually overlaps the base of the second
		metacarpal at their point of articulation.)

partly of dense white areas where fusion is proceeding.)

Stage H

TW2 RUS 30 49

Stage I

(i) Fusion of epiphysis and metaphysis is completed. (Over the majority of its TW2 RUS length the line of fusion has entirely disappeared, but some thickened 32 67 remnant of it may still be visible.)

TW2 RUS 33 67

TW2 RUS

31 53

TW2 RUS

43

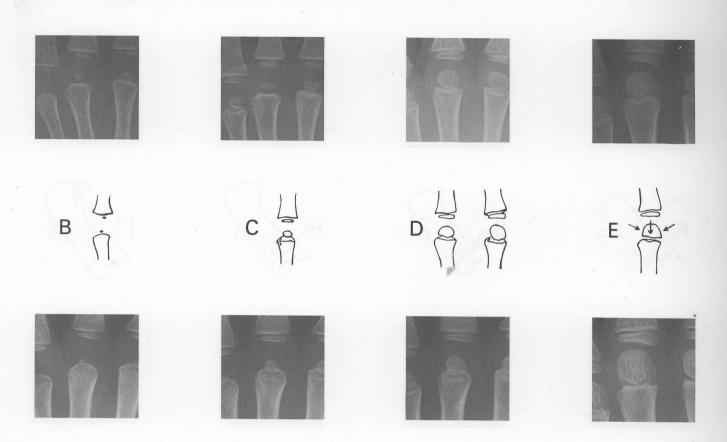
29

(i) Fusion of epiphysis and metaphysis has begun. (A line is still visible, com-

posed partly of black areas where the epiphyseal cartilage remains and

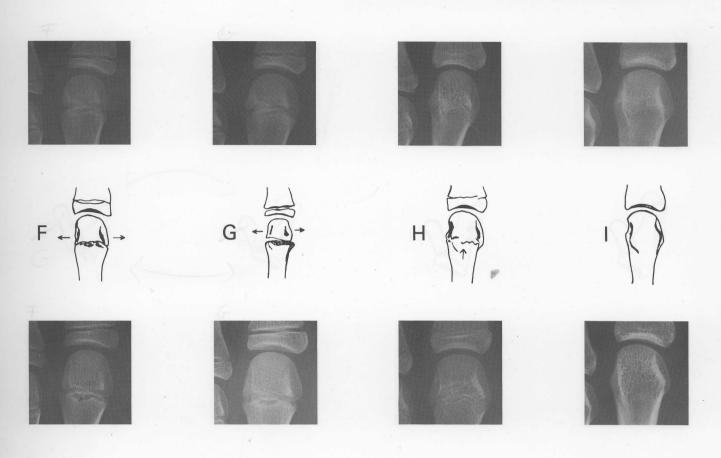
Third (III) and Fifth (V) Metacarpals

DISTAL MEDIAL PROXIMAL



	Bo	oys'		G	irls'	
	Sc	ores	Stage B		ores	
111	TW2 3	RUS 4	(i) The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.	TW2	RUS	
V	3	4		3	5	///
			Stage C	3	6	V
Ш	TW2 4	RUS 5	(i) The epiphysis is distinct in appearance and rounded in shape with a smooth continuous border.	TW2 5	RUS 8	///
V	3	6	(The transverse diameter is less than half the width of the metaphysis.)	4	9	V
III V	TW2 6	RUS 9 9	 Stage D (i) The transverse diameter is half or more the width of the metaphysis. (The proximal border may or may not have begun to flatten, but the lateral and medial borders seen in the next stage are not yet visible.) 	TW2 7 7	RUS 12 12	111 V
			Stage E	/	12	V
	740	DUIG	(i) Since the last stage the shape of the epiphysis has changed from being an			
ш	TW2 10	RUS 12	oval or semicircle to that of a spade or finger-nail. This occurs by virtue of the lateral modial and provincel hordors of the using the second secon	TW2	RUS	
V	12	14	the lateral, medial and proximal borders of the epiphysis becoming distinct one from another. (The palmar and dorsal surfaces are not yet differentiated.)	11 12	16 17	III V

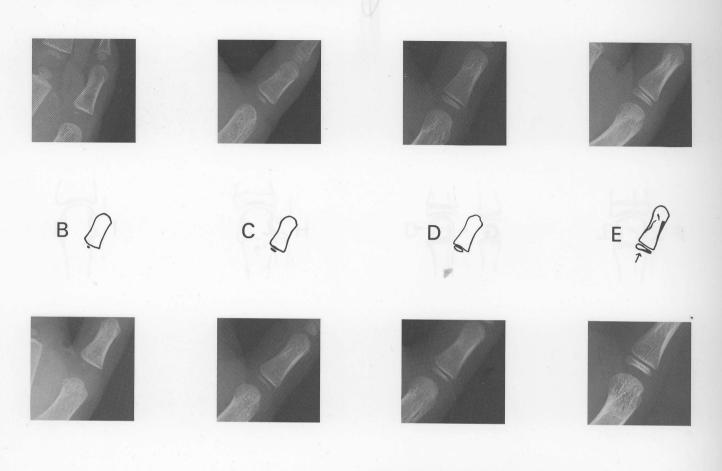
Third (III) and Fifth (V) Metacarpals



	Boys' cores	Stage F	Gii Sco		
• 2	2 RUS 19 18	(i) It is now possible, in a good film, to distinguish the palmar from the dorsal surface of the epiphysis. Since the last stage the medial and or lateral edges of the dorsal surface have grown outwards to overlap the palmar surface of the epiphysis. The outlines of the palmar edges now appear as longitudinal		RUS 23 23	/// V
TW III 22 V 21	/2 RUS 31 29	 Stage G (i) The epiphysis is as wide as, or wider than, the metaphysis. (This stage would seem to be the equivalent of the stage of capping in the epiphysis of the phalanges.) (The longitudinal white lines that signify the edges of the palmar surface now curve outwards to the proximal corners.) (A translucent line of cartilage still remains, but due to positioning of the hand it does not usually extend right across the bone; it should, however, 	TW2 23 22	RUS 37 35	/// V
TW III 23 V 23	/2 RUS 43 43	extends over less than three-quarters of the bone's breadth, but is not	TW2 24 24	RUS 47 48	111 V
III TV V 25 V 25		length the line of fusion has entirely disappeared, but some thickened remnant	TW2 26 25	RUS 53 52	111 V

Proximal Phalanx of the Thumb

DISTAL MEDIAL \longleftrightarrow LATERAL PROXIMAL



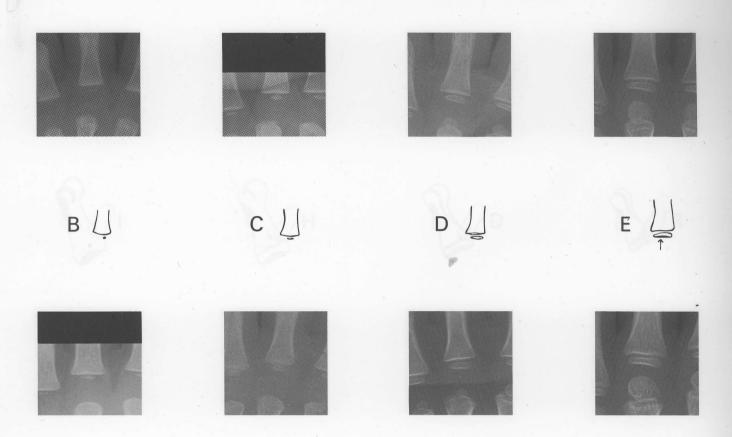
Bo Sco			Stage B		rls' ores
TW2 4	RUS 7	(i)	The centre is just visible as a single deposit of calcium or more rarely as multiple deposits. The border is frequently ill-defined.	7W2 5	
TW2 5	RUS 8	(i)	Stage CThe centre is distinct in appearance and disc-shaped, with a smooth continuous border.(The maximum diameter is less than half the width of the metaphysis.)(Multiple centres may occur whose summed maximum diameters exceed half the width of the metaphysis, they should however be rated stage C.)	TW2 5	RUS 11
TW2 8	RUS 11	(i)	Stage D The maximum diameter is half or more the width of the metaphysis. (The epiphysis has acquired distinct blunt medial and lateral ends and has the appearance of a broad ring; the borders may or may not show slight thickening.)	TW2 8	RUS 14
TW2 15	RUS 17	(i) (ii)	Stage E The proximal border is concave and usually thickened, which is a forerunner of its differentiation into palmar and dorsal surfaces seen in the next stage. The medial side is longer than the lateral, giving a wedge-shaped appearance. (The epiphysis is very nearly as wide as the metaphysis.)	TW2 14	RUS 20

Proximal Phalanx of the Thumb

		1			
F	J	?	G J H J	5	?
Y					I
Bo Sco			Stage F		rls' pres
TW2 23	RUS 26	(i)	The epiphysis is distinctly wider than the metaphysis, particularly at the medial side; it follows closely its shape although it does not yet cap it at the edges. (Further development of the metacarpal articular surfaces has produced a differentiation of palmar and dorsal edges, which are now visible. The dorsal edge is represented by a thickened white line, which runs in an arc concentric with the end of the metacarpal head, from one proximal corner of the epiphysis to the other. The palmar surface is visible as the proximal border of the epiphysis.)	TW2 24	
TW2	RUS	(i)	Stage G The epiphysis caps the metaphysis; the capping is seen better on the medial	TW2	RUS
28	38		than on the lateral side. Stage H	29	44
TW2 30	RUS 52	(i)	Fusion of epiphysis and metaphysis has begun. (A line is still visible, com- posed partly of black areas where the epiphyseal cartilage remains and partly of dense white areas where fusion is proceeding.)	TW2 30	RUS 56
TW2 32	RUS 67	(i)	Stage I Fusion of epiphysis and metaphysis is completed. (Over the majority of its length the line of fusion has entirely disappeared, but some thickened remnant of it may still be visible.)	TW2 32	RUS 67

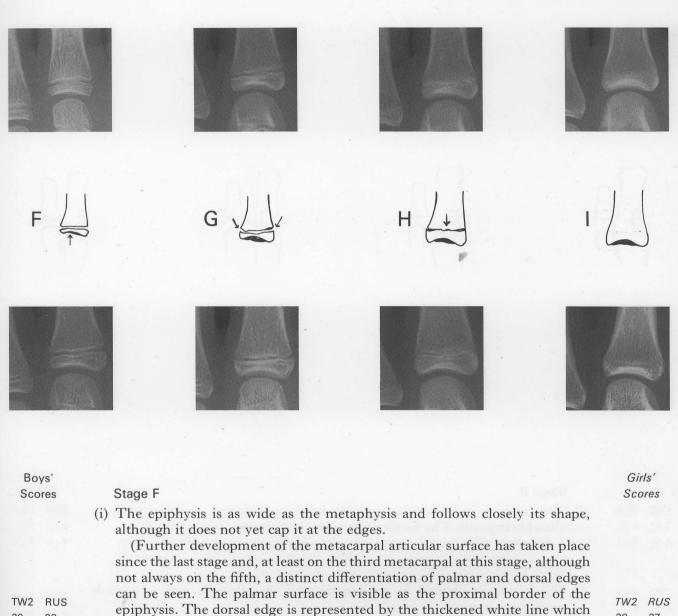
53

Proximal Phalanges of Third (III) and Fifth (V) Fingers



	Boy Sco	-		Stage B	Gii Scc		
	TW2 3	4		The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.	TW2 4 4	RUS 5 6	111 V
V	3	4		Stage C	4	0	V
III V	TW2 4 3	RUS 4 5	(i)	The centre is distinct in appearance and disc-shaped, with a smooth continuous border. (The maximum diameter is less than half the width of the metaphysis.)	TW2 4 4	RUS 7 7	 V
v	5	5		half the which of the surgeouse, they should have a to define and stage C a	4		v
	TW2	RUS		Stage D	TW2	RUS	
III V	6 6	9 9	(i)) The epiphysis is half or more the width of the metaphysis.	7 7	12 12	/// V
				Stage E			
III V	TW2 13 13	RUS 15 15	(i)	 The proximal border of the epiphysis is concave and distinctly thickened. (This is the forerunner of the development of the metacarpal articular surface, which usually takes place only in the next stage. Sometimes in stage E, however, some differentiation into palmar and dorsal surfaces, as described in stage F, can be seen.) (The epiphysis is not yet as wide as the metaphysis.) 	TW2 13 13	RUS 19 18	/// V

Proximal Phalanges of Third (III) and Fifth (V) Fingers



20 27 III 19 26 V

				Store C			
	TW2	RUS		Stage G	TW2	RUS	
111	23	31	(i)	The epiphysis caps the metaphysis.	24	37	///
V	22	30			23	35	V
				Stage H			
	TW2	RUS	(i)	Fusion of epiphysis and metaphysis has now begun. (A line is still visible	TW2	RUS	
III	24	40		composed partly of black areas where the epiphyseal cartilage remains and	25	44	///
V	23	39		partly of dense white areas where fusion is proceeding.)	24	42	V
				Stage I			
	TW2	RUS	(i)	Fusion of epiphysis and metaphysis is completed. (Over the majority of its	TW2	RUS	
Ш	26	53		length the line of fusion has entirely disappeared, but some thickened	26	54	
V	25	51		remnant of it may still be visible.)	25	51	V
				55			

runs in an arc concentric with the end of the metacarpal head from one

proximal corner of the epiphysis to the other. In some positions of the hand, however, the palmar edge may coincide with the dorsal, and the dorsal

thickened concave white line is all that can be seen.)

23

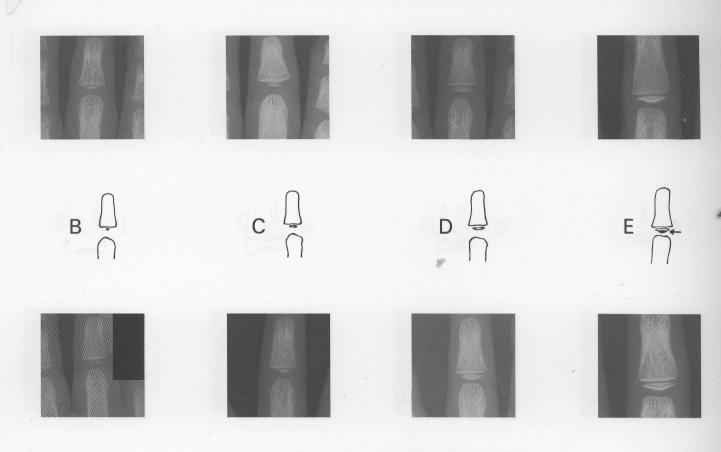
21

111 20

V 19

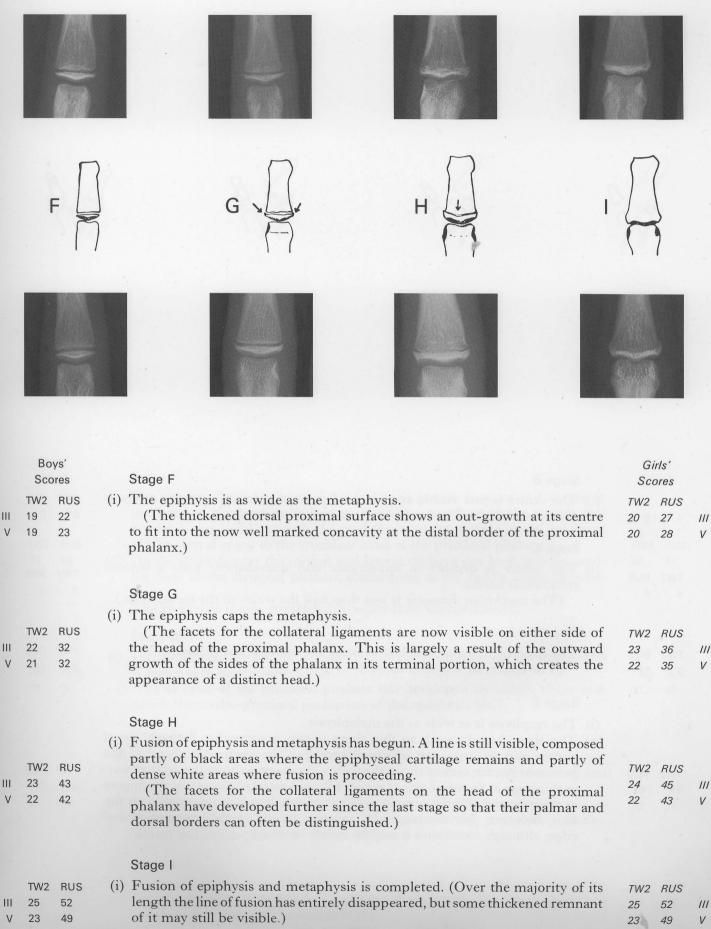
DISTAL MEDIAL PROXIMAL

Middle Phalanges of Third (III) and Fifth (V) Fingers



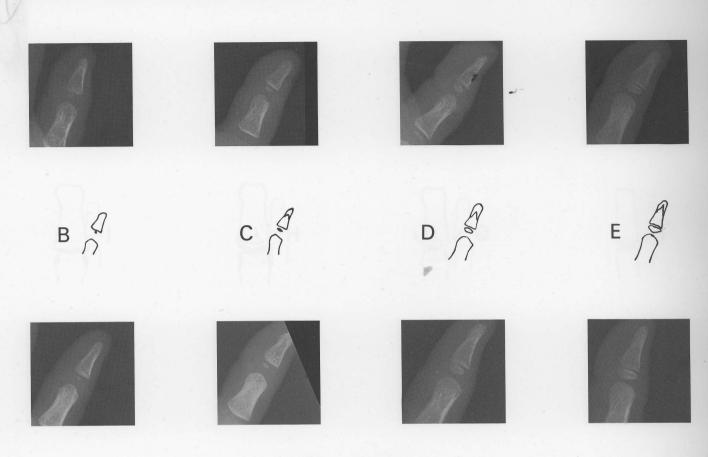
	Boys' Scores				Girls' Scores		
Ш	TW2 3	RUS 4	(i)	The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.	TW2 4	RUS 6	//
V	4	6		manuple deposits. The border is nequency in defined.	4	7	V
				Stage C			
ш	TW2 4	RUS 6	(i)	The centre is distinct in appearance and disc-shaped, with a smooth continuous border.	TW2	RUS	
V	4	7		(The maximum diameter is less than half the width of the metaphysis.)	4 5	8 8	L
				Stage D			
III V	TW2 7 8	RUS 9 9	(i)	The maximum diameter is half or more the width of the metaphysis. (The borders are slightly thickened, and the proximal border somewhat convex.)	TW2 7 8	RUS 12 12	li V
				Stage E			
			(i)	The central portion of the proximal border has thickened and grown towards the end of the adjacent phalanx, shaping to its trochlear surface.			
ш	TW2 13	RUS 15		(This thickened white line represents the dorsal surface of the epiphysis; proximal to it the palmar surface is usually visible on one or both sides as a	TW2 13	RUS 18	
V	14	15		convex projection. In some positions of the hand, however, these proximal edges of palmar and dorsal surfaces appear superimposed.) (The distal border of the proximal phalanx shows a small concavity.)	13 14	18	V

Middle Phalanges of Third (III) and Fifth (V) Fingers



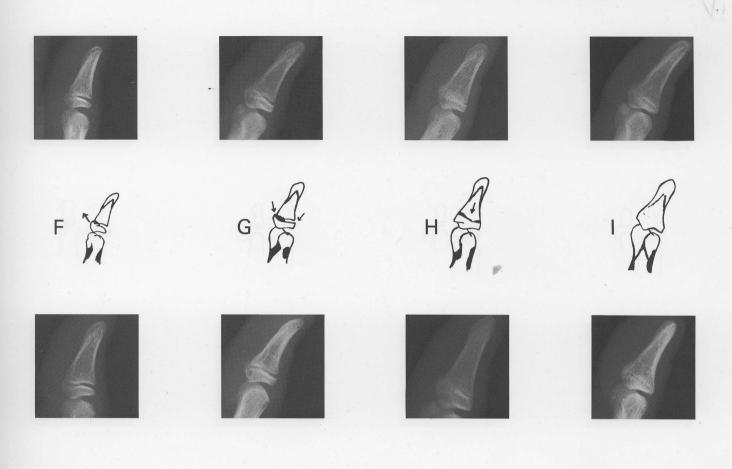
Distal Phalanx of the Thumb

DISTAL MEDIAL + LATERAL PROXIMAL



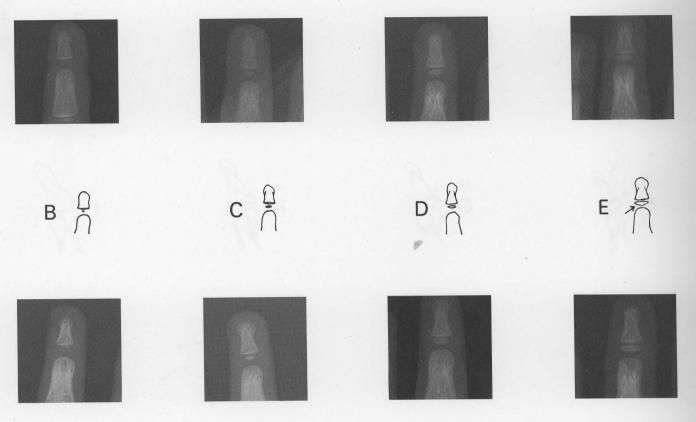
Boy Sco			Stage B	Sco	
TW2 4	RUS 5	(i)	The centre is just visible as a single deposit of calcium, or more rarely as multiple deposits. The border is frequently ill-defined.	TW2 5	RUS 7
1985. 12			Stage C		
TW2 4	RUS 6	(i)	The second secon	TW2 5	RUS 9
			Stage D		
TW2 7	RUS 11	(i)	The maximum diameter is half or more the width of the metaphysis. (The epiphysis is oval in shape.)	TW2 8	RUS 15
			Stage E		
TW2 14	RUS 17	(i) (ii)	The second distal	TW2 15	RUS 22

Distal Phalanx of the Thumb



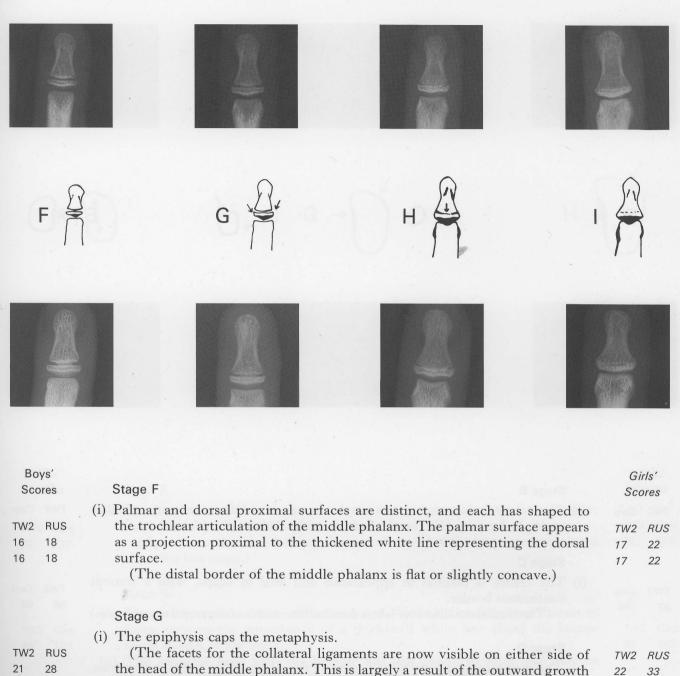
Scores			Stage F		ris ores
TW2 23	RUS 26	(ii)	The proximo-lateral border of the epiphysis is now concave and shapes to the head of the proximal phalanx. (In some positions of the thumb this border is not visible as such. Instead the articular surface of the epiphysis can be seen shaping to the trochlear head of the proximal phalanx.) On the distal border the medial and lateral surfaces can both be seen, with the base of the terminal phalanx conforming to the saddle shape between them. The epiphysis is now considerably wider than the metaphysis.	TW2 24	RUS 33
			Stage G		
TW2 30	RUS 38	(i)	The epiphysis caps the metaphysis; because of the position of the thumb this is better seen on the medial side. (The head of the proximal phalanx has developed its saddle shape into which the medio-proximal projection of the epiphysis fits.)	TW2 31	RUS 48
			Stage H		
TW2 31	RUS 46	(i)	Fusion of the epiphysis and metaphysis has begun. (A line is still visible, composed partly of black areas where the epiphyseal cartilage remains, and partly of dense white areas where fusion is proceeding.) (Differentiation of the head of the proximal phalanx has progressed so that its medial and lateral enlargements can be clearly seen, being medio- dorsal and latero-palmar in this projection.)	TW2 32	RUS 51
			Stage I		
TW2 33	RUS 66	(i)	Fusion of epiphysis and metaphysis is completed. (Over the majority of its length the line of fusion has entirely disappeared, but some thickened remnant of it may still be visible.)	TW2 34	RUS 68
			59		

Distal Phalanges of Third (III) and Fifth (V) Fingers



	Bo Sco		Stage B	Gir Sco		
	TW2	RUS		N2	RUS 7	1
II V	3 3	4 5	multiple deposits. The border is frequently in defined.		7	۱
v	5	5	Stage C			
Ш	TW2 4	RUS 6	(i) The centre is distinct in appearance and disc-shaped, with a smooth 7 continuous border.		RUS 8	1
V	4	6	(The maximum diameter is less than half the width of the metaphysis.) 4		8	l
			Stage D			
	TW2	RUS	(1) The maximum diameter is nam of more the width of the metaphysic.	W2	RUS	
ш	6	8	(The borders are slightly thickened, and the proximal border somewhat		11	1
V	7	9	convex.)		11	1
			Stage E			
			(i) The epiphysis is as wide as the metaphysis.			
			(ii) The central portion of the proximal border has grown towards the end of			
	TW2	RUS	the induce phalanx, so that the proximal border no longer concrete to a	W2	RUS	
Ш	10	13	single convex surface, no unterentiation into pumilar and dereat surface,	0 1	15 15	'
V	11	13	however, can yet be seen. (The distal border of the head of the middle phalanx is flat or still slightly convex.)	/	15	

Distal Phalanges of Third (III) and Fifth (V) Fingers



- the head of the middle phalanx. This is largely a result of the outward growth of the sides of the phalanx in its distal portion, which creates the appearance of a distinct head.)
 - Stage H

Ш

V

111

V 20

Ш

V

111

V

27

RUS

34

34

TW2

22

21

(i) Fusion of epiphysis and metaphysis has begun. (A line is still visible, composed partly of black areas where the epiphyseal cartilage remains and partly of dense white areas where fusion is proceeding.)
 (The faceta for the collectoral liggements on the head of the middle of the second s

(The facets for the collateral ligaments on the head of the middle phalanx have developed further since the last stage so that their palmar and dorsal surfaces can often be distinguished.)

Stage I

TW2 RUS(i) Fusion of epiphysis and metaphysis is completed. (Over the majority of its72449length the line of fusion has entirely disappeared, but some thickened22348remnant of it may still be visible.)2

RUS	
49	. ///
47	V

111

V

111

V

111

V

21

TW2

23

22

32

RUS

37