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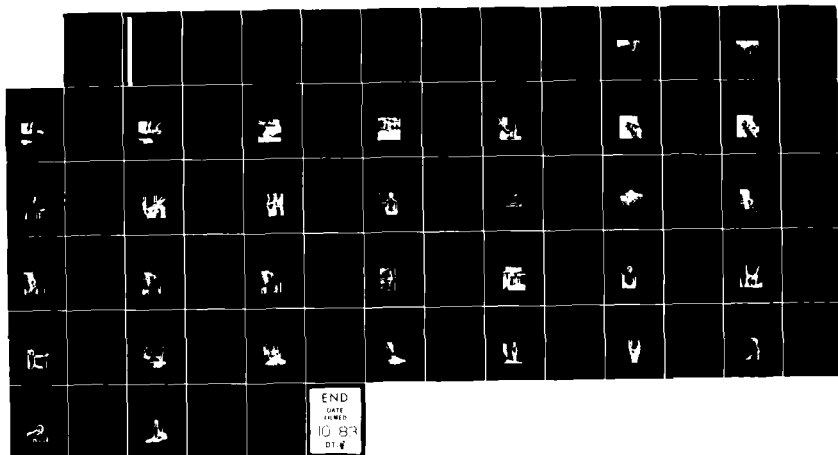
AUSTRALIAN TRI-SERVICE ANTHROPOMETRIC SURVEY 1977 PART
7 SURVEY RESULTS:..(U) AERONAUTICAL RESEARCH LABS
MELBOURNE (AUSTRALIA) K C MENDY JUL 79 ARL/SYS-15

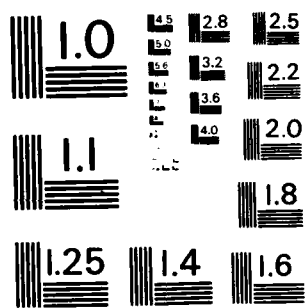
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**DEPARTMENT OF DEFENCE
DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION
AERONAUTICAL RESEARCH LABORATORIES**

MELBOURNE, VICTORIA

SYSTEMS REPORT 15

**AUSTRALIAN
TRI-SERVICE ANTHROPOMETRIC SURVEY, 1977:**

**PART 7. Survey results: Army WEAPON USERS and
OTHERS group**

by

K. C. HENDY

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**AUSTRALIAN
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SUMMARY

An anthropometric survey of approximately 3000 male members of the three Australian military branches was conducted during 1977. Part 7 of this nine part document contains the results of the analysis for the Army WEAPON USERS and OTHERS group data. This group, of 555 subjects, is a composite of three groups from the original sampling.

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16. **ABSTRACT**
An anthropometric survey of approximately 3000 male members of the three Australian military branches was conducted during 1977. Part 7 of this nine part document contains the results of the analysis for the Army WEAPON USERS and OTHERS group data. This group, of 555 subjects, is a composite of three groups from the original sampling.

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DISTRIBUTION

1. INTRODUCTION

Part 7 of Systems Report 15 contains the results of an analysis performed on the Army WEAPON USERS and OTHERS group data. This group is an amalgamation of three independently chosen groups from the original sampling procedure. The rationale for the combination of these groups and the separate analysis of the composite group is presented in Part 1 of Reference 1. Other groups subjected to separate analysis are reported in Parts 2 to 9 of Reference 1.

The composition of the Army WEAPON USERS and OTHERS group is as follows:

ARMY	Number
Weapons Users	177
Transportation	188
Clerks and Others	190
	—
TOTAL	555
	—

An analysis was performed on this composite group data and summary statistics derived. The results of this analysis are presented in Tables 1 to 33. An index to the tabulated results appears in the Contents listing of this document. For convenience in using the information a Visual Index and alphabetical listing precedes Table 1. The photographs accompanying the tables are to illustrate technique only.

2. SITTING POSTURE

For all sitting measurements the height of the hydraulic stool was adjusted so that with the subject sitting erect, back free of the wall, the line joining the femoral marks was horizontal and with his feet flat on the floor the line joining the upper and lower fibular marks was vertical.

Without changing the position of his legs after adjusting the stool the subject sat erect, back free of the wall with the trunk straight, upper arms vertical, elbows resting lightly against the sides and the forearms extended so that the hands rested on mid-thighs. The shoulders were equally relaxed.

Note: In Tables 1 to 33

— unsmoothed data and 'Normal' fit

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REFERENCES

1. Hendy, K.C.: Australian Tri-service Anthropometric Survey, 1977:

PART 1. Survey planning, conduct, data handling and methods of analysis.

PART 2. Survey results: Combined services AIRCREW group.

PART 3. Survey results: Airforce TRANSPORT and CATERING group.

PART 4. Survey results: Airforce TECHNICAL and CLERICAL group.

PART 5. Survey results: Army CATERING group.

PART 6. Survey results: Army TECHNICAL group.

PART 8. Survey results: Navy CLEARANCE DIVER group.

PART 9. Survey results: Navy CONSOLIDATION group.

Aeronautical Research Laboratories, Systems Report 15. Fishermen's Bend, Melbourne, Australia, 1979.

TABLE 1

Age (years)

Number of Subjects : 555
 Mean : 28.3
 Standard Deviation : 7.6
 Coefficient of Skewness: 1.08
 Coefficient of Kurtosis : 0.81
 Range of Data : 17-55

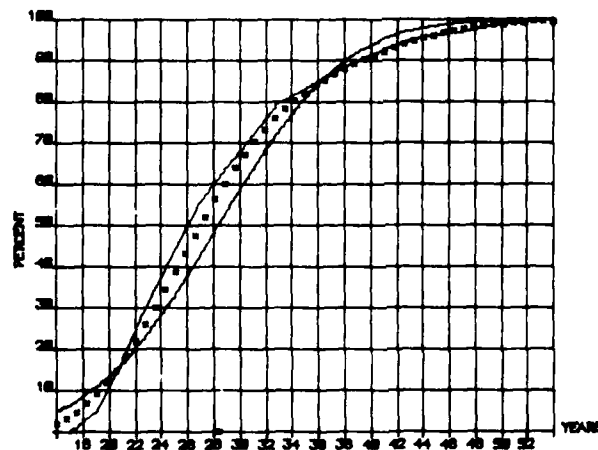
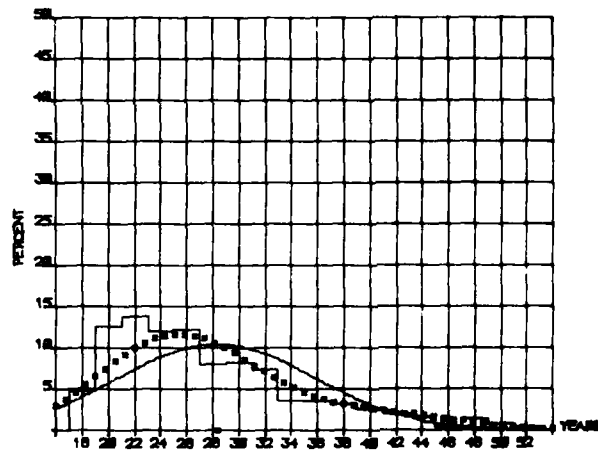


TABLE 2

Foot Length

Subject stands with his left foot in the foot-box, heel against the back wall and the medial side of the foot in contact with the side wall of the box. The datum edge is brought up to touch the most prominent toe. Record the distance of the datum edge from the back wall of the foot-box.

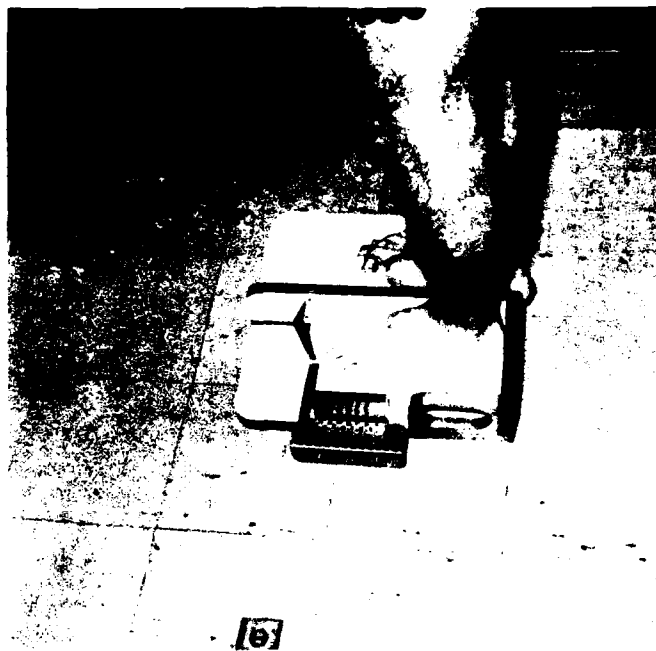
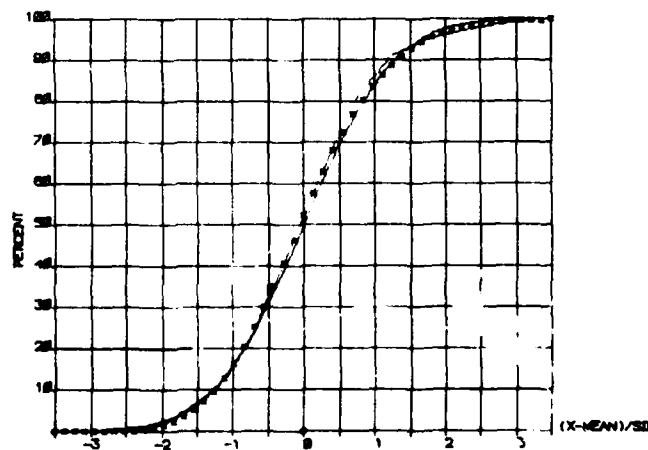
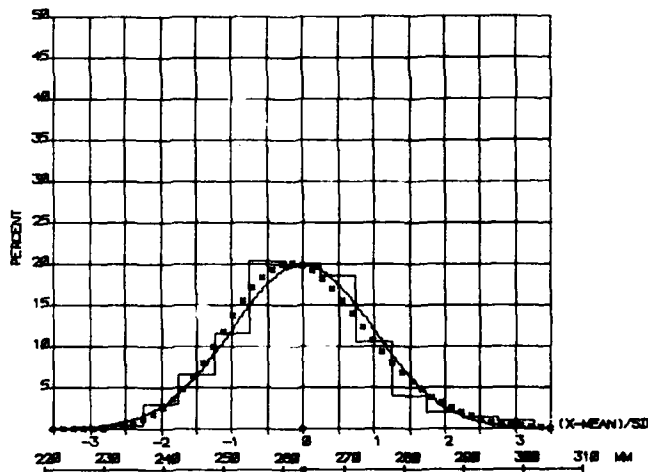


TABLE 2

Foot Length (mm)

Number of Subjects	: 555
Mean	: 263.3
Standard Deviation	: 11.9
Coefficient of Skewness	: 0.35
Coefficient of Kurtosis	: 0.44
Range of Data	: 230-305



1st percentile	239
3rd percentile	243
5th percentile	245
10th percentile	248
15th percentile	251
20th percentile	253
25th percentile	255
30th percentile	257
40th percentile	260
50th percentile	263
60th percentile	266
70th percentile	269
75th percentile	271
80th percentile	273
85th percentile	276
90th percentile	279
95th percentile	284
97th percentile	287
99th percentile	294

TABLE 3

Foot Breadth

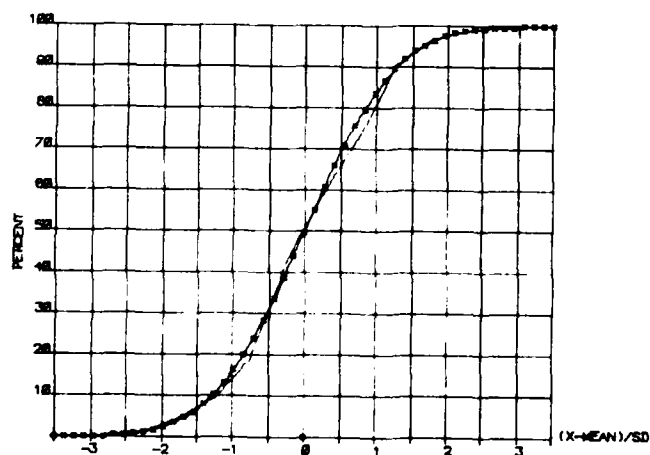
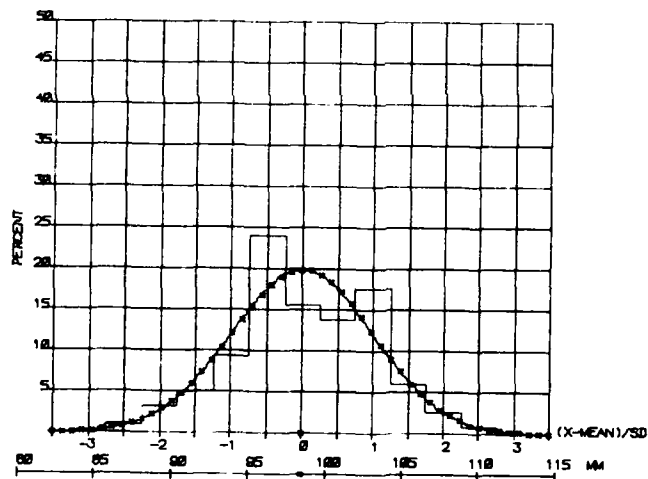
Subject stands with his left foot in the foot-box, heel against the back wall and the medial side of the foot in contact with the side wall of the box. The datum edge is brought into light contact with the widest aspect of the foot. Record the distance of the datum edge from the side wall of the foot-box.



TABLE 3

Foot Breadth (mm)

Number of Subjects	: 555
Mean	: 98.5
Standard Deviation	: 4.6
Coefficient of Skewness	: -0.04
Coefficient of Kurtosis	: -0.29
Range of Data	: 84-111



1st percentile	88
3rd percentile	90
5th percentile	91
10th percentile	93
15th percentile	94
20th percentile	95
25th percentile	95
30th percentile	96
40th percentile	97
50th percentile	98
60th percentile	100
70th percentile	101
75th percentile	102
80th percentile	102
85th percentile	103
90th percentile	104
95th percentile	106
97th percentile	107
99th percentile	109

TABLE 4

Hand Length

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together. With the bar of the sliding calipers parallel to the longitudinal axis of the hand, measure the distance from the tip of the third digit to the wrist mark at the first major skin crease proximal to the base of the hypothenar eminence.

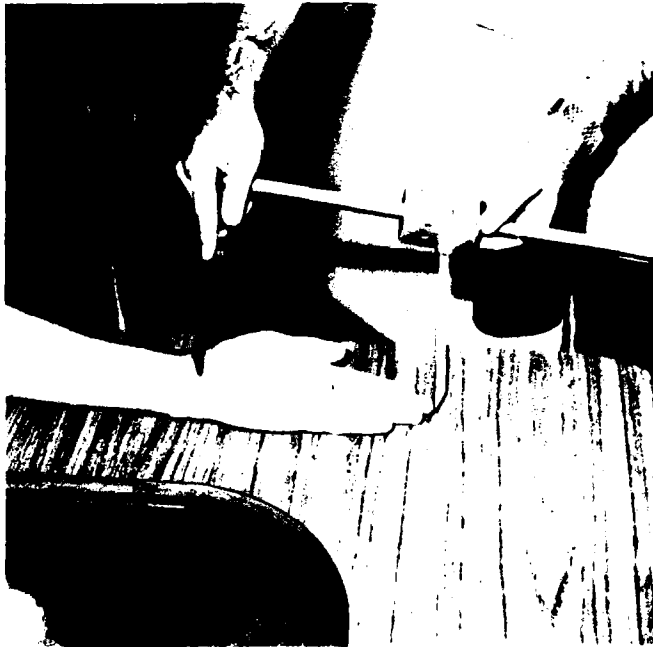
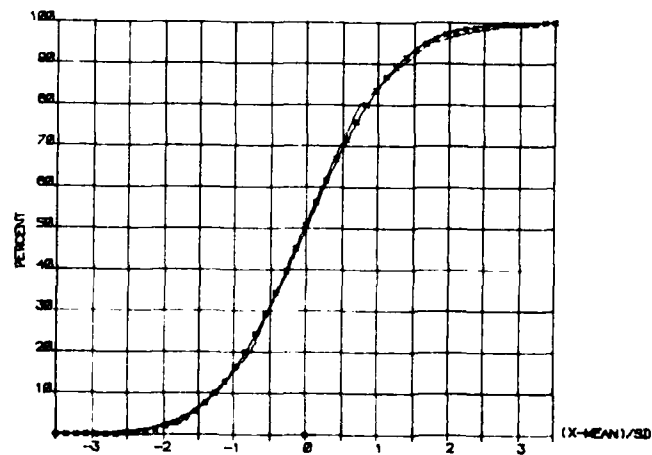
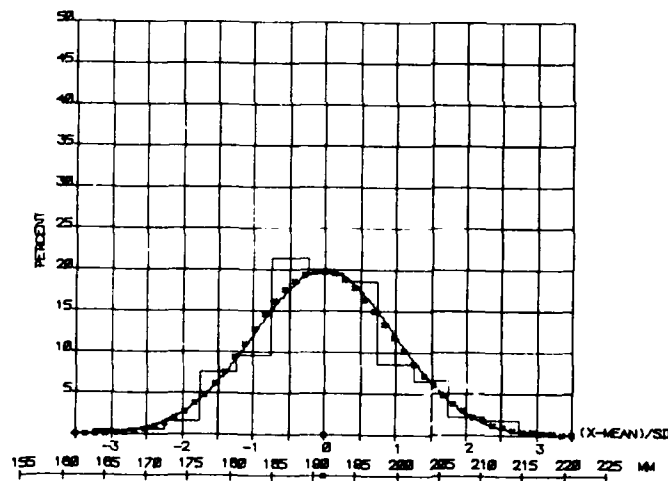


TABLE 4

Hand Length (mm)

Number of Subjects : 555
 Mean : 191.2
 Standard Deviation : 8.5
 Coefficient of Skewness: 0.13
 Coefficient of Kurtosis : 0.32
 Range of Data : 166-220



1st percentile 172
 3rd percentile 176
 5th percentile 178
 10th percentile 180
 15th percentile 182
 20th percentile 184
 25th percentile 185
 30th percentile 187
 40th percentile 189
 50th percentile 191
 60th percentile 193
 70th percentile 196
 75th percentile 197
 80th percentile 198
 85th percentile 200
 90th percentile 202
 95th percentile 205
 97th percentile 208
 99th percentile 212

TABLE 5

Palm Length

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together. With the bar of the sliding calipers parallel to the longitudinal axis of the hand, measure the distance from the skin fold at the junction of the third digit and the palm of the hand to the wrist mark at the first major skin crease proximal to the base of the hypothenar eminence.

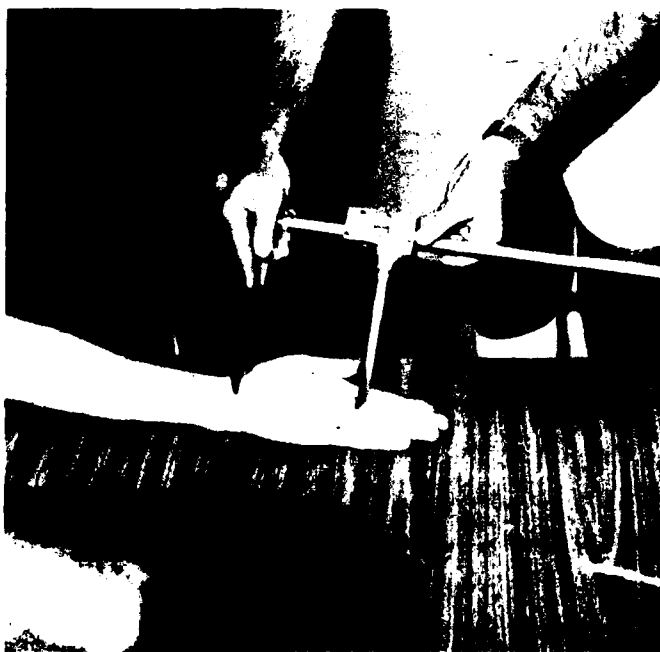
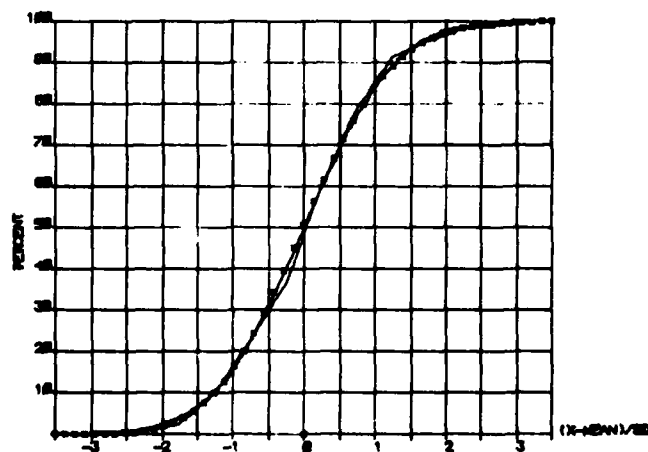
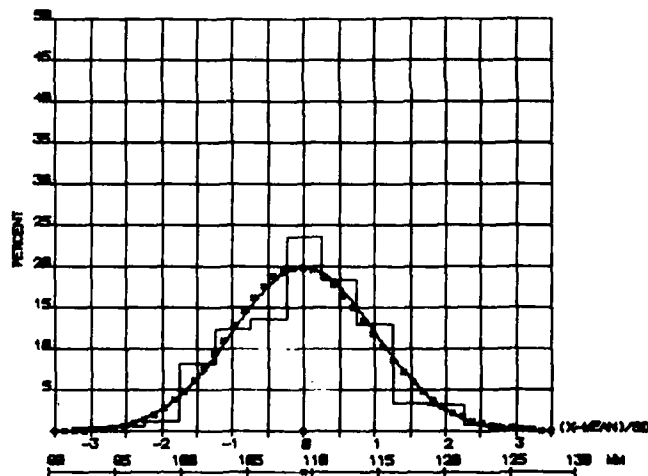


TABLE 5

Palm Length (mm)

Number of Subjects	555
Mean	: 109.3
Standard Deviation	: 5.4
Coefficient of Skewness	: 0.14
Coefficient of Kurtosis	: 0.36
Range of Data	: 92-129



1st percentile	97
3rd percentile	100
5th percentile	101
10th percentile	103
15th percentile	104
20th percentile	105
25th percentile	106
30th percentile	106
40th percentile	108
50th percentile	109
60th percentile	111
70th percentile	112
75th percentile	113
80th percentile	114
85th percentile	115
90th percentile	116
95th percentile	118
97th percentile	120
99th percentile	122

TABLE 6

Hand Breadth

Subject's left hand is fully extended and supinated in the axis of the forearm, fingers together with the thumb held away from the hand. Using the sliding calipers measure the distance across the distal ends of the metacarpal bones.

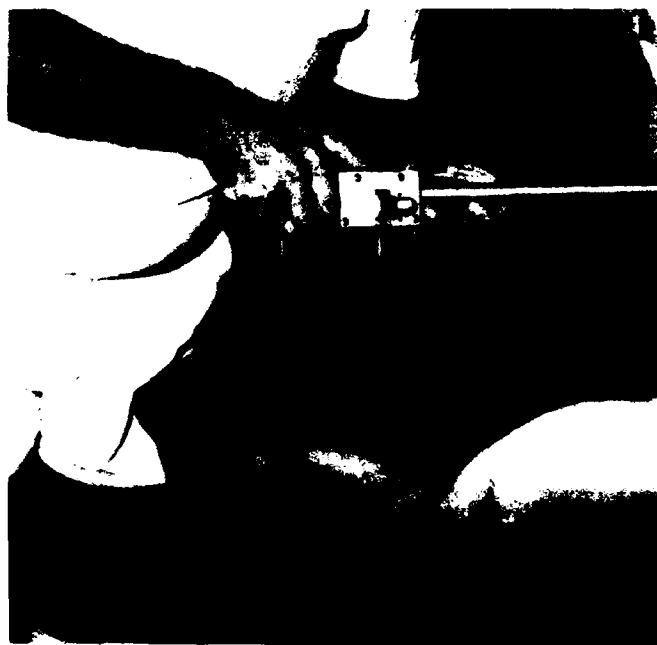
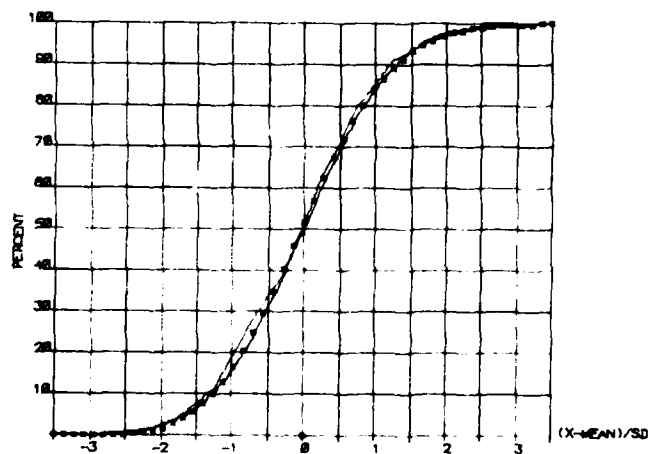
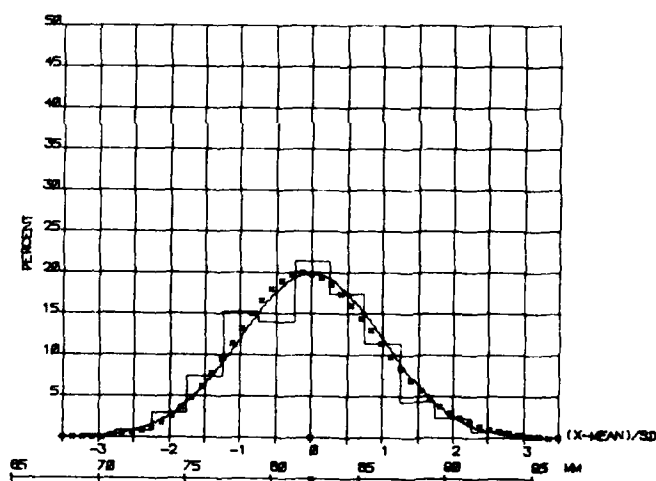


TABLE 6

Hand Breadth (mm)

Number of Subjects : 555
 Mean : 82.3
 Standard Deviation : 4.1
 Coefficient of Skewness: 0.23
 Coefficient of Kurtosis : 0.38
 Range of Data : 71-99



1st percentile 73
 3rd percentile 75
 5th percentile 76
 10th percentile 77
 15th percentile 78
 20th percentile 79
 25th percentile 79
 30th percentile 80
 40th percentile 81
 50th percentile 82
 60th percentile 83
 70th percentile 84
 75th percentile 85
 80th percentile 86
 85th percentile 87
 90th percentile 88
 95th percentile 89
 97th percentile 90
 99th percentile 92

TABLE 7

Thumb Length

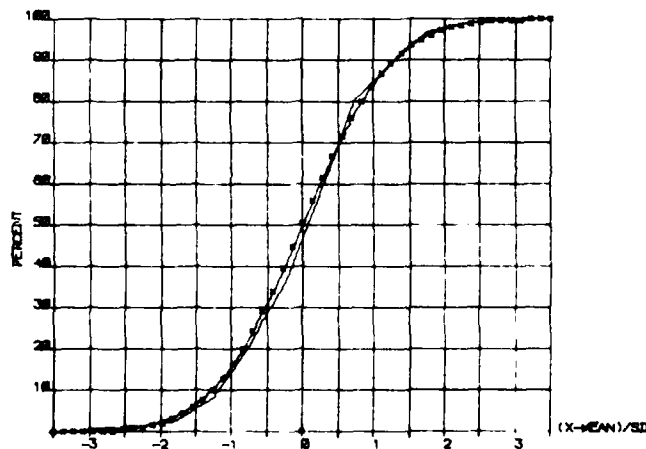
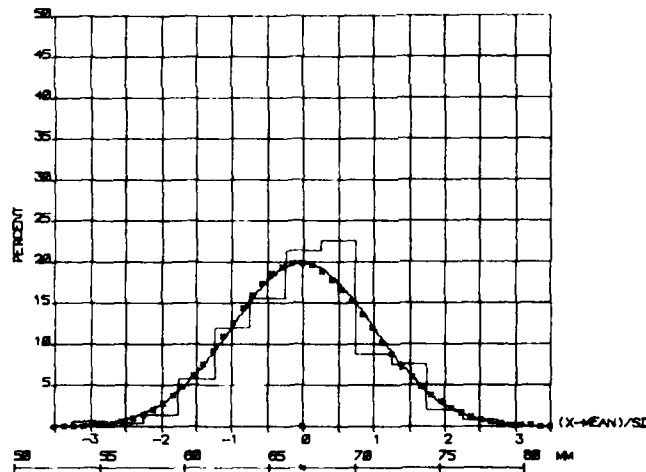
Subject's left hand is fully extended and pronated in the axis of the forearm, fingers together with the thumb held away from the hand. With the bar of the sliding calipers parallel to the longitudinal axis of the thumb, measure the distance from the tip of the thumb to the thumb mark at the first metacarpophalangeal joint.



TABLE 7

Thumb Length (mm)

Number of Subjects : 555
 Mean : 66.9
 Standard Deviation : 4.2
 Coefficient of Skewness: 0.09
 Coefficient of Kurtosis : 0.09
 Range of Data : 54-82



1st percentile 57
 3rd percentile 59
 5th percentile 60
 10th percentile 62
 15th percentile 63
 20th percentile 63
 25th percentile 64
 30th percentile 65
 40th percentile 66
 50th percentile 67
 60th percentile 68
 70th percentile 69
 75th percentile 70
 80th percentile 70
 85th percentile 71
 90th percentile 72
 95th percentile 74
 97th percentile 75
 99th percentile 77

TABLE 8

Inner Hand Grip Circumference

The measuring device is a cone of linearly increasing diameter. The subject grips the cone firmly from behind with the left hand at the maximum diameter at which the thumb and third digit may be lightly opposed. The point of opposition lies over the line scribed on the front of the cone. The Inner Hand Grip Circumference is the circumference of the cone in a horizontal plane containing the point of opposition.

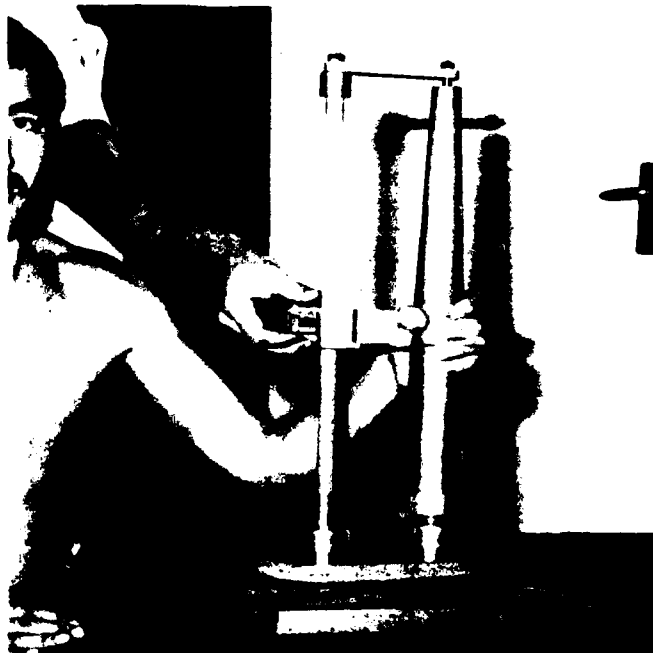
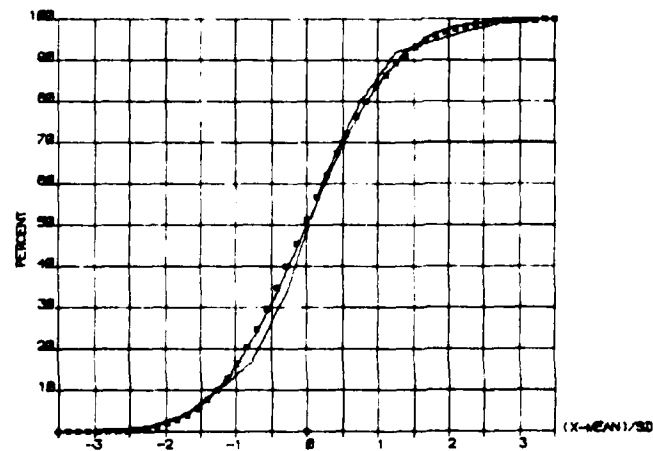
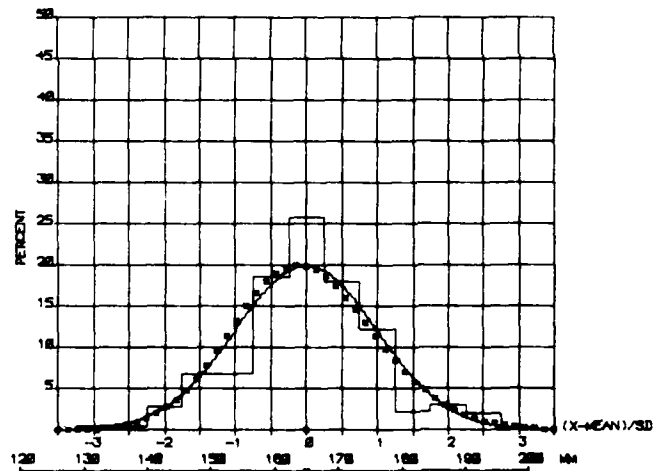


TABLE 8

Inner Hand Grip Circumference (mm)

Number of Subjects : 555
 Mean : 165.0
 Standard Deviation : 11.2
 Coefficient of Skewness: 0.21
 Coefficient of Kurtosis : 0.53
 Range of Data : 131-207



1st percentile	141
3rd percentile	145
5th percentile	147
10th percentile	151
15th percentile	154
20th percentile	156
25th percentile	157
30th percentile	159
40th percentile	162
50th percentile	165
60th percentile	167
70th percentile	171
75th percentile	172
80th percentile	174
85th percentile	177
90th percentile	180
95th percentile	184
97th percentile	187
99th percentile	193

TABLE 9

Head Circumference

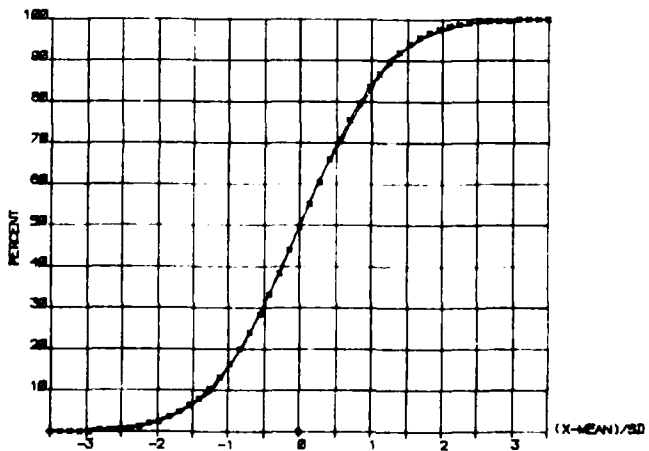
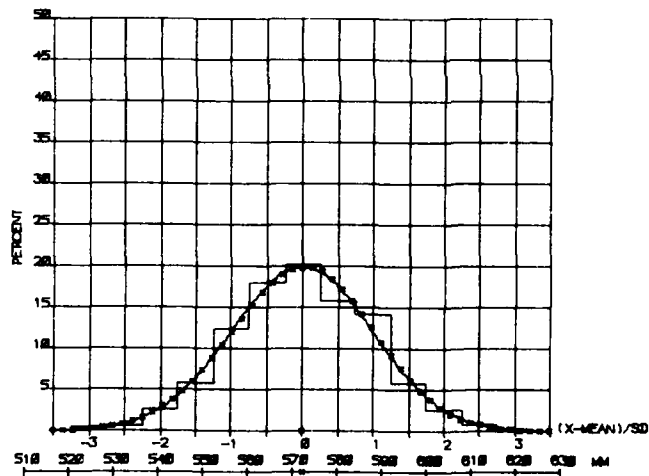
Subject sits erect, looking straight ahead. Measure the maximum head circumference, the tape passing just over the brow ridges and over the occiput, using just sufficient tape tension to flatten the hair.



TABLE 9

Head Circumference (mm)

Number of Subjects : 555
 Mean : 572.4
 Standard Deviation : 15.9
 Coefficient of Skewness: -0.07
 Coefficient of Kurtosis : -0.00
 Range of Data : 523-618



1st percentile 535
 3rd percentile 542
 5th percentile 546
 10th percentile 552
 15th percentile 556
 20th percentile 559
 25th percentile 562
 30th percentile 564
 40th percentile 569
 50th percentile 573
 60th percentile 577
 70th percentile 581
 75th percentile 583
 80th percentile 586
 85th percentile 589
 90th percentile 593
 95th percentile 598
 97th percentile 602
 99th percentile 609

TABLE 10

Neck Circumference

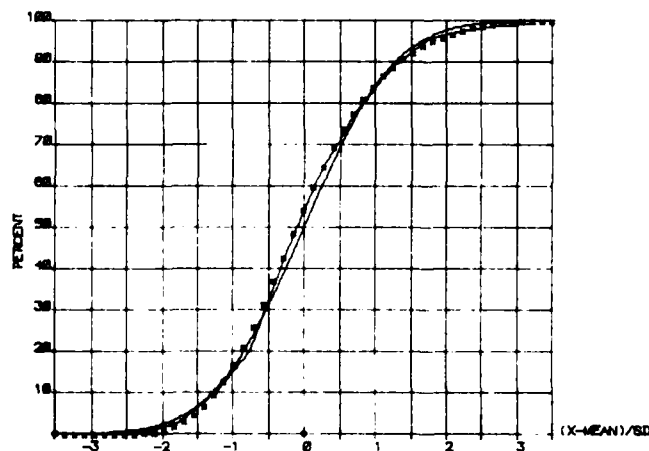
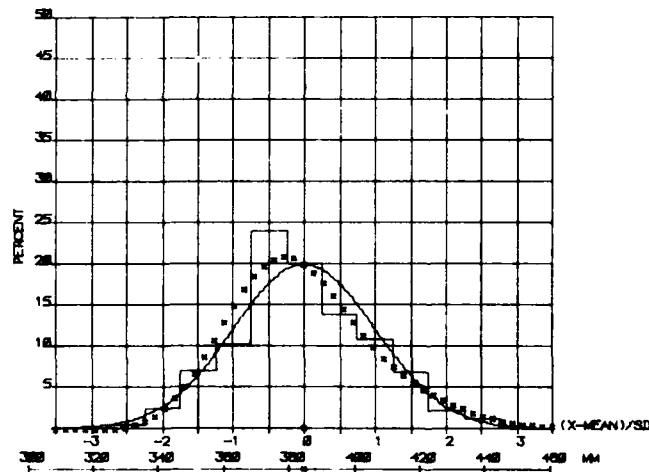
Subject sits erect, looking straight ahead. Measure the circumference of the neck ensuring that the tape is at right angles to the longitudinal axis of the neck and that the datum edge of the tape passes over the tip of the thyroid cartilage.



TABLE 10

Neck Circumference (mm)

Number of Subjects : 555
 Mean : 384.6
 Standard Deviation : 21.8
 Coefficient of Skewness: 0.61
 Coefficient of Kurtosis : 1.30
 Range of Data : 332-494



1st percentile	343
3rd percentile	348
5th percentile	352
10th percentile	358
15th percentile	362
20th percentile	366
25th percentile	369
30th percentile	372
40th percentile	377
50th percentile	382
60th percentile	388
70th percentile	394
75th percentile	398
80th percentile	402
85th percentile	407
90th percentile	414
95th percentile	425
97th percentile	432
99th percentile	443

TABLE 11

Chest Circumference

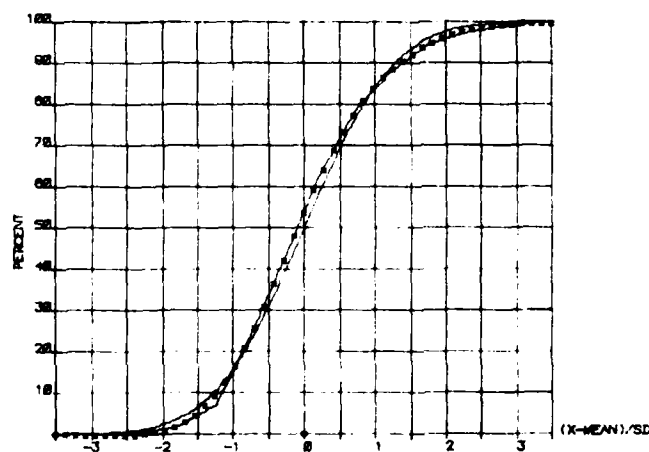
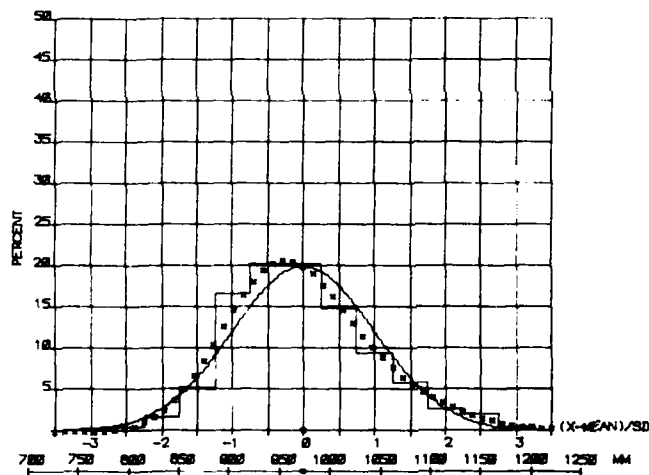
Subject stands erect, feet approximately 100 mm apart, with arms away from the sides. The tape is passed horizontally around the chest, aligning the datum edge with the nipples and the chest marks made on the subject's back. The arms are lowered, tape alignment checked and Chest Circumference measured at the end of a normal inspiration.



TABLE 11

Chest Circumference (mm)

Number of Subjects : 555
 Mean : 973.6
 Standard Deviation : 70.5
 Coefficient of Skewness: 0.55
 Coefficient of Kurtosis : 0.29
 Range of Data : 804-1219



1st percentile	836
3rd percentile	855
5th percentile	867
10th percentile	887
15th percentile	901
20th percentile	913
25th percentile	923
30th percentile	932
40th percentile	950
50th percentile	967
60th percentile	985
70th percentile	1005
75th percentile	1017
80th percentile	1031
85th percentile	1047
90th percentile	1069
95th percentile	1102
97th percentile	1124
99th percentile	1162

TABLE 12

Waist Circumference

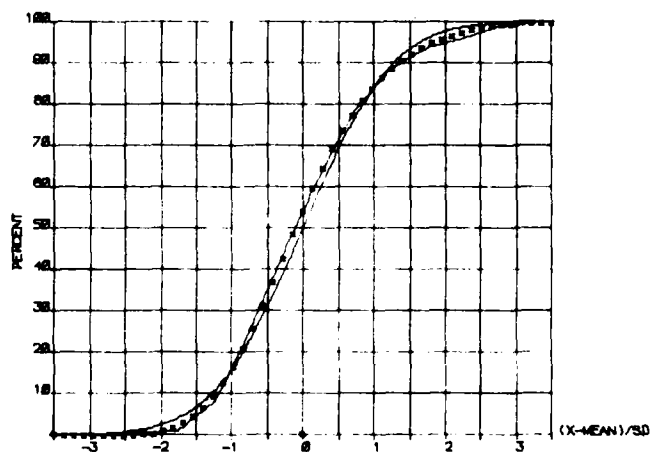
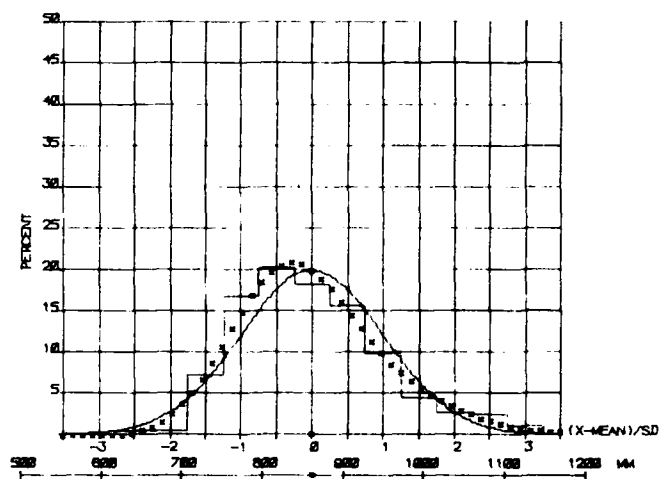
Subject stands erect, heels approximately 100 mm apart, with arms away from the sides. The tape is passed horizontally around the waist, aligning the datum edge with the umbilicus and the waist marks made on the subject's back. The arms are lowered, tape alignment checked, and the Waist Circumference measured.



TABLE 12

Waist Circumference (mm)

Number of Subjects : 555
 Mean : 862.2
 Standard Deviation : 88.0
 Coefficient of Skewness: 0.61
 Coefficient of Kurtosis : 0.26
 Range of Data : 641-1165



1st percentile	693
3rd percentile	716
5th percentile	730
10th percentile	754
15th percentile	771
20th percentile	786
25th percentile	799
30th percentile	810
40th percentile	832
50th percentile	853
60th percentile	876
70th percentile	901
75th percentile	916
80th percentile	933
85th percentile	954
90th percentile	982
95th percentile	1025
97th percentile	1052
99th percentile	1101

TABLE 13

Buttock Circumference

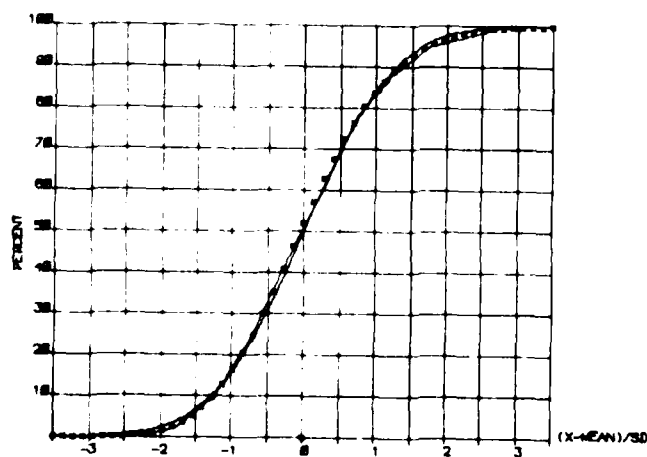
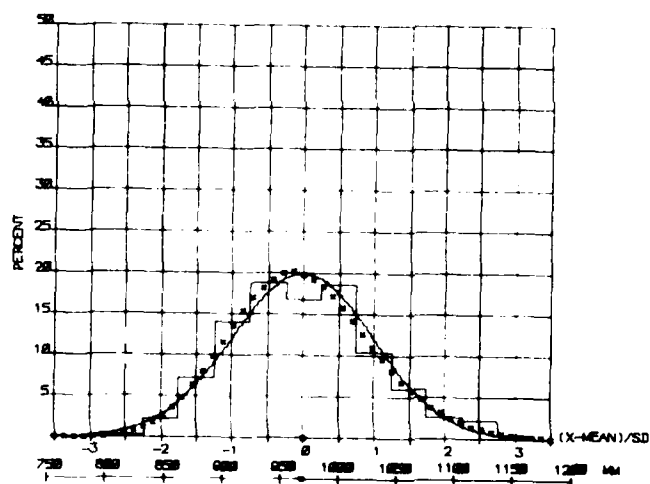
Subject stands erect, feet together. Measure Buttock Circumference with the tape passing horizontally around the maximum posterior protuberance of the buttocks.



TABLE 13

Buttock Circumference (mm)

Number of Subjects : 555
 Mean : 969.0
 Standard Deviation : 61.0
 Coefficient of Skewness: 0.30
 Coefficient of Kurtosis : -0.20
 Range of Data : 826-1141



1st percentile	840
3rd percentile	861
5th percentile	873
10th percentile	893
15th percentile	906
20th percentile	917
25th percentile	926
30th percentile	935
40th percentile	951
50th percentile	966
60th percentile	982
70th percentile	999
75th percentile	1008
80th percentile	1019
85th percentile	1033
90th percentile	1049
95th percentile	1075
97th percentile	1092
99th percentile	1124

TABLE 14

Vertical Trunk Circumference

Subject stands erect, looking straight ahead, heels approximately 100 mm apart and the arms relaxed by the sides. Measure Vertical Trunk Circumference, passing the tape back over the left shoulder, the datum edge aligned with the 90 mm shoulder mark, down between the buttocks, through the crotch to the left of the genitals and up the front of the trunk spanning all body hollows. Adjust the tape tension so that firm pressure is applied to the crotch without indenting the shoulder.

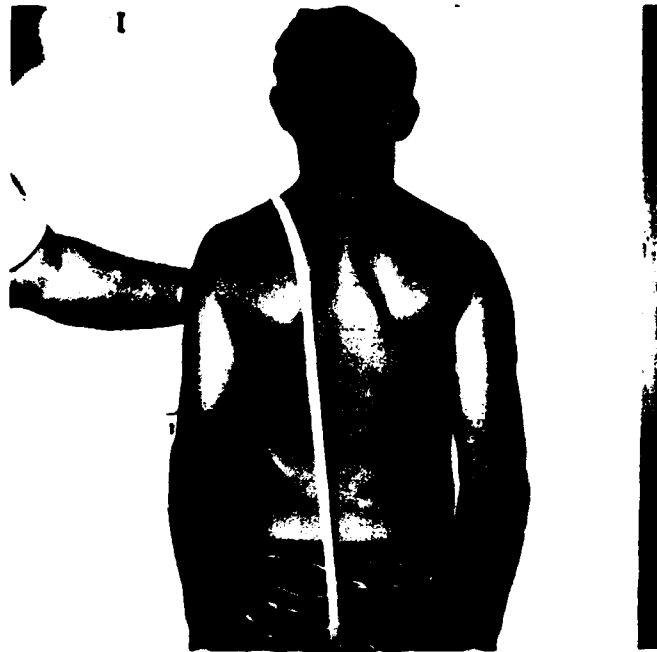
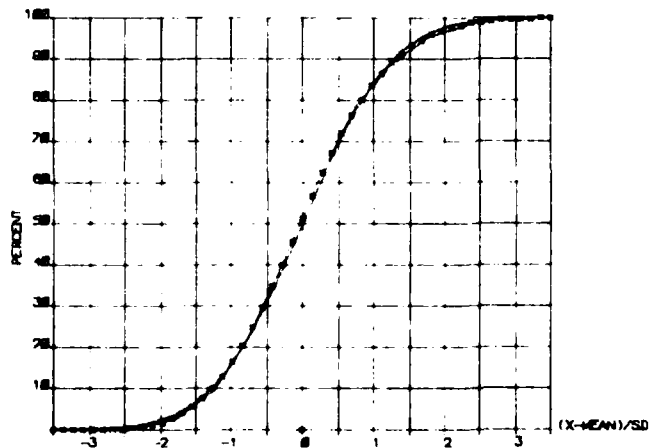
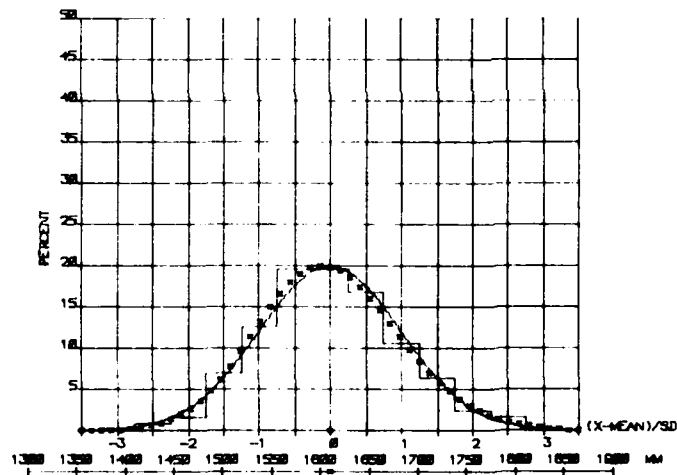


TABLE 14

Vertical Trunk Circumference (mm)

Number of Subjects : 555
 Mean : 1610.3
 Standard Deviation : 72.8
 Coefficient of Skewness: 0.22
 Coefficient of Kurtosis : 0.15
 Range of Data : 1393-1876



1st percentile	1453
3rd percentile	1480
5th percentile	1495
10th percentile	1519
15th percentile	1535
20th percentile	1548
25th percentile	1560
30th percentile	1570
40th percentile	1589
50th percentile	1608
60th percentile	1626
70th percentile	1646
75th percentile	1658
80th percentile	1671
85th percentile	1686
90th percentile	1706
95th percentile	1735
97th percentile	1754
99th percentile	1791

TABLE 15

Buttock-Heel Length

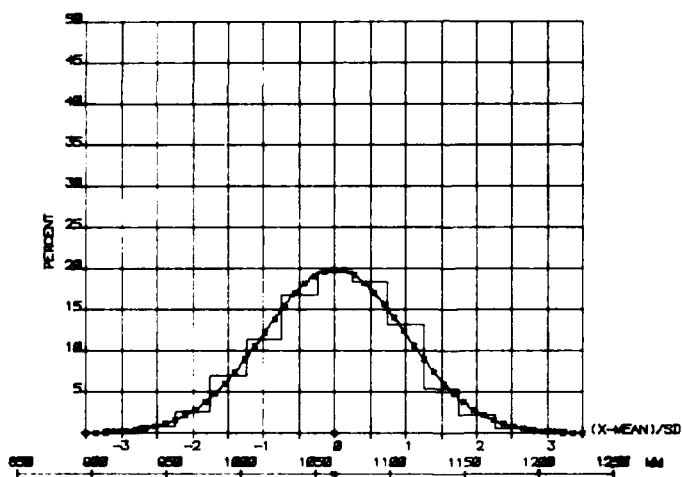
Subject sits on the measuring rig with both legs out straight and the knees locked. The subject is instructed to '... push your buttocks as far as possible into the back wall'. Before the subject relaxes, the foot block is brought up to the left heel and the distance of the datum edge from the rear wall of the measuring device is recorded.



TABLE 15

Buttock-Heel Length (mm)

Number of Subjects : 555
 Mean : 1062.7
 Standard Deviation : 47.6
 Coefficient of Skewness: - 0.02
 Coefficient of Kurtosis : 0.12
 Range of Data : 921-1228



1st percentile	951
3rd percentile	973
5th percentile	984
10th percentile	1002
15th percentile	1013
20th percentile	1023
25th percentile	1031
30th percentile	1038
40th percentile	1051
50th percentile	1063
60th percentile	1075
70th percentile	1088
75th percentile	1095
80th percentile	1103
85th percentile	1112
90th percentile	1124
95th percentile	1141
97th percentile	1152
99th percentile	1173

TABLE 16

Mass

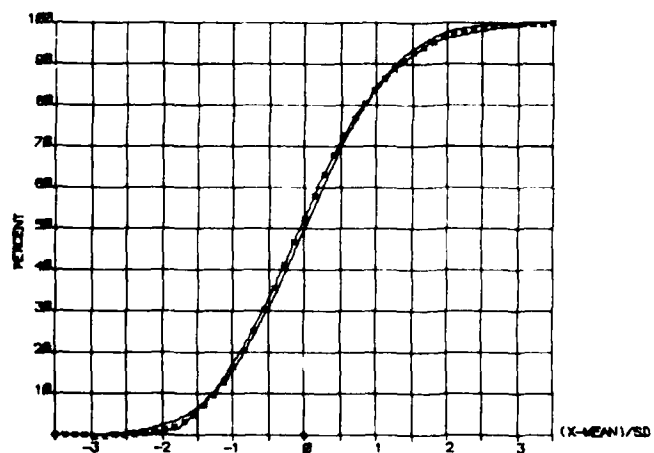
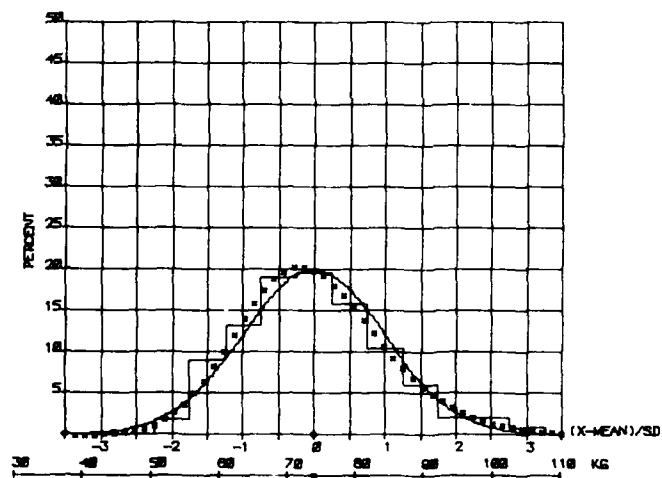
The mass of the subject is recorded standing on a spring scale (subject wearing briefs only).



TABLE 16

Mass (kg)

Number of Subjects : 555
 Mean : 74.0
 Standard Deviation : 10.4
 Coefficient of Skewness: 0.40
 Coefficient of Kurtosis : 0.10
 Range of Data : 52.0-106.0



1st percentile	52.7
3rd percentile	55.9
5th percentile	57.9
10th percentile	61.0
15th percentile	63.2
20th percentile	65.0
25th percentile	66.6
30th percentile	68.0
40th percentile	70.7
50th percentile	73.3
60th percentile	75.9
70th percentile	78.9
75th percentile	80.6
80th percentile	82.5
85th percentile	84.8
90th percentile	87.8
95th percentile	92.4
97th percentile	95.4
99th percentile	100.9

TABLE 17

Sitting Height

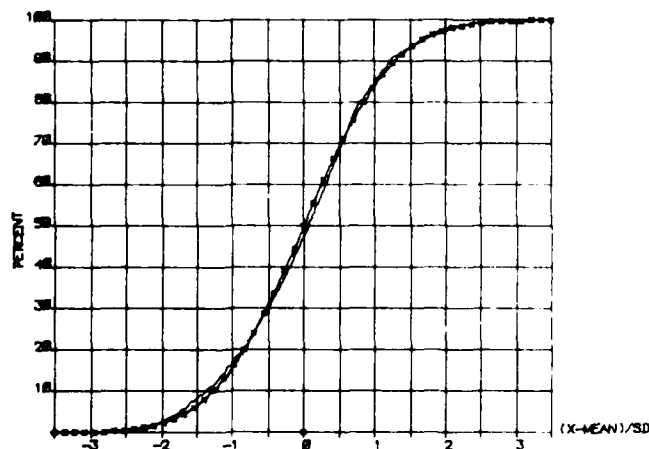
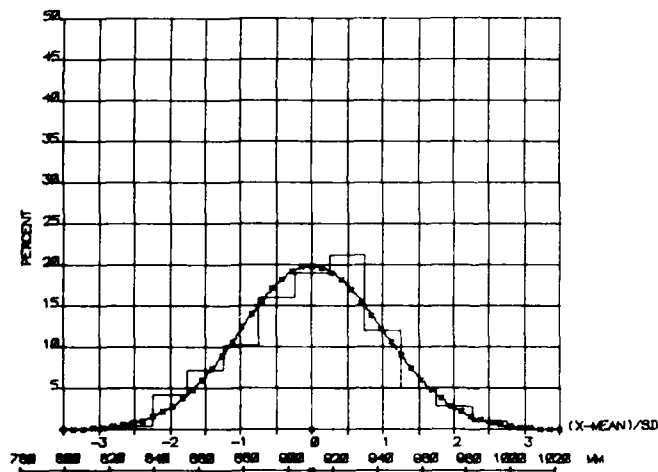
The subject holds the sitting posture. The datum edge is brought down in the midsagittal plane until light contact is made with the vertex. Record the height of the datum edge from the floor. Sitting Height equals datum height less Stool Height.



TABLE 17

Sitting Height (mm)

Number of Subjects : 555
 Mean : 910.8
 Standard Deviation : 31.8
 Coefficient of Skewness: 0.02
 Coefficient of Kurtosis : 0.02
 Range of Data : 825-1031



1st percentile 837
 3rd percentile 851
 5th percentile 859
 10th percentile 870
 15th percentile 878
 20th percentile 884
 25th percentile 889
 30th percentile 894
 40th percentile 903
 50th percentile 911
 60th percentile 919
 70th percentile 927
 75th percentile 932
 80th percentile 938
 85th percentile 944
 90th percentile 952
 95th percentile 963
 97th percentile 971
 99th percentile 985

TABLE 18

Eye Height (Sitting)

The subject holds the sitting posture. The datum line is brought up until the reflections of this line and the centre of the subject's left pupil, in the mirror opposite, are coincident. Record the height of the datum line from the floor. Eye Height equals datum height less Stool Height.

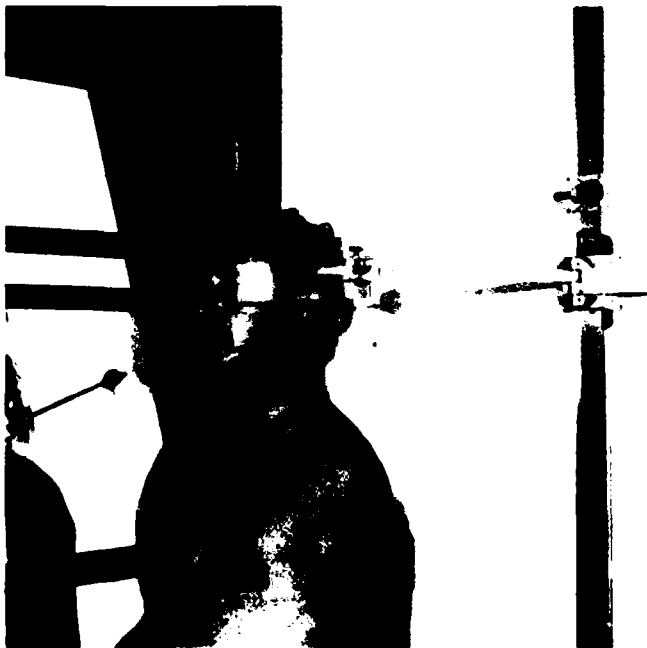
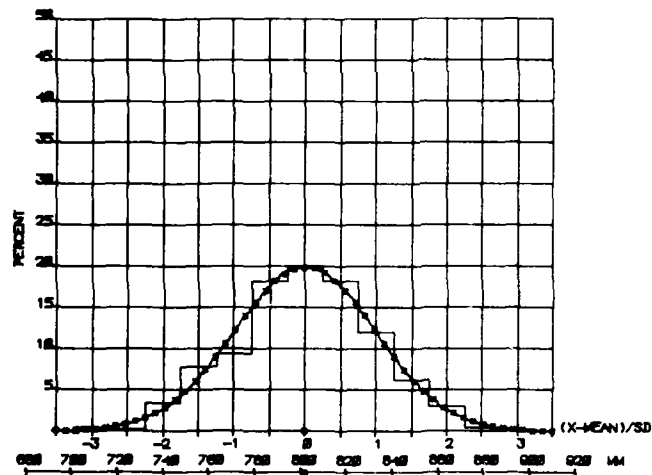


TABLE 18

Eye Height, Sitting (mm)

Number of Subjects : 555
 Mean : 801.8
 Standard Deviation : 31.0
 Coefficient of Skewness: -0.01
 Coefficient of Kurtosis : 0.10
 Range of Data : 700-918



1st percentile 729
 3rd percentile 743
 5th percentile 751
 10th percentile 762
 15th percentile 770
 20th percentile 776
 25th percentile 781
 30th percentile 786
 40th percentile 794
 50th percentile 802
 60th percentile 810
 70th percentile 818
 75th percentile 823
 80th percentile 828
 85th percentile 834
 90th percentile 842
 95th percentile 853
 97th percentile 860
 99th percentile 874

TABLE 19

Shoulder Height (Sitting)

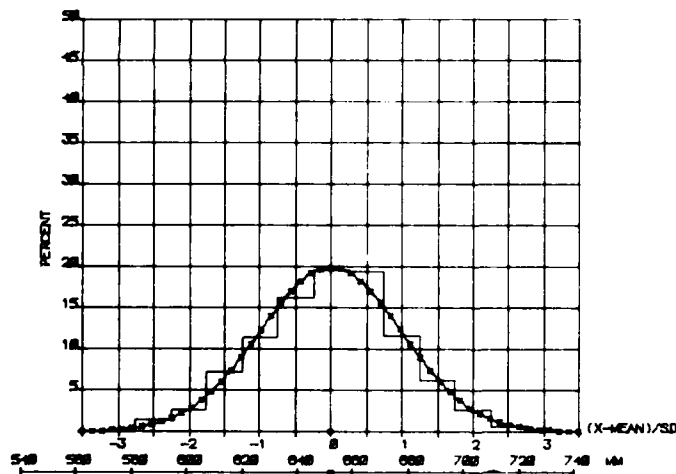
The subject holds the sitting posture. The datum edge is brought down until light contact is made with the 90 mm mark on the left shoulder. Record the height of the datum edge from the floor. Shoulder Height equals datum height less Stool Height.



TABLE 19

Shoulder Height, Sitting (mm)

Number of Subjects : 555
 Mean : 652.1
 Standard Deviation : 25.7
 Coefficient of Skewness : -0.01
 Coefficient of Kurtosis : -0.14
 Range of Data : 588-740



1st percentile	592
3rd percentile	604
5th percentile	610
10th percentile	619
15th percentile	626
20th percentile	631
25th percentile	635
30th percentile	639
40th percentile	646
50th percentile	652
60th percentile	659
70th percentile	666
75th percentile	669
80th percentile	674
85th percentile	679
90th percentile	685
95th percentile	694
97th percentile	700
99th percentile	712

TABLE 20

Acromial Height (Sitting)

The subject holds the sitting posture. The datum edge is brought down until light contact is made with the left acromial mark. Record the height of the datum edge from the floor. Acromial Height equals datum height less Stool Height.

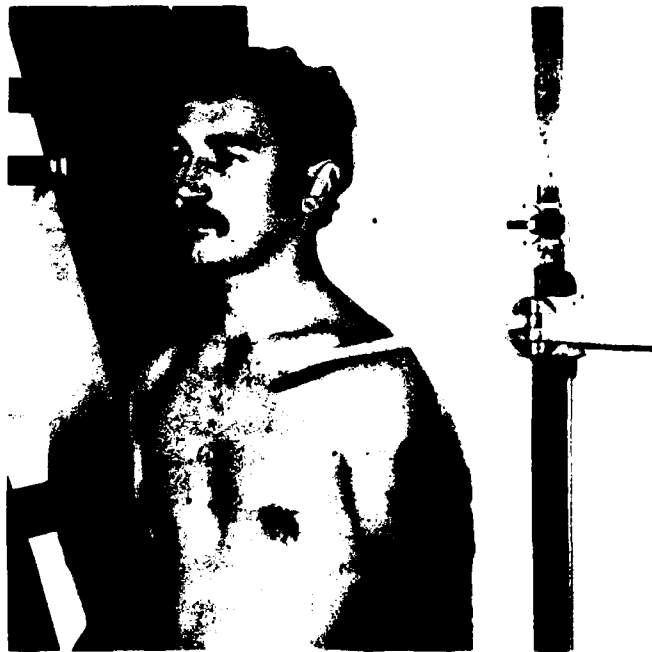
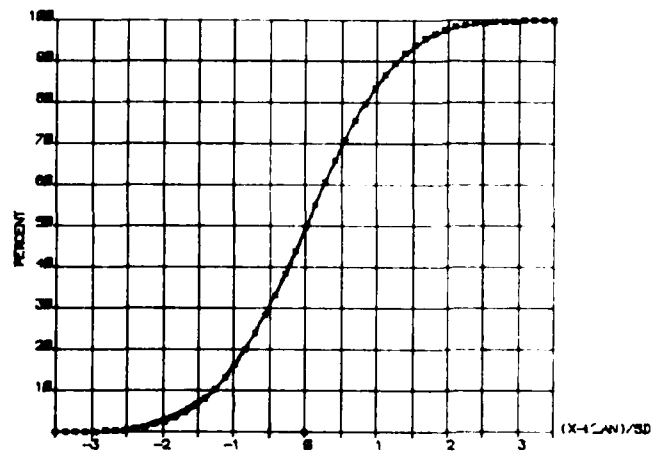
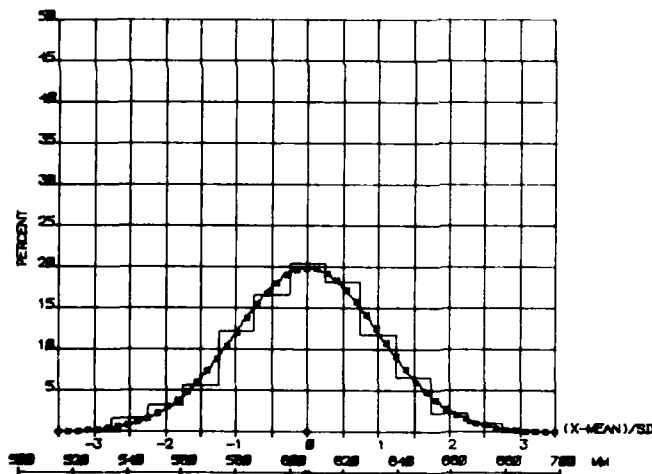


TABLE 20

Acromial Height, Sitting (mm)

Number of Subjects : 555
 Mean : 606.6
 Standard Deviation : 26.3
 Coefficient of Skewness: -0.05
 Coefficient of Kurtosis : -0.12
 Range of Data : 537-683



1st percentile	544
3rd percentile	557
5th percentile	563
10th percentile	573
15th percentile	579
20th percentile	585
25th percentile	589
30th percentile	593
40th percentile	600
50th percentile	607
60th percentile	613
70th percentile	620
75th percentile	624
80th percentile	629
85th percentile	634
90th percentile	640
95th percentile	649
97th percentile	655
99th percentile	667

TABLE 21

Elbow Rest Height

The subject holds the sitting posture except that the forearms are raised and extended forwards horizontally. The hands and fingers are extended in the vertical plane containing the forearm. The datum edge is brought up to make contact with the lower edge of the left olecranon. Record the height of the datum edge from the floor. Elbow Rest Height equals datum height less Stool Height.

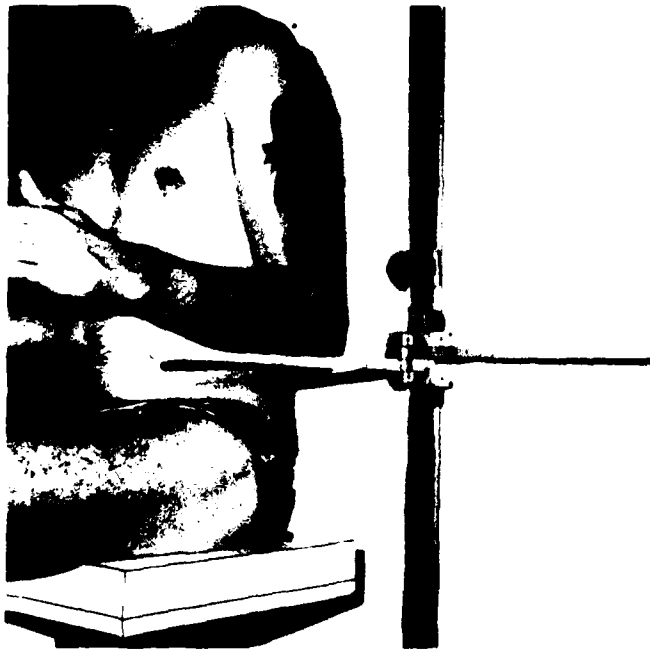
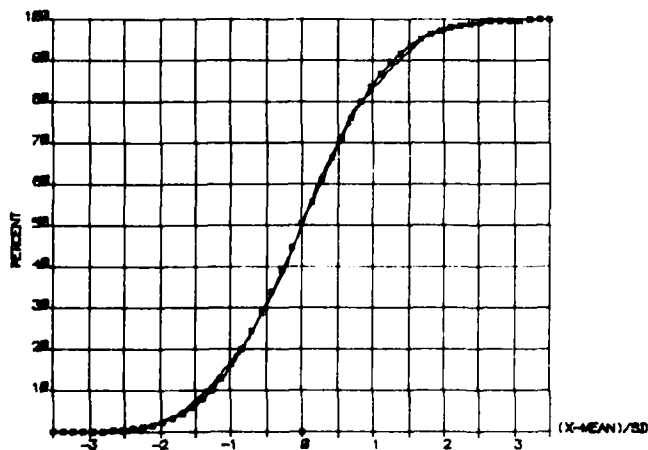
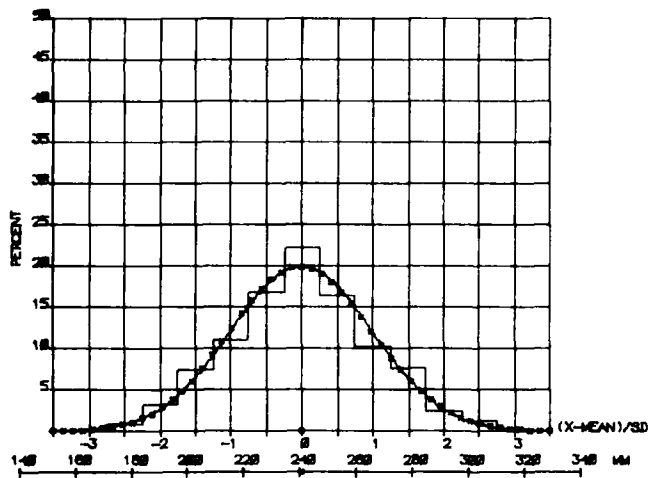


TABLE 21

Elbow Rest Height (mm)

Number of Subjects : 555
 Mean : 240.5
 Standard Deviation : 25.2
 Coefficient of Skewness: 0.05
 Coefficient of Kurtosis : -0.14
 Range of Data : 172-317



1st percentile	183
3rd percentile	194
5th percentile	199
10th percentile	208
15th percentile	214
20th percentile	219
25th percentile	223
30th percentile	227
40th percentile	234
50th percentile	240
60th percentile	247
70th percentile	254
75th percentile	257
80th percentile	262
85th percentile	267
90th percentile	273
95th percentile	282
97th percentile	289
99th percentile	300

TABLE 22

Popliteal Height

The subject holds the sitting posture. With the sliding calipers measure the vertical distance from the floor to the underside of the tendon of the left biceps femoris muscle where it joins the calf.

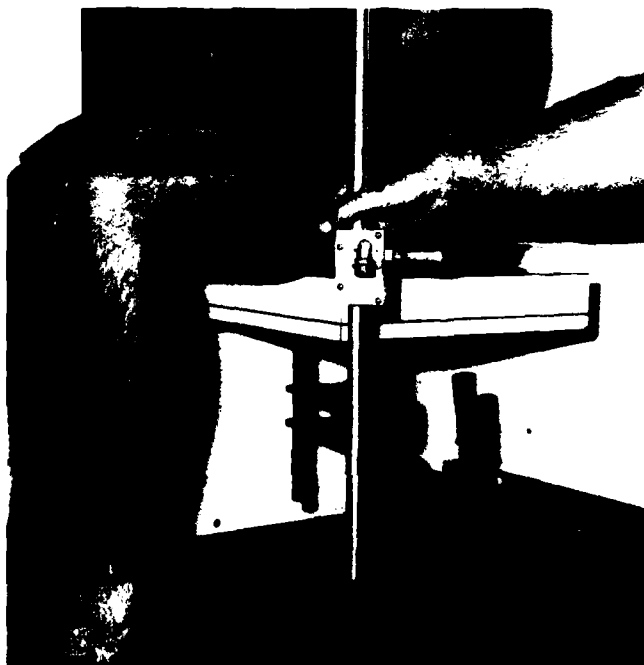
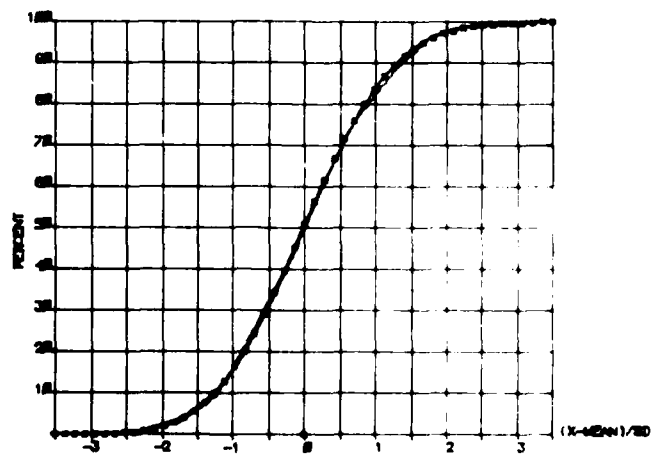
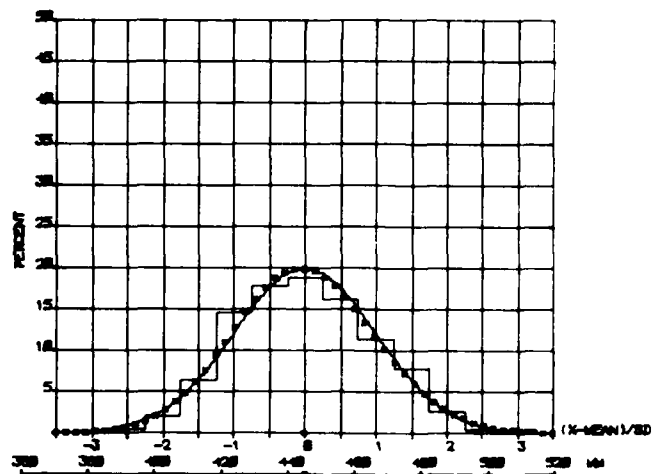


TABLE 22

Popliteal Height (mm)

Number of Subjects : 555
 Mean : 445.1
 Standard Deviation : 21.3
 Coefficient of Skewness: 0.14
 Coefficient of Kurtosis : 0.07
 Range of Data : 375-520



1st percentile 398
 3rd percentile 406
 5th percentile 411
 10th percentile 418
 15th percentile 423
 20th percentile 427
 25th percentile 431
 30th percentile 434
 40th percentile 439
 50th percentile 445
 60th percentile 450
 70th percentile 456
 75th percentile 459
 80th percentile 463
 85th percentile 467
 90th percentile 473
 95th percentile 481
 97th percentile 486
 99th percentile 497

TABLE 23

Bideltoid Breadth

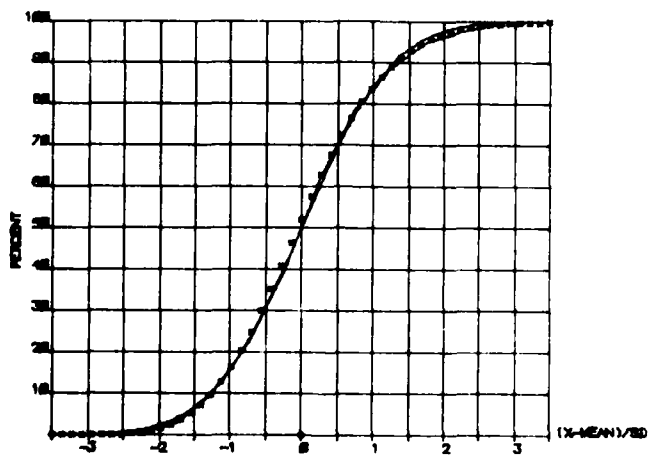
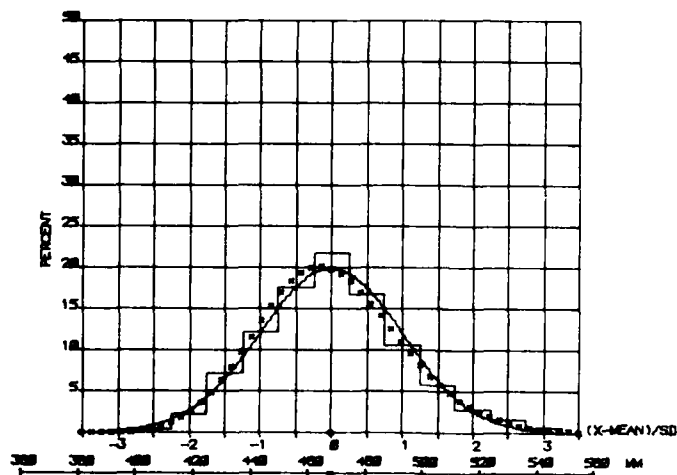
The subject moves across to his right-hand side until the right deltoid muscle is brought into light contact with the perspex wall panel. The circle of skin in contact with the perspex has a diameter of approximately 30 mm (this is monitored in the mirror). The subject regains the sitting posture and the datum edge is moved horizontally until light contact is made with the most distal portion of the left deltoid prominence. Record the distance of the datum edge from the end wall.



TABLE 23

Bideloid Breadth (mm)

Number of Subjects : 555
 Mean : 468.2
 Standard Deviation : 24.8
 Coefficient of Skewness: 0.31
 Coefficient of Kurtosis : 0.02
 Range of Data : 409-547



1st percentile	416
3rd percentile	425
5th percentile	429
10th percentile	437
15th percentile	443
20th percentile	447
25th percentile	451
30th percentile	454
40th percentile	461
50th percentile	467
60th percentile	473
70th percentile	480
75th percentile	484
80th percentile	489
85th percentile	494
90th percentile	501
95th percentile	511
97th percentile	518
99th percentile	531

TABLE 24

Hip Breadth

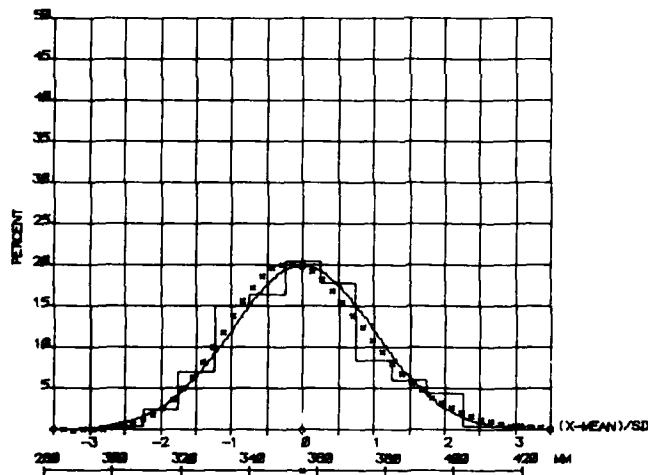
Subject moves across to his right-hand side so that the fleshy part of his right hip makes light contact with the perspex wall panel (monitored in the mirror). The subject's knees are brought together; feet are flat on the floor. The datum edge is moved horizontally until light contact is made with the widest region of the left hip. Record the distance of the datum edge from the end wall.



TABLE 24

Hip Breadth (mm)

Number of Subjects : 555
 Mean : 355.7
 Standard Deviation : 20.8
 Coefficient of Skewness: 0.37
 Coefficient of Kurtosis : 0.04
 Range of Data : 306-428



1st percentile 313
 3rd percentile 320
 5th percentile 323
 10th percentile 330
 15th percentile 334
 20th percentile 338
 25th percentile 341
 30th percentile 344
 40th percentile 349
 50th percentile 354
 60th percentile 360
 70th percentile 366
 75th percentile 369
 80th percentile 373
 85th percentile 377
 90th percentile 383
 95th percentile 392
 97th percentile 398
 99th percentile 409

TABLE 25

Functional Reach

The subject sits erect looking straight ahead at the reflection of his pupils in the mirror directly in front of him. Both shoulder blades are symmetrically and lightly touching the perspex panel in the end wall of the measuring rig(monitored in the mirror). The arms are extended forward horizontally and the hand is pronated with the tip of the index finger touching the extended thumb (which is held in the plane of the extended arm). The datum edge is moved horizontally until contact is made with the tip of the left thumb. Record the distance of the datum edge from the end wall.

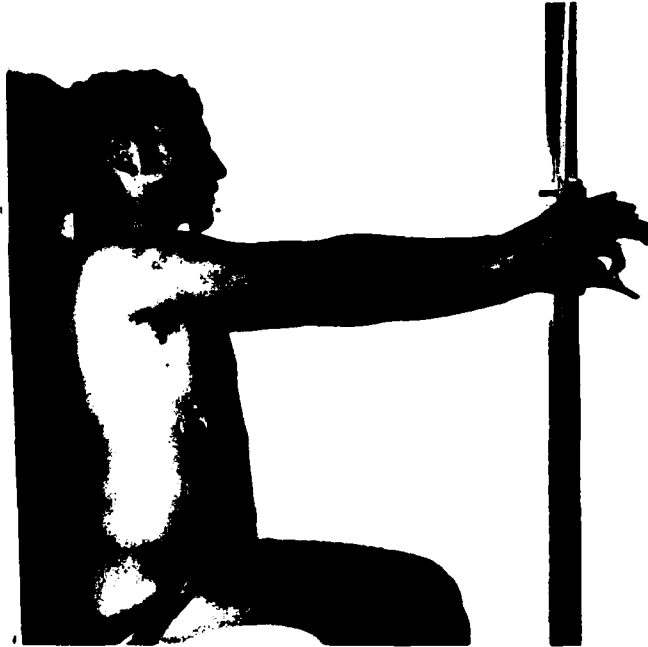
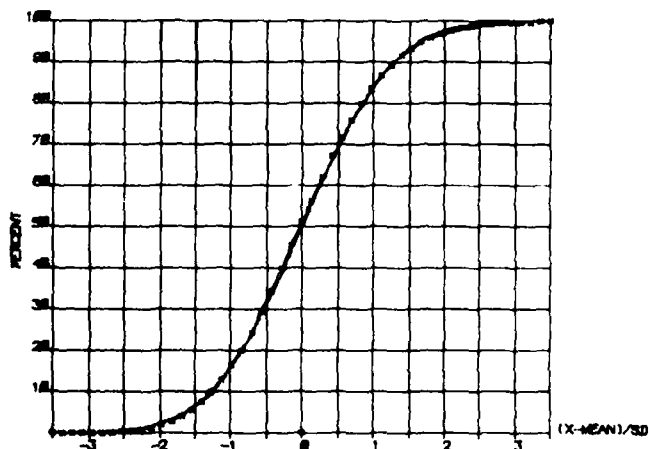
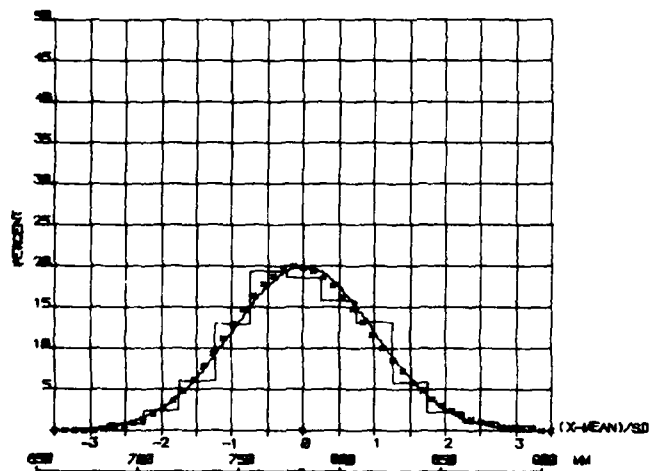


TABLE 25

Functional Reach (mm)

Number of Subjects : 555
 Mean : 781.6
 Standard Deviation : 35.1
 Coefficient of Skewness: 0.17
 Coefficient of Kurtosis : 0.06
 Range of Data : 683-888



1st percentile 704
 3rd percentile 718
 5th percentile 725
 10th percentile 737
 15th percentile 745
 20th percentile 752
 25th percentile 757
 30th percentile 762
 40th percentile 772
 50th percentile 781
 60th percentile 790
 70th percentile 799
 75th percentile 805
 80th percentile 811
 85th percentile 818
 90th percentile 827
 95th percentile 841
 97th percentile 850
 99th percentile 868

TABLE 26

Buttock-Knee Length

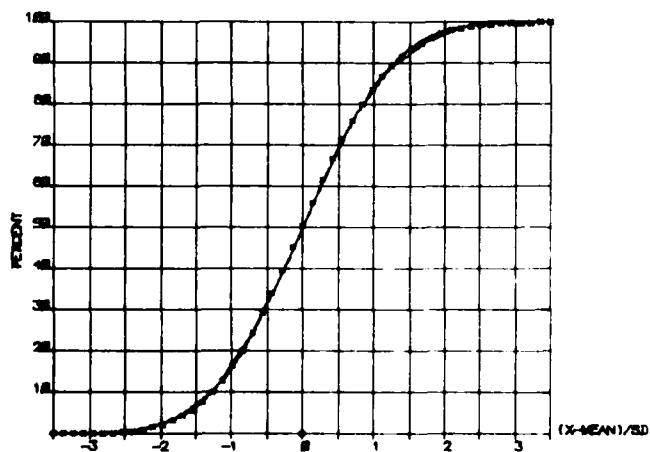
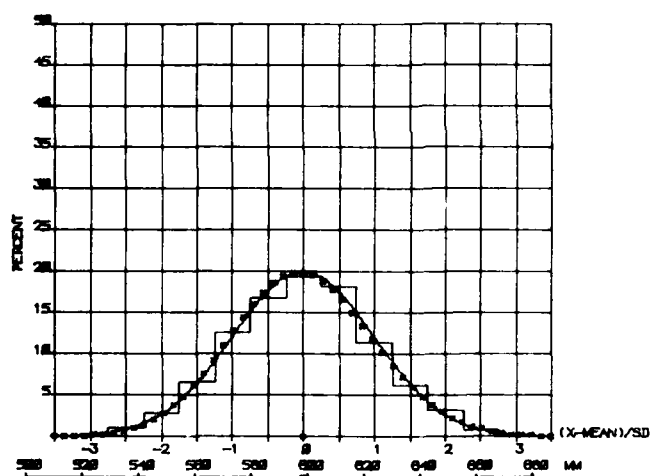
The subject sits erect, feet flat on the floor and thighs parallel to the rear wall of the measuring rig. The subject is instructed to '... push your buttocks back until you have equal pressure on both buttocks against the perspex wall'. Both shoulder blades are symmetrically and lightly touching the perspex panel in the end wall of the measuring rig. The datum edge is moved horizontally until contact is made with the most forward prominence of the left patella. Record the distance of the datum edge from the end wall.



TABLE 26

Buttock-Knee Length (mm)

Number of Subjects : 555
 Mean : 598.3
 Standard Deviation : 25.2
 Coefficient of Skewness : 0.10
 Coefficient of Kurtosis : 0.02
 Range of Data : 531-684



1st percentile 542
 3rd percentile 552
 5th percentile 558
 10th percentile 566
 15th percentile 572
 20th percentile 577
 25th percentile 581
 30th percentile 585
 40th percentile 591
 50th percentile 598
 60th percentile 604
 70th percentile 611
 75th percentile 615
 80th percentile 619
 85th percentile 624
 90th percentile 631
 95th percentile 640
 97th percentile 647
 99th percentile 659

TABLE 27

Thigh Clearance Height

The subject sits erect, feet flat on the floor, arms hanging vertically and lightly touching the sides. The datum edge is brought down to make light contact with the highest point on the left thigh. Record the height of the datum edge from the floor. Thigh Clearance Height equals datum height less Stool Height.

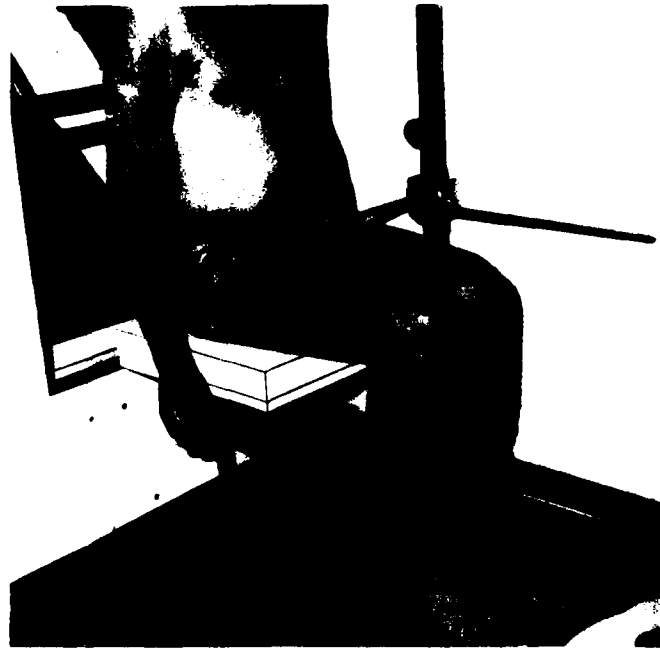
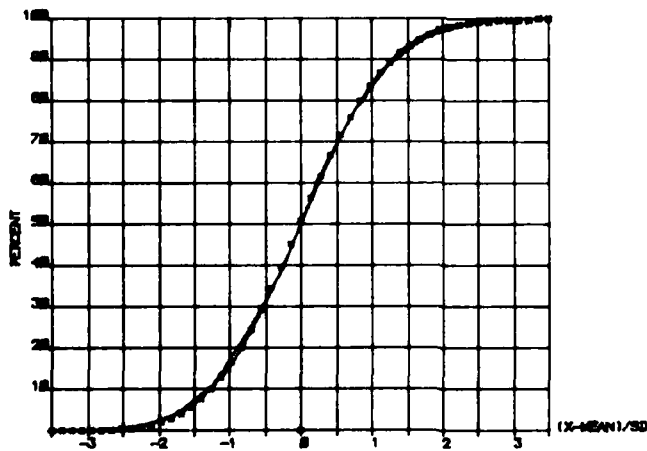
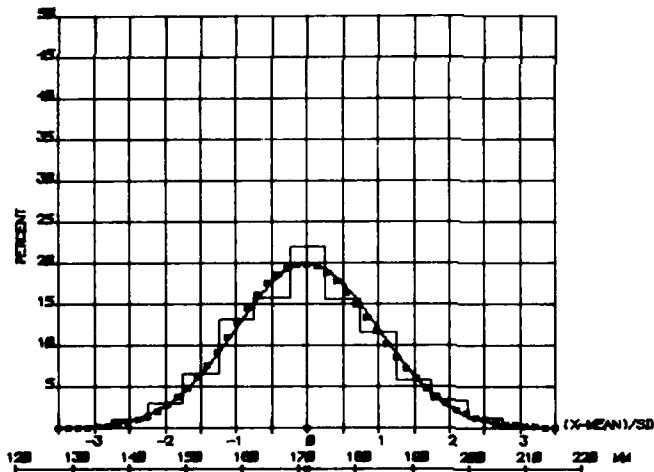


TABLE 27

Thigh Clearance Height (mm)

Number of Subjects : 555
 Mean : 171.4
 Standard Deviation : 12.5
 Coefficient of Skewness: 0.12
 Coefficient of Kurtosis : -0.19
 Range of Data : 137-206



1st percentile	143
3rd percentile	148
5th percentile	151
10th percentile	156
15th percentile	158
20th percentile	161
25th percentile	163
30th percentile	165
40th percentile	168
50th percentile	171
60th percentile	174
70th percentile	178
75th percentile	180
80th percentile	182
85th percentile	184
90th percentile	188
95th percentile	193
97th percentile	196
99th percentile	202

TABLE 28

Stool Height

The subject stands and moves away from the stool. The datum edge is brought down to make contact with the upper surface of the stool seat. Record the height of the datum edge from the floor.

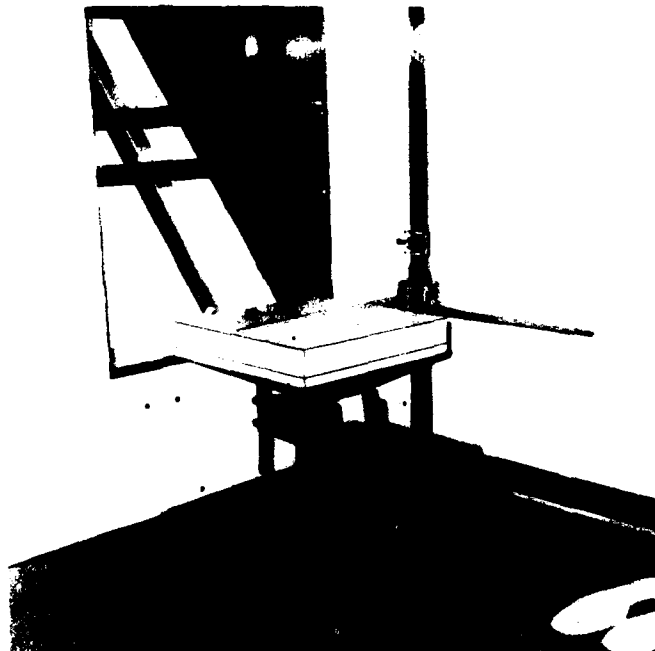
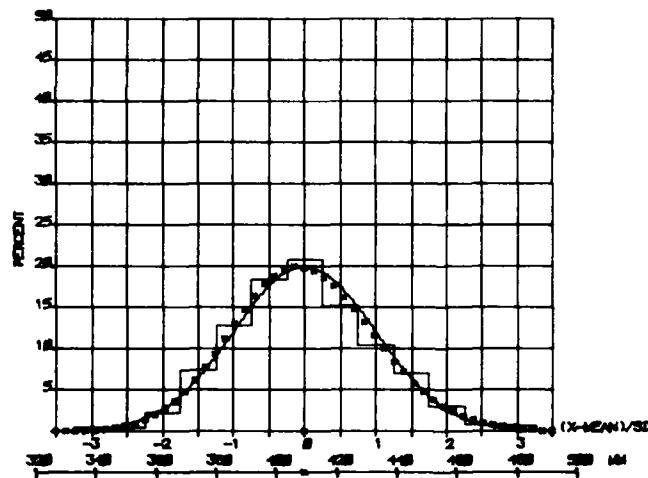


TABLE 28

Stool Height (mm)

Number of Subjects : 555
 Mean : 409.4
 Standard Deviation : 23.6
 Coefficient of Skewness : 0.18
 Coefficient of Kurtosis : 0.05
 Range of Data : 335-480



1st percentile 358
 3rd percentile 367
 5th percentile 372
 10th percentile 380
 15th percentile 385
 20th percentile 389
 25th percentile 393
 30th percentile 396
 40th percentile 403
 50th percentile 409
 60th percentile 415
 70th percentile 421
 75th percentile 425
 80th percentile 429
 85th percentile 434
 90th percentile 440
 95th percentile 449
 97th percentile 456
 99th percentile 467

TABLE 29

Stature

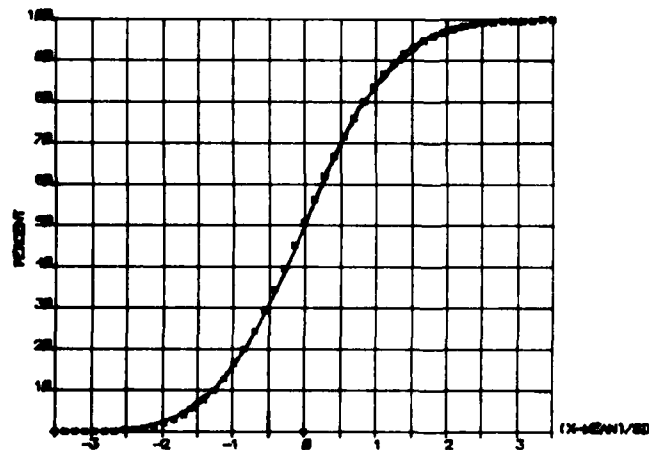
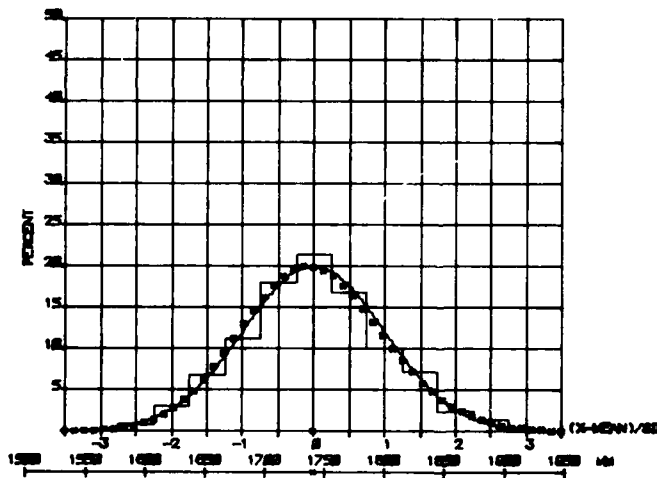
The subject stands erect, looking straight ahead, heels together and back free of the wall. The datum edge is brought down in the midsagittal plane until light contact is made with the vertex. Record the height of the datum edge from the floor.



TABLE 29

Stature (mm)

Number of Subjects : 555
 Mean : 1740.4
 Standard Deviation : 59.3
 Coefficient of Skewness: 0.15
 Coefficient of Kurtosis : 0.01
 Range of Data : 1591-1950



1st percentile 1609
 3rd percentile 1632
 5th percentile 1645
 10th percentile 1665
 15th percentile 1679
 20th percentile 1690
 25th percentile 1700
 30th percentile 1708
 40th percentile 1724
 50th percentile 1739
 60th percentile 1754
 70th percentile 1770
 75th percentile 1780
 80th percentile 1790
 85th percentile 1802
 90th percentile 1817
 95th percentile 1841
 97th percentile 1856
 99th percentile 1885

TABLE 30

Crotch Height

The subject stands erect looking straight ahead with heels approximately 100 mm apart. The datum edge is pushed up into the floor of the perineum, taking care not to impinge on the buttocks or the genitals. Record the height of the datum edge from the floor.

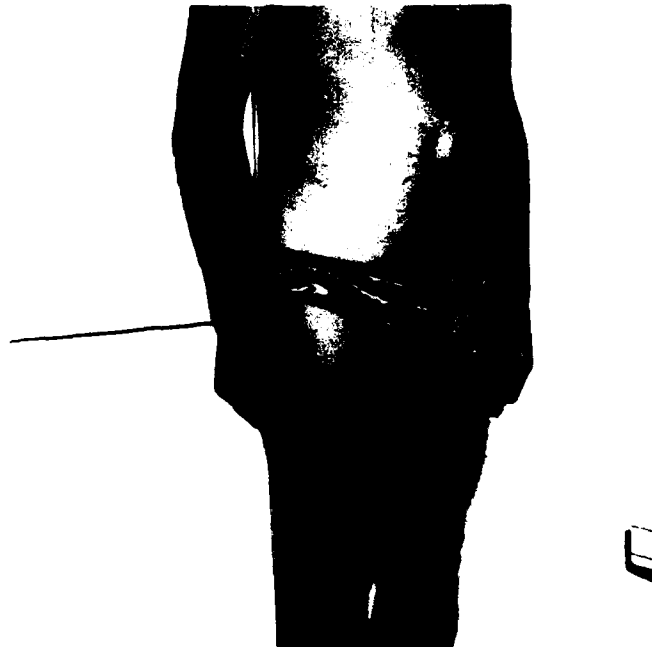
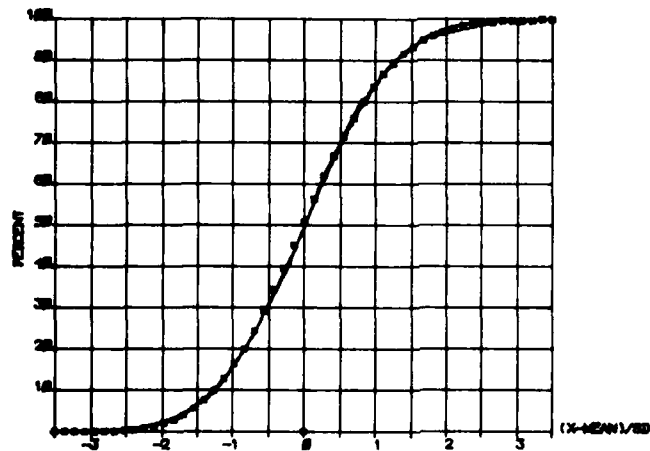
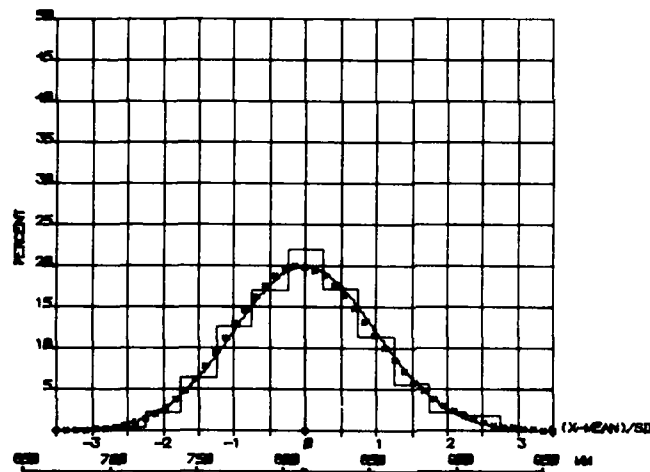


TABLE 30

Crotch Height (mm)

Number of Subjects : 555
 Mean : 812.6
 Standard Deviation : 41.0
 Coefficient of Skewness: 0.15
 Coefficient of Kurtosis : 0.43
 Range of Data : 671-967



1st percentile 722
 3rd percentile 738
 5th percentile 747
 10th percentile 761
 15th percentile 770
 20th percentile 778
 25th percentile 784
 30th percentile 790
 40th percentile 801
 50th percentile 812
 60th percentile 822
 70th percentile 833
 75th percentile 840
 80th percentile 847
 85th percentile 855
 90th percentile 866
 95th percentile 882
 97th percentile 893
 99th percentile 913

TABLE 31

Chest Depth

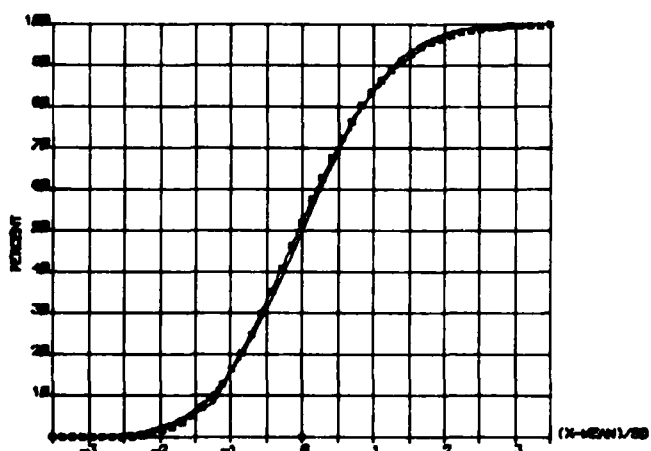
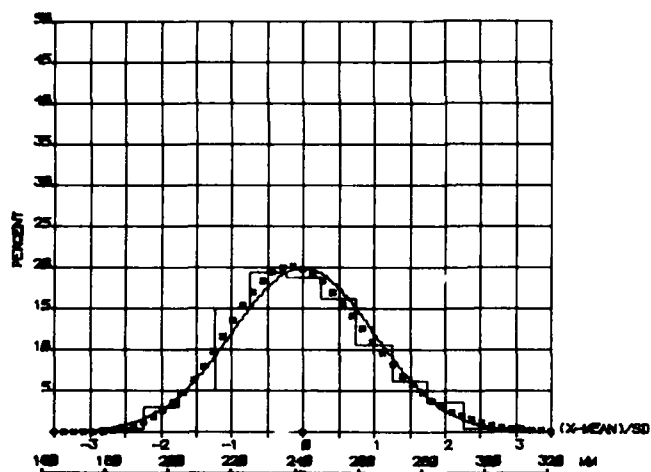
The subject stands erect with arms relaxed by the sides. With the bar of the sliding calipers held horizontally and parallel to the midsagittal plane at the level of the left nipple, measure Chest Depth at the end of a normal inspiration.



TABLE 31

Chest Depth (mm)

Number of Subjects : 555
 Mean : 242.5
 Standard Deviation : 22.4
 Coefficient of Skewness: 0.31
 Coefficient of Kurtosis : -0.02
 Range of Data : 184-316



1st percentile	195
3rd percentile	203
5th percentile	207
10th percentile	214
15th percentile	219
20th percentile	223
25th percentile	227
30th percentile	230
40th percentile	236
50th percentile	241
60th percentile	247
70th percentile	253
75th percentile	257
80th percentile	261
85th percentile	266
90th percentile	272
95th percentile	282
97th percentile	288
99th percentile	300

TABLE 32

Head Breadth

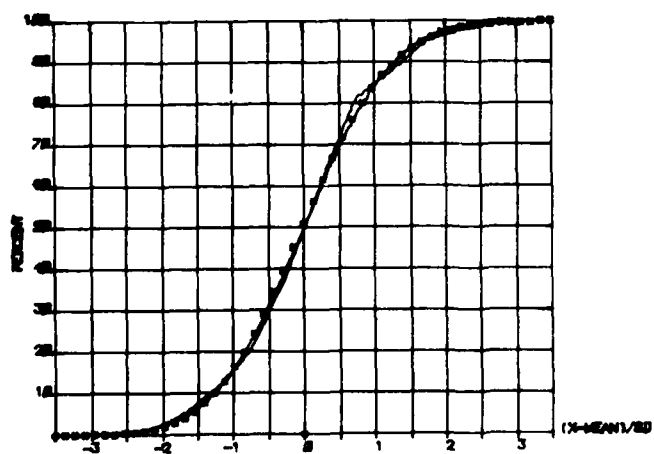
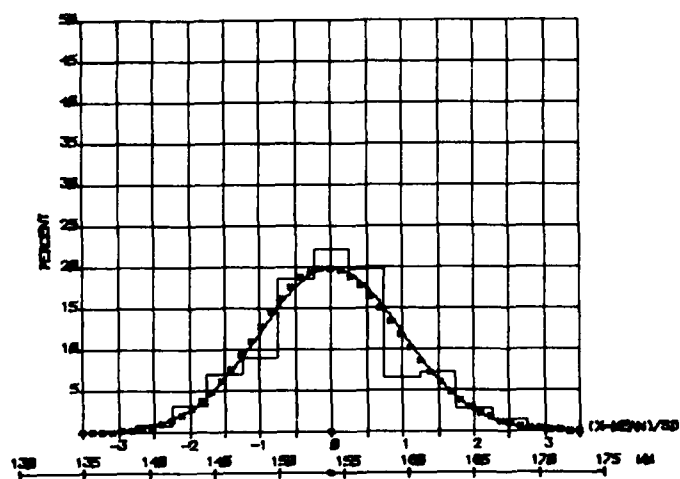
The subject sits, looking straight ahead. With the sliding calipers held in a horizontal plane and applying sufficient pressure with the jaws of the calipers to flatten the hair, measure the maximum head breadth in the coronal plane.



TABLE 32

Head Breadth (mm)

Number of Subjects : 555
 Mean : 154.0
 Standard Deviation : 5.5
 Coefficient of Skewness: 0.14
 Coefficient of Kurtosis : 0.18
 Range of Data : 138-170



1st percentile	142
3rd percentile	144
5th percentile	145
10th percentile	147
15th percentile	148
20th percentile	149
25th percentile	150
30th percentile	151
40th percentile	152
50th percentile	154
60th percentile	155
70th percentile	157
75th percentile	158
80th percentile	159
85th percentile	160
90th percentile	161
95th percentile	163
97th percentile	165
99th percentile	167

TABLE 33

Inter-Elbow Breadth

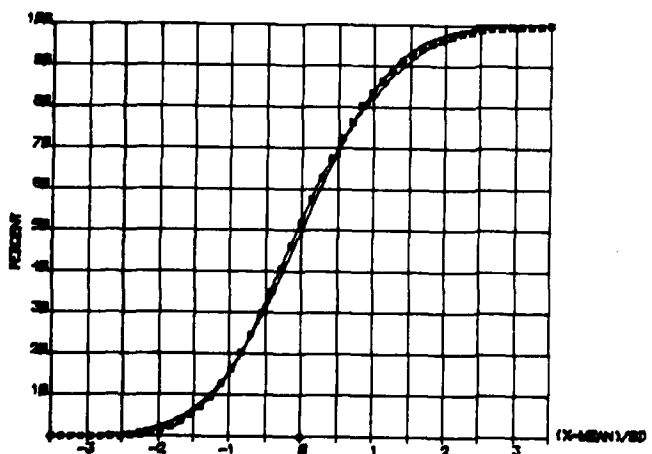
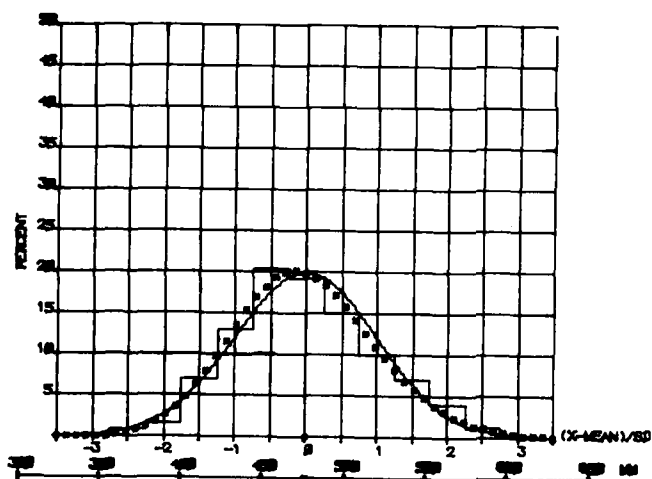
The subject sits erect, upper arms vertical, elbows lightly touching the sides, forearms extended forwards horizontally and palms resting lightly on the support bar. With the sliding calipers measure the horizontal distance between the most distal projections of the lateral epicondyles of the humeri.



TABLE 33

Inter Elbow Breadth (mm)

Number of Subjects : 555
 Mean : 476.2
 Standard Deviation : 43.5
 Coefficient of Skewness: 0.30
 Coefficient of Kurtosis : -0.23
 Range of Data : 369-605



1st percentile	384
3rd percentile	399
5th percentile	408
10th percentile	422
15th percentile	431
20th percentile	439
25th percentile	446
30th percentile	452
40th percentile	463
50th percentile	474
60th percentile	485
70th percentile	497
75th percentile	504
80th percentile	512
85th percentile	521
90th percentile	533
95th percentile	552
97th percentile	564
99th percentile	586

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