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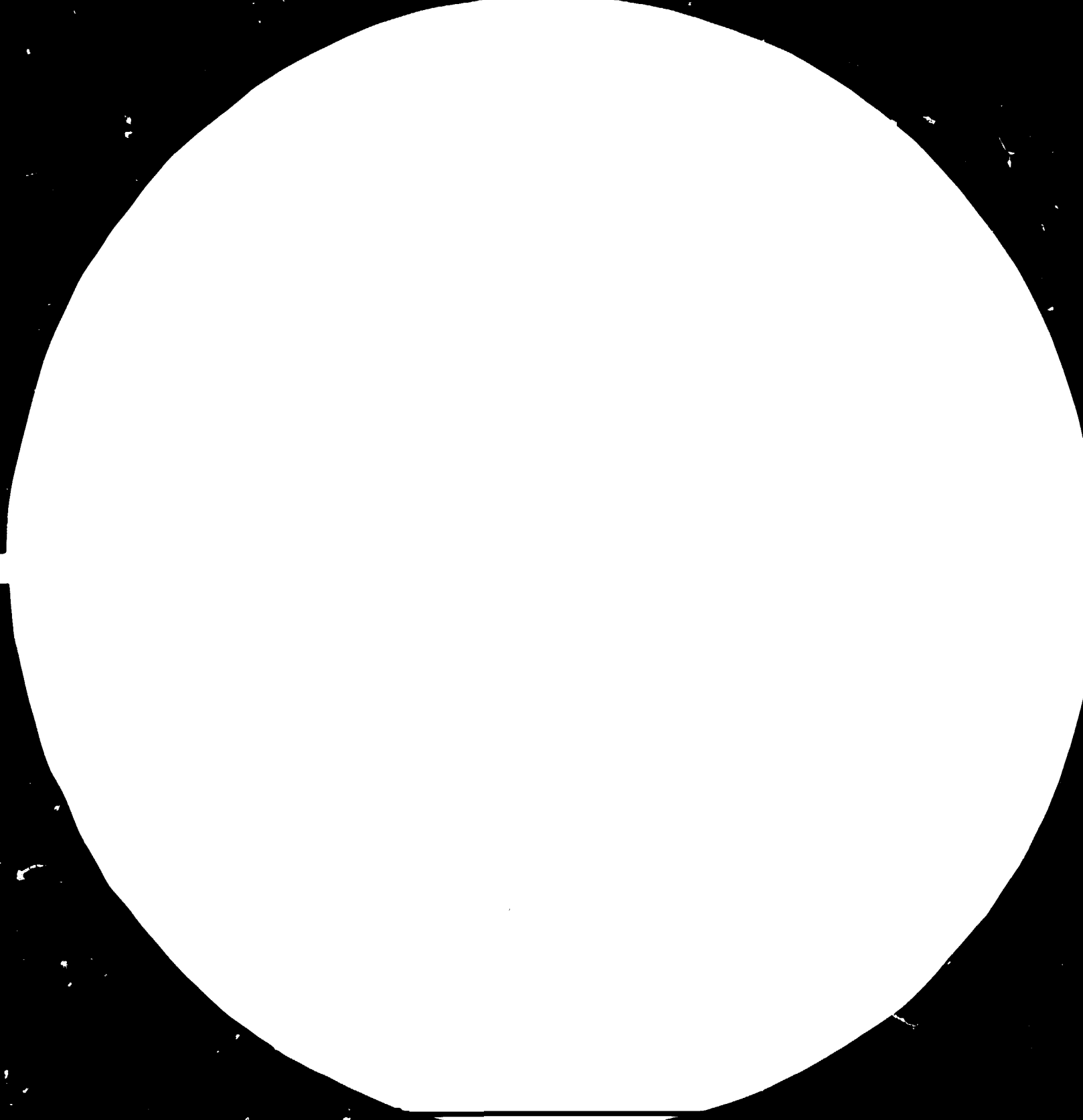

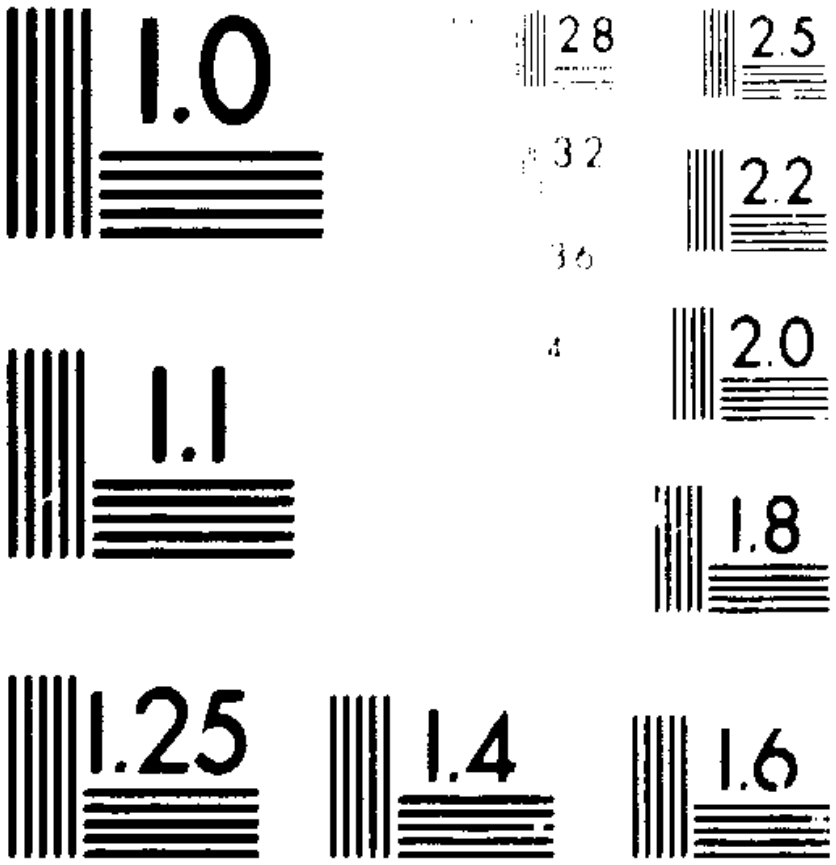

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13784

FINAL REPORT
ON THE RESULTS OF THE FOOT MEASUREMENT PROGRAMME CARRIED OUT IN ETHIOPIA

Prepared for the Government of Ethiopia
through the United Nations
Industrial Development Organization

Project No: DP/ETH/73/001
Leather and Leather Product Development
Contract No: 72/34

Budapest, 1974.

C O N T E N T S

Explanatory notes

Organizations

BCK - Bőr-, és Cipőipari Kutató-fejlesztő Vállalat /Research Institure of the Leather and Footwear Industries/
H-1047 Budapest, Paksi József u. 43, Hungary
Phone: 696-500 Telex: 224497

BMKI - Bőr-, Műbőr- és Cipőipari Kutató Intézet /Research Institute of the Leather, Artifical Leather and Footwear Industries/ - today is BCK as above

ISO - International Organization for Standardization /Geneva, Switzerland/

NLSC - National Leather and Shoe Corporation, Addis Ababa, Ethiopia

UNIDO - United Nations Indusrial Development Organization /Vienna, Austria/

Countries

GDR - German Democratic Republic

UK - United Kingdom

Units of measurements

cm - centimeter

mm - millimeter

kg - kilogram

INTRODUCTION

One of the objectives of the UNIDO project No. DP/ETH/76/001 is to start local shoe last pilot production, which requires properly designed samples and models. Shoe lasts may be considered as the volume model of the inner space of the shoe, which takes up the foot. Since the anthropometric data of any population shows certain dissemination even within a given age group, foot sizes also exhibit a definit range - which, in turn, has to be reflected by the size range of the footwear offered for the local population. /The proper design of the lasts as to their size, volume and shape are especially important in case of children's shoes, because the wrong footwear may cause irrevereible deformation of the foot, leading to serious orthopaedic diseases in the adult age./

To be able to produce properly designed footwear a well elaborated sizing system is required. Lasts manufactured and/or supplied from industrialised countries /i.e. from Europe, North-America or Japan/ most probably can not serve their purpose in Africa, particularly not in Ethiopia, owing to the anthropometric differences of the population and to the wearing conditions /urbanisation, climate, shoe consumption etc./. Not having a long tradition in local footwear trade and no statistical data available on foot sizes of the country, the correct appoach is to make a thorough survey on this subject matter.

UNIDO subcontracted BCK /formerly BMKI/ to carry out a foot measurement programme in Ethiopia. The aim of the survey was

i/ to collect data on foot and related anthropometric characteristics of the local population and make their mathematico-statistical evaluation;

ii/ to elaborate a shoe sizing system along with size/fitting ranges which would reflect the local demand;

iii/ to produce sample lasts and their documentation on the base of the results of the anthropometric survey completed.

Using the opportunity of collecting such data it seemed to be possible to provide the Ethiopian specialists/institutions with a few statistical information concerning some anthropometric data /e.g. weight, height/ of the local population.

The present report is to set out the findings and explain the recommendations on the shoe sizing system, which is suggested to be introduced in Ethiopia. The sample lasts, series of graded patterns and the computer print-outs represent an organic part of this report, however the data and procedures presented in the report and its annexes may serve as a database for the reproduction of the lasts and the samples.

1. THE FOOT MEASUREMENT PROGRAMME

1. Sampling

In case of a large population / as the human population of Ethiopia is about 30 million people/ the distribution of the anthropometric data can be estimated fairly reliably on the base of a much smaller sample.

Large scale foot measurement programmes carried out in several industrialized countries /e.g. France, Poland, USSR, GDR, Hungary/ and the experience in the retail of footwear designed on the base of statistical data has proved that

i/ there are always people with deformed or extreme feet, which need special /surgical or order/ services to provide them with properly designed footwear;

ii/ The standard deviation of foot-length /computed on the base of well known mathematico-statistical theories/ ranges between 9.0 - 13.0 mm depending on the age groups and the other measurements of the feet;

iii/ certain conditions /e.g. profession/ may influence the proportion of the feet.

Taking into consideration all these circumstances, the geography and ethnics of Ethiopia and the required efficiency of mechanized footwear manufacturing, the following limitations have been accepted:

- the statistical reliability of the programme must be at least 95%,
- the permissible error of measurement should have a magnitude of ±0.1 mm,

- the programme may cover the population with healthy feet only.

On the base of the resul's produced by similar programmes /data were available from the technical literature on this subject/ and the theory of mathematical statistics the sample wa= designed as follows:

Age group	Female	Male
6- 9	1,000-1,300	900-1,200
10-14	800-1,100	700- 900
15-17	500- 700	700- 900
18-	800-1,100	900-1,300
Sub-total	3,100-4,100	3,200-4,400
Total	6,300-8,500	

2. Technique of the foot measurement

Since the manual method of foot measurement is not sufficiently productive for a large scale project, it has subjective elements and is not hygienic. That is why it has been replaced by a photographic technique some 15 years ago and has been tried in France, GDR, Poland and Hungary and has proved its suitability.

The photographic foot measurement method consists of two stages:

i/ taking photos of the feet,

ii/ evaluation of the photos and registration of the necessary linear measurements.

2.1. Preparation of the programme

A data sheet was designed for recording the most important personal data of those measured /Fig.1./, which was to serve as the identifying medium when analysing the photos taken during the programme. Since the volume measurement such as girth at ball, ankle etc. can not be measured from plane projections of feet, it was necessary to take and record these measurements on site. The serial /identifier/ number of sheets is located in the left lower corner, because it is photographed together with the foot, which has been recorded on that particular sheet.

The organisational preparation of the foot measurement programme was to be done by the

Personal Data Sheet

2			Residence
		*	Sex
3	1		Female
	2		Male
4			Age
5			Weight in kgs
6			Height in cms
7			Occupation
		*	Doing the job in the following position
8	1		sitting
	2		standing
	3		walking
	4		sitting & standing
	5		sitting & walking
	6		standing & walking
	7		carrying weight
9			Ball girth
10			Short heel girth
11			Ankle girth
12			Girth above ankle
13			Height of above girth

measurements in mm

07004

* The answer should be given by putting a cross in the appropriate blank.

Fig 1

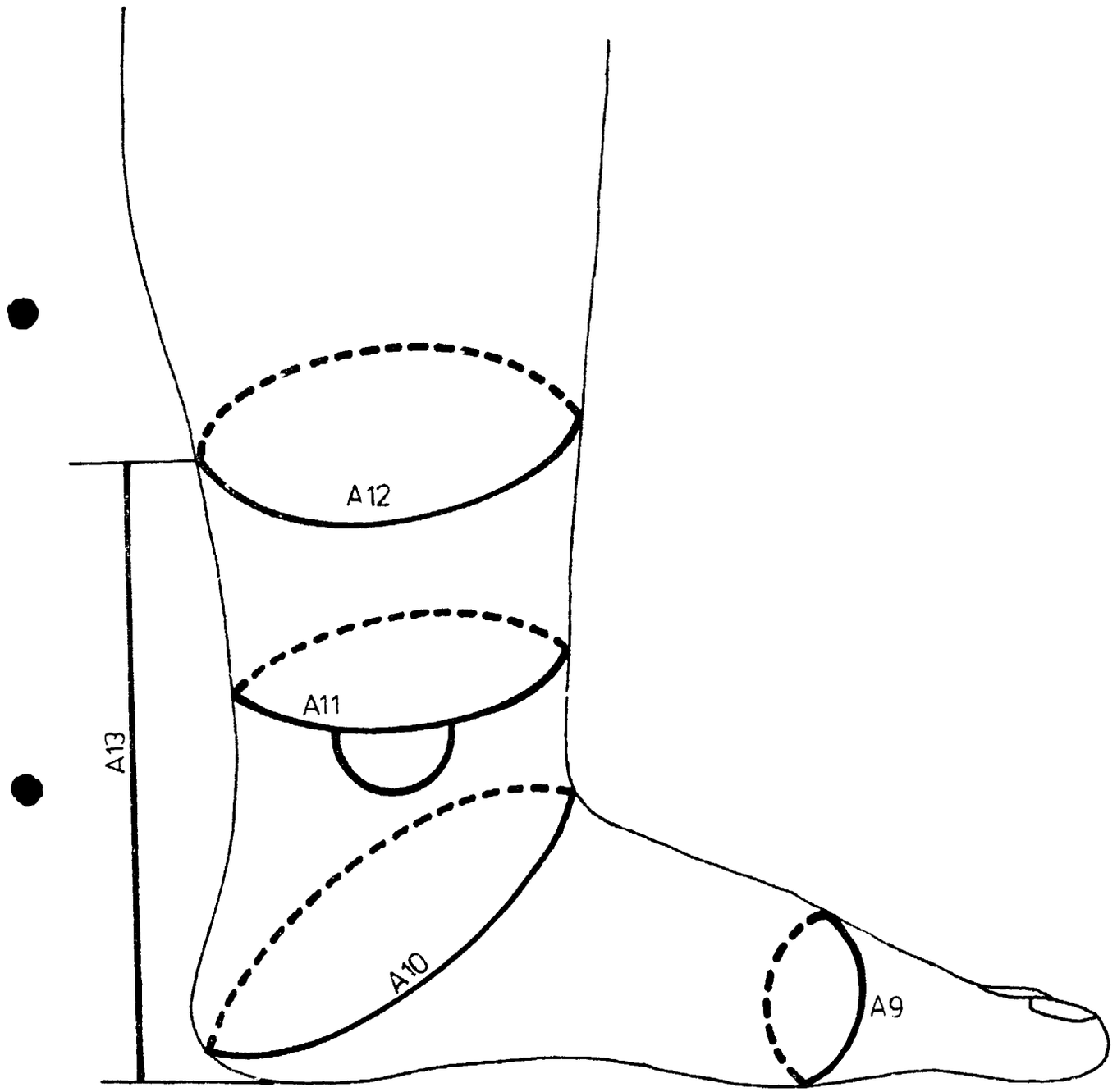


Fig.1.b

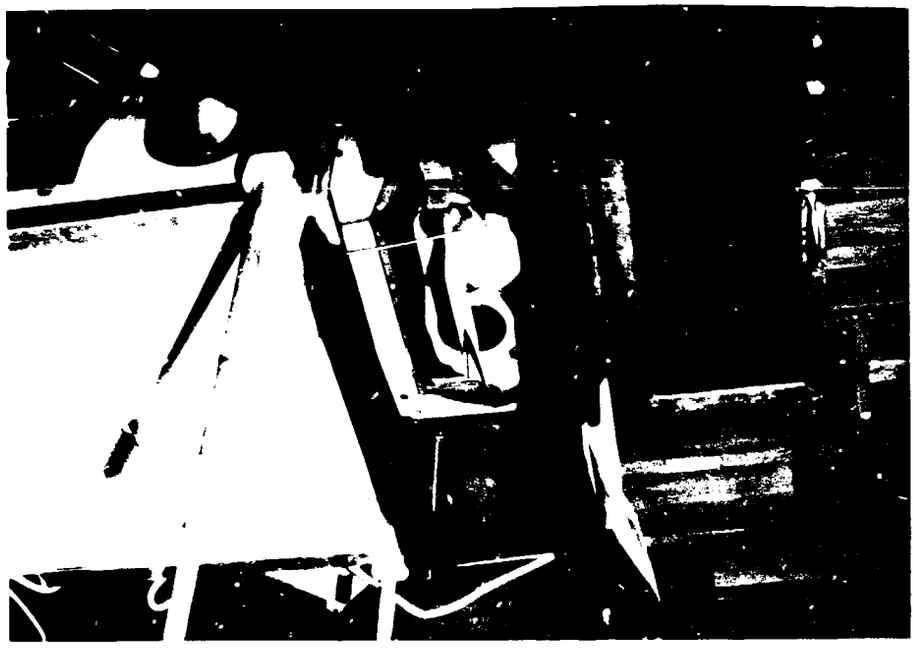
Ethiopian specialists and authorities according to the required conditions /see Annex I/.

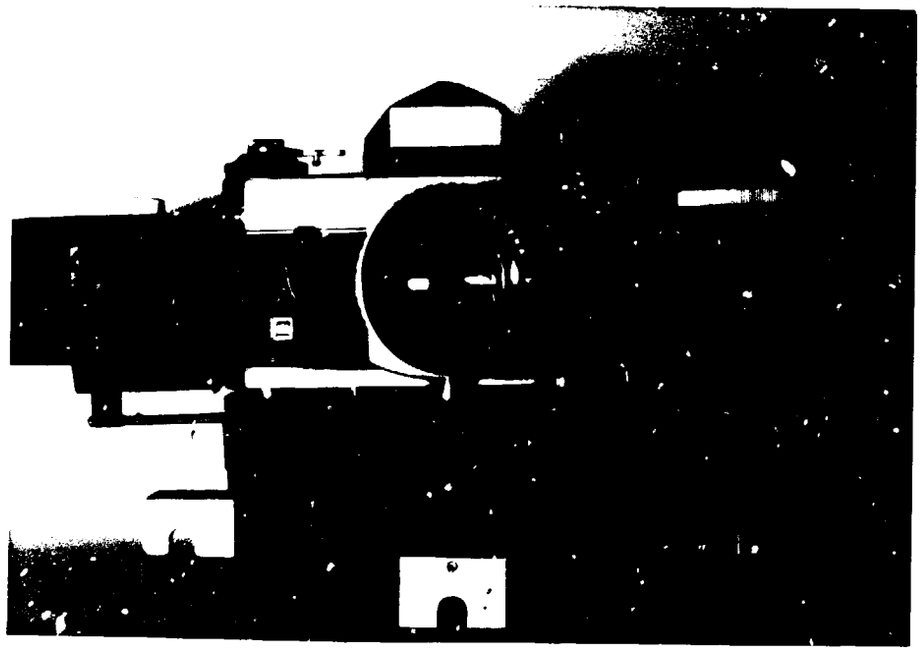
2.2. Foot photographing

The data collecting phase of the programme was assisted by a special equipment, PODOGRAPH, designed and made by BCK according to its own licence. It is composed around an optic system producing two projections /side and sole/ of the foot. These views are taken by an automatic camera on the same frame along with the identifying number of the data sheet, at the same time the light is controlled by a special system built in the equipment. In order to ensure the preciseness of photographing and to assist in setting the magnification when analysing the photos a model is to be taken after a certain number / usually after 50 - 100/ of feet, as well as the first shot in case of new films.

Some photos of the PODOGRAPH are shown on Fig.2.

The whole setup for the foot measuremnt consists of the PODOGRAPH, a balance, a special equipment for body-height measuring and a table + chair for data recording. The preparation /i.e. setting the equipment/ takes 15 - 30 minutes; the measurement process for one man may be performed within 60-100 s by three operators.





The actual measurements were carried out as follows:

i/ the general data /codes 2,3,7,8/ were recorded first,

ii/ the height and the weight were measured and recorded,

iii/ Data coded 9 through 13 were measured and recorded,

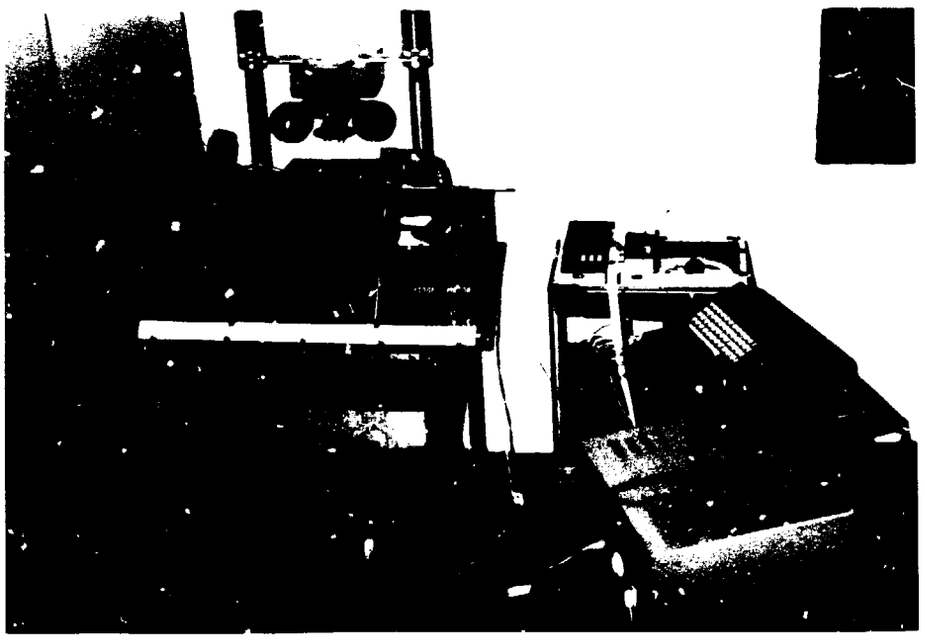
iv/ the data sheet was inserted into the pocket of the PODOGRAPH, the subject stood on the equipment and kept in balanced position while a picture was taken.

The report of the Hungarian expert in charge of supervising the foot measurement programme in Ethiopia is attached as Annex II. This sets out the difficulties and constrains the team faced when performed its duties.

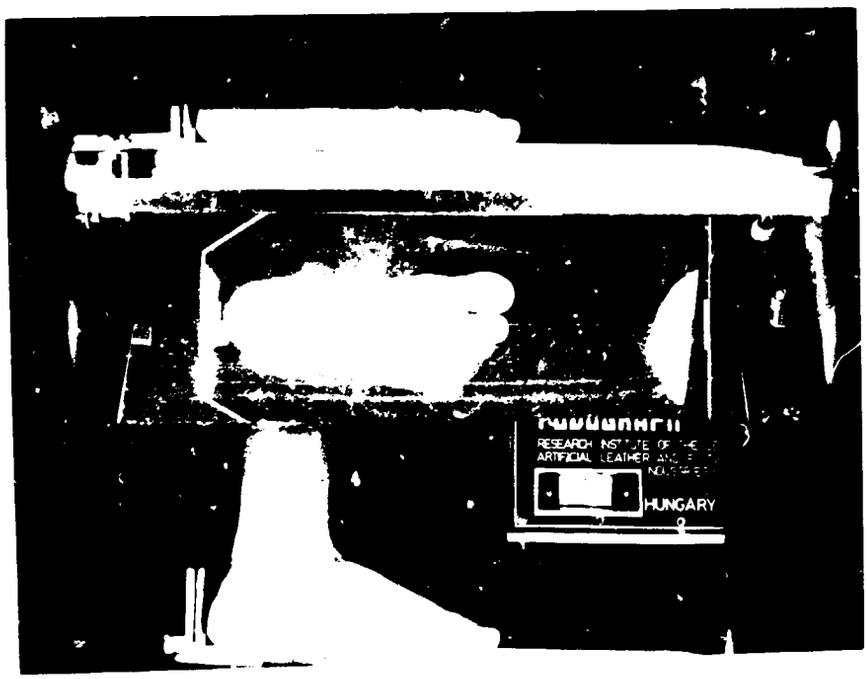
2.3. Data Processing

After developing the photos taken , the recording of the linear measurement was made. For this purpose another special equipment, the PODOESTIMATOR /Fig.3./, was used, which has been constructed in BCK. It has an optical system for the magnification of the projections and an electronic system for reading the respective measurements and recording them on a paper punch tape.

It was decided that 20 linear measurements of the two projections should be recorded. /Fig. 4. shows a shot taken by the PODOGRAPH and Fig. 5. represents the system of linear measurements recorded by the PODOESTIMATOR./




PODDESTIMATOR


RESEARCH INSTITUTE OF THE
ARTIFICIAL LEATHER AND
HUNGARY

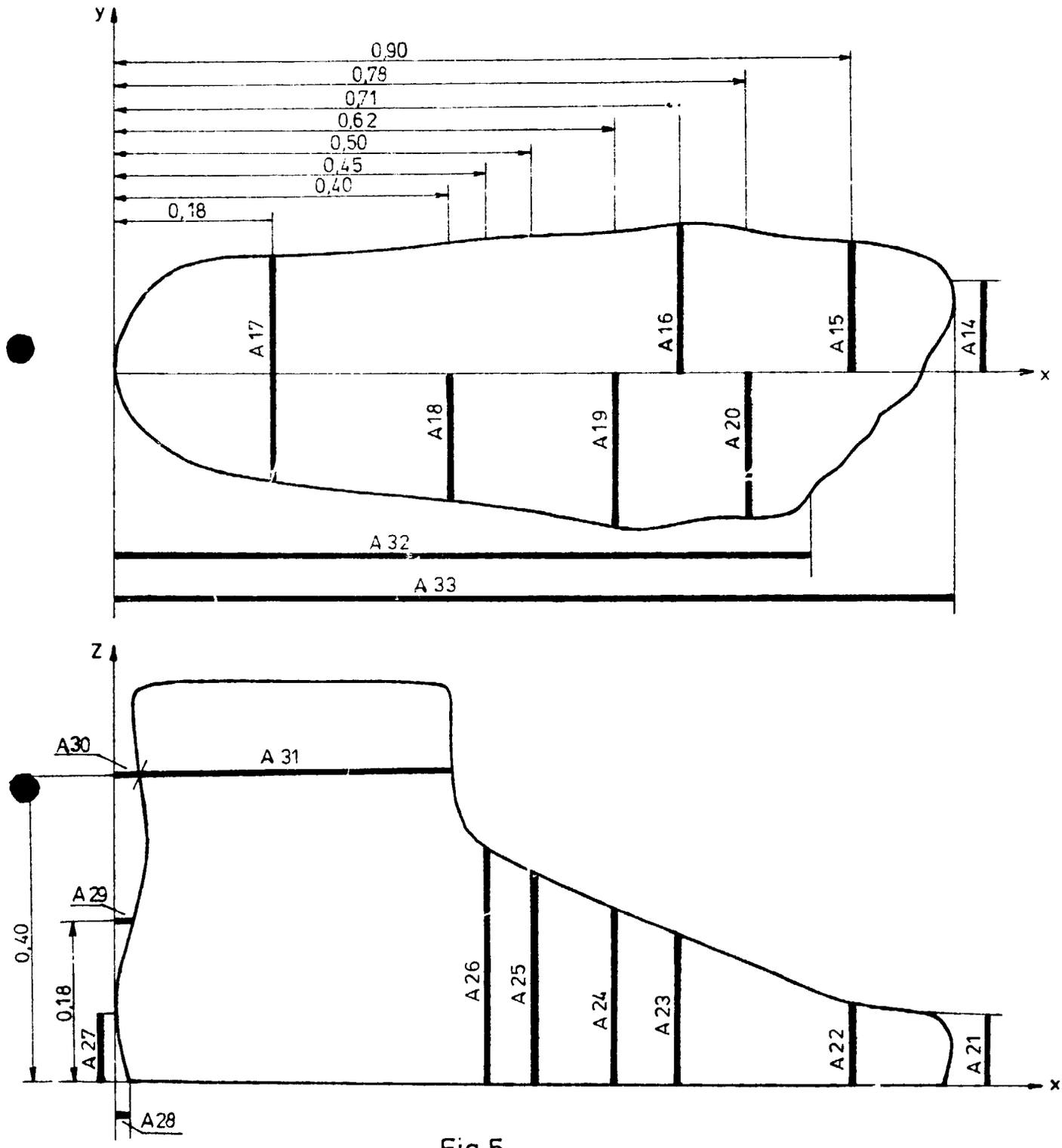

y
0,90
0,78
0,71
0,62
0,50
0,45
0,40
0,18
A 17
A 16
A 15
A 14
x
A 18
A 19
A 20
A 32
A 33
z
A 30
A 31
A 29
0,40
0,18
A 27
A 28
A 26
A 25
A 24
A 23
A 22
A 21
x

Fig.5

Thus altogether 39 data were recorded in case of each person:

Data code	Denominations	Source
1	identifying number	data sheet
2 - 13	personal data recorded on site of measurement	data sheet
14 - 33	linear measurement of the foot	film
35 - 39	generated data according to Fig.6.	data 14 - 33

The list of all data is attached in Annex III. It must be emphasized that all the linear data represent measurements of the projections.

2.4. Computing

For the data processing and computing a microcomputer /VIDEOTON Personal Computer - hereafter VPC/ was used, which had in its configuration:

i/ a central processing unit with 48 KBytes operative memory;

ii/ two floppy discs, size 5 1/4 inch, having a capacity of 70 KBytes per disc;

iii/ a paper tape reader;

iv/ a line printer.

The operating system has a BASIC compiler very similar to MICROSOFT used by several microcomputers. /The VPC

configuration is shown on Fig. 7./

The computing process had the following main phases /Fig. 8/ :

i/ the basic data were feeded into the computer and checked /both sintactically and semantically/, then stored on floppy discs for further processing;

ii/ if faults were detected on tapes, then the respective data sheets and films were to be analysed again in order to produce new /presumably/ perfect data records;

iii/ data were sorted according to ages and sexes for comparison of mean values and variances of selected measurement;

iv/ on the base of statistical trials groups were formulated /constructed/ taking into account the differences in averages and ranges /standard deviations/ of the most important measurements;

v/ in case of each group of the sample the following questions were studied:

- statistical characteristics of feet /persons/ falling within pre-defined limits of measurements;
- distribution of feet /persons/ among size groups;
- differences according to the residence /ethnic groups/ and occupations.

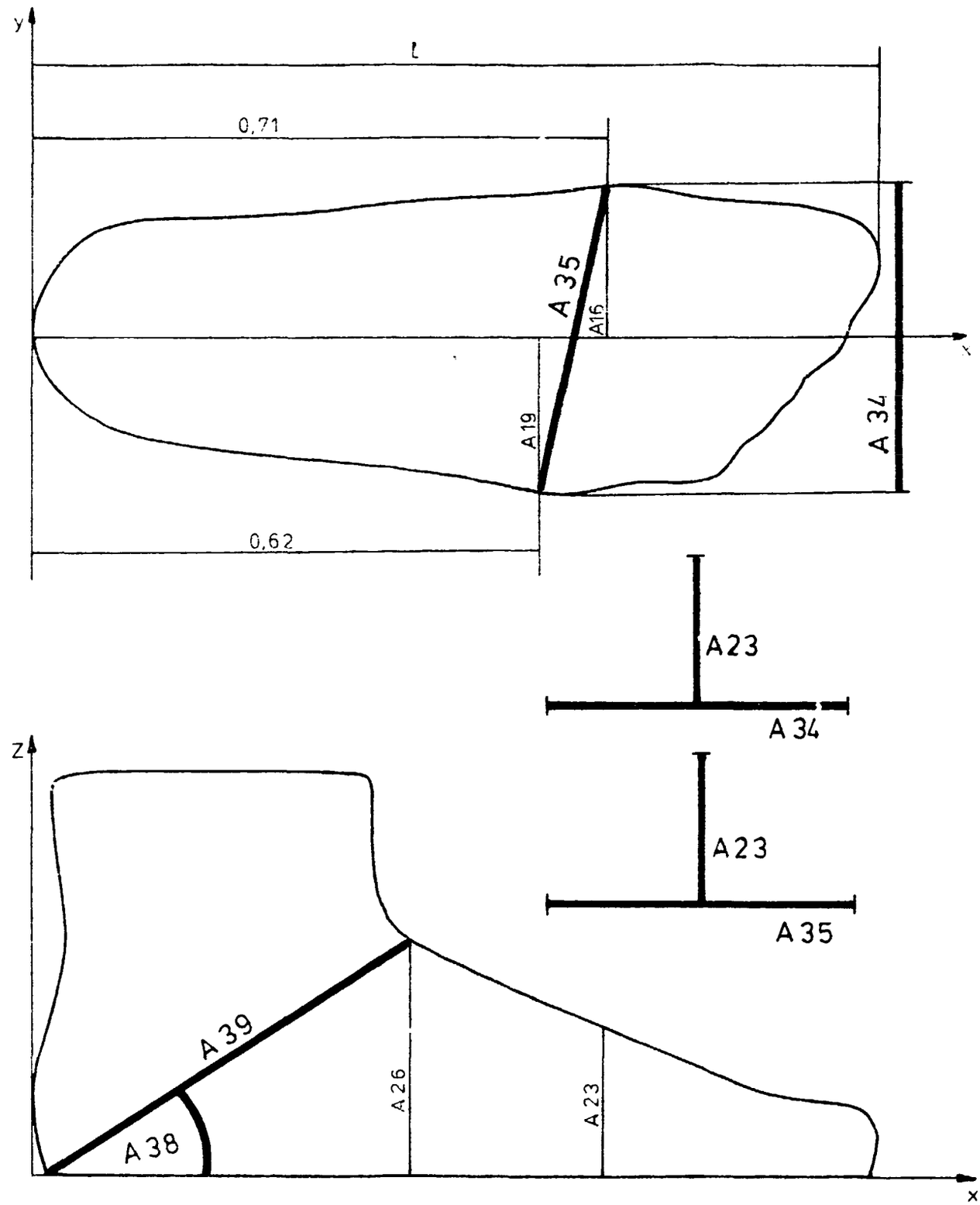
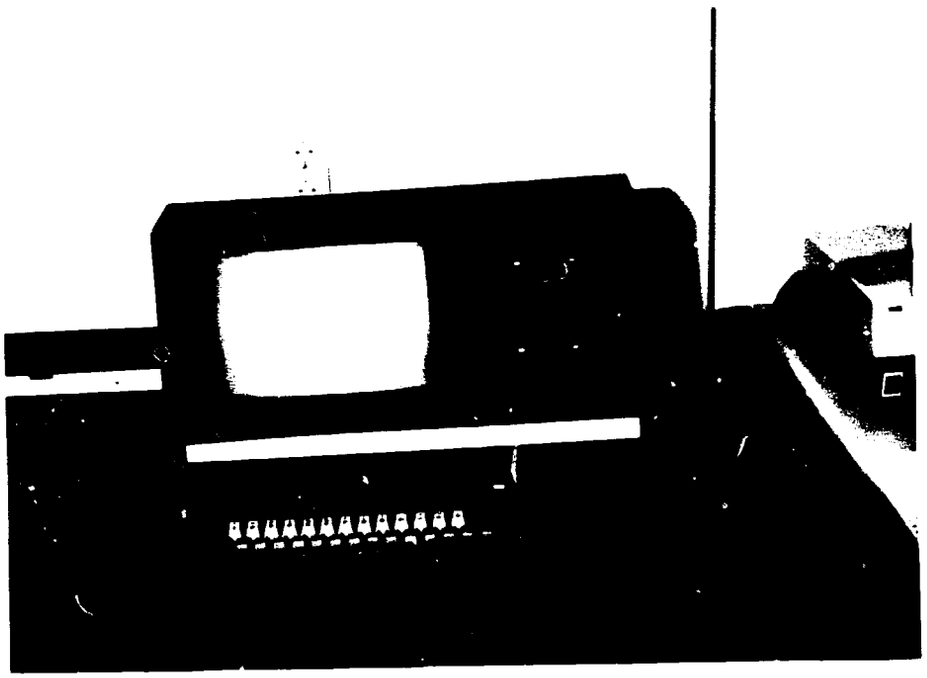
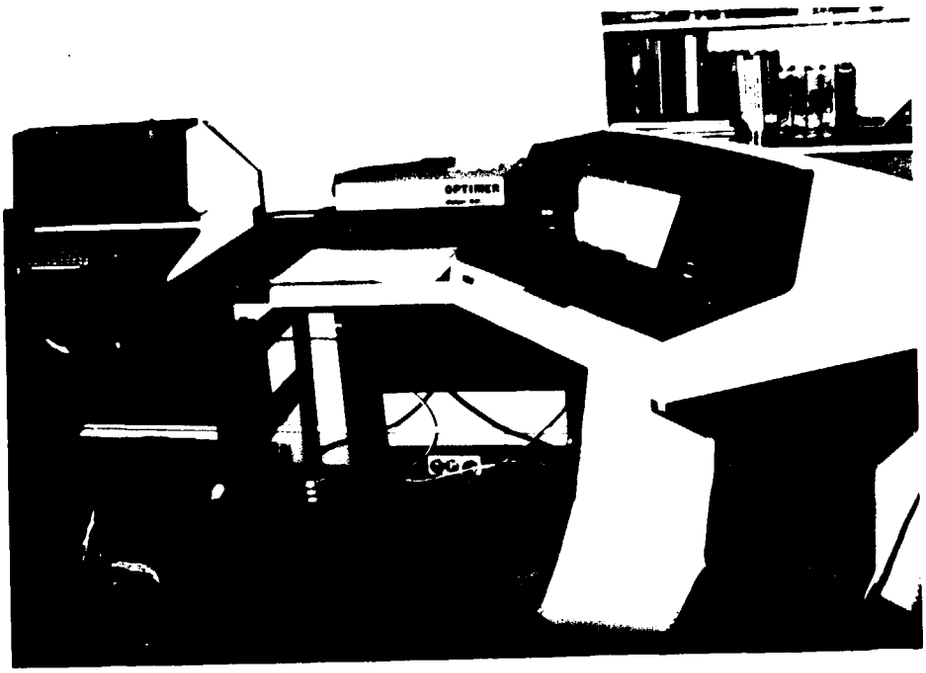


Fig.6




OPTIMEM

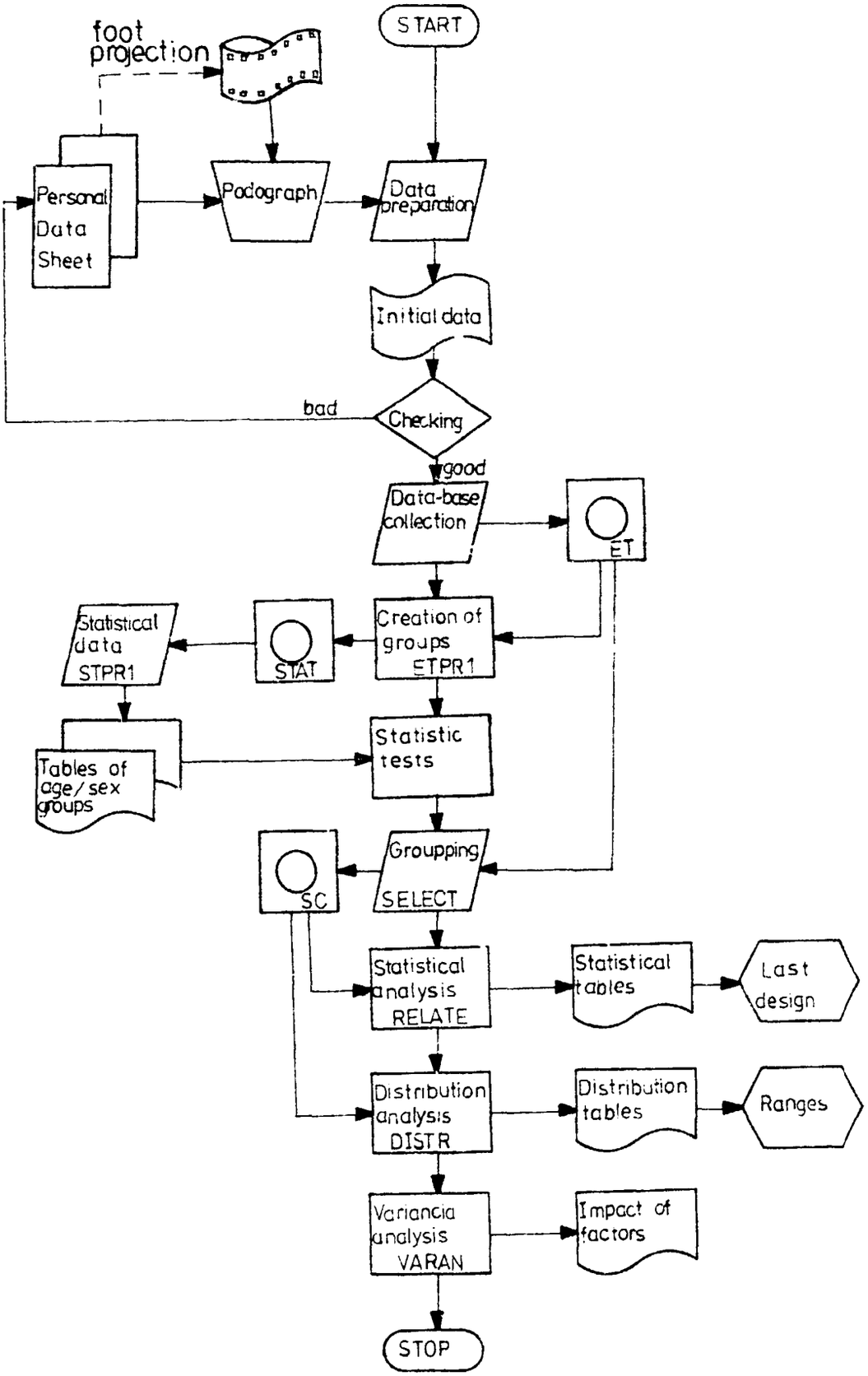

START
foot projection
Personal Data Sheet
Podograph
Data preparation
Initial data
Checking
bad
good
Data-base collection
ET
Creation of groups ETPR1
STAT
Statistical data STPR1
Tables of age/sex groups
Statistic tests
SC
Groupping SELECT
Statistical analysis RELATE
Statistical tables
Last design
Distribution analysis DISTR
Distribution tables
Ranges
Variancia analysis VARAN
Impact of factors
STOP

Fig. 8

Results of the data processing were stored on discettes and printed out in the form of tables for further analysis and application.

Using the statistical data /tables of related mean values and distributions/ the recommended size ranges and the basic parameters for sample last making were elaborated. Thus the final results /outputs/ of the foot measurement programme are:

- statistics on anthropometric data of the local population and their feet,
- recommended sizing system and size ranges to manufacture and retail footwear,
- sample lasts for each age group;
- patterns of last bottoms, longitudinal and cross-sections and their graded renge.

3. Findings

After developing the films made by the PODOGRAPH in Ethiopia, recording the data and checking them altogether 6122 datarecords have remained useful for further processing. The geographic distribution of the people measured is shown on Fig. 9.

3.1. Groupping

Since the data base stored on discettes was a random sequence of personal data and measurements /determined chiefly by the sequence of datasheets and shots/, the first task was to group them and create statistical informations for a more systematic dataprocessing. Thus two main criteria had benn determined:

i/ sex /A3/ and

ii/ age /A4/.

The computer program STPR sorted the datarecords into age/sex groups, i.e. separated females and males of each age /by one year from age 6 to 20 and by 10 years above 21/. In case of each group the average /arithmetic mean/, the standard deviation, the minimum and maximum values detected and the range of that particular data were computed and recorded. Appendix 1 consists of the respective printouts made for the most important measurements, table 1. presents the statistical data for foot length and ball girth in compound form.

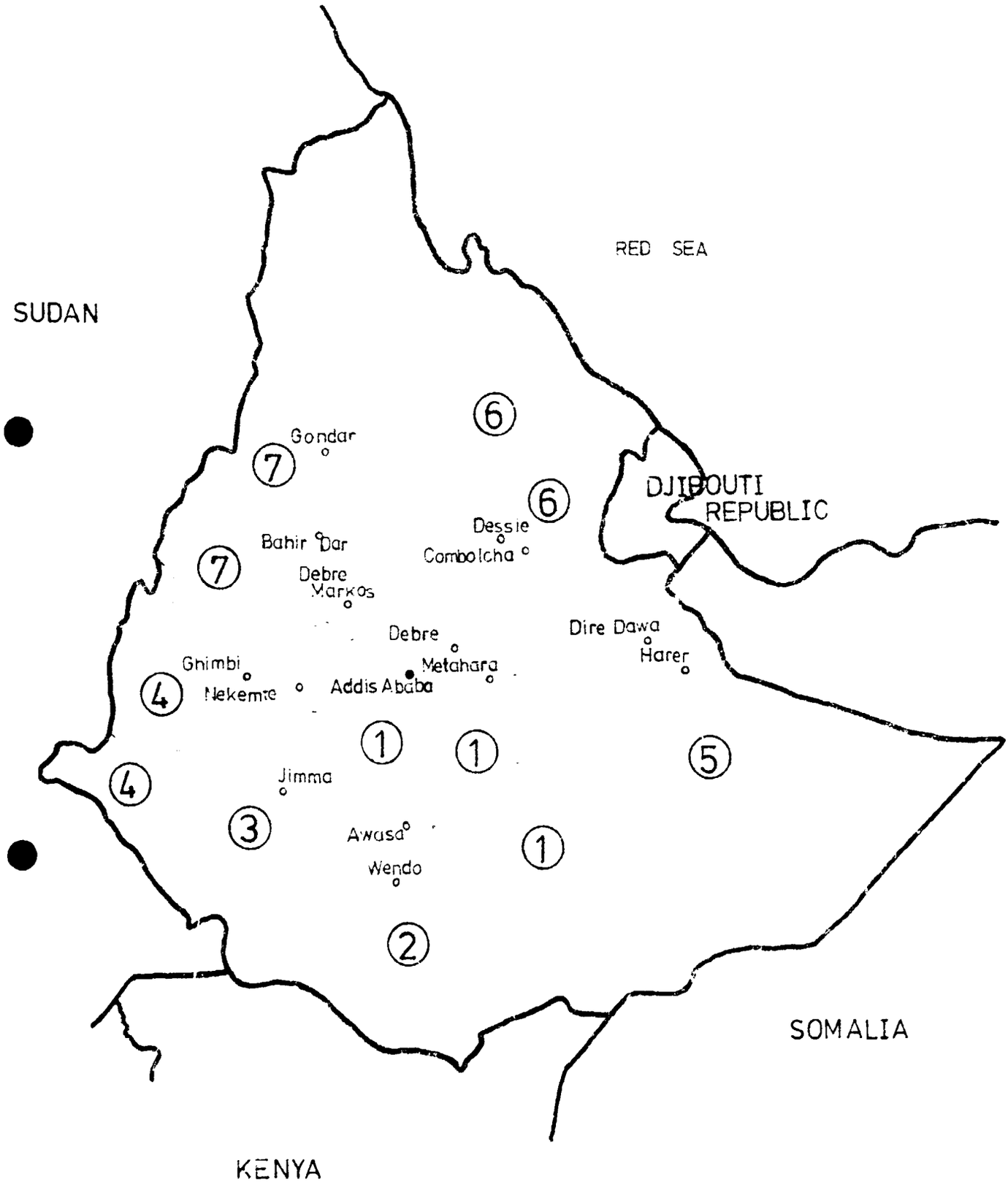


Fig.9

M 1 : 88.000.000

Using appropriate statistical test methods it was proved that

i/ there is no significant difference between mean values and variances of girls and boys of the same age until the age of 10 years;

ii/ the differences in foot measurements between consecutive age groups but same ages are significant from 11 to 14 years;

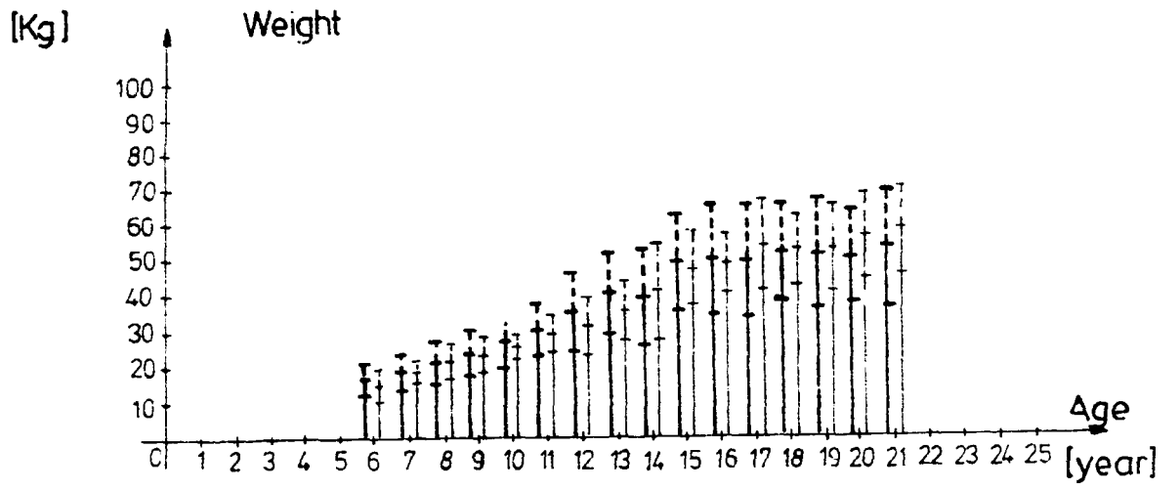
iii/ no significant differences among different ages of women and men.

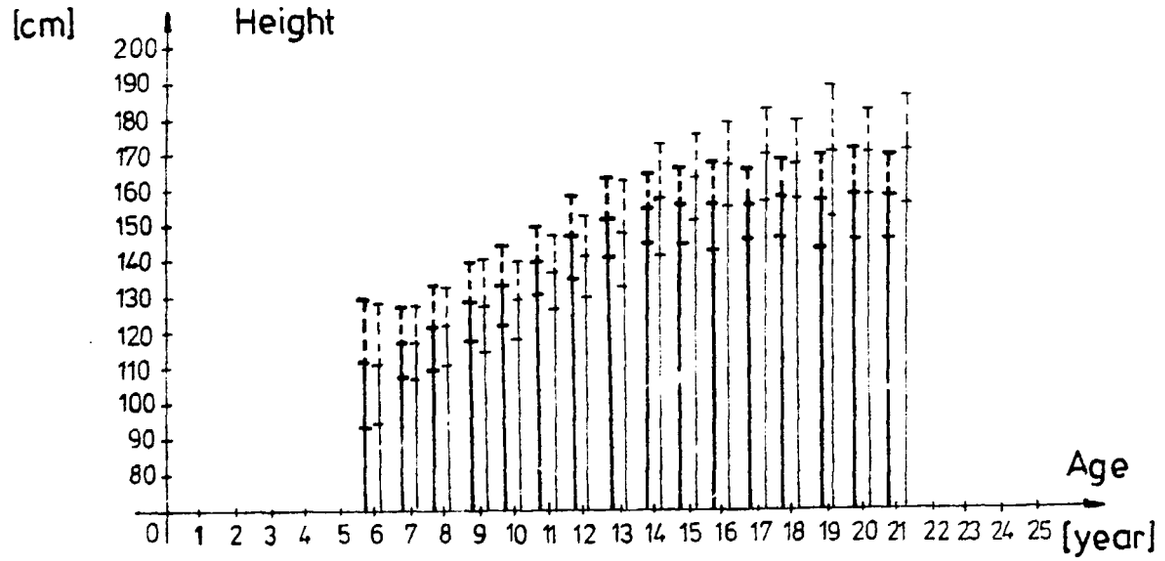
Fig. 10 illustrates the growth trend of the main anthropometric data such as weight, height and foot length.

The conclusion was that on the base of the available data /assuming that the sample represent the local population properly/ 5 size groups have to be formed. Taking into account the children below the age of 6 years, two more groups should be considered: babies just learning and starting to walk /1-2 years old/ ant the small children /3-6 years old/ wearing already more or less the same construction of shoes as the olders.

Thus the following size groups are suggested to be introduced in Ethiopia:

		Age /years/
I	Babies	1 - 2
II	Young children	3 - 6
III	Children /both sexes/	6 - 10
IV	Girls	11 - 14
V	Boys	11 - 14
VI	Women /Ladies/	15 and above
VII	Men /Gents/	15 and above


[Kg]
Weight
100
90
80
70
60
50
40
30
20
10
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Age
[year]


[cm]
Height
200
190
180
170
160
150
140
130
120
110
100
90
80
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Age
[year]

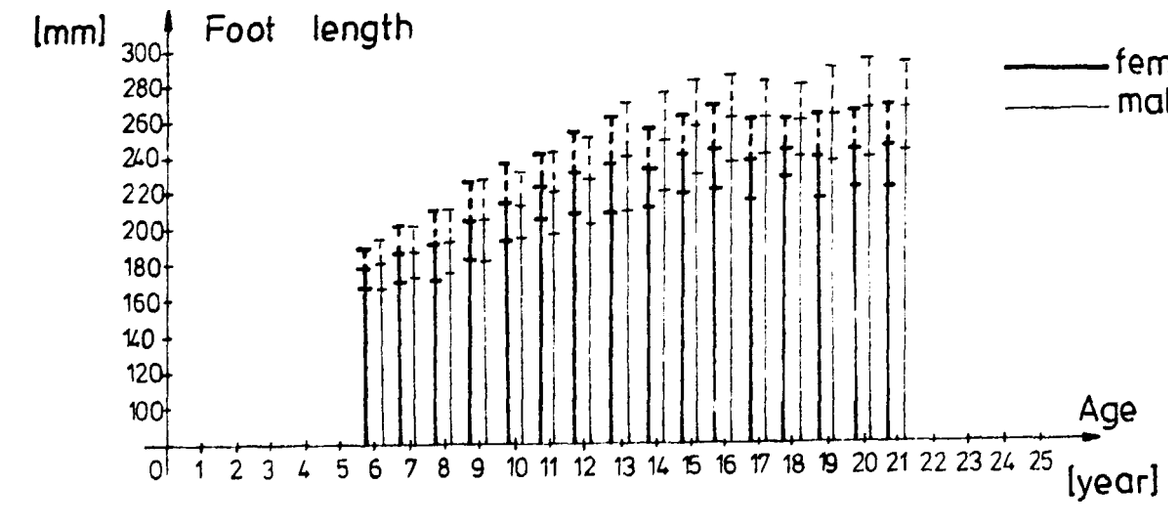

[mm]
Foot length
300
280
260
240
220
200
180
160
140
120
100
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
Age
[year]
female
male

Fig.10

R e m a r k : Group I and II requires a special survey or a size range, a size range recommended on the following pages may just be adopted, since children younger than 6 years were not envisaged to be measured by this programme.

In order to simplify further computations the initial database was split into three age groups and the datarecords were selected and stored /using the coputer program SELECT/ on seperate discettes. All the following operations were carried out five times:

1. for children excluding 11 years old ones /group III/;
2. for 11-15 years old children excluding boys /group IV/;
3. for 11-15 years old children excluding girls /group V/;
4. for adults excluding men /group VI/;
5. for adults excluding females /group VII/.

3.2. Statistical analysis

Before the statistical computations were started the following principles had benn created:

i/ on the base of the results and experiences gained by earlier foot measurement programmes, as well as taking into consideration various footwear sizing systems adopted in industrialized countries as basic measurement the foot length /A33/ was selected;

ii/ the size increment in length recommended by ISO is 5 mm.

Thus using the computer program RELATE for the five size groups five tables were made under the heading "Table of related mean values", in which

- each row represents a measurement/data according to the code indicated by the first figure in the row,
- each column represents an interval of foot length ending with the size shown in the heading /e.g. 255 means, that this column consists of mean values of measurements of feet with length larger than 250 mm and smaller or equal to 255 mm/;
- an element of the table is the mean value of the measurement as shown in the first column /data code/ of feet falling into the respective foot length group;
- the last row of the table indicates the instances, i.e. the number of feet falling into the respective column.

Tables of related mean values are enclosed in Appendix 2 /each table representing one of the size groups is printed on two pages/.

On the base of these statistical data the following conclusions are made:

i/ the distribution of foot lengths in each size group follow the normal /Gaussian/ distribution at a fairly high degree of statistical significance;

ii/ the range of foot lengths of different age/sex groups are overlapping, but certain measurements are different:

iii/ on the base of distribution of foot lengths size ranges may be established for each size group /see Table 2./.

Taking into account the actual distribution of and the statistical data of each age group /Table 1/ the following middle sizes were selected:

III	Children	195 mm
IV	Girls	235
V	Boys	235
VI	Women	240
VII	Men	260

3.3. Analysis of measurement distributions

Beside foot lengths the volume measurements /girths and widths of the foot/ are important when supplying footwear for a particular market. Experience has proved in many countries, that having only one fitting available a considerable number of consumers can not find comfortable footwear, because shoes of the suitable length are either to wide or too narrow. In order to find out the required fitting range two dimensional distribution tests were carried out for the following pairs of measurements:

foot length	-	ball /joint/ girth
foot length	-	ball /joint/ width
ball girth	-	ball width
height	-	foot length
height	-	weight

The tables of respective distributions by size groups, produced by program DISTR, are found in Appendix 3.

Table 1.

Statistical data of different age/sex groups

Age	Sex	Number of items	Foot length/A33/ mean	standard deviation	Ball girth /A9/ mean	standard deviation
0-6	1	157	178.19	8.49	16o.84	8.24
	2	161	18o.o2	8.23	165.9o	8.92
7	1	2o2	186.41	9.74	167.87	8.39
	2	2o8	187.64	9.44	171.38	8.82
8	1	173	195.3o	1o.42	173.74	8.76
	2	14o	196.42	9.87	178.62	8.79
9	1	18o	2o5.54	1o.o9	182.23	1o.o5
	2	159	2o6.o8	1o.39	185.71	1o.o9
10	1	1o9	212.42	11.o3	188.51	1o.11
	2	1o7	211.98	9.25	191.o7	12.13
11	1	235	222.28	9.23	199.52	1o.o2
	2	299	219.7o	1o.o7	2oo.64	9.19
12	1	97	231.96	1o.88	2o4.74	11.17
	2	231	227.98	11.19	2o5.77	12.37
13	1	1o4	234.99	11.49	21o.75	9.78
	2	185	239.12	12.22	213.43	12.5o
14	1	75	237.o6	1o.47	213.54	11.28
	2	146	248.67	11.38	222.63	16.41
15	1	228	241.8o	1o.49	216.59	11.39
	2	362	258.44	11.69	234.72	11.93
16	1	61	242.o1	12.66	216.o9	11.93
	2	239	259.o7	12.o3	234.26	11.o1
17	1	25	238.24	11.95	215.76	12.44
	2	2o5	26o.84	11.13	236.o7	1o.94
18	1	1o5	241.o8	9.92	215.46	1o.88
	2	11o	26o.38	11.67	238.98	11.37
19	1	54	239.14	11.68	214.98	11.96
	2	127	261.26	13.34	242.74	12.78

Table 1 /cont/

20	1	51	241.56	12.02	214.11	10.36
	2	148	262.10	12.53	242.74	13.49
21-30	1	320	239.91	11.81	214.80	13.14
	2	628	262.75	12.93	239.94	14.88
31-40	1	153	240.11	10.66	213.85	12.15
	2	184	260.65	12.22	236.21	13.79
41-50	1	29	238.31	12.14	212.31	10.96
	2	87	260.65	12.55	234.54	14.06
51-60	1	9	243.77	9.79	213.44	10.42
	2	8	266.75	10.06	237.00	13.62
61-99	1	7	245.71	10.08	220.14	8.86
	2	14	267.14	7.49	237.00	10.43
Subtotal	1	2374				
	2	3748				
Total		6122				

Distribution of foot length
in perzentage

Table 2

Sizes, mm /foot length - A33/	Size groups				
	III	IV	V	VI	VII
160	0.2	-	-	-	-
165	0.8	-	-	-	-
170	2.6	-	-	-	-
175	6.0	-	-	-	-
180	9.5	-	-	-	-
185	11.9	-	-	-	-
190	11.1	-	-	-	-
195	11.6	-	-	-	-
200	11.9	1.0	1.5	-	-
205	8.9	0.6	1.8	-	-
210	9.5	2.1	3.3	0.1	-
215	6.7	1.7	3.7	0.4	-
220	4.6	7.2	6.3	1.4	-
225	2.6	13.5	11.1	5.3	-
230	1.6	15.7	9.8	10.8	0.5
235	0.5	16.6	13.0	16.2	1.0
240	-	16.4	7.8	15.3	3.2
245	-	10.1	9.7	16.9	5.9
250	-	6.0	7.8	15.9	10.2
255	-	4.8	6.9	8.7	13.7
260	-	2.1	5.7	4.6	16.2
265	-	1.6	4.8	2.7	12.6
270	-	0.6	3.4	1.0	13.6
275	-	-	1.5	0.2	11.0
280	-	-	1.5	0.2	6.5
285	-	-	0.2	0.3	3.1
290	-	-	0.2	-	1.5
295	-	-	-	-	0.4
300	-	-	-	-	0.5
305	-	-	-	-	0.1
310	-	-	-	-	-
315	-	-	-	-	-
Total	100.0	100.0	100.0	100.0	100.0

Note: This table is based on data given in Appendix 2

The heading of each printed table consists of the code of measurements tested, whereis "x" corresponds to columns and "y" to rows - like in the system of coordinates. In case of groups IV - VII each table is given in two forms: the first shows the distribution of instances detected while the second represents the distribution in percentages.

R e m a r k : In terms of mathematical statistics these tables show the correlation of the respective measurements.

The statistical survey proved, that if closed shoes are supplied only in one fitting for the Ethiopian population, then about 60-70% of consumers can find a suitable size. Other tables prove, that the correlation between the examined measurements is fairly strong.

3.4. Factor analysis

The next stage of the statistical analysis was to sort the sample according to the geographic origin, which reflects ethnic distribution as well. Appendix 4 consists of five tables /one for each size group/ of average values of selected measurements for each geographic area /the codes of provinces and cities are enclosed in Annex IV/. Examining these data the following statements may be made:

i/ the difference in mean values of foot lengths and ball girths detected in various areas are

within two sizes/width increments for the groups III - V.

ii/ the women population's foot sizes are almost exactly the same everywhere in the country;

iii/ men living in Gonder and Gojam provinces have about 5 mm shorter feet that the country average, while those of Harerge have 3 mm longer feet.

Another factor influencing the foot measurements used to be the living condition of the adult population, i.e. in which position of the body they spend most of the time. The result of such survey is shown in Appendix 5 /the explanation of codes are given on Fig. 10; according to those there is no significant difference in this respect. The computer program used for this analysis was the VARAN.

4. Last design

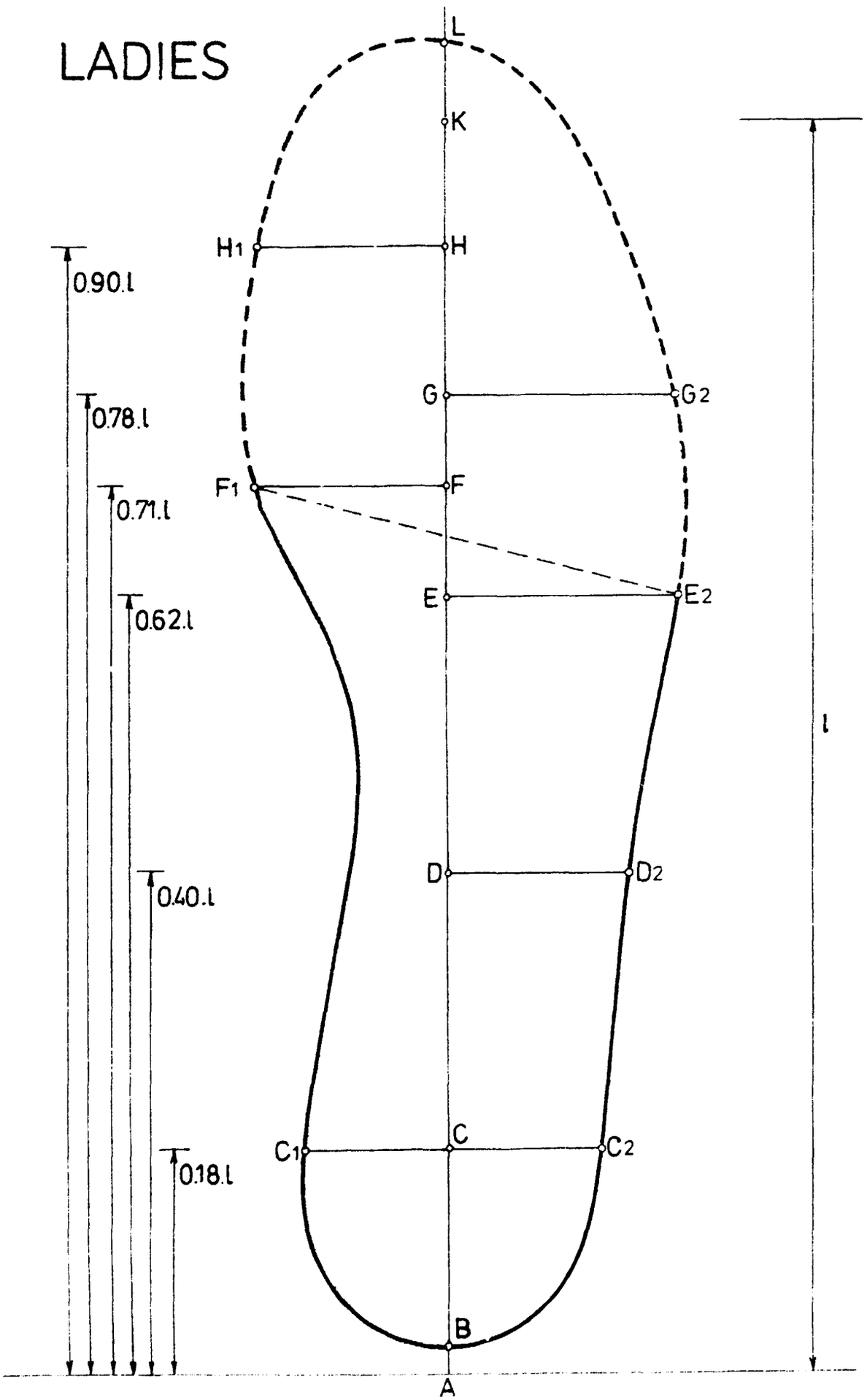
4.1. Basic data for design

Using the average values of measurements of feet falling in column corresponding to the middle size of the group, data were created for last design. These data are enclosed in Annex V.

4.2. Sample lasts

On the base of data available from statistical computations the last bottom patterns, longitudinal and cross-section profiles were made. /Fig 11 shows the system of construction of shoe bottom pattern, Annex VI consists of the other middle sizes./

LADIES



Shoe lasts were designed for each middle size as follows:

Group	Middle size mm	Heel height mm
III	195	10
IV	235	30
V	235	20
VI	240	15
VII	260	30

4.3. Grading

Using the results of statistical analyses and the recommendations made by the ISO the grading parameters were adopted:

- increment in length between two adjacent sizes is 5 mm;
- increment in ball /joint/ girth
  - . between two sizes /differing in length by 5 mm/

Group	increment, mm
III	3.5
IV	3.5
V	4.0
VI	3.5
VII	3.0

  - . between two fittings: 6 mm

Patterns of last bottoms, longitudinal and cross-sections were made according to these parameters. The graded contours are enclosed in Annex VII.

. Recommendations

5.1. A great number of industrialized countries have accepted the following ISO standards:

ISO 3416 Fundamental characteristics of a system of shoe sizing to be known as Mondopoint

ISO 3735 Shoe sizes - System of length grading /for use in the Mondopoint system/

ISO 3944 Shoe sizes - Method of marking

Therefore it is strongly recommended to adapt the Mondopoint system of shoe sizing. According to that the size of the shoe determined by thore measurements of a foot, deemed to be sufficient to provide a shoe that will fit a foot corresponding to those measurements.

5.2. Although the ISO has issued the above standards agreement has been achieved only in the question of the basic shoe size, which is the corresponding foot length expressed in mm. The two recommended length intervals are the 5.0 mm and 7.5 mm, however the interval of 7.5 mm is foreseen for special use /e.g.safety rubber boots/. Thus it is recommended to express the shoe sizes by the length of the corresponding foot /not by the length of its last bottom/ expressed in mm-s with 5.0 mm intervals.

5.3. The volume of shoes is recommended by ISO to define by the width of the corresponding foot, but this has not yet beend adapted by the practice. In shoe

last design and manufacture the other important measurement is the joint girth perimeter. It is recommended to adapt the ball /joint/ girth expressed in mm-s for last design, manufacture and quality control and the width of foot /A36/ expressed also in mm-s for fitting marking /if applicable/.

7.4. On the base of the results derived from the foot measurement programme it is recommended to introduce the size groups and basic measurements according to the Table 3.

8.5. The range of sizes offered for the local population should be decided upon depending on the required degree of coverage and types of footwear supplied. The Annex VIII offers three variants corresponding to different degrees of coverage /95%, 90% and 85%/. If it is possible to produce and retail footwear in more than one fitting, then it is recommended to do so only in case of more expensive closed types of adult shoes.

9.6. Grading of lasts should be done using intervals suggested in section 4.4. Consequently grading of all patterns is to be made using increments proportional to the respective basic measurements of lasts.

Table 3

Basics of the shoe sizing system recommended for Ethiopia

Size groups			Middle size, mm			Length range,** mm
Code	Denomination	Consumer group	length	foot width	last girth	
I	Babies*	1-2 years old children	115	57	141	105-125
II	Young children*	3-6 years old children	150	64	161	130-165
III	Children	6-10 years old male & female	195	74	182	170-225
IV	Girls	11-14 years old female	235	89	215	2o5-26o
V	Boys	11-14 years old male	235	90	215	2o5-275
VI	Women	adult female	240	93	221***	220-275
VII	Men	adult male	260	101	239	235-295

R e m a r k s : * Recommended on the base of estimations and extrapolation of data

** See also Annex VIII

*** 15 mm heel beight

Recommended tables of girths for each size group are enclosed in Annex IX.

... Sample lasts for the recommended middle sizes, as well as graded series of patterns are delivered as a supplement of this report. Important notice: it is recommended to standardize the backpart of lasts and their patterns, therefore the toepart /from the ball points to the toe/ may be changed according to the actual fashion trend. The last supplied for a specific heel heightu may be used with heels 5 mm lower and higher then specified i.e. the women last with 45 mm heel height is applicable for heels of 40,45 and 50 mm.

... Owing to the acceleration, demografic changes, urbanization etc. the range of shoe sizes required by the population is usually changing as well. Therefore it is recommended to carry out similar foot measurement programmes every 10-15 years, or make surveys of narrower scope /e.g. ones measuring only young children, another time only army members etc./ but more frequently. It is also suggested to make a supplementary study on children of age 1-4 years.

... The recommended lasts /their measurements and size ranges/ were made strictly on the base of statistical analysis, at the same time retail of footwear may reflect slightly different

statistics as to size ranges /due to specifics of consumers groups, buying power etc./ it is recommended to carry out fitting trials and make the necessary corrections if required. /One pair of each middle sized lasts ready for shoe manufacture is supplied for this purpose./

CONDITIONS

to be provided by the

National Leather and Shoe Corporation

for the Foot Measurement Programme

1. Counterpart Personnel

The Hungarian Research Institute of Leather and Shoe Industries /BMKI/ delegates one qualified person for the entire duration of the period needed for the foot measurement in Ethiopia. This expert is experienced in carrying out such anthropometric programmes, is capable of operating the equipment which is also provided by BMKI and will train local counterpart personnel in performing their duties.

The National Leather and Shoe Corporation /NLSC/ is expected to delegate two assistants /plus one driver if neither of the assistants can drive the car needed for the transportation/. Their duties, knowledge and language requirements are specified in the attached Table I.1.

It is recommended to involve the shoe technologist serving as a UNIDO expert under the project DP/ETH/78/001 /post 11-04/ in order to ensure a good communication and the desired impact of the programme on the above project's activities. The expert would visit from time to time the measuring team and would advise on problems which might arise.

2. Transportation

The team /3-4 persons as described above/ together with the portable equipment provided by BMKI /weighing approximately 80-100 kg, size of the PODOGRAPH is 850 x 600 x 450 mm/ has to be transported according to the programme of measurement. The best way is to provide a suitable car - preferably a landrover type - which would travel to the selected cities and villages. The NLSC is expected to arrange for the car and the necessary quantity of fuel for the duration of the programme activities.

3. Programme Preparation

3.1. Sampling

Taking into consideration the population, demography and ethnics of Ethiopia, as well as the previous experience in anthropometric surveys gained by BMKI and mathematical--statistical computations, some 6,000 - 8,000 people of various age groups and both sexes should be measured in order to provide 95 per cent of reliability of the local population representation. The suggested sample population is shown in Table I.2 /the figures given are to be understood as guidelines, see also the note under Table I.2/.

3.2. Selection of measuring places

Appropriate places where the foot measurements should take place are such establishments where at least one hundred children and/or adults with no defect on their feet are available at the same time. It is recommended to select schools, factories and military camps for this.

3.3. Territorial distribution of measuring places

When selecting the establishments for the foot measurement the following factors should be taken into account:

a/ ethnical characteristics /it is recommended to consult with a local anthropologist in order to define the real differences in anthropometrical conditions/;

b/ urbanization of the country;

c/ population to be provided with footwear from mass production;

d/ the establishment should have a smaller room or a corner in a larger one with power supply of 220v 50 Hz /single phase/ - if the current is different, an appropriate transformer /maximum consumption is 500 W/ is to be provided by NLSC;

e/ road conditions for easy access.

3.4. Programming

The NLSC is expected to elaborate a thorough programme and schedule for the team travel on the basis that in six hours of continuous work the team will be capable of measuring the feet of 200-250 persons. The time table has to show exactly the following components:

- day /date/
- establishment /place for measuring/
- number of persons available
- travelling time
- accomodation en route.

4. General

4.1. After deciding on the exact starting date, NLSC has to book accomodation according to the time table /for the preparation a 2-3 days stay is recommended in Addis Ababa/.

4.2. NLSC should arrange all formalities concerned with customs clearances of the equipment, which will arrive together with the BMKI's representative, as well as for films containing the projections of feet when leaving the country.

Table I. 1

REQUIRED COUNTERPART PERSONNEL

No.	Counterpart	Duties	Previous Experience	Language
1.	First assistant /measurer/	a. Measure perimeter of feet b. Measure weight, height c. Assist in setting up the measuring equipment d. Assist in organizing the measurement procedure on site e. Communication with local authorities	a. Basic knowledge of foot anthropometrics b. Some experience in footwear technology or design	English/Amhara
2.	Second assistant	a. Complete personal data sheets b. Assist in moving and setting up the equipment	Basic general education	English desirable but not essential
3.	Driver	a. Drive the car provided by NLSC or the project b. Assist in setting up the equipment		

Note: One of the assistants may perform the driver's duties - in this case only two counterparts are needed.

Table I. 2

SUGGESTED SAMPLE POPULATION

Age	Male	Female
6 - 9	900 - 1,200	1,000 - 1,300
10 - 14	700 - 900	800 - 1,100
15 - 17	700 - 900	500 - 700
18 -	800 - 1,100	900 - 1,300
Sub-total	3,100 - 4,100	3,200 - 4,400
Total	6,300 - 8,500	

Note: The figures given are guidelines, $\pm$ 10 % deviation would not reflect on the statistical reliability.

Annex II.

Report on the Ethiopian Foot Measurement Programme

It was decided in advance that a program such as the one carried out in Ethiopia would take about six weeks in case the arrangements were made in time:

- choosing the correct measuring places with at least one hundred children/adults on site;
- a room where the measuring would take place, with electricity;
- road conditions for easy access.

Such a programme time-table was prepared in advance, naming the cities to visit, how long it will take to reach it, the number of persons to measure. The time-table was broken done to weeks, so it seemed that it can be finished in six weeks. The NLSC provided the measuring team with two landcruisers for the duration of the foot measuring, with adequate fuel for travelling.

Ethiopian counterparts

It was arranged in advance that according to the programme prepared by the NLSC one of the counterparts /becoming an expert on marketing/ would be going ahead with one of the landcruisers to ensure that everything would be ready for the measuring team.

The measuring team consisted of

- the Hungarian expert,
- a shoe-upper designer /measuring with the tape, filling the Personal Data Sheet, help setting

up the PODOGRAPH and later on choosing the measuring places / schools, factories etc./,

- a driver /doing height and weight measurin, help setting up equipment,etc/.

Trips of the foot measuring programme

Arriving in Addia Ababa on the 13th Nov. 1982. we should have started the foot measuring the next day with the programme prepared for the team by the NLSC. We were unable to start until the 24th Nov. because the PODOGRAPH, the foot measuring equipment, was delayed in Frankfurt. In the mean time we planned our first trip to SIDAMO and HARERGE provinces. Awasa was the first city reached by the team where setting up the equipment was a trial by itself, even the Ethiopian counterparts have not seen it or done it before. We met with difficulties settind up the PODOGRAPH, namely the powerwinder for the camera was broken, loosing a few hours trying to repair it, we got over the problem and from this time on we went on without a powerwinder. The foot measuring equipment had to be readjusted every time when set up due to the road conditions / during the vibration of the car the mirrors were moved/ while travelling.

After our first trip /lo days/ we reported in Addis Ababa, picked up fuel and started for KEFFA, ILLUBABUR and WOLLEGA provinces. Leaving the city of Jimma the other land-cruiser met with an accident, so they could not go ahead with the programme.

From this time on we had to arrange everything for ourselves - finding measuring places, talking with authori-

ties, etc. We accomplished the second trip also in 10 days. Starting on our third trip to WELLO and TIGRAY provinces, just to save 3-4 days we took a road from Dessie to Gondar on a road that is not built yet /according to map/, so reaching GONDER and GOJJAM provinces. The whole trip taking 15 days. On the way back to Addia Ababa our landcruiser also broke down, so we had to wait in Finote Selam for three days for transportation back to Addis Ababa.

From the 3rd Jan. 1983. we had done measuring in and around the capital, accomplishing our foot measuring program on the 20th Jan. 1983.

Results and conclusions of the programme

In Table II.1 the cities, schools can be found where we had done foot measurement, with the results as well. In most elementary schools no problems occured in finding adequate number of children in the different age groups. The most problematical age group was the 16-18 years old ones - they took evening classes, didn't want to miss classes, the girls were shy, etc.

Also with the adult population we had difficulties, finding the factories big enough to have atleast 100 workers. Even in the original program prepared by the NLSC we had cities appointed where there were no factories at all: i.e. Nekemte or Ghimbi, in the later there was no electricity in the schools.

Even in shoe factories, where the people in charge should understand the objectives of the foot measuring

programme, we had difficulties finding the samples to be measured. The most problems we had with measuring enough women - so we also took the opportunity of measuring the adults on a women's meeting /mainly housewives/, or in one case measuring unemployed women standing in front of a factory waiting for employment. /see Table II.2/

In Table II.3 all the cities and towns can be found where we have been and the amount of pictures taken with the daily average. Just looking at it one can see that in one of the largest cities we could hardly do any work - the reason is lack of electricity /no electric power from morning till night/. Some of the factories had their own generator, but we could not arrange to be let in for foot measuring.

The programme for the foot measuring team was arranged without the knowledge of the above problems. Knowing them ahead we wouldn't have gone to places like Gondar or Ghimbi /in Gondar there was no electricity, in Ghimbi we measured the children in a Café/.

The whole foot measuring programme was to be finished in 6 weeks, instead of which it took us 9 weeks and were able to measure only 6535 persons. Just to see the greatness of the territory included in our work - we have travelled 6050 km and reached the above mentioned places.

We have met with unexpected difficulties which were not included in the timetable /i.e. car breakdown, camera repairing, lack of electricity, etc./ The whole programme took us 58 days and only on 31 did we do effective work, 14 days travelling time and the rest /13 days/ of the time for solving the above problems.

Table II. 1

Measurement places for children population

City, Town	Name of Schools	Number of children
Awasa	Awasa School	131
Dire Dawa	Kezira School	303
Harer	Secondary School	87
	MOKENNE School	103
Jimma	HIRMATA Elementary and Junior High School	379
Nekemte	YEWKETMENCH School	200
Ghimbi	Elementary and Junior School	194
Debre Berhan	Model-2 Elementary School	137
Combolcha	Elementary School	220
Dessie	YEKATIT "66" Comprehensive Secondary School	112
	EWKET CHORA Elementary School	215
Bahir Dar	FASILO Junior Secondary School	100
	YEDELE CHEBO Elementary and Junior School	257
Addis Ababa	EDGET BEHEBRET Elementary and Junior School	428
	SHIMELES HABTE Secondary School	410
	BETHLEHEM Public School	661
	AGAZZIAN Elementary School	604
	NEFASSE SELK Comprehensive Secondary School	154
	Total of	4,695

Table II. 2

Measurement places for the adult population

City, Town	Name of Factory or Place of Measurement	Number of persons
Melgue Wondo	Ethiopian Livestock Developing Company	212
Dire Dawa	Textile Mills	94
Jimma	Ethiopian Enterprises Plywood Factory	151
Nekemte	Prison	74
	Women's Meeting	81
Debre Berhan	Wool Factory	77
Combolcha	Sopral Meet Factory	83
Dessie	Soft Drinks' Factory	108
Gondar	Beverage Factory and Distribution	62
Bahir Dar	Textile Mills	186
Addis Ababa	Ethiopian Thread Factory	138
	Tikur Abbay Shoe Factory	107
	Ethiopian Rubber and Canvas Shoe Factory	89
	Military Camp	378
	Total of	1,840

Table II. 3

Cities and towns included in the Foot Measurement Program

City, Town	Total of Measured Feet	Measuring Time/day/	Daily Average foot/day
Awasa	131	1	131
Melgue Wondo	212	2	106
Dire Dawa	397	2	198.5
Harer	190	1	190
Jimma	530	3	176.7
Nekemte	355	2	177.5
Ghimbi	194	1	194
Debre Berhan	214	1	214
Combolcha	303	2	151.5
Dessie	435	2	217.5
Gondar	62	1	62
Bahir Dar	543	2	271.5
Addis Ababa	2,969	11	269.9
T O T A L :	6,535	31	21o.8

List of recorded data

This list represents all the data recorded or generated for each person measured. More detailed explanations are given in Fig. 1,5 and 6.

A 1	Identification number
A 2	Code of residence
A 3	Code of sex
A 4	Age
A 5	Weight in kg
A 6	Height in cm
A 7	Code of occupation
A 8	Code according to the most usual working position
A 9	Ball girth: metatersu - phalangeal joint
A 10	Short heel girth
A 11	Ankle girth
A 12	Girth above ankle
A 13	Height of above ankle measurement
A 14	Position of the first toe axis
A 15	Distance of the first toe /from the axis/
A 16	Distance of the inner joint from the axis
A 17	Heel width
A 18	Width of the shankpart
A 19	Distance of the outer joint from the axis
A 20	Distance of the fifth toe from the axis
A 21	Height of the forepart of the first toe
A 22	Height of toe /at 78% of the foot length/

A 23	Height of joint /at 71% of the foot length/
A 24	Height of waist /at 62% of the foot length/
A 25	Height of the short heel /at 45% of the foot length/
A 26	Height of the short heel /at 40% of the foot length/
A 27	Height of the heel curve
A 28	Bend of heel curve
A 29	Bend of heel curve at 18%
A 30	Bend of curve
A 31	Width of ankle
A 32	Distance between the fifth toe and the heel
A 33	Foot length
A 34	Width of joint perpendicular to the axis
A 35	Width of joint /direct distance/
A 36	Width of joint + height /perpendicular/
A 37	Width of joint + height /direct
A 38	Angle of short heel girth
A 39	Projection of the short heel girth

The dimension of data A 9 - A 37 and A 39 is mm, while A 38 has a dimension of ^{o} /degree/.

Annex IV

Codes for geographical areas

Code	Province	Code	City/village
1.	SHEWA ARSI BALE	11 12	Addis Ababa Military Camp representing the whole country
2.	SIDAMO	21 22	Awasa Melgue Wando
3.	KEFA	31	Iima
4.	ILUBABOR WELEGA	41 42	Gimbi Nekemte
5.	HARERGE	51 52 53	Dire Dawa Metehara Harer
6.	WELO TIGARI	61 62 63	Dese Kembolcha Debre Birhan
7.	GONDER GOJAM	71 72 73	Bahir Dar Debre Markos Gonder

Derived data for last design

Group III. Children /6-10 years/
Middle size: 195 mm /of foot length/

Measurement *	Mean value of feet masured	Value for last design
	mm	
A 9	173.2	182.o
A 15	33.1	33.o
A 16	33.o	33.o
A 17	52.4	53.o
A 18	3o.5	31.5
A 19	39.2	39.o
A 20	39.5	39.o
A 21	19.o	19.5
A 22	22.1	22.o
A 23	36.2	36.5
A 24	45.7	46.o
A 27	19.6	21.o
A 28	5.3	5.5
A 33	192.8	195.0
A 35	74.2	-

* For position of measurements see Fig 10,5 and 6

Derived data for last design

Group IV. Girls /11-14 years/
Middle size: 235 mm /of foot length/

Measurement *	Mean value of feet masured	Value for last design
	mm	
A 9	2o8.9	215.o
A 15	38.4	35.o
A 16	4o.4	39.o
A 17	61.8	61.5
A 18	36.0	35.0
A 19	46.4	45.5
A 20	44.5	43.0
A 21	21.1	21.5
A 22	24.8	25.0
A 23	42.3	41.5
A 24	53.7	54.5
A 27	22.1	23.0
A 28	6.8	6.5
A 33	232.8	235.0
A 35	89.3	-

* For position of measurements see Fig 10,5 and 6

Derived data for last design

Group V. Boys /11-14 years/
Middle size: 235 mm /of foot length/

Measurement *	Mean value of feet masured	Value for last design
	mm	
A 9	210.9	215.0
A 15	40.2	34.0
A 16	40.4	38.5
A 17	62.8	61.0
A 18	37.2	36.0
A 19	46.6	45.o
A 20	45.4	43.0
A 21	22.1	21.5
A 22	25.7	26.0
A 23	43.1	43.0
A 24	54.7	54.0
A 27	23.0	21.0
A 28	6.6	6.0
A 33	233.0	235.0
A 35	89.5	-

* For position of measurements see Fig 10,5 and 6

Derived data for last design

Group VI. Women /15 and above/
Middle size: 240 mm /of foot length/

Measurement *	Mean value of feet masured	Value for last design
	mm	
A 9	214.5	221.0
A 15	39.6	36.0
A 16	41.6	40.0
A 17	65.8	64.0
A 18	38.4	37.5
A 19	48.5	47.0
A 20	45.2	45.0
A 21	22.4	21.0
A 22	26.0	25.5
A 23	43.8	44.5
A 24	55.0	56.0
A 27	24.0	23.0
A 28	6.2	5.0
A 33	237.8	240.0
A 35	92.7	-

* For position of measurements see Fig 10,5 and 6

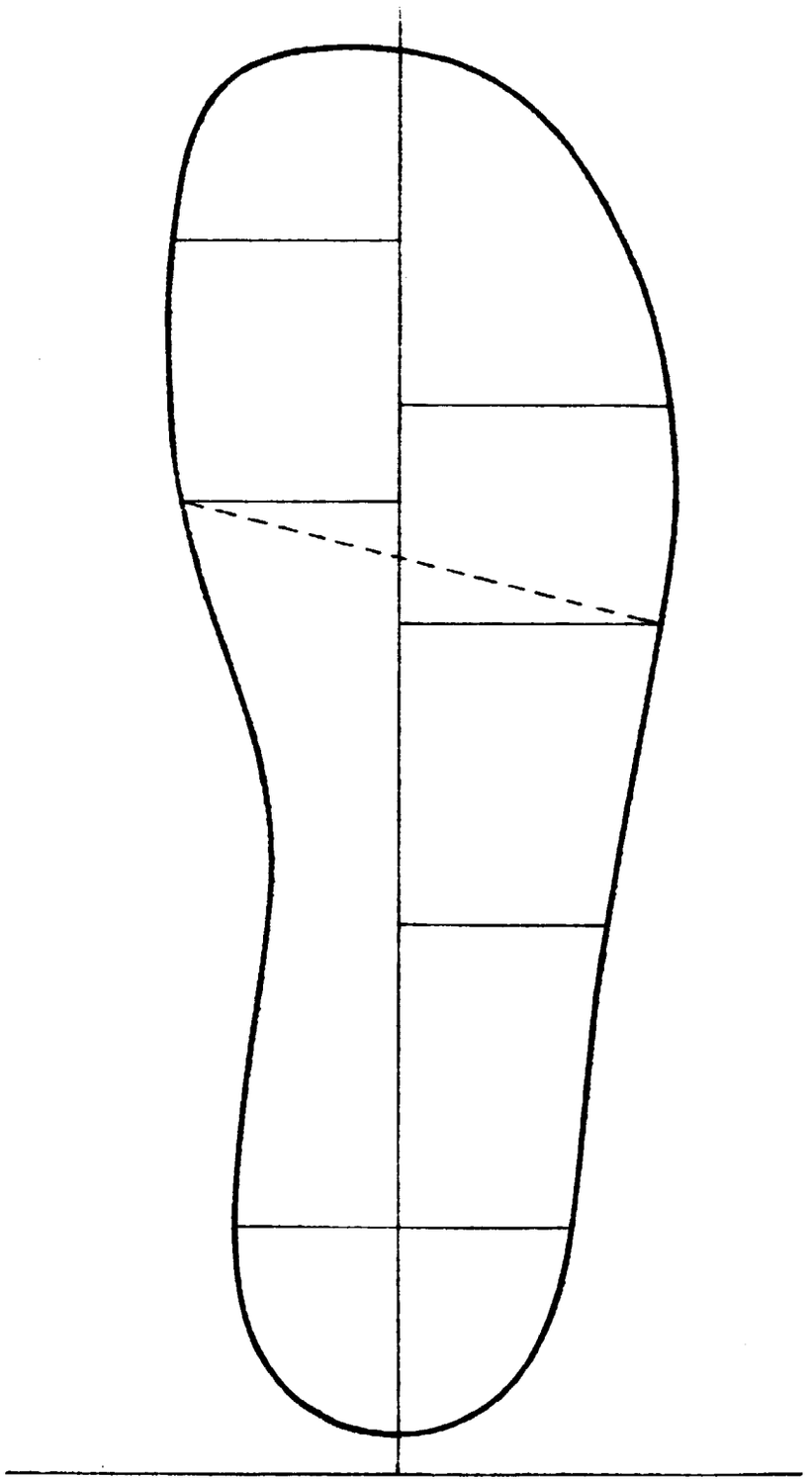
Derived data for last design

Group VII. Men /15 and above/
Middle size: 260 mm /of foot length/

Measurement *	Mean value of feet masured	Value for last design
	mm	
A 9	236.0	239.0
A 15	44.0	41.0
A 16	44.9	44.0
A 17	71.4	71.0
A 18	43.0	42.0
A 19	53.6	52.0
A 20	50.4	50.0
A 21	23.9	25.0
A 22	28.7	29.0
A 23	47.1	46.0
A 24	60.3	61.0
A 27	24.3	25.0
A 28	7.3	7.0
A 33	258.0	260.0
A 35	101.4	-

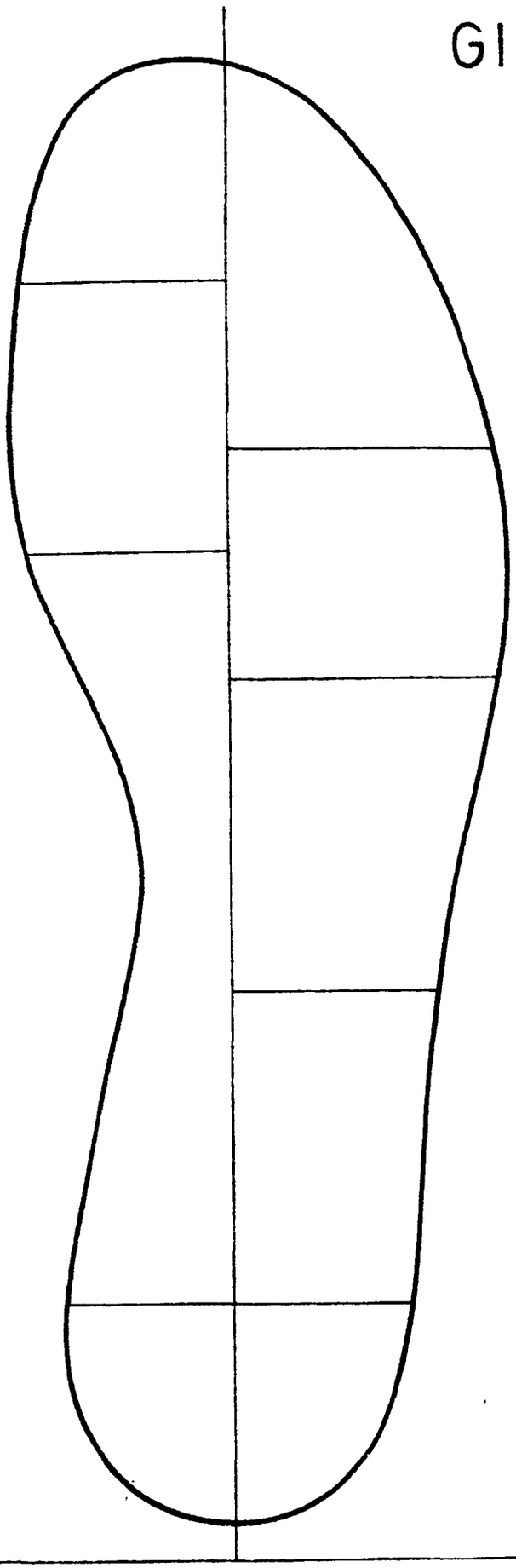
* For position of measurements see Fig. 5 and 6

CHILDREN



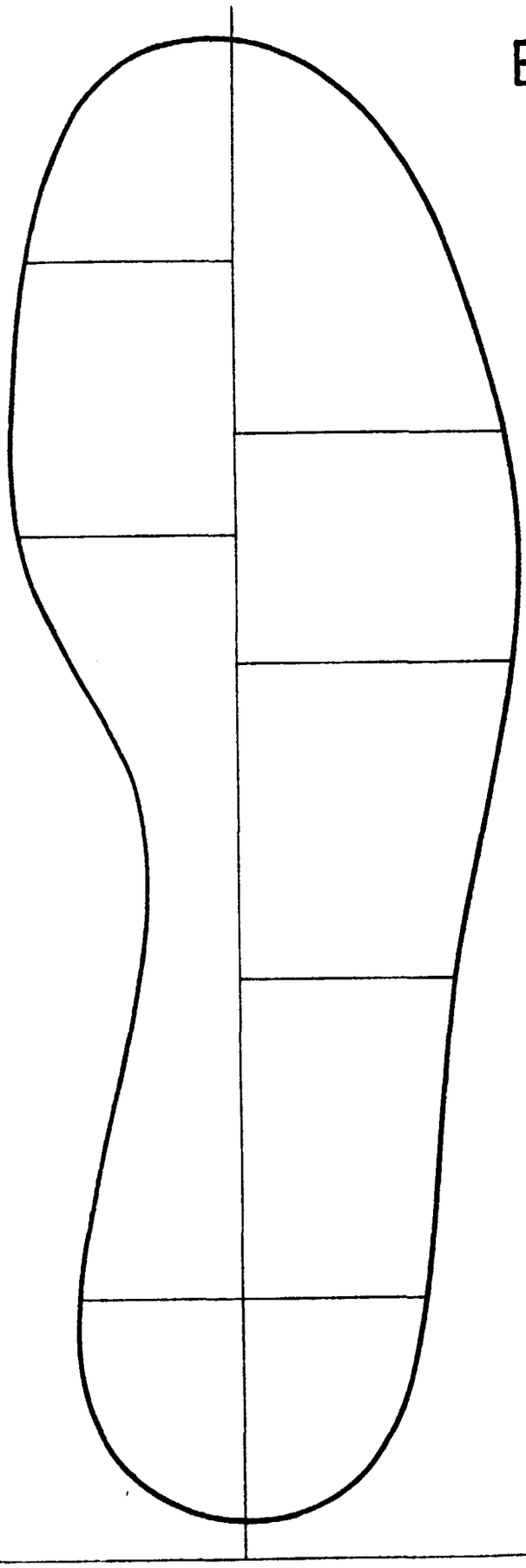
Annex VI

GIRLS



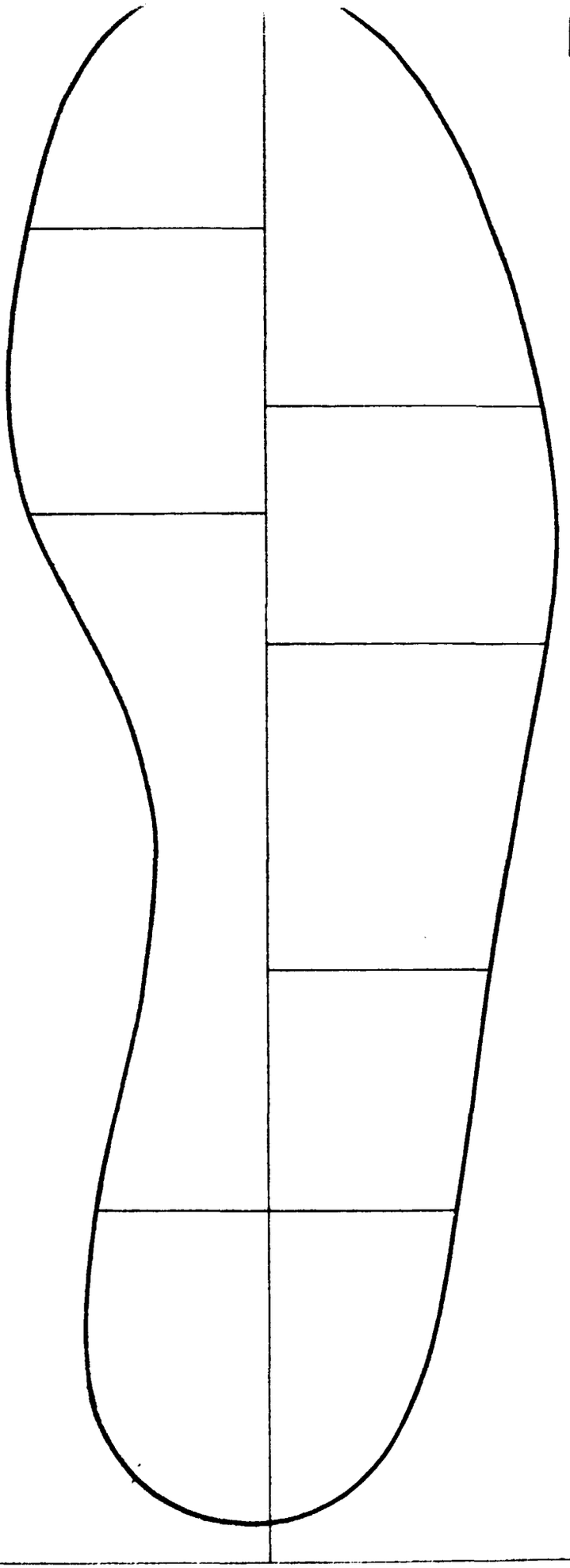
Annex VI

BOYS



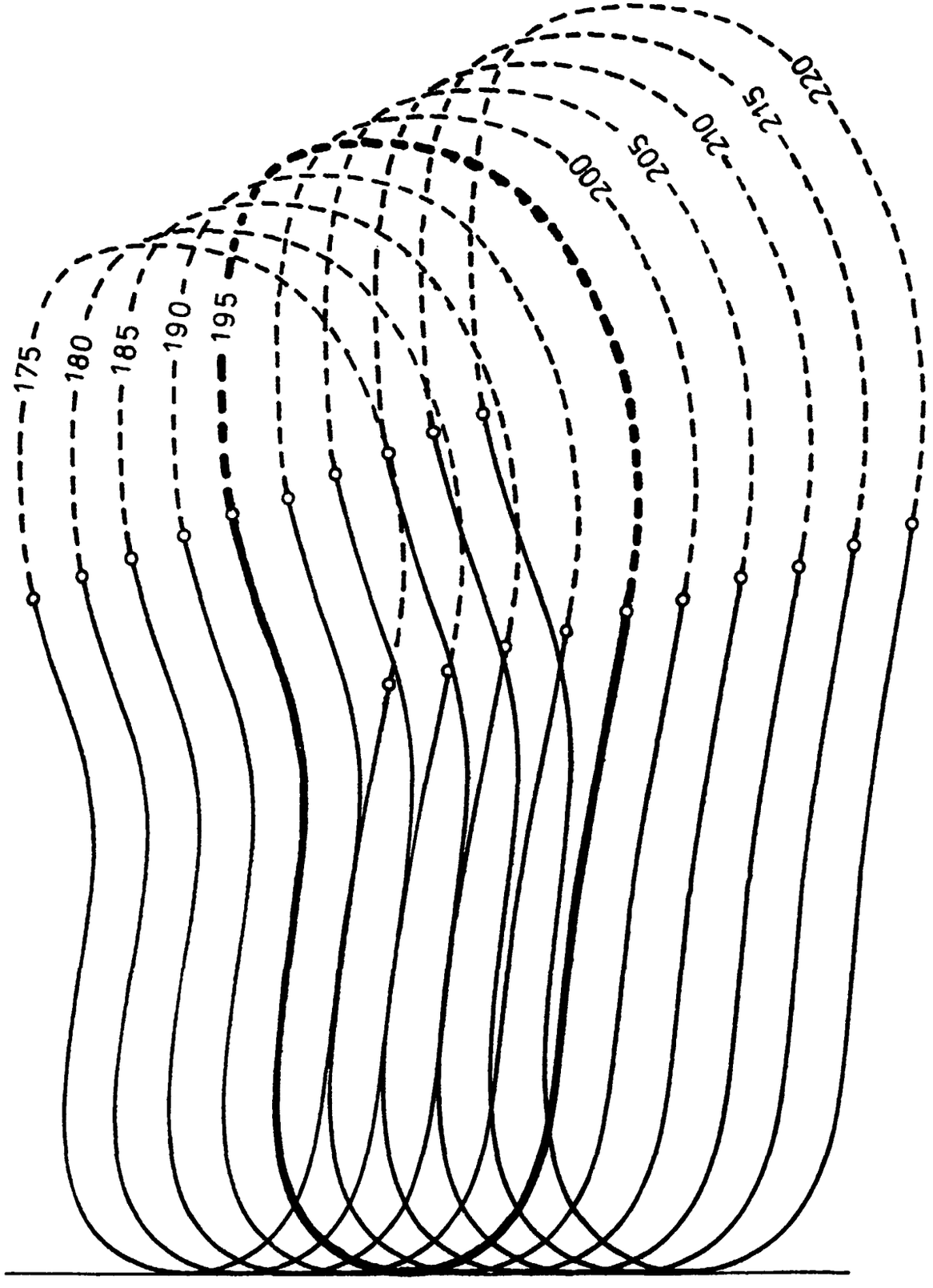
Annex VI

MEN



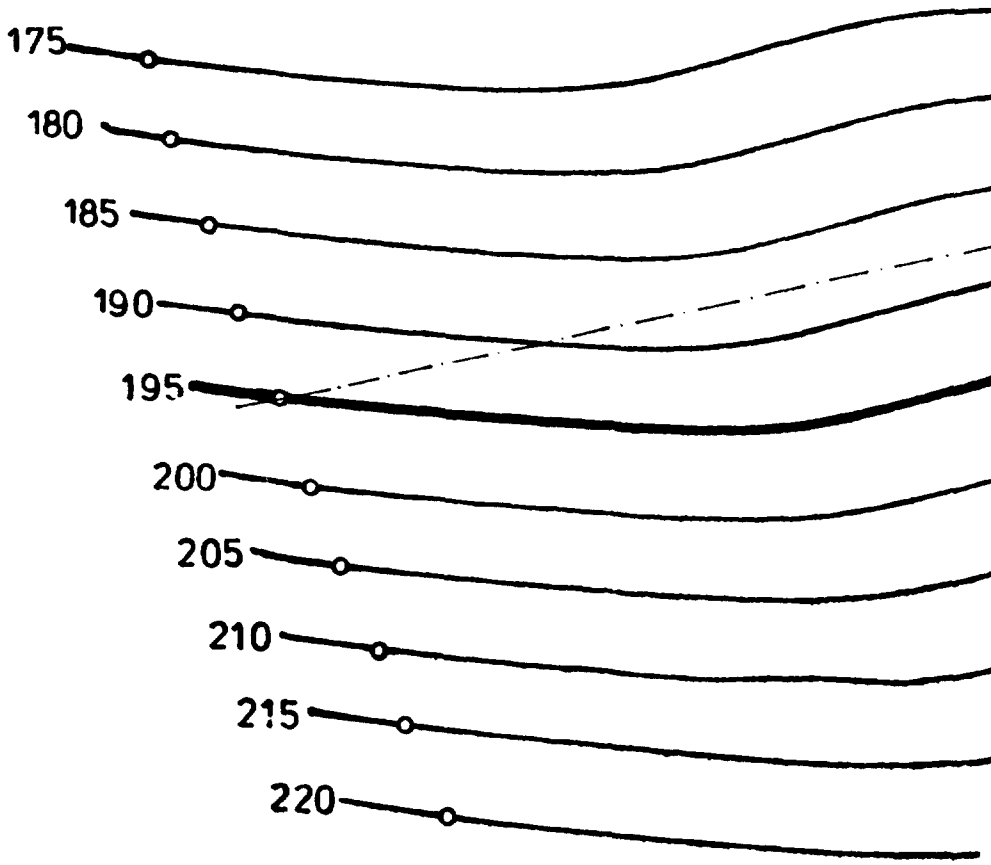
Annex VI

CHILDREN III

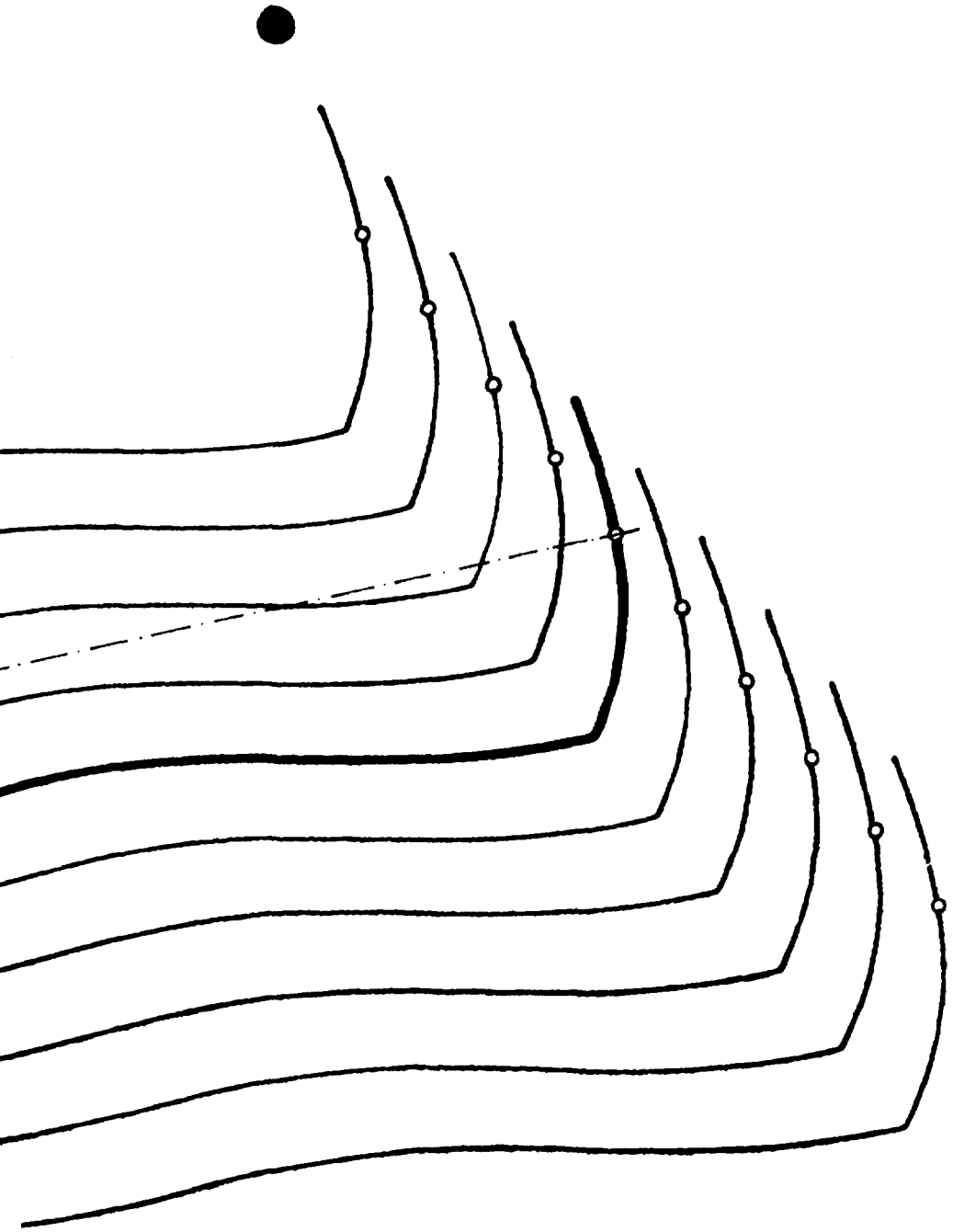


Annex 7

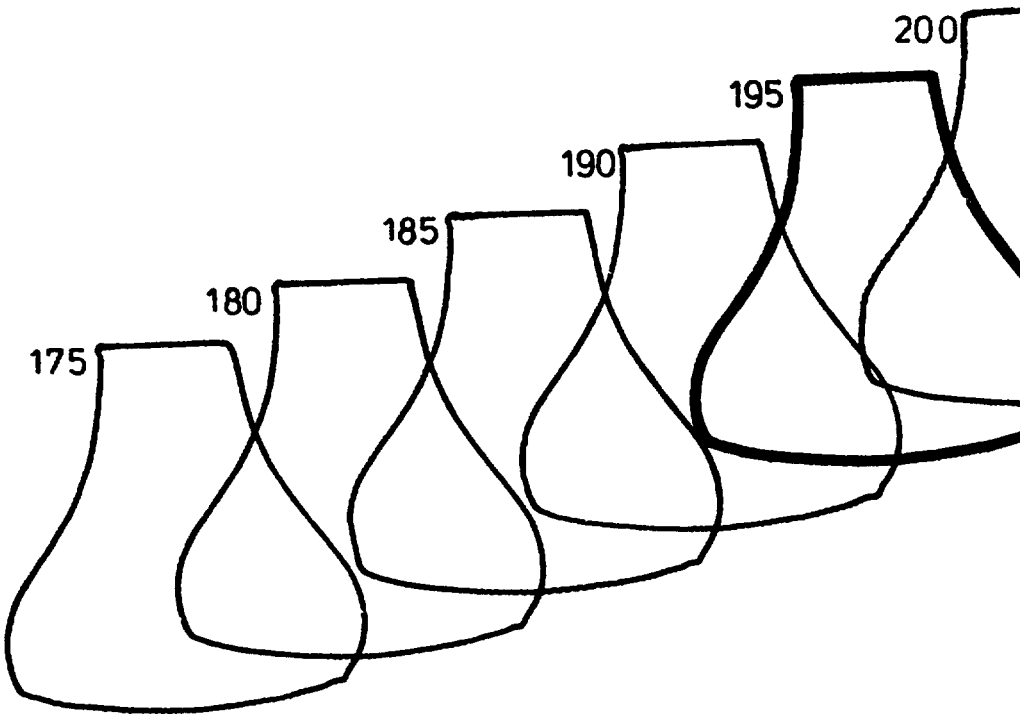
CHILDREN III



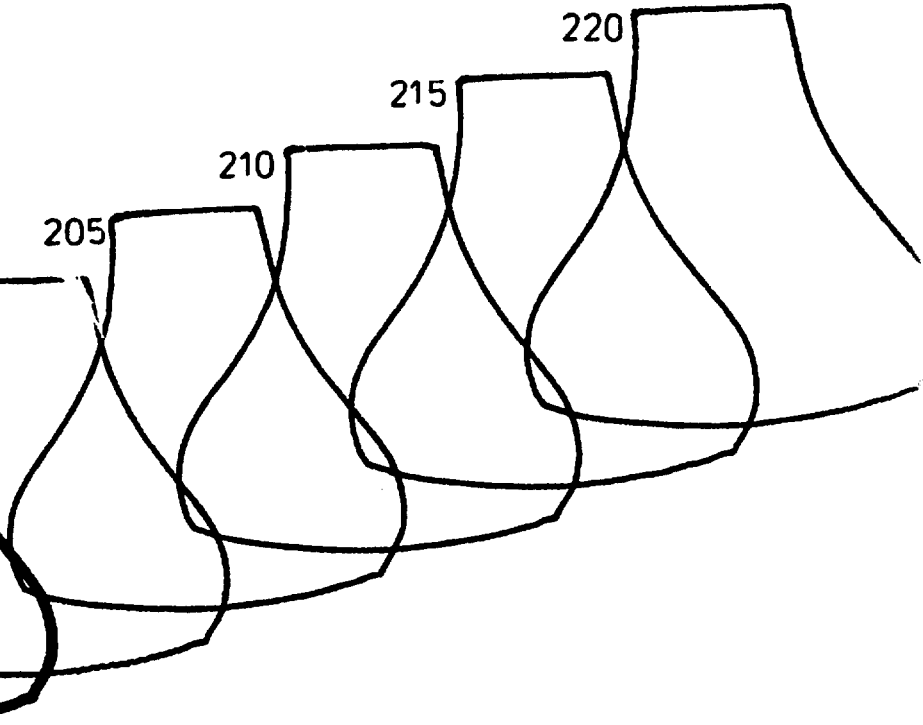
Annex 7

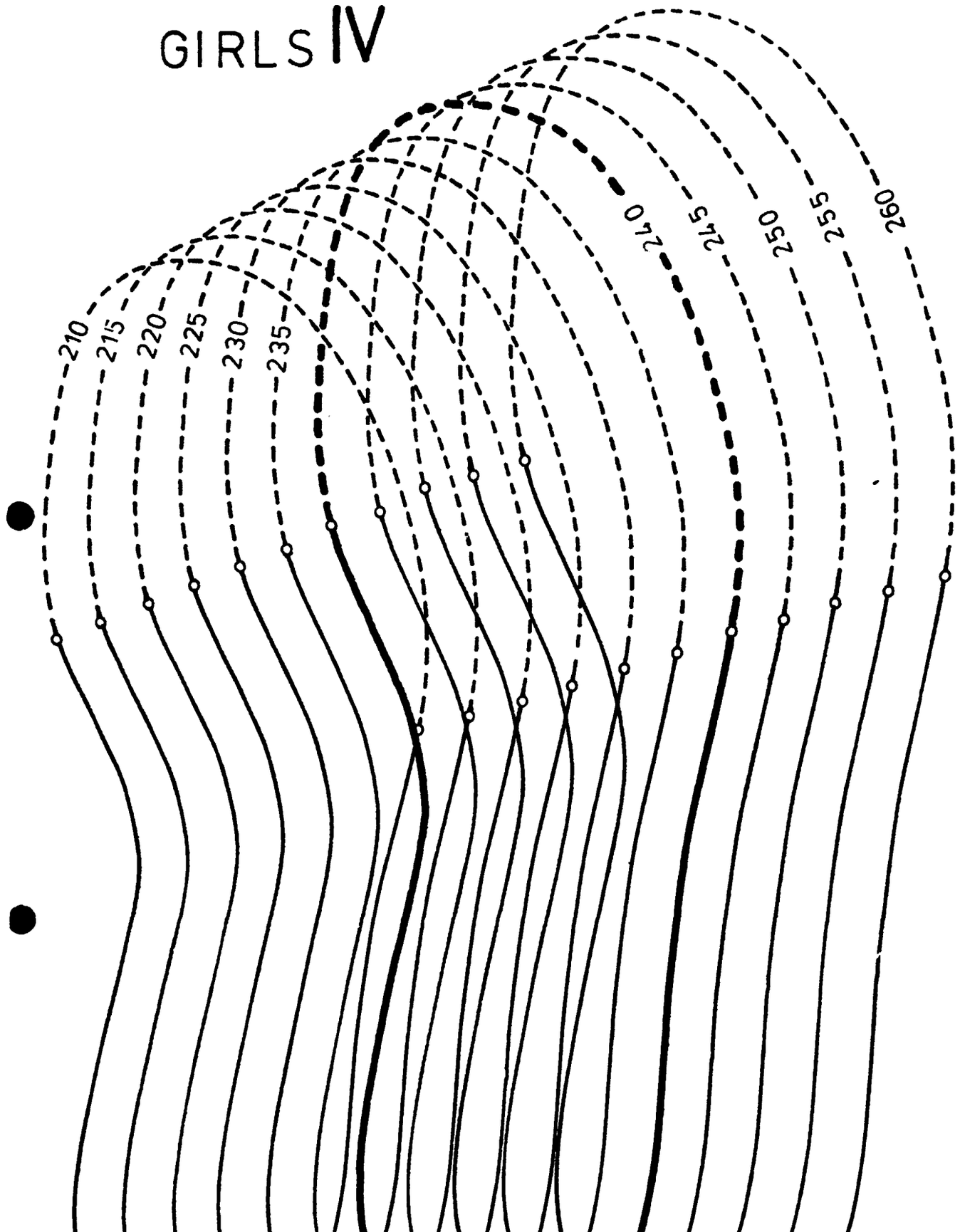


CHILDREN III



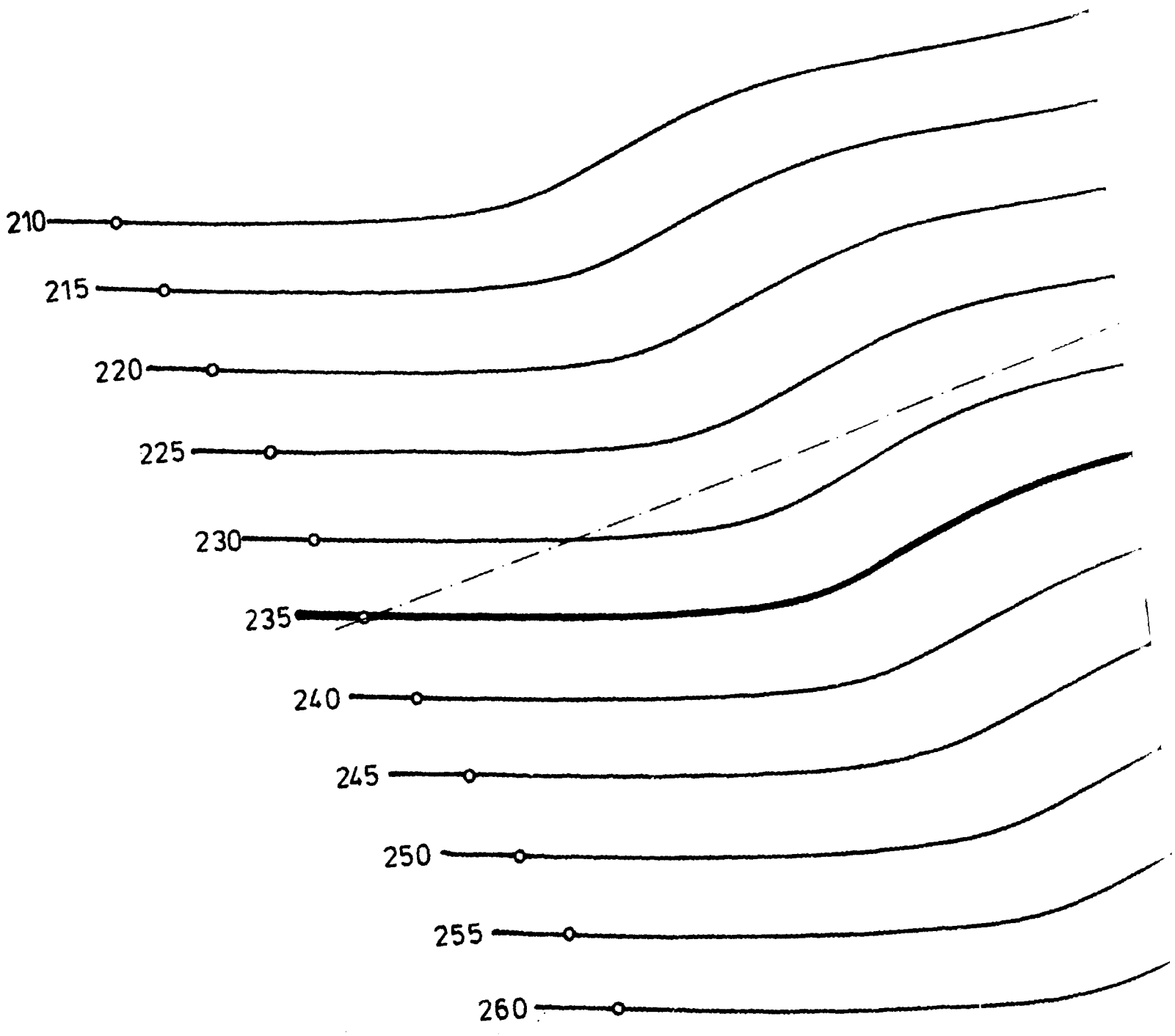
Annex 7


220
215
210
205

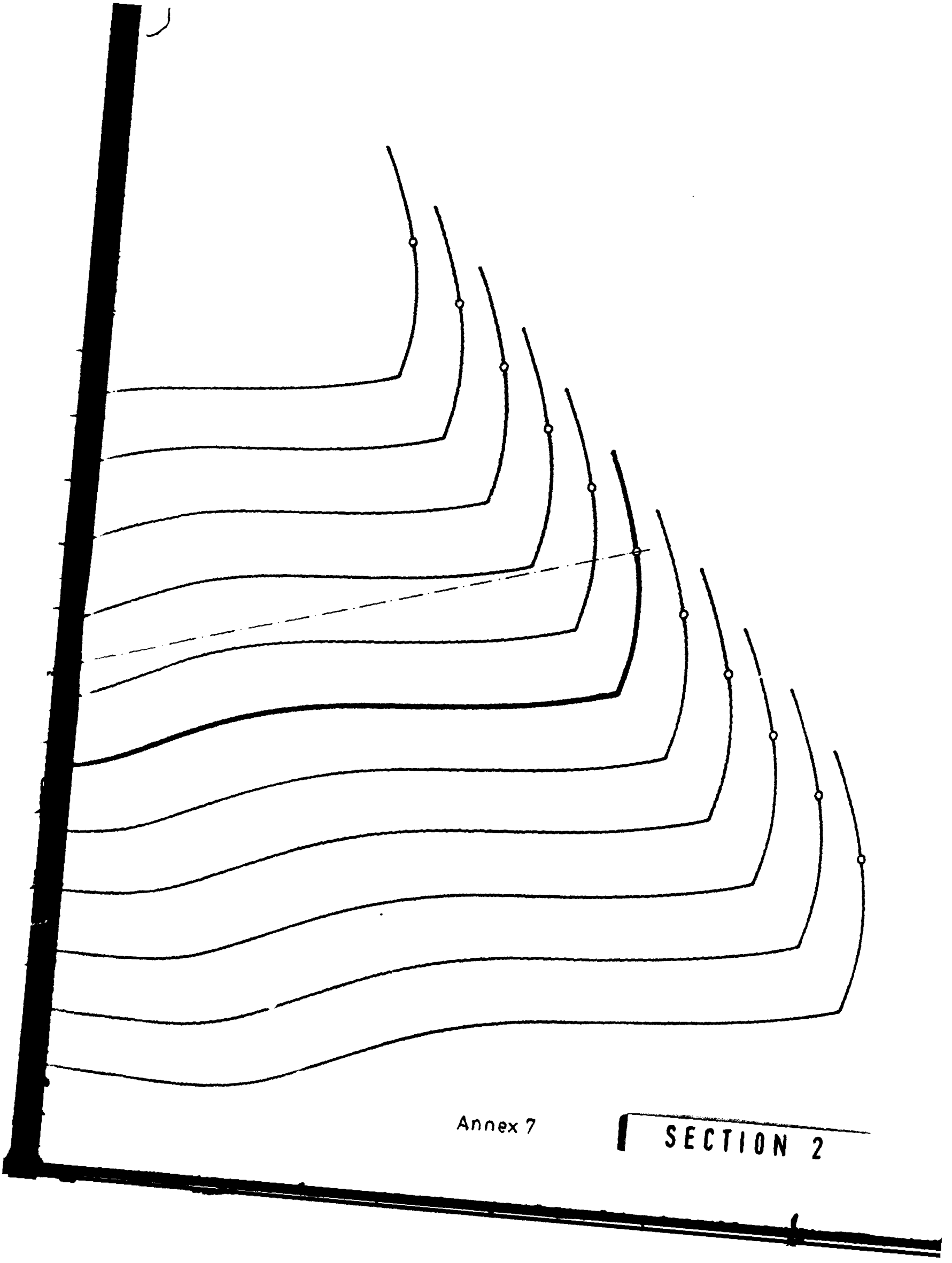


Annex 7

GIRLS IV



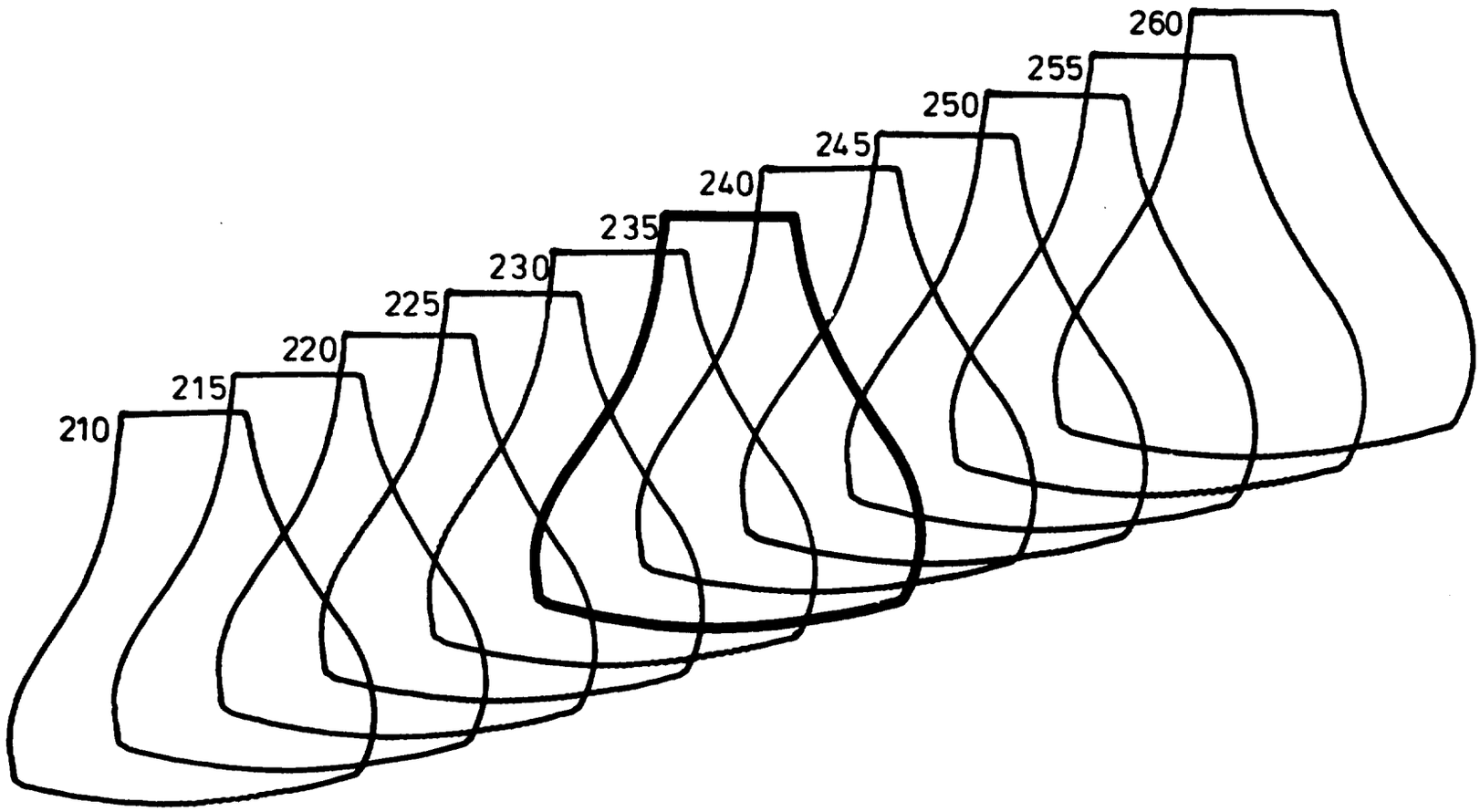
SECTION 1

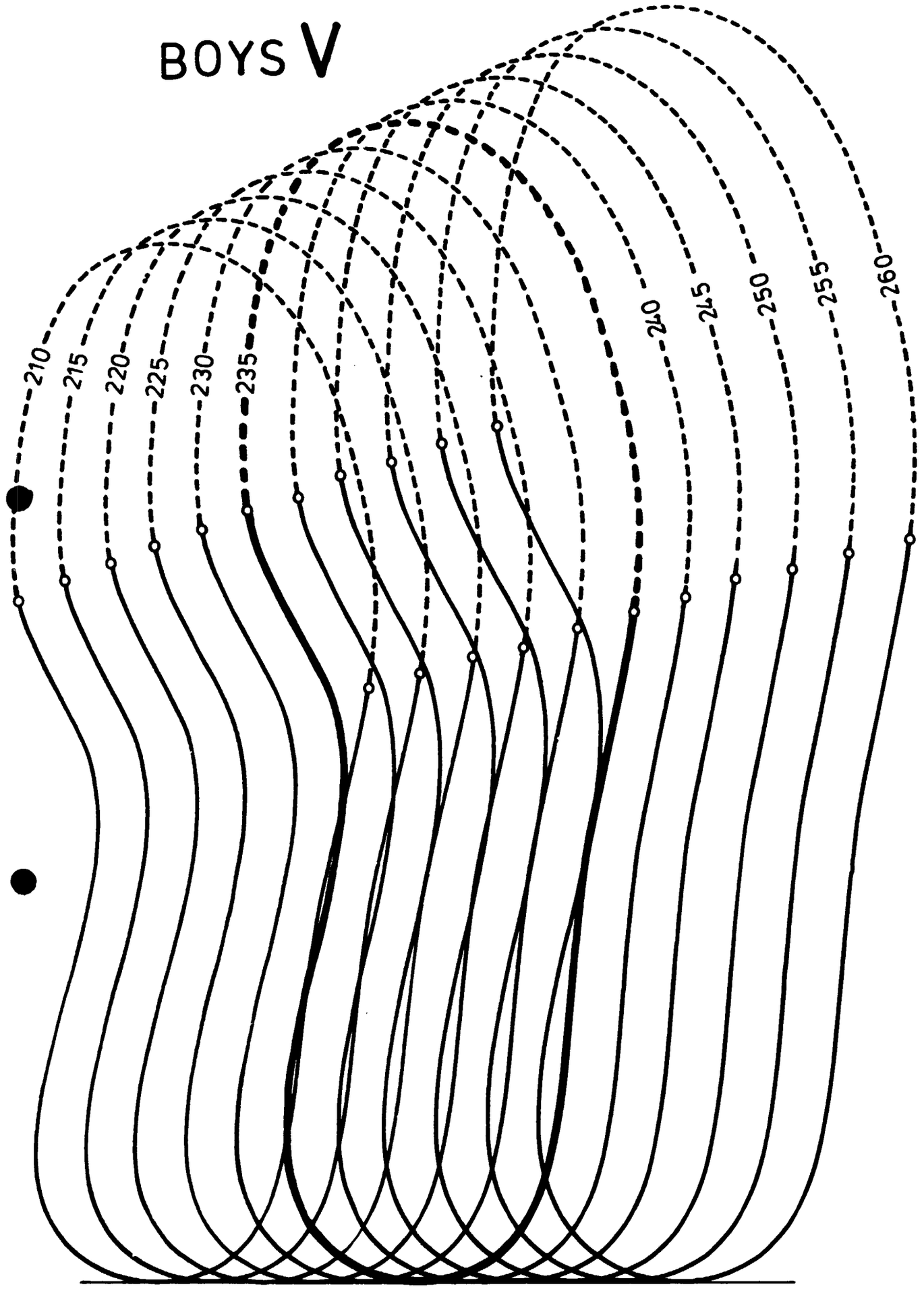


Annex 7

SECTION 2

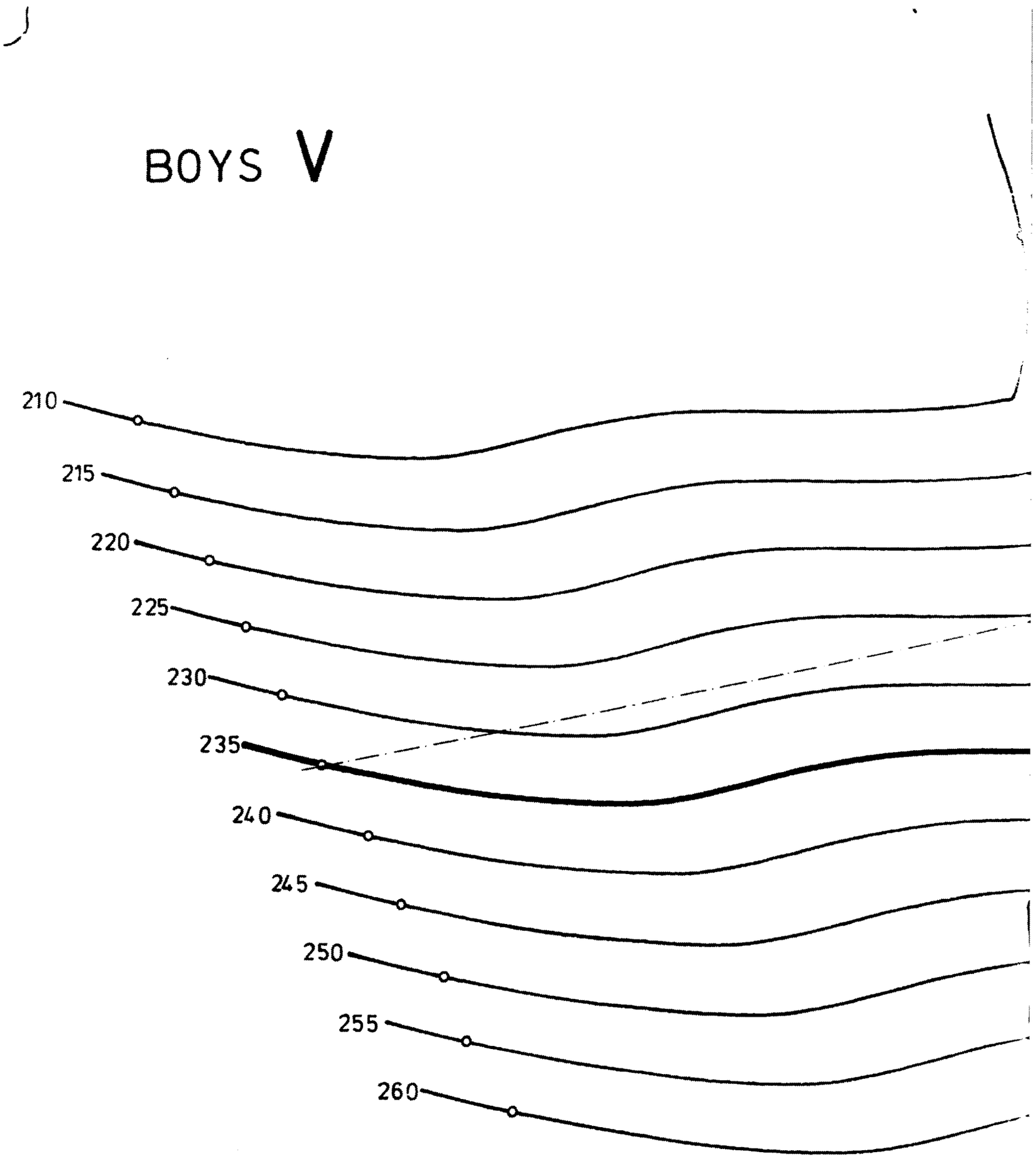
GIRLS IV





Annex 7

BOYS V



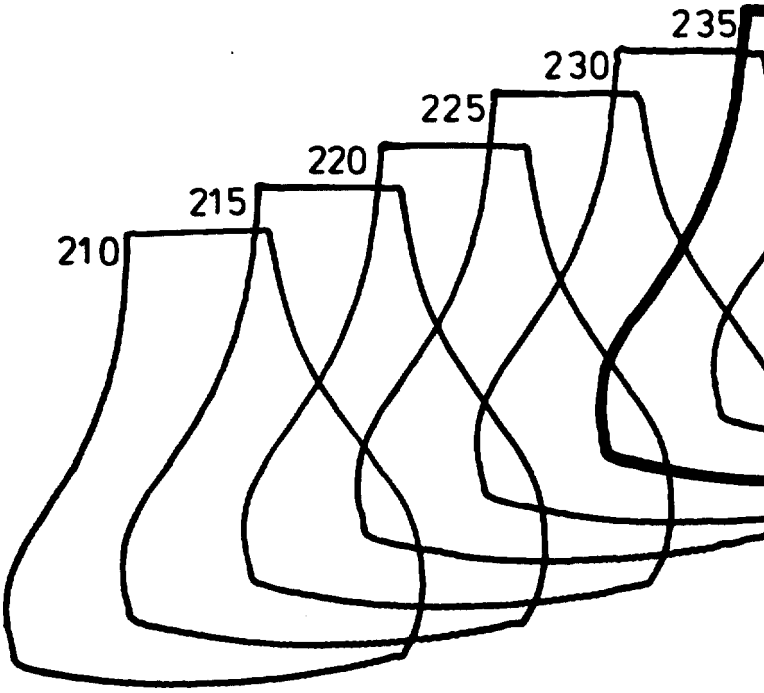
SECTION 1

Annex 7

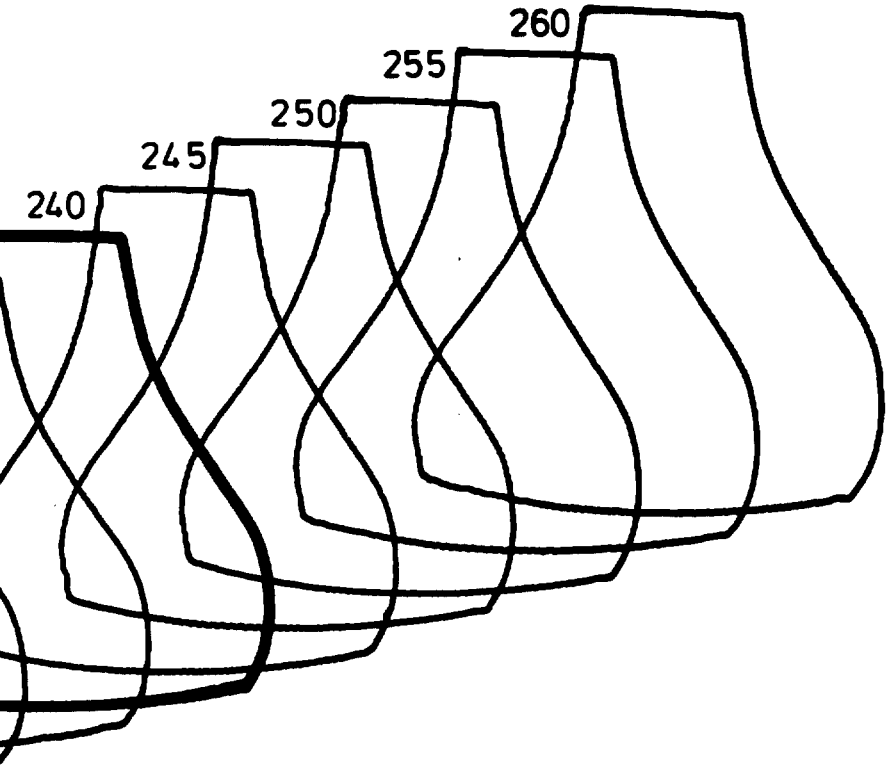
Annex 7

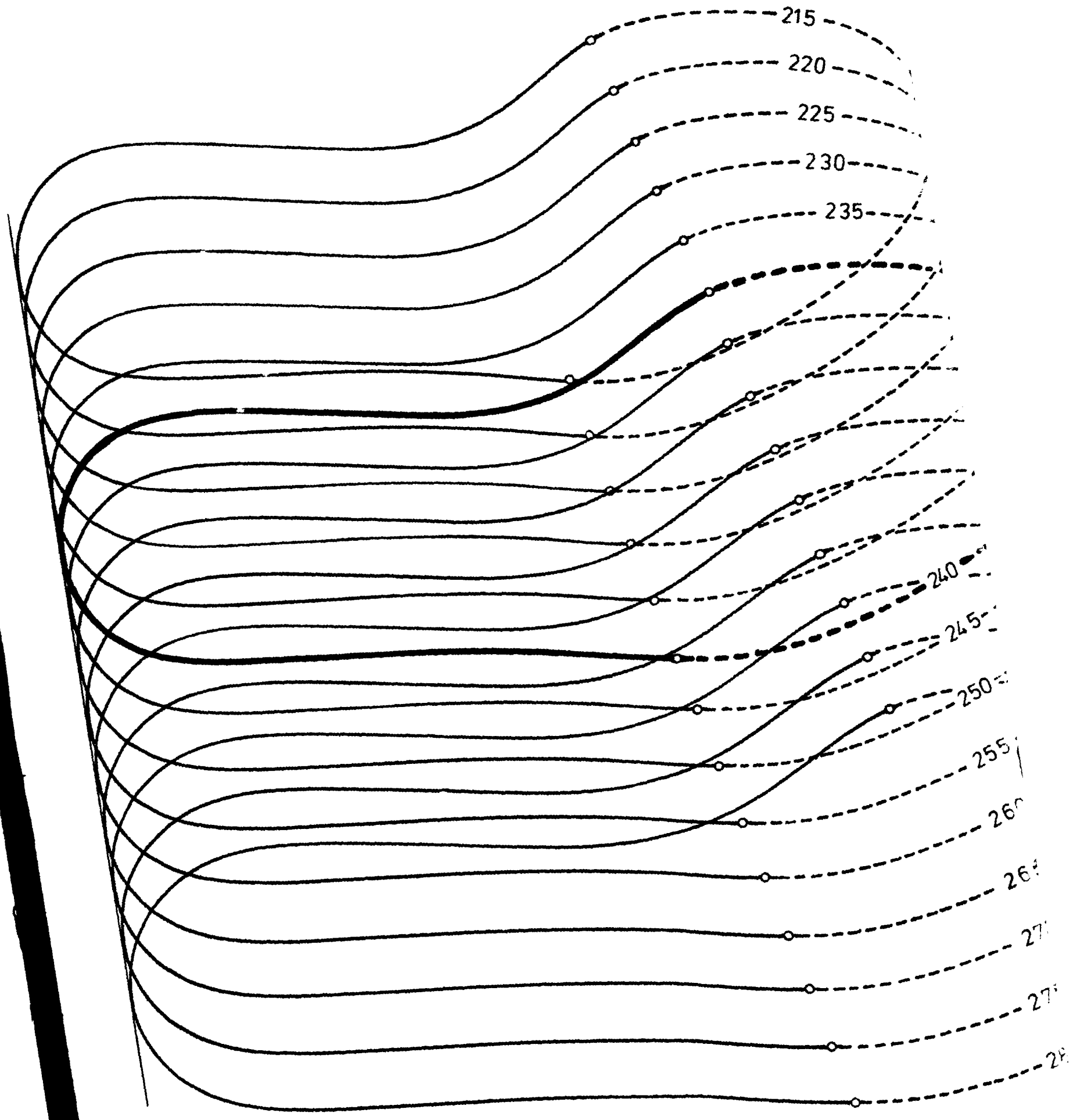
SECTION 2

BOYS V



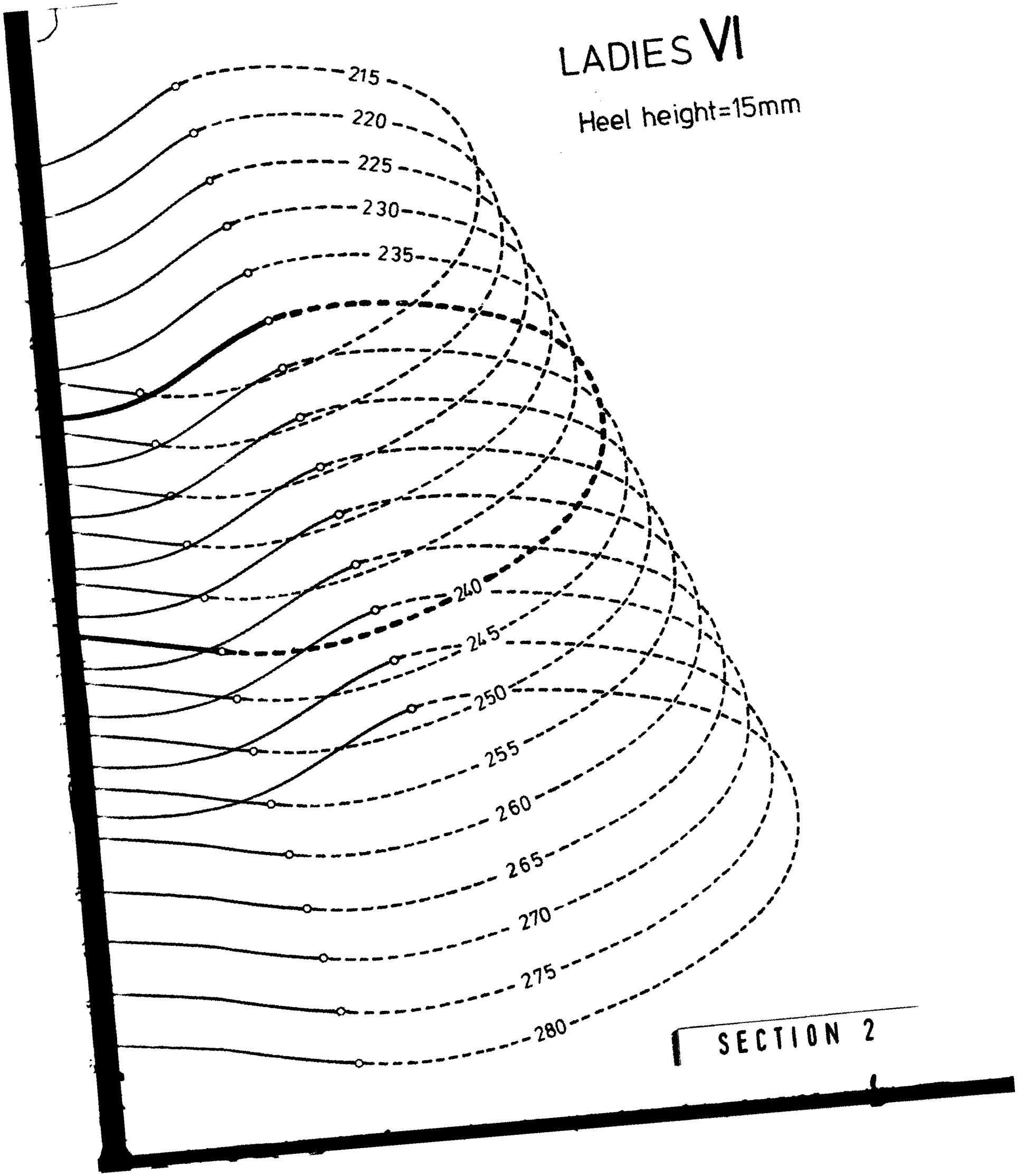
Annex 7


260
255
250
245
240


215
220
225
230
235
240
245
250
255
260
265
270
275

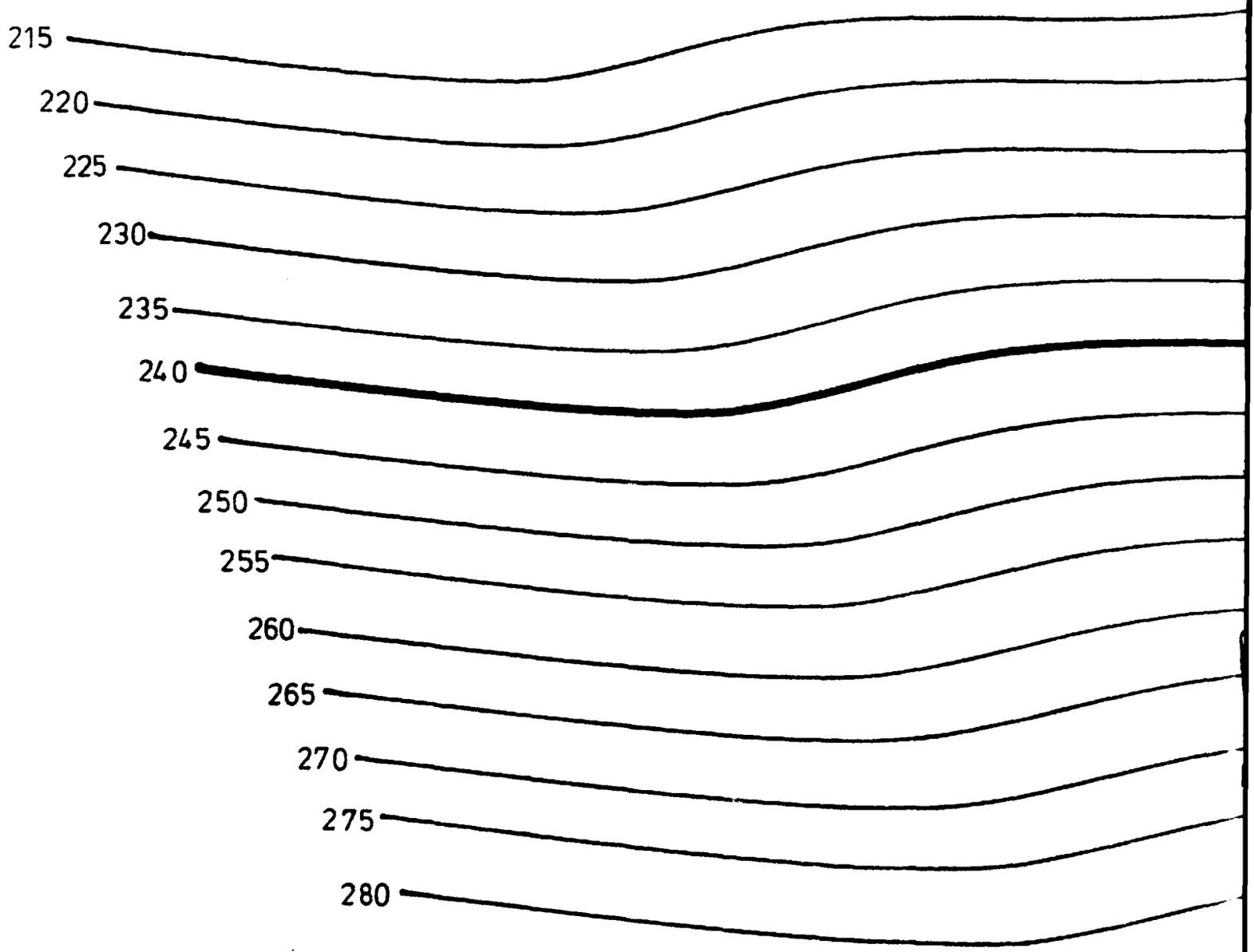
LADIES VI

Heel height=15mm



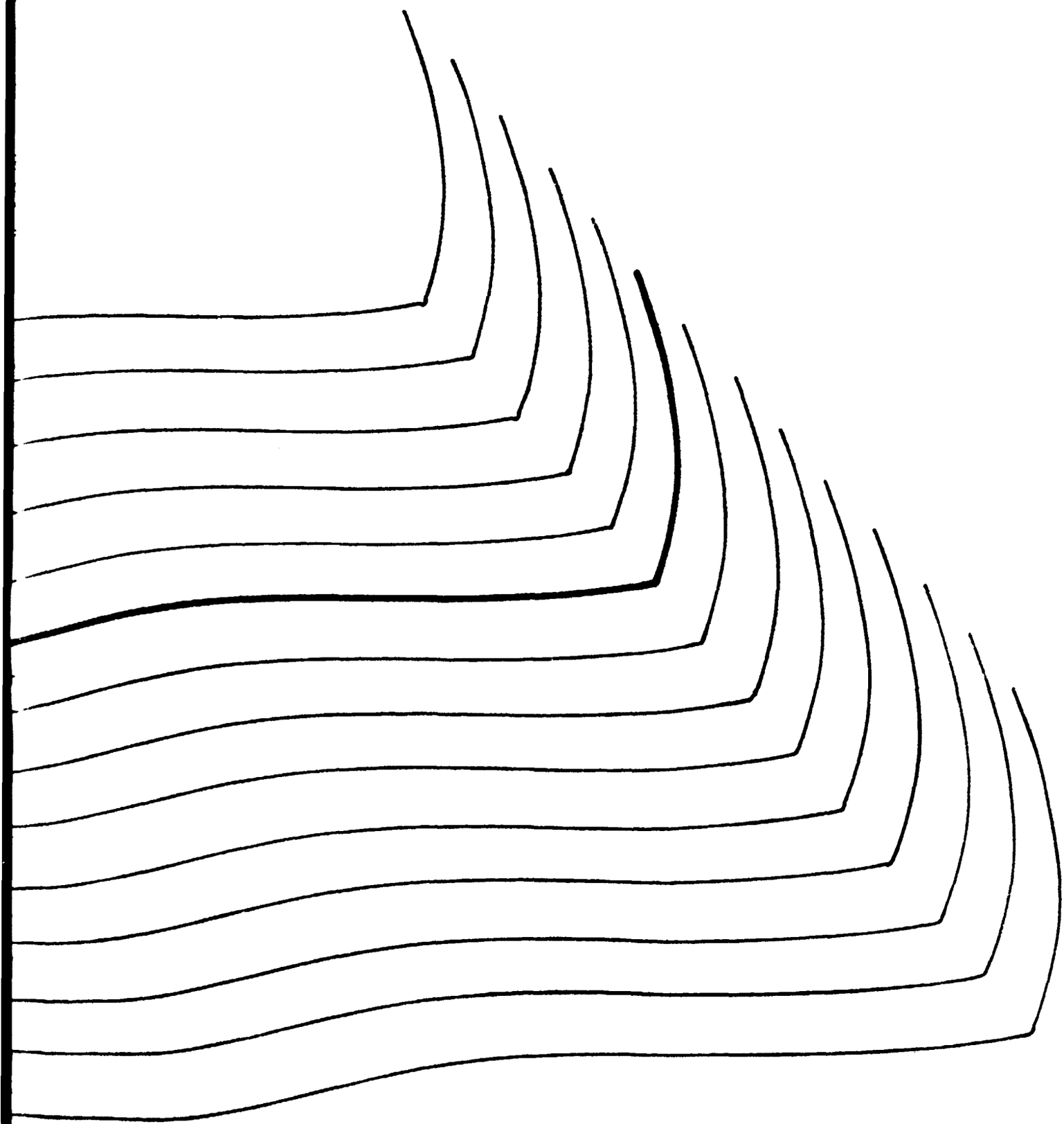
LADIES VI

Heel height=15mm



SECTION 1

Annex 7

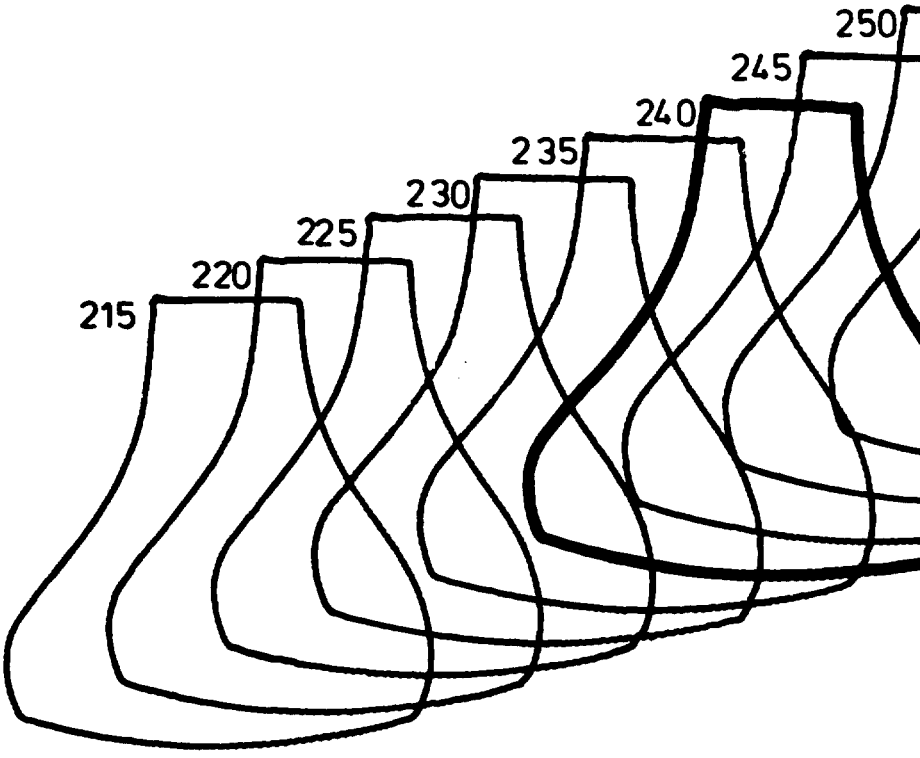


Annex 7

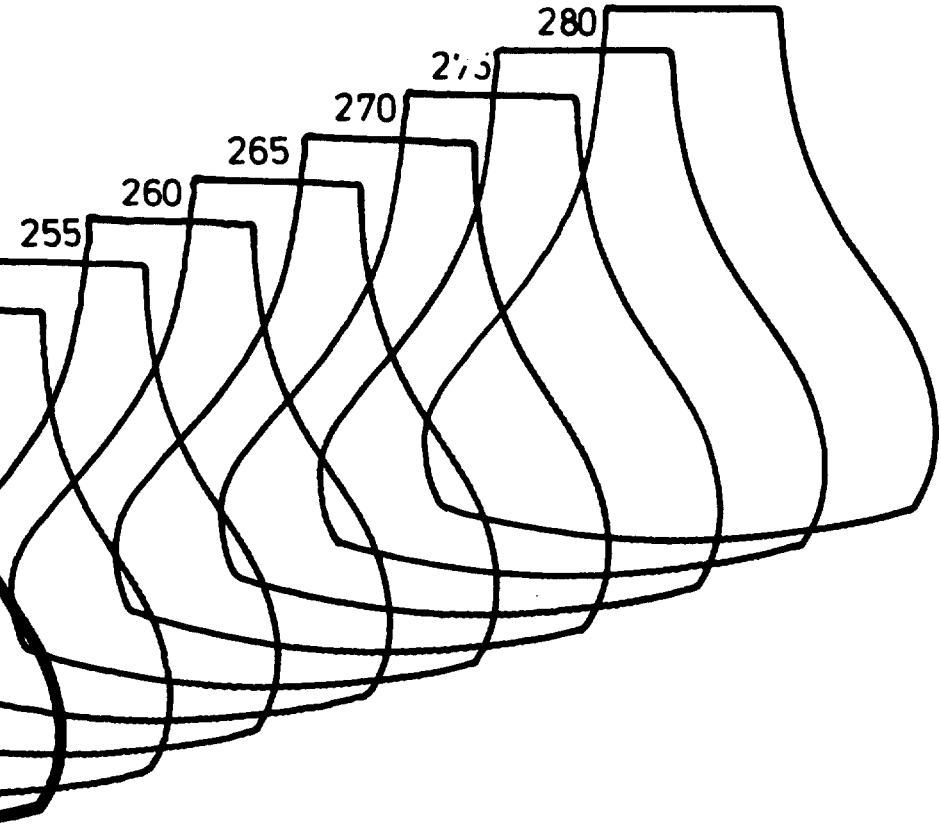
SECTION 2

LADIES VI

Heel height=15mm

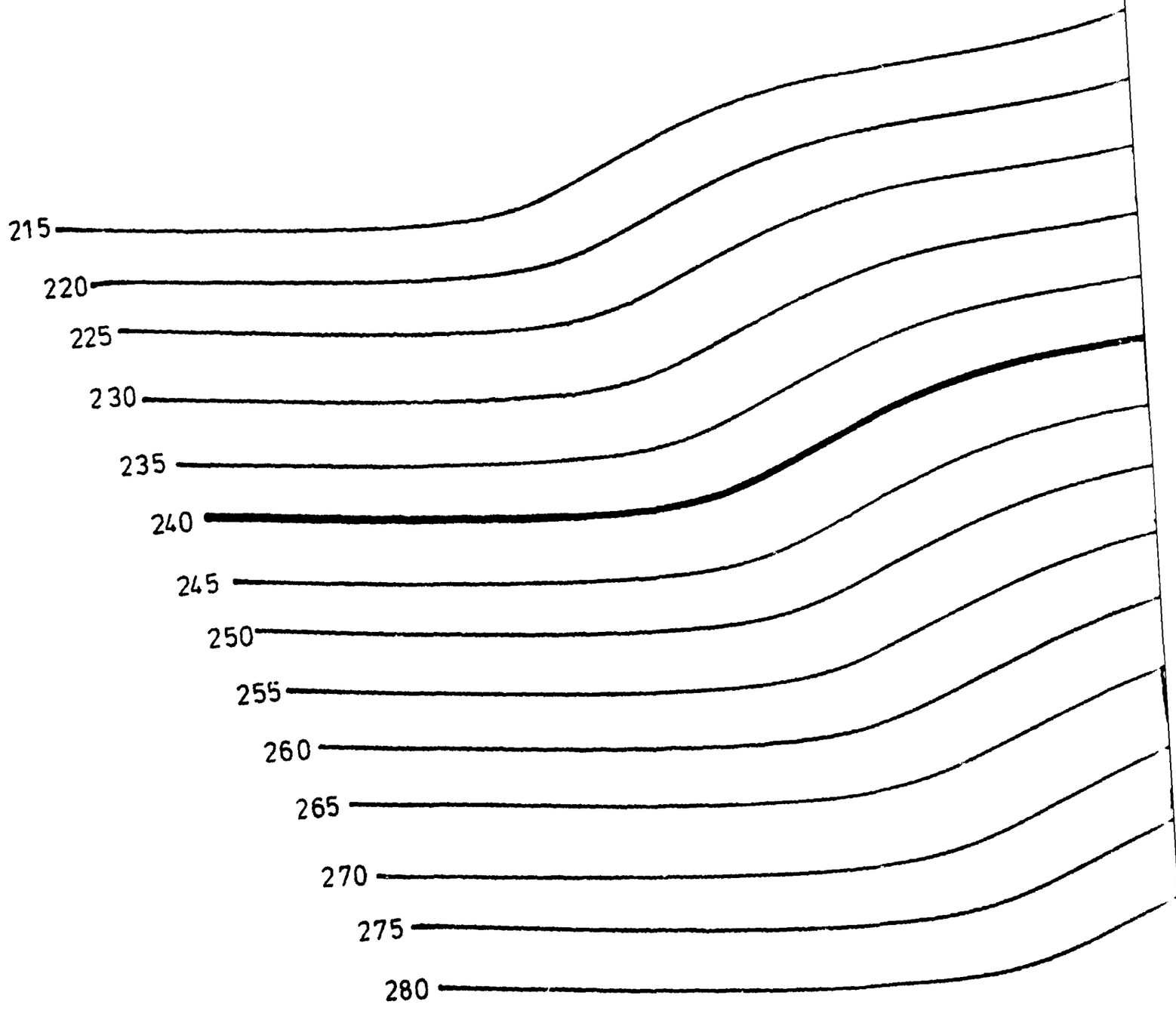


Annex 7


280
270
265
260
255

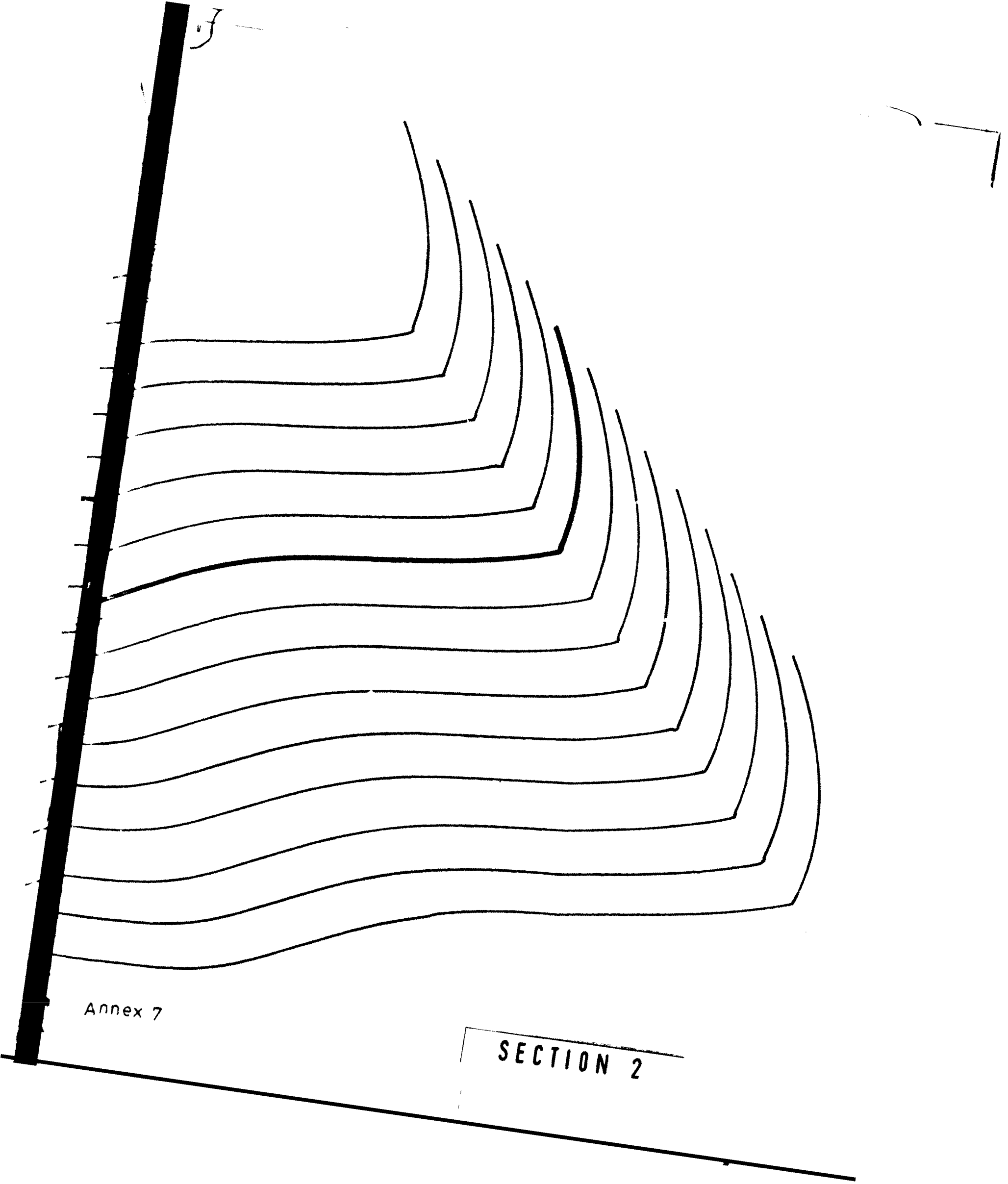
LADIES VI

Heel height = 30mm



Annex 7

SECTION 1

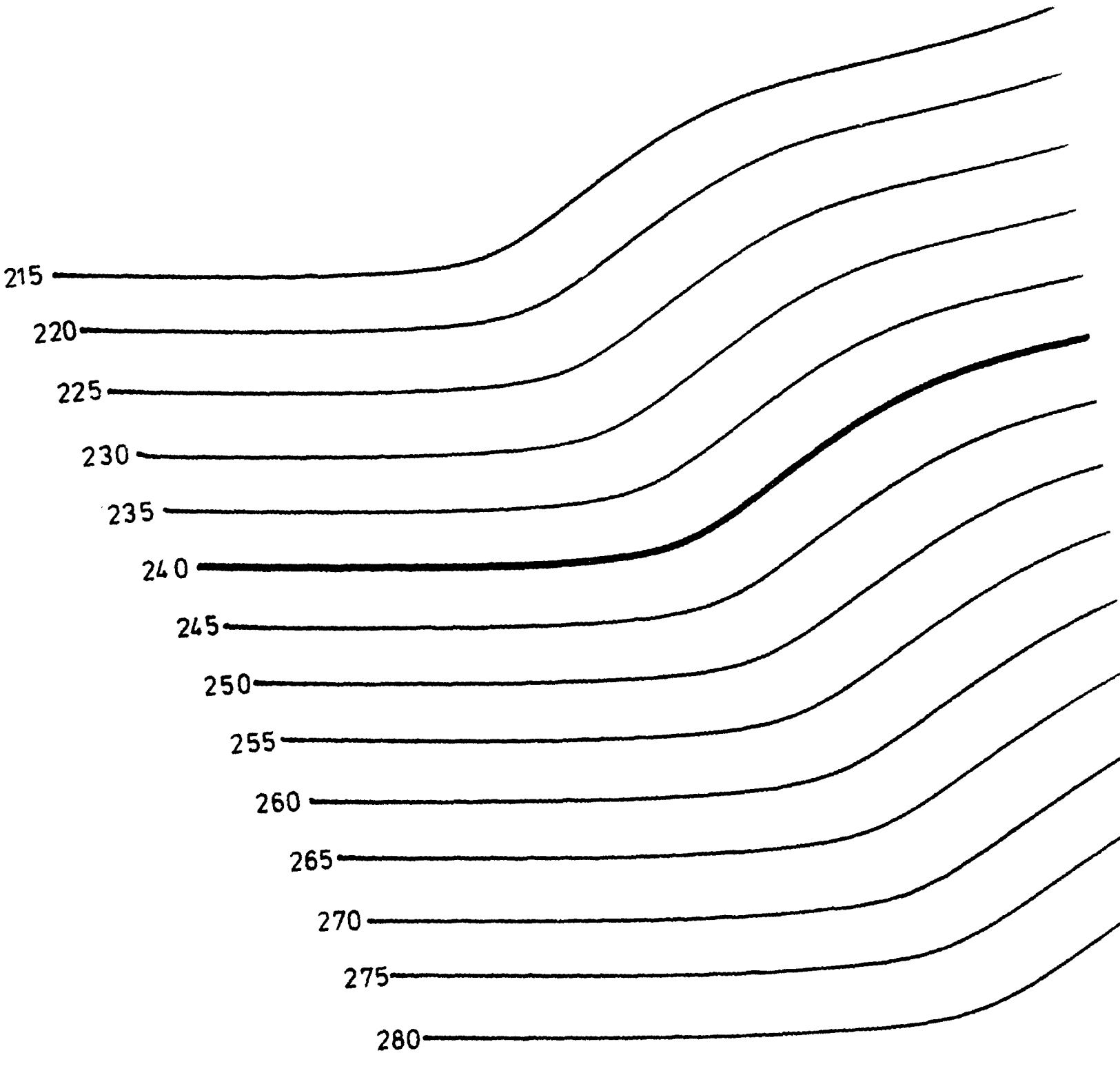


Annex 7

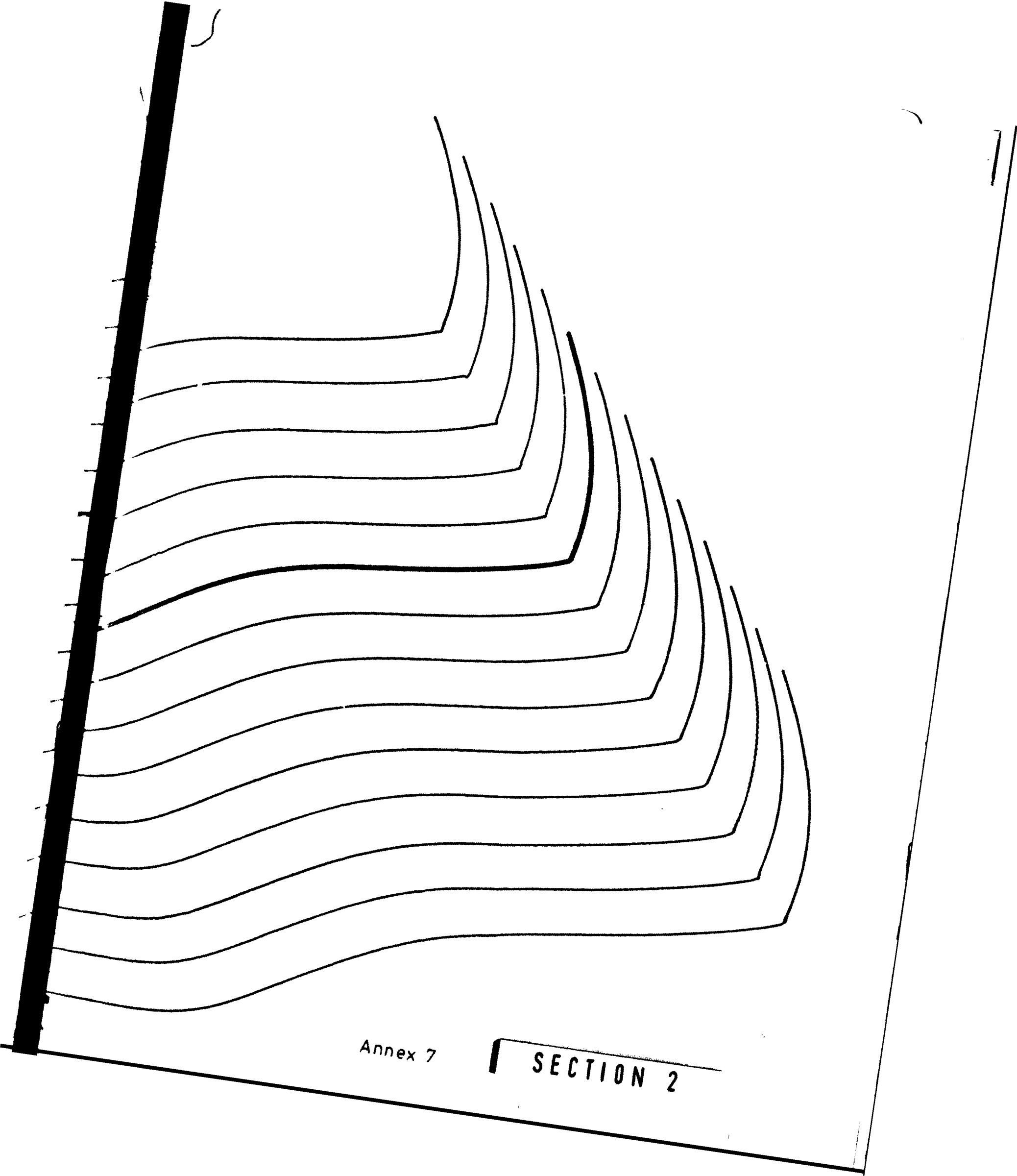
SECTION 2

LADIES VI

Heel height = 45 mm

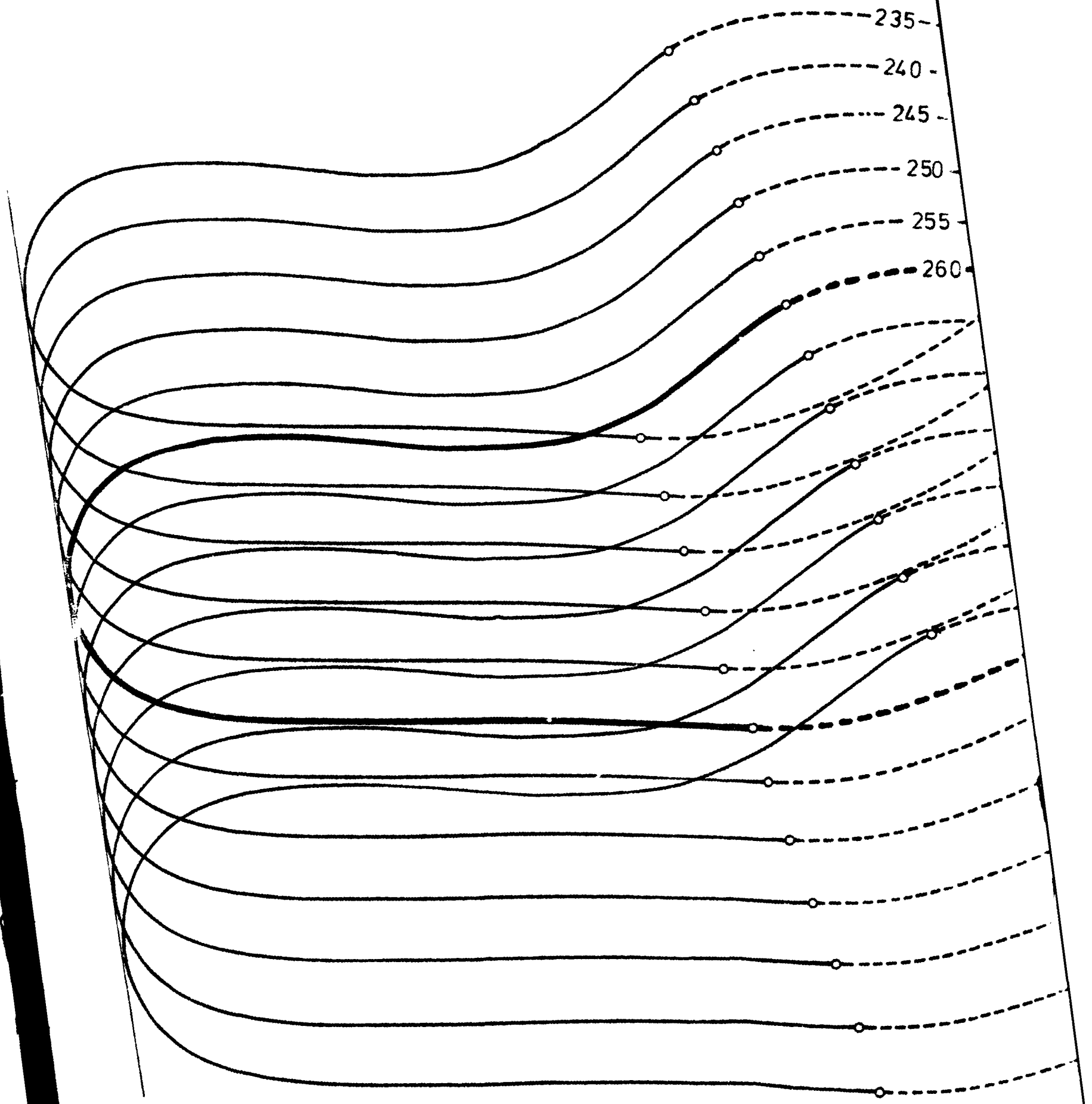


SECTION 1

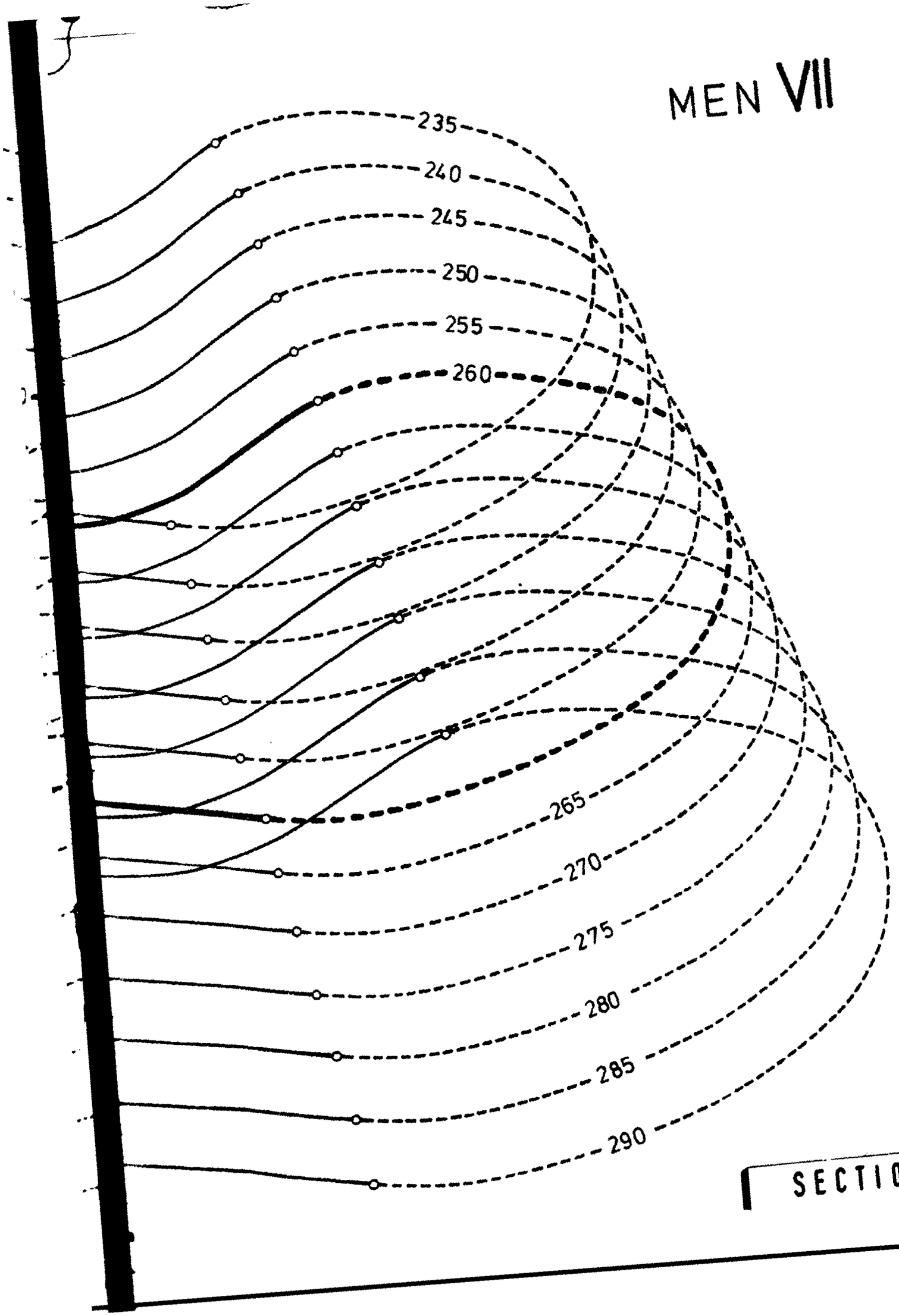


Annex 7

SECTION 2

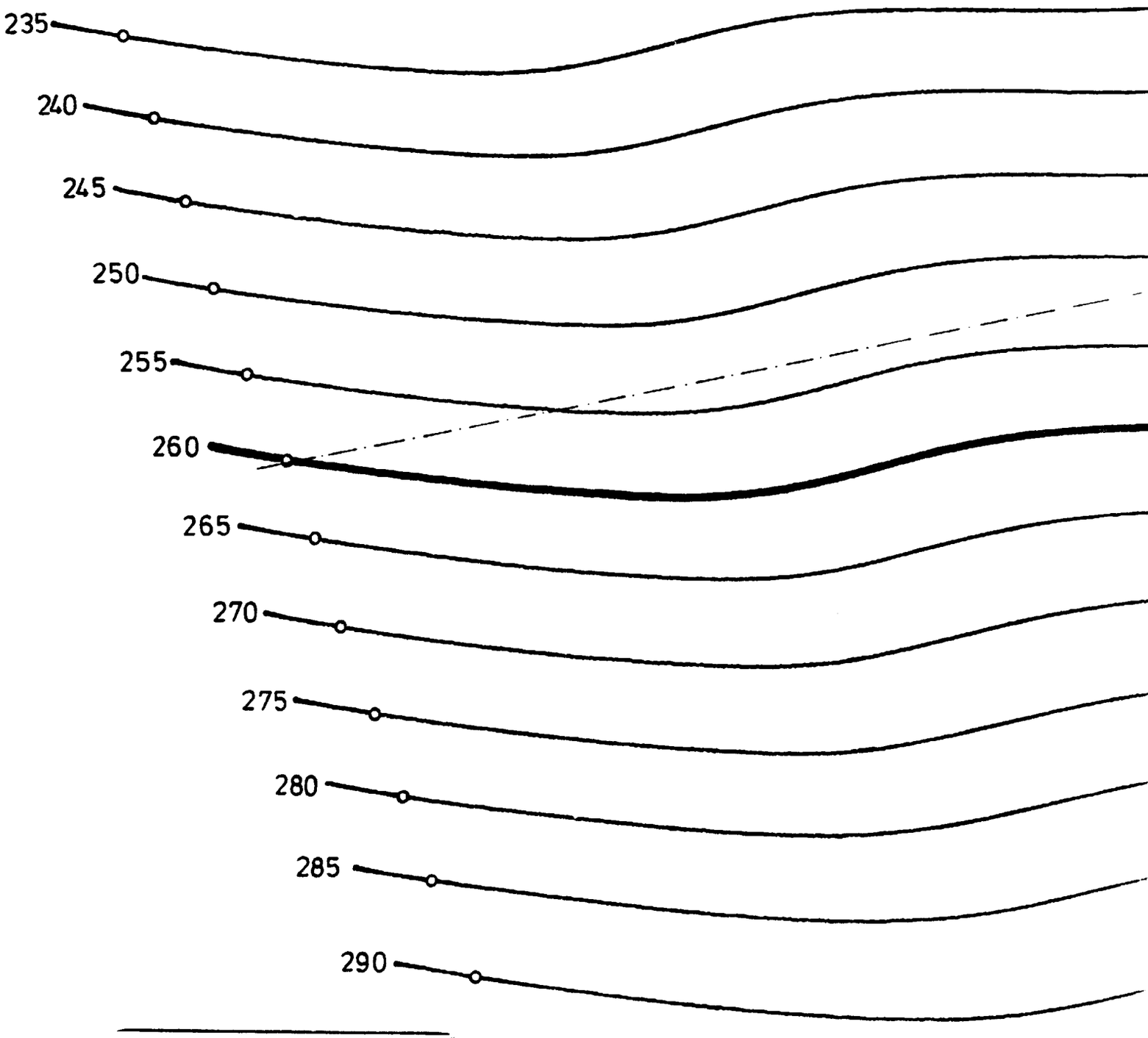

235
240
245
250
255
260

MEN VII



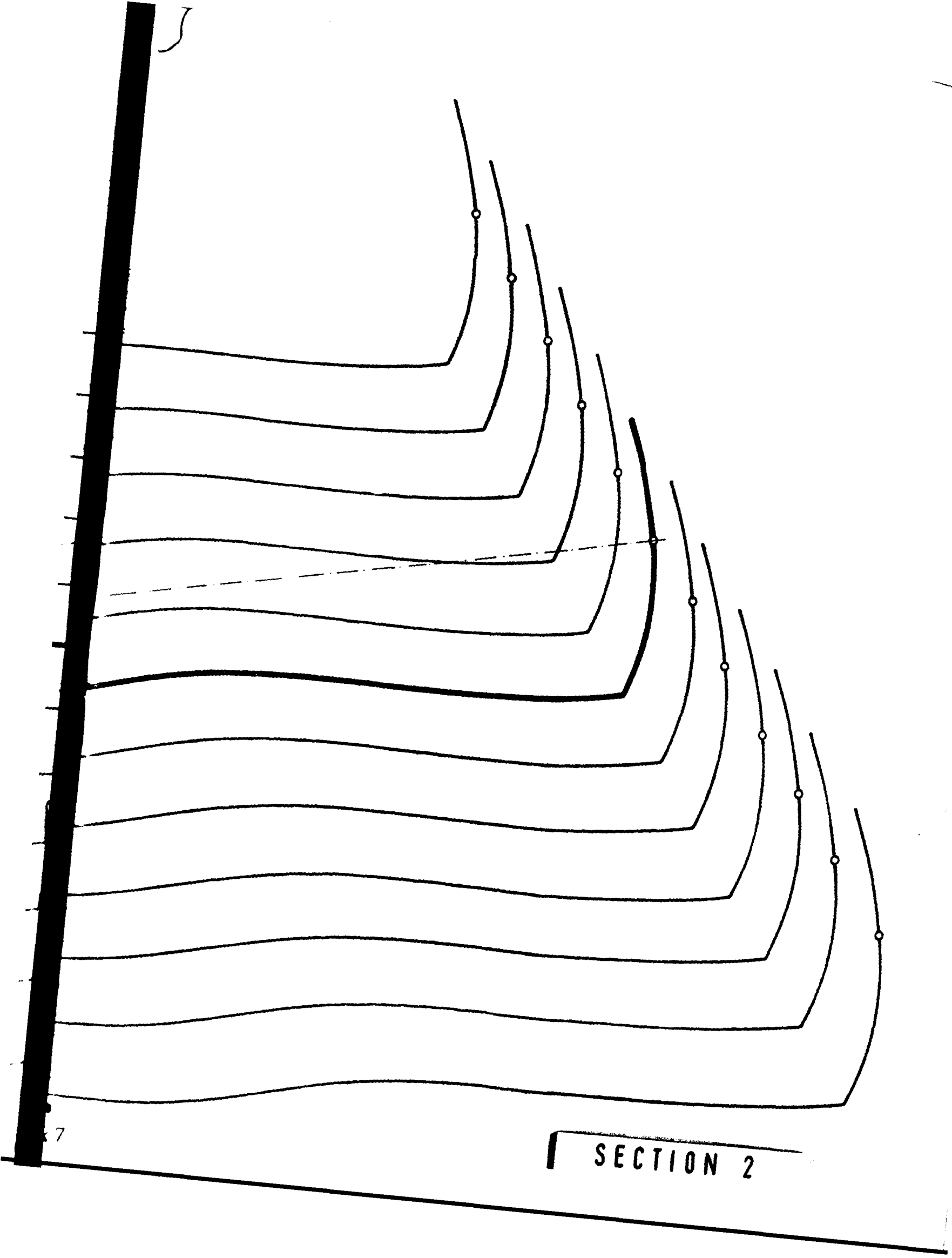
SECTION 2

MEN VII

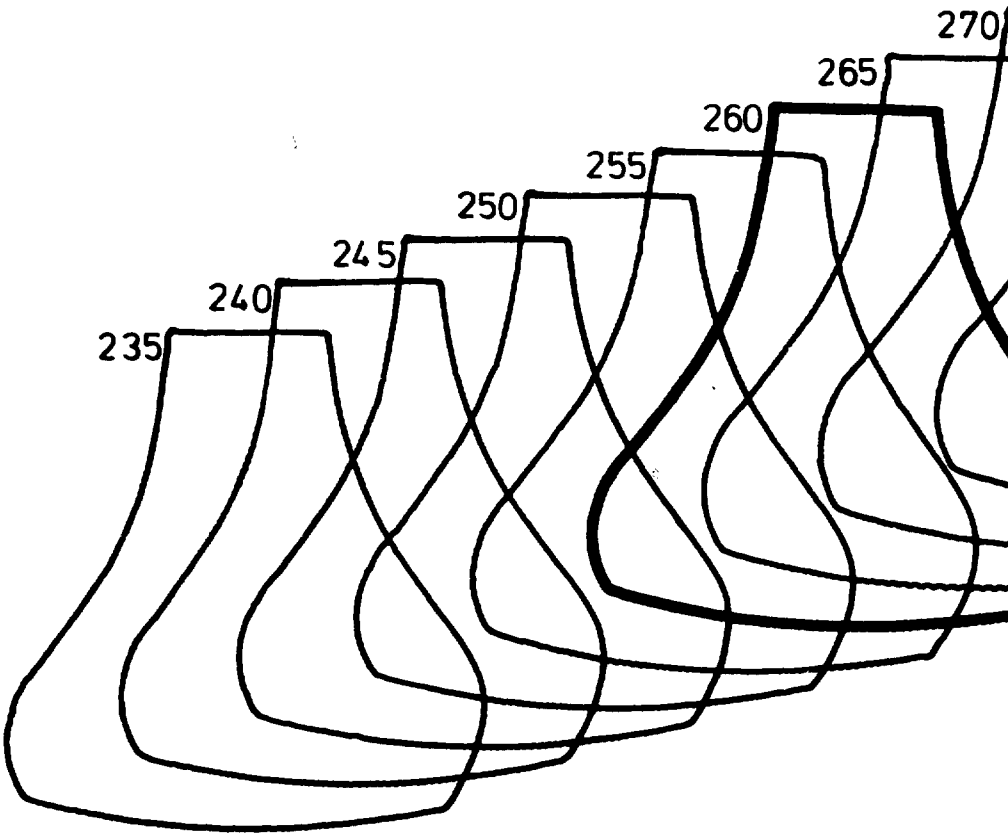


SECTION 1

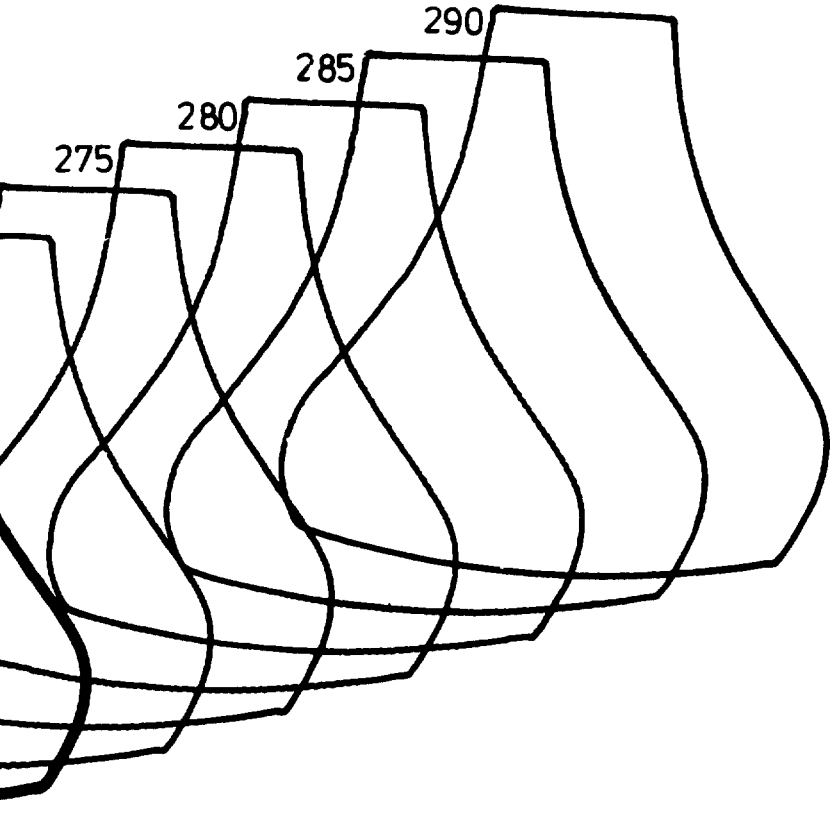
Annex 7


SECTION 2

MEN VII



Annex 7


290
285
280
275

Shoe size ranges /lengths/

Group: III /Children/

Degree of coverange	Pairs in series of 100		
	99%	95%	85%
160	-	-	-
165	-	-	-
170	2	3	-
175	6	7	9
180	10	10	12
185	12	12	14
190	12	13	14
195	12	13	14
200	12	12	14
205	9	10	12
210	9	9	11
215	6	6	-
220	5	5	-
225	3	-	-
230	-	-	-
235	-	-	-
Total	100	100	100
Number of sizes in the serie	13	11	8

Shoe size ranges /lengths/

Group: IV /Girls/

Degree of coverage	Pairs in series of 100		
	99%	95%	85%
200	-	-	-
205	1	-	-
210	2	-	-
215	2	3	-
220	7	8	9
225	14	14	16
230	16	16	18
235	17	17	19
240	16	16	18
245	1o	1o	12
250	6	7	8
255	5	6	-
260	2	3	-
265	2	-	-
270	-	-	-
Total	100	100	100
Number of sizes in the serie	13	10	7

Shoe size ranges /lengths/

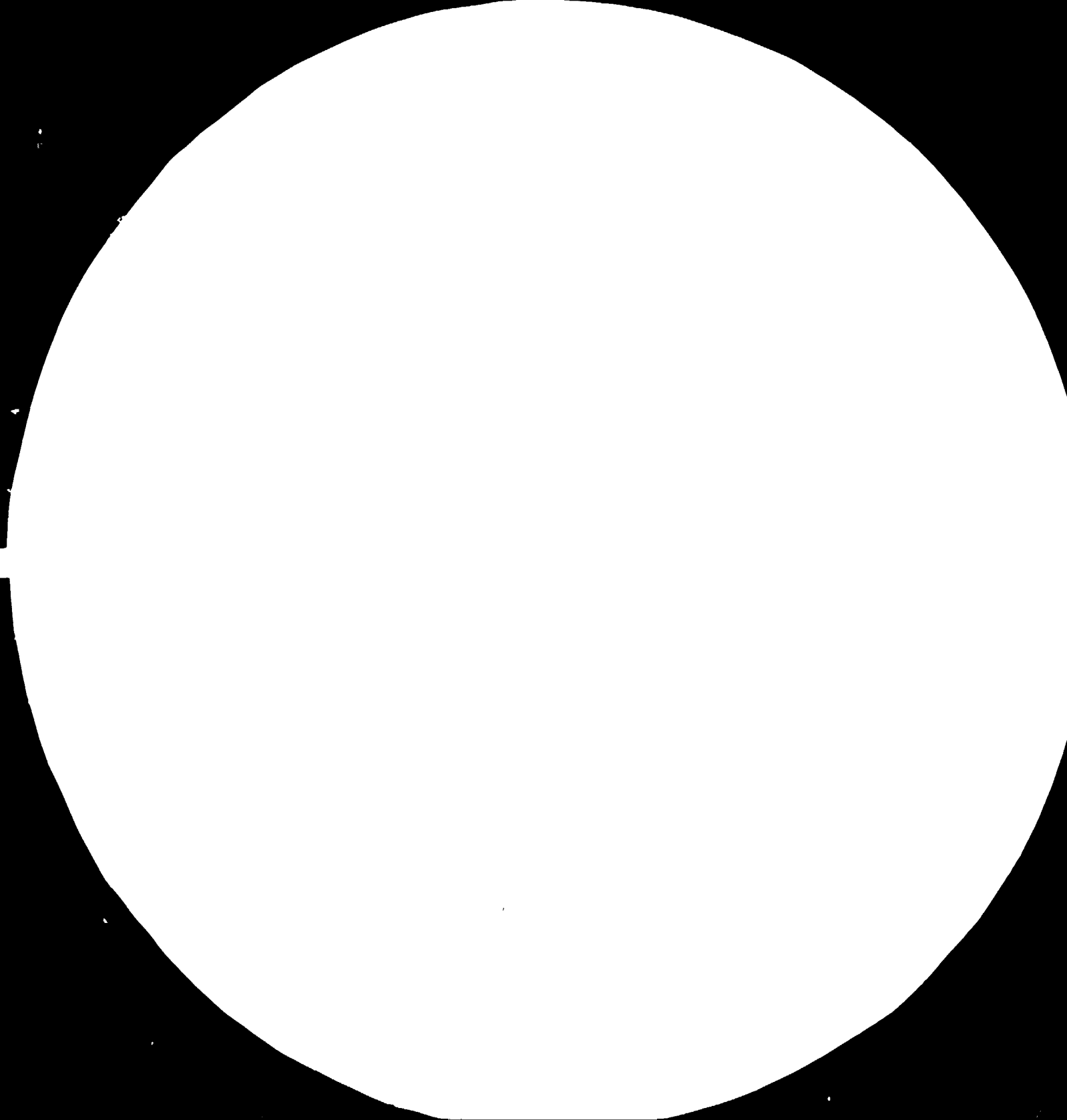
Group: V /Boys/

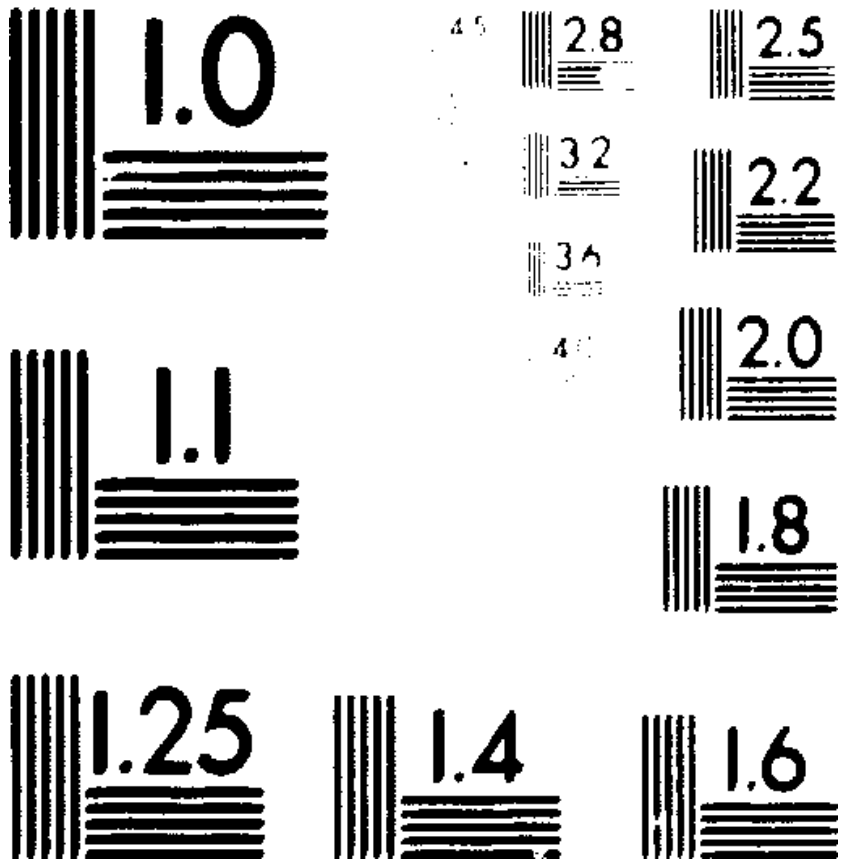
Degree of coverage	Pairs in series of 100		
	99 %	95 %	85 %
200	-	-	-
205	2	-	-
210	3	3	-
215	4	4	6
220	7	7	8
225	1o	1o	11
230	11	11	12
235	13	13	14
240	1o	1o	11
245	9	9	1o
250	7	8	9
255	7	7	8
260	6	6	6
265	5	5	5
270	3	4	-
275	2	3	-
280	1	-	-
285	-	-	-
290	-	-	-
Total	100	100	100
Number of sizes in the serie	16	14	11

Shoe size ranges /lengths/

Group: VI /Women/

Degree of coverage	Pairs in series of 100		
	99%	95%	85%
210	-	-	-
215	-	-	-
22o	1	-	-
225	5	5	6
230	11	11	12
235	15	15	15
240	16	16	16
245	17	17	17
250	16	16	16
255	9	1o	1o
260	5	6	8
265	3	3	-
270	1	1	-
275	1	-	-
280	-	-	-
285	..	-	-
Total	100	100	100
Number of sizes in the serie	12	10	8





Shoe size ranges /lengths/

Group: VII /Men/

Degree of coverage	Pairs in series of 100		
	99%	95%	85%
230	-	-	-
235	1	-	-
240	3	3	-
245	6	6	8
250	10	10	11
255	14	14	15
260	16	16	17
265	13	13	14
270	13	13	14
275	11	11	12
280	7	7	9
285	3	4	-
290	2	3	-
295	1	-	-
300	-	-	-
305	-	-	-
Total	100	100	100
Number of sizes in the serie	13	11	8

RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST, HUNGARY
Production Development Department

Foot Measurement Programme
TABLE OF RELATED MEAN VALUES

FILTER DATA NO.(1-33) = 3 — Children of age 1 - 10 years
FILTER MIN, MAX: 1 , 2
EXAMINED DATA NO.(1-33) = 33
MIN,MAX,INCREMENT: 24 , 36 , 1

	25	26	27	28	29	30	31	32	33	34	35	36
5	0	0	15	16	17	18	19	21	23	25	27	29
	.0	.0	.8	.4	.3	.6	.7	.6	.6	.2	.9	.3
6	0	0	106	109	112	116	119	123	128	132	135	138
	.0	.0	.7	.1	.5	.2	.8	.8	.1	.1	.7	.2
9	0	0	156	160	164	169	173	178	185	188	195	198
	.0	.0	.3	.8	.3	.9	.2	.5	.0	.5	.3	.3
10	0	0	208	215	221	229	236	243	252	260	265	274
	.0	.0	.2	.6	.1	.0	.5	.4	.2	.5	.9	.6
11	0	0	161	166	171	177	181	187	194	197	204	208
	.0	.0	.6	.5	.7	.1	.7	.3	.3	.7	.1	.0
12	0	0	141	145	148	152	156	161	166	169	174	177
	.0	.0	.4	.5	.8	.5	.1	.2	.2	.2	.7	.5
13	0	0	81	83	86	88	90	94	95	100	102	104
	.0	.0	.4	.8	.2	.5	.0	.2	.7	.6	.2	.1
14	0	0	17	18	18	18	19	19	20	19	20	21
	.0	.0	.3	.1	.0	.6	.1	.3	.1	.9	.8	.3
15	0	0	29	31	31	32	33	33	35	35	37	37
	.0	.0	.7	.0	.3	.4	.1	.8	.0	.3	.0	.4
16	0	0	29	30	31	32	33	34	35	35	37	38
	.0	.0	.2	.2	.4	.2	.0	.0	.0	.9	.5	.1
17	0	0	46	48	49	51	52	53	55	56	58	59
	.0	.0	.6	.8	.5	.1	.3	.6	.1	.6	.1	.1
18	0	0	27	29	29	30	30	31	32	32	33	34
	.0	.0	.8	.2	.3	.2	.5	.5	.1	.6	.9	.1
19	0	0	34	36	37	38	39	40	41	41	42	43
	.0	.0	.9	.6	.0	.3	.1	.0	.3	.6	.7	.4
20	0	0	34	36	37	38	39	39	40	40	41	42
	.0	.0	.6	.7	.0	.2	.4	.5	.9	.6	.5	.1
21	0	0	16	17	18	18	18	19	19	20	20	20
	.0	.0	.6	.8	.0	.7	.9	.8	.9	.3	.2	.6
22	0	0	20	20	21	22	22	22	23	23	23	24
	.0	.0	.1	.7	.1	.0	.1	.7	.2	.7	.6	.3
23	0	0	33	34	34	35	36	37	38	38	39	40
	.0	.0	.3	.2	.2	.4	.1	.1	.3	.8	.8	.4
24	0	0	41	42	43	44	45	46	48	49	50	51
	.0	.0	.4	.7	.1	.5	.6	.8	.5	.5	.3	.3
25	0	0	50	52	52	54	56	58	60	61	62	64
	.0	.0	.5	.2	.7	.6	.4	.1	.4	.9	.9	.3
26	0	0	56	58	58	60	63	65	67	69	70	71
	.0	.0	.3	.4	.8	.8	.0	.0	.3	.5	.5	.9
27	0	0	17	17	17	19	19	20	22	23	23	22
	.0	.0	.5	.6	.8	.3	.8	.8	.8	.9	.3	.6
28	0	0	5	5	5	5	5	5	5	5	5	6
	.0	.0	.2	.0	.1	.3	.3	.3	.6	.4	.9	.1
29	0	0	3	3	3	3	3	3	3	3	4	4
	.0	.0	.9	.3	.6	.6	.7	.5	.7	.9	.0	.7
30	0	0	10	11	11	12	12	12	13	14	15	16
	.0	.0	.9	.7	.5	.2	.8	.9	.8	.8	.2	.0
31	0	0	55	57	58	60	62	64	66	68	70	71
	.0	.0	.2	.2	.4	.2	.4	.1	.5	.3	.3	.5

32	0	0	139	144	149	154	159	163	169	173	178	183
	.0	.0	.1	.4	.2	.2	.3	.8	.1	.8	.5	.9
33	0	0	167	172	179	185	192	199	206	212	218	225
	.0	.0	.0	.9	.0	.9	.6	.0	.1	.3	.8	.6
34	0	0	64	66	68	70	72	74	76	77	80	81
	.0	.0	.2	.8	.4	.6	.1	.0	.3	.5	.2	.5
35	0	9	65	68	70	72	74	76	78	79	82	84
	.0	.0	.9	.6	.3	.6	.2	.2	.6	.8	.6	.0
36	0	0	97	101	102	106	108	111	114	116	120	121
	.0	.0	.5	.1	.7	.1	.3	.2	.7	.4	.1	.9
37	0	0	99	102	104	108	110	113	116	118	122	124
	.0	.0	.3	.9	.5	.0	.3	.4	.9	.7	.4	.4
38	0	0	36	36	36	35	35	35	35	35	35	35
	.0	.0	.7	.8	.0	.9	.9	.9	.9	.9	.5	.2
39	0	0	94	97	99	103	107	110	114	118	121	124
	.0	.0	.0	.4	.8	.5	.2	.7	.6	.2	.2	.5

FREQUENCIES:

0	0	32	107	224	277	208	253	224	156	154	112

NUMBER OF CUMULATED DATA: 1,779
OUTRANGED DATA: 13

RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST, HUNGARY
Production Development Department

Foot Measurement Programme
TABLE OF RELATED MEAN VALUES

FILTER DATA NO.(1-33) = 3 Girls of age 11 - 14 years
FILTER MIN, MAX 1 , 1
EXAMINED DATA NO.(1-33) = 33
MIN,MAX,INCREMENT = 30 , 43 , 1

	31	32	33	34	35	36	37	38	39	40	41	42	43
5	0	0	27	31	31	36	39	42	45	48	49	52	54
	.0	.0	.7	.0	.8	.1	.7	.7	.0	.4	.1	.1	.0
6	0	0	134	139	140	145	148	150	155	155	159	158	157
	.0	.0	.6	.7	.3	.5	.8	.8	.2	.0	.3	.5	.0
9	0	0	197	195	199	200	200	212	216	219	224	231	242
	.0	.0	.5	.7	.0	.4	.4	.7	.2	.4	.3	.2	.0
10	0	0	254	266	271	279	285	291	299	300	314	318	330
	.0	.0	.5	.1	.6	.3	.4	.8	.3	.1	.5	.1	.0
11	0	0	197	206	208	212	218	223	226	232	240	240	259
	.0	.0	.4	.9	.3	.2	.3	.6	.2	.4	.8	.8	.0
12	0	0	172	168	178	185	190	194	196	202	209	211	224
	.0	.0	.4	.5	.9	.3	.4	.5	.4	.5	.0	.1	.0
13	0	0	97	101	103	106	106	108	100	110	111	112	110
	.0	.0	.5	.5	.8	.4	.0	.3	.7	.0	.5	.1	.0
14	0	0	20	19	20	21	21	22	22	22	24	22	31
	.0	.0	.0	.4	.9	.4	.4	.5	.7	.3	.1	.5	.0
15	0	0	36	34	37	37	38	39	40	40	42	39	53
	.0	.0	.7	.5	.4	.8	.6	.9	.8	.5	.6	.7	.0
16	0	0	38	36	38	39	40	41	42	43	44	43	48
	.0	.0	.0	.6	.9	.3	.4	.0	.6	.3	.5	.2	.0
17	0	0	55	57	50	60	61	63	65	66	68	70	68
	.0	.0	.5	.7	.0	.2	.9	.7	.3	.9	.7	.7	.0
18	0	0	30	32	33	34	35	36	37	38	38	41	44
	.0	.0	.2	.5	.8	.7	.6	.7	.5	.0	.9	.1	.0
19	0	0	39	42	43	44	45	47	48	48	49	52	50
	.0	.0	.5	.4	.0	.7	.8	.0	.3	.1	.0	.4	.0
20	0	0	37	40	41	42	44	44	45	46	46	47	46
	.0	.0	.9	.9	.2	.9	.0	.4	.5	.0	.7	.7	.0
21	0	0	19	20	20	20	20	21	21	22	23	22	23
	.0	.0	.0	.6	.0	.3	.8	.9	.2	.5	.8	.7	.0
22	0	0	22	24	23	24	24	25	25	25	27	26	31
	.0	.0	.0	.1	.7	.0	.6	.7	.1	.7	.5	.4	.0
23	0	0	38	40	40	40	42	42	42	43	45	44	45
	.0	.0	.8	.4	.1	.9	.1	.5	.5	.6	.5	.5	.0
24	0	0	49	51	51	52	53	53	54	54	57	57	60
	.0	.0	.7	.1	.0	.2	.5	.6	.1	.5	.0	.1	.0
25	0	0	62	64	64	65	67	67	68	68	71	71	77
	.0	.0	.8	.1	.0	.7	.7	.2	.4	.5	.6	.0	.0
26	0	0	71	73	71	73	76	76	77	77	80	80	88
	.0	.0	.4	.2	.9	.6	.6	.1	.3	.7	.5	.7	.0
27	0	0	21	20	20	20	21	23	23	24	26	23	19
	.0	.0	.1	.2	.4	.7	.7	.1	.1	.2	.3	.0	.0
28	0	0	6	6	6	6	6	6	6	6	6	7	6
	.0	.0	.0	.4	.0	.2	.4	.6	.6	.9	.5	.4	.0
29	0	0	4	4	4	4	4	5	5	5	6	7	8
	.0	.0	.9	.6	.0	.7	.9	.3	.3	.5	.8	.5	.0
30	0	0	13	14	14	14	16	16	17	17	18	21	16
	.0	.0	.8	.8	.2	.9	.1	.9	.8	.6	.1	.5	.0
31	0	0	69	71	72	73	76	78	79	81	84	84	94
	.0	.0	.3	.2	.0	.6	.0	.5	.3	.2	.2	.5	.0

32	0	0	167	174	178	183	189	192	199	203	208	211	226
	.0	.0	.6	.0	.6	.7	.2	.5	.4	.6	.8	.2	.0
33	0	0	207	212	219	225	232	238	245	251	258	264	270
	.0	.0	.5	.4	.4	.9	.4	.6	.6	.9	.6	.7	.0
34	0	0	77	79	81	84	86	88	91	91	93	95	98
	.0	.0	.6	.3	.9	.0	.3	.1	.0	.5	.5	.7	.0
35	0	0	79	81	84	86	88	90	93	94	96	98	100
	.0	.0	.8	.6	.3	.4	.8	.7	.6	.2	.4	.6	.9
36	0	0	116	119	122	125	128	130	133	135	139	140	143
	.0	.0	.5	.7	.0	.0	.4	.7	.5	.1	.0	.2	.0
37	0	0	118	122	124	127	130	133	136	137	141	143	145
	.0	.0	.7	.0	.4	.4	.9	.3	.1	.9	.9	.2	.9
38	0	0	37	37	36	35	36	35	34	34	34	34	35
	.0	.0	.3	.4	.0	.8	.1	.2	.9	.3	.6	.0	.9
39	0	0	117	120	122	125	129	131	134	137	141	144	150
	.0	.0	.6	.4	.2	.6	.8	.7	.9	.5	.6	.0	.0

FREQUENCIES:

0	0	12	9	64	107	106	109	48	34	16	7	1

NUMBER OF CUMULATED DATA: 513
OUTRANGED DATA: 955

RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST, HUNGARY
Production Development Department
****
Foot Measurement Programme
TABLE OF RELATED MEAN VALUES
****
FILTER DATA NO.(1-33) = 3
FILTER MIN, MAX: 2 , 2
EXAMINED DATA NO.(1-33) = 33
MIN,MAX,INCREMENT: 31 , 44 , 1

Boys of age 11 - 14 years

	32	33	34	35	36	37	38	39	40	41	42	43	44
5	0	0	27	28	30	32	36	39	42	43	46	51	47
	.0	.0	.0	.8	.0	.7	.1	.0	.7	.8	.6	.5	.4
6	0	0	135	137	139	143	149	153	157	160	163	166	165
	.0	.0	.4	.4	.4	.4	.1	.0	.1	.4	.2	.0	.7
9	0	0	195	200	202	210	216	220	229	228	237	241	248
	.0	.0	.7	.4	.6	.2	.7	.0	.2	.7	.0	.4	.0
10	0	0	270	276	281	288	297	305	313	318	326	334	336
	.0	.0	.9	.0	.6	.5	.7	.2	.6	.0	.5	.0	.2
11	0	0	199	209	213	219	222	229	233	237	245	252	249
	.0	.0	.9	.8	.1	.1	.2	.8	.7	.8	.4	.9	.7
12	0	0	168	179	180	187	192	196	202	204	211	216	217
	.0	.0	.7	.0	.4	.8	.5	.5	.8	.2	.9	.7	.5
13	0	0	105	105	109	109	111	116	116	117	120	124	117
	.0	.0	.1	.8	.2	.3	.7	.9	.0	.5	.9	.6	.1
14	0	0	19	22	21	23	23	23	24	24	24	21	26
	.0	.0	.2	.3	.9	.4	.6	.6	.2	.2	.7	.1	.7
15	0	0	36	38	38	40	41	41	43	42	43	40	47
	.0	.0	.0	.5	.1	.1	.2	.7	.0	.9	.9	.6	.1
16	0	0	37	38	38	40	42	42	44	45	47	45	50
	.0	.0	.3	.6	.5	.2	.1	.6	.8	.3	.7	.9	.0
17	0	0	57	58	60	62	64	65	69	68	72	73	73
	.0	.0	.9	.7	.3	.5	.4	.7	.0	.7	.6	.6	.4
18	0	0	32	33	35	36	38	40	40	40	42	44	42
	.0	.0	.8	.7	.1	.8	.3	.1	.0	.4	.6	.4	.0
19	0	0	41	43	44	46	48	49	50	50	52	54	53
	.0	.0	.5	.4	.6	.4	.0	.7	.7	.4	.6	.3	.4
20	0	0	41	43	43	45	45	46	47	47	48	49	49
	.0	.0	.4	.0	.6	.1	.5	.7	.8	.5	.3	.8	.7
21	0	0	20	20	21	21	21	22	23	22	23	25	22
	.0	.0	.4	.7	.1	.7	.8	.2	.5	.8	.2	.6	.2
22	0	0	24	23	25	25	26	26	27	27	28	29	28
	.0	.0	.0	.9	.0	.4	.1	.5	.2	.2	.0	.3	.8
23	0	0	39	40	41	42	43	44	44	45	45	47	46
	.0	.0	.6	.8	.2	.7	.5	.4	.6	.2	.5	.1	.0
24	0	0	50	52	53	54	55	57	57	58	58	59	58
	.0	.0	.4	.1	.0	.2	.6	.0	.6	.1	.4	.9	.1
25	0	0	64	65	66	68	70	72	73	74	73	75	75
	.0	.0	.1	.2	.9	.6	.3	.3	.0	.0	.2	.9	.0
26	0	0	72	73	75	77	79	81	82	83	83	85	84
	.0	.0	.3	.5	.4	.5	.2	.2	.3	.5	.9	.6	.1
27	0	0	21	22	21	22	22	23	24	24	25	25	26
	.0	.0	.7	.0	.5	.4	.7	.6	.8	.3	.5	.0	.1
28	0	0	5	6	6	6	6	7	7	7	7	7	6
	.0	.0	.9	.4	.3	.6	.7	.2	.1	.7	.2	.8	.8
29	0	0	4	4	4	4	4	5	5	5	6	6	6
	.0	.0	.0	.0	.4	.2	.7	.0	.2	.7	.4	.7	.1
30	0	0	15	15	15	16	16	16	17	18	19	19	21
	.0	.0	.0	.1	.9	.1	.2	.4	.9	.1	.9	.0	.5
31	0	0	69	72	73	76	77	80	[illegible]	83	84	87	88
	.0	[illegible]	.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.7	.6	.0

32	0	0	175	180	185	190	195	201	204	211	217	221	224
	.0	.0	.3	.5	.5	.9	.7	.0	.9	.6	.0	.0	.7
33	0	0	213	219	225	232	239	245	252	258	265	271	277
	.0	.0	.0	.4	.6	.6	.0	.8	.3	.6	.6	.7	.5
34	0	0	78	82	83	86	90	92	95	95	100	100	103
	.0	.0	.8	.0	.1	.7	.2	.3	.5	.0	.4	.2	.4
35	0	0	81	84	85	89	92	95	98	98	103	103	106
	.0	.0	.1	.3	.6	.2	.7	.0	.2	.6	.2	.1	.4
36	0	0	118	122	124	129	133	136	140	141	145	147	149
	.0	.0	.4	.9	.4	.5	.8	.7	.1	.0	.9	.3	.4
37	0	0	120	125	126	132	136	139	142	143	148	150	152
	.0	.0	.7	.2	.8	.0	.3	.4	.0	.8	.7	.3	.4
38	0	0	36	36	36	36	36	36	35	35	35	34	33
	.0	.0	.9	.6	.5	.4	.2	.2	.9	.6	.0	.9	.9
39	0	0	120	123	126	[illegible]	133	137	140	143	146	149	150
	.0	.0	.2	.2	.6	[illegible]	.6	.3	.3	.3	.2	.4	.6

FREQUENCIES:

0	0	33	97	142	138	113	109	87	75	62	19	14

NUMBER OF CUMULATED DATA: 887
OUTRANGED DATA: 581

[illegible] LEATHER AND FOOTWEAR INDUSTRIES [illegible]
[illegible]
[illegible] programme
TABLE OF RELATED [illegible] VALUES

FILTER DATA NO. [illegible] = 3
FILTER MIN. MAX [illegible]
[illegible] = 33
MIN.MAX.INCREMENT [illegible] 43 . 1

Women of age 15 - 70 years

	32	33	34	35	36	37	38	39	40	41	42	43
5	[illegible]	0	45	45	47	49	51	53	54	56	60	64
	.0	.0	.0	.5	.9	.1	.3	.0	.3	.3	.6	.3
6	[illegible]	0	152	149	151	153	155	157	159	161	163	166
	.0	.0	.8	.1	.1	.3	.3	.8	.2	.5	[illegible]	.0
9	0	0	204	201	207	210	214	216	220	226	[illegible]	241
	.0	.0	.4	.9	.2	.9	.9	.8	.6	.7	.7	.0
10	0	0	272	278	283	287	295	300	304	314	318	334
	.0	.0	.2	.6	.3	.1	.3	.0	.6	.5	.5	.0
11	0	0	215	213	218	223	228	231	235	239	[illegible]	255
	.0	.0	.4	.2	.2	.7	.4	.7	.0	.0	.5	[illegible]
12	0	0	185	188	190	193	192	200	204	207	[illegible]	223
	.3	.0	.0	.6	.7	.9	[illegible]	.6	.4	.4	.4	.3
13	0	0	102	105	105	108	109	110	111	119	[illegible]	106
	.0	.0	.0	.8	.9	.9	.3	.5	.7	[illegible]	.0	[illegible]
14	0	0	22	22	21	21	22	22	22	23	[illegible]	26
	.0	.0	.0	.0	.1	.2	.0	.1	.0	.2	[illegible]	.0
15	0	0	38	38	37	38	39	39	40	41	40	44
	.0	.0	.0	.1	.2	.0	.5	.7	.0	.8	[illegible]	[illegible]
16	0	0	38	38	39	39	41	42	42	44	[illegible]	48
	.0	.0	.6	.4	.5	.9	.3	.1	.4	.1	.9	.3
17	0	0	61	62	63	63	65	66	68	70	71	74
	.0	.0	.2	.4	.1	.9	.9	.9	.2	.4	.5	.3
18	0	0	37	36	37	37	38	38	40	41	41	41
	.0	.0	.0	.2	.1	.8	.6	.7	.1	.0	[illegible]	.5
19	0	0	46	45	47	48	48	49	50	50	51	53
	.0	.0	.8	.2	.0	.2	.7	.1	.3	[illegible]	.2	.3
20	0	0	[illegible]	42	44	45	45	46	46	46	47	45
	.0	.0	.0	.6	.7	.0	.4	.0	.4	.8	.8	.0
21	0	0	20	21	22	22	22	23	23	23	24	24
	.0	.0	.0	.5	.1	.4	.5	.0	.4	.7	.1	.6
22	0	0	24	24	25	25	26	26	26	27	27	26
	.0	.0	.8	.4	.4	.7	.0	.7	.9	.7	.8	.6
23	0	0	44	41	42	42	43	44	44	45	45	[illegible]
	.0	.0	.4	.3	.7	.6	.7	.3	.5	.7	.7	.3
24	0	0	55	52	54	53	55	55	55	57	57	54
	.0	.0	.8	.1	.0	.9	.0	.6	.7	.1	[illegible]	.3
25	0	0	70	64	67	67	68	69	69	71	70	70
	.0	.0	.2	.7	.6	.7	.8	.6	.7	.7	.4	.0
26	0	0	78	72	77	76	78	78	79	82	79	84
	.0	.0	.0	.9	.0	.8	.3	.8	.1	.0	.3	.3
27	0	0	24	20	22	22	23	22	22	22	24	22
	.0	.0	.4	.5	.3	.4	.3	.2	.4	.7	.0	.0
28	0	0	5	6	[illegible]	6	6	6	6	6	6	7
	.0	.0	.4	.2	.0	.2	.2	.3	.3	[illegible]	.2	.5
29	0	0	[illegible]	5	5	5	5	6	6	7	7	9
	.0	.0	[illegible]	.1	.2	.5	[illegible]	.1	.1	.1	[illegible]	.5
30	0	0	10	15	14	15	16	17	18	19	21	19
	.0	.0	[illegible]	[illegible]	[illegible]	.7	.8	[illegible]	.0	[illegible]	[illegible]	.5
31	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

32	0	0	174	180	185	189	194	200	204	209	214	218
	.0	.0	.6	.0	.4	.3	.6	.1	.2	.6	.1	.0
33	0	0	214	219	226	232	238	246	252	258	265	272
	.0	.0	.2	.7	.1	.7	.9	.1	.0	.6	.3	.6
34	0	0	85	83	86	88	90	91	92	94	95	101
	.0	.0	.4	.6	.5	.1	.0	.2	.8	.9	.2	.6
35	0	0	87	85	88	90	92	93	95	97	98	104
	.0	.0	.5	.9	.9	.6	.6	.9	.5	.8	.1	.5
36	0	0	129	124	129	130	133	135	137	140	141	145
	.0	.0	.8	.9	.3	.8	.8	.6	.4	.7	.0	.0
37	0	0	131	127	131	133	136	138	140	143	143	147
	.0	.0	.9	.2	.7	.2	.3	.2	.1	.5	.9	.9
38	0	0	38	36	37	36	36	35	34	35	33	34
	.0	.0	.8	.3	.0	.1	.0	.3	.8	.1	.5	.4
39	0	0	124	122	127	129	133	136	138	142	143	149
	.0	.0	.1	.9	.7	.9	.1	.0	.4	.5	.4	.0

FREQUENCIES:

0	0	5	25	117	175	211	214	98	55	19	3

NUMBER OF CUMULATED DATA: 927
OUTRANGED DATA: 1,933

RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST, HUNGARY
Production Development Department

Foot Measurement Programme
TABLE OF RELATED MEAN VALUES

FILTER DATA NO.(1-33) = 3
FILTER MIN. MAX: 2 , 2
EXAMINED DATA NO.(1-33) = 33
MIN.MAX.INCREMENT: 35 , 47 , 1

Men of age 15 - 70 years

	36	37	38	39	40	41	42	43	44	45	46	47
5	0	0	49	51	52	53	55	58	60	61	65	64
	.0	.0	.0	.9	.7	.9	.9	.6	.7	.7	.0	.5
6	0	0	158	163	164	167	168	171	174	175	176	164
	.0	.0	.4	.1	.1	.2	.6	.3	.0	.4	.8	.7
9	0	0	224	229	233	236	240	245	249	251	252	254
	.0	.0	.5	.7	.3	.3	.4	.7	.1	.8	.7	.7
10	0	0	304	310	316	321	329	335	338	348	350	325
	.0	.0	.0	.9	.0	.7	.9	.3	.6	.2	.4	.7
11	0	0	229	234	238	243	248	254	256	258	264	262
	.0	.0	.6	.3	.6	.8	.5	.3	.1	.9	.1	.5
12	0	0	195	200	205	209	212	217	218	220	223	225
	.0	.0	.4	.6	.4	.7	.7	.8	.6	.4	.7	.2
13	0	0	120	121	122	124	125	127	131	129	135	123
	.0	.0	.0	.7	.0	.3	.6	.6	.5	.4	.0	.7
14	0	0	24	24	23	24	24	24	25	25	24	27
	.0	.0	.0	.0	.8	.4	.6	.8	.1	.2	.2	.5
15	0	0	41	42	42	43	44	44	45	45	45	49
	.0	.0	.9	.1	.6	.7	.2	.8	.2	.2	.8	.7
16	0	0	41	43	43	44	46	46	47	46	48	49
	.0	.0	.8	.0	.5	.8	.1	.6	.6	.8	.5	.0
17	0	0	67	69	70	71	73	74	76	77	80	80
	.0	.0	.6	.4	.9	.6	.2	.8	.5	.4	.0	.7
18	0	0	41	42	42	43	43	44	45	48	44	48
	.0	.0	.2	.1	.7	.2	.4	.9	.4	.5	.8	.5
19	0	0	51	52	53	53	53	55	56	57	55	58
	.0	.0	.7	.9	.4	.7	.9	.6	.0	.7	.8	.2
20	0	0	49	50	50	50	50	52	52	53	51	54
	.0	.0	.8	.1	.6	.6	.7	.2	.2	.4	.4	.0
21	0	0	23	23	24	24	24	24	25	25	26	26
	.0	.0	.8	.6	.3	.0	.3	.6	.4	.7	.2	.5
22	0	0	28	28	28	29	30	30	31	31	32	31
	.0	.0	.5	.8	.7	.1	.0	.1	.2	.2	.5	.5
23	0	0	46	47	46	47	48	49	49	49	50	51
	.0	.0	.0	.2	.8	.5	.2	.0	.3	.1	.0	.2
24	0	0	58	60	60	60	61	62	62	62	62	61
	.0	.0	.1	.0	.0	.7	.5	.2	.7	.0	.7	.5
25	0	0	73	76	76	77	78	79	80	79	80	79
	.0	.0	.1	.0	.4	.2	.2	.3	.4	.5	.5	.7
26	0	0	83	86	86	87	89	90	90	89	89	88
	.0	.0	.4	.2	.4	.6	.0	.1	.8	.8	.2	.0
27	0	0	24	24	24	24	26	25	27	27	25	26
	.0	.0	.2	.7	.8	.5	.0	.7	.3	.0	.7	.5
28	0	0	6	6	7	7	7	8	8	9	9	10
	.0	.0	.8	.8	.0	.3	.4	.2	.0	.0	.1	.0
29	0	0	5	5	5	5	6	7	6	7	8	7
	.0	.0	.4	.4	.4	.8	.1	.0	.6	.2	.2	.7
30	0	0	16	16	17	18	19	20	21	22	23	23
	.0	.0	.4	.5	.2	.0	.7	.4	.1	.3	.2	.7
31	0	0	81	83	85	86	87	89	91	91	94	92
	.0	.0	.0	.3	.0	.5	.4	.5	.2	.9	.2	.5

32	0	0	196	202	207	212	217	222	227	231	230	235
	.0	.0	.3	.9	.5	.1	.5	.6	.4	.9	.5	.0
33	0	0	239	246	252	258	266	272	278	285	291	297
	.0	.0	.9	.3	.6	.9	.0	.5	.6	.2	.2	.7
34	0	0	93	95	97	98	100	102	103	104	104	107
	.0	.0	.6	.9	.0	.6	.0	.3	.7	.5	.4	.2
35	0	0	96	98	99	101	102	105	106	107	107	110
	.0	.0	.1	.5	.6	.3	.9	.1	.7	.6	.6	.5
36	0	0	139	143	143	146	148	151	153	153	154	158
	.0	.0	.7	.1	.8	.1	.3	.2	.0	.6	.4	.5
37	0	0	142	145	146	148	151	154	156	156	157	161
	.0	.0	.1	.7	.5	.9	.1	.1	.0	.7	.5	.8
38	0	0	37	37	37	36	36	36	35	34	34	33
	.0	.0	.6	.7	.1	.8	.5	.2	.8	.9	.1	.1
39	0	0	136	140	143	145	149	152	154	156	158	160
	.0	.0	.6	.6	.0	.9	.3	.3	.9	.7	.7	.5

FREQUENCIES:

0	0	74	230	306	433	355	258	159	54	14	8

NUMBER OF CUMULATED DATA: 1,893
OUTRANGED DATA: 967

Girth table generation
/MONDOPOINT System/

Size group	Middle size, mm	Last girth, mm	Increment of joint girth, mm	
			from size to size*	from fit to fit
I Babies	113	141	3.5	6
II Young children	130	161	3.5	6
III Children	195	182	3.5	6
IV Girls	235	215	3.5	6
V Boys	235	215	4.0	6
VI Women	240	221**	3.5	6
VII Men	260	239	3.0	6

* Difference of adjecent sizes = 5mm

** 15mm heel height

Remark: The last girths correspond to the middle fit /ø/

Girth table generation
/Paris point system/

Size group	Middle size			Increment of girth, mm	
	length, P. point	fit	girth, mm	from size to size	from fit to fit
I Babies	19	5	141	4.5	5
II Young children	24	5	161	3.5	5
III Children	30	4	182	4.5	5
IV Girls	36	6	215	4.5	5
V Boys	36	6	215	5.0	5
VI Women	37	7	221*	4.0	5
VII Men	40	8	239	3.5	5

* 15mm heel height

Remark: The fit groups correspond to the last girth table adopted in Europe / see "Handbuch für die Schuhindustrie", 13. Ausgabe - Dr. Alfred Hüthig Verlag GmbH, Heidelberg - p. 196/.

```
10 REM  ####################
20 REM  ##                ##
30 REM  ##  E T P R 1 8   ##
40 REM  ##                ##
50 REM  ####################
60 CLEAR2000:WIDTH(255):POKE&H201F,&H24:POKE&H2020,&H20:DEFINTA-Z
70 DEFUSR0=&H3509:DIMX$(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
80 PRINT"ETHIOPIAN PROJECT * DATA FILTERING & PREPARING PROGRAM
90 DEFUSR1=&H350C:DIMPO(75)
100 DATA&HC3,&H00,&H38,&HC3,&H0C,&H38,&HCA,&H33,&H38,&HCA,&H23,&H37
110 DATA&HEB,&H22,&HFE,&H37,&H2A,&HFE,&H37
120 DATA&H23,&H5E,&HC3,&H18,&H37,&HCD,&H22,&H36,&HE6,&H7F,&HFE,&H7F
130 DATA&HCA,&H04,&H38,&HE6,&H3F,&HFE,&H3D,&HC2,&H26,&H37,&H2A,&H5B
140 DATA&H37,&H2B,&H2B,&H3E,&H20,&H77,&H23,&H22,&H5B,&H37,&H3A,&H5D
150 DATA&H37,&H3D,&H32,&H5D,&H37,&HC3,&H44,&H37,&H3A,&H5D,&H37,&H3C
160 DATA&H2A,&HFE,&H37,&H77,&HC3,&H54,&H37
170 RESTORE:U1=&H3714:U2=&H3722:U3=&H3727:U4=&H3731:U5=&H37FF
180 DIMB(33),B1(33),D(33),E(33),E1(20):REM<ARR.OF BOUND,DATA,LENGH,SN
190 N$="D1ET":Z0=1:INPUT"DISK-NO=?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
200 ONERROR GOTO230:OPENRN$:PRINT"FILE ";N$;" OPENED":XN=255
210 INPUT"FIRST RECN?";X0:Y0=2:GOSUB650:GOSUB630:DSKINS0$:Y0=3:GOSUB650:GOTO3
50
220 IF(ERR=27)AND(ERL=240)THENRESUME250ELSEGOTO260
230 IF(ERR=25)AND(ERL=200)THENPRINT"FILL?":INPUTQ:OPENWN$:WIDTH(254):A$=SPACE
$(252)
240 FORI=1TO256:PRINTI;:ONERRORGOTO220:DSKOUTA$:NEXTI:WIDTH(255):'AN EMPTY FI
LE
250 CLOSW:PRINT"NO.OF SCTR'S=";I:RESUME200
260 PRINT"ERR=";ERR;"ERL=";ERL:STOP
270 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
280 DATA 1,9999,1,99,1,2,1,99,10,130,70,210,1,9,1,7,100,300,120,450
290 DATA 100,300,100,320,50,300
300 ' ^^ SET IN THESE DATA PAIRS FOR REAL PERSONAL DATA BOUNDARIES!
310 ' <<<V^V^V^V^V^V^V^V^V^V^V^V^V^V^V^V^V^>>>
320 DATA 0,60,10,120,10,130,30,90,10,100,15,130,15,130,5,35,5,40,10,90
330 DATA 15,120,25,160,25,180,2,100,1,20,1,40,1,40,20,160,70,280,90,320
340 ' ^^ SET IN HERE THE REAL MEASUREMENT BOUNDARIES!
350 RESTORE:FORI=1TO74:READPO(I):NEXT:FORI=1TO3:POKEU1+I,PO(I):NEXT
360 FORI=1TO3:POKEU2+I,PO(I+3):NEXT:FORI=1TO3:POKEU3+I,PO(I+6):NEXT
370 FORI=1TO3:POKEU4+I,PO(I+9):NEXT:FORI=1TO62:POKEU5+I,PO(I+12):NEXT
380 FORI=1TO33:READE(I): NEXT:IR=0
390 FOR I=1 TO 33:READ B(I):READ B1(I):NEXT
400 GOTO420
410 PRINTTAB(40);"ROSSZ: ";LEFT$(A$,12)
420 A$=SPACE$(255):ONERROR GOTO590:PRINT"READ";:A$=USR1(A$):PRINT"<OKE";
430 N=LEN(A$):IFN<122THENPRINT" ":GOTO420
440 A$=SPACE$(5)+A$:A$=RIGHT$(A$,127)
450 C1=1:FORI=1TO33:L=VAL(MID$(A$,C1,E(I)))
460 IF(L=>B(I))AND(L<=B1(I))THEN500
470 IFI=1THEN490
480 IFL>800THENL=L-800:GOTO560
490 IF(L<B(I))OR(L>B1(I))THEN410
500 IFI=31THENL=(L*889)/1000:GOTO560
510 C1=C1+E(I):NEXTI
520 A$=LEFT$(A$,126):PRINT"  ****";LEFT$(A$,5)
530 GOSUB 600:'STORE ON DISKETTE
540 IFX0<=XNTHENGOTO420
550 X0=X0-1:Y0=4:GOSUB650:CLOSR:GOTO190
560 S$="  "+STR$(L):S$=RIGHT$(S$,E(I))
570 A$=LEFT$(A$,C1-1)+S$+RIGHT$(A$,127-C1-E(I)+1)
580 IFI=31THEN510ELSE490
590 RESUME 410
600 IR=IR+1:IF(IRMOD2)=1THENA2$=A$:RETURN
610 A1$=A2$+A$:Y0=5:GOSUB650:GOSUB630:DSKINS0$:S0$=A1$:Y0=3:GOSUB650
620 X0=X0+1:PRINTSTRING$(24,39):PRINTTAB(10);"NEXT SECTOR=";X0:PRINT:RETURN
```

```
630 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF00
640 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
650 ON Y0GOTO660,670,710,720,680
660 RETURN
670 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
680 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
690 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
700 X2=X7AND255:X6=(X7AND&HFF00)/256:POKE&H6620,X2:POKE&H6621,X6:RETURN
710 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
720 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
730 END
```

```
10 REM  ####################
20 REM  ##                ##
30 REM  ##  S T P R 1 8   ##
40 REM  ##                ##
50 REM  ######. ############
60 CLEAR2000:WIDTH(255):DEFINTV-Z
70 DEFUSR0=&H3509:DIMX5(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
80 PRINT"ETHIOPIAN PROJECT * BASIC STATISTICAL TEST PROGRAM"
90 DEFINT E-N:DIM E(33),F(33),S(8,32,2),IS(8,32,2),K1(4),K2(4),N(8)
100 INPUT"NEW PROCESSING OR LISTING OF RESULTS? (N/L)";Y$
110 IFY$="L"THEN820
120 PRINT"GIVE 8 NUMBERS FOR THE LIMITS OF 4 DIFFERENT AGE INTERVALLS"
130 PRINT"TO BE EXAMINED IN THIS ANALYSIS"
140 FORI=1TO4:PRINTI;:INPUT"   LOW  ";K1(I):INPUT"      HIGH  ";K2(I):NEXTI
150 GOTO300
160 PRINT"INSERT THE NEXT DATA DISK NAMED ET_ INTO DRIVE#1 (CTRL.BREAK!)"
170 N$="D1ET":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
180 ONERRORGOTO160:OPENRN$:PRINT"FILE ";N$;" OPENED":INPUT"LAST SCTR.NO?";XN
190 X0=0:RETURN
200 PRINT"INSERT THE DISK OF RESULT'S FILE NAMED STAT_ INTO DRIVE#1(CTRL.BREA
K!)"
210 N$="D1STAT":Z0=1:INPUT"FILE-NO=?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-

220 ONERROR GOTO250:CLOSR:OPENRN$:PRINT"FILE ";N$;" OPENED":XN=31
230 X0=0:Y0=2:GOSUB920:DSKIN$0$:Y0=3:GOSUB920:GOTO750
240 IF(ERR=27)AND(ERL=260)THENRESUME270ELSEGOTO280
250 IF(ERR=25)AND(ERL=220)THENINPUT"FILL?";0:OPENWN$:WIDTH(254):A$=SPACE$(252
)
260 FORI=1TO33:PRINTI;:ONERRORGOTO240:DSKOUTA$:NEXTI:WIDTH(255)
270 CLOSW:PRINT"NO.OF SCTR'S=";I-1:RESUME220
280 PRINT"ERR=";ERR;"ERL=";ERL:STOP
290 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
300 GOSUB160:RESTORE:FORI=1TO33:READE(I):NEXT:IR=0:G=9999
310 PRINT"WAIT FOR CLEANING ARRAYS"
320 FORI=1TO8:FORJ=1TO32:FORK=1TO2:S(I,J,K)=0:NEXTK:IS(I,J,1)=0:IS(I,J,2)=999
9
330 NEXTJ:N(I)=0:NEXTI
340 IFX0<=XNTHEN380
350 IFX0>XNTHENFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
360 PRINT"LAST SCTR":INPUT"CONTINUE (Y/NOT)?";Y$:IFY$="NOT"THEN530
370 GOSUB160
380 DSKINA$:A1$=LEFT$(A$,126):GOSUB400:A1$=MID$(A$,127,126):GOSUB400
390 PRINTTAB(10);"FILE ";N$;"  SCT";X0:X0=X0+1:IR=IR+2:GOTO340
400 I1=1:I1=I1+E(1):ONERROR GOTO 340
410 FORI=2TO33:Z$=MID$(A1$,I1,E(I)):F(I)=VAL(Z$):I1=I1+E(I):NEXTI
420 FORI=1TO4:IF(F(4)=>K1(I))AND(F(4)<=K2(I))THEN440
430 NEXTI:RETURN
440 L=(I-1)*2+F(3)
450 IFF(4)<=10ANDF(5)>=50THEN520
460 IFF(5)>99THEN520
470 IFF(4)<=10ANDF(6)>=160THEN520
480 FORJ=1TO32:J1=J+1:S(L,J,1)=S(L,J,1)+F(J1):S(L,J,2)=S(L,J,2)+F(J1)*F(J1)
490 IFF(J1)>IS(L,J,1)THENIS(L,J,1)=F(J1)
500 IFF(J1)<IS(L,J,2)THENIS(L,J,2)=F(J1)
510 NEXTJ:N(L)=N(L)+1
520 RETURN
530 PRINT"WAIT FOR CALCULATIONS PLEASE"
540 FORI=1TO8:FORJ=1TO32:IFN(I)<>0THENS(I,J,1)=S(I,J,1)/N(I):S(I,J,1)=(INT(S(
I,J,1)*100))/100
550 IFN(I)=0THENIS(I,J,2)=0
560 IFN(I)<2THENS(I,J,2)=0:GOTO600
570 S(I,J,2)=S(I,J,2)-N(I)*S(I,J,1)*S(I,J,1)
580 S(I,J,2)=SQR(ABS(S(I,J,2)/(N(I)-1)))
590 S(I,J,2)=(INT(S(I,J,2)*100))/100
```

```
600 NEXTJ:NEXTI
610 PRINT"RESULTS ARE CUMULATED IN MATRIX FORM"
620 INPUT"DISPLAY ANY OF MATRIX-PAGES? (Y/N)";Y$
630 IFY$="N"THEN730
640 INPUT"DATA NO. TO BE DISPLAYED?";J:IF(J<2)OR(J>33)THEN640
650 PRINT:PRINT"DATA  A(";J;")  HAS THE FOLLOWING STAT. CHARACTERISTICS:"
660 PRINT"     =======":PRINT
670 PRINT:PRINTTAB(7);"AGE   SEX    ITEM     MEAN       VAR       MAX       MIN
   RANGE"
680 PRINT:J=J-1:FORI=1TO8:L=(I-1)/2+1:M=(I-1)MOD2+1
690 F$="      ##!##    #    ####    ###.##   ###.##      ###       ###       ###
"
700 PRINTUSINGF$;K1(L);"-";K2(L);M;N(I);S(I,J,1);S(I,J,2);IS(I,J,1);IS(I,J,2)
,IS(I,J,1)-IS(I,J,2)
710 IFIMOD2=0THENPRINT
720 NEXTI:GOTO620
730 INPUT"STORE ON DISK? (Y/N)";Y$:IFY$="N"THEN1000
740 GOTO200
750 FORJ=1TO32:X0=J-1:A$=RIGHT$("  "+STR$(J+1),2):FORI=1TO8:M=(I-1)MOD2+1
760 L=(I-1)/2+1:A$=A$+RIGHT$(" "+STR$(K1(L)),2)+RIGHT$(" "+STR$(K2(L)),2)
770 A$=A$+RIGHT$(" "+STR$(M),1)+RIGHT$("   "+STR$(N(I)),4)+RIGHT$("     "+STR
$(S(I,J,1)),6)
780 A$=A$+RIGHT$("     "+STR$(S(I,J,2)),6)+RIGHT$("  "+STR$(IS(I,J,1)),3)
790 A$=A$+RIGHT$("  "+STR$(IS(I,J,2)),3)+RIGHT$("  "+STR$(IS(I,J,1)-IS(I,J,2)
),3)
800 NEXTI:Y0=5:GOSUB920:GOSUB900:DSKINS0$:S0$=A$:Y0=3:GOSUB920
810 PRINT"FILE ";N$;" SCT ";X0:NEXTJ:Y0=4:GOSUB920:CLOSR:GOTO100
820 INPUT"RESULT'S FILE NAMED STAT_ IS IN DRIVE#1?";0
830 N$="D1STAT":INPUT"FILE-N0=?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
840 ONERRORGOTO820:OPENRN$:PRINT"FILE ";N$;" OPENED"
850 FORJ=1TO32:DSKINA$:FORI=1TO8:L=(I-1)/2+1:M=2+(I-1)*30
860 K1(L)=VAL(MID$(A$,M+1,2)):K2(L)=VAL(MID$(A$,M+3,2)):N(I)=VAL(MID$(A$,M+6,
4))
870 S(I,J,1)=VAL(MID$(A$,M+10,6)):S(I,J,2)=VAL(MID$(A$,M+16,6))
880 IS(I,J,1)=VAL(MID$(A$,M+22,3)):IS(I,J,2)=VAL(MID$(A$,M+25,3))
890 NEXTI:PRINT"FILE ";N$;" SCT ";J-1:NEXTJ:GOTO610
900 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF00
910 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
920 ON Y0GOTO930,940,980,990,950
930 RETURN
940 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
950 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
960 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
970 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
980 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
990 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
1000 END
```

```
10 REM  ####################
20 REM  ##                  ##
30 REM  ##  S E L E C T 8  ##
40 REM  ##                  ##
50 REM  ####################
60 CLEAR2000:WIDTH(255):DEFINTV-Z
70 DEFUSR0=&H3509:DIMX5(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
80 PRINT"ETHIOPIAN PROJECT * DATA SELECTING PROGRAM"
90 DIM E(33),F(33),G(30,3)
100 INPUT"GIVE NUMBER OF SELECTOR DATA /MAX.30/";N
110 PRINT"GIVE SELECT INFO: DATA NO./1-33/, LOWER BOUND, UPPER BOUND"
120 FORI=1TON:INPUT"DATA NO";G(I,1):INPUT"LOWER";G(I,2):INPUT"UPPER";G(I,3):N
EXTI
130 GOTO290
140 PRINT"INSERT THE NEXT DATA DISK NAMED ET_ INTO DRIVE#1 (CTRL.BREAK!)"
150 N$="D1ET":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
160 ONERRORGOTO140:OPENRN$:PRINT"FILE ";N$;" OPENED"
170 INPUT"FIRST AND LAST INPUT SCTR.NO?";XI,XN:CLOSR
180 RETURN
190 PRINT"INSERT THE DISK OF RESULT'S FILE NAMED SC_ INTO DRIVE#0(CTRL.BREAK!
)"
200 M$="D0SC":INPUT"DISK-NO=?";DN:M$=M$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
210 ONERROR GOTO240:OPENRM$:PRINT"FILE ";M$;" OPENED"
220 INPUT"NEXT AND LAST OUTPUT SCTR.NO?";XJ,XM:B$=" ":CLOSR:RETURN
230 IF(ERR=27)AND(ERL=250)THENRESUME260ELSEGOTO270
240 IF(ERR=25)AND(ERL=210)THENINPUT"FILL?";Q:OPENWM$:WIDTH(254):A$=SPACE$(252
)
250 FORI=1TOXM+1:PRINTI;:ONERRORGOTO230:DSKOUTA$:NEXTI:WIDTH(255)
260 CLOSW:PRINT"NO.OF SCTR'S=";I:RESUME210
270 PRINT"ERR=";ERR;"ERL=";ERL:STOP
280 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
290 GOSUB140:RESTORE:FORI=1TO33:READE(I):NEXTI:GOSUB190
300 OPENRN$:X0=XI:Y0=2:Z0=1:GOSUB550
310 IFXI<=XNTHEN340ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
320 PRINT"LAST INPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN520
330 Y0=4:GOSUB550:CLOSR:GOSUB140:GOTO300
340 IFXJ<=XMTHEN370ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
350 PRINT"LAST OUTPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN520
360 Y0=4:GOSUB550:CLOSR:GOSUB190:GOTO300
370 PRINT"IN:";N$;"/";XI:PRINTTAB(20);"LAST OUT:";M$;"/";XJ:GOSUB530
380 DSKINA$:A1$=LEFT$(A$,126):GOSUB400:A1$=MID$(A$,127,125):GOSUB400
390 XI=XI+1:X0=XI:Y0=5:GOSUB550:GOTO310
400 I1=1:I1=I1+E(1):ONERROR GOTO 270
410 FORI=2TO33:Z$=MID$(A1$,I1,E(I)):F(I)=VAL(Z$):I1=I1+E(I):NEXTI
420 FORI=1TON:IF(F(G(I,1))<G(I,2))OR(F(G(I,1))>G(I,3))THEN440
430 NEXTI:GOTO450
440 RETURN
450 B$=B$+A1$
460 IFLEN(B$)=127THEN440
470 Y0=4:GOSUB550:CLOSR
480 OPENRM$:X0=XJ:Y0=2:Z0=0:GOSUB550
490 Y0=3:S0$=RIGHT$(B$,252):GOSUB550:B$=" "
500 PRINTTAB(10);"OUT:";M$;"/";XJ:XJ=XJ+1
510 Y0=4:GOSUB550:CLOSR:OPENRN$:X0=XI:Y0=2:Z0=1:GOSUB550:GOTO440
520 Y0=4:GOSUB550:CLOSR:GOTO630
530 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF00
540 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
550 ON Y0GOTO560,570,610,620,580
560 RETURN
570 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
580 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
590 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
600 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
610 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
620 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
630 END
```

```
700 PRINT:PRINT:LPRINT
710 LPRINTUSING"NUMBER OF CUMULATED DATA:######.";NJ
720 LPRINTUSING"           OUTRANGED DATA:######.";NR:LPRINT:LPRINT:GOTO830
730 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF00
740 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
750 ON Y0GOTO760,770,810,820,780
760 RETURN
770 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
780 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
790 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
800 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
810 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
820 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
830 END
```

```
100 REM    ######################
110 REM    ##                  ##
120 REM    ##  R E L A T E S  ##
130 REM    ##                  ##
140 REM    ######################
150 CLEAR2000:WIDTH(255):DEFINTE:DEFINTI-N:DEFINTV-Z
160 DEFUSR0=&H3509:DIMX5(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
170 DIM E(33),F(39),P1(38,20,1),MM(20):ONERROR GOTO 350
180 A$="RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST,
 HUNGARY":B$="Production Development Department"
190 PRINTA$:PRINTB$:LPRINTA$:LPRINTB$
200 A$=" DATA NO.(1-33) ":B$="MIN, MAX"
210 A1$="TOO MANY INTERVALLS!"
220 LPRINTSTRING$(77,42):LPRINT"Foot Measurement Programme"
230 LPRINT"TABLE OF RELATED MEAN VALUES"
240 LPRINTSTRING$(77,42)
250 A2$="FILTER"+A$+"?":PRINTA2$;:INPUTIN:LPRINT"FILTER"+A$+"=";IN
260 PRINT"FILTER ";B$;:INPUTI0,I1:LPRINT"FILTER ";B$;I0;I1
270 A2$="EXAMINED"+A$+"/X-VAR/?":PRINTA2$;:INPUTJN:LPRINT"EXAMINED"+A$+"=";JN
280 PRINT"X-";B$+", INCREMENT";:INPUTJ0,J1,JS
290 JK=INT((J1-J0)/JS+.5):IFJK=<20THEN370ELSEPRINTA1$:GOTO280
300 PRINT"INSERT THE NEXT DATA DISK NAMED SC_ INTO DRIVE#1 (CTRL.BREAK!)"
310 N$="DISC":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
320 ONERRORGOTO300:OPENRN$:PRINT"FILE ";N$;" OPENED"
330 INPUT"FIRST AND LAST INPUT SCTR.NO?";XI,XN
340 ONERRORGOTO350:RETURN
350 PRINT"ERR=";ERR;"ERL=";ERL:STOP
360 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
370 J1=J0+JK*JS:GOSUB300:RESTORE:FORI=1TO33:READE(I):NEXTI:PRINT"WAIT!"
380 FORI=0TO38:FORJ=0TOJK-1:FORK=0TO1:P1(I,J,K)=0:NEXTK:NEXTJ:NEXTI:NR=0:NJ=0
390 LPRINT"X-";B$;":";J0;J1;JS
400 X0=XI:Y0=2:Z0=1:GOSUB750
410 IFXI<=XNTHEN440ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
420 PRINT"LAST INPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN590
430 Y0=4:GOSUB750:CLOSR:GOSUB300:GOTO400
440 PRINT"IN:FILE:";N$;"/SCTR:";XI:GOSUB730
450 DSKINA$:A1$=LEFT$(A$,126):GOSUB470:A1$=MID$(A$,127,126):GOSUB470
460 XI=XI+1:X0=XI:Y0=5:GOSUB750:GOTO410
470 I2=1:I2=I2+E(1):ONERROR GOTO 580
480 FORI=2TO33:Z$=MID$(A1$,I2,E(I)):F(I)=VAL(Z$):I2=I2+E(I):NEXTI
490 IF(F(IN)<I0)OR(F(IN)>I1)THENNR=NR+1:RETURN
500 IF(F(JN)<=J0)OR(F(JN)>J1)THENNR=NR+1:RETURN
510 F(34)=F(16)+F(19):F(35)=SQR((F(16)+F(19))^2+(.09*F(33))^2)
520 F(36)=F(16)+F(19)+F(23):F(37)=F(23)+F(35):F(38)=ATN(F(26)/(.45*F(33)))*18
0/(4*ATN(1))
530 F(39)=SQR(F(26)^2+(.45*F(33))^2)
540 FORI=1TO33:IFI>2THENI4=I+6ELSEI4=I+4
550 I3=I-1:J=INT((F(JN)-J0)/JS-1E-03):P1(I3,J,0)=P1(I3,J,0)+1
560 P1(I3,J,1)=P1(I3,J,1)+INT(F(I4)+.5)
570 NEXTI:NJ=NJ+1:MM(J)=MM(J)+1
580 RETURN
590 Y0=4:GOSUB750:CLOSR:A$="     ":LPRINT
600 FORJ=1TOJK:A$=A$+RIGHT$("    "+STR$(J0+J*JS),5)+" ":NEXTJ:PRINTA$:PRINT
610 LPRINTA$:LPRINT:FORI=1TO33:IFI>2THENI4=I+6ELSEI4=I+4
620 I3=I-1:A$=RIGHT$("    "+STR$(I4),3)+" ":A1$="     "
630 FORJ=1TOJK:H=P1(I3,J-1,0):IFH=0THENA$=A$+"   0":A1$=A1$+" .0":GOTO670
640 L=INT(P1(I3,J-1,1)*10/H)
650 A$=A$+RIGHT$("    "+STR$(INT(L/10)),3)
660 A1$=A1$+"."+RIGHT$(" "+STR$(L-10*INT(L/10)),1)
670 NEXTJ:LPRINTA$:PRINTA$:LPRINTA1$:PRINTA1$:NEXTI:LPRINT
680 LPRINT"FREQUENCIES:":LPRINT
690 A$="     ":FORJ=0TOJK:A$=A$+RIGHT$("        "+STR$(MM(J)),4):NEXTJ:LPRINTA$
```

```
100 REM          ########################
110 REM          ##                    ##
120 REM          ##   R E L A T E - F R   ##
130 REM          ##                    ##
140 REM          ########################
150 REM
160 REM
170 CLEAR2000:WIDTH(255):DEFINTE:DEFINTI-N:DEFINTV-Z
180 DEFUSR0=&H3509:DIMX5(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
190 DIM E(33),F(39),P1(38,20,1),MM(20):ONERROR GOTO 390
200 A$="RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST,
 HUNGARY":B$="Production Development Department"
210 PRINTA$:PRINTB$:LPRINTA$:LPRINTB$
220 A$=" DATA NO.(1-33) ":B$="MIN, MAX"
230 A1$="TOO MANY INTERVALLS!"
240 LPRINTSTRING$(77,42):LPRINT"Foot Measurement Programme"
250 LPRINT"TABLE OF RELATED MEAN VALUES"
260 LPRINTSTRING$(77,42)
270 A2$="FILTER"+A$+"?":PRINTA2$;:INPUTIN:LPRINT"FILTER"+A$+"=";IN
280 PRINT"FILTER ";B$;:INPUTI0,I1:LPRINT"FILTER ";B$;":  ";I0;",";I1
290 IFIN=33THENCI=20/3:CK=-4:ELSECI=1:CK=0
300 A2$="EXAMINED"+A$+"/X-VAR/?":PRINTA2$;:INPUTJN:LPRINT"EXAMINED"+A$+"=";JN
310 PRINT"X-";B$+", INCREMENT";:INPUTJ0,J1,JS
320 IFJN=33THENCJ=20/3:CL=-4ELSECJ=1:CL=0
330 JK=INT((J1-J0)/JS+.49):IFJK<18THEN410ELSEPRINTA1$:GOTO310
340 PRINT"INSERT THE NEXT DATA DISK NAMED SC_ INTO DRIVE#1 (CTRL.BREAK!)"
350 N$="DISC":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
360 ONERRORGOTO340:OPENRN$:PRINT"FILE ";N$;" OPENED"
370 INPUT"FIRST AND LAST INPUT SCTR.NO?";XI,XN
380 ONERRORGOTO390:RETURN
390 PRINT"ERR=";ERR;"ERL=";ERL:STOP
400 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
410 J1=J0+JK*JS:GOSUB340:RESTORE:FORI=1TO33:READE(I):NEXTI:PRINT"WAIT!"
420 FORI=0TO38:FORJ=0TOJK-1:FORK=0TO1:P1(I,J,K)=0:NEXTK:NEXTJ:NEXTI:NR=0:NJ=0
430 LPRINT"MIN,MAX,INCREMENT:  ";J0;",";J1;",";JS;
440 IF IN=33 THEN LPRINT" Paris Point" ELSE LPRINT
450 X0=XI:Y0=2:Z0=1:GOSUB800
460 IFXI<=XNTHEN490ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
470 PRINT"LAST INPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN640
480 Y0=4:GOSUB800:CLOSR:GOSUB340:GOTO450
490 PRINT"IN FILE:";N$;"/SCTR:";XI:GOSUB780
500 DSKINA$:A1$=LEFT$(A$,126):GOSUB520:A1$=MID$(A$,127,126):GOSUB520
510 XI=XI+1:X0=XI:Y0=5:GOSUB800:GOTO460
520 I2=1:I2=I2+E(1):ONERROR GOTO 630
530 FORI=2TO33:Z$=MID$(A1$,I2,E(I)):F(I)=VAL(Z$):I2=I2+E(I):NEXTI
540 IFF(IN)<I0*CI-CKORF(IN)>I1*CI-CKTHENNR=NR+1:RETURN
550 IFF(JN)<=J0*CJ-CLORF(JN)>J1*CJ-CLTHENNR=NR+1:RETURN
560 F(34)=F(16)+F(19):F(35)=SQR((F(16)+F(19))^2+(.09*F(33))^2)
570 F(36)=F(16)+F(19)+F(23):F(37)=F(23)+F(35):F(38)=ATN(F(26)/(.45*F(33)))*18
0/(4*ATN(1))
580 F(39)=SQR(F(26)^2+(.45*F(33))^2)
590 FORI=1TO33:IFI>2THENI4=I+6ELSEI4=I+4
600 I3=I-1:J=INT((F(JN)+4-J0*CJ)/(JS*CJ))+1:P1(I3,J,0)=P1(I3,J,0)+1
610 P1(I3,J,1)=P1(I3,J,1)+F(I4)
620 NEXTI:NJ=NJ+1:MM(J)=MM(J)+1
630 RETURN
640 Y0=4:GOSUB800:CLOSR:A$="       ":LPRINT
650 FORJ=1TOJK:A$=A$+RIGHT$("      "+STR$(J0+J*JS),4)+" ":NEXTJ:PRINTA$:PRINT
660 LPRINTA$:LPRINT:FORI=1TO33:IFI>2THENI4=I+6ELSEI4=I+4
670 I3=I-1:A$=RIGHT$("     "+STR$(I4),4)+" ":A1$="      "
680 FORJ=1TOJK:H=P1(I3,J-1,0):IFH=0THENA$=A$+"     0":A1$=A1$+"    .0":GOTO720
690 L=INT(P1(I3,J-1,1)*10/H)
700 A$=A$+RIGHT$("       "+STR$(INT(L/10)),5)
710 A1$=A1$+"    ."+RIGHT$("    "+STR$(L-10*INT(L/10)),1)
720 NEXTJ:LPRINTA$:PRINTA$:LPRINTA1$:PRINTA1$:NEXTI:LPRINT
730 LPRINT"FREQUENCIES:":LPRINT
740 A$="      ":FORJ=0TOJK-1:A$=A$+RIGHT$("       "+STR$(MM(J)),5):NEXTJ:LPRINT
```

```
750 PRINT:PRINT LPRINT
760 LPRINTUSING"NUMBER OF CUMULATED DATA:######,";NJ
770 LPRINTUSING"           OUTRANGED DATA:######,";NR:LPRINT:LPRINT:GOTO880
780 POKE&H661E,&HFF:JF=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF00
790 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
800 ON Y0GOTO810,820,860,870,830
810 RETURN
820 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
830 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
840 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
850 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
860 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
870 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
880 END
```

```
10 REM  ####################
20 REM  ##                ##
30 REM  ##  D I S T R 8   ##
40 REM  ##                ##
50 REM  ####################
60 CLEAR2000:WIDTH(255):DEFINTE:DEFINTI-N:DEFINTV-Z
70 DEFUSR0=&H3509:DIMX$(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
80 DIM E(39),F(39),N1(50,24),MX(24),MY(50):ONERROR GOTO 280
90 A$="RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST,
HUNGARY":B$="Production Development Department"
100 PRINTA$:PRINTB$:LPRINTA$:LPRINTB$
110 A$="DATA NO.(1-39): ":B$="MIN. MAX. INCREMENT":B1$=LEFT$(B$,8)+":   "
120 A1$="TOO MANY INTERVALLS!"
130 LPRINTSTRING$(77,42):LPRINT"Foot Measurement Programme"
140 LPRINT"TWO-VARIABLE DISTRIBUTION TABLE":LPRINTSTRING$(77,42)
150 PRINT"FILTER ";A$;:INPUTKN:IFKN<10RKN>33THEN150
160 PRINTB1$;:INPUTK0,K1:IFK1<K0THEN160ELSELPRINT:LPRINT"FILTER DATA No.: ";K
N,:LPRINT" ";B1$;K0;",";K1:LPRINT
170 A2$=A$+"Y ?":PRINTA2$;:INPUTIN:LPRINTA$+"Y=";IN
180 PRINT"Y-";B$;:INPUTI0,I1,IS
190 IK=INT((I1-I0)/IS+.5):IFIK>50THENPRINTA1$:GOTO180
200 A2$=A$+"X ?":PRINTA2$;:INPUTJN:LPRINTA$+"X=";JN
210 PRINT"X-";B$;:INPUTJ0,J1,JS
220 JK=INT((J1-J0)/JS+.5):IFJK=<24THEN300ELSEPRINTA1$:GOTO210
230 PRINT"INSERT THE NEXT DATA DISK NAMED SC_ INTO DRIVE#1 (CTRL.BREAK!)"
240 N$="DISC":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
250 ONERRORGOTO230:OPENRN$:PRINT"FILE ";N$;" OPENED"
260 INPUT"FIRST AND LAST INPUT SCTR.NO?";XI,XN
270 ONERRORGOTO280:RETURN
280 PRINT"ERR=";ERR;"ERL=";ERL:STOP
290 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
300 J1=J0+JK*JS:I1=I0+IK*IS:GOSUB230:RESTORE:FORI=1TO33:READE(I):NEXTI
310 FORI=1TOIK:FORJ=1TOJK:N1(I,J)=0:NEXTJ:NEXTI:NR=0:NJ=0
320 LPRINT"Y-";B$;":";I0;I1;IS:LPRINT"X-";B$;":";J0;J1;JS:LPRINT,"MEAN VALUES
:":LPRINTSTRING$(12,45):LPRINT
330 X0=XI:Y0=2:Z0=1:GOSUB760
340 IFXI<=XNTHEN370ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
350 PRINT"LAST INPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN500
360 Y0=4:GOSUB760:CLOSR:GOSUB230:GOTO330
370 PRINT"IN:FILE:";N$;"/SCTR:";XI:GOSUB740
380 DSKINA$:A1$=LEFT$(A$,126):GOSUB400:A1$=MID$(A$,127,126):GOSUB400
390 XI=XI+1:X0=XI:Y0=5:GOSUB760:GOTO340
400 I2=1:I2=I2+E(1):ONERROR GOTO 490
410 FORI=2TO33:Z$=MID$(A1$,I2,E(I)):F(I)=VAL(Z$):I2=I2+E(I):NEXTI
420 IFF(KN)<K0ORF(KN)>K1THENNR=NR+1:RETURN
430 F(34)=F(16)+F(19):F(35)=SQR((F(16)+F(19))^2+(.09*F(33))^2)
440 F(36)=F(16)+F(19)+F(23):F(37)=F(23)+F(35):F(38)=ATN(F(26)/(.45*F(33)))*18
0/(4*ATN(1))
450 F(39)=SQR(F(26)^2+(.45*F(33))^2)
460 IF(F(IN)<=I0)OR(F(IN)>I1)THENNR=NR+1:RETURN
470 IF(F(JN)<=J0)OR(F(JN)>J1)THENNR=NR+1:RETURN
480 I=INT((F(IN)-I0)/IS-1E-03)+1:J=INT((F(JN)-J0)/JS-1E-03)+1:N1(I,J)=N1(I,J)
+1:NJ=NJ+1:MY(I)=MY(I)+1:MX(J)=MX(J)+1
490 RETURN
500 Y0=4:GOSUB760:CLOSR:A$="     ":LPRINT,"FREQUENCIES:":LPRINT,STRING$(12,45)
:LPRINT
510 FORJ=1TOJK:A$=A$+RIGHT$("    "+STR$(J0+J*JS),3):NEXTJ:A$=A$+" SUM":PRINTA$
:PRINT
520 LPRINTA$:LPRINT:FORI=1TOIK:A$=RIGHT$("    "+STR$(I0+I*IS),3)+" "
530 FORJ=1TOJK:A$=A$+RIGHT$("    "+STR$(N1(I,J)),3)
540 NEXTJ:A$=A$+RIGHT$("     "+STR$(MY(I)),4):LPRINTA$:PRINTA$:NEXTI
550 A$=" SUM":FORJ=1TOJK:A$=A$+RIGHT$("     "+STR$(MX(J)),3):NEXTJ:A$=A$+RIGHT
$("     "+STR$(NJ),4)
560 PRINTA$:LPRINT:LPRINTA$:LPRINT:LPRINT
570 LPRINT"NO. OF CUMULATED DATA=";NJ
```

```
590 A$="RESEARCH INSTITUTE OF LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST,HUNG
ARY"
600 B$="Production Development Department":LPRINTA$:LPRINTB$:LPRINTSTRING$(57
,42)
610 LPRINT"Foot Measurement Programme":LPRINT"TWO-VARIABLE DISTRIBUTION TABLE
"
620 LPRINTSTRING$(57,42):LPRINT:LPRINT"FILTER DATA No.: ";KN," MIN, MAX: ";K0
;",";K1:LPRINT
630 LPRINT"DATA No. - Y: ";IN:LPRINT"DATA No. - X: ";JN
640 A$="     ":LPRINT:LPRINT:B$="DISTRIBUTION IN PERCENTAGE:":LPRINT,B$:LPRINT
,STRING$(LEN(B$),45)
650 FORJ=1TOJK:A$=A$+RIGHT$("     "+STR$(J0+J*JS),3):NEXTJ:A$=A$+" SUM":PRINTA
$:LPRINT:LPRINTA$:LPRINT
660 FORI=1TOIK:A$=RIGHT$("     "+STR$(I0+I*IS),3)+" ":AA$="     "
670 FORJ=1TOJK:B$=RIGHT$("     "+STR$(INT(1000*N1(I,J)/NJ+.5)),3)
680 A$=A$+LEFT$(B$,2)+".":AA$=AA$+"  "+RIGHT$(B$,1)+" ":NEXTJ
690 B$=RIGHT$("     "+STR$(INT(1000*MY(I)/NJ+.5)),4):A$=A$+RIGHT$("     "+LEFT$
(B$,3)+"."+RIGHT$(S$,1),4)
700 PRINTA$:LPRINTA$:PRINTA$:LPRINTA$:NEXTI:LPRINT:A$=" SUM":AA$="     "
710 FORJ=1TOJK:B$=RIGHT$("     "+STR$(INT(1000*MX(J)/NJ+.5)),3):A$=A$+LEFT$(B$
,2)+","
720 AA$=AA$+"  "+RIGHT$(B$,1)+" ":NEXTJ:A$=A$+" 100":PRINTA$:LPRINTA$
730 PRINTAA$:LPRINTAA$:LPRINTCHR$(12):GOTO840
740 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF0B
750 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
760 ON Y0GOTO770,780,820,830,790
770 RETURN
780 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ZARASI ALLAP.
790 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
800 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
810 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
820 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
830 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
840 END
```

```
100 REM              ######################
110 REM              ###                  ###
120 REM              ###  V A R A N G  ###
130 REM              ###                  ###
140 REM              ######################
150 REM
160 REM
170 REM        Made in the RESEARCH INSTITUTE OF THE
180 REM        LEATHER AND FOOTWEAR INDUSTRIES (BOK)
190 REM              Budapest - Hungary, 1983
200 REM
210 REM
220 CLEAR2000:WIDTH255:DEFINTE:DEFINTI-N:DEFINTV-Z
230 DEFUSR0=&H8500:DIMX%(6):Z0=1:Y0=2:X0=0:S0$=SPACE$(254)
240 DIM E(33),F(39),E1(16),P(16,22,1),MX(10):ONERROR GOTO 440
250 DATA 5,6,9,10,11,12,13,17,21,23,24,25,33,35,37,39
260 RESTORE:FORI=1TO16:READE1(I):NEXTI
270 A$="RESEARCH INSTITUTE OF THE LEATHER AND FOOTWEAR INDUSTRIES - BUDAPEST,
 HUNGARY":B$="Production Development Department"
280 PRINTA$:PRINTB$:LPRINTA$:LPRINTB$
290 A$="DATA NO.(1-39):  ":B$="MIN. MAX. INCREMENT":B1$=LEFT$(B$,8)+":   "
300 A1$="TOO MANY INTERVALLS!"
310 LPRINTSTRING$(77,42):LPRINT"Foot Measurement Programme"
320 LPRINT"DATA FOR STATISTICAL TESTS":LPRINTSTRING$(77,42):JJ=0
330 PRINT"FILTER ";A$;:INPUTKN:IFKN<10RKN>39THEN330
340 PRINTB1$;:INPUTK0,K1:IFK1<K0THEN340ELSELPRINT:LPRINT"FILTER DATA No.: ";K
N;:LPRINT" ";B1$,K0,",";K1
350 A2$="EXAMINED "+A$:PRINTA2$;:INPUTJN:IFJN<10RJN>39THEN350ELSEIFJN=2THENPR
INT"POSITION (0 - ALL) ";:INPUTJJ
360 IFJJ<0ORJJ>2THEN350
370 PRINTB$;:INPUTJ0,J1,JS:IFJ1<J0ORJ0<0THEN370
380 JK=INT((J1-J0)/JS+.5):IFJK=<10THEN460ELSEPRINTA1$:GOTO370
390 PRINT"INSERT THE NEXT DATA DISK NAMED SC_ INTO DRIVE#1 (CTRL.BREAK!)"
400 N$="DISC":INPUT"DISK-NO?";DN:N$=N$+RIGHT$(STR$(DN),LEN(STR$(DN))-1)
410 ONERRORGOTO390:OPENRN$:PRINT"FILE ";N$;" OPENED"
420 INPUT"FIRST AND LAST INPUT SCTR.NO?";XI,XN
430 ONERRORGOTO440:RETURN
440 PRINT"ERR=";ERR;"ERL=";ERL:STOP
450 DATA 5,3,2,3,4,4,2,2,4,4,4,4,4,5,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4,4
460 J1=J0+JK*JS:GOSUB390:FORI=1TO33:READE(I):NEXTI:PRINT"WAIT!"
470 FORI=1TO16:FORJ=1TO(JK+1)*2:FORK=0TO1:P(I,J,K)=0:NEXTK:NEXTJ:NEXTI:NR=0:N
J=0
480 LPRINT"EXAMINED DATA (1-39):  ";JN;:IFJJ<>0THENLPRINT"/";JJ
490 X0=XI:Y0=2:Z0=1:GOSUB840
500 IFXI<=XNTHEN530ELSEFORI=1TO8:PRINTSTRING$(255,7);:NEXTI
510 PRINT"LAST INPUT SCTR":INPUT"CONTINUE (Y/N)?";Y$:IFY$="N"THEN680
520 Y0=4:GOSUB840:CLOSR:GOSUB390:GOTO490
530 PRINT"IN:FILE:";N$;"/SCTR:";XI:GOSUB820
540 DSKINA$:A1$=LEFT$(A$,126):GOSUB560:A1$=MID$(A$,127,126):GOSUB560
550 XI=XI+1:X0=XI:Y0=5:GOSUB840:GOTO500
560 I2=1:I2=I2+E(1):ONERROR GOTO 650
570 FORI=2TO33:Z$=MID$(A1$,I2,E(I)):F(I)=VAL(Z$):I2=I2+E(I):NEXTI
580 IFF(KN)<K0ORF(KN)>K1THENNR=NR+1:RETURN
590 F(34)=F(16)+F(19):F(35)=SQR((F(16)+F(19))^2+(.09*F(33))^2)
600 F(36)=F(16)+F(19)+F(23):F(37)=F(23)+F(35):F(38)=ATN(F(26)/(.45*F(33)))*18
0/(4*ATN(1))
610 F(39)=SQR(F(26)^2+(.45*F(33))^2)
620 IFJJ=1THENIFINT(F(JN)/10)<J0ORINT(F(JN)/10)>J1THENNR=NR+1:RETURNELSE650
630 IFJJ=2THENIFVAL(RIGHT$(STR$(F(JN)),1))<J0ORVAL(RIGHT$(STR$(F(JN)),1))>J1T
HENNR=NR+1:RETURNELSE650
640 IFF(JN)<=J0ORF(JN)>J1THENNR=NR+1:RETURN
650 IFJJ=0THENI=INT(F(JN)-J0)*2+1ELSEIFJJ=1THENJ=INT(F(2)/10-J0)+1ELSE I=VA
L(RIGHT$(STR$(F(2)),1))-J0+1
660 FORJ=1TO(JK+1)*2:FORK=0TO1:P(I,J,K)=P(I,J,K)+(F(I)-A)^2:NEXTK,J:NEXTI
```

```
670 RETURN
680 Y0=4:GOSUB840:LU$=A$:A$="CODE":LPRINT:LPRINT
690 FORJ=0TOJK:A$=A$+RIGHT$(" "+STR$(J0+J*10),7):NEXTJ:PRINTA$:
   PRINTA$
700 A$="     ":FORJ=1TOJK+1:A$=A$+" Mo- D=v-":NEXTJ:PRINTA$:LPRINTA$
710 A$="     ":FORJ=1TOJK+1:A$=A$+"an ;at ":NEXTJ:PRINTA$
720 LPRINTA$:LPRINT:FORI=1TO16:A$=RIGHT$("    "+STR$(E1(I)),3)+" ":A1$="     "
730 FORJ=1TOJK+1:IFMX(J)<=1THENNA$=" -- ":ND$="-- ":GOTO760
740 NA$=RIGHT$("     "+STR$(INT(10*P(I,J,0)/MX(J)+.5)),4)
750 ND$=RIGHT$("     "+STR$(INT(10*SQR(P(I,J,1)-MX(J)*(P(I,J,0)/MX(J))^2)/(MX
(J)-1))+.5)),4)
760 A$=A$+LEFT$(NA$,3)+LEFT$(ND$,3)+" "
765 A1$=A1$+" ."+RIGHT$(NA$,1)+" ."+RIGHT$(ND$,1)+" "
770 NEXTJ:LPRINTA$:PRINTA$:LPRINTA1$:PRINTA1$:NEXTI
780 A$="FRED":FORJ=1TOJK+1:A$=A$+RIGHT$("       "+STR$(MX(J)),6)+" ":NEXTJ
790 PRINTA$:LPRINT:LPRINTA$:LPRINT:LPRINT
800 LPRINTUSING"NUMBER OF CUMULATED DATA:  #######.";NJ
810 LPRINTUSING"            OUTRANGED DATA:  #######.";NR:LPRINTCHR$(12):GOTO920
820 POKE&H661E,&HFF:JP=PEEK(&H6621)*256+PEEK(&H6620)-1:JF=JPAND&HFF0B
830 JF=JF/256:JA=JPAND&HFF:POKE&H6621,JF:POKE&H6620,JA:POKE&H6622,&H10:RETURN
840 ON Y0GOTO850,860,900,910,870
850 RETURN
860 FORX4=0TO5:X5(X4)=PEEK(&H661E+X4):NEXTX4:'ARRAY ALLAP.
870 X2=(INT(X0/16))*2:X3=X0MOD16:POKE&H661E,0:POKE&H6623,X2
880 X4=PEEK(&H6632+X2+1)*&H100+PEEK(&H6632+X2):X7=X4+X3
890 X2=X7AND&HFF:X6=(X7AND&HFF00)/&H100:POKE&H6620,X2:POKE&H6621,X6:RETURN
900 X2=USR0(X7):X2=USR0(Z0):X2=USR0(S0$):RETURN
910 FORX4=0TO5:POKE&H661E+X4,X5(X4):NEXTX4:RETURN
920 END
```

```
1000 REM                  ####################
1010 REM                  ###                ###
1020 REM                  ###   T A B L E    ###
1030 REM                  ###                ###
1040 REM                  ####################
1050 REM
1060 REM
1070 REM        Made in the RESEARCH INSTITUTE OF THE
1080 REM        LEATHER AND FOOTWEAR INDUSTRIES (BOK)
1090 REM              Budapest - Hungary, 1983
1100 REM
1110 REM
1120 Z$="GIVE NEW VALUES!":FORI=1TO30:PRINT:NEXTI:CLEAR4000:WIDTH(120)
1130 INPUT"NAME OF THE TABLE: ";T$:PRINT:PRINT"PARAMETERS:"
1140 INPUT"   HORISONTALLY: ";HN$:INPUT"      - MINIMUM:   ";HI:INPUT"      - M
AXIMUM:   ";HA:INPUT"      - INCREMENT: ";HD
1150 IFHI>HATHEN1140
1160 INPUT"   VERTICALLY:   ";VN$:INPUT"      - MINIMUM:   ";VI:INPUT"      - M
AXIMUM:   ";VA:INPUT"      - INCREMENT: ";VD
1170 IFVI>VATHEN1160
1180 IH=INT((HA-HI)/HD+.5)+1:IV=INT((VA-VI)/VD+.5)+1:IFIH>7THEN1140ELSEPRINT
1190 INPUT"ANY OTHEN INFORMATIONS TO BE PRINTED? (Y/N)   ";C$:IFC$="Y"THENINP
UT"GIVE THE TEXT: ";TX$:GOTO1210
1200 IFC$<>"N"THEN1190
1210 INPUT"STARTING AT (Y,X): ";Y,X
1220 IFY>VAORY<VIORX<HIORX>HATHENPRINT:PRINT,"OUT OF TABLE RANGE. ",Z$:PRINT:
GOTO1210
1230 FORI=HITOHASTEPHD
1240 IFI=XTHEN1260
1250 NEXTI:PRINT:PRINT,"DOES NOT MATCH WITH HORIZONTAL HEADINGS."PRINT,Z$:PRI
NT:GOTO1210
1260 FORI=VITOVASTEPVD
1270 IFI=YTHEN1290
1280 NEXTI:PRINT:PRINT,"DOES NOT MATCH WITH VERTICAL HEADINGS.":PRINT,Z$:PRIN
T:GOTO1210
1290 II=INT((X-HI)/HD)+1:JJ=INT((Y-VI)/VD)+1
1300 INPUT"STARTING VALUE IN THE STARTING POINT OF THE TABLE: ";T0:PRINT"INCR
EMENTS":INPUT"   HORISONTALLY:  ";DX
1310 INPUT"   VERTICALLY:    ";DY:A=T0-DX*(II-1)-DY*(JJ-1):PRINT
1320 LPRINT:LPRINT:LPRINT:LPRINT:FORI=1TO30:PRINT:NEXTI:PRINT,T$:PRINT,STRING
$(LEN(T$),61):PRINT
1330 LPRINT ,:FORI=1TOLEN(T$):LPRINTMID$(T$,I,1);" ";:NEXTI:LPRINT:LPRINT ,ST
RING$(2*LEN(T$)-1,61):LPRINT:LPRINT
1340 IFT$<>""THENLPRINT"    ";TX$:LPRINT:LPRINT:PRINT"    ";TX$:PRINT
1350 W$=VN$+SPACE$(100):LPRINTMID$(W$,1,15);"          ";HN$:LPRINTMID$(W$,16
,15);
1360 PRINTMID$(W$,1,15);"        ";HN$:PRINTMID$(W$,16,15);
1370 B$="    ":FORI=1TOIH:B$=B$+RIGHT$("       "+STR$(HI+(I-1)*HD),8):NEXTI:LPR
INTB$:PRINTB$
1380 LPRINTMID$(W$,31,15);"      ";STRING$(8*IH,45):LPRINT
1390 PRINTMID$(W$,31,15);"      ";STRING$(8*IH,45):PRINT
1400 FORI=1TOIV:IFMID$(RIGHT$("         "+STR$(VI),8),7,1)<>"."ANDMID$(RIGHT$(
"       "+STR$(VD),8),7,1)<>"."THEN1420
1410 G=VI+(I-1)*VD:IFMID$(RIGHT$("      "+STR$(G),8),7,1)="."THEN1420ELSEB$=RI
GHT$("       "+STR$(G)+".0",8):GOTO1430
1420 B$=RIGHT$("         "+STR$(VI+(I-1)*VD),8)
1430 B$=B$+"             "
1440 FORJ=1TOIH:IFMID$(RIGHT$("     "+STR$(A),6),5,1)<>"."ANDMID$(RIGHT$("
  "+STR$(DX),6),5,1)<>"."THENZZ=0ELSEZZ=1
1450 IFZZ=0ANDMID$(RIGHT$("      "+STR$(DY),6),5,1)<>"."THEN1480
1460 G=A+(I-1)*DY+(J-1)*DX:IFMID$(RIGHT$("         "+STR$(G),8),7,1)="."THEN14
80ELSEB$=B$+RIGHT$("     "+STR$(G)+".0",8)
1470 GOTO1490
1480 B$=B$+RIGHT$("        "+STR$(A+(I-1)*DY+(J-1)*DX),8)
1490 NEXTJ:LPRINTB$:PRINTB$:NEXTI
1500 PRINT:INPUT"COPY? (Y/N)  ";C$:IFC$="Y"THENLPRINTCHR$(12):PRINT:PRINT:PRI
NT PRINT:GOTO1320ELSEIFC$<>"N"THEN1500
1510 PRINTCHR$(12)
```

[illegible] GIRTH OF LEGS

I - Babies

Shoe sizes	Fittings				
	-2	-1	0	1	2
105	[illegible]	128.0	134.0	140.0	146.0
110	[illegible]	131.5	137.5	143.5	149.5
115	[illegible]	135.0	141.0	147.0	153.0
120	[illegible]	138.5	144.5	150.5	156.5
125	136.0	142.0	148.0	154.0	160.0

II - Young children

Shoe sizes	Fittings				
	-2	-1	0	1	2
130	135.0	141.0	147.0	153.0	159.0
135	138.5	144.5	150.5	156.5	162.5
140	142.0	148.0	154.0	160.0	166.0
145	145.5	151.5	157.5	163.5	169.5
150	149.0	155.0	161.0	167.0	173.0
155	152.5	158.5	164.5	170.5	176.5
160	156.0	162.0	168.0	174.0	180.0
165	159.5	165.5	171.5	177.5	183.5

III - Children

Shoe sizes	Fittings				
	-2	-1	0	1	2
160	145.5	151.5	157.5	163.5	169.5
165	149.0	155.0	161.0	167.0	173.0
170	152.5	158.5	164.5	170.5	176.5
175	156.0	162.0	168.0	174.0	180.0
180	159.5	165.5	171.5	177.5	183.5
185	162.0	168.0	175.0	181.0	187.0
190	166.5	172.5	178.5	184.5	190.5
195	170.0	176.0	182.0	188.0	194.0
200	173.5	179.5	185.5	191.5	197.5
205	177.0	183.0	189.0	195.0	201.0
210	180.5	186.5	192.5	198.5	204.5
215	184.0	190.0	196.0	202.0	208.0
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible] - Girls

Shoe sizes	Positions				
	-2	-1	0	1	2
[illegible]	[illegible]	164.5	[illegible]	[illegible]	202.5
205	182.0	[illegible]	194.0	200.0	206.0
[illegible]	185.0	191.5	197.5	203.5	209.5
215	[illegible]	195.0	201.0	207.0	213.0
220	[illegible]	[illegible]	204.5	210.5	216.5
[illegible]	196.0	202.0	208.0	214.0	220.0
230	199.5	205.5	211.5	217.5	223.5
235	203.0	209.0	215.0	221.0	227.0
240	206.5	212.5	218.5	224.5	230.5
[illegible]	210.0	216.0	222.0	228.0	234.0
[illegible]	213.5	219.5	225.5	231.5	237.5
255	217.0	223.0	229.0	235.0	241.0
260	220.5	226.5	232.5	238.5	244.5
265	224.0	230.0	236.0	242.0	248.0
270	227.5	233.5	239.5	245.5	251.5

W - Boys

Shoe sizes	Positions				
	-2	-1	0	1	2
200	175	181	187	193	199
205	179	185	191	197	203
210	183	189	195	201	207
[illegible]	187	193	199	205	211
220	191	197	203	209	215
[illegible]	195	201	207	213	219
[illegible]	199	205	211	217	223
[illegible]	203	209	215	221	227
240	207	213	219	225	231
245	211	217	223	229	235
250	215	221	227	233	239
[illegible]	219	225	231	237	243
260	223	229	235	241	247
265	227	233	239	245	251
[illegible]	231	237	243	249	255
[illegible]	[illegible]	241	247	[illegible]	259
[illegible]	[illegible]	245	251	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	1	2
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	203.5	[illegible]	215.5
[illegible]	[illegible]	201.0	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	222.5
230	202.0	[illegible]	214.0	220.0	225.0
[illegible]	[illegible]	211.5	217.5	[illegible]	[illegible]
240	[illegible]	[illegible]	221.0	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	224.5	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	234.0	[illegible]
[illegible]	[illegible]	[illegible]	231.5	237.5	[illegible]
260	[illegible]	[illegible]	235.0	241.0	[illegible]
[illegible]	226.5	[illegible]	[illegible]	244.5	[illegible]
[illegible]	[illegible]	[illegible]	242.0	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	245.5	251.5	257.5
280	237.0	243.0	249.0	255.0	261.0
[illegible]	240.5	246.5	252.5	258.5	264.5

[illegible]

[illegible]	[illegible]	-1	0	1	[illegible]
230	[illegible]	215	221	[illegible]	[illegible]
235	212	218	224	230	[illegible]
240	[illegible]	[illegible]	227	[illegible]	[illegible]
245	[illegible]	[illegible]	230	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	245
[illegible]	[illegible]	[illegible]	236	242	248
[illegible]	[illegible]	[illegible]	[illegible]	245	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	248	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	251	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	260
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	266
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

JOINT GIRTH OF LASTS

I - Babies

Shoe sizes	Fittings					
	3	4	5	6	7	8
17	122.0	127.0	132.0	137.0	142.0	147.0
18	126.5	131.5	136.5	141.5	146.5	151.5
19	131.0	136.0	141.0	146.0	151.0	156.0
20	135.5	140.5	145.5	150.5	155.5	160.5

II - Young children

Shoe sizes	Fittings					
	3	4	5	6	7	8
21	140.5	145.5	150.5	155.5	160.5	165.5
22	144.0	149.0	154.0	159.0	164.0	169.0
23	147.5	152.5	157.5	162.5	167.5	172.5
24	151.0	156.0	161.0	166.0	171.0	176.0
25	154.5	159.5	164.5	169.5	174.5	179.5
26	158.0	163.0	168.0	173.0	178.0	183.0

III - Children

Shoe sizes	Fittings					
	2	3	4	5	6	7
24	145.0	150.0	155.0	160.0	165.0	170.0
25	149.5	154.5	159.5	164.5	169.5	174.5
26	154.0	159.0	164.0	169.0	174.0	179.0
27	158.5	163.5	168.5	173.5	178.5	183.5
28	163.0	168.0	173.0	178.0	183.0	188.0
29	167.5	172.5	177.5	182.5	187.5	192.5
30	172.0	177.0	182.0	187.0	192.0	197.0
31	176.5	181.5	186.5	191.5	196.5	201.5
32	181.0	186.0	191.0	196.0	201.0	206.0
33	185.5	190.5	195.5	200.5	205.5	210.5
34	190.0	195.0	200.0	205.0	210.0	215.0
35	194.5	199.5	204.5	209.5	214.5	219.5
36	199.0	204.0	209.0	214.0	219.0	224.0
37	203.5	208.5	213.5	218.5	223.5	228.5
38	208.0	213.0	218.0	223.0	228.0	233.0

JOINT GIRTH OF LASTS

IV - Girls

Shoe sizes	Fittings					
	4	5	6	7	8	9
31	182.5	187.5	192.5	197.5	202.5	207.5
32	187.0	192.0	197.0	202.0	207.0	212.0
33	191.5	196.5	201.5	206.5	211.5	216.5
34	196.0	201.0	206.0	211.0	216.0	221.0
35	200.5	205.5	210.5	215.5	220.5	225.5
36	205.0	210.0	215.0	220.0	225.0	230.0
37	209.5	214.5	219.5	224.5	229.5	234.5
38	214.0	219.0	224.0	229.0	234.0	239.0
39	218.5	223.5	228.5	233.5	238.5	243.5
40	223.0	228.0	233.0	238.0	243.0	248.0
41	227.5	232.5	237.5	242.5	247.5	252.5
42	232.0	237.0	242.0	247.0	252.0	257.0
43	236.5	241.5	246.5	251.5	256.5	261.5

V - Boys

Shoe sizes	Fittings					
	4	5	6	7	8	9
32	185	190	195	200	205	210
33	190	195	200	205	210	215
34	195	200	205	210	215	220
35	200	205	210	215	220	225
36	205	210	215	220	225	230
37	210	215	220	225	230	235
38	215	220	225	230	235	240
39	220	225	230	235	240	245
40	225	230	235	240	245	250
41	230	235	240	245	250	255
42	235	240	245	250	255	260
43	240	245	250	255	260	265
44	245	250	255	260	265	270

JOINT GIRTH OF LASTS

VI - Women

Shoe sizes	Fittings						
	4	5	6	7	8	9	10
32	186	191	196	201	206	211	216
33	190	195	200	205	210	215	220
34	194	199	204	209	214	219	224
35	198	203	208	213	218	223	228
36	202	207	212	217	222	227	232
37	206	211	216	221	226	231	236
38	210	215	220	225	230	235	240
39	214	219	224	229	234	239	244
40	218	223	228	233	238	243	248
41	222	227	232	237	242	247	252
42	226	231	236	241	246	251	256
43	230	235	240	245	250	255	260

VII - Men

Shoe sizes	Fittings						
	5	6	7	8	9	10	11
36	210.0	215.0	220.0	225.0	230.0	235.0	240.0
37	213.5	218.5	223.5	228.5	233.5	238.5	243.5
38	217.0	222.0	227.0	232.0	237.0	242.0	247.0
39	220.5	225.5	230.5	235.5	240.5	245.5	250.5
40	224.0	229.0	234.0	239.0	244.0	249.0	254.0
41	227.5	232.5	237.5	242.5	247.5	252.5	257.5
42	231.0	236.0	241.0	246.0	251.0	256.0	261.0
43	234.5	239.5	244.5	249.5	254.5	259.5	264.5
44	238.0	243.0	248.0	253.0	258.0	263.0	268.0
45	241.5	246.5	251.5	256.5	261.5	266.5	271.5
46	245.0	250.0	255.0	260.0	265.0	270.0	275.0
47	248.5	253.5	258.5	263.5	268.5	273.5	278.5

WIDTH OF JOINT (BALL WIDTH)

I - Babies

Shoe sizes	Fittings				
	-2	-1	0	1	2
105	49.4	51.8	54.2	56.6	59.0
110	50.8	53.2	55.6	58.0	60.4
115	52.2	54.6	57.0	59.4	61.8
120	53.6	56.0	58.4	60.8	63.2
125	55.0	57.4	59.8	62.2	64.6

II - Young children

Shoe sizes	Fittings				
	-2	-1	0	1	2
130	53.6	56.0	58.4	60.8	63.2
135	55.0	57.4	59.8	62.2	64.6
140	56.4	58.8	61.2	63.6	66.0
145	57.8	60.2	62.6	65.0	67.4
150	59.2	61.6	64.0	66.4	68.8
155	60.6	63.0	65.4	67.8	70.2
160	62.0	64.4	66.8	69.2	71.6
165	63.4	65.8	68.2	70.6	73.0

III - Children

Shoe sizes	Fittings				
	-2	-1	0	1	2
170	62.2	64.6	67.0	69.4	71.8
175	63.6	66.0	68.4	70.8	73.2
180	65.0	67.4	69.8	72.2	74.6
185	66.4	68.8	71.2	73.6	76.0
190	67.8	70.2	72.6	75.0	77.4
195	69.2	71.6	74.0	76.4	78.8
200	70.6	73.0	75.4	77.8	80.2
205	72.0	74.4	76.8	79.2	81.6
210	73.4	75.8	78.2	80.6	83.0
215	74.8	77.2	79.6	82.0	84.4
220	76.2	78.6	81.0	83.4	85.8
225	77.6	80.0	82.4	84.8	87.2

W I D T H O F J O I N T (B A L L W I D T H)

IV - Girls

Shoe sizes	Fittings				
	-2	-1	0	1	2
205	75.8	78.2	80.6	83.0	85.4
210	77.2	79.6	82.0	84.4	86.8
215	78.6	81.0	83.4	85.8	88.2
220	80.0	82.4	84.8	87.2	89.6
225	81.4	83.8	86.2	88.6	91.0
230	82.8	85.2	87.6	90.0	92.4
235	84.2	86.6	89.0	91.4	93.8
240	85.6	88.0	90.4	92.8	95.2
245	87.0	89.4	91.8	94.2	96.6
250	88.4	90.8	93.2	95.6	98.0
255	89.8	92.2	94.6	97.0	99.4
260	91.2	93.6	96.0	98.4	100.8

V - Boys

Shoe sizes	Fittings				
	-2	-1	0	1	2
205	75.0	77.4	79.8	82.2	84.6
210	76.7	79.1	81.5	83.9	86.3
215	78.4	80.8	83.2	85.6	88.0
220	80.1	82.5	84.9	87.3	89.7
225	81.8	84.2	86.6	89.0	91.4
230	83.5	85.9	88.3	90.7	93.1
235	85.2	87.6	90.0	92.4	94.8
240	86.9	89.3	91.7	94.1	96.5
245	88.6	91.0	93.4	95.8	98.2
250	90.3	92.7	95.1	97.5	99.9
255	92.0	94.4	96.8	99.2	101.6
260	93.7	96.1	98.5	100.9	103.3
265	95.4	97.8	100.2	102.6	105.0
270	97.1	99.5	101.9	104.3	106.7
275	98.8	101.2	103.6	106.0	108.4

WIDTH OF JOINT (BALL WIDTH)

VI - Women

Shoe sizes	Fittings				
	-2	-1	0	1	2
220	82.6	85.0	87.4	89.8	92.2
225	84.0	86.4	88.8	91.2	93.6
230	85.4	87.8	90.2	92.6	95.0
235	86.8	89.2	91.6	94.0	96.4
240	88.2	90.6	93.0	95.4	97.8
245	89.6	92.0	94.4	96.8	99.2
250	91.0	93.4	95.8	98.2	100.6
255	92.4	94.8	97.2	99.6	102.0
260	93.8	96.2	98.6	101.0	103.4
265	95.2	97.6	100.0	102.4	104.8
270	96.6	99.0	101.4	103.8	106.2
275	98.0	100.4	102.8	105.2	107.6

VII - Men

Shoe sizes	Fittings				
	-2	-1	0	1	2
235	89.7	92.1	94.5	96.9	99.3
240	91.0	93.4	95.8	98.2	100.6
245	92.3	94.7	97.1	99.5	101.9
250	93.6	96.0	98.4	100.8	103.2
255	94.9	97.3	99.7	102.1	104.5
260	96.2	98.6	101.0	103.4	105.8
265	97.5	99.9	102.3	104.7	107.1
270	98.8	101.2	103.6	106.0	108.4
275	100.1	102.5	104.9	107.3	109.7
280	101.4	103.8	106.2	108.6	111.0
285	102.7	105.1	107.5	109.9	112.3
290	104.0	106.4	108.8	111.2	113.6
295	105.3	107.7	110.1	112.5	114.9