In the autumn of 1988 I was granted a short-term scholarship from the Laboratory of Archaeology at the Smithsonian Tropical Research Institute in Panama. The Laboratory is headed by Dr Richard Cooke who encouraged me to study their collection of human skeletons. Dr Richard Cooke was very helpful and hospitable and offered his advice in archaeology. At the very Laboratory I was received with warmth and understanding. My main task, following the stipend, was to clean and preserve human skeletons and to measure those bones which were suitable for that purpose. For three months I was working on human bone material collected from two sites :

I Cerro Mangote / marked CO-40 /, and represented by 5 burials /including 15 individuals in all/, and dating back to 5000--3000BC.

II Sitio Sierra / marked AG-3 /, represented by two burial grounds

a/ burial ground "B" - a series of 22 burials containing fragments of ca 24 skeletons, dated from 300 BC to 500 AD,

b/ burial ground dated ± 1100 AD and represented by three series of burials :

- series "A" - four burials including, in toto, bone fragments of four individuals
- series "F" - fragments of skeletons of three individuals
- series "G" - five burials with skeletal fragments of five individuals.

Additionally, I included the remnants of two /highly incomplete/ skeletons belonging to the series marked CA-3.

I have characterised the general condition of the skeletons in a description for the Laboratory Archive. For practical purposes I give explanation of the abbreviations used in the description of the condition of the crania :

1/ CR - CRANIUM - a complete cranium with a complete mandible

2/ CV - CALVARIUM - a complete cranium without the mandible

3/ CL - CALVARIA - a cranium without the mandible and facial part

4/ Ca - CALVA or CALOTTA - the cranial vault /the upper part without the base/.

The measurements of the preserved bones were made with typical anthropometric instruments /spreading calipers, sliding caliper, osteometric board and measuring tape/.

I considered the following metric traits of the postcranial skeletons:

a/ femur

- physiological /natural/ length
- maximum length
- vertical diameter of the head
- subtrochanteric medio-lateral diameter of the shaft
- subtrochanteric anterior-posterior diameter of the shaft
- bicondylar breadth
- shaft circumference

b/ tibia

- maximum length
- medio-lateral diameter at the nutrient foramen
- anterior-posterior diameter at the nutrient foramen
- shaft circumference

c/ patella

- length
- breadth
- thickness

d/ humerus

- maximum length
- superior diameter /upper/
- maximum diameter of the head

- maximum diameter mid-shaft
- minimum diameter mid-shaft
- inferior diameter /lower/
- shaft circumference

e/ ulna

- maximum length
- physiological length
- least circumference of the shaft
- maximum diameter of the shaft at the nutrient foramen
- minimum diameter of the shaft at the nutrient foramen

f/ radius

- maximum length
- physiological length
- head diameter
- least circumference of the shaft

g/ clavicula

- maximum length
- mid-bone circumference
- minimum diameter
- maximum diameter

Cranial measurements:

- g-op maximum cranial length
- eu-eu maximum cranial breadth
- ft-ft minimum breadth of the forehead
- b-ba cranial height
- g-l cranial length to point lambda
- g-i anterior-posterior diameter
- n-pr upper facial height
- mf-ek orbital breadth
- orbital height

- apt-apt nasal breadth
- n-ns nasal height
- cranial circumference
- go-go lower facial breadth /bigonial breadth/
- gn-id height of mandibular symphysis.

While working on fragments of the skeletons, I tried to evaluate the individual's sex and age at the moment of his/her death. This information is indispensable for a further population analysis. The individual's age at death was evaluated from biological changes in development, which were observed in the preserved bone pieces. Therefore, while talking on the age, I mean the so-called biological age and not the calendar one. Undoubtedly, the development of the organism is canalised, yet this does not mean that the process is harmonious, because changes in development do not occur in a strictly arranged sequence; development depends on several environmental factors /life style, physical activity, diet, diseases suffered, and other stressing situations/ as well as predispositions of the organism. These factors hamper giving a precisely defined individual age /described by the developmental standards, especially, when one lacks in knowledge of socio-economic and cultural conditions of a given population. With these limitations in mind, I decided to describe individual age by the following terms :

1/ INFANS I - the period from birth until the moment of eruption of first permanent dentition /6-7 years of life/,

2/ INFANS II - the period lasts until the eruption of the second molar /ca 12-14 years of life/,

3/ JUVENIS - the period lasts until the moment of occurring of bone fusion between the sphenoid and occipital bones. Usually at that time there erupts the third molar /18-20 years of life/,

4/ ADULTUS - the period from the moment of completion of the fusion

of the occipital with the sphenoid bone until the onset of obliteration of the main cranial sutures,

5/ MATURUS - obliteration of sutures is intermediate, and teeth definitely abraded /until 50-55 years of life/,

6/ SENILIS - obliteration of sutures is highly advanced, sutures are almost invisible, and teeth strongly abraded and missing.

In this situation some additional observations were helpful :

1/ fusion of the long bones epiphyses with their shafts,

2/ the degree of obliteration of sutures and the occurrence of bone fusion between the sphenoid and occipital bones which substitute for synchondrosis,

3/ the presence of deciduous and permanent dentition and the degree of their abrasion, and the observation of well preserved bone fragments /eg. vertebrae, pelvic bones, shoulder-blades, cranial bones/, /Bass, 1971; Malinowski, Strzałko, 1985;/.

Defining the sex from the preserved skeletons turned out to be a bit troublesome, owing mostly to missing postcranial and cranial parts. Thus I used only some descriptive traits apt for observation, and neglected /in this context/ the analysis of measurements. A more massive skeleton, with huger and more massive long bones, more distinct sculpture suggest males. It is easier, however, to determine the sex while having cranial and pelvic traits. Male sex is determined by such features as :

- massiveness of the cranium, visible sculpture of the occipital bone, distinct temporal lines, frontal squama inclined posteriorly, rounded edges of the orbits, large and massive mastoid process, significantly high mandible with its angles characterized by the edges bent outside and its branches significantly massive,
- significantly narrow and deep greater sciatic notch, large and relatively low facies auricularis, usually lacking of pre-auricular sulcus and many others, significant traits which are observable on

a well-preserved pelvis /Sinelnikov, 1988; Bass, 1971;/.

Gynandromorphism /masculinization or feminization/ is an obstacle in defining the sex. There are such individuals in which the morphological sexual traits are poorly expressed and thus they take an intermediate form. It is worth mentioning that the intensity of sexual differences during the development of human organism varies and depends on the individual's age. Sexual dimorphism is not significant in childhood, but it becomes more distinct at growth spurt. Its final value is 8% /Malinowski,Strzałko, 1985;/. Sexual differences reveal themselves more strongly or weakly not only in relation to the age but also in relation to the race and a given population.

Having several well-preserved post-cranial skeletons, I decided to estimate stature of respective individuals. The determination of body height by means of the preserved body remnants is not easy. It is a sort of evaluation which, generally, allows to assess the somatic build of the inhabitants of a given region and period.

Numerous standards for evaluating stature from the length of long bones and ready-made tables with these results, should not be safely applied as they usually refer to a given population of a given morphological structure. It is revealed in interpopulational differences in basic somatic traits, also in body height and body proportions.

Some autors point also to the decrease stature in resulting from ageing of the organism /Trotter, Gleser, 1951; Miall et. al., 1967; Himes, Mueller, 1977; Panek, 1978;/. This process begins at the age of 30 /i.e. still Adultus/, and the defference in maximum body height and the so-called senile one can reach as many as 8 cm in females and nearly 10 cm in males /Panek, 1978;/. Such significant differences depend not only on ontogenetic changes in the organism /progressing scoliosis of the spine, flaccid muscles/ but also on the secondary ones, i. e. style of life /type of the performed work, diet, diseases suffered/.

I determined body height exclusively of these individuals whose postcranial skeletons included at last one complete long bone. The final, although approximate stature value, was obtained from tables quoted by Genovés /1967/. When more than one long bone of a given individual survived, then all these bones were measured. Values of stature of a given individual were calculated from each of his/her long bone. His/her final stature is a mean value calculated from the above values.

Thus calculated body height is highly approximate, since it was impossible to determine precisely the individual's age and the pattern of his/her source population.

Thus there appears a gap in the research which needs filling in by :

1/ anthropometric research describing morphologically the people inhabiting Panama /esp. those groups which inhabit the regions where there human remnants, now collected at the Laboratory, were found/,

2/ an analysis of the prospective morphological differences between the people originating from different regions of that country,

3/ working out standards and formulas describing basic morphological traits /body height, body proportions .../.

Because of large incompleteness of the reconstructed crania, it was impossible to make an in-depth analysis of their metrical traits. Only very few crania could be analysed for general index, therefore, it would be disputable to determine the dominant type of cranium among the human remnants coming from the discovered cementeries.

Only some values may point to a tendency in the so-called "brachycephalization" of the population of the province of central Panama. Among the skeletons from both sites, Cerro Mangote and Sitio Sierra, there are bone fragments with distinct pathological

changes like osteoporosis, hyperostosis, osteophytes, reduced height /flattened/ of the vertebrae and caries. However, I did not observe any intentional deformations of the bones.

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Table 1. The number of identified skeletons, sex and age of the individual at death, Cementeries Cerro Mangote and Sitio Sierra /Panama/.

	Burial symbol	Number	Sex	Age
1.	CO-40/68C	5	?	1 Adultus, 3 Infans I, 1 Infans II
2.	CO-40/68E	2	?	Maturus, Infans
3.	CO-40/68W	5	?	1 Adultus, 1 Adultus-Maturus, 2 Infans I, 1 Infans II
4.	CO-40/69	2	M,?	Adultus, Infans I
5.	CO-40/77	1	F	Maturus
1.	AG-3/B-0	1	M	Maturus/Senilis
2.	AG-3/B-1	1	F	Maturus
3.	AG-3/B-2	1	?	Infans II
4.	AG-3/B-3?	1	M	Maturus
5.	AG-3/B-4	1	F?	Maturus
6.	AG-3/B-6	1	M/F?	Maturus
7.	AG-3/B-7	1	M	Maturus/Senilis
8.	AG-3/B-8	1	F	Maturus
9.	AG-3/B-9	1	?	Infans II
10.	AG-3/B-10	1	M	Adultus
11.	AG-3/B-11	1	M	Juvenis
12.	AG-3/B-12	1	M	Maturus
13.	AG-3/B-13	1	M	Maturus
14.	AG-3/B-14	1	M	Maturus
15.	AG-3/B-15	2	?,?	Senilis, Juvenis

16.	AG-3/B-16	1	F	Maturus
17.	AG-3/B-17	1	M	Adultus
18.	AG-3/B-18	1	?	Juvenis
19.	AG-3/B-19	1	F	Juvenis
20.	AG-3/B-20	1	M	Adultus
21.	AG-3/B-22	1+1?	F?	Maturus+ teeth-Juvenis
22.	AG-3/B-23	1	M	Adultus

1.	AG-3/A-1	1	F	Adultus/Maturus
2.	AG-3/A-2	1	F	Maturus/Senilis
3.	AG-3/A-3	1	M/F?	Adultus?
4.	AG-3/A-4	1	M	Adultus

1.	AG-3/F	3	M	?
			F	Adultus
			?	Infans I

1.	AG-3/G-1	1+1	M,?	Adultus,?
2.	AG-3/G-2	1	M	Adultus
3.	AG-3/G-3	1+1	M,?	Adultus,?
4.	AG-3/G-4	1	F?	Maturus
5.	AG-3/G-7	1	M	Maturus

1.	AG-3/A-1	F	157,1
2.	AG-3/A-3	M/F	152,5/147,3

$\bar{x}_{♀}$ = 152,2 cm

1.	AG-3/G-1	M	152,9
2.	AG-3/G-2	M	159,8 max.
3.	AG-3/G-3	M	152,0
4.	AG-3/G-4	F?	144,5

$\bar{x}_{♂}$ = 154,9 cm

Table 2. Life body height of individuals from Cerro Mangote and Sitio Sierra /Panama/.

	Burial symbol	Sex	Height /cm/
1.	CO-40/68E	M/F	156,5/153,0
2.	CO-40/69	M	155,0
3.	CO-40/77	F	140,5
	$\bar{x}_{♂}$ = 155,8 cm	$\bar{x}_{♀}$ = 146,8 cm	
1.	AG-3/B-7	M	163,3 max.
2.	AG-3/B-11	M	154,5
3.	AG-3/B-12	M	156,5
4.	AG-3/B-13	M	150,0
5.	AG-3/B-14	M	149,5 min.
6.	AG-3/B-17	M	162,2
7.	AG-3/B-20	M	157,5
	$\bar{x}_{♂}$ = 156,2 cm		
8.	AG-3/B-1	F	143,3 min.
9.	AG-3/B-4	F	149,2
10.	AG-3/B-8	F	152,0
11.	AG-3/B-16	F	152,4 max.
12.	AG-3/B-19	F	149,0
13.	AG-3/B-6	M/F?	151,5/146,7
	$\bar{x}_{♀}$ = 149,2 cm		

Table 3. General index of the selected crania from Cerro Mangote and Sitio Sierra /Panama/.

	Burial symbol	Sex	General index
1.	CO-40/69	M	73,40 DOLICHOCRANIUM
1.	AG-3/B-0	M	75,69 MESOCRANIUM
2.	AG-3/B-6	M/F	78,24 MESOCRANIUM
3.	AG-3/B-7	M	81,50 BRACHYCRANIUM
4.	AG-3/B-10	M	78,80 MESOCRANIUM
5.	AG-3/B-11	M	81,40 BRACHYCRANIUM
6.	AG-3/B-12	M	79,70 MESOCRANIUM
7.	AG-3/B-14	M	80,90 BRACHYCRANIUM
8.	AG-3 /B-17	M	78,20 MESOCRANIUM
9.	AG-3/B-20	M	78,90 MESOCRANIUM
10.	AG-3/B-8	F	82,80 BRACHYCRANIUM
11.	AG-3/B-16	F	74,90 DOLICHOCRANIUM
1.	AG-3/A-1	F	76,88 MESOCRANIUM
2.	AG-3/A-4	M	92,31 HYPERBRACHYCRANIUM
1.	AG-3/G-3	M	88,00 HYPERBRACHYCRANIUM