

# EARLY NEOLITHIC SKELETONS FROM PHILIA-DRAKOS, SITE A (CYPRUS)

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## **Abstract**

A report is presented on skeletons from an early Neolithic site in Cyprus, and comparisons are made with other Neolithic and Bronze Age osteological remains from Cyprus and the Mediterranean area.

## **Introduction**

Excavations by Dr. Trevor Watkins at Philia-Drakos, Site A, revealed the presence of early Neolithic human skeletons. An examination of these following reconstruction was carried out by the writer at the Anatomy Department, Edinburgh University Medical School.

## **Osteological Description**

The osteological examination of the skeletal material revealed the presence of three individuals, designated skeletons 1, 2 and 3.

### **SKELETON 1**

#### **(a) The Skull**

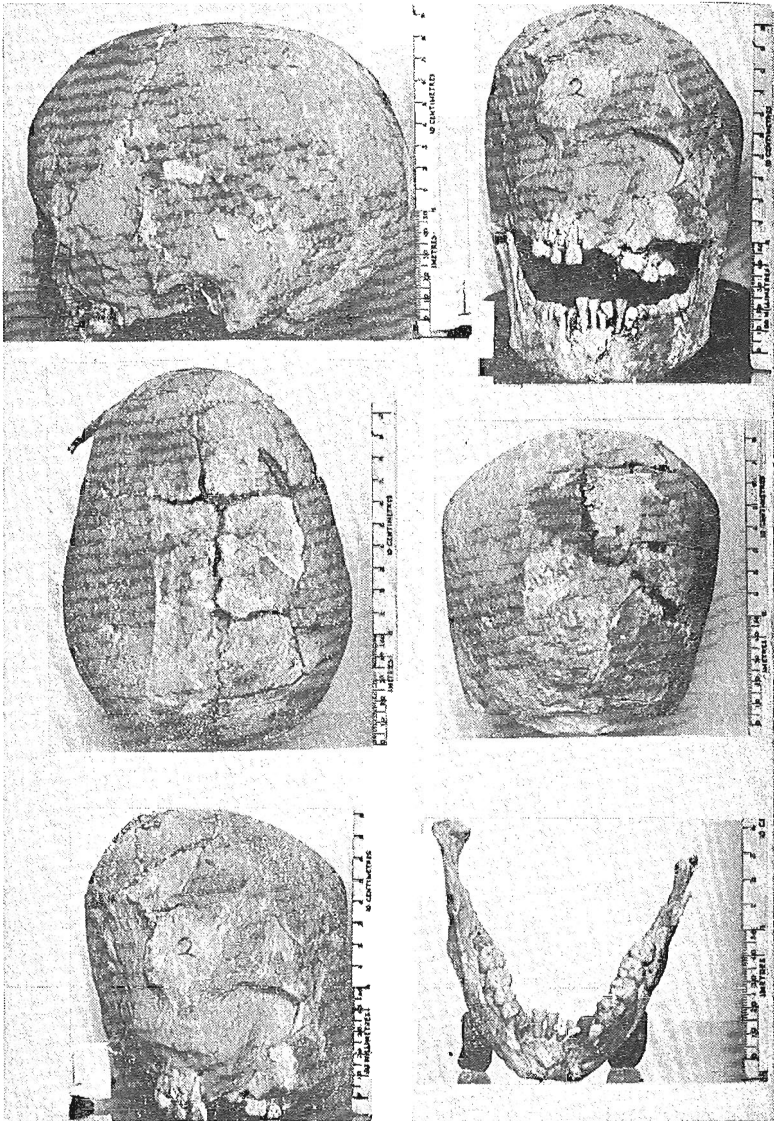
The skull was reconstructed from very many small fragments which were quite thin (2-3 mm). A good reconstruction could not be made, however. The skull appears to have undergone posthumous deformation, such that the splanchnocranium was pushed backwards under the base of the skull. The measurements given for this skull should be treated with greatest caution on account of the posthumous deformation and the poor quality of the reconstruction.

*Norma Verticalis*: Ovoid with parietal bullae and a left-hand side anteriorly bulging frontal bone. Mesocranial bordering on dolichocranial. No obliteration of coronal, sagittal, or lambdoid sutures which are moderately complicated.

*Norma Occipitalis*: Owing to supero-inferior compression and absence of the inferior part of the occipital bone and the

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SKELETON 2  
Skull Mandible

Posthumous deformation made it impossible to unite some bones at the contiguous sutures as may be seen in the **norma verticalis** and **norma occipitalis**.

mastoid processes, little can be said of this aspect with confidence, except to note that no Wormian bones were seen.

*Norma Basilaris:* Absence of base of skull precludes this description.

*Norma Anterior:* The frontal bone and zygoma are deficient on the right-hand side, and the bones surrounding the nasal aperture and the medial sides of both orbits, as well as the medial parts of both maxillae were all lacking. No facial measurements nor indices were obtainable. The frontal bone lacks brow ridges and the glabellar area is flattened. The frontal bone rises vertically from the orbits and root of the nose with traces of a frontal tuber (posthumous deformation?) on the left.

*Norma Lateralis:* The skull is low and flat, especially between the bregma and lambda, probably due both to posthumous deformation and to deformation during reconstruction, and the overall flatness of the skull is exaggerated by the posterior position of the maxillae and left zygoma, which is probably posthumous deformation. The occipital region is a smooth convexity. No brow ridges can be seen, and the glabellar area is flat, above which the frontal bone rises vertically, with some trace of a tuber on the left-hand side, which may, however, be in part due to the posthumous deformation. The zygomatic arches on each side are broken.

No photographs of the skull are given here on account of the posthumous deformation and poor quality reconstruction which would render them misleading.

*Mandible:* Only small, unmeasurable fragments of the mandible were preserved.

*Craniometry:* The following measurements are tentatively offered.

Maximal antero-posterior length .....	? 185.5
Maximal breadth of skull .....	? 140.5
Maximal frontal breadth .....	? 126.5
Glabella—bregma cord .....	97
Glabella—bregma circumference .....	120
Glabella—lambda cord .....	179.5
Glabella—lambda circumference .....	250
Biporionic breadth .....	? 98

Bimastoid breadth .....	?	89
Vertical circumference between poria via bregma .....		293
Horizontal circumference .....		525
Minimal height between zygomatic process of maxilla and floor of orbit .....		19
Cranial Index .....	?	75.7

The flattening to which the skull has been subjected assuredly means that the auriculobregmatic height as measured on the restored specimen (109) is too low and it would be unsafe to base calculations upon that value.

### (b) Post-cranial bones

*Claviculae*: Two broken clavicles from which both medial and lateral extremities are missing, are short and light, each giving a low perimeter of 22 mm.

*Manus and Carpus*: Two pisiforms and a fragmentary scaphoid (?), nine metacarpal bones, three metacarpal epiphyses, and seventeen phalanges or fragments thereof.

*Pes and Tarsus*: One fragmentary right cuboid and right second cuneiform, and a first left cuneiform, five metatarsals, and fragments of three phalanges. The tarsal bones were remarkable for their small size.

*Ribs*: Various fragments of ribs. It was not possible to assess the number of ribs which these fragments comprised.

### Conclusions

The individual was most probably a young person, perhaps female, of early adolescent age. This assessment agrees with the dental age (*vide infra*) of 11-14 years, assuming comparability with present-day population.

## SKELETON 2

### (a) The Skull

The skull was reconstructed from a few dozen fragments which had been partly preserved in the position encountered at excavation by *in situ* treatment with polyvinyl acetate. No attempt was made to interfere with the earlier treatment, in order to preserve the archaeological posthumous deformation, although the reconstruction so made demonstrates an infero-posterior depression of the frontal bone and splanchnocranium in general. Attempts to correct the resulting separation of the bregmatic part of the coronal suture resulted in separation of the inferior extremity of that suture with the parietal bone, indicative of post-

humous deformation of both bones. Since it would under such circumstances have been impossible to correctly compensate for the deformation by any reconstruction, the reconstruction made has been that of the condition in which the skull was excavated. Because of the deformation, the craniometric values should be treated with caution. The antero-posterior skull length is probably rather lower than the *in vivo* length, in particular, and the cranial index therefore may be too high on that account, although, on the other hand, the parietal deformations have probably resulted in too high a maximal skull breadth, which would if correspondingly reduced, leave the cranial index at about the value given (mesocranial).

*Norma Verticalis:* The skull is rhomboidal in this aspect, and shows trigonocephaly almost certainly on account of the post-humous deformation. Mesocranial bordering on dolichocranial (but see above). Parietal bullae are prominent. No obliteration of coronal, sagittal or occipital sutures which are simple.

*Norma Occipitalis:* The parietal bones rise straight and divergently above the mastoid processes to prominent bullae and then incline at a low angle to meet at the sagittal suture, their superior parts being only slightly convex. The right parietal bone is higher than the left. No Wormian bones were found, although a deficiency in the right lambdoid suture might have been occupied by one such bone.

*Norma Basilaris:* Most of the base of the skull being deficient, little can be said about this aspect.

*Norma Anterior:* The bones surrounding the nasal aperture, as well as most of the right-hand part of the frontal bone and right zygoma and maxilla were lacking. The left maxilla was fragmentary. Little can be said with confidence about this aspect therefore.

*Norma Lateralis:* There are no brow ridges and the glabellar area is flat. The frontal bone rises up vertically from the root of the nose. The sagittal curve has a smoothly convex profile, but there appears to be some flattening towards the lambda. The mastoid processes are well developed. The zygomatic arches on each side are broken.

*Mandible:* The mandible was almost complete except for a damaged left mandibular condyle.

*Craniometry*

Maximal antero-posterior length .....	173
Maximal skull breadth .....	132
Maximal frontal breadth .....	108.5
Glabella—inion cord .....	156
Glabella—inion circumference .....	319
Glabella—lambda cord .....	170
Glabella—lambda circumference .....	247
Glabella—bregma cord .....	103
Glabella—bregma circumference .....	121
Lambda—inion cord .....	65.5
Bregma—lambda cord .....	116.5
Nasion—bregma cord .....	108
Glabella—nasion cord .....	6.2
Biasterionic breadth .....	108
Bimastoid breadth .....	88
Biporionic breadth .....	85
Left auriculobregmatic height .....	121
Right auriculobregmatic height .....	122
Maximal horizontal circumference .....	492
Vertical circumference between poria via bregma .....	310
Minimal height between zygomatic process of maxilla and floor of orbit .....	21.5
Upper facial height .....	? 37
Total facial height .....	81.5
Mandibular bicondylar breadth .....	? 107
Mandibular bigonial breadth .....	90
Mandibular symphyisial height .....	24.5
Height of right mandibular ramus .....	50
Minimal breadth of left mandibular ramus ..	32
Minimal breadth of right mandibular ramus	32
Mandibular angle .....	57° (123°)

*Other features*

Left orbital frontal notch present.

Meningeal arterial impressions well preserved on interior of calvarium.

Circular foramen on external surface of right mandibular gonion 3 mm in diameter, probably caused by posthumous animal action.

*Indices and Anthropological Classifications*

Cranial Index	76.2	Mesocranial (close to dolichocranial)
Vertico-transverse Index*	92	Acrocranial
Vertico-longitudinal Index*	70.3	Hypsicranial
Mean Height Index*	79.7	High skull
Cranial Capacity**	1340 approx.	
Cranial Capacity***	1564	„

Facial indices, transverse cranio-facial indices, orbital indices, nasal and palatal indices could not be calculated on account of the impossibility of obtaining the necessary measurements owing to the fragmentary state of the skull.

**(b) Post-cranial bones**

*Scapula:* Unmeasurable fragments of left scapula.

*Clavicula:* Proximal extremity of right clavicle; epiphysis not fused. Distal extremity of left clavicle. No measurements were attempted on these fragments.

*Humerus:*

Right humerus: the head was damaged, and greater and lesser tuberosities deficient. The medial epicondyle was damaged. The shaft was bowed medially. No epiphyseal lines were observed.

Left humerus: the head was damaged, and greater and lesser tuberosities deficient. The shaft was bowed medially. No epiphyseal lines were observed.

	R	L
Maximal length .....	258	261
Physiological length .....	257	257
Midshaft circumference .....	60	60
Midshaft maximal diameter .....	19.5	19.5
Midshaft minimal diameter .....	15	15
Angle of inclination of neck .....	121°	116°
Angle of numeral torsion .....	? 42°	? 36°
Diaphyseal index .....	76.9	Eurybrachial

\* These indices may have been distorted by possible vertical deformation of the skull.

\*\* Calculated on the basis that the skull is female.

\*\*\* Calculated on the basis that the skull is male.

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Length: thickness index ..... 230.7  
 Sex ..... probably female

*Radius:*

Right radius: head damaged and obliquely placed, neck much angulated.

Left radius: no special features.

	<i>R</i>	<i>L</i>
Maximal length .....	198	201
Physiological length .. .	189	191
Maximal circumference .....	37	35
Maximal transverse diameter .....	15.5	14.5
Minimal transverse diameter .....	9	9
Collodiaphyseal angle .....	147°	159°
Brachial index .....	76.5	

The brachial index is above the range for modern Europeans.

*Ulna:*

Right ulna: no special features.

Left ulna: distal extremity deficient, and olecranon damaged.

	<i>R</i>	<i>L</i>
Maximal length .... .	219	U
Physiological length .....	192	U
Minimal circumference .....	8	U
Transverse diameter .....	17	17
Antero-posterior diameter .....	22	21
Platoleneal index .....	79 Platoleneal	

*Manus and Carpus:*

Right-hand side: all eight carpal bones present; all five metacarpals present; all five first phalanges present; all five second phalanges present; all four third phalanges present.

Left-hand side: scaphoid, hamate, lunate, pisiform, triquetral, and trapexium bones present; metacarpals II-V present; first phalanges of all five digits present; middle phalanges II-V present; third phalanges II and IV only present.



**Calculations of Stature**

Based on humerus	(M-O**)	below 1400
	(T-G***)	1455
Based on radius	(M-O)	1455
	(T-G)	1495
Based on ulna	(M-O)	1497
	(T-G)	1510

*Sacrum:* The lower part of the sacrum was missing and sacral length unmeasurable therefore. The sacrum is hypobasal, frequently a male characteristic. The maximal sacred breadth is 103 mm.

*Os coxae:*

Right hip: very fragmentary. Iliac crest not fused.

Left hip: much damaged. Iliac crest not fused. Iliac breadth 129 mm.

Although it was not possible to sex the hip, the general impression given by the fragments was of robusticity.

*Femur:* Both femora were fragmentary and unmeasurable.

*Tibia:* Both tibia were fragmentary and unmeasurable.

*Fibula:* Both fibulae were fragmentary and unmeasurable.

*Talus:*

Right talus: fragmentary and unmeasurable.

The left talus gave the following measurements:

Talar length .....	37.5
Talar breadth .....	42.5
Talar height .....	24
Angle of declination .....	15°
Angle of torsion .....	30°
Index of talar breadth .....	88.2
Index of talar height .....	63

*Calcaneus:*

Right calcaneus: fragmentary and unmeasurable.

Left calcaneus gave the following measurements.

Maximal length .....	60
Minimal breadth .....	23
Minimal height .....	27
Anterior breadth .....	33.5
Index of calcaneal breadth .....	38.6
Index of calcaneal height .....	55.7

\* Based on assumption that individual was female, since low values of lengths precluded reference to tables of male values for some bones.

\*\* From Manouvrier's tables (1893) as revised by Olivier (1969).

\*\*\* From Trotter and Gleser (1958).

Vertebrae

Vertebrae	Anterior height of body	Posterior height of body	Breadth of superior articulation	Breadth of inferior articulation	Maximal canal breadth	Maximal antero-posterior length of canal	Maximal antero-posterior length	Maximal superior breadth of body	Maximal inferior breadth of body	Height of dens	Fragments
C I	—	—	43.5	41.5	24	27.5	40.5	U	U	34	
C II	—	—	39	42	21	18	43.5	9.5	17.5		
C III	12	10	40.5	43.5	20.5	13	35	16	16		
C IV	11.5	8	43.5	45	21	13	34.5	16.5	16.5		
C V	10	9	U	U	U	U	U	U	U		
C VI	10	10.5	46.5	46.5	22.5	U	U	20.5	17		
C VII	19.5	U	U	U	U	U	U	U	U		
T I	U	U	U	U	U	U	U	U	U		+
T II	15	U	U	U	U	U	U	U	U		
T III	16.5	16	U	U	U	16	U	U	U		+
T IV	U	U	U	U	U	U	U	U	U		+
T V	U	U	U	U	U	U	U	U	U		
T VI	16.5	16	U	U	U	17	U	22	U		
T VII	20.5	20	30.5	29	13.5	13	U	25.5	24		
T VIII	16.5	16	U	U	14	14.5	U	23.5	24		
T IX	16.5	18	U	U	U	U	U	26	26		
T X	19	19	U	U	U	U	U	26	30		
T XI	17.5	U	27.5	27.5	16.5	16.5	U	27	27		
T XII	20.5	23	U	28.5	20	16	66	34	38.5		
T XIII	21	20	33	26.5	20	16.5	62	30.5	35		
L I	22	U	U	U	U	U	U	30.5	31		
L II	24	25	U	U	U	U	U	U	U		
L III	23.5	23	U	U	U	U	U	37	43		
L IV	24.5	22	U	U	U	U	U	40.5	43		
L V	26	20	U	54.5	28	18	U	42	43.5		

There are thirteen thoracic vertebrae instead of the more usual twelve. T X has been retained for possible palaeoserological investigation.

*Ribs:* Many small fragments of ribs, and it seems likely that all 24 ribs were present.

**Conclusions**

The skeleton seems to be that of a young adult, perhaps female, of late adolescent age. This assessment agrees with the dental age (*vide infra*) of 15-19 years, assuming comparability with present-day populations. The individual was of short stature.

**SKELETON 3**

This skeleton comprised small fragments of the following bones:

- One os coxae
- One femur (head not fused)
- One tibia
- One fibula
- One scapula
- Six phalanges
- One mandibular condyle
- One patella
- Various costal fragments

None of the bones was capable of osteometric measurement. They seem to be those of a child or young adolescent.

A possibly supernumerary deciduous canine tooth (human) may have belonged to this specimen (see report on Dentition below).

**APPENDIX**

The Dentition of the Philia-Drakos Site A Skulls

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**Skeleton 1**

In this specimen the following teeth were present:

Deciduous dentition	E																
	e	e														e	e
	8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8	
Permanent dentition	8		6	5	4	3	2	1	1	2	3	4			6	7	8
	c															e	e
	e = erupting																
of these	7 6 5 4 3								4 5 6 7								
	6 E <sub>5</sub> 4 3								6								

were present in their sockets in corresponding positions of the

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maxillae and mandible, the remainder of the teeth being loose. After these had been identified  $\frac{7}{7} \mid \frac{5}{5}$  were found to be missing.

Estimation of the growth stage of the dentition was carried out by examination of the roots of the teeth. Several of the teeth, notably the upper and lower incisors, showed evidence of *post mortem* damage to their roots, as was expected since the maxilla and mandible were damaged in these tooth-bearing areas. The incisors therefore could not be used to estimate the growth stage.

However, from an examination of the remaining tooth root apices, it was decided that the teeth and jaws were of a human aged 11-14 years.

### Skeleton 2

In this specimen the following teeth were present:

Deciduous dentition	8 7 6 5 4 * 2 1		1	3	4	5	6	7	8
				E					
Permanent dentition	8 7 5 4 * 2 1		1 2	A	5	6	7	8	8
	* = missing								
	A = root only present								
of these	5 4 * 2 1		6	7	8				
	8 7	5 4 * 2 1		1 2	A E <sub>s</sub>	6	7	8	8

were present in sockets in corresponding positions of the mandible and maxillae. The mandible was almost intact save for marked destruction in the incisor-bearing area of the alveolar process and symphysis.

Several other teeth were presented with this specimen. These were identified as—

- (i) a carnivore premolar
- (ii) a left or right deciduous human canine showing marked attrition.

The latter may, or more probably may not, have belonged to this specimen.

Of particular interest was the presence of the retained  $\overline{E}$ . The succeeding premolar ( $\overline{5}$ ) was erupting lingually and showed a mesio-lingual rotation. X-rays were taken.

From an examination of the intact teeth and of the form and shape of the mandible, it was estimated that the teeth and jaws were those of a young adult aged 15-19 years.

## Discussion

The individuals from Philia-Drakos Site A on which the present report is based, died before skeletal and dental maturity had been fully attained. The skulls and postcranial bones suggest either males of gracile build or females. One individual was of short stature. The skulls are mesocranial, or perhaps dolichocranial, if some allowance be made for posthumous deformation.

They may be contrasted against the predominantly brachycranial and roughly contemporary early Neolithic skulls from Khirokitia (Angel, 1953), which comprised a large and reliable series. However, no meaningful conclusions can be drawn from two badly preserved skulls. The Khirokitia individuals seem to have been of taller stature, moreover.

Publication of the Khirokitia series necessitated a revision of the previously held view that Near Eastern populations of the early Neolithic, and of earlier, late Upper Palaeolithic times, were predominantly long-headed. A recent discussion of the problem (Ferembach, 1966) mentions brachycrany as an occasional phenomenon at Çatal Hüyük in Turkey and from the Palestinian Neolithic site of Fallah, as well as mesocrany among the Natufians of earlier date, whilst supporting the usual opinion that brachycrany did not become an important element of the mainland populations until a much later time, perhaps the third or second millennia B.C. Dolichocrany seems to have been the norm among the predynastic Badarians of Egypt (Stoessiger, 1927; Morant, 1936) also. Falkenburger (1950) detects at least three physical types in predynastic and early dynastic Egypt ("Cromagnoid", "Negroid", and "Mediterranean"). He relates brachycrany to the "Cromagnoid" and "Mediterranean" strains and notes that it is a phenomenon of Lower rather than Upper Egypt, and it is probably to be associated with the later periods in any case.

However, recent work in North Africa (Briggs, 1955; Chamla, 1968, 1970) suggests that Oranian and Capsian of pre- and early Neolithic cultural associations comprised an early (Oranian) mixed group of various strands ranging from hyperdolichocrany to brachycrany with a predominance of the robust mesocranials of "Afalou" type. Subsequently, there seems to have taken place a progressive gracilisation, at least in the more northern areas away from the central Sahara, with a tendency towards dolicho-mesocranial forms. It is suggested that brachycrany might have been a local development. ("Negroid" elements are also discernible in certain regions.) In connection with brachycranial development one might also mention the dolicho-mesocrany of

European Mesolithic populations such as the Mugem middens in Portugal and the Breton burial grounds, and especially the Bavarian cave of Ofnet with no less than four brachycranial skulls in a group of thirty-two of which only two were dolichocranial.

It is reasonable, therefore, to accept Angel's view (1953) that "there may be no need to look for any population like Khirokitia on the mainland of western Asia". The mesocranial skulls from Philia-Drakos need not be out of place in a Cypriot context, nor need the mesocranial skulls from the later Cypriot Neolithic site of Sotira (Angel, 1961). The possibility of local differentiation put forward by Angel seems eminently plausible. Settled agricultural communities might be expected to manifest this for a variety of genetic reasons when contrasted against pastoralists who would have been more mobile. Dolichocrany appears at the later Neolithic or Chalcolithic site of Karavas on Cyprus and the Bronze Age site of Vounous (Hjortsö, 1947). These sites are said to be "pre-3000 B.C." and third millenium B.C., respectively. Hjortsö contrasted those skulls against the high proportion of later Bronze Age skulls from Enkomi of brachy- and mesocranial types (65% and 25%, respectively; Fürst, 1933; Schaeffer, 1952).

Whilst the increasing incidence of brachycrany in the later prehistoric periods is well documented (Ferembach, 1966) it should clearly not be regarded as necessarily a late phenomenon in all areas. It is interesting that there seems to have been a higher incidence of mesocranial skulls at a number of Turkish and Greek sites (Angel, 1971, pp. 100-101) from the early Neolithic to the Bronze Age than in the Middle East, and one wonders whether the influx of brachycranial people into that area in the Bronze Age might not have had its origin further west. In this connection, it is perhaps interesting that Necrasov and Cristescu (1965) have remarked on brachycrany among otherwise long-headed Rumanian Neolithic individuals.

Such is the piecemeal state of the palaeoanthropological record, that inferences about population "types" or "movements" must remain largely speculative for the moment. They are as yet incapable of attaining that degree of confidence which the archaeologist can better obtain from excavations and investigation of artefacts. However, at the purely regional scale, palaeoanthropological investigations can throw light on intra-regional cultural variation as Angel (1953, 1961, 1971) has so admirably demonstrated. Similar work on the skeletal remains of over three hundred south-eastern Spanish Copper Age individuals under preparation for publication by the present writer seems to dem-

onstrate a similar highly localised and random variation within a small region, such as might be expected between scattered settled communities. However, for such inquiries, multivariate statistical analyses are required, and the smallness of the Philia-Drakos Site A group really prevents any very useful conclusions along such lines from being drawn.

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