COMMODORES FOR EARLY LIFE

Several other commodities, besides water, may have had relevance for early life patterns. The occurrence of clay, copper, and stone were examined in the lower catchment, and soil samples were also taken and analysed.

Clays, suitable for the formation of pots and low temperature firing, occur infrequently in the valley: only four suitable outcrops were located. Three of these occur where a tributary stream, flowing off the schist, has built up a low alluvial fan. The clays are thinly bedded, among coarser material, at the edge of the fans. Some elongated clay lenses were found. The fourth deposit occurs near the A. Kyriaki spring and has been described above. Most of the clays consist of clay grade quartz particles, abundant calcite with a relatively low percentage of clay mineral. They appear similar in texture to many thick-walled pot fragments excavated by the archaeological team. More clay deposits may exist in the valley, but covered by colluvial or alluvial debris. However, the authors doubt whether any high quality clays are to be found in the study area.

A few traces of malachite were observed in the schist, associated with massive quartz veining. These copper ores were of low quality and probably very difficult to smelt. However, Branigan recorded a small copper source just outside of the catchment area, north of Kaloi Limenes, and Faure has drawn attention to the place called Χάρκο Καφίδα just west of the Moni Odiyitis.

Building stone is abundant in the valley. Many of the building remains were constructed from material collected within 50 m. of the site.

PEDOLOGY AND LAND USE by JOHN BINTLIFF

From intensive field data a soil map and a land use potential map have been compiled. They should be considered together, and in relation to the cumulative site maps (Figs. 34–6).

THE SOIL MAP (Figs. 7a, 7b). The letters indicate the content of the soil and the numbers the mode of origin, as follows:

Group A: soil and loose weathering products derived from the pure soft marly limestone; tendency to Rendzina soil.

Group B: similar to A, but from the pure schists; tendency to dry Mediterranean Forest Soil.

Group C: derives from a mixture of the erosion products of underlying schist and overlying residual or transported Marly Limestone; a mixture of A and B.

Group D: similar to C, but from the crystalline limestone; tendency to Terra Rossa soil.

Group E: eroded hard limestone products deposited on the weathering products of schists; a mixture of C and D.

Group F: soil derived from schistose limestone.

Group 1: a soil derived from elsewhere that is relatively stable in its present location.

Group 2: areas of in situ weathering that are unstable, i.e. the weathering products are being quickly removed.

Group 3: in situ weathering products that are relatively stable.

Since there is no normal profile development or depth of subsoil, the soil types distinguished

12 The location of the source found by Branigan is marked on the map, Fig. 34; for Χάρκο Καφίδα, see Faure RA (1966) I, 54.
are really only tendencies to recognized soil types found under better conditions elsewhere in Greece. From the soil map it will be seen that only small areas of the valley exhibit deposits of soil groups D, E, and F, and these patches are of no economic importance.

In the following discussion, therefore, only groups A, B, and C receive attention. The main soil groups of Greece may be divided into the limestone and non-limestone weathering products. The limestone group can be further subdivided into the erosional products of the hard, crystalline formations (generally Terra Rossa), and those of the soft marly-sandy limestones (usually Rendzinas). Within the Aegean lowland belt, characterized by low rainfall and high temperatures, the non-limestone parent materials generally give rise to dry Mediterranean Forest Soils, though in our area a scrubby, xerophytic vegetation may be the protecting organism. In temperate climates the effect of moderate to high rainfall over most of the year, and a somewhat humid hot season, is to leach the less firmly bound constituents of the soil down into the subsoil, where they may accumulate in a horizon of illuviation. This produces the classic soil profile, with a surface horizon (A) rich in humus, below it the B horizon with leached concentrates, and finally, above bedrock, a C horizon which is the in situ weathering of the underlying rock. However, in Greece and the Mediterranean, and particularly in this dry lowland Aegean belt, the evaporation : precipitation ratio is so top-heavy that through much of the year an upward migration of water may take place and the soil minerals remain at the surface. The vast bulk of
the rainfall, of course, drains away very rapidly from the ground surface, through or along the bedrock with limestones and schists respectively. As summer advances, the moisture retained in the soil and rock matrix succumbs to the upward movement or migration. Unfortunately, owing to the normally very high rate of mechanical erosion and removal of surface waste prevalent in the Mediterranean, these upper layers are very easily lost, especially when Man tries to cultivate such marginal incipient soils. Greek soils characteristically lack a B horizon differentiated from the surface layer, but because of misuse farmers today may even be cultivating into the C zone of barely weathered rock.

SOIL ANALYSES AND SOIL POTENTIAL

Samples were collected by the writer from the main soil groups recognized, so as to include all the land types significant for cultivation. Thus the pure schist, the soft limestone, the Ayia Kyriaki soil, the alluvial terrace and the Step mixed soil were all sampled. In every case the sample was taken from an area where, owing to shelter or slope factors, some measure of stability had been achieved, allowing soil development. However, it is true to say that in no part of the valley, with the possible exception of the Ayia Kyriaki deposit, are we dealing with anything but shallow and embryonic soils.
The results of the analyses of these samples, undertaken by A. Doe and D. Holmes, are as follows:

<table>
<thead>
<tr>
<th>Soil type</th>
<th>pH</th>
<th>Organic Matter</th>
<th>CEC*</th>
<th>MgCO₃</th>
<th>CaCO₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>7.75</td>
<td>3.56</td>
<td>36.4</td>
<td>2.6</td>
<td>37.7</td>
</tr>
<tr>
<td>B1</td>
<td>7.86</td>
<td>2.69</td>
<td>24.8</td>
<td>2.0</td>
<td>63.5</td>
</tr>
<tr>
<td>C1</td>
<td>7.69</td>
<td>1.82</td>
<td>33.0</td>
<td>0.15</td>
<td>1.0</td>
</tr>
<tr>
<td>Kyriaki</td>
<td>7.78</td>
<td>0.312</td>
<td>22.4</td>
<td>0.84</td>
<td>47.4</td>
</tr>
<tr>
<td>Terrace</td>
<td>7.54</td>
<td>1.306</td>
<td>34.5</td>
<td>0.70</td>
<td>5.2</td>
</tr>
</tbody>
</table>

* CEC signifies Cation Exchange Capacity, which is an indication of the amount of plant nutrients of mineral form available in the soil.

The advantages of the A1 soil in terms of humus and plant nutrients are clear; this soil occupies large areas of the well-watered Step. The high humus count recorded for soil of type B1 derived from the pure, soft limestone reflects the well-known capacity of Rendzinas to retain organic nutrients. The other three samples all show a high potential from the inorganic nutrients, and if conditions allowed stable development fertile soils could arise. The schist (C1) discourages such a development, especially in the present climate, but the Terrace and the Kyriaki deposits (both of an alluvial mixed nature) could, with careful husbandry, develop extremely productive soils capable of intensive irrigation cropping. We know that until quite recently A. Kyriaki was under such a regime, but neglect has allowed the torrents that flow through it, and the two spring outlets arising within it, to remove all the fines and tilth accumulated over perhaps thousands of years. Equally, sections of the alluvial terrace below the monastery are still worked and appear very fertile; the analysed sample was from one long abandoned.

Our soil groups and their analyses can be compared with various authorities and find good agreement with them. It is abundantly clear, if one considers the distribution of stable soil in our valley, how important the A group is; its extent reinforces its agricultural advantages. Soil developed from the schist is very rare, while pure Rendzina from the soft limestone is common but confined to the very arid, highly exposed plateau tops and a smaller ‘step’ just below the valley rim. These considerations have been borne in mind in drawing up the Land Use Potential Map.

**The Land Use Potential Map (Figs. 8a, b)**

On this map the total landscape is evaluated in terms of the potential for food production. The underlying assumption is that the land is all being intensively exploited, i.e. the map represents what the valley could offer to industrious farmers and shepherds. It is assumed that the best land will be used for arable; then, as soil and water resources decrease, less demanding use of the land—extensive dry tree culture—is found (Plate 1c); and finally grazing of sheep and goats. The lower the grade on the map, the poorer the land, and the lower the food yields.

It will be seen that I have suggested on the map that the land highly suitable for arable farming includes the stable areas of the A group, the river terraces and the Kyriaki patch (Plate 1d); the latter two are suitable for irrigation cropping. Less favourable are the stable zones of the pure Rendzina and the schist (brown forest soil). The shallow subsoil, and erosion only just kept in check, require extensive and low-demanding crops—widely spaced dry tree crops and cereals or fodder crops with a long fallow and only shallow working of the soil. On the predominant expanses of unstable soil even these crops are not worth the effort of cultivation, and the natural vegetation, concentrated into the winter and spring and sparse in the dry months, is exploited by
flocks of sheep and goats. Owing to this seasonal inequality of grazing resources, most of these flocks must leave the valley during the summer months for the higher pastures of Mts Ida and Kofinas.

**The Carrying Capacity of the Valley**

The calculation of the carrying capacity of the valley involved computing from the Land Potential Map the total area of higher grade acreage, then from accumulated ancient, recent and modern figures, suggesting probable figures for crop yields and subsistence requirements per family per year. It had to be assumed that the most plausible land-use pattern was in operation, namely subsistence cereal and surplus olive production. The carrying capacity of the area from permanent farming is likely to have been of the order of 17–34 nuclear families, i.e. 102 to 140 people.

The recent and ancient estimates of yields and division of crops are conveniently brought together by Michell and Allbaugh. Most sources, past and present, give values for Mediterranean yields of average 12 bushels per acre for cereals (often higher for barley, lower for wheat), and 150 litres of olive oil per hectare (i.e. 50 trees with cereals below). A suggested annual requirement per individual would be 8½ bushels and 15 litres of oil. A family of 5 adults

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and 1–2 children (see below) would therefore require over 4 acres of cereal land, and c. 1½ acres of wide-spaced olives. It is a necessary practice to fallow the cereal fields on a 50:50 basis, so a total cereal acreage would then be more than 8 acres. The fallow growth would be used for animal fodder. Olive trees normally produce in quantity only in alternate years, thus favouring a cereal crop beneath a grove every other year. Cretan farmers tend to grow subsistence cereals and an olive surplus for exchange. Thus a hectare of olives is commonly kept, up to half the produce of which is available for the market.

![Fig. 8b. Land Potential Map: northern area of the survey](image)

In the SW. Asteroussia the holding size is large for Crete, and averages c. 15 acres.14 This is a reflection of the less favourable ratio of good soil to poorer land, and correlates with the strong herding interests of the inhabitants of this area (since some of this large acreage must be kept as fodder fields to supplement the extensive stony grazing areas). In addition the olive groves are more likely to be spread loosely over the uneven ground, and the cereal land, as we have seen, consists of a string of discrete patches.

From the map of the Potential Land Use for the Ayiofarango, all the land in the favourable B and B–C categories has been approximately summed for its total surface area, using a grid of 1½ acre squares. From a final figure of c. 550 acres we must necessarily subtract the land comprised by the recent alluvial terraces, thus leaving a figure of c. 517 acres of land of sufficient quality for

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14 G. Burgel, *Pobia: A Village in Crete* (Centre des Sciences Sociales d’Athènes (1955)).
sustaining a permanent population in the valley. From this and our 15-acre figure we obtain our maximum estimate of 34 families. However, it must be admitted that the quality of the valley soils, especially in the b-c category, is probably below the average for the cereal and oil yields quoted above, and for those cited in the area by Burgel. Given the characteristic thinness of the soil, the notable summer aridity in our area, and the frequent appearance of years with unfavourable rainfall patterns, we must widen the range of long-term viability in the gorge, and it is possible that a total of, say, only 17 families would be able to derive a consistent and secure livelihood from the same area.

THE SITES by David Blackman and Keith Branigan

I. THE AYIOFARANGO VALLEY

E1 (M, GR, BM)

A terrace at about the 200 m. contour, east of and above the road from Kaloi Limenes to A. Kyriaki, c. 100 m. from the point where the road crosses the watershed into the catchment area. The terrace is c. 150 m. (N.-S.) by 50 m. (E.-W.), bounded on the east by steep, bare upward gradients, and on the west by a steep downward slope covered only with low scrub. Two possible stretches of wall were found on the western slope, but the only certain structural remains were a modern sheep pen and a circular wall, c. 1.5 m. in diameter, which appeared to be a filled-in well. Abraded sherds were quite common on the western slope, but scarcer on the terrace. Sixteen sherds were collected and classified: 10 probably Minoan (3 TF.G including 2 jug handles, 1 unperforated lug in gritty brown fabric, 7 with grey core fired to pinkish red, a type found on several tholos sites); 6 late Hellenistic/early Roman (including 2 TF.R, 2 TF.S). Modern sherds were noted but not collected. This is unlikely ever to have been an occupation site.

E2 (BM)

On a lower terrace, c. 250 m. north-west of E1 and at c. 175 m. above sea level, a horseshoe-shaped enclosure built of a single line of boulders set on edge. The greatest width was 7.5 m., narrowing to 5.6 m. at the entrance. The depth from front to rear was 6.8 m. Against the inside face of the wall, opposite the entrance, was a hearth area outlined by stone slabs on edge and containing fire debris. Immediately before the hearth were lumps of smashed ferriferous rocks. Only four sherds were found, all modern, and this agrees with the generally unweathered condition of the site and hearth in suggesting a recent date for the use of the enclosure. It may have been a threshing-floor, re-used as an industrial area on a single occasion.

E2a (GR?, BM)

Immediately west of E2, and continuing for c. 50 m. northwards, there were traces of a metalled trackway which marks a route still followed by the mounted postman and other local travellers. There is no evidence for dating, but Bintliff suggests it may well be Venetian in origin. In this case traces of substantial walls which in places crossed beneath the line of the metalling would be earlier and their character suggests that they might be Hellenistic/Roman.

E3 (BM)

Above and 20 m. east of the Kaloi Limenes to A. Kyriaki road, and c. 50 m. north of its junction with the modern footpath, is an artificially levelled terrace perched at c. 150 m. above sea level
The small rise in the population of the monastery at this time might reflect partly a shift thither by persons born in Yialomonokhoro, and partly a more positive attitude to seeking 'recruits' by the monastery. At the time of the Second World War Yialomonokhoro was totally abandoned, and since then the population of the monastery has remained static. In 1971 it was 15 persons, all of them in middle or old age. After the abandonment of Yialomonokhoro, the only settlement in the valley, apart from the monastery, was the farmstead at A. Kyriaki. Here, melons and tomatoes were grown until the early 1950s.

The owner of this land still visits the site to gather figs and olives, and Yialomonokhoro is still visited on its church's nameday (A. Sophia: 17 September) by the families who formerly lived there, even though the village has been abandoned now for almost forty years. This seems to be a similar situation to that found after MM I, when tombs produce the occasional later sherds (presumably reflecting the occasional later burial), and the peak sanctuaries are still visited. In addition, we must remember that the valley is still exploited by man—quite apart from the small area of cultivation by the monastery. The numerous sheep-folds (Plate 10d) and the small areas of cultivated land by them are a firm reminder that transhuming shepherds still frequent the valley (below, this page). It seems likely that we must envisage similar exploitation during those earlier periods when the valley seems not to have been inhabited by a settled population.

Whether or not the family who established themselves, in 1972, at the entrance to the gorge may be seen as the beginning of a new era of permanent human settlement in the valley is uncertain, but at face value unlikely. They can survive only because they have an uninterrupted, piped supply of water from A. Kyriaki. If others attempted to utilize the same source the hydrological budget would be insufficient to maintain them all. There is, however, a new factor which may completely alter the situation. A new road, from the Mesara to Kaloi Limenes, is planned to run down the valley; knowledge of this was one of the factors which prompted our survey. If and when it is built it may yet open up the valley to further human settlement and bring about the most radical change in the history of the human occupation of the valley, since it began some five millennia ago.

Appendix I: Culture, Religion, and Economics by J. Bintliff

This is a brief discussion of four topics, from data gathered in Ayiofarango, that are of especial interest in a wider context.

(1) Transhumance: The catchment area of our valley and the hill-land to its west is remarkably large in respect of winter shepherds. This stems from local environmental advantages and not the present near-absence of cultivation in the area. The source villages are mostly places with a herding bias in poorer upland locations. Particularly interesting is the link to Sfakia (W. Crete). One group from Krousonna comes and occupies houses at Kaloi Limenes, and consists of five interrelated families with about 1,000 sheep and goats: they have a particular right to graze in the Ayiofarango. In summer only a small number of animals remain in the valley. At this time, these alien flocks will normally transhume to the Mt. Ida massif, while in the days when Yialomonokhoro and Gavaliana were inhabited the local people took their flocks up to the higher parts of Asteroussia (Mt. Kofinas). The same links are created by winter visitors elsewhere in South Crete, and at Pobia on the south edge of the Mesara, Burgel records the winter presence of Anogeia shepherds, chiefly five brothers with about 800 caprovinies, who live in caves above the village. At Pigaidakia, between Pobia and Ayiofarango, he notes shepherds, especially Sfakiotes, transhuming.

1 G. Burgel, Pobia: A Village in Crete (Centre des Sciences Sociales d'Athènes (1955)).
In 1865, Spratt visited Lasaia, just east of Kaloi Limenes, where he noted a patch of terraced ground ‘that is partially tilled by a Sfakian shepherd, whose mandri or sheepfold is above it’. Lightly working the poorer land near grazing is quite common even when permanent farmers exist alongside the seasonal visitors. Burgel stresses the long tradition of these practices, and we may suggest their extremely high antiquity.

But the most provocative point of Burgel’s comes when he examines the many links of feeling, culture, and blood that make his Pobians part of a wider world beyond the village. He concludes ‘but at the bottom is it not surely the consequence of old economic and human links—trans-humance uniting the mountains of Psiloritis [Ida], the Mesara and the coastal chain of Asterousia’. Archaeologists consume a lot of effort in relating styles of living, as expressed in material culture, from different sites, but very little in accounting for the distribution of cultural traits. At least in the Minoan tholoi, and in a preference for certain wares such as local A. Onoufrios, these same areas were part of a culture area that to some extent stood apart from other areas of Crete in the Early Bronze Age, and I suggest that further research for other archaeological evidence for this Mesara culture may prove rewarding.

(2) Deserted Villages: In the traditional Greek village the community has a collective identity which sets it apart from its neighbours. This is expressed and reaffirmed in the community ritual associated with the village patron saint. Once a year, on that saint’s day, the village has a festival which neighbouring villages attend. Even when the village is abandoned, for a long time after any of those who once lived there will return with their descendants to the site on the village’s nameday, with a priest, and celebrate the festival. Thus in September former inhabitants of Yialomonokhoros reassemble from the villages they dispersed to, and Pashley writes of a village in central Crete he passed through where the ruined church was still visited by a priest (and presumably former villagers) on its nameday.

This feeling of a spiritual force around which the thoughts and activities of villagers are centred, symbolizing continuity and the accumulated history of the community, has then a permanent power attached to the scene of past events. In the chequered life of many village and town sites that are excavated, we often come upon curious reoccupation levels, some of which do not seem to be a resettlement, but of a ritual character. A striking example is the palace of Knossos, where Mervyn Popham concludes: ‘Much of this pottery was doubtless connected with the Shrine of the Double Axes and its cult, as Evans stated. Indeed it is tempting to believe that most if not all the reoccupation was connected with the shrine. Many of the deposits do not look like occupation pottery . . . . It could well be that the occupiers of the Palace ruins were some priestly body and that the stores of pots were meant primarily for sale to worshippers visiting the shrine.’ We might also cite the famous mound and sacred (?) precinct over the ruins of the House of the Tiles at Lerna.

(3) The Monastery: Odigitria is likely to have controlled all this south-west projection of the Asteroussia in its early modern heyday, as far as a border on the east with the equally extensive lands of Moni Apeizanes. To the north we hear of an exo-ecclesia near Pobia belonging to our monastery, suggesting that its territory spread down into the Mesara—probably up to the lands of Moni Kalyviana, near Phaistos.

The monastery system, considered purely securally, is a well-constructed network of economic centres, high up in a carefully organized hierarchy of agricultural exploitation. The parallels to the Middle Bronze Age Palaces in Crete and the Late Bronze Age Palaces on the mainland are

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2 T. Spratt, *Travels and Researches in Crete* ii (1865) 8.
remarkable, though it is highly probable that similar environmental and social factors were at work. The notable interest in the Ida and Kophinas upland zones shown by monastic distribution is closely connected to their historical role as large-scale sheep and goat 'ranchers' using these uplands for summer grazing of very sizeable flocks. Killen has demonstrated that the Knossos Linear B tablets show control over vast flocks as well? and almost certainly the major palaces at Knossos and Phaistos were using these zones for seasonal pasturing. The peak sanctuaries on Ida and Kophinas summits can only relate, as with the present sanctuaries there, to such usage in summer from a wide lowland catchment. However, a different and complementary feature of the monastery locations is the extensive lowland arable lands owned by the monasteries in the hills and foothills zone, e.g. the territory of Odiytria—which, as noted, included the SW. Asteroussia from the south coast to the Mesara Plain, and an important section of the southern Mesara around Pobia. Finally there are monasteries such as Kalyviani, almost identical in its territory to ancient Phaistos, and a cluster of wealthy foundations occupying the same central inland zone of Crete, with its fine rendsina soils, as Knossos and Arkhanes.

(4) Peak Sanctuaries: Almost all of these begin coincidentally with palace civilization in Crete, and on the mainland. They reflect a national cult and are probably to be associated with 'territorial representations' of a ceremonial nature. We might argue, from their Ayiofarango distribution, that in an ascending order of integrative ritual, 'extended family' worship at the tholos of the ancestors has been replaced by the hillock shrine for the same group, the village peak sanctuary for the families of a nucleated or dispersed community, the palace and villa cult areas for surrounding populations within their respective territories, and regionally significant peak sanctuaries on the loftiest peaks.

Thus the physical world is related to the religious system, the unified Minoan cultural world and the administrative hierarchy made symbolically manifest, and inseparable, in the Minoan awareness, from these former systems. All the component parts of a world real and conceptual may have been articulated by the momentum, not least the literal momentum, of ceremonies embracing ever-broadening areas of the landscape, and involving the physical coming together and socio-political integration of worshippers from an ever-widening circle of villages.

As Professor Branigan has pointed out (above, p. 68) there is little evidence for use or construction of the tholoi after the MM II period, although Cretan culture flourished up to the LM 1b Thera catastrophe. The peak sanctuaries spread over Crete just before the eclipse of the tholos period, and are well attested into Late Minoan times. It seems very plausible to consider these two networks of fossilized ritual behaviour as serving similar ends, the sanctuaries more 'national' and 'extrovert' social representations in comparison to the close-kin orientated tholos system. If transhumance forms a natural link between the Mesara people and the upland pastures of Mt. Kophinas in Asteroussia, there is also the common grazing interest in the Mt. Ida area by villages in the North Mesara and the Knossos—Arkhanes plateau land. It appears that small countryside shrines relate to arable land, great mountain shrines to major seasonal pasturelands. The major peak shrine at Kophinas would perhaps form a focus for Mesara people alone, that on Ida for people of the Mesara and from the central plateau. For the Minoans living around and in the palaces at Arkhanes and Knossos, the peak shrine at Mt. Iuktas may have formed a ritual focus. The palaces themselves certainly formed important ritual centres for all their surrounding and dependent populations.

Precisely such a system of religious and cultural integration can be argued for the exactly equivalent 'territorial ceremonies' still retained in attenuated form in rural Greece by the Greek Church, and it is no coincidence that the goal of the great Profitis Elias ritual (when all the

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6 J. Bintliff in F. Carter (ed.), The Historical Geography of the Balkans (1975).
7 J. Killen, BSA l ix (1964) 1–15.
countryside or a whole island were accustomed to accompany the priest to chapels on prominent local eminences and finally the highest mountain within view) is very often the site of a Bronze Age Peak Sanctuary.

**Appendix 2: The Number of Burials in the Mesara Tholoi** by J. Bintliff

Finally, another independent way to confirm our estimates for the social group using each tholos, is to calculate the order of magnitude of human remains that would accumulate over a given number of centuries from three to six families, and compare this to the rough figures given by excavators for tholoi whose use is known, from enclosed pottery, to within a century or two.

Again I have necessarily made certain assumptions about generation length and death-rates, relying on ancient and modern estimates. It is generally agreed that the Mesara tholoi were used for the burial of the whole community of a given area. Certainly both sexes are well represented, and precious articles deposited with the dead are rare and hardly ever suggestive of high status. This writer has in fact assumed that all family members were buried in their kin tholoi, including the sub-adult mortalities. It is unfortunate that we lack any evidence for mortality patterns in these tholoi. In Charles's summary of burial finds throughout Crete, we find that, rather naturally, only well-preserved mature and robust specimens are worth examination by the physical anthropologists past and present, therefore sub-adults get little mention. A cave at A. Nikolaos, in Eastern Crete, provided Late Neolithic burials, and we are told that along with a number of adults a 6-year-old infant was found. Another cave cemetery was examined in the Zakro gorge, with MM burials, and a child was identified with three adults. From Alexiou's Lefkina excavations we hear of only two good specimens, later aged at 30 and 45, and from the Viannos tholos, east of the Mesara, a few of the better specimens gave ages from 20 to 25 upwards. This writer has already allowed for distortion of the burial counts in the tholoi (see below) by contrasting the poor preservation of the infant bones with the tendency to exaggerate the minimum number of dead from a mass of disarticulated skeletons. If the infants had been buried elsewhere, we need not adjust any further than if they were very poorly observed amongst the tholos boneheaps.

The best source for population statistics is J. C. Russell's monumental work. He concludes that the European peasant family in the medieval age, on gross average, consisted of seven members. Of five children, one was likely to die in the first year of life, a second before the age of 20, while only two of the remainder were likely to produce a further generation. Obviously in times of economic growth or collapse, the figures were slightly different. The evidence for these generalizations stems from historical records and cemetery analysis. Authorities such as Wrigley, Cox and Schott seem agreed on these figures, though analyses simply of cemetery excavation by Gejvall and Ascadi and Nemeskevi, suggest that at times 60 per cent of the dead may have been immature specimens.

Taking the more general figure, we might expect that the Cretan family contributed five 'bodies' to a communal tomb in every generation (normally accepted to be every 25 years). These five were made up of two generations, the three surviving children of a former generation and two immature deaths from their summed offspring (for convenience one can take two productive siblings as 'producing' two immature dead children, even though they married into other

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2. W. Duckworth, *BSA* ix (1903) 344f.