



Seven Faces from Grave Circle B at Mycenae

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Source: *The Annual of the British School at Athens*, 1995, Vol. 90, Centenary Volume (1995), pp. 107-136

Published by: British School at Athens

Stable URL: <https://www.jstor.org/stable/30104516>

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SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE

(PLATES 14–18)

THE BACKGROUND

‘After Philip of Macedon, why not Agamemnon?’ was the question asked of us by Dr Elizabeth French after the somewhat spectacular reconstruction of the skull from Vergina. Sadly, despite the enthusiastic support of Dr K. Demakopoulou, Curator of Prehistoric Antiquities at the National Museum, the remains of the skulls found by Schliemann in grave circle A all proved too fragmentary and too confused to make a reconstruction viable: one could have produced a composite ‘Shaft Grave’ face, based on the identifiable portions of several of the skulls, but this would have achieved little of serious academic value beyond a theoretical ‘real’ face to set against the faces depicted in the art of the period, and in the end would have satisfied neither the standards of the National Museum nor our own. This is not what serious facial reconstruction is about. There remained two other possibilities, however, the so-called ‘mummy’ found by Schliemann in Shaft Grave V and the skeletons discovered in Grave Circle B. The ‘mummy’, which careful study of Schliemann’s description and of the associated grave goods shows is neither Egyptian nor a mummy, will be the subject of a further study by Dr Demakopoulou, which will include a reconstruction if the remains justify it, using computer-assisted X-ray techniques if appropriate to avoid subjecting what may be a very fragile skull to the rigours of casting. The skulls from Circle B, however, were another matter, and with the enthusiastic blessing of the late Professor G. E. Mylonas, and the somewhat more cautious but nonetheless warm-hearted support of Professor Spyros Iakovidis, his colleague and later his successor as director of the Mycenae excavations of the Archaeological Society, we received permission to study and where possible to reconstruct skulls from Grave Circle B.¹

¹ Aside from those people mentioned in the text, we should like to express our warmest thanks to Dr Elizabeth French for her help in Nauplia, and for her advice, encouragement, and occasionally criticism (always constructive) on many aspects of this project: she saved us from many errors, both practical and archaeological, and those that remain must be laid entirely at our own doors; to Mrs P. Pachygianni-Kaloudi and Mrs E. Palaiologou, Ephor and Acting Ephor of Antiquities in Nauplia respectively, for making the material available to us, giving us working space, and providing financial help in making the boxes to contain the skulls; to the technicians in the Nauplia Museum for their practical help, especially Mr Kostas Piteros; to the late Dr J. L. Angel, Dr K. Demakopoulou, Prof. G. Kopcke, and Dr L. Morgan for advice and encouragement; to Mrs Diana Wardle for advice on hairstyles and for making the drawings for FIGS. 11 *a–b*; to Miss Louise Adkins for drawing FIGS. 1, 12 and 13; and to Dr H. W. Catling and the staff of the British School for arranging our permits. The work was funded by grants from the Institute of Aegean Prehistory, the Society of Antiquaries, and the University of Manchester Staff Travel

Fund and Delta Travel Awards: that we are grateful to them goes without saying. The bulk of this article was written while AJNWP held the Visiting Fellowship at the School during 1994: warm thanks to the Managing Committee for making it possible. A further account of these reconstructions will appear in J. Prag and R. Neave, *Making Faces* (London: British Museum Press, forthcoming).

The following special abbreviations are used:

Dickinson, *Origins* = O. T. P. K. Dickinson, *The Origins of Mycenaean Civilisation* (SIMA 4; Göteborg, 1977)

Mylonas, *Grave Circle B* = G. E. Mylonas, ‘Ο Ταφικός Κύκλος Β τῶν Μυκηνῶν (*Grave Circle B at Mycenae*) (Athens, 1973)

Mylonas, *MRG* = id., *Mycenae Rich in Gold* (Athens, 1983)

The finding of the ‘mummy’ is described by Schliemann in *Mycenae* (London, 1878), 296–7, quoted in W. M. Calder III and D. A. Traill (eds), *Myth, Scandal and History* (Detroit, 1986), 254; the arguments against the Egyptian connection are put forward by Dickinson, *Origins*, 57–58. That it is not a true mummy at all will be explained in *Making Faces*.

The particular interest in these skulls was twofold. First, analysis of the two grave circles by Dickinson and others suggested that between them they spanned perhaps five generations or a little over a century, with an overlap of one generation or so, from late Middle Helladic to the very beginning of Late Helladic II A, which can be variously taken as the years between c.1625 and 1500 BC or between 1600 and 1480 BC. Further, the earlier graves of Circle B were apparently arranged in groups but not laid out to a preconceived orientation, and while each grave was probably used and reused by a single family it was debatable whether each group of graves belonged to one family group: for in his study of the skulls in the original publication of the excavation Angel had noted similarities according to which he believed that he could detect family relationships which cut across the grave-groups. In Circle A the shaft graves are richer and arranged according to a uniform alignment; this may be taken to represent the triumph of one family, but others note the fact that these are multiple graves, reused a number of times within a very short period, and therefore argue that these are at best different ruling branches of a single family who shared power in some fashion, but that they may still be unrelated. The increasing quantity and quality of the grave goods in the two circles may indicate the creation and growth of a Mycenaean social structure: if one assumes that all those buried in the shaft graves are of the same general status group, then the relative quality of the finds may reflect a hierarchy by wealth or rank. As in medieval Europe, the existence of such a hierarchy need not preclude blood relationships across the social stratification. On any interpretation, however, the disproportion of the sexes and of adults to children demonstrates that the people buried here only represent a selection of their social grouping, and not the normal composition of the population.² For us the attraction of the skulls from these graves lay in the possibility of using the technique to detect and display family relationships in a manner which non-specialists might understand, especially as Angel's suggestions sometimes seem a little sweeping and hard to follow or to check for those who do not possess his facility for 'reading' skulls, particularly skulls as fragmentary as some of those from Circle B.

The second point of interest in these skulls lay in what they might tell us about the appearance of the dwellers in mainland Greece at the end of the Middle Helladic. Foremost here was their potential link with the so-called death-masks, five of gold from Circle A and one of electrum from grave Γ in Circle B, since there is little else to guide us even to their racial type: the siege rhyton, the lion-hunt dagger, and the gold rings decorated with scenes of hunting and battle from grave IV, like the little cut-out plaques of a goddess and a worshipper and the plaque attached to the head of a pin found in grave III, are on too small a scale to be useful as illustrations of specific physical types, even if the artist had this in mind. From grave

² e.g. Dickinson, *Origins*, 50–1, argues for the single family group in Grave Circle A; for the view that this circle still represents more than one family see e.g. Elizabeth French, '“Dynamis” in the archaeological record at Mycenae', in M. M. Mackenzie and C. Roueché (eds), *Images of Authority: Papers Presented to Joyce Reynolds* (PCPS supp. 16; 1989), 123. The argument for a social structure based on the quality of the grave goods is put forward in detail by I. Kilian-Dirlmeier, 'Beobachtungen zu den Schachtgräbern von Mykenai und zu den Schmuckbeigaben mykenischer Männergräber', *Jahrbuch des römisch-germanischen Zentralmuseums Mainz*, 33 (1986), 159–98. Since these authors

wrote, a wooden bowl from shaft grave V has been dated to 1619 ± 37 BC by dendrochronology, but because the bowl is a carved piece and does not have the bark layer we do not know when the tree was cut, nor how long it had been in use before being put into the grave, so the date cannot be regarded as absolute yet: P. I. Kuniholm, 'A date-list for bronze age and iron age monuments based on combined dendro-chronological and radiocarbon evidence', *Aspects of Art and Iconography: Anatolia and its Neighbours. Studies in Honor of Nimet Ozgüç* (Ankara, 1993), 2 (our warm thanks to Prof. Kuniholm for this reference). Angel's comments are in Mylonas, *Grave Circle B*, 379–97, esp. 389–90 with pls 244–9.

Γ55 in Circle B we have the amethyst carved with the head of a bearded man (FIG. 10) that is sufficiently individual in its rendition to have been considered to be a portrait, but it is now reckoned to be Minoan rather than Mycenaean work. At a time when their two cultures are still distinct, one can only use Minoan art as evidence for the appearance of the mainlanders with the greatest caution.

The six masks are unique in bronze age Greece. Ever since their discovery they have aroused strong reactions and have provoked a lively debate, which we do not want to reopen here except to touch on the question of whether they can in any way be regarded as portraits.³ It is clear that they fall into two groups: on the one hand the more primitive 'flat' masks, one from grave Γ in Circle B (FIG. 8) and two from grave IV in Circle A; on the other hand, the two round masks from graves IV and V in Circle A. The 'beautiful mask' from grave V in Circle A, commonly known as 'Agamemnon', belongs with the flat ones but is best considered separately.⁴ The three flat masks share the same triangular face and high forehead, the same treatment of the eyebrows (or rather single eyebrow, arching across both eyes), the same firm, long nose and small, full-lipped mouth; the eyelashes look 'stitched', and scholars have argued as to whether they were intended to be shown closed, as on a death-mask, or open as in life. The round masks from graves IV and V in Circle A are quite differently conceived, and appear to have a third dimension: the face is round, the eyebrows are more fully modelled, the eyes appear open, the nose is shorter and wider, and the large mouth seems to smile at one. Mylonas has suggested that one of these two represents a woman, on the grounds that the grave goods buried with the body were more suited to a 'richly dowered princess' than to a warrior prince, but he was presumably led to think in this way because he believed that this body was a mummy with Egyptian connections, an interpretation that we believe to be incorrect. Dickinson has looked at the grave goods again and finds the 'female' argument unconvincing, not least because this would be the only female mask: certainly there is nothing feminine about this severe, large face.⁵

The 'beautiful' mask belongs with the 'flat' group, but it stands head and shoulders above the others, both technically and artistically. The goldsmith who made this piece was an exceptional artist, and could indulge in a greater interest in the form and structure of the face, and his concern with greater realism is particularly noticeable in the rendering of the beard and moustache.⁶ Of them all, this seems the most likely to have been intended as a portrait. However, although particular features are shown and characterized, just as on the other masks the characterization does not seem to be of the kind which reflects a particular, known individual, which is the fundamental requirement of a true portrait.⁷

³ The arguments for and against the 'portraiture' theory are conveniently collected by G. Kopcke, 'Zum Stil der Schachtgräbermasken', *AM* 91 (1976), 1–13. The comments of Angel, who sees the problem from an anthropologist's point of view, are interesting; Mylonas, *Grave Circle B*, 390. We shall discuss it more fully in *Making Faces*.

⁴ On the 'Agamemnon' mask, e.g. O. T. P. K. Dickinson, 'Schliemann and the shaft graves', *G&R* 23 (1976), 164 with nn. 19–20; Calder and Traill (n. 1), 234 no. 14. The five masks from Grave Circle A are conveniently illustrated together by Mylonas, *MRG* 35, fig. 20.

⁵ G. E. Mylonas, *Arch. Eph.* 1969, 125–42; also in *MRG* 59; against the Egyptian connection, Dickinson, *Origins*,

57–8; cf. also, e.g., his pp. 36–7 and 101–6, or E. T. Vermeule, *The Art of the Shaft Graves at Mycenae* (Cincinnati, 1975), on the paucity of Mycenaean contact with the world beyond the Aegean at this time: at pp. 8–9, fig. 7, she reproduces the highly imaginative 'Egyptian' reconstruction proposed by M. Meurer, 'Der Goldschmuck der mykenischen Schachtgräber', *JdI* 27 (1912), 208–27, pl. 12.

⁶ Traill's unconvincing argument that this mask is a forgery rests largely on the grounds that it is different from the others: Calder and Traill (n. 1), 134–5.

⁷ e.g. O. Brendel, *Etruscan Art* (Pelican History of Art; Harmondsworth, 1978), 387 ff., esp. 392–5.

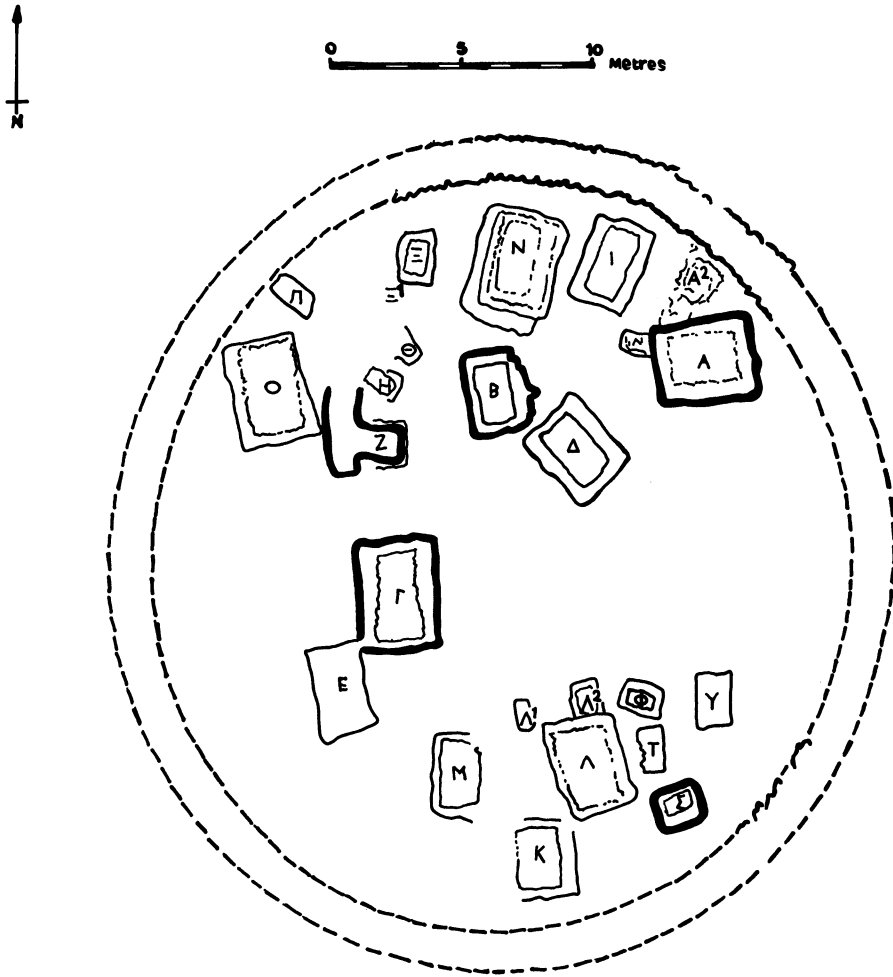


FIG. 1. Plan of Grave Circle B; graves from which skulls were reconstructed marked with heavy outline (after Dickinson, *Origins*, fig. 7).

The second possibility of reconstruction lay amongst the remains of the thirty-five skeletons found by Papadimitriou in Grave Circle B. Because so many of the graves had been reused and the previous occupants merely brushed to one side, and because all were fragile and often broken as a result of the high alkalinity of the soil in which they had lain, by no means all of them were complete: some were represented only by a few teeth or broken pieces. Angel had studied twenty-three of them in 1954, and his detailed report suggested that it would be well worth considering reconstructing at least a selection, bearing in mind their possible relationship to each other and to the occupants of the graves in Circle A.

The twenty-six graves in Circle B appear to be grouped in different sectors of the circle: NW, NE, SE, and central (FIG. 1). One can trace their development as they become larger, deeper, and richer, although the fact that many were often reused makes a precise chronological ordering difficult. They can however be divided into phases, and there are

graves of different phases in most groups. Because there are enough burials here to represent several families (or several branches of one family) over three or four generations, it would be tempting to suggest that these were family plots, although Angel reckoned to be able to distinguish relationships between skeletons that had come from widely separate burials.⁸

SELECTING THE SKULLS

The work of studying and casting the skulls was spread over two sessions in 1986 and 1987: although in consultation with Dr Oliver Dickinson we had prepared a list of the skeletons, and therefore the skulls, that had the greatest potential interest from a historical point of view, until we actually unpacked the skulls in the first season we did not know how many would be physically suitable for casting. Because of its high alkali level, bones that have been buried in the soil of the Argolid tend to be fragile and are sometimes warped; Angel's report makes it clear that even in 1954 many of the skulls from Grave Circle B were in poor condition. In the upshot, four skulls were suitable for immediate casting, and the technique we had evolved for dealing with such fragile material by covering it with metal foil before making the mould for casting (described in *BSA* 89 (1994), 92) proved so successful that a second visit in the following year could be justified in order to cast three further skulls noted as 'having potential for the future, subject to conservation and on the basis of expertise gained so far'. It was also clear from Angel's comments and photographs that much potential information had been lost since his study in 1954, and therefore in 1987 the team included a conservator, Mrs Danaë Thimme from the Art Museum at Indiana University. Complete conservation of the skulls would have taken months, not least because it would have been necessary to remove the Alvar used as a consolidant by Angel's technician, which had not always been allowed to penetrate the bone properly. Mrs Thimme's task was thus principally to carry out first aid to the seven skulls selected for casting, and to a number of others which were in particular need: this ranged from removing old glue and wire struts and replacing the latter with plexiglass, to reattaching damaged fragments on some of the skulls (Mrs Thimme's report appears as Appendix 2). With the assistance of the Ephoreia, at the end of 1987 all the skulls and some other skeletal material were repacked in specially made boxes.

We located fourteen skulls together with their skeletons, and fragments of seven more (the numbering is that of Angel, who simply studied the skeletons in the order in which they were unpacked, adding the Greek letter by which Papadimitriou and Mylonas had identified the graves): Γ51, Β52, Π53, Η54, Γ55, Ξ157, Γ58, Ζ59, Δ61, Α62, Ν66, Ν66a, Ι68, Σ131, Υ132, and Λ₂133. We found the following fragmentary skeletons without distinguishable skulls: Λ₁56, Θ63, 65, Α₁69, Κ70, Λ70a, and Λ₂134; and two unnumbered skeletons, one of which may be the missing fourth body from grave Γ.⁹ We also located two later skulls, one of Late Helladic III date (67, a child, labelled 'from Foundation tower near Lion Gate, LH III'), and one that probably comes from an intrusive medieval burial (Α64?—the number on the skull is indistinct, but the long bones marked 64 are medieval), which were not relevant to our project.¹⁰ After sorting and checking they were collated with Angel's descriptions, and

⁸ In Mylonas, *Grave Circle B*, 389–90. For a further analysis, see Dickinson, *Origins*, 40–6. The burials have been reanalysed by S. Dietz, *The Argolid at the Transition to the Mycenaean Age* (Copenhagen, 1991), 106–32.

⁹ See further Angel in Mylonas, *Grave Circle B*, 382.

¹⁰ This does not correspond exactly with Angel's list: he also studied Δ60 ('unmeasurable fragments of an adult of about 40'), but does not mention the skull Α64 (?) or 67.

discrepancies and missing fragments were noted and some further points added (see Appendix 1). Angel had studied all the skeletal material that survived, whereas our brief was restricted to the skulls. Quite apart from the level of his knowledge and scholarship, Angel's descriptions and comments were invaluable because the bones have deteriorated further since excavation. The skeletons had been in a friable state when excavated some thirty years earlier; although most of the skulls had been consolidated and mended for him in 1954, the work had every appearance of having been done in haste and with the prime object of making the skulls fit for Angel to handle and study rather than with any longer view in mind. Time and storage conditions had resulted in many of these repairs coming apart, and the bone itself had become even more fragile. In more than one case the skulls were now less complete than when Angel had seen them, but his descriptions enabled us to identify and reunite loose fragments. However, the greatest loss was the disappearance of all but four of the mandibles: all efforts to trace them were unsuccessful, and unfortunately Angel himself, the last person we knew to have seen them, died in the autumn of 1986 before he could respond to our plea for help. Nevertheless his published descriptions and photographs were sufficiently detailed to allow Mrs Mary Harrison, in the Unit of Art in Medicine at the University of Manchester, to use them later as the basis for recreating the missing jawbones in wax.

CASTING THE SKULLS

In 1986 four skulls were selected for casting and reconstruction on the basis of their interest, condition and the time available: $\Gamma 51$, $B52$, $Z59$, and $\Sigma 131$ (see plan, FIG. 1). $\Gamma 51$ was a tall and powerfully built man who according to Angel's estimate (based on the pubic symphysis) died at around 28 years old, and whose skull was fractured and shows evidence of a trephining operation which he did not survive, while his grave goods are relatively mean; $B52$ was by Angel's estimate perhaps two years older than $\Gamma 51$, another large man with a 'narrow, beaky and toothy face'; $Z59$ was a powerful man of perhaps fifty with a long face and an arthritic shoulder, a battle-scarred and formidable old warrior; and $\Sigma 131$ was also in his fifties, massively built but suffering from gallstones as well as arthritis, notionally perhaps the founding father of the whole dynasty, and now the proud possessor of the only lower jaw among them.

In 1987 a further three skulls were cast: $A62$, a man in his early twenties, in whom Angel saw a massive physique and evidence of heavy exercise, as well as an interestingly shaped face; $\Gamma 55$, a 'notably tall and strong man . . . of around 33' from whose burial came the electrum mask; and $\Gamma 58$, the final surviving skull from this grave: though damaged, it is the only woman's skull of which enough remains to make reconstruction feasible. Whatever the relationship of the different graves to each other, it seemed reasonable to assume that all the bodies buried in a single grave were members of the same family, though of course we did not know at this stage if this lady was wife or sister to her grave-fellows.

Even in themselves these seven casts had considerable potential, first simply as faithful replicas that are available for study, away from the restrictions of access necessarily imposed on the originals. Given the fragility and past history of the originals this is not a negligible matter, as was demonstrated by the fact that $B52$, one of the skulls cast in 1986, had collapsed by the time we returned in 1987 despite our careful preliminary packing.

Second, as we have already suggested, for all but the skilled specialist the casts are much easier to 'read': the actual skulls are often fragmentary or at least damaged, while the casts, on which the damage has been made good, appear much more complete. For the non-specialist

at least, it immediately becomes much easier to make broad comparisons between the skulls. There are undoubted advantages in comparing individuals before the flesh has been put back on the skull, certainly before potentially distracting details such as facial hair have been added; but it also became clear to us that the process of reconstruction required a thoughtful analysis not only of the details of the face but also of its entire structure, which led to a much fuller understanding of the head as a whole than Angel had been able to reach from the bare bones. On more than one occasion we came to suspect that he had been a little hasty in his vivid descriptions of the faces which he felt lay over the skulls, and thus the family relationships which he deduced among the occupants of the graves.

RECONSTRUCTING THE HEADS

The technique of reconstruction has now been described on several occasions, and it is not necessary to repeat it here.¹¹ The first skull from grave circle B to be reconstructed was $\Sigma 131$, largely because he was the only one of those we had selected for casting who still had his mandible; but it was also appropriate to begin with him because he was perhaps the founder of the dynasty that built the Mycenae of the Grave Circles. If Schliemann believed he had found Agamemnon in Grave Circle A, then this should have been Pelops (FIG. 2).

His grave was one of the earliest to survive in the circle, a simple cist with a shelf cut in the walls to take the roof. Although no pottery or metalwork was buried with him, his grave was marked out by a heap of stones, which must indicate that those who buried him regarded him as a man of importance. Angel reckoned that he lived to be about fifty-five years old, judging from the exostoses on his shoulders and feet, and although today one would hesitate over using these as accurate indicators of ageing and his dental age may be slightly younger than fifty-five, he was still the oldest of all those buried in Circle B. Angel described him as a massively built man, big enough to cause comment in a crowd, and estimated his height as 1.757 m.¹² Like Z59 he was a fine specimen of manhood: the muscle attachments are indicative

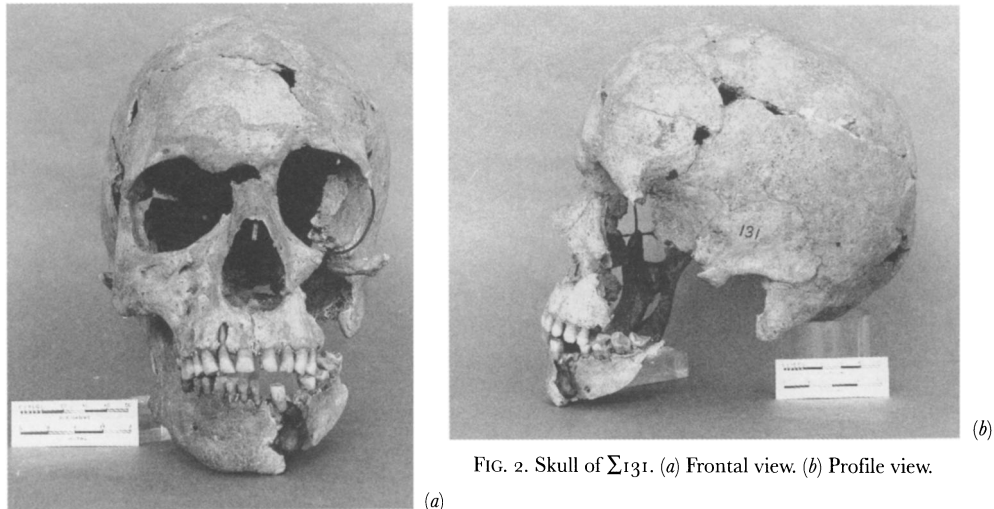


FIG. 2. Skull of $\Sigma 131$. (a) Frontal view. (b) Profile view.

¹¹ e.g. *JHS* 104 (1984), 65–8, and *AJA* 94 (1990), 37–8, where further references are given.

¹² In Mylonas, *Grave Circle B*, 226, 383, pls 203 a, 247, 249. See also appendix 1 below on the accuracy of dental ageing.

of his powerful neck and jaw, and his square jaw and pronounced mastoid process are very male characteristics. The reconstruction showed a round-headed, brachycephalic man with a relatively high, straight forehead, rather close-set eyes, a wide and rather large nose, and a prominent mouth that concealed his prognathous teeth (PLATE 15 *a–b*).

For the other skulls the missing mandibles were then recreated from Angel's notes and photographs, and as a first test of the question of whether facial reconstruction might demonstrate kinship the three skulls that were the most complete were fleshed out to a stage where they might easily be compared with one another ($\Gamma 51$, B52, and Z59).¹³

Z59 was another founding father, but perhaps of a more junior branch of the hierarchy. His grave lay in the NW of the circle, where the graves begin later than those in the SE where $\Sigma 131$ was buried, for they contain more and better vases and the first bronze implements. He, too, had been buried in a crouched position in a simple cist grave, but it was longer than most, for he was a large man, and its perimeter had been picked out with a ring of stones; four holes in the floor of the grave showed that there had been posts to support the roof as well as the shelf cut into the walls. His grave goods included one of the earliest yellow Minyan goblets with rings incised around the stem, some finely decorated cups and jugs, and a spouted jug probably imported from the Cyclades, clearly a prized possession and a token of contact with other parts of the Aegean. Between the pots lay a very long sword. Like $\Sigma 131$ he was a fine figure of a man, with powerful neck and jaw muscles and a very marked (male) mastoid process (FIG. 3). Angel had described him as

in his prime perhaps the most powerful of the champions. He is tall and broad-shouldered, and thick-boned with large hands and feet. At the age of at least 49, probably older, . . . he has . . . marked arthritic changes in cervical, lumbar and lower thoracic vertebrae involving fusion of thoracic vertebrae 9–11 through ossification of the disk portions of the anterior longitudinal ligament, and slight arthritis of metacarpal bones. It is uncertain how far such arthritis might link with a large abscess-derived cyst at the site of the upper second molar tooth: this has penetrated the maxillary sinus . . . Since the left clavicle shows a pseudoarthrosis . . . possibly from over-use of the shoulder (supporting a heavy many-layered shield in battle?), it is possible that all the hypertrophic arthritic changes reflect

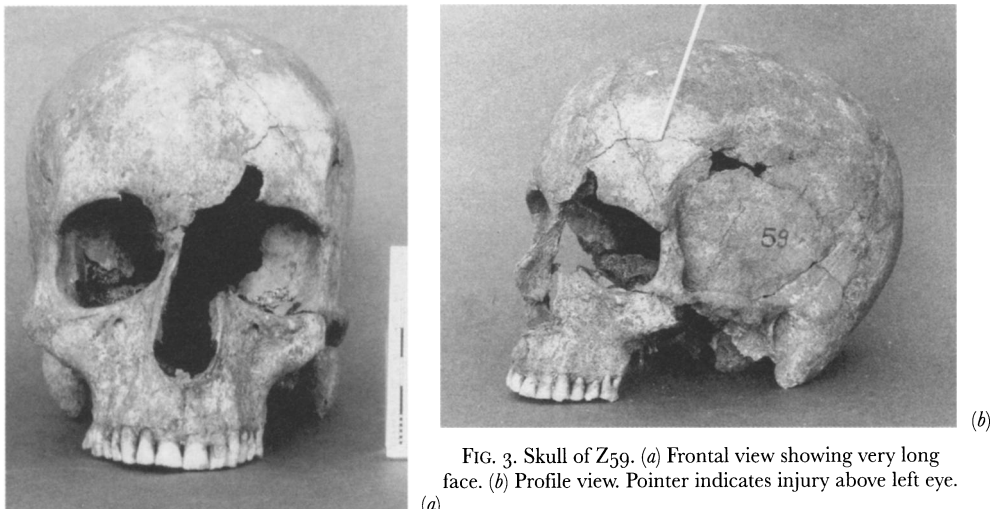


FIG. 3. Skull of Z59. (a) Frontal view showing very long face. (b) Profile view. Pointer indicates injury above left eye.

¹³ These three were first presented at an Upper House Seminar at the BSA in 1991: the discussion that followed was most useful in correcting some of our ideas.

simply hard usage. . . . Strikingly large, long ovoid, and high skull, with its marked muscle attachments, almost concave sidewalls, and long rectangular horse-like face. . . . Large mouth, deep chin, vertical face profile, and notably high and narrow nose fit this picture. Noticeable depressions in the skull vault 2 cm above the left eye and behind the left parietal boss are apparently results of heavy blows or wounds inflicted by a right-handed opponent.

Angel had also noted a possible healed fracture to the spine, and had estimated his height at 1.75 m; on a subsequent visit we noted a healed fracture to at least one rib which Angel had missed.¹⁴ When reconstructed, the face of this champion of champions confirmed many of the features noted from the skull by Angel and JHM; his face was long with relatively small features: close-set eyes, a strikingly narrow nose, and a deep chin which drew attention to the rather small mouth. One could appreciate why Angel had seen a certain horseyness in this long face with its high, straight forehead. His dour expression perhaps conceals the continuous pain from both arthritis and toothache with which he must have had to live (PLATE 14 *a-b*).

Γ51 was a much younger man, both in terms of when he lived and of his age at death, twenty-eight years. The grave in which he was found was one of the largest and latest in the circle, for among the grave goods were a number of LH I vases. It contained the remains of four or possibly five people, at least three men and a woman.¹⁵ The skeleton of one of the men, presumably the first occupant, had been swept to one side when the later burials were inserted, and no skull appears to survive. The woman had also been pushed to the side, evidently before her body had decomposed sufficiently for the bones to become disarticulated, so that her skeleton, like those of the other two men whose bones were undisturbed, was still complete. This was an important group of people, to judge not only from the electrum mask and gold cups found in the grave, but also from the fact that this was one of only four graves in this circle where the burials were marked by stelai. The young man **Γ51** had been given only a few vases, but no grave goods of metal, not even a sword, and was the only person in the grave *not* to have been honoured with a stele. While some have linked this poverty with the trephination, and seen in it a superstitious fear of possible madness caused by the head wound, analysis of the grave goods in the shaft graves as a whole shows that it is not unique, even in this late phase: for instance, the 45-year-old man in grave K was also buried with pottery only.¹⁶ The quality of his burial seems more likely to reflect his social standing than his state of mental health. Rather than being laid out along the length of the grave in what was by now the customary manner, he was placed along its S end, where he only just fitted, probably the last body to be put into the grave. He was presumably buried at much the same time as the wealthy and well-armed **Γ55**, for there is little sign that he disturbed the latter's remains.

Physically he was a fine specimen: 'a tall, particularly strong-boned, long-bodied, and large-footed man' was how Angel described him, estimating his height at 1.733 m (FIG. 4). There were slight traces of healed osteoporosis on the skull. Above the left eye was a shallow depression nearly 2.5 cm long, presumably the result of a battle injury, while an oval hole in the top of his skull, measuring 2.7 by 3.0 cm, was the result of a trephination. The two roughly semicircular pieces of bone that had been cut out survive, and show that the skull had been cut with great skill through the outer table only; as it was cut it had sprung away from the head and split lengthwise into two, curling slightly in the process, probably because it was still

¹⁴ In Mylonas, *Grave Circle B*, 381–2, 387, pls 245, 249; the finds are illustrated on pls 89–90.

¹⁵ Although Mylonas only recorded four skeletons in the grave, Dietz (n. 8), 110, 112 and fig. 32, identifies some of the remains as being from a fifth body; so also Kilian-Dirlmeier (n. 2), 171–4.

¹⁶ Poverty of grave goods possibly the result of superstition: e.g. Dickinson, *Origins*, 46; analysis of grave-goods in all the burials, Kilian-Dirlmeier (n. 2), 184–5, tables 5–6.

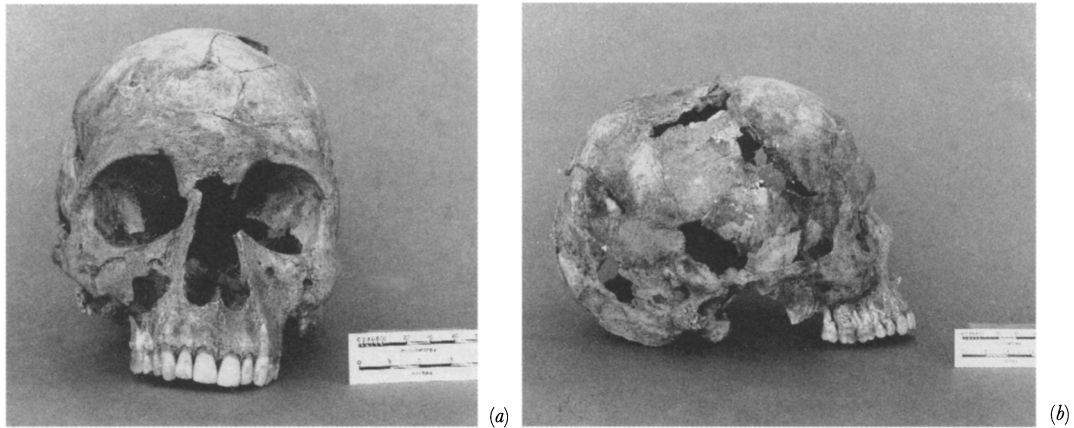


FIG. 4. Skull of $\Gamma 51$. (a) Frontal view. (b) Profile view. Trepanation hole can be seen on top of skull; two ante-mortem (?) fractures run from it towards front of head.

attached to the scalp. Therefore one can deduce that the patient survived at least until the operation had been completed, in contrast to a case in Argos from the ninth century BC where the operation was abandoned before the bone had been cut right through. However, there is no trace of healing on the bone around the hole, so one assumes that $\Gamma 51$ did not survive for long. We can only speculate as to why he underwent such drastic treatment. He was around twenty-eight when he died, and the average age of all the bodies in this circle was estimated by Angel at thirty-six years, so the poverty of his grave goods cannot be attributed to his youth; they have been taken as evidence that he suffered from a mental illness, but two fractures lead away from the trepanation hole towards the front of the head. It is impossible to say if these occurred post-mortem or were the effect of an injury which rendered him unconscious, but the latter seems more likely, and the trepanation was then a desperate but unsuccessful measure intended to revive him. From the technical point of view it meant that casting his skull needed great care, because of the weakness caused by the trepanation combined with the many fractures it had suffered both ante- and post-mortem; it fully justified the use of the new technique of covering the skull with a protective layer of burnished foil.¹⁷

Angel had described him from the bare skull as having a 'full cerebellar region, strong brow-ridges, and a big rectangular face of longish intermediate proportions. The nose is big and high, chin deep, jowls strong, and teeth perfect.' When reconstructed, $\Gamma 51$ proved to have a long upper lip and the same long face, close-set eyes, and large lower face and chin as $Z 59$. The nose was set high in both faces, though it was not in fact unduly large: Angel was perhaps misled by the fact that the nasal aperture appears large on the skull because part has broken away, in particular the nasal bone. In any case, because the whole face is large, individual features will appear to be relatively less large. The similarity between the two heads when seen from the front was quite striking, though it was a little less noticeable in profile (PLATE 14 *a-b*). It is very difficult to believe that there is not some family relationship between them, although these men must be at least two generations apart, one from the early period of use of the Grave Circle, the other from the very end, when it was already being overtaken by Grave

¹⁷ Angel's description (and illustration of the trepanation roundel): Mylonas, *Grave Circle B*, 380, pls 244, 249; the grave: *ibid.*, 43–79, pls 29–39 with the finds illustrated on the

following plates; also Dickinson, *Origins*, 46. For a recent discussion of trepanation in the ancient world, M. D. Grmek, *Diseases in the Ancient World* (Baltimore and London, 1989), 63–5.

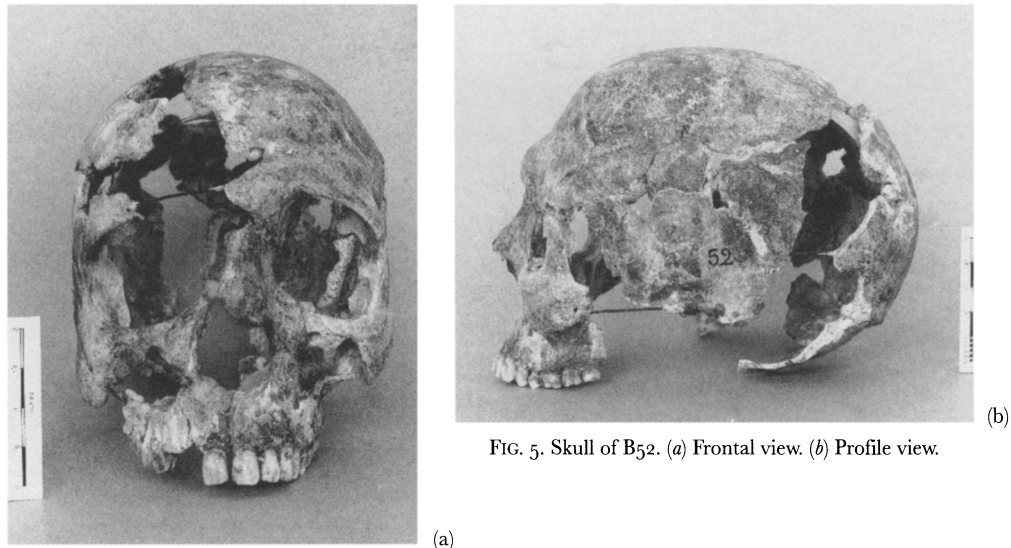


FIG. 5. Skull of B52. (a) Frontal view. (b) Profile view.

Circle A. Grave Γ lay a little to the S of grave Z, in the centre of Circle B, an area where graves were only dug towards the end of its period of use.

The last of the trio was **B52**, buried in a different part of the circle and a different type of skull: altogether a smaller head with a lower, sloping forehead and prominent brow-ridges, nose, and teeth (FIG. 5). He had been buried alone in a grave cut in the N part of the circle, close to grave Z but probably belonging with the NE group. Like grave Z, his grave had four posts to give additional support to the roof. He was buried with seven vases, including four yellow Minyan goblets with incised stems, and with a broad-bladed dagger which, along with the evidence from his skeleton, confirmed his sex; but he also wore a gold armband on the left arm, and a plain strip of electrum found lying on his body probably decorated his clothing. These are the earliest such ornaments from the grave circles, and elsewhere in the Middle Helladic period they normally accompany the burials of women. He belongs early in the middle phase of the circle, and remains the only skull from this period which we have so far been able to reconstruct: his near-contemporary I68 was at one point under consideration, and was indeed studied by Dr McGeorge because of his potential interest in Minoan–Mycenaean interrelationships, while we had noted that the long, narrow vault showed evidence for a possible sutural closure disorder, but we had to abandon him because there was really no longer enough of the facial area surviving to make a reconstruction practical.

The skull of B52 is small but also striking for the asymmetry of his face, especially when seen from below; his nose is large, and altogether he has ‘a lot of face’. When the face was reconstructed, he did look quite different from the other two. ‘A large man of about thirty . . . the skull has a narrow, beaky face with a long nose and rectangular facial outline’ was how Angel had described him, estimating his height at 1.73 m.¹⁸ Although the face was rectangular it was a much shorter, squarer rectangle than the other two, for it did not have their lantern jaw, the eyes were set wider apart, and the nose appeared relatively larger. The entire proportions of the face were different when viewed from the front, and not a single one of the

¹⁸ Ibid. 379, pl. 245; the grave described at pp. 36–43, pls 23 b–28; also Dickinson, *Origins*, 40–2, 43.

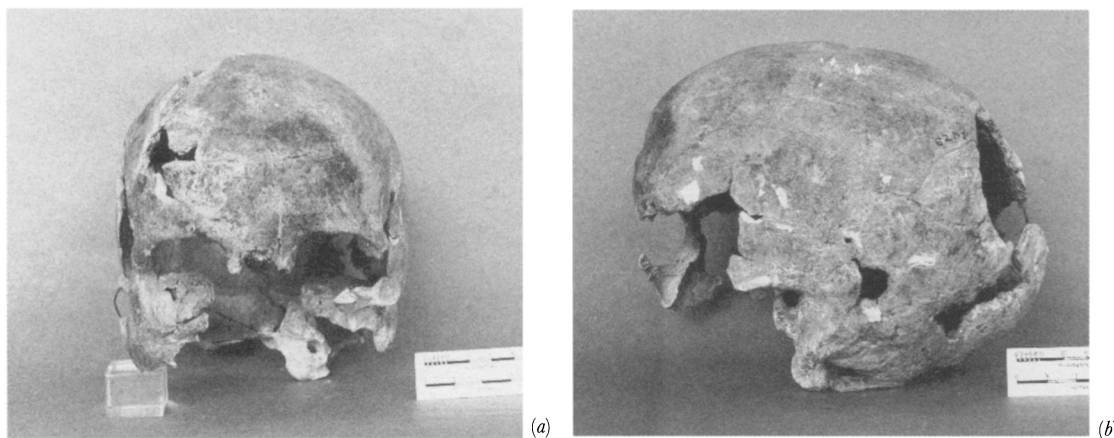


FIG. 6. Skull of A62. (a) Frontal view. (b) Profile view.

measurements used to match up faces in the forensic technique of photocomparison (also called face-mapping) seemed likely to correspond. When seen in profile, the strong brow-ridges and the jutting lower lip caused by the prognathous jaws gave him a somewhat primitive appearance, and the contrast with the other two heads was increased by the sloping forehead, shared (though to a much lesser degree) by $\Gamma 51$ (PLATE 14 *a-b*).

For this trio, then, facial resemblances suggested that B52 from the NE group of burials stood apart, but that there might be a link over two or three generations between Z59 and $\Gamma 51$, buried in graves in the NW and the centre of the circle respectively; we shall return to the significance of this later. $\Sigma 131$ was an early member of the SE group: his facial structure set him apart from this trio, but as will be shown later one can see some features which he shared with the two other occupants of grave Γ .

The reconstruction of the remaining three skulls produced arguments for some kinship links within grave Γ , and between individuals buried in graves Γ and A.

Grave A in the NE of the circle was a large grave of the late phase that had been used at least twice, for apart from the principal skeleton **A62**—certainly male—the remains of another individual had been swept against the wall. It had been marked by a stele, crudely carved with a fight scene, and the grave goods were very rich: as well as a large number of fine weapons there were metal vases, a faience cup, gold ornaments, and two pins. Since these last seem more suited to a woman, it may be that the first occupant was female. When Angel saw the skull it was still in good condition, and from this and the other remains he described a broad-shouldered, strong-limbed, and big-bodied man, 1.68 m tall, perhaps twenty-three years old but whose spine showed signs of heavy exercise and possibly also of a healed fracture. Like Z59 and $\Sigma 131$, the muscle attachments still gave evidence of his powerful neck and jaw, and he also showed the characteristically male pronounced mastoid process, but in 1987 the skull was extremely fragile: many of Angel's repairs were still intact but some of the lower parts had become detached and broken, and it needed very delicate conservation before it was stable enough to undergo casting (FIG. 6). Since it was not possible to make joins strong enough to withstand handling, it was decided not to reattach fragments of the orbit and maxilla but to cast them separately. The face that finally emerged had a high forehead and wide cheekbones tapering down to the chin; the features sat neatly within the face, with a fairly wide nose above a small, precise mouth. Angel had described it as a massive ovoid skull, 'extremely large, with

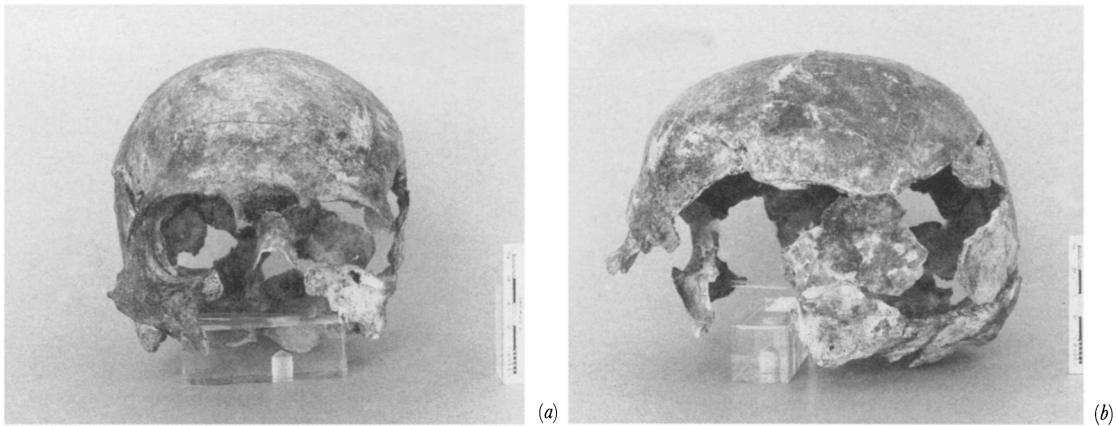


FIG. 7. Skull of Γ_{55} . (a) Frontal view. (b) Profile view.

wide forehead above a very wide-cheeked heart-shaped face with deep chin and wide nose' (PLATE 15 *c-d*).¹⁹

The skull of Γ_{55} was in extremely poor condition. Angel's technician had reattached numerous fragments, and his photographs indicate that he had left it reasonably complete save for some gaps in the vault and an area in the maxilla. However, in the intervening thirty years the wire frame on which he had rebuilt the skull had disintegrated, and so all those parts that would form the structure for the central and lower parts of the face had come away; much of the glue had given way, although the nasal bone was still loosely attached. It was refixed firmly, along with both mastoid processes and the right orbit, to ensure a reasonably solid foundation for a cast that extended down to the lower cheeks. Taken with Angel's notes and photographs, and bearing in mind that much of the maxillary dentition and some other portions survived even if they could not be reattached, it formed an adequate basis for reconstruction (FIG. 7).

This was another big man: Angel had calculated his height at 1.76 m, and had put his age at around thirty-three on the basis of his pubic symphysis. He had commented on the strength and thickness of his bones, the likely strength of his neck muscles, and his nearly perfect teeth. When the skeleton was excavated the knees were spread wide, which led Angel to say that he had been buried in the position of a horse-rider, but it seems more likely that he was laid out with his legs drawn back somewhat, perhaps to allow space for the body of Γ_{51} across the end of the grave, and that the bones fell outwards as the flesh decomposed. Angel evidently expected a rather massive face with a low brow: the reconstruction showed more delicate features, with a relatively high forehead, wide cheekbones, and eyes set well apart, tapering towards the chin—much more the heart-shaped face that he had noted when comparing him with his female tomb-companion Γ_{58} (PLATE 16 *a-b*).²⁰

Γ_{55} was the only person in this grave circle to have been buried with a mask, thus providing a link with graves IV and V in Circle A (FIG. 8). It is of electrum, belonging with the early 'flat' group of masks, and is probably the earliest of them all. Unlike the masks in

¹⁹ The grave: Mylonas, *Grave Circle B*, 21–34, pls 12–22, with Angel's comments on pp. 379, 387, and pls 244, 249, where the skull is shown as it was when found.

²⁰ The mask as found: *ibid.* pl. 35; for the account of the burial, pp. 43–79, pls 32–61; Angel's comments are on pp. 379–80, 389–90; pl. 244 shows the skull as found.



FIG. 8. The electrum mask buried with $\Gamma 55$, c.1550–1500 BC (Athens, National Museum; photo courtesy of Athens Archaeological Society).

showed a face with small features, roughly triangular in outline and with a high forehead. But there were other technical and stylistic reasons why the craftsman should have made the mask triangular that need have no connection with the physical appearance of the man for whom it was made, and when it comes to details the two do not match: the mask has a long and rather narrow nose (as do several of the masks) and a small mouth; the reconstruction shows a relatively larger mouth, and a wider and much smaller nose with a deep hollow between the eyes. The reconstructions are never accurate portraits in the strict sense, but technically they must produce a face that is recognizable and identifiable; when one compares the reconstruction with the mask, it becomes clear that the mask cannot be a portrait in the sense of depicting this particular individual at all. At the outset we had thought that the electrum mask might give us a guide as to this man's appearance, but the more we looked into its archaeological history, and at the details of its appearance and method of manufacture, the clearer it became that the two could have no physical resemblance. At one stage we had debated whether we should try to make a cast of the interior of the mask to match against the reconstruction, but now there seemed little justification in subjecting so precious an object to such an ordeal. It is worth adding that when viewed from the back—as it is now possible to do in the new displays in the National Museum—even allowing for the fact that they have been repaired since their discovery, none of the masks look as if they were shaped to fit over actual features like a true mask for the dead, as was once suggested. Had they been so shaped, it might have been worth exploiting the new technique of photocomparison (face-mapping) to attempt a measured comparison between the electrum mask and the reconstructed face of $\Gamma 55$, but on a flat

grave circle A, however, this one was found not over the face of the dead man, but resting on its edge against a jug some way behind and to one side of the skull, where it had perhaps fallen from a box. It lay much too far from the skull ever to have rested upon it. This in itself calls into question the role of the masks as portraits in any sense of the word, at least in their original intention. Those in Grave Circle A certainly seem to have been intended to serve as death masks in some manner when they were placed over the face of the dead person, but the position of this mask in grave Γ suggests that this may not have been their original function, indeed, that this function had not yet been considered when this man was buried, with his mask beside him; and it is conceivable that their primary role was as symbols of power and authority. When it came to comparing this reconstruction with the electrum mask one could say that they both

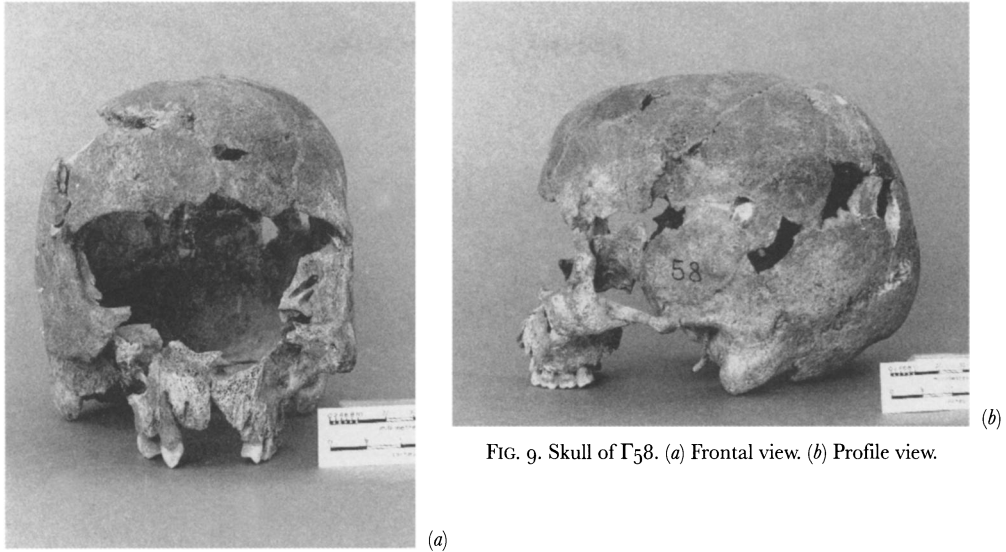


FIG. 9. Skull of $\Gamma 58$. (a) Frontal view. (b) Profile view.

mask the features must be too distorted and too remote from the original for such a comparison to have been either practical or valid.²¹

The last member of this grave group to be studied was $\Gamma 58$. For a number of reasons we wanted to attempt to reconstruct at least one woman's skull from the grave circle, but only four skeletons had been identified as female. Two of these were lacking the skulls altogether ($\Theta 63$ and $A_1 69$), and the skull of the third ($Y 132$) had been badly distorted by the pressure of the earth upon it, and even in 1954 the fragments, though restorable, were 'rotten-woodlike in their fragility'; by 1986 not only the repairs but many of the actual fragments had disintegrated, rendering her quite unsuitable.²² This left $\Gamma 58$, who had the advantage that we might expect some kind of relationship with the men buried in the same grave. However, even in 1954 much of her face was gone: Angel's photographs showed the entire nasal bone and much of the maxilla to be missing, so that the region of the eyes and the centre of the face appeared as a gaping chasm (FIG. 9). However, the surviving bone was better preserved than in many of the other skulls, and it had not deteriorated significantly since the 1950s: despite some reservations Dr Dickinson felt strongly that for all the technical difficulty her face should be reconstructed if at all possible.

Like $\Gamma 55$ she was a strongly built person, though probably quite slender, and tall (1.606 m). She was in only her mid-thirties when she died, but already suffered from the beginnings of arthritis in her lumbar vertebrae and in her hands. The right humerus showed a well-healed fracture. The skull is theoretically large enough to be male, and it is also rather heavy, though this is probably the effect of the thickening of the bone caused by osteoporosis; however, other details such as the sharpness of the supra-orbital margins and the lack of brow-ridges, coupled with the fact that Angel, who had the opportunity to study the whole skeleton, commented on her markedly female true pelvis and noted the birth

²¹ It is perhaps revealing that Angel commented that 'the electrum mask . . . with its wide forehead, tapering face outline, and notably deep chin could fit Gamma 51 (except

for his wide jowls) if one assumes that it was done freehand and not as an actual cast' (in Mylonas, *Grave Circle B*, 381).

²² *Ibid.* 384–5, pl. 247.

canal, confirmed that this was the skull of a woman. The ivory comb found with the skeleton confirms this.²³

Her face had the same heart-shaped outline as Γ55; like him, too, the eyes are relatively small and wide apart, but her mouth seems proportionately larger. Seen in profile her forehead is prominent and the line of her jaw strong (though under the circumstances one should not rest too much on this feature); it is quite unlike the profile of the prognathous B52 (PLATE 16 *c-d*).

THE FASHION IN HAIRSTYLES

In their hairless state the reconstructions were extremely valuable as three-dimensional reports on the skulls, and for identifying the characteristics and features which might demonstrate a relationship, but as a means of conveying what the Mycenaeans looked like in life they were less convincing, and it was necessary to consider both hairstyles and the wearing of beards at the end of the Middle Helladic. The only contemporary mainland face is the electrum mask from grave Γ, and this, taken together with the slightly later golden examples from Circle A, was our first guide. Only the 'beautiful' mask from grave V in Circle A is shown with beard and moustache, but save for the eyebrows on the other flat masks none of them are shown with any hair at all. Kopcke has argued that the artists of the other gold masks did not give them beards and moustaches because they were learning from the artistic tradition of the Cycladic islands and of Middle Minoan Crete, where full beards were rarely if ever shown and one may assume that men went clean-shaven; he suggests that therefore no convention existed for the depiction of facial hair other than eyebrows, and it needed an innovator like the artist of the 'beautiful' mask to create one.²⁴ Nevertheless there are other illustrations of male faces which are close enough in time to give an indication of Mycenaean fashion at the end of the Middle Helladic (given the vagaries of human taste in these matters): there seems to have been no hard and fast rule, and some men wore a full beard, others a beard and no moustache, while some shaved their faces completely and wore their hair short. It seems perfectly feasible that the gold masks illustrate these differences too. Although Marinatos suggested that hair length reflected social status in the Bronze Age as it did later, so that long hair was a sign of nobility and hair trimmed at the nape indicated official status while the common people cut their hair short, the evidence from the mainland does not really support this, even though it may be true of Minoan Crete.²⁵ On the slightly later lion-hunt dagger from Shaft Grave IV the huntsmen are all clean-shaven, and have short hair that sometimes covers the nape and is sometimes cut level with the ears; on the gold rings from the same grave showing the 'battle in the glen' and a stag hunt, warriors and huntsmen are shown both bearded and clean-shaven, their hair long or short. The charioteer and the figure on foot on the stele from Shaft Grave V seem to be short-haired and clean-shaven, although the carving is not very detailed, while that on the only sculpted grave stele from Circle B is even more sketchy. The LH III silver phiale from chamber tomb 24 at Mycenae and its companion from Pylos show long-haired men with neat beards but no moustache, as do the niello plaques of the same date found at Pylos; these are all rather later than Circle B, and seem to reflect a time when the clean-shaven upper lip

²³ *Ibid.* 380–1, 389, pl. 244; also Dickinson, *Origins*, 45. On the effects of osteoporosis, Grmek (n. 17), 60; for further refs. see A. J. N. W. Prag *et al.*, 'The priest and priestess from Archanes-Anemospilia: reconstructing Minoan faces', *BSA* 89 (1994), at 91 nn. 3–4.

²⁴ *AM* 91 (1976), 1–13.

²⁵ S. Marinatos, 'Minoische Porträts', in D. Ahrens (ed.), *Festschrift Max Wegner* (Münster, 1962), 9–12, with further references.

was the general fashion. Ivories from this period show men completely clean-shaven, but the amethyst seal found in grave Γ shows the beard with clean upper lip (FIG. 10): even if this gem was made in Crete, it is at least contemporary with the warrior with whose burial it is normally associated (Γ 55). The fact that the hairstyle was found later on the mainland at the very least renders it possible that some of those buried in Grave Circle B were already wearing it.²⁶

In the end we opted to let our reconstructions reflect this variety of hairstyles, not least because in their finished form it still made comparison between the various facial types easier if they were not all covered by hair. Σ 131 was given a style that reflected the 'beautiful' mask from Shaft Grave V as befitted his

seniority: hair reaching to the nape, and a neatly trimmed full beard and moustache. But first he required a little modification to his features. Colleagues had pointed out that the face which we had given him was that of a modern fifty-five-year-old, not one from the sixteenth century BC (PLATE 17 *a*). His health record showed that this was a fair criticism: he had three diseased teeth, including a large abscess above the upper right lateral incisor; we found evidence for *cribra orbitalia* and possible osteoporosis on the skull, and Angel had noted slight arthritis of the spine and had found several gallstones resting between his lowest ribs and pelvis, a combination which must have given him fairly continuous pain. The relaxed expression was replaced by leaner and more pained features, as a result of which even when it was given hair and a beard his whole face appeared rather narrower, drawing attention to his rather prominent nose (PLATE 17 *b*). The underlying skull and thus the fundamental structure of the face remain the same despite these minor changes: either version would have satisfied a forensic case, and his relatives would have recognized him easily in either version, but, as we have often stressed, the object of reconstructing skulls from archaeological contexts is not to create a portrait but in effect to compile a three-dimensional report: therefore it involves reporting all the evidence in visual form.²⁷

Z 59 should perhaps have had a beard too, in view of his age, but here we felt that as much of his face as possible should be visible, so that the similarities with Γ 51 would not be covered up: he is clean-shaven, with receding hair that reveals his battle scars trimmed off at the nape (PLATE 17 *c*). Γ 51 was left with the short trim found on the lion-hunt dagger as befitted his relative youth and likely social status (of which more below); since he did not survive the trephination, the reconstruction does not show its scars. The old wound over his left eye—like



FIG. 10. Disc-shaped amethyst seal with head of bearded man buried with Γ 55, probably MM III B–Late Minoan I A, c.1600–1550 BC (Athens, National Museum).

²⁶ Illustrated e.g. by Mylonas, *MRG* figs. 18, 29, 30, 32, 114, 124, 181. Niello plaques: S. Marinatos and M. Hirmer, *Crete and Mycenae* (London, 1960), pl. 204; also M. S. F. Hood, *The Arts in Prehistoric Greece* (Harmondsworth, 1968), figs. 115, 118, 121, 164 *b*.

²⁷ The case of the Great Harwood murder victim shows how the structure of the skull is much more important than superficial detail in our recognition of a familiar face: *BSA* 89 (1994), 90–1, fig. 1.

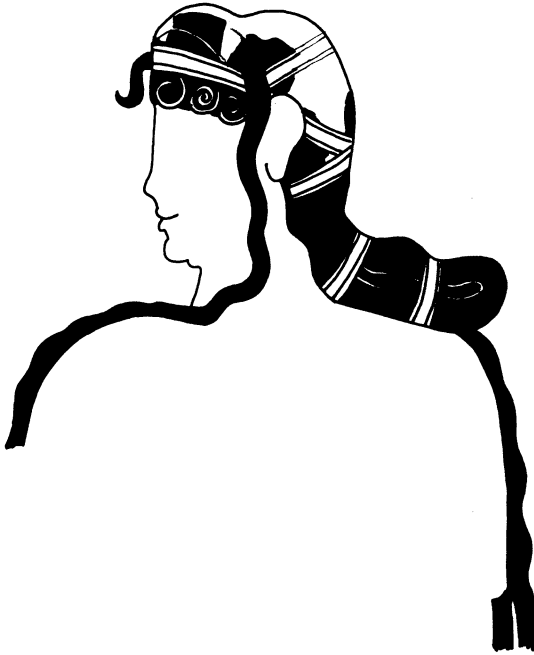


FIG. 11. Hairstyle of 'Mycenaean Lady': fresco fragment from House of the High Priest, Mycenae, Late Helladic III B2, c.1200 BC.

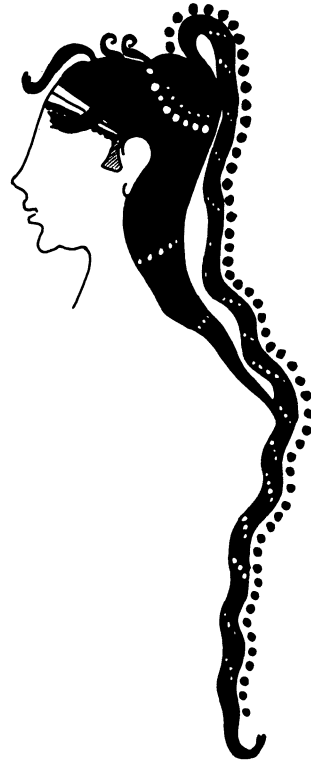


FIG. 12. Hairstyle of 'Mistress of the Animals': fresco from Xeste 3, Thera, c.1550 BC (after C. Dumas, *The Wall-paintings of Thera*, 162–3, where details of her jewellery and anatomy are included).

that on the top of Z59's head—did not necessarily disfigure him permanently, so in this case we omitted them from the final reconstruction (PLATE 17 *d*). B52 was also left clean-shaven, more to allow his very individual features to speak for themselves than because of his apparent youth (his death at around thirty in a society where the average age at death was thirty-six only makes him seem youthful in modern eyes) (PLATE 18 *a*). By contrast A62, though only in his early twenties, was given the patriarchal style worn by Σ131, perhaps because there was no reason to assume an inferior status (PLATE 18 *b*), while Γ55, in his early thirties, has the beard and clean-shaven upper lip illustrated on the amethyst from his grave (PLATE 18 *c*).

The hairstyle of Γ58 was the subject of much discussion, and was several times revised. The four little gold plaques and the gold ornament on the pin (possibly Minoan work) found in Shaft Grave III and only a generation or two later, though small and crudely detailed, suggested a row of curls at the front and shoulder-length hair at the back which left the ears exposed. Although one should not rely too heavily on fresco paintings found at Mycenae and other mainland sites, because of their LH III date as well as potential Minoan influence, these also showed a row of curls across the brow and long hair hanging down the back of the head, with long curls in front of the ears, which were again left exposed (FIG. 11). If the jewellery worn in the hair and on the head can be taken as a guide, fashions in the world of the Shaft Graves had much in common with those at Thera: the Mycenaean ladies in Grave Circle A

were buried with similar ear-rings, hairpins, and beads to those worn by the Therans depicted on the frescoes from Xeste 3, and thus we felt justified in following contemporary Theran hairstyles for our Mycenaean (FIG. 12 shows one of the women from Xeste 3, but her jewellery has been omitted from the drawing for the sake of clarity: that she, too, was a lady of riper years is clear from her incipient double chin and generous breasts). The typically Mycenaean fourteenth-century fashion of pulling the hair up onto the crown and letting it fall down in a single pony-tail or in three long locks, seen on the idiosyncratic LH III 'idols' from the cult centres at Mycenae and at Phylakopi, is also found on Thera.²⁸ Thus it seemed reasonable to use the Theran styles as the basis for rendering Γ58's hair: a pony-tail and long locks hanging down the back, held in place by a band wound around them, with three little plaits on the top of the head, and with the addition of a row of 'Mycenaean' curls over the forehead, not normally found on Thera but very much a feature of Mycenaean taste. It must be said, however, that this is not intended as a definitive version of a Shaft Grave hairstyle, but merely as an addition to the lady's *ensemble* that will place the reconstruction in its historical context (PLATE 18 *d*).

'A TABLE OF KINDRED AND AFFINITY'

When one began to compare the seven reconstructions on a purely visual basis, both similarities and differences became apparent, which one might interpret as evidence for and against blood kinship; they are summarized and compared with Angel's suggestions in FIGS. 13–14. Taking account of such characteristics as the overall shape of the skull, notably the height and angle of the forehead and the shape of the back of the cranium, and of details such as the distance between orbits and between cheekbones respectively, and the depth of the recreated chins, one noticed again the striking similarity between Z59 and Γ51: their long faces share a high and slightly sloping forehead and rounded skull, narrow cheekbones and closely-set eyes, and a deep chin; despite their very long faces, their noses were—surprisingly—shorter than those of the much rounder-faced A62 and B52. The chief difference showed in profile: Γ51 was somewhat prognathic but Z59 not at all, which meant that the old warrior had a much more prominent chin than the man we might assume to be his young descendant, in whose side view the mouth becomes a much more striking feature. Seen in profile, Γ51 also has a straighter forehead and much less of a hollow at the top of the nose. Curiously, it was just in their profiles that Angel had noticed a resemblance.

²⁸ **Plaques:** G. Karo, *Die Schachtgräber von Mykenai* (Munich, 1930–3), nos. 27–8, 36, pl. 27; also in Marinatos and Hirmer (n. 26), pl. 205; Hood (n. 26), fig. 199. **Ear-rings:** cf. Mylonas, *MRC* 37, fig. 22 or Marinatos and Hirmer, op. cit., pl. 201, with C. Doumas, *The Wall-paintings of Thera* (Athens, 1992), 142, 154–5 etc.. **Pins in the hair:** cf. Mylonas, *MRC* 38 fig. 26 (pendant only; complete pin: Karo, *Schachtgräber*, no. 75, pl. 30 or Marinatos and Hirmer, op. cit., pl. 200), with Doumas, op. cit. 142–3. **Stylized lilies on bracelets:** cf. Karo no. 79, pl. 27 with Doumas, op. cit. 162; the dragonflies on the necklace in this painting recall the gold plaques shaped like bees and butterflies from Shaft Grave III: Karo, op. cit., nos. 45, 49, pls 26–7. (We owe grateful thanks for these references, and especially for the suggestions of hairstyles that derive from them, to Mrs Diana Wardle.) **Other fresco-paintings of women's hair:** e.g.

the women in the Procession Fresco from Tiryns: Marinatos and Hirmer (n. 26), pls 40 and 226. **'Stephane' head-dress:** e.g. the priestess from the Shrine at Mycenae, Mylonas, *MRC* fig. 113. **Terracotta 'idols':** A. D. Moore, *The Cult Rooms from the 'Citadel House' Excavations at Mycenae* (unpublished Ph.D. thesis, Univ. of Manchester, 1988), nos. 68-1221, 68-1611, 69-61, 69-62, pls 3. 4, 3. 15–17; Mylonas, *MRC* fig. 110; C. Renfrew *et al.*, *The Archaeology of Cult* (BSA supp. vol. 18; 1985), 214–15, nos. SF 2660, 2691, fig. 6. 4, pls 31–33 *a*; J. A. Sakellarakis, *The Mycenaean Collections of the National Archaeological Museum at Athens* (Athens, 1971), 84 no. 36. The fashion with the **single pony-tail** is also clearly illustrated on a 13th-cent. ivory box lid from Minet el Beida in Syria, which though probably local work shows strong Mycenaean influence: Mylonas, *MRC* fig. 208. **The Theran fashions:** Doumas, op. cit., *passim*, esp. pp. 154–63.

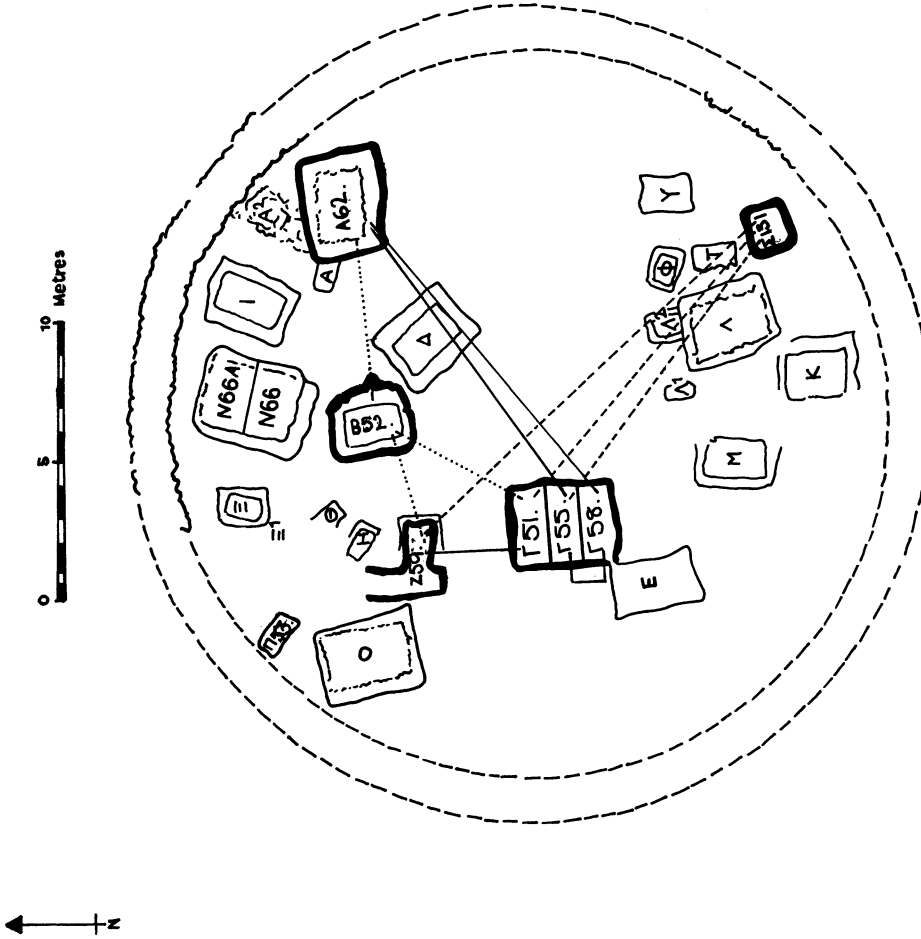


FIG. 13. Plan of Grave Circle B, showing kinship connections between skulls based on facial reconstructions: solid lines indicate probable links, broken lines possible links, dotted lines tentative links.

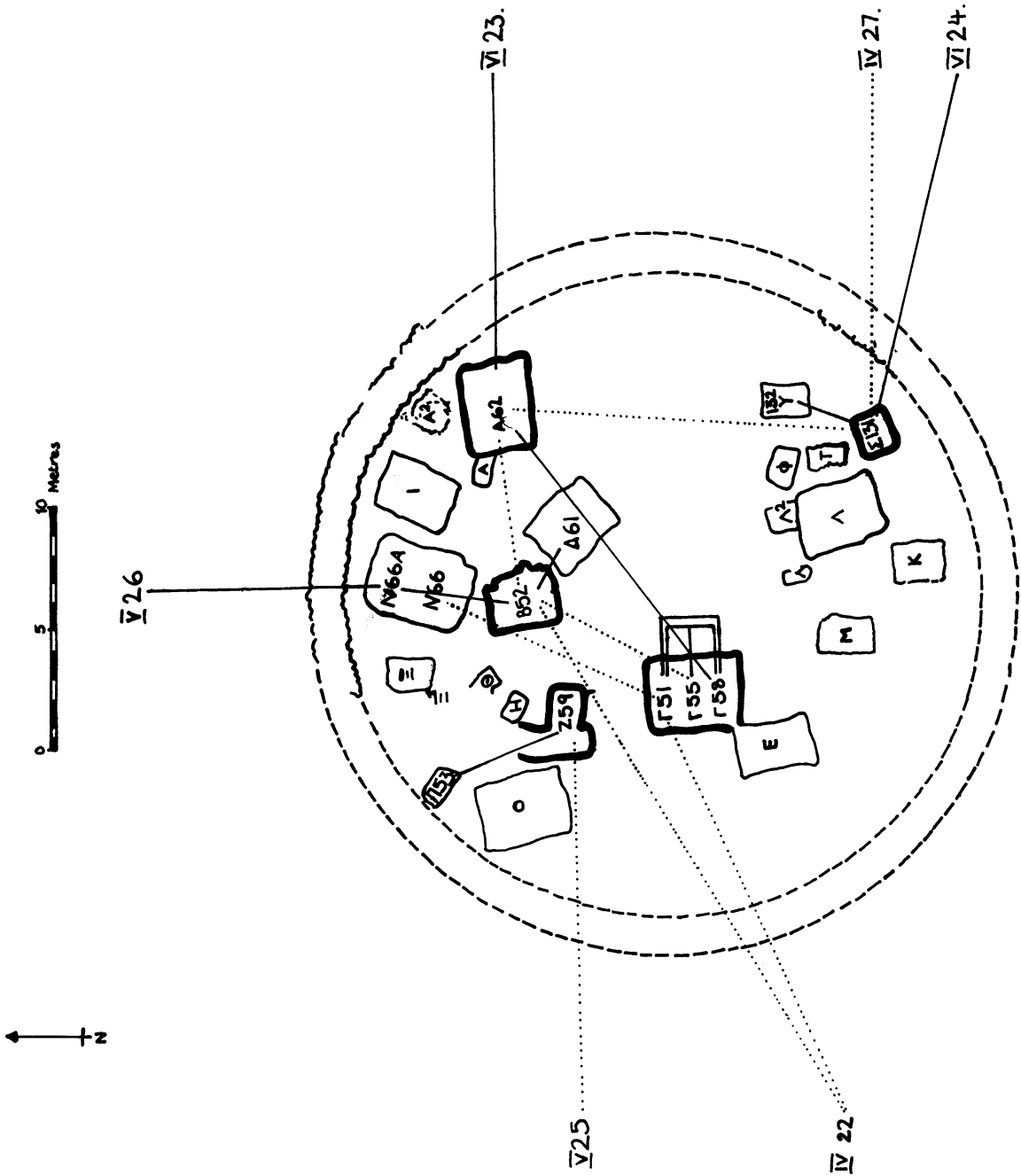


FIG. 14. Plan of Grave Circle B, showing kinship connections between skulls suggested by Angel in *Grave Circle B*; solid lines indicate probable links, broken lines possible links (figures outside circle refer to skulls from graves in Circle A).

Σ131 seemed to share most of these features, but his forehead did not slope and did not have the hollowed sides that gave the other two their horse-like appearance; he was markedly more prognathic, and his skull was altogether shorter and more rounded, so that in profile one is struck by his eyebrows, nose, and mouth. The shape of the nose and the straightforward shape of the vault with a very pronounced occipital region were like those of Γ55, with whom one could detect further similarities in the frontal proportions, notably in the lower and upper ratios; that is, those between chin and nasion (bridge of the nose) and between nasion and top of the head. Both showed a rather weak chin, but to use this feature to judge them as leaders of men is surely to go beyond the evidence.

B52, the beaky young man 'with a lot of face', remained physically something of a loner: although he shared the narrow cheekbones and close orbits of Z59 and Γ51, his forehead is low and slopes sharply, as does the back of his skull; his chin is shallow, and with his prominent brow-ridges and long mastoid process he seems at first to be no relation of any of the other six. When seen from the front the slope of his forehead makes his skull as a whole appear surprisingly tall in relation to its internal proportions. In profile he shares some features with A62, even if his face is generally narrower despite a proportionately wider chin—features like the sloping forehead and perhaps thus the overall shape of the top of the head, the brow-ridges and the dorsal ridge of the nose. Traits and family likeness do not always persist, and can quickly become diluted or overridden, but there comes a point where the 'similarities' need be no more than those that can occur between any members of the same tribal or racial group, and one must not press them too far. Angel had suggested a link in vault form with the skulls Δ61 and N66a, graves on either side of B where a connection is certainly possible on archaeological grounds; unfortunately, both these skulls were much too damaged to be considered for reconstruction; in fact, the extent to which they survived, even when excavated, leads one to treat some of the links proposed by Angel with a little caution (of Δ61 there remained only a frontal bone and mandible, and N66a was little better). Indeed, he found so many possible links between members of both circles that in FIG. 14 we have only included those of his suggestions that relate to the seven skulls with which we are concerned.²⁹

Interestingly, the other two skulls from grave Γ, 55 with the electrum mask and the woman 58, were very similar to each other—wide orbits and cheekbones, rounded skull, high straight forehead, heart-shaped face—but were unlike the young Γ51 in almost every respect: they shared only the rounded back to the skull and the fairly high forehead. Angel had noted a similarity in the shape of the vault between 58 and 51, and of unspecified facial detail between 51 and 55.

A62 has much more in common with them: his mouth is relatively wider, and his face lacks their delicacy, but he shares their profile, and in fact shows most of the characteristics that link them—the widely set eyes and cheekbones, the angle of cheek to chin—which is in itself interesting because his grave was in another part of the circle. Σ131, from a grave in the SE part of the circle, also has something in common with this group: a neat, compact face with small supra-orbital margins; it is round rather than heart-shaped, but as with the others the mandible is not heavy, and the jaws are not prognathic; but as with B52, it is better not to press these features too hard.

The relationships suggested by the facial similarities deriving from the reconstructions thus place Σ131, the only representative of the SE grave-group, rather on his own. If he is to be seen as one of the dynastic founders, then our present evidence suggests that his dynasty was not

²⁹ In Mylonas, *Grave Circle B*, 389–90, pls 245–6.

the most successful, though he should take consolation from the 'dilution factor' noted above, and from the fact that this evidence is still very incomplete, and such negative deductions are probably unjustified. Angel certainly thought otherwise, and gave him a key procreative and genetic role.³⁰ He does have rather tenuous links with B52, who otherwise also stands alone: while one would like to see a link between B52 and A62 in the same grave group, the only real similarity seems to be in the slope to the back of the skull, hardly sufficient to identify them as members of the same family, although in fairness one has to allow for the fact that the lower part of the skull of A62 was badly damaged. It is in the NW and central groups that matters become more intriguing. Γ51 must be descended from Z59, champion of champions and potential ancestor of many, but so far we have detected no others of the line, and the other two occupants of this late grave, cut into the centre of the circle, show clear signs of relationship to each other but not, apparently, to this younger man who was put last into their grave. Rather, they show physical links with A62 from the NE corner. Are we to see in the occupants of this grave, as well as in its position in the circle, evidence of some kind of reconciliation or linking up between the different groups, who had until now ruled as separate families or separate units, and had buried their dead accordingly? This grave, late in the life of Circle B, belongs to the period when one group, perhaps a single family, were already burying their dead in the new Grave Circle A.

There is one further element in the relationships proposed within grave Γ. Of the thirty-five skeletons buried in Circle B only nineteen or twenty could be sexed: fifteen or possibly sixteen were identified as male, only four as certainly female. The similarity of Γ58 to her tomb-companion Γ55 seems to argue irrefutably that they were closely related: if not brother and sister then at least cousins; certainly not husband and wife, while they are too close in age to have been mother and son.

CONCLUSION: 'I HAVE GAZED UPON THE FACE OF . . .'

Our original purpose in undertaking reconstructions of skulls from Grave Circle B had been twofold. The first was the simple fascination of applying a new technique to re-examining this important material and, as a result, looking at the faces of this group of people who, one could fairly say, were among the first rulers of Mycenae as it set out on the road that led to a major role in the eastern Mediterranean. In this we like to think we were wholly successful. Schliemann said that he felt that by his discoveries at Mycenae he had brought Agamemnon to life. Perhaps we have gone a step or two further: even if we have not yet been able to bring the faces behind Schliemann's gold masks to life, we have nevertheless gone some way towards achieving it with their immediate forebears.

The faces that have grown upon the skulls are all individuals. As we have tried to emphasize, the fundamental technique of facial reconstruction is totally objective, and it is only superficial detail that can be subjectively influenced. These seven skulls have produced seven faces that certainly reflect, not the features, but the individualism and force of character conveyed by the gold and electrum masks, which persisted throughout Mycenaean art down to the lively frieze of soldiers with their impossibly long noses on the LH III c 'Warrior Vase', or the idiosyncratic idols from the shrines at Mycenae, Tiryns, and Phylakopi. In the Minoan world Biesantz and Marinatos between them could only find five gems, out of the many thousands that survive, which could be regarded as portraits, and this ethos seems to prevail in

³⁰ *Ibid.* 390.

the Mycenaean world too. This, rather than physical accuracy or idealism, is perhaps one of the underlying elements of the representation of the human figure in Mycenaean art. Even the 'Mycenaean Lady' from the House of the High Priest at Mycenae, with her massive arms, double chin, and narrow eyes, is a personality rather than an idealized physical beauty (FIG. 11).³¹

Our second aim was to discover whether, having recreated their faces, we might be able to judge whether they were in any way related to each other, or whether they came from a number of different families; in other words, whether we could by this new approach learn something new, not just about the people themselves, but also about the social and political history of a period in late prehistory where until now one has had to rely on the evidence of more traditional archaeology, or on occasional references in the annals of other already literate societies such as Egypt. Here we can claim modified success—and greater certainty in our conclusions than Angel was able to achieve, because our technique required us to look at the material in more detail and also more comprehensively than he had done: skulls from graves in different parts of the circle, tentatively identified as belonging to different groups, generally do not look alike, and thus are more probably unrelated than related to each other, with certain notable exceptions such as Z59 and Γ51. Skulls from burials in the same graves sometimes show distinct family likenesses, even when of different sexes: of course, facial similarity need be no more than just that, and not everyone who shares features with someone else is necessarily related to that person, but lookalikes come from the same family far more often than not, in bronze age Mycenae as anywhere else. The similarity between Z59 and Γ51 raises an interesting point. Z59 took some fine pottery and a long sword into the next world with him, a substantial offering for a burial from phase 1 of the grave circle; Γ51 by contrast had only a few vases and no metalwork at all. If Kilian-Dirlmeier is right in seeing the quality of a person's grave goods as an indicator of his or her social standing, then this man should perhaps be seen in a subordinate role to Γ55, the last wealthy burial in this large grave.³² They were seemingly buried at the same time, with Γ51 laid rather oddly across the feet of the other bodies, and there were only about five years between the two men, too little to suggest a medieval knight-and-squire type of relationship; in any event, at twenty-eight Γ51 was no longer youthful by bronze age standards. It has been suggested that, late in the life of the Grave Circle, graves Γ and E were inserted between the NW group (of which grave Z happens to be the most southerly) and the SE burials (where the only late grave, Mu, lies on the W edge of the group, closest to the two central graves), and that this was part of a political manoeuvre linking the two groups of people whose dead were buried there. This notion seems to gain strength if we can see Γ51 as a scion of the old NW house, fulfilling some kind of subordinate role in a rising branch of the ruling group.

Bearing in mind that only seven skulls seemed suitable for the method we proposed, this seems a satisfactory result, particularly as it is now leading to further initiatives. Since this project was first conceived in 1985, there have been notable advances in biological or bioanthropological techniques for determining the relationships between human remains found in archaeological contexts, such as the study of epigenetic variation and most notably the technique of DNA matching. With the support of the Ephoreia, and in collaboration with Keri Brown and Terry Brown in the Department of Medical Biochemistry at the University of

³¹ Warrior vase: e.g. Mylonas, *MRG* fig. 117; for references to the idols see n. 28. Portrait gems: Marinatos (n. 25), 9–12; H. Biesantz, 'Die minoischen Bildnisgemmen',

Marburger Winkelmann-Programm, 1958, 9 ff., pl. 10. 1–4.

³² Kilian-Dirlmeier (n. 2), 159–86.

Manchester Institute of Science and Technology, samples have been taken from the skeletons of six of these individuals to test them for DNA. However, having been buried for three and a half thousand years in the soil of Greece the bones have become very mineralized, and there was some doubt whether sufficient organic material remained in them to yield any DNA. Further, because alien DNA can be transmitted simply by physical contact, it is also possible that any found will be modern, from those who have excavated and handled the bones in the last thirty years. At the time of writing one can report that DNA has certainly been found in four of the skulls, and probably from all six, and that it appears to be ancient. Not long ago the next step would have been obvious, straightforward, and exciting; but in these days, to analyse the DNA which we have now discovered for evidence of family relationships and for confirmation of the sexing means first discovering the funds for a project to do so. It might even help towards settling the debate over the Minoan connections of these Mycenaeans.

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J. H. MUSGRAVE
 R. A. H. NEAVE
 A. J. N. W. PRAG

APPENDIX 1: THE CRANIA FROM MYCENAE GRAVE CIRCLE B: ANATOMIST'S
 REPORT BY JONATHAN H. MUSGRAVE AND ROSEMARY A. MUSGRAVE

These notes are intended only to update J. L. Angel's very full appendix to Mylonas, *Grave Circle B*, pp. 378–97 (generally referred to in this section as 'JLA'); we sometimes refer to his comments, using his initials and, where appropriate, giving the page number. Angel numbered the skulls in the order in which he came upon them, adding the suffix 'Myc' to distinguish them from other sites on which he was also working during the summer of 1954; we have retained his numbering but have normally omitted the suffix, including instead the letter of the Greek alphabet by which the excavators identified each grave. The dental age we suggest for each individual will often appear to be lower than that proposed by Angel: this is because our estimate is based solely on the extent of attrition of the teeth, which depends on variables such as diet, while Angel also had the postcranial bones, often the whole skeleton, on which to base his figure. We recorded all the available skulls, although only seven were in the end selected for facial reconstruction ('reconstruction' in these notes refers to reconstruction of the bone fragments carried out for Angel). In these notes 'R' and 'L' stand for right and left respectively.

F51

Condition: unstable.

Colour: generally light.

Cribral orbitalia: none.

Increased trabeculation/thickened cranial diploe: vault does not look greatly thickened; nevertheless see JLA p. 380: 'slight traces of healed osteoporosis' on both parietals. Parts of the parietal could have been 8+ mm thick.

Vault: almost complete but long fragment missing from left parietal; triangular fragment missing from right parietal. Irregular fragments missing from left parietal/occipital.

NB *trephination hole* on left side of frontal just anterior to left coronal suture. Two roundel fragments found (see JLA for details). See JLA also for description of small, depressed, healed lesion on right side of frontal.

Base: damaged. Foramen magnum present but

restored effectively; a large gap from basion to pterygoid region, i.e. much of sphenoid missing. Temporal bones virtually complete; both glenoid fossae present.

Face: almost complete but damaged.

Orbits: R orbit complete. L lacks middle part of medial wall.

Nose: nasal bones absent and L lateral wall (maxilla) also missing.

Zygomatic bones: virtually complete.

Maxilla: including dentition: almost complete but damaged on R side below orbit.

Sex: clearly male.

Age: dental age: 20–25 years. JLA: c.28.

Sutures: coronal closing internally and open externally. Sagittal and lambdoid: greater precision not possible given the condition of the bones.

Pathology: (i) Trephination on L side of frontal bone. NB bone only cut through outer table. Internal diameter greater than external. Recovery of 2 fragments of roundel confirm that the operation was completed. (ii) Healed wound on R side of frontal.

Comments: mandible missing. Body of hyoid and greater cornu recovered; corpse buried with flesh on. Two major trephination roundel fragments examined, cleaned, and packed in cotton wool in polythene bag; c.50 very small fragments also bagged. Some facial asymmetry: L side of frontal behind R.

B52

Condition: poor.

Colour: quite heavily stained brown.

Cribrata orbitalia: each orbital roof damaged but traces visible. Stage not diagnosable.

Increased trabeculation/thickened cranial diploe: vault too damaged to comment reliably.

Vault: R side of frontal much damaged; L almost complete. R parietal has much missing. L parietal huge gap posteriorly. Occipital fragmentary.

Base: virtually non-existent.

Face:

Orbits: R orbit incomplete superiorly. L orbit almost complete.

Nose: Almost complete, nasal bones present.

Zygomatics: R and L almost complete.

Maxilla: L side virtually complete. R far less so and distorted.

Sex: male (JLA). Not very rugged but external occipital protuberance region and L supra-orbital region and R mastoid accord with JLA's diagnosis.

Age: c.30 (JLA). Dental age: Slightly younger.

Sutural closure only just started along coronal, sagittal, and lambdoid sutures.

Pathology: cribrata orbitalia?

Comments: mandible missing. 2 lower teeth probably not from B52 but bagged with other 52 cranial remains (as they were previously packed with them). One bag with c.30 tiny fragments.

Π53

Condition: not too bad.

Colour: light.

Cribrata orbitalia: trace in L orbit.

Increased trabeculation/thickened cranial diploe: some. L parietal looks thick: up to 9 mm (?) in places.

The remains comprise: L half frontal bone; L parietal; upper 3/4 occipital; L squamous temporal; R supraorbital region; 2 mandibular fragments with teeth.

Mandibular fragments: 1 body fragment from chin region and the L ramus and distal part of L body.

H54

Condition: very crumbly.

Colour: light with some staining.

Cribrata orbitalia: trace on R side.

Increased trabeculation/thickened cranial diploe: probably none.

Four large cranial vault fragments. One zygomatic fragment.

Comments: From Angel's photographs (pl. 245) his reconstruction has collapsed; the nasal region is missing; the mandible is missing (both there in JLA's time). Also found a bag with some small fragments of maxilla, some loose teeth, and many very small fragments.

Γ55

Condition: not too bad.

Colour: light with dark stains.

The remains comprise: almost complete cranial vault, i.e. frontal, both parietals, upper part of occipital, and much of each temporal bone preserved; also the nasal bones and fragments of each zygomatic. Complete L maxillary dentition and 3 R maxillary teeth.

Comments: reconstruction has suffered; the wiring has gone. Mandible is missing. Much of the 'face' is now missing to judge from Angel's photographs (pl. 244).

Λ156

'Very fragmentary' (JLA). Not examined in 1986.

Ξ157

Skeleton of a child contained in a small cardboard box: not studied in 1986 because of its fragility.

Γ58

Condition: bone apparently better preserved than in some of the other skulls.

Colour: generally dark brown.

Cribrata orbitalia: none?

Increased trabeculation/thickened cranial diploe: yes? Some vault 8+ mm thick. Possibly as much as 10 mm in places.

Vault: much of upper part R of mid-line completely missing. L half vault virtually complete: much of posterior and inferior parts of R parietal present. Occipital bone virtually complete.

Base: not well represented but basilar portion of occipital and both glenoid fossae present. Much of sphenoid missing. Both temporals virtually complete.

Face: central portion missing, i.e. no nasal bones and no nasal processes of maxilla: the face is a gaping chasm.

R zygomatic: nearly complete.

L zygomatic: fully complete.

Maxilla: upper medial nasal portions missing. Palatine and dental portions present.

Sex: JLA says female. Not easy to determine from skull: certainly face looks low, superior orbital margins are sharp, and supra-orbital regions of the frontal are quite smooth, but mastoids and external occipital protuberance regions ambivalent. Skull also heavy: because of increased trabeculation/thickened cranial diploe?

Age: 36 (JLA). Dental age: 20–25.

Sutures: as far as one can see L coronal, sagittal, and lambdoid are all open externally and closing, irregularly, internally. Much damaged internally. Agree with JLA's estimate of 36.

Pathology: none seen by me.

Comments: mandible missing.

Reconstruction: original conservation and restoration looks sound.

Z59

Condition: very good: the best preserved.

Colour: probably quite light. Skull apparently not cleaned during original conservation.

Cribral orbitalia: present bilaterally: not serious; or a healed old lesion.

Thickened cranial diploe: difficult to determine but vault thickness could be 8+ mm in many places and the skull is certainly heavy.

Vault: virtually complete. Slight damage here and there.

Base: almost complete but basilar part of occipital and much of R sphenoid missing.

Face: almost complete.

Orbits: R complete. L lacks parts of superior rim and medial border.

Nose: almost complete; lacks upper part of lateral wall: nasal process of L maxilla missing. Nasal opening narrow and nasal sill sharp.

Maxilla: L nasal process missing, some damage to palate in mid-line; otherwise complete.

Zygomatic bones: R and L almost complete. R damaged posteriorly. L damaged inferiorly.

Sex: male.

Age: 49+ (JLA). Dental age: 40–45.

Sutures: coronal and sagittal completely closed internally. Lambdoid probably closed internally. Externally coronal and sagittal closed but outline still clear. Lambdoid: R side pretty well closed; L side apparently less so.

Pathology: see JLA. Degenerative joint disease etc. Two depressions in the skull vault. Massive abscess above upper left second permanent molar.

Comments: L nasal processes were present when photographed by JLA but missing by 1986. One cranial fragment in bag could be replaced on vault if reconstructed. Maxilla was found broken but rejoined. Mandible missing.

Δ60

'Unmeasurable fragments' (JLA). Not seen in 1986.

Δ61

Found in box in storeroom; bagged up and noted. No reconstruction by Angel. Mandible is missing. No cribral orbitalia but perhaps some increased trabeculation /thickened cranial diploe. Vault thickness of L frontal boss 8–9 mm thick. Rest comprises: 4 small bags of cranial fragments; a few mandible fragments with teeth; loose teeth; and 3 small bags of uninformative fragments. (Re-bagged and labelled by AJNWP.) This skull needs to be re-conserved.

A62

Condition: extremely fragile and very crumbly.

Colour: light.

Cribral orbitalia: very slight trace on L.

Increased trabeculation/thickened cranial diploe: none visible but it is 'too hot to handle'.

Comments: reconstruction almost intact; maxilla had become detached and broken. Mandible missing. Other points: see JLA.

Θ63

'No skull fragments survive' (JLA).

A64 (?)

Not studied by Angel. It could be medieval as the long bones of 64 are; but the number deciphered as being '64' on the skull is very indistinct.

65 Myc

Not applicable: child of unknown epoch.

N66

Condition: pretty dreadful.

Colour: quite light.

Cribral orbitalia: very slight trace on L.

Increased trabeculation/thickened cranial diploe: possibility: feels quite dense; but not possible to measure vault thickness.

Large fragments of frontal. R and L parietals. L temporal and upper part of occipital joined together patchily. Incomplete predominantly L side of vault. Almost complete maxilla.

Right			Left		
8	7	6	3	1	6 7 8

1 large fragment of L sphenoid.

Comments: cranial reconstruction in fair condition: much has collapsed; bits missing mainly in face area. NB Angel's photograph (pl. 246) was taken before his reconstruction was completed.

N66a ('packed bones')

Condition: not bad.

Colour: quite dark.

Cribr orbitalia: none on L.
Increased trabeculation/thickened cranial diploe: none seen.
The remains comprise: mainly L side: fragments of L frontal, L temporal, L parietal, and much of upper part of occipital. In 1986 the mandibular fragment was missing (see photograph in JLA, pl. 246). Plus 12 small, mainly cranial, fragments and 1 zygomatic fragment found in the store.

67 Myc

Not applicable: a child from 'Foundation tower near Lion Gate LH III 7/2/54'. Not listed by Angel but stored with other skulls.

168

Condition: fragile.
Colour: very light.
Cribr orbitalia: possible trace on R and L.
Increased trabeculation/thickened cranial diploe: none visible.
The remains comprise: upper part of vault; frontal; R and L parietals; upper part of occipital, plus R temporal; 2 base fragments; and an almost complete maxilla.
Comments: NB The vault is long and narrow: probably some sutural closure disorder.

Σ131

Condition: above average.
Colour: generally light.
Cribr orbitalia: orbital roofs damaged but almost certainly he had suffered from cribr orbitalia.
Increased trabeculation/thickened cranial diploe: probably impossible to tell but traces of healed osteoporosis (?) on R and L parietals and occipital near lambda.
Vault: virtually complete. R parietal damaged posteriorly. Occipital chignon present near lambda.
Base: almost completely missing but R and L glenoid fossae present.
Face:
Orbits: R almost complete; damaged supero-medially, L much damaged laterally and infero-laterally.
Nose: complete. Opening broad.
Zygomatic bones: R almost complete, L missing.
Mandible: present but incomplete. R half almost complete. L half has full tooth row in damaged body. L ramus missing.
Maxilla: R half complete, L less so (damaged posteriorly).
Sex: male.
Age: c.55 years (JLA). Dental age: slightly younger.

Pathology: see above for osteoporosis. Large abscess above upper right permanent lateral incisor.

Y132

Condition: poor.
Colour: fairly light.
Cribr orbitalia: no orbits.
Increased trabeculation/thickened cranial diploe: none apparent; impossible to tell.
The remains comprise: large parts of R and L parietals; smaller fragment of R side of occipital. Interesting point: several wormian bones in R lambdoid suture. Large mandibular fragment (mended) and almost complete. L ramus missing. Anterior front teeth apparently prognathous.
Comment: Angel's wiring has gone. When studied in 1986 the following were missing (evidence from JLA's photos, pl. 247): L ramus; R coronoid process; and what appears to be the almost complete maxilla; nasal bones and R and L zygomatics.

Λ2133

Condition: fragile.
Colour: fairly light.
Cribr orbitalia: none seen.
Increased trabeculation/thickened cranial diploe: probably not.
The remains comprise: an almost complete cranial vault; R half frontal almost complete; L side less so (see JLA pl. 246). Also NB metopic suture still open; R and L parietal bones complete. Much of R temporal and occipital bone almost complete. 2 small wormian bones near lambda.
Maxilla: almost complete maxillary dentition. 8 teeth on R (joined).

Right	Left
8 7 6 5 4 3 2 1	1 5 6 7

Complete R zygomatic.

Mandible:

Right	Left
8 7 6 5 4 3 2	2 3 4 5 6 7 8

Comment: since Angel's time this skull has lost the few nose fragments it had then; i.e. they were not found on the tray in 1986.

APPENDIX 2: CONSERVATION OF THE SKULLS BY DANAË I. THIMME,
INDIANA UNIVERSITY ART MUSEUM

Our prime aim was to consolidate and where necessary to repair the skulls that had been selected for casting (and it will be remembered from the main body of this article that in the first season only four skulls had been thought fit to cast, while for the second three further candidates were selected on the grounds of their archaeological significance even though they were in a less stable condition). However, having kindly been given access to all the skulls from Grave Circle B in order to make the selection of those suitable for facial reconstruction, our intention in 1987 was also to give first aid treatment to any other skull that needed it: hence this report covers a different selection of individuals from the seven whose faces were reconstructed. Broadly the same methods had been used on the skulls of the 'priest and priestess' from Archanes–Anemospilia,³³ although in that case the bones were less friable and after the initial (and fatal) disaster had suffered less from the conditions of their interment and post-excavation storage or over-hasty consolidation.

EXAMINATION AND CONDITION

Γ51

Light in colour with bone in fair condition except in areas where it is very thin, particularly near the fill at the foramen magnum. Reassembled from several fragments. The centre portion of the face is complete, but the right side of the left orbit is missing, as are some fragments of the cranium towards the back and at the base of the skull. The mandible is missing. There is a hole over the left temple caused by trephining, and an indentation from a blow over the right temple.

At the base of the skull there is wire reinforcement; joins have been made with polyvinyl acetal (Alvar), which was so lavishly applied that it has bubbled out. The gaps in both zygomatic arches were bridged with polyvinyl acetal, and the fill in the base of the skull also appears to be polyvinyl acetal. In places where the excess polyvinyl acetal is lifting, it is taking some of the surface of the bone with it. There is a mud wasp's nest near the rear inside of the cranium.

Three bags of fragments were stored with the skull. One contains two pieces of the roundel removed by trephination.

The repairs are extremely carelessly and untidily done, and the skull has not been consolidated. It appears not to have been cleaned before treatment, so that dirt is trapped underneath the adhesive. The surface is covered with additional dirt from storage.

B52

Very fragmentary and light in weight, the bone is brittle and friable. Light in colour. Covered with dust. The skull has been reassembled from a great many fragments with polyvinyl acetal (Alvar), which has been so thickly applied that it has formed bubbles

along the joins. Judging by the dirt trapped under the adhesive, the skull had not been cleaned before it was repaired. It was put together on a wire armature, the ends of which are attached in place with an opaque yellow, brittle adhesive, readily soluble in acetone. Some traces of grey plasticine on surface. Mandible missing.

On unpacking, several fragments became detached: the mastoid process and three fragments of the cranium, each made up of several smaller pieces.

Γ55

Bone fragile with friable edges. Mandible missing. Broken in several places, some new breaks and some previous repairs. The old joins have come apart along the adhesive line, and in each case some bone has become detached and adheres to the adhesive. Joins have been made with polyvinyl acetal and opaque yellow adhesive. There are remains of grey plasticine all over the surface.

Γ58

Bone dark in colour, main fragments appear solid but the edges are friable. Large portion of the cranium missing, also centre portion of face and mandible. Reassembled with polyvinyl acetal which has bubbled out of the joins and the sutures on the cranium. Around the foramen magnum there is some wire reinforcement, the ends of which are attached with opaque yellow adhesive. Some joins have been reinforced with wax containing black pigment. This has dripped onto surrounding bone. There is a plasticine fill on the back of the cranium. The skull appears not to have been consolidated, but polyvinyl acetal has been smeared over the surface, adjacent to the joins, both on the inside and the outside. The skull is, overall, very dirty.

³³ *BSA* 89 (1994), 89–100

A62

Bone light in colour and very dry. Surface very dirty. Traces of grey plasticine. Extensive repairs made with polyvinyl acetal which was very thickly applied and has bubbled out of the joins. The right side of the face has been restored with wire bridges attached with opaque yellow adhesive, and there is also some wire reconstruction at the base of the skull.

N66

Cranium, one fragment, and the maxilla preserved. Bone thick, very dry but not too friable. Very dirty with a great deal of grey plasticine, an opaque yellow adhesive, and polyvinyl acetal over the entire surface. Some areas of delamination of surface. Pieces originally attached during a previous restoration detached and lost. One piece of wire reinforcement near the base of the skull attached with opaque yellow adhesive.

I68

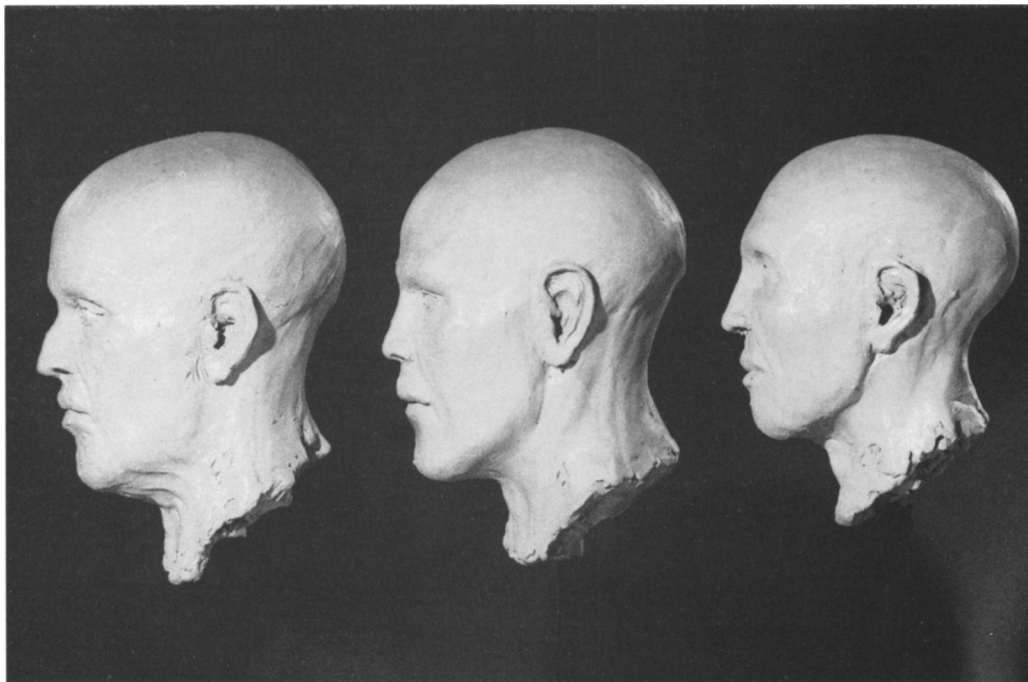
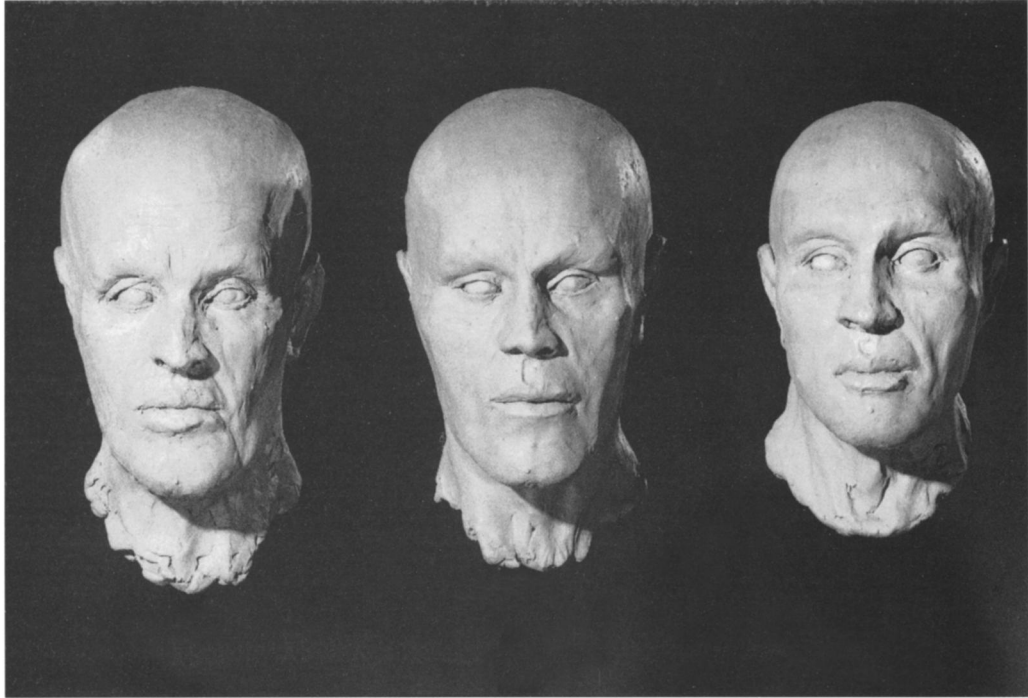
Bone very dry and edges very friable, light in colour. Mandible missing, cranial vault still reassembled; but other fragments, originally attached, and some of the wire bridges have become detached. Originally repaired with polyvinyl acetal (Alvar) and an opaque yellow adhesive, readily soluble in acetone. Some wire still attached. Traces of grey plasticine on surface.

Y132

Bone in very poor condition, completely dry and very friable. Cranial vault and two detached pieces and the mandible preserved. Surface very dirty with traces of grey plasticine. Previously repaired with polyvinyl acetal and opaque yellow adhesive. The polyvinyl acetal is smeared all over the surface, and there are pieces of newspaper adhering to it.

SUMMARY OF TREATMENT

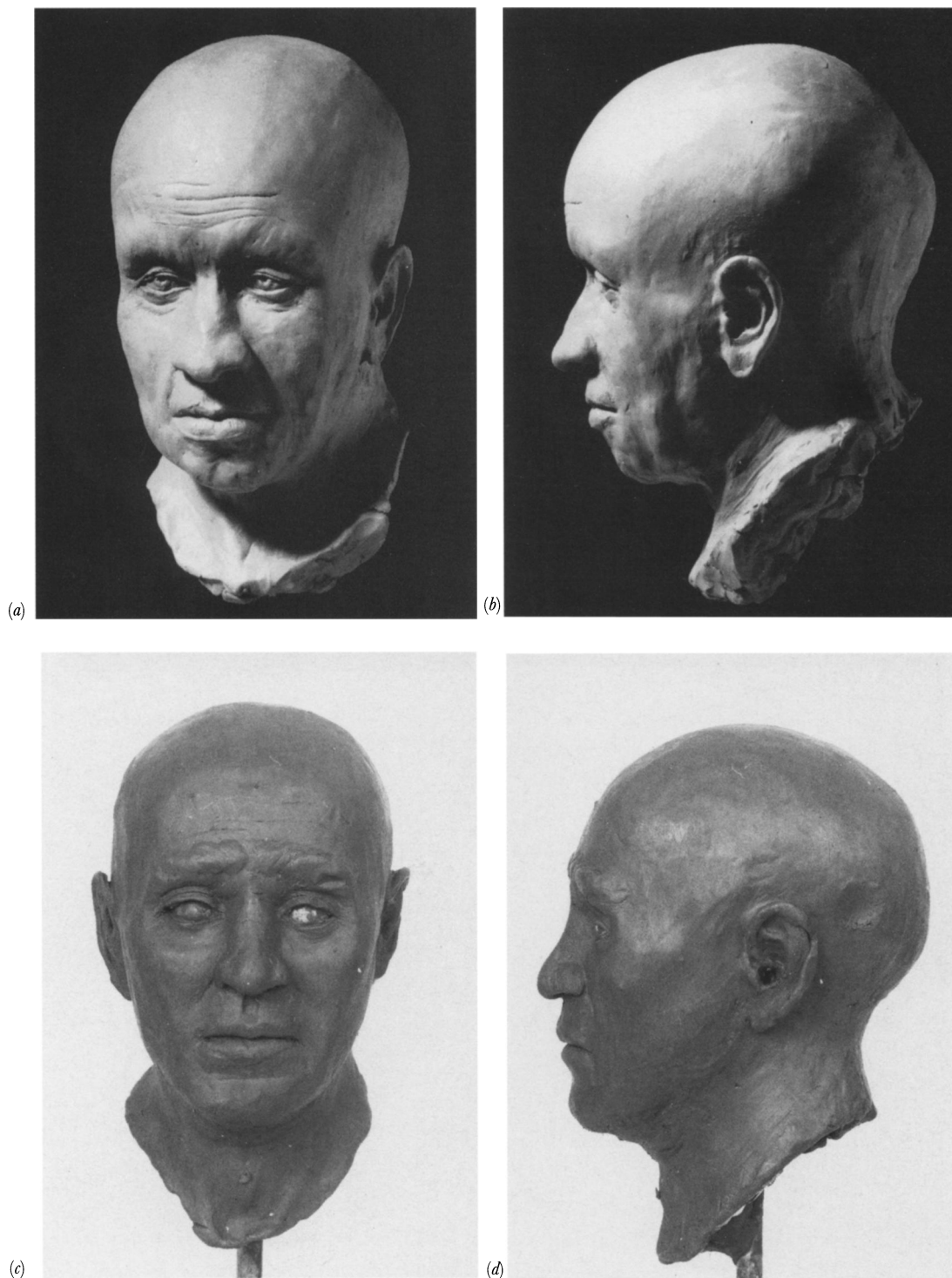
1. Loose dirt was brushed from the surface of all skulls, and as much excess polyvinyl acetal and adhesive as practical, and all traces of plasticine, were removed with acetone. Ideally, skulls $\Gamma 51$ and B52 should have been taken apart, cleaned, consolidated, and properly reassembled, but given their present condition this was not feasible; on $\Gamma 51$ the polyvinyl acetal bridges across the gaps were left in position for fear of weakening the joins.
2. Friable edges and any new breaks were consolidated with 3%, 5%, and sometimes 10% solutions of acryloid B72 (paraloid) in 80 : 20% acetone : ethanol, applied with a hypodermic syringe; the same solution was applied to very porous areas of some skulls (e.g. A62).
3. When they were not too fragile (as were e.g. the orbit/maxilla of A62), fragments that had become detached were reattached using cellulose nitrate adhesive (HMG); worn or delicate joins were reinforced with fibreglass patches or hinges, attached with 10% acryloid B72 in 80 : 20% acetone : ethanol. Additional reinforcement was made where necessary by plexiglass (methyl methacrylate) rods or wooden splints fixed with HMG, or by fibreglass 'bridges' stiffened with a 15% solution of acryloid B72 in 80 : 20% acetone : ethanol.
4. On $\Gamma 58$ the wrongly repaired fragment of the maxilla was detached, cleaned, and reattached, and the gap left by the removal of the plasticine fill bridged with a strip of fibreglass.
5. When they were still in place, it was deemed safest to leave Angel's wire bridges untouched, though some were reinforced (e.g. I68).
6. All the skulls were stored in lidded particle board boxes, the interior of which had previously been coated with a 15% solution of acryloid B72 in 80 : 20% acetone : ethanol and padded with bubble-wrap. The skulls and any associated post-cranial remains were packed in acid-free tissue; small fragments were placed in self-sealing plastic bags, punched with air-holes to avoid any risk of condensation.



PRAG *ET AL.*

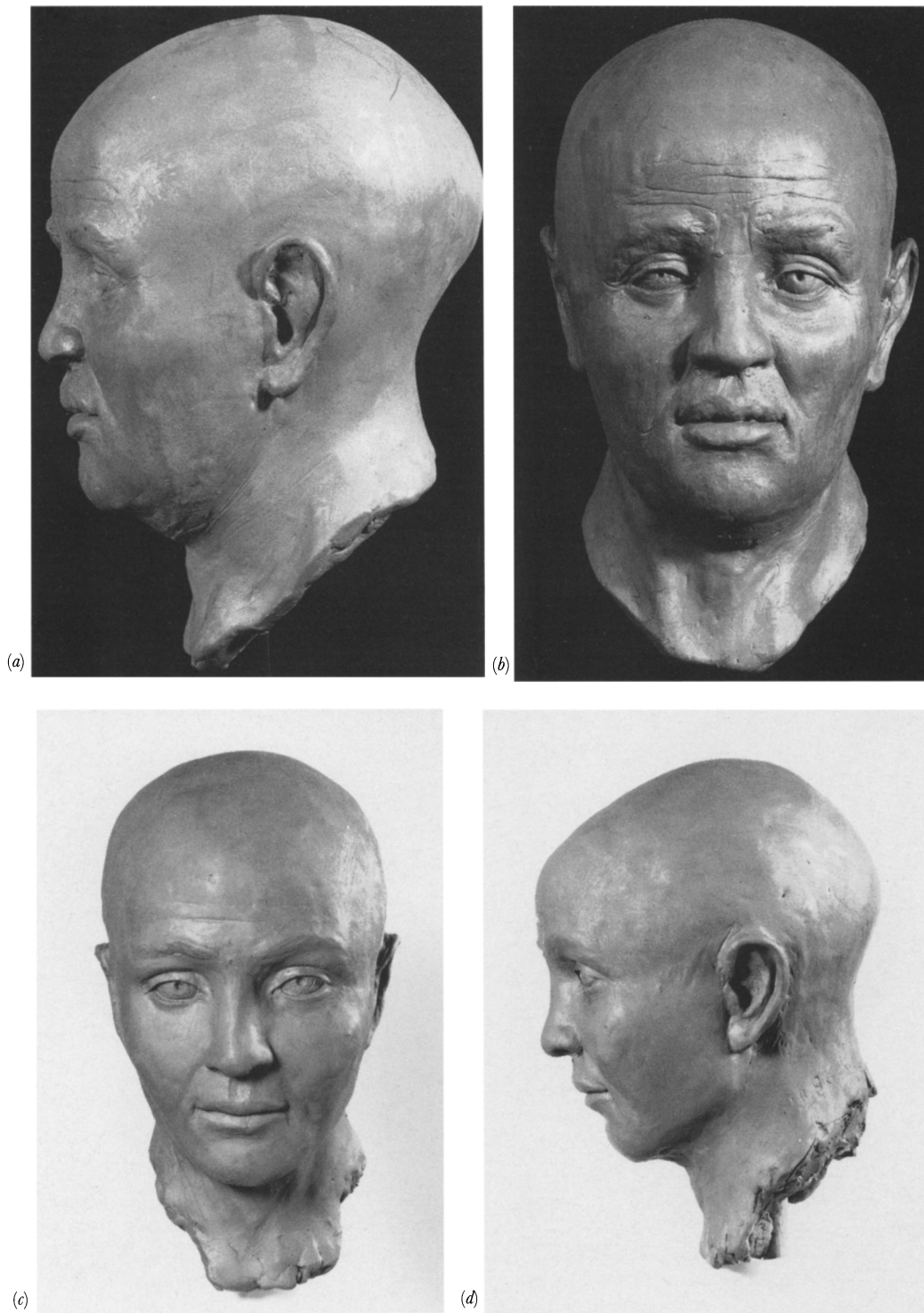
SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE

Reconstructed heads of Z59 (left), Γ51 (centre) and B52 (right) without hair: (a) frontal view; (b) profile view. (Courtesy University of Manchester.)

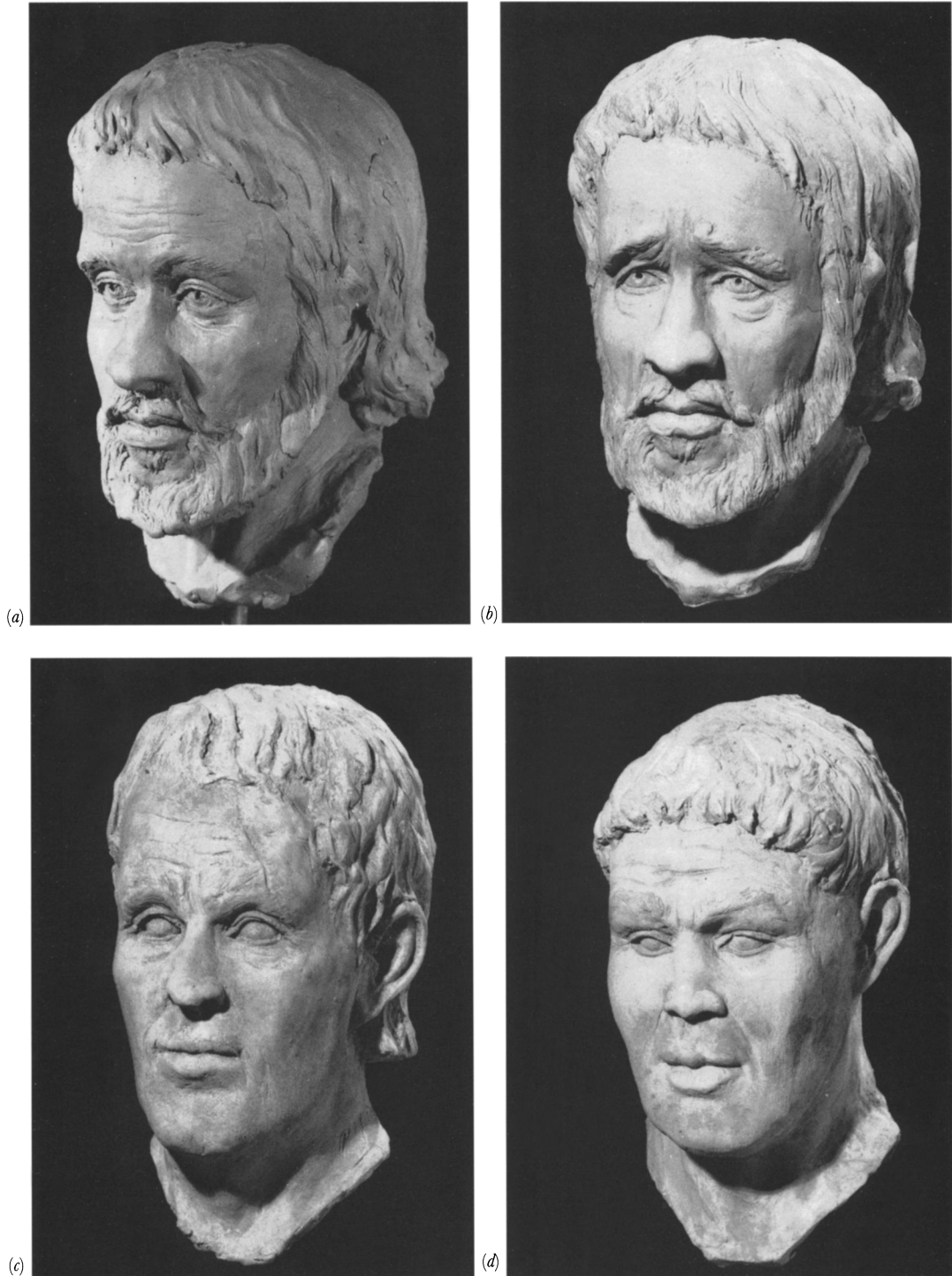
PRAG *ET AL.*

SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE

(*a-b*) Reconstructed head of $\Sigma 131$ without hair (first version): (*a*) front view; (*b*) profile view. (*c-d*). Reconstructed head of A62 without hair: (*c*) front view; (*d*) profile view. (Courtesy University of Manchester.)

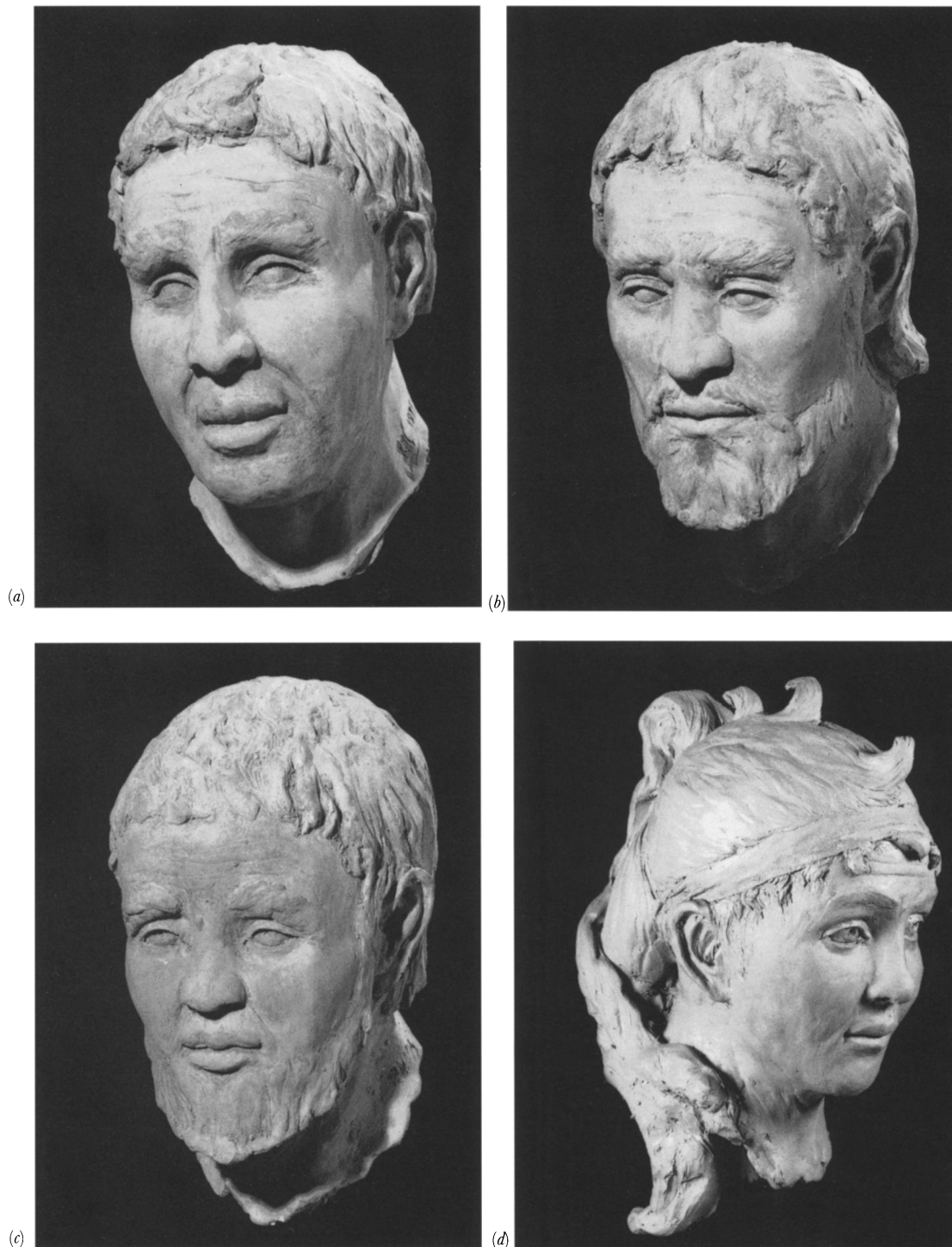


PRAG *ET AL.*
SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE
(a)–(b) Reconstructed head of $\Gamma 55$ without hair: (a) front view; (b) profile view. (c)–(d). Reconstructed head of $\Gamma 58$ without hair: (c) front view; (d) profile view. (Courtesy University of Manchester.)

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SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE

(a) Reconstructed head of $\Sigma 131$ with hair and beard: first version. (b) Reconstructed head of $\Sigma 131$ with hair and beard: second, 'lean' version. (c) Reconstructed head of Z59 with hair. (d) Reconstructed head of $\Gamma 51$ with hair. (Courtesy University of Manchester.)



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SEVEN FACES FROM GRAVE CIRCLE B AT MYCENAE

(a) Reconstructed head of B52 with hair. (b) Reconstructed head of A62 with hair and beard. (c) Reconstructed head of Γ55 with hair and beard. (d) Reconstructed head of Γ58 with hair. (Courtesy University of Manchester.)