of the region, contrasting with a high percentage of flint in the east. As Straus notes, the increase in the petrolithic index, as one moves west from the Basque country through Santander to Asturias, means that the classic de Sonneville-Bordes/Perot typology of south-western France becomes increasingly less relevant and meaningful. One reason is simply that preferred artefact sizes vary with raw material. Also, functional variability may be exemplified by contrasting selections of raw materials: quartzite for concave base points or flint for shouldered points. Here, Straus argues that the quartzite points—which weigh twice to four times the weight of flint points with respective ranges of 4-9 grams compared with 2-4 grams — were designed to tip throwing or thrusting spears, whereas the shouldered points were used to tip projectiles propelled by spear-throwers or, even, bows. My own research on this issue, albeit conducted in the different cultural milieu of Holocene Britain, there identified 8 grams as a dividing line between two putatively different functional groups, although comparative evidence was adduced to suggest that the upper weight limit for arrow-points would probably only rarely exceed 14 grams (Green 1980: 48, 173). The latter figure does not lend substantiation to the hypothesis of functional differentiation based on the weights of these Spanish points. Rather the variation may arise from competition between specialists either exploiting different resources or, perhaps, working respectively in competing traditional and innovatory materials. In addition to these other considerations, Straus also documents the increasing specialisation in flint as a raw material in the Upper Palaeolithic compared with the Mousterian.

Contrasting with this is the remarkable reappearance of bifaces, choppers, chopping tools, denticulates and side-scrapers—all characteristically of quartzite—in the Solutrean and Magdalenian levels at La Riera.

This important volume covers the vastly interesting fields of the Iberian Palaeolithic and its raw materials, but the petrolithic dimension of the volume surely misses the point. Rocks of all kinds were used for knapping, both petroliths and many kinds of flint. Moreover, the sources of these raw materials display geographical variation and may not all have been contemporaneously accessible. The focus of this compilation is, in reality, rather wider than that of non-flint rocks. Indeed, the book would seem to have outgrown its original concept which lurchs, nonetheless, like a Pleistocene 'lag gravel' in the title. Undoubtedly this BAR will serve as an important quarry for students and scholars, but it is not user-friendly.

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The Ras-el-Kelb Cave is located 15km north of Beirut, on a prominent headland on the Lebanese coast. Despite intermittent exploration since its discovery in 1874, the most notable excavations at the site were by Dorothy Garrod and Germaine Henri-Martin, the latter daughter of the excavator of La Quina. Following a number of obstacles to publication of the excavations—not least of which were the deaths of Garrod and Henri-Martin—it is pleasant to see such an important site brought to such a comprehensive and attractive publication.

Garrod aficionados will find much to entertain and educate. The volume begins with a welcome English translation of Garrod’s and Henri-Martin’s 1961 preliminary report originally published in Bulletin du Musée de Beyrouth XVI, from which we learn that a Levalloiso-Mousterian similar to that of the caves of the Wadi Mughara was recovered from what the excavators refer to as two distinct ‘operations’ in the cave—the ‘Tunnel Trench’ and the ‘Rail Trench’. Perhaps the rather militaristic terminology is not surprising given that the route through the promontory that perhaps attracted the cave’s earliest occupants was well-known to armies from the troops of Rameses II to the Second World War. Chapter 3 reproduces Garrod’s excavation diary, which combines useful information with a fascinating insight into Garrod’s field techniques, within which are such gems as: ‘...tent was put up during lunch hour. It nestsles in the shelter of the dynamite store! It is a very great comfort as the cold wind from the west has been odious’ (262/59), ‘...the roof does not look safe’ (113/59).
Following entries range from 'Incident with gendarmes and man from ministry of finance, who said that they had received information that gold had been found!' (13/3/59), 'Salim spent the day sieving the earth' (31/3/59), to the rigours of Saturday 7th March '59 where (sole entry) 'two flash photos were taken'. Wonderful stuff, but the weight of the book lies in the description of the nature and sediments of the cave itself by Copeland (Chapter 2), and 8 specialist chapters ranging from the fauna to ochre and incised flint (there are even one or two human teeth — they come from separate individuals), which in total represent the sum knowledge of Mousterian Ras-el-Kelb.

Sanaville (Chapter 4) infers an OIS 5d age for the Mousterian at the site on the basis of an apparent OIS 5e marine transgression immediately prior to occupation, which, at 120 ka BP puts the Mousterian Type C of Ras-el-Kelb between Tabun Level C (c 170 ka BP - TL) and Qafzeh (e 96 ka BP - ESR), which may either indicate that this Mousterian variant had a long duration or that dating by the presence of Strombus shells in raised beaches is not reliable. Whatever the actual age, conditions immediately following the marine retreat were sufficient to allow colonisation of the cave by land snails as Reece (Chapter 7) reports, at which time the palynological remains of the site indicate that 'mountain type' trees were established, at least in upland areas (Leroi-Gourhan, Chapter 6). Garrard's analysis of the fauna (Chapter 5) indicates that the Mousterian inhabitants of the site obtained most of their products from medium and large-sized woodland mammals, many of which (especially Damal) were obtained by hunting, although some scavenging, including that of Dicerorhinus, was in use also. Small mammals, marine and freshwater species are intriguingly absent. The occupants also used red ochre and engaged in behaviour that left irregular incisions on the surface of a flint flake (Moloney, Chapter 11) evidence of potentially intriguing behaviour which makes it all the more disappointing that the two human teeth are undiagnostic as Bourke (Chapter 8) notes.

Two chapters will be of major interest to LSS members — the analysis of the Middle Palaeolithic flint industry by Copeland (Chapter 9) and the use-wear analysis of selected specimens by Yamada (Chapter 10) — which together comprise over 50% of the volume. Yamada found no evidence of use-wear, probably because of a combination of taphonomic and behavioural factors — no surprises there (so much so that my already fair suspicion of use-wear analysis grew to some degree of concern). More than 30,000 flint artefacts from 19 archaeological horizons were excavated from Ras-el-Kelb by Garrod and Henri-Martin alone, which Copeland studied over four seasons in the 1970s. The main material in use at the site was flint, mostly of good quality, despite the fact that Yamada uses the term 'coarse', and most of it was recovered in fresh condition. Most of the artefacts have had their cortex removed, which is suggestive of a degree of 'working down' of available material before entry onto the site. Both Levallois and non-Levallois (prismatic uni- and bipolar, discoidal) technologies were in use at Ras-el-Kelb, although the former predominate. In terms of Levallois strategies, flakes which were large and thick were used as Levallois cores, possibly to exploit the natural curvature of the bulb of percussion as has been suggested for Kebara (Bar Yosef and Meignen 1992). The recurrent centripetal method was also employed, as were (more rarely) Levallois point cores. In terms of products, it is not surprising that points are rare, given that point cores are not abundant. Levallois flakes are numerous, so much so that it was possible to classify them in some details and therefore come to terms with variability within this class of product. The typically broad, thin Levallois flake occurs in large numbers in all horizons, averaging 40-60% of assemblages, the larger the flakes the more faceting is visible on the dorsal surface. Narrower Levallois products, approaching a degree of laminarity also occur, although in varying frequencies, as do 'atypical' Levallois flakes. In terms of formal tool categories, retouch on the Levallois flakes is generally insufficient, suggesting that the extent of predetermination of flake form with the varying Levallois chaînes opératoires was generally sufficient to produce useable forms. A number of Mousterian Points were recovered, however, which typically grade into the category of convergent scrapers. Numerically, the dominant retouched tool type are scrapers, forming 31-61% of the retouched tool count and varying between those mainly made on Levallois blanks or those on more variable blanks. Notches and denticulates also form an important component of the tools, and are usually made on small, thin blanks. A smattering of ‘Upper Palaeolithic’ types also appear, e.g. truncated pieces, burins (of which dihedral forms outnumber those on truncations), naturally backed knives, backed knives (scarce), endscrapers (rare) and perforators (virtually absent). For Mousterian enthusiasts the ILTy is high — 56-81% in most horizons and the II.7l low, indicating the rarity of Levallois points, the IR is also high (40-60% essential count). The Group I (Levalloisian) index is always high (43-81%), the Group II (Bordes' essential list, ie types 5-29) is dominated by scrapers, the Group III (Upper Palaeolithic) index negligible (2-15%), and the Group IV (Denticulate) index also on the low side (3-15%). Overall, it seems that the occupants selected large nodules of flint preferentially, probably decorticated these at source or at least outside the cave, before working usually with recurrent Levallois techniques aimed at producing the typically thin, broad flakes. Retouch — generally of a light form — was quite commonly employed, notably in the formation of scrapers edges. Given that the lithics presumably represents the toolkit employed in hunting the game that Garrard notes, the near absence of Levallois points is mildly surprising, but perhaps not puzzling, given that Mousterian points are fairly common. Here is an
interesting contrast to the Levallois point-producing sites such as Kebara, a further documentation of variability in armature manufacture in the Levantine Middle Palaeolithic. As Copeland notes (p. 91) perhaps "this illustrates the old saw that "there are more ways to skin a cat" " (or Dama in this case) and Shea's (1998) suggestions as to Levallois point frequencies and hunting strategies come immediately to mind.

The Ras-el-Kelb industry both compares and contrasts to other Near Eastern Mousterian industries, and as such the volume is a most welcome addition to the literature of an important archaeological phenomenon. Assemblages similar to Ras-el-Kelb include Tabun C (unit 1, 18-26) where broad Levallois flakes dominate and a radial Levallois method was employed, Nahr Ibrahim layers D-E-F where both technology and typology is similar (ie the sidescrapers and Mousterian Points dominate), Naame (high IL, Levallois points scarce, scrapers with light retouch in moderate amounts), Ras Lados, which is remarkably similar, and others. The general coastal context of these sites is particularly interesting and inevitably opens up possibilities for future research into Levantine ecological niches and technological variability. Some similarities are shared with Qafzeh particularly in the earlier levels where the burials were found, and especially important given the apparent ages of both sites. Sites at variance with Ras-el-Kelb include Tabun D and B, Kebara and Amud Caves, all of which yielded relatively abundant Levallois Points, and other Late Mousterian (Tabun B) assemblages with more Levallois Point production and axial preparation. Overall, Copeland suggests a coastal tradition of Tabun C assemblages, differing from earlier (Tabun D) and later (Tabun B) phases at Tabun itself. Although dating imprecision is a major problem, one feels that the variability documented in these sites, of which Ras-el-Kelb is clearly of major importance, will eventually shed light on Middle Palaeolithic diachronic variability as has already been documented for Europe.

In all, the volume is without doubt one of the stars of the BAR crown. It brings into the general domain a most important site from a region which it is probably fair to say has the most dynamic and important Middle Palaeolithic record; the chapters come together (or are drawn together by Copeland's conclusion) in an informative way and allow one to come away with a good impression of this particular Middle Palaeolithic coastal adaptation. While Yamada's lack of success with the usewear is a cause for concern, Copeland's analysis of the abundant lithics is characteristically erudite and thorough; the illustrations abound and are of good quality, and the amount of technological and typological data appended (over 60 figures and tables) will provide even the most ardent lithic analyst a career's worth of comparison and further analysis. As with all good reports, important questions inevitably arise: why does Levallois point production vary so much in the Levant? How does behaviour in this coastal context affect lithic technology, and how does this contrast with other regional traditions? Why was Levallois technology important, and why does it change over time? Do we trust usewear? Ultimately, the question as to which hominin species produced which Levantine assemblage is crucial, and may even pertain directly to questions regarding the origins of the Upper Palaeolithic and the spread of our own species. With two molars at Ras-el-Kelb we will never know, but it will be fun — and, I suggest possible — to get to the root of the problem.

References