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# THE HANNIBAL ROUTE CONTROVERSY AND FUTURE HISTORICAL ARCHAEOLOGICAL EXPLORATION IN THE WESTERN ALPS

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## ABSTRACT

If we are ever to find artifacts related to Hannibal's invasion of Italia the actual col route needs to be identified with certainty so that specific sites such as hearths, army bivouac/regrouping areas and other topographic features described in ancient texts are brought into focus. Some of the key environmental features include a gorge along the approach route, bivouac area near the summit of the Alps, and a blocking rockfall on the lee side of the range, amongst others. Strange that Kuhle and Kuhle (2012, 2015) provide a rebuttal of the Traversette Pass blocking rockfall (for location see Fig 12.1, Mahaney, 2008) as the route Hannibal followed into Italia when all evidence points to the one rockfall, a massive topographic feature described by Polybius nearly 2200 years ago. They present various quibbles over various translations of Polybius by no end of authors over the last two millennia, excellent photographs of various passes, but with the Traversette Col and major landforms misplaced on Fig. 1, and mention of fieldwork without offering any field evidence of any kind that might lead to historical archaeological exploration. Yet, it is clear from any author translating Polybius' *Histories* that Polybius did indeed see the rockfall mentioned in all ancient texts and he clearly understood the deposit to be a substantial mass, a two-tier event, that is, older and younger deposits superimposed on one another. Kuhle and Kuhle quote Walbank (1990) as a prime author who disputed translations of Polybius (Scott-Kilvert, 1979) etc. saying the topographic situation and time lines were inventions by others. What then, if one were to go to Paton (1922) revised by Walbank and Habicht (2010), only to find that the translation of the rockfall encounter runs parallel with Scott-Kilvert's translation, the one favored by Mahaney (2008, 2013).

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**KEYWORDS:** Hannibalic Wars; Traversette Rockfall; Polybius' *Histories*; Search for historical archeological evidence.

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## 1. INTRODUCTION

Every municipality in Transalpine France would like to claim ownership of Hannibal's invasion route into Italia in 218 BC, such a quest compelling Dennis Proctor to research the question (Proctor, 1971). Similarly, nearly every ancient historian/classicist who has studied the Second Punic War has waded into the controversy of 'which route' did the great captain follow (see Fig. 1), seemingly because the 'great route' is sometimes referred to as the 'great question of antiquity', (T Corey Brennan, Rutgers University, personal communication, 2005). The idea of the 'great question' was discussed by Mahaney (2008) and in other co-authored papers with colleagues, the conclusion being that great question or not, the main emphasis lay with the possibilities for historical archaeological exploration and recovery of artifacts once the invasion route was identified. Such recovery would help explain the culture of ancient Carthage. The prime difficulty up to now has been the proclivity of authors to argue for one route over another on the basis of photographic evidence (Kuhle & Kuhle, 2015), assessment of topography too difficult for animals and humans, philological discussions of place/river names, almost all without any attempt at actual field investigations to search for the rockfall in question, possible hearths, sporadic permafrost, defile along the approach route, and regrouping area as identified by Polybius. The only possible rockfall in question, is that identified and discussed by Mahaney (2008), and Mahaney et al. (2007; 2008a, b; 2010a, b, c; 2014), that lies below the Col de la Traversette, in the upper Po River catchment.

Given the description provided by both Polybius and Livy, the location and composition of the rockfall is an integral part of the invasion route forensic effort to link it with suspected hearths and foraging areas on both the proximal (French) and distal (Italian) sides of the Alps. Recent excavations in an alluvial mire at ~2600 m asl (Fig. 2) on the French side in the upper Guil River catchment (Mahaney et al., 2016a, 2016b) point to a significant link between probable foraging/watering areas on the inbound leg of the invasion, the legendary rockfall [landslide in Scott Kilvert (1979) and Paton (1922)], and regrouping area on the lower slopes on the lee side of the Alps (Mahaney, 2008). The first recovered artifacts from the alluvial mire include a churned-up bed in several cores and sections and increased or-

ganic matter within the bioturbated sediment, all radiocarbon dated to 2168 cal yr BP (218 BC) (Mahaney et al., 2016a), and all documenting a mass animal deposition termed the MAD beds. Moreover bacteria endospores, a single fossil tapeworm egg linked to equine species, and bile acids linked to horses and mules (Mahaney et al., 2016b) complete the artifact recovery, where, perhaps, for the first time bacteria serves as an artifact. The geomorphological and biological evidence presented in these findings point to the passage of large numbers of animals, perhaps tens of thousands, at precisely the time of the invasion. Moreover, susceptible magnetic measurements taken from churned-up beds in three sections show spikes in Fe, although with magnetization numbers overall reflecting the water soaked reducing environment of the mire, which correlates with the geochemical and palynological evidence.

Slight differences of the blocking rubble mass (Fig. 3) on the lee side of the Alps are presented in both translations (noted above) of the Hannibalic invasion of Italia—Scott-Kilvert and Paton—but the essentiality is that Hannibal encountered a massive rockfall, a doublet comprising two deposits, one older and one younger, an impediment to the passage of horses, mules and elephants. A further essentiality is that there is only one rockfall on the lee side of the Alps with the mass and the necessary couplet of deposits to match Polybius' description and it is located between 2600 and 2350 m asl below the Col de la Traversette (~3000 m asl). Rockfalls below all other possible passes—Col du Agnel, Col de la Croix, Col de Genève, Col du Clapier, Mt. Cenis (Fig. 1)—are now and were during Hannibal's time insubstantial, hardly of sufficient mass to block even modern tourists. Polybius' identification of the Traversette rockfall presents an answer to the question of the invasion route location as Sir Gavin de Beer pointed out several decades ago. It is now incumbent upon archaeologists to carry out exploration of this landmark and other nearby likely hearths/foraging areas to determine if artifacts can be recovered, stratigraphically tied to 2168 calibrated <sup>14</sup>C yr BP, the time of the invasion (see Mahaney et al., 2016a for details on the radiocarbon chronology). What is urgently needed on the French side of the range is a ground penetrating radar (GPR) survey of the G5 mire at ~2600 m elevation.

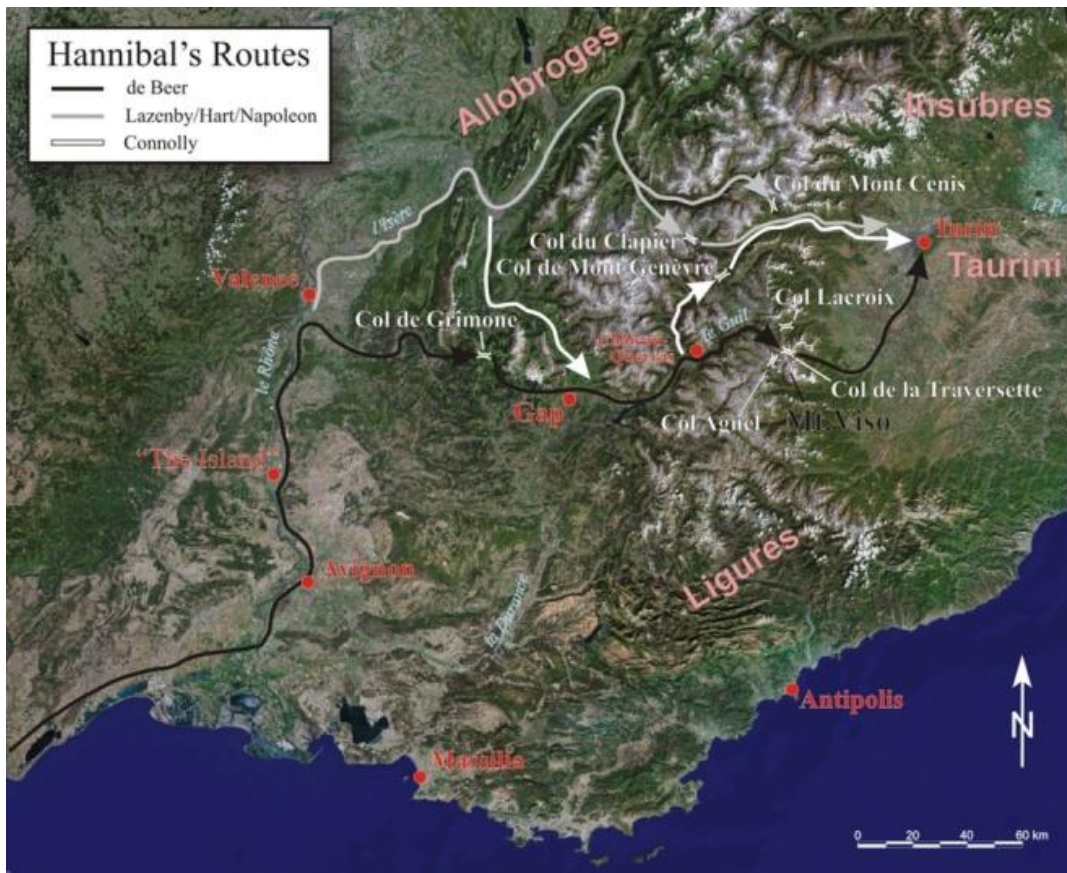


Fig. 1. Satellite map annotated with the main invasion routes of the Second Punic War as proposed by different authorities over the last two centuries. The major cols are listed from south to north with the Col de al Traversette (3000 m) called Hannibal's col since antiquity. Tribes, e.g. Allobroges, are located in approximate cis-and trans-alpine areas. Satellite image courtesy of USGS, JPL, NASA. Reprinted from Mahaney (2008).

The Kuhle & Kuhle (2012, 2015) dispute over the rockfall, its existence and the route should have led them to come forth with some hard evidence (other than photography and odd mismatched quotations) as to why another route is preferred, and in the absence of such evidence, there is hardly any need to continue with quotes from authors purporting to show why the Traversette is not the route in question. Surely these authors must know that even weak belief structures require more than mere quotes from authorities most of whom have never visited sites along the proposed routes, much less the cols in question, let alone set about to do any significant field work to prove their assertions. Claiming to rely on firsthand accounts as Kuhle & Kuhle (2015) have done should discount Livy as he had only access to Polybius and presumably Silenus' account of the invasion, the latter source presumably destroyed in the great fire of the library in Alexandria, 300 AD. Polybius being the only reliable firsthand written account of the invasion route makes all other sources at best second and third-hand renditions of the event, and accordingly, highly questionable (see Lancel, 1999 on this).

## 2. HISTORICAL RECORD

The historical record quoted by Kuhle & Kuhle (2015) from Livy (trans., de Sélincourt, 1972) and Polybius (trans., Scott-Kilvert, 1979) is more or less correct with the exception of what is interpreted by Scott-Kilvert (1979) with regard to Polybius. However, Scott-Kilvert's (1979) translation of Polybius is little different from W.R. Paton's (1922) translation, only the odd word phrasing-landslip vs landslide-presenting differences between the two translations. Essentially, both Scott-Kilvert and Paton (the latter revised by F.W. Walbank and C. Habicht, 2010) describe the descent from the pass along steep cliffs whereupon the narrowness of the path made further progress with the elephants and pack animals impossible. Paton's translation thus, 'a previous landslide having carried away about one and a half stades of the face of the mountain and a further landslide having recently occurred.' Compare this translation with Scott-Kilvert's (1979) interpretation (Polybius states, Book III, 54): 'A previous landslide had already carried away some 300 yards of the face of the mountain, while a recent one had made

the situation still worse' and it is clear Hannibal faced a rubble mass through which he could not possibly proceed with horses and elephants, although his infantry could pass toward the lower slopes. Both translations use the term 'face of the mountain', that is, the bedrock source area above the rubble mass making up the 'landslide' or 'landslip.' All of this, including mention of rubble (cf. rockfall) has been fully reiterated by countless historians and need not be re-discussed here. Clearly the Traversette rockfall, a two-tier deposit from two mass wasting events, is the blocking mass Polybius

described. If mention of 'landslip' is to be construed as the bedrock sliding plane of transported mass wasted sediment as Kuhle & Kuhle (2015) assert, one would have to imagine Hannibal's engineers cutting through bedrock, as there is no near-horizontal sliding plane of rock blocking anyone's progress below any of the possible transit cols. With the Traversette case, and because of the steep cliffs, there is no possibility of bedrock blocking the army, only rubble sourced from near vertical cliffs along the Italian/French border producing the rockfall mass.



*Fig. 2. G5 mire site in the upper Guil Valley at ~2600 m, the upper reach of the 'Faito', common name for the north spur of the drainage. The Younger Dryas (YD) moraine lies astride the alluvial outlet and documents a readvance of ice during the last stage of the last glaciation (Late Glacial). The YD follows the YDB (Younger Dryas Boundary) dated to 12.8 ka, time of a local cosmic airburst identified over this area of the Western Alps (see Mahaney and Keiser, 2013 and Mahaney et al., 2013, 2016c) for a detailed assessment in both the upper Guil and upper Po catchments. Photography by Pierre Tricart (Université de Grenoble).*

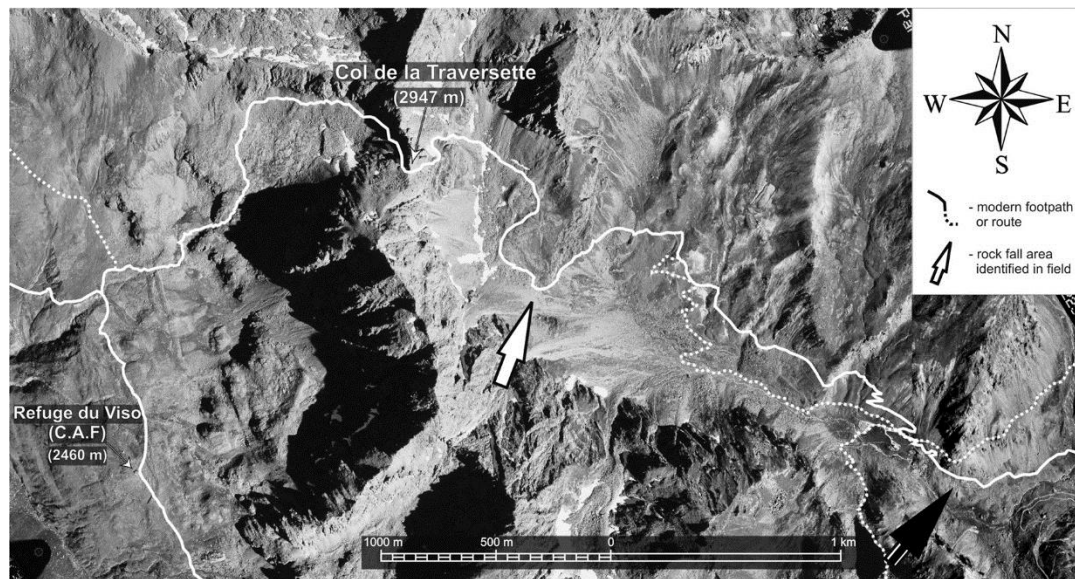


Fig. 3. Projected trail followed by Hannibal's army from the Guil River to the west across the Col de la Traversette to the blocking rockfall in the upper Po River catchment. Reprinted from Mahaney (2008).

The interpretation of Kuhle & Kuhle (2015) that 'landslip' in translation (Paton, 1922) of the ancient texts reveals only rock for Hannibal's Army to pass suggests the mass wasted sediment sped off down the mountain to some undisclosed resting place, hardly a logical argument, as gliding planes lie upslope and underneath a mass wasted deposit, the latter responding to gravity and friction coming to rest downslope. It is disingenuous to argue that on the basis of translation variations - landslip vs. landslide - that Hannibal was forced to forge a trail through rock as opposed to rubble and even so rubble is what both Polybius (III, 54) and Livy (XXI, 37) recount as the two-tier blocking mass. Even Livy's translator identifies the transit col as the Traversette (Livy, de Sèlincourt, 1972, p. 60) based on his reading of the ancient text. Since it was Polybius who identified the blocking mass, and who had to have been present given his identification of the two-tier event that produced the landform, most historians take his version over that of Livy who recounts heating of rock to remove obstacles, presumably boulders as one would not heat bedrock expecting any comminution of material. As Lancel (1999) mentions, one has to consider Coelius Antipater's (contemporary of Polybius, work now lost – see Lazenby, 1998, p. 261) influence on Livy, more or less a 'distorted mirror' and probably all originating from Silenus. Polybius is **mute on the firing event** which probably indicates it never took place (Mahaney, 2008). However, the nature of the terrain is such that no 'landslip' (that is a shear surface) plane exists below the Traversette, only steep cliffs and couloirs that act to provide source material for numerous rockfall and talus deposits. Moreover,

the translation of ἀπορροῶχος from Polybius, meaning 'precipitous cliff or abyss; or landslip in the sense of something fallen away' describes the descent from the Traversette Col exactly, and 'landslip' (Paton, 1922) is synonymous with landslide (Scott-Kilvert, 1979) with or without a shear bedrock plane exposed in the proximal position, upslope from a settled mass of rubble. Even if bedrock were an obstacle, Hannibal's engineers would have constructed a route around or over it.

Figure 1 in Kuhle & Kuhle (2015) mixes locations of the Traversette Col and the rockfall and incorrectly assigns a glacial origin to what is clearly a mass wasted deposit. Thus, the mention of fieldwork, sadly lacking in Kuhle & Kuhle (2015), has led to misidentification of pertinent topographic features. For the proper location of the Col de la Traversette, the reader is referred to Mahaney (2008), in particular to Fig. 12.1 for the topography and elevation of the col, and Fig. 8.10 for the geology. As for the soil cover in mass wasted deposits, one would expect such after millennia of subsidence and repeated re-ballasting of the path through the upper rockfall (see Mahaney, 2008), and with subsidence the rockfall today does not look as robust a feature as it did in Polybius' time.

As previously argued by Kuhle & Kuhle (2012), they believe there is no mention of a landslide/rockfall in the various translations of Polybius, yet as noted above Scott-Kilvert (1979) uses the term 'landslide', which is better termed rockfall (Mahaney, 2008), given the random orientation of coarse clastic debris in the Traversette deposit and the lack of any sliding plane upslope from the deposit. Surely Kuhle & Kuhle must know that land-

slides result from mass wasting processes and involve removal and deposition of sediment from a higher to a lower position. To argue that Hannibal's starving troops had to cut a path through rock rather than re-ballast or strengthen a path through a rockfall simply belies any of the various translations, either that of Scott-Kilvert (1979) or of Paton (1922). Both translations speak of a two-tier event, either two landslides or two land masses (the latter, i.e. 'landslips'). Polybius' description of the two-tier event was probably based on the character or state of the two deposits at the time: one, the younger, with fresh, un-pitted, nearly lichen-free clasts, sediment lacking any appreciable soil cover, the other, older, with darker (oxide/hydroxide-rich clasts), lichen covered even ~2200 yr ago and carrying sporadic soil cover (Mahaney et al., 2014). The very fact that Polybius distinguished the two deposits, *the only such two-stage rockfall deposit on the lee flank of the Alps*, speaks to his understanding of landscape.

Alternatively, it is possible Polybius could have coupled the two-tier event to trim lines in the bedrock, all mica schist at this locality and similar to almost all other passes, but identification of such, given the ease with which schist weathers would have been as difficult in his time as now. During various expeditions to survey the route from 2002 on, attempts were made by me to try to identify trim lines in the cliffs above the Traversette rockfall but without success. Hydrolization and oxidation of the bedrock is rapid enough to overprint fresh bedrock so that middle Neoglacial (~3 ka) and Late Glacial (13-15 ka) surfaces, have by this time taken on the same or similar colors. In Polybius' time the younger rockfall deposit would have been very fresh looking compared with the older Late Glacial deposit. Age control on the older rockfall lobes comes from identification of a cosmic airburst/impact that most certainly correlates with the black mat event or the YDB (Younger Dryas Boundary) of 12.8 ka (Mahaney and Keiser, 2013; Mahaney et al., 2013).

As outlined in Mahaney (2008), the geologic/geomorphologic character of every major pass from the Col Agnel to Mt. Cenis, was assessed with respect to difficulty of access and exfiltration, the result being that only the Col de la Croix proved to be relatively impossible, the inbound and outbound track itself of no particular advantage to Hannibal attempting to reach the Po River country. If Kuhle & Kuhle (2015) prefer the Col du Clapier as Hannibal's main transit pass into Italia, there is neither a rockfall to block passage, nor any need for Hannibal's engineers to cut rock forging a path to the Dora Riparia (not the Po), and Polybius (Paton, 1922;

III, 56) is definite Hannibal was intent on reaching the Po plains.

Paton's translation of Polybius states the great general's assessment of the width of the rockfall as equivalent to 1.5 stades, one stade being 0.1778 km. Calculation of the width as amounting to 0.3 km or 300 m is close to the present width of the Traversette rockfall as measured by Mahaney (2008) and more or less equivalent to Scott-Kilvert's (1979) figure of 300 yards quoted above.

I cannot imagine that any presentation of google images or crisscrossing discussions from Polybius and Livy et al. as presented by Kuhle & Kuhle (2015) adds anything but further obfuscation to the history. However, if the southern route of Sir Gavin de Beer is to be discredited by Kuhle & Kuhle, they should at least bring in the entire environmental matrix from the ancient literature, such as the defile on the approach march (de Beer, 1967, 1969; Mahaney, 2008, 2008b), the presence of sporadic permafrost/firnpack (de Beer, 1969; Mahaney, 2008), place names in north-south order (Mahaney, 2008), the rockfall (Mahaney et al., 2008a, b; 2010a, b, c; 2014) and the regrouping area in the upper Po River (Mahaney, 2008; Mahaney et al., 2010b).

It is strange indeed, that with Kuhle & Kuhle's (2015) focus on the rockfall 'enigma', that no mention is made of the firing event heralded about in the ancient texts, the absence of evidence for which is well documented in Mahaney (2008) and in (Bagnall, 1999; Mahaney et al., 2007, 2010a, c; 2014). Furthermore, the one lone, small rockfall below the Col du Clapier (Sodhi et al., 2006) is the only fired deposit below any of the major cols of passage on the lee side of the Alps, the fired clasts sampled and analyzed as described in Mahaney et al. (2007). The unweathered state of this deposit and lack of lichens and any soil development indicates the deposit is of relatively recent age (<100 yr) and quite possibly was fired by road crews clearing a path to a hydro station in the upper valley (see Sodhi et al., 2006, for chemical analysis of the fired rock). The rockfall firing event most probably originated in the original text of Silenus who accompanied Hannibal on his invasion of Italia, and is purely an imaginary invention, for which there is no evidence in the form of carbonized rock in the Traversette rockfall (Mahaney, 2008).

The statement (Kuhle & Kuhle, 2015) make that: 'on the Traversette it is the first ~80 m of altitude towards the Italian side that is particularly difficult, such that even mules cannot master it (Fig. 1, '3') is particularly revealing, and underscores my previous statement, as to why visitation to field sites is so important. It is not the first 80 m of the descent that is most difficult, as anyone who has trod the path will

tell you, but the last ~50 m just above the old unmanned Italian army barracks immediately above the rockfall. Kuhle & Kuhle go on to explain: 'It is for this reason that in the 15<sup>th</sup> Century a tunnel—unique for a pass in the Alps—was bored through rock in order to enable caravans to avoid the upper pass region. In fact, the tunnel was put in place because of the winter snow, not to make it easier for travelers and animals to transit the pass (Pierre Tricart, personal communication, 2015). Even today, workers from the Refuge du Viso (CAF, France) and the Rifugio Giacoletti/Mon Viso, Italia are often obliged to remove snow from the Col de la Traversette to allow tourists and trekkers to transit the pass itself (not the lower slopes). Even a fresh fall of snow in 218 BC, as described by both Livy and Polybius, would not have stopped the invading Punic Army despite the slippery ground etc. After all, Hannibal's troops and animals got across the pass and down to the rockfall impediment, and according to many authors, in nearly record time.

The argument proposed by Kuhle & Kuhle (2015) that the Traversette exfiltration is too difficult belies the physical state of Hannibal's army with personnel hardly the equal of the average modern male. These were professional soldiers as Paton (1922) states, men used to long hard treks, and who would have been equal to the task of cresting the Traversette and descending into the Po River valley. As for the elephants, the trail down out of the Traversette would have been negotiable, just as *Loxodonta africana* [much larger beasts compared with Syrian elephants (*Elephas maximus*) used by Hannibal] are known to have traversed the much higher (~4700 m asl) and steeper slopes of Mt. Kenya (Mahaney, 1990, 2008).

### 3. CONCLUSIONS

While discussions of the Hannibalic route, and various episodes connected with the invasion of Italia of 218 BC, continue to titillate and rouse enthusiasm of many as to how an army the size of Hannibal's could pass over the Alps without leaving a trace, most previous interpretations of the historic literature on the subject have done little to identify the correct route. The first attempts to analyze climate (Neumann, 1992) during the invasion, flood times for rivers (de Beer, 1969), and weather controlling movement at sea and on land (Proctor, 1971) provided a step in the right direction. Mahaney (2004, 2008) constructed an environmental matrix—permafrost/firnpack, elevation, approach defile, hearth locations, rockfall, foraging areas, regrouping area—out of the ancient texts and analyzed each environmental factor against each major col concluding that the original assessment of the projected southern route, thought to have been used by Hannibal by

Sir Gavin de Beer, was correct. Even with elevations imprecisely known at the time, Polybius's (trans. 1979) description of the invasion route strongly suggests the Traversette as the crossing point into the peninsula, an inference supported by Varro's mention in *De Re Rustica* (quoted by Proctor (1971)) of the passes in geographic order from north to south—'Hannibal's Pass' lying south of the Col de Genève. Moreover, reference to Varro's mention of the five cols, including Hannibal's Col as the highest, is quoted in Servius' commentaries translated in Savage (1934). Polybius also used the phrase, *tas hyperbolas tas anōtatō tōn Alpeōn*, 'the highest pass in the Alps' (John Lazenby, personal communication to WCM, 2007; Lazenby, 1998, p. 45).

All environmental evidence, firnpack/sporadic permafrost, defile on the approach march, blocking rockfall and grassy regrouping area on the lee side point to the Traversette as the transit col, and reinforce the notion that if another route is preferred, one needs to circumvent the evidence presented in ancient texts to prove it. Even then with artifacts in hand, one would need to prove they did not originate from Hasdrubal's invasion of 207 BC ending with his destruction by Roman legions at the Metaurus River.

While no artifacts have been recovered to date, the Guil-Po valleys and the Traversette rockfall are prime targets upon which to focus future historical archaeological explorations by someone with a license to carry out the research. The objective ought to be on actual field analysis not a rehash of ancient literature without corroborating field evidence. For example, the analysis of ballast in the Traversette rockfall roadway (Mahaney, 2008), ancient walls in the upper Po regrouping area (now buried by debris flows in 2008; Mahaney et al., 2010b), excavation of a single un-cemented dwelling/station and grave on a bedrock bar (~2250 m asl) overlooking the upper Po valley, foraging areas in the Guil and Po valleys and analysis of rockfall in the Combe de Queyras, the latter the probable defile where Hannibal lost considerable men under attack from the Allobroges (Mahaney, 2008).

Of all the pundits assessing the various Hannibalic routes through the Alps, and this includes some notable historians/classicists aside from de Beer (1969), such as, Brown (1963), Connolly (1981), Cottrell (1992), Dodge (1891), Hart (1967), Seibert (1993), Lazenby, (1998), Prevas (1998), Wilkinson (1911) to name a few, none have had Hannibal cutting through solid rock, a bedrock shear plane (as it were—'landslip') to forge a path down out of whatever high pass was picked as the point of entry. None, outside of Paton (1922), have mentioned a 'landslip,' although Cottrell mentions a huge boulder, just how

huge is left to the imagination of the reader. In any case future work will eventually lead to the recovery of artifacts and these will, in all likelihood, originate in one or more localities in the Guil and upper Po valleys. Recent finds of physical sedimentary evidence in the form of a bioturbated bed in an alluvial

mire in the Guil River catchment, dated precisely to 2168 cal yr BP (218 BC), have been recovered along with bacteria endospores and tapeworm eggs from horses, have been reported recently (see Mahaney et al., 2016a, 2016b).

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