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THE FLINT ASSEMBLAGES FROM PITS XVIII AND XXXII OF THE EARLY NEOLITHIC SITE OF CAMPO CERESOLE AT VHO' DI PIADENA (Cremona, northern Italy)***

SUMMARY - The Authors examine the flint assemblages from two Early Neolithc pits excavated at the central Po Valley site of Campo Ceresole, dated between the end of the seventh and the beginning of the sixth millennium BP. The assemblages, obtained from flint of Alpine origin, are characterized by a strong blade index and by the presence of a high number of bladelets struck from subconical cores. On a typological basis the retouched instruments include Burins on a side notch, straight Borers, trapezoidal and rhombic Geometrics and Bladelets with a sinuous profile. The Microburin technique is well represented. The study of the microwear traces compares tool form and function. It shows that the majority of the tools had been used on wood or hard materials such as bone or antler. The assemblage is also characterized by a high degree of resharpening and reuse. Perhaps most interestingly, the tools bearing «sickle» gloss improve our understanding of the use of plant materials during the Early Neolithic.

RIASSUNTO - *Le industrie litiche dei pozzetti XVIII e XXXII del sito Neolitico di Campo Ceresole presso il Vhò di Piadena (Cremona).* Gli Autori prendono in esame le industrie su selce raccolte in due pozzetti del sito neolitico di Campo Ceresole datati fra la fine del settimo e l'inizio del sesto millennio BP. Si tratta di industrie su selce esotica di provenienza alpina caratterizzate da un forte indice laminare e dalla presenza della tecnica di scheggiatura per la confezione di lamelle strette tratte da Nuclei subconici. Fra gli strumenti sono caratteristici Bulini su incavo, Perforatori diritti, Geometrici trapezoidali e romboidali e Lamelle a margine sinuoso. È rappresentata la tecnica del Microbulino. Lo studio delle tracce d'usura riguarda un'analisi comparativa della tipologia e della funzione dei reperti litici scheggiati. Questa ha dimostrato che la maggior parte degli strumenti è stata impiegata per lavorare legno o materiale duro quale osso o corno. L'industria è inoltre caratterizzata da un numero elevato di ravvivamenti e di strumenti reimpiegati. L'aspetto forse più interessante riguarda la presenza di attrezzi con usura obliqua lucida, il che migliora le nostre conoscenze circa l'utilizzo di graminacee all'inizio del Neolitico.

PREFACE (P. B.)

The Early Neolithic sites of Vhò lie on a fluvial terrace, 30-33 metres high, which extends south-east of Piadena (Cremona), in the central Po Valley. This terrace is delimited, to the south, by the lowlands of the river Po, and, to the north, by the escarpment of the Oglio which flows some two kilometres away (fig. 1). Known since the end of the last century, the sites were first investigated by PARAZZI (1890) and

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CASTELFRANCO (1892) who carried out several excavation campaigns. Nine sites have been discovered so far. That of Campo Ceresole was test-trenched in 1974 (BAGOLINI and BIAGI, 1975). The excavations, sponsored by the Soprintendenza Archeologica della Lombardia, were carried out between 1976 and 1979. Some 3000 square metres of this settlement, which extends over 30-40,000 sqm, were uncovered, bringing to light 69 pits of different shape and size as well as remains of a probable long house (fig. 2) (BAGOLINI *et al.*, 1987).

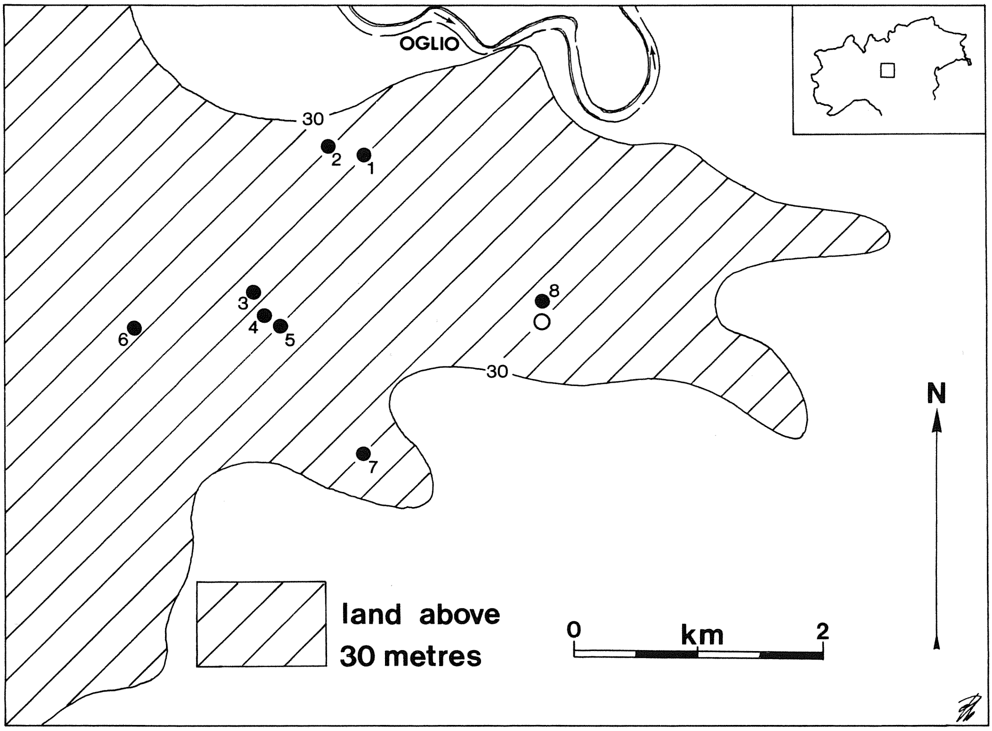

Fig. 1 - Distribution map of the Neolithic sites of Vhò di Piadena (dots) with the location of Campo Ceresole (circle). The other sites are Campo Costiere Orefici (1), Campo Costiere (2), Campo Guercio (3), Campo del Ponte (4), Campo Cappellino (5), new site discovered in the Seventies (6), Campo Cinque Fili (7), and Campo Sera Mattina (8) (drawn by P. Biagi).

THE ARCHAEOLOGICAL FEATURES (P. B.)

Two of the pits excavated during the 1976-1979 campaigns, namely Pit XVIII and Pit XXXII (fig. 3), produced very rich assemblages. The excavation of Pit XVIII took place in 1977 and 1978, revealing a unique feature, 2,20 metres deep, dug out into the soil, below the present water-table. The main concentration of finds lay some 1,50 below the surface (fig. 4). It included a rich flint assemblage, sherds of at least 400 pots, fragments of greenstone and sandstone polished tools (BAGOLINI *et al.*, 1976), a rich collection

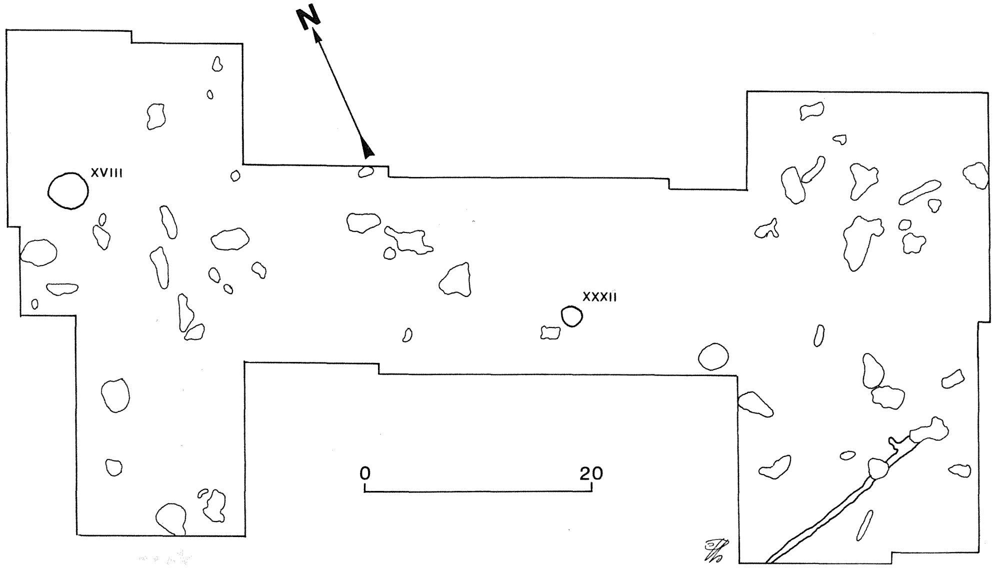

Fig. 2 - Plan of the 1977-1979 excavations at Campo Ceresole with the location of Pits XVIII and XXXII (drawn by P. Biagi).

of bones among which were, in descending order, roe deer, turtle, cattle, red deer, pig and sheep/goat (BARKER, 1983), two pieces of clay figurines and one polished pebble (BAGOLINI and BIAGI, 1977). The charcoals were analyzed by CASTELLETTI and MASPERO (1992) who identified the following species: ash, oak, elm, maple and *Pomoideae*. One charcoal sample was dated to 6170 ± 110 BP; 5260 (5154) 4970 cal BC (I-11445). A second date of 6235 ± 470 BP (I-11444) is unacceptable because of its high standard deviation. Pit XXXII, some 1,10 metres deep, almost cylindrical in shape, had three main phases of filling (fig. 5). Nevertheless there are reasons to suggest that also this pit was filled rather quickly. Bones and charcoal were concentrated mainly at the bottom of the pit. It produced sherds of at least 45 pots, bones of both domesticated and wild animals such as roe deer red deer, pig, cattle, fish and sheep/goat, a few freshwater molluscs, six specimens of Tertiary marine fossils (GIROD, 1978) and abundant charcoal pieces identified as ash, oak, maple, hazelnut, elm and *Pomoideae* (CASTELLETTI and MASPERO, 1992). The charcoal was dated to 5930 ± 50 BP; 4900 (4814) 4781 cal BC (Bln-3135) (PEARSON *et al.*, 1986).

THE FLINT ASSEMBLAGES (P. B.)

All the artefacts from Campo Ceresole are obtained from Alpine flint whose outcrops probably lie on the eastern moraines of Lake Garda or on the Lessini Hills in the Veneto, some sixty kilometres north-east of the site (CREMASCHI, 1981). This is demonstrated by many corticated artefacts with striations produced by glacial friction (Plate I). A complete list of the flint colours is given in Appendix 1.

The main characteristics of the lithic industries of Pits XVIII and XXXII are listed in Table I and in fig. 6. A total of 164 complete, unretouched, instruments from Pit XVIII and 33 from Pit XXXII were measured to develop the diagrams and the

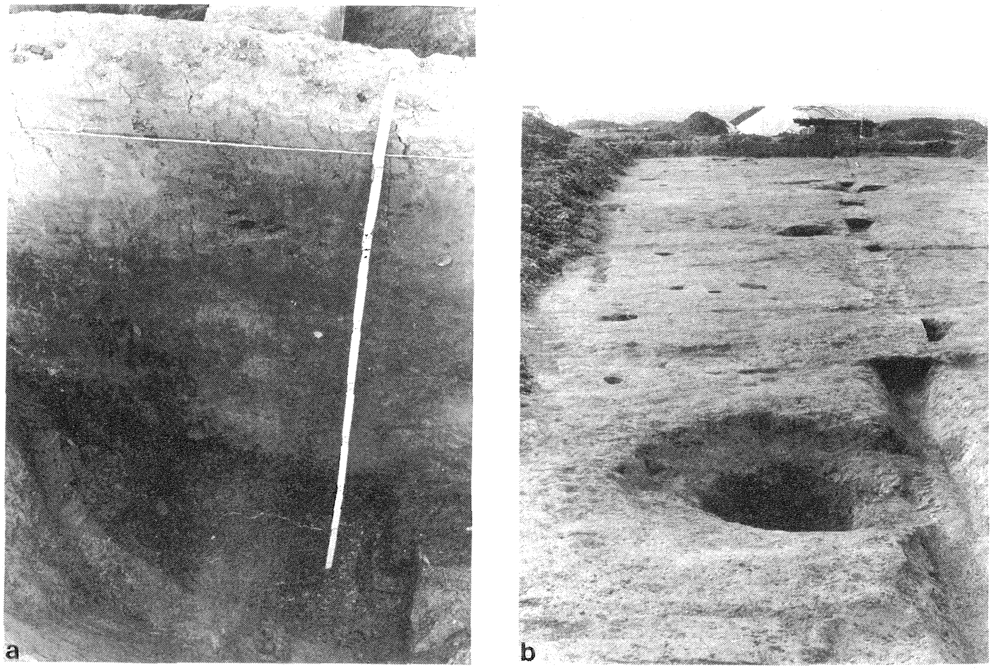

Fig. 3 - Campo Ceresole. Pit XVIII (a) and Pit XXXII (b) (photos by P. Biagi).

histograms of figs. 7 and 8, respectively. The different results are reasonably due to the very low number of artefacts measured from Pit XXXII. The diagram of Pit XVIII shows the high percentage of narrow blades and tools of normolithic dimension. The length/thickness diagram has a high index of flat and very flat artefacts. Pit XXXII has a high percentage of both microlithic and normolithic flat or very flat tools and a relatively low number of narrow blades. Pit XXXII gave 104 Instruments, 14 Cores, 8 Microburins and 2 Rejuvenation flakes, while Pit XXXII produced 15 Instruments, 3 Cores and 3 Microburins (Table I). The number and percentage of Instruments from the pits is given in fig. 9. The industries are described following Laplace's method (LAPLACE, 1964), cores excluded for which the authors have followed the typological list of BROGLIO and KOZLOWSKI (1983).

Cores (N)

Most of the Cores from both pits are of subconical, blade type on one or both sides, with one prepared platform (177-187, 222, 223). They have blade scars on one or both sides. Most pieces are corticated, and none show traces of wear. One Core from Pit XXXII is oval-shaped (224) with centripetal, flakelet, scars.

Burins (B)

The most common type is the Burin on a side notch on narrow blade or bladelet (so-called Ripabianca Burin), represented by twenty-seven specimens from Pit XVIII

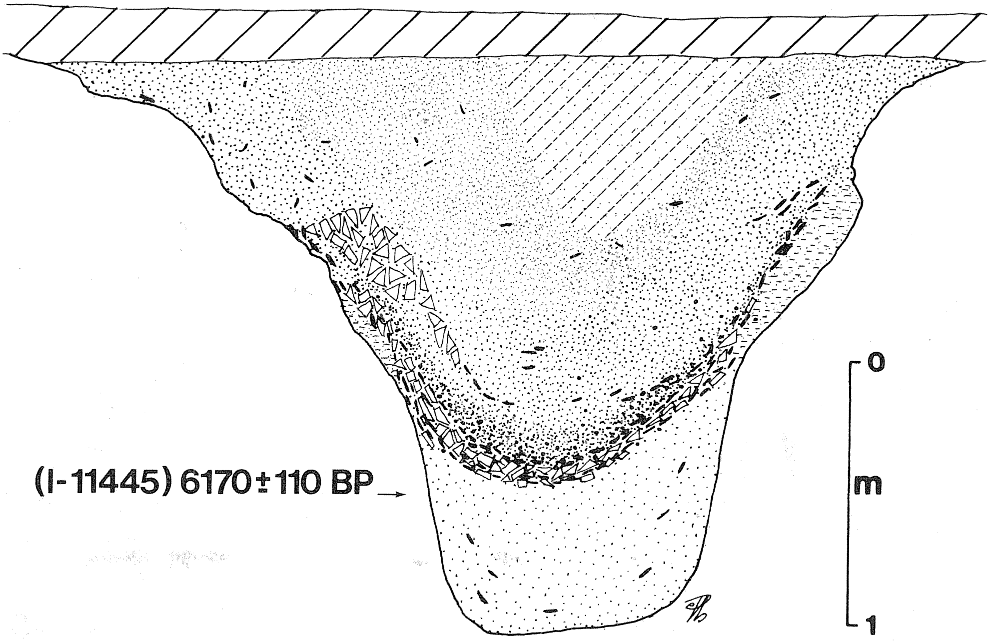

Fig. 4 - Campo Ceresole. Profile of Pit XVIII (drawn by P. Biagi).

(1-12, 14-28) and one from Pit XXXII (198). They are sometimes double or triple with lateral burin blows in both directions. Only two samples have one transverse blow (24, 25). Other types include one Burin on truncation with one lateral blow, from Pit XVIII (13) and one Burin on retouch with one transversal blow, from Pit XXXII (204). They had been used on wood or hard materials.

Endscrapers (G)

One broken, long, Endscraper on a bladelet with rather steep end, from Pit XVIII (29), used on wood.

Truncations (T)

All Truncations are on bladelets. From Pit XVIII were three marginal (30-32), three normal (33-35) and three oblique Truncations (36-38) one of which with *piquant trièdre* point (38). Two marginal (200, 202) and one oblique Truncation with *piquant trièdre* point (201) come from Pit XXXII. The Truncations were used in a variety of actions and on a variety of materials, similar to the Retouched Blades.

Borers (Bc)

Pit XVIII produced eleven straight Borers, on blades or bladelets, obtained with backed retouch (39-49) and one straight Borer on a narrow blade from Pit XXXII

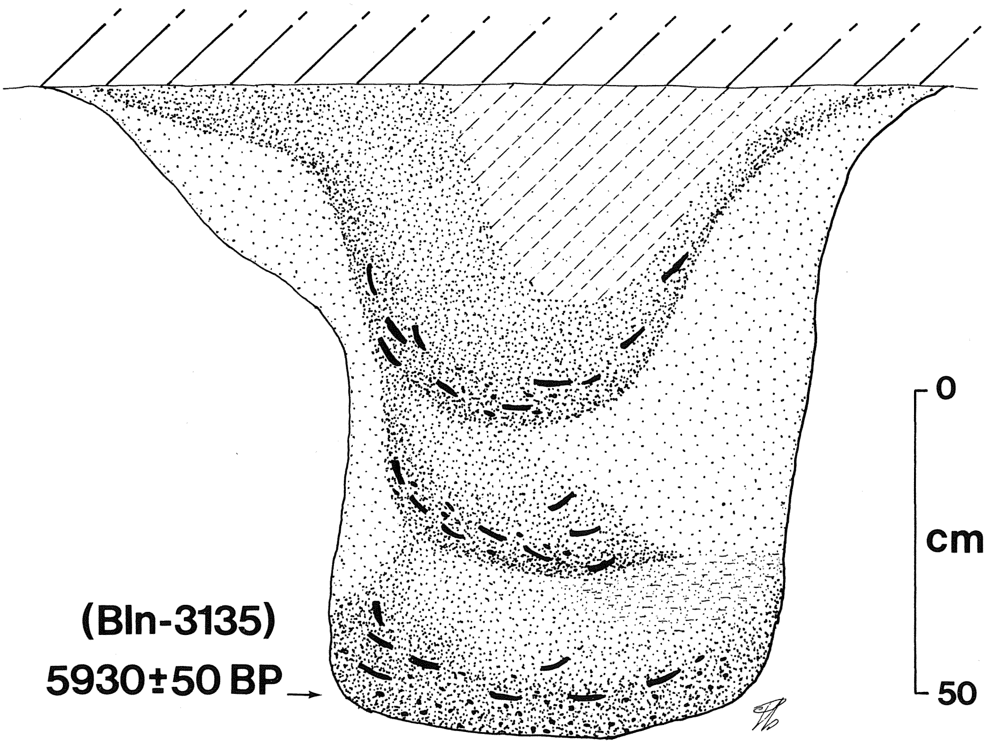

Fig. 5 - Campo Ceresole. Profile of Pit XXXII (drawn by P. Biagi).

(199). The Borers had been extensively used on wood or harder materials, such as bone or antler, except for one example which appears to have been used on a medium soft substance, perhaps hides.

Geometric Tools (Gm)

Four Rhomboids with parallel, oblique, truncations (51, 53-55), one scalene (50) and two rectangular Trapezes (52, 56) from Pit XVIII. One rectangular Trapeze with *piquant trièdre* point comes from Pit XXXII (203). None of the Geometric tools show wear traces from having been used as armatures although all bore traces of use.

Retouched blades (L)

Retouched Blades are the most common instruments from both Pit XVIII (thirty-seven) and XXXII (five). They have a simple, marginal retouch tending to be backed. A few specimens have characteristic sinuous edges (127, 133, 145, 146, 149, 212). The greatest variety of actions and worked materials was found among the Retouched Blades, including use on soft materials and plants.

Denticulates (D)

This group includes two single Notches, nine Notched Blades, obtained with simple or, more rarely, backed retouch and one tanged bladelet with simple, bilateral, bifacial retouch (168), from Pit XVIII. As with the Burins, the Denticulates exclusively have wear traces from having been used on wood or hard materials such as bone or antler.

Side Scrapers (R)

Three pieces from Pit XXXII. In two cases the retouch is simple and marginal (217, 218). The third shows a simple, deep, inverse, retouch on the left side (216). Only

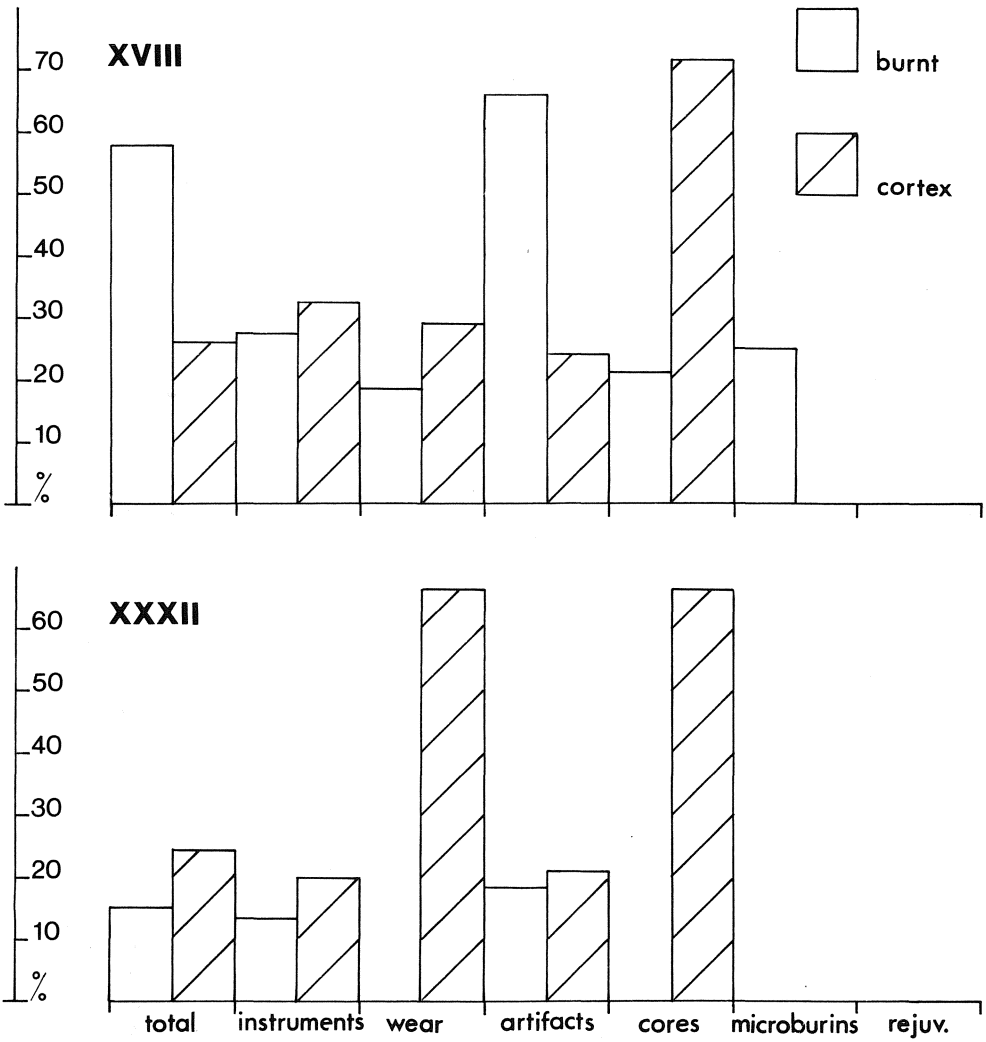

Fig. 6 - Campo Ceresole. Percentage of burnt and corticated artefacts (drawn by P. Biagi).

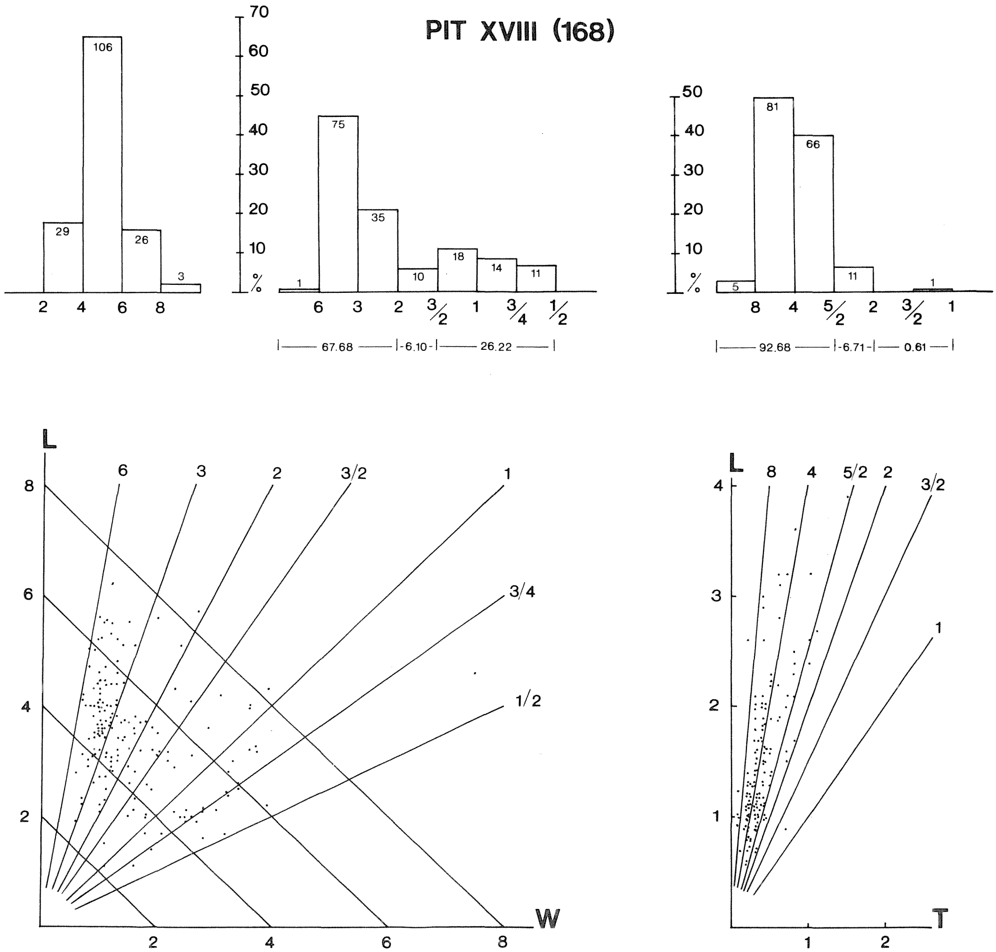

Fig. 7 - Campo Ceresole. Length/width (left) and length/thickness (right) diagram of the unretouched artefacts from Pit XVIII (drawn by P. Biagi).

one of the Side Scrapers has use wear from functioning as a Scraper, while the other two had been cutting tools.

Microburins (Mb)

The size is very variable. Only one proximal Microburin comes from Pit XXXII. All the other specimens are distal. This technique is largely employed in the manufacture of Truncations and Geometric Tools. None of the Microburins had microwear traces except one, a relatively large piece which had been used to work wood.

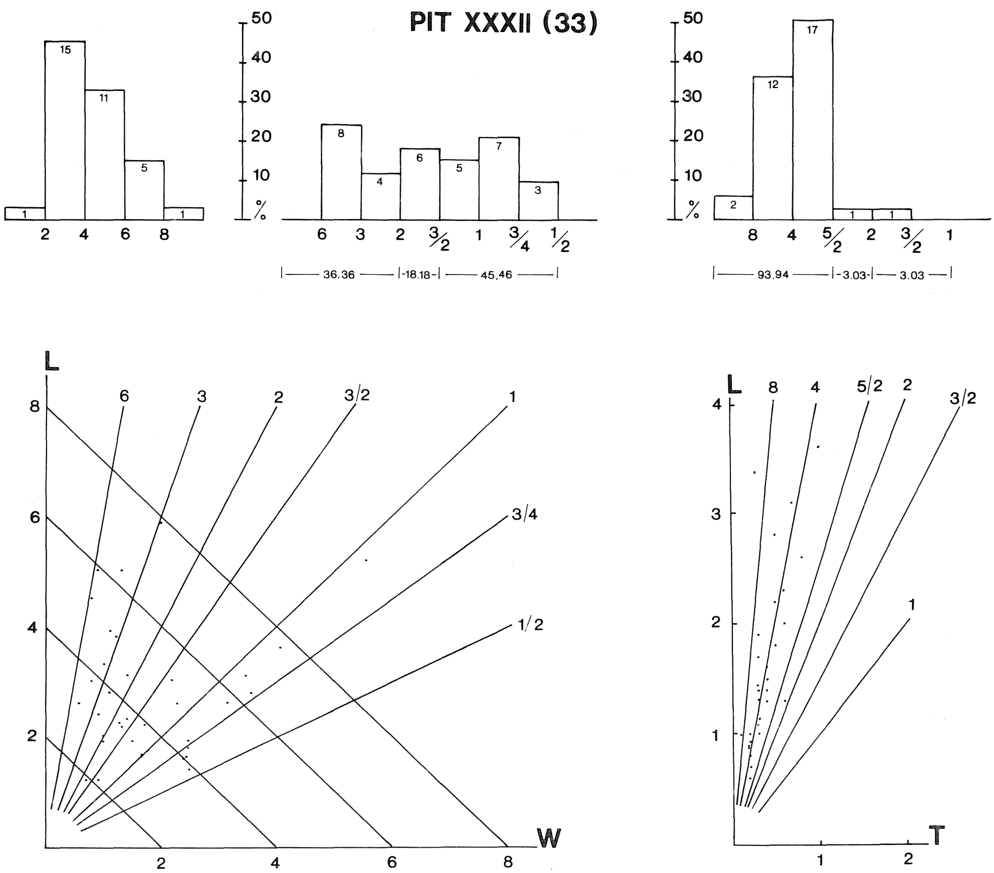

Fig. 8 - Campo Ceresole, Length/width (left) and length/thickness (right) diagram of the unretouched artefacts from Pit XXXII (drawn by P. Biagi).

Rejuvenations (Rj)

Only one blade (188) and one flake (189) from Pit XVIII. Both of the Rejuvenations had been used, one extensively on a hard substance (bone or antler).

MICROWEAR ANALYSIS (B. A. V.)

Microwear (or use-wear) analysis is a form of lithic study whereby units of a stone assemblage are examined under a stereoscopic binocular microscope to determine traces of wear that were incurred when the lithic was used. For this particular study of the neolithic materials from Campo Ceresole, the magnifications used did not exceed 100x, which differentiates this study from the so-called «high-power» approach to microwear (for background discussion of microwear, cf. KEELEY, 1980; MOSS, 1983;

NEWCOMER *et al.*, 1968; VAN GIJN, 1989; VOYTEK, 1985).

The accompanying figures show tools that had been used on materials of varying resistance. By way of explanation, «soft» (S) should be taken to mean a material of little resistance such as fresh meat or skins; «hard» (H) substances have the most resistance and would include antler and dried bone. The traces associated with «woodworking» (WW) are sufficiently material specific that «wood» (W) can be indicated, with «hard wood» (HW) suggesting species such as oak and «soft wood» (SW), maple or hazelnut. The other materials mentioned, such as hides, should be considered reasonable suggestions, rather than the only possibilities for worked materials. In addiction, the actions shown such as «cutting» (C) or «scraping» (S) should be accepted as indicators of the motion involved when the edge in question had been used and not as indicators of a particular tool type, except perhaps in the case of Borers (see Appendix 2).

The lithic material from Campo Ceresole should be able to help shed light on production activities which took place at the site. We do know that the floral and faunal evidence indicates that the subsistence economy was mainly based on hunting, fishing, collection of fresh-water resources as well as, most likely, wild plant foods, with less emphasis on stock-rearing and cultivation (BARKER, 1983: 68). This is supported by pollen and other environmental studies which indicate that the region had been covered by a dense mixed oak woodland and surrounded by marshy areas (BARKER, 1983: 52).

In spite of the excellent data on subsistence activities, questions remain as to the nature of the site and also, the nature of the economy. That is, was the site a seasonal settlement, part of a larger network of sites by which the landscape had been utilized by the Early Neolithic population? Were the production activities carried out at the site representative of hunter-gatherers or of agriculturalists? Such questions motivated the microwear analysis reported here.

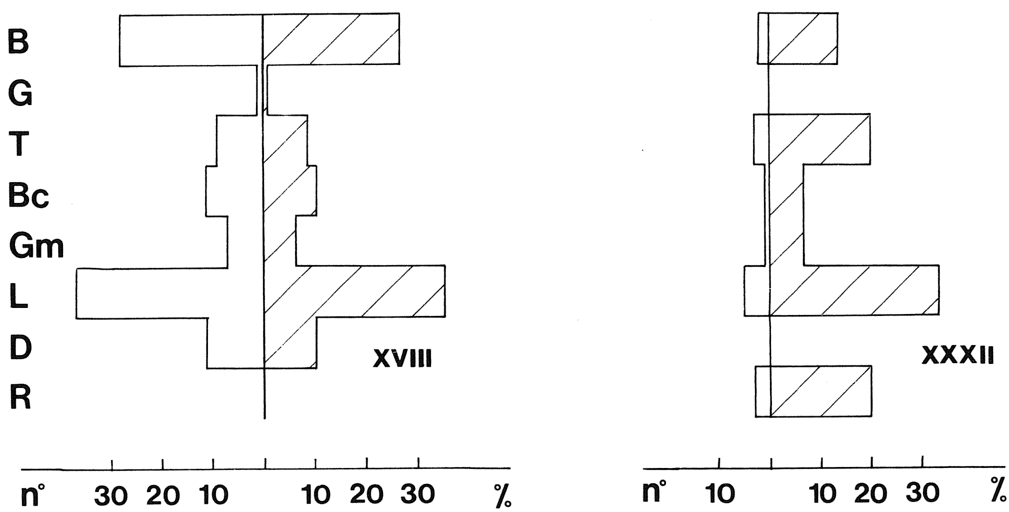

Fig. 9 - Campo Ceresole, Pit XVIII. Number and percentage of flint instruments (drawn by P. Biagi).

During the summer of 1990, 1,078 pieces of chipped stone were examined from the site of Campo Ceresole. Of this number, 184 had been used (17.1% of the total assemblage). This figure is relatively low, compared with 57% used pieces from the neolithic site of Suvero (VOYTEK, n. d.) and over 75% from the neolithic levels at Arene Candide (STARNINI and VOYTEK, i. p.).

Of the total number of used pieces, 70 had shown evidence of hafting (38.0%). Cortex was found on 23 tools, suggesting that trimming flakes were often considered functional pieces. On a few blades, the edge with cortex had been hafted (e. g. 62, 64, 73, 122).

Resharpening and reuse

Over 11% of the used pieces had been reused and the same number had been resharpened (21), although these two attributes were not mutually inclusive. This compares with slightly less than 9% at Arene Candide. The burin technique was the most common method of removing a used, exhausted adge and creating a new one. Out of thirty Burins which were examined, thirteen had undergone resharpening in this way (eleven of them were so-called Ripabianca Burins). Eight of the Burins had been reused (seven of these were the Ripabianca type). The original use of these tools had been on hard materials or especially, hard wood, which dulled the edges extensively. Without the burin technique, these tools would have had limited use value.

The Burins on a side notch, or Ripabianca, have been examined by other researchers. An excellent discussion of their manufacture is provided by D'ERRICO (1987, 1988). Contrary to his studies, our analysis showed no evidence for use on grains (D'ERRICO, 1987: 142; 1988: 57). However there were clear remnants of the original or prior usage effectively, but not always completely, removed by the burin blows (figs. 27, 28). The reuse of the «new» or rejuvenated edge was also documented by microwear traces.

Resharpening and reuse are often associated with lack of raw materials, a situation which would have necessitated conservation. However, there did not appear to be a shortage of material available to this site. The flint appears to come from an Alpine source, which is well-documented although there is no evidence for systematic exploitation of flint sources during the Early Neolithic (BARFIELD, 1990: 151). From this, we might infer that the users of these tools had not been regularly or directly involved in raw material procurement. That is, their tasks while at this site perhaps did not include obtaining quantities of raw materials and working them into stone tools. Resharpening of tools fit the production system better than replacing them because the raw materials did not come to the site upon demand.

The use of flint blades on hard woods surely contributed to the development of the burin technique for «rejuvenating» edges or at the very least, encouraged its improvement. Flint edges dull quickly against wood, especially hard wood like oak. Abrasion of the edge is extensive and reduces the ability of the edge to cut into the material (TRINGHAM *et al.*, 1974; VOYTEK, 1985: 372) (fig. 29a). Lateral simple retouch is another means of resharpening tools (figs. 29b, 30), but it is not as effective as Burin techniques in producing a new working edge. Resharpening within neolithic assemblages from Southeast Europe is not characterized by such edge treatment; exhausted edges were simply replaced with new tools or inserts. Again, this fact has been related to the nature of raw material procurement activities and their control by the individual households (VOYTEK, 1985: 139-149; 238-263).

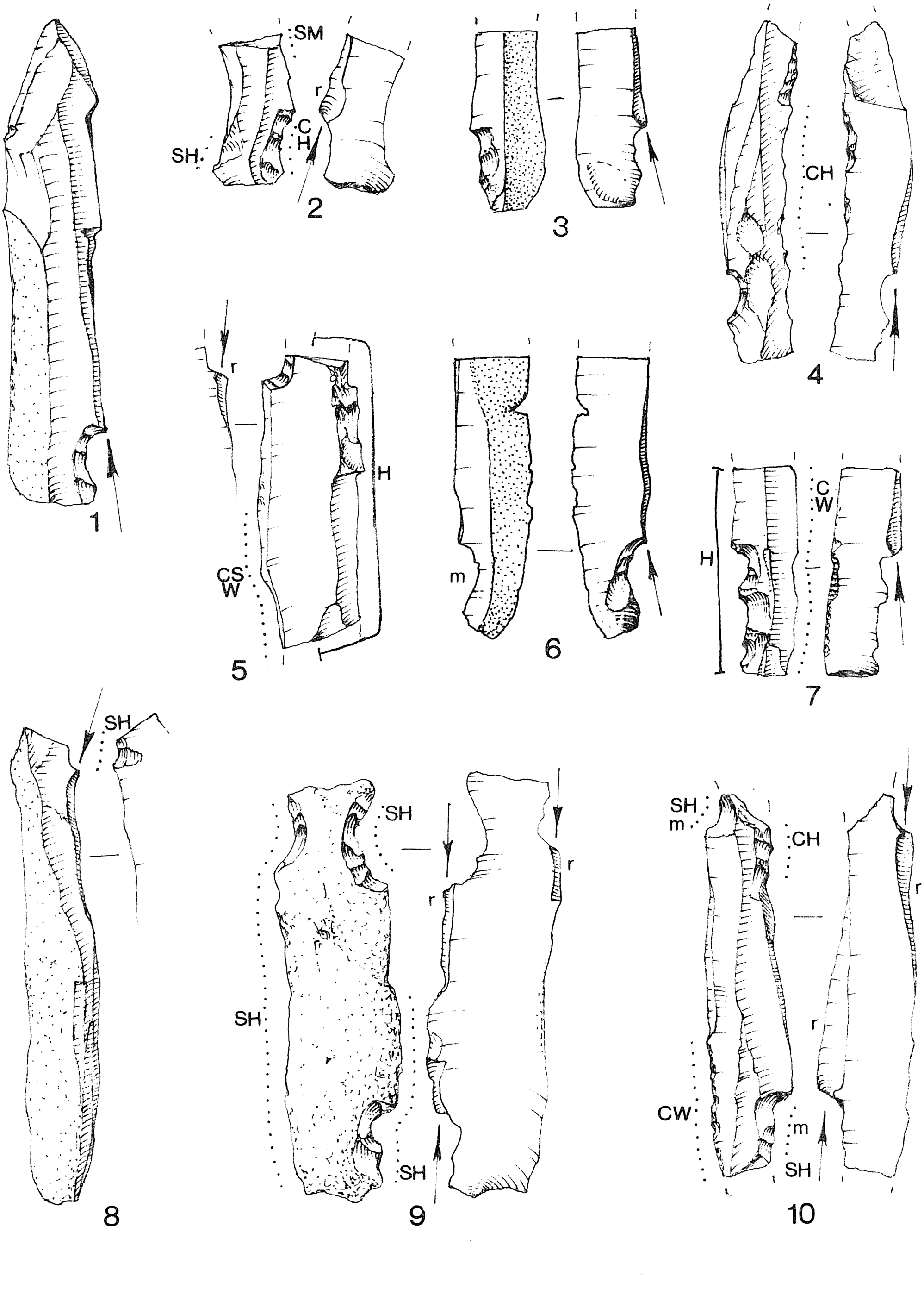

Fig. 10 - Campo Ceresole, Pit XVIII. Burins on a side notch (1-10) (1:1) (drawn by G. Almerigogna).

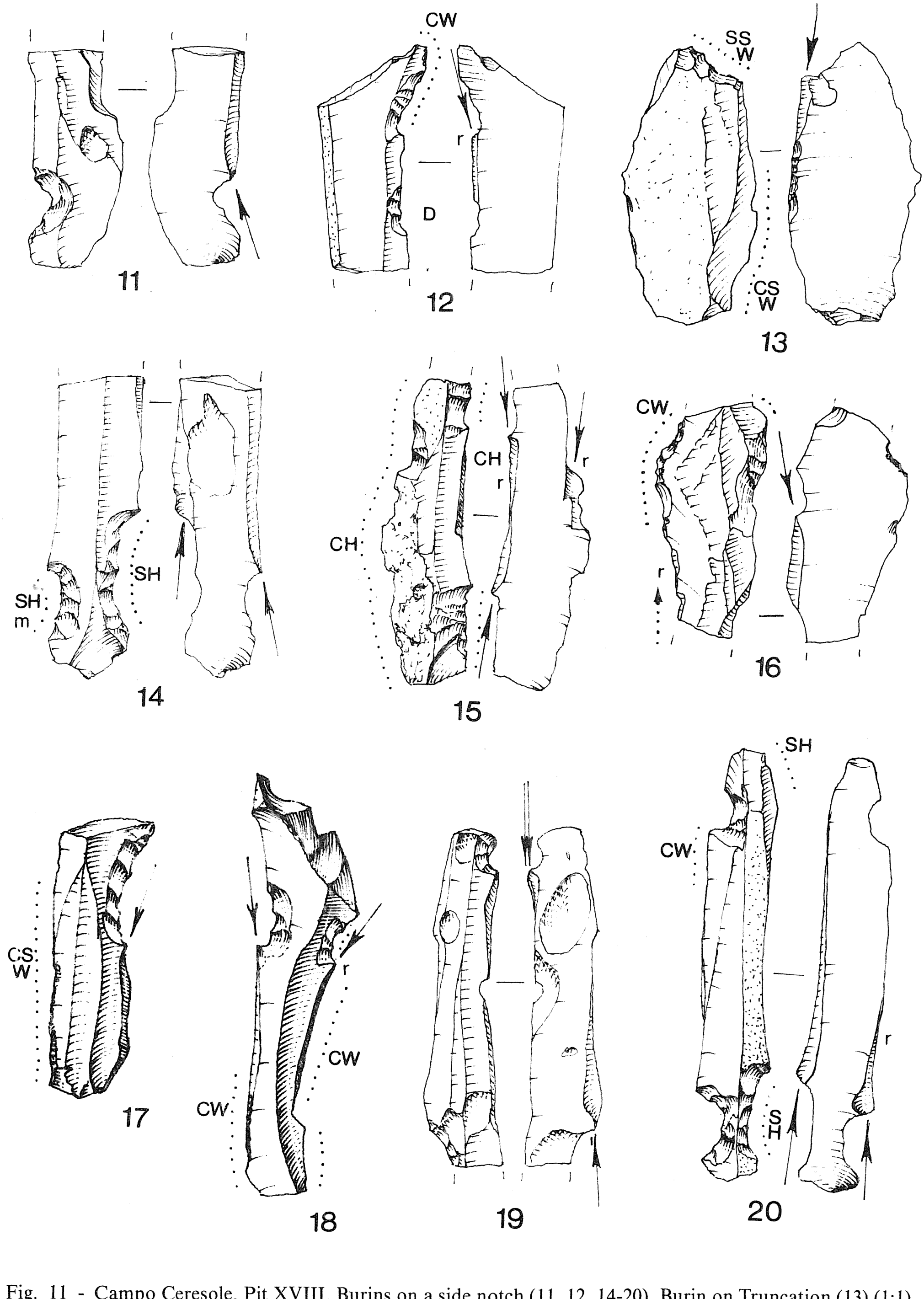

Fig. 11 - Campo Ceresole, Pit XVIII. Burins on a side notch (11, 12, 14-20), Burin on Truncation (13) (1:1) (drawn by G. Almerigogna).

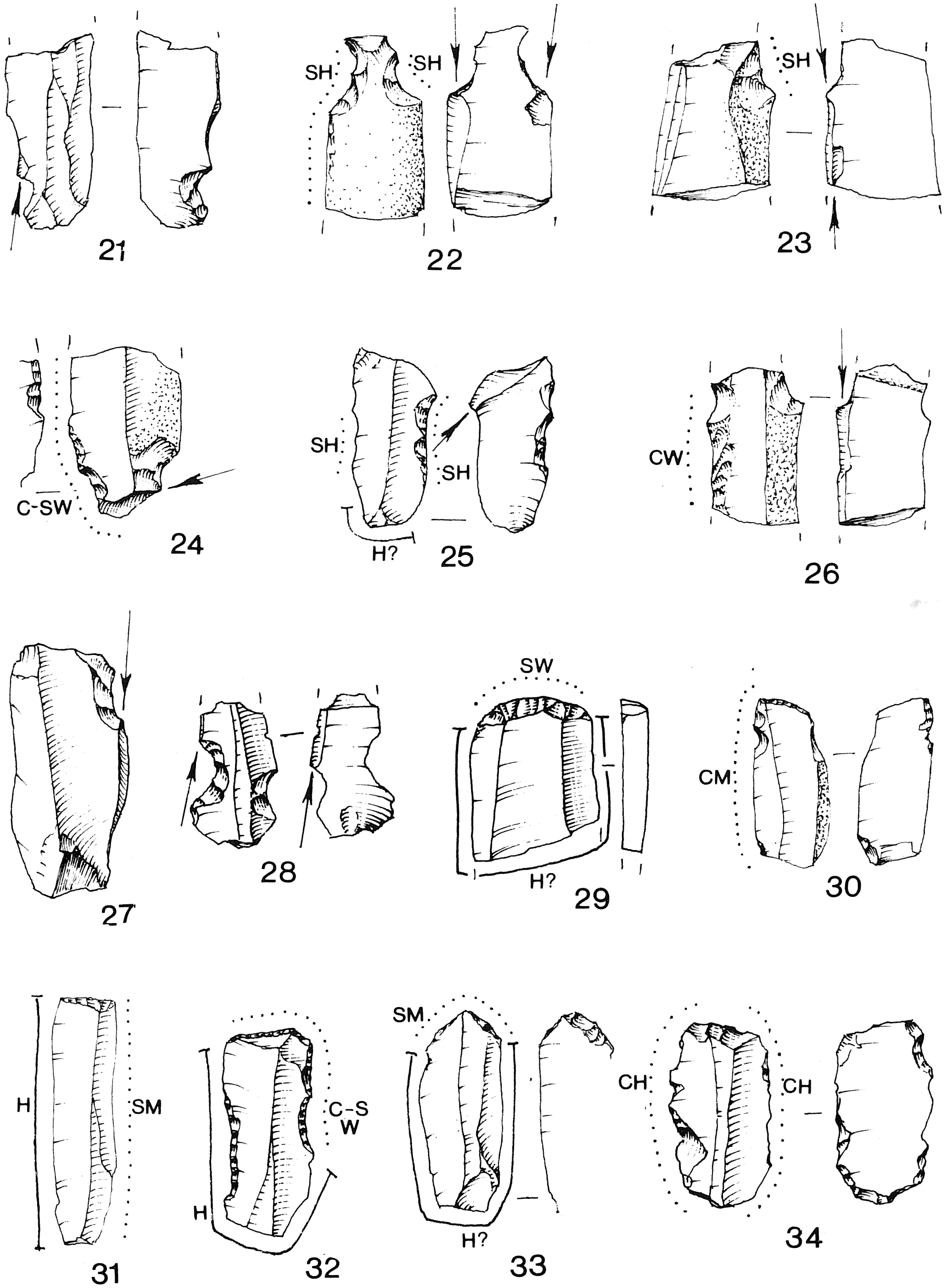

Fig. 12 - Campo Ceresole, Pit XVIII. Burins on a side notch (21-28), Endscraper (29), Truncations (30-34) (1:1) (drawn by G. Almerigogna)

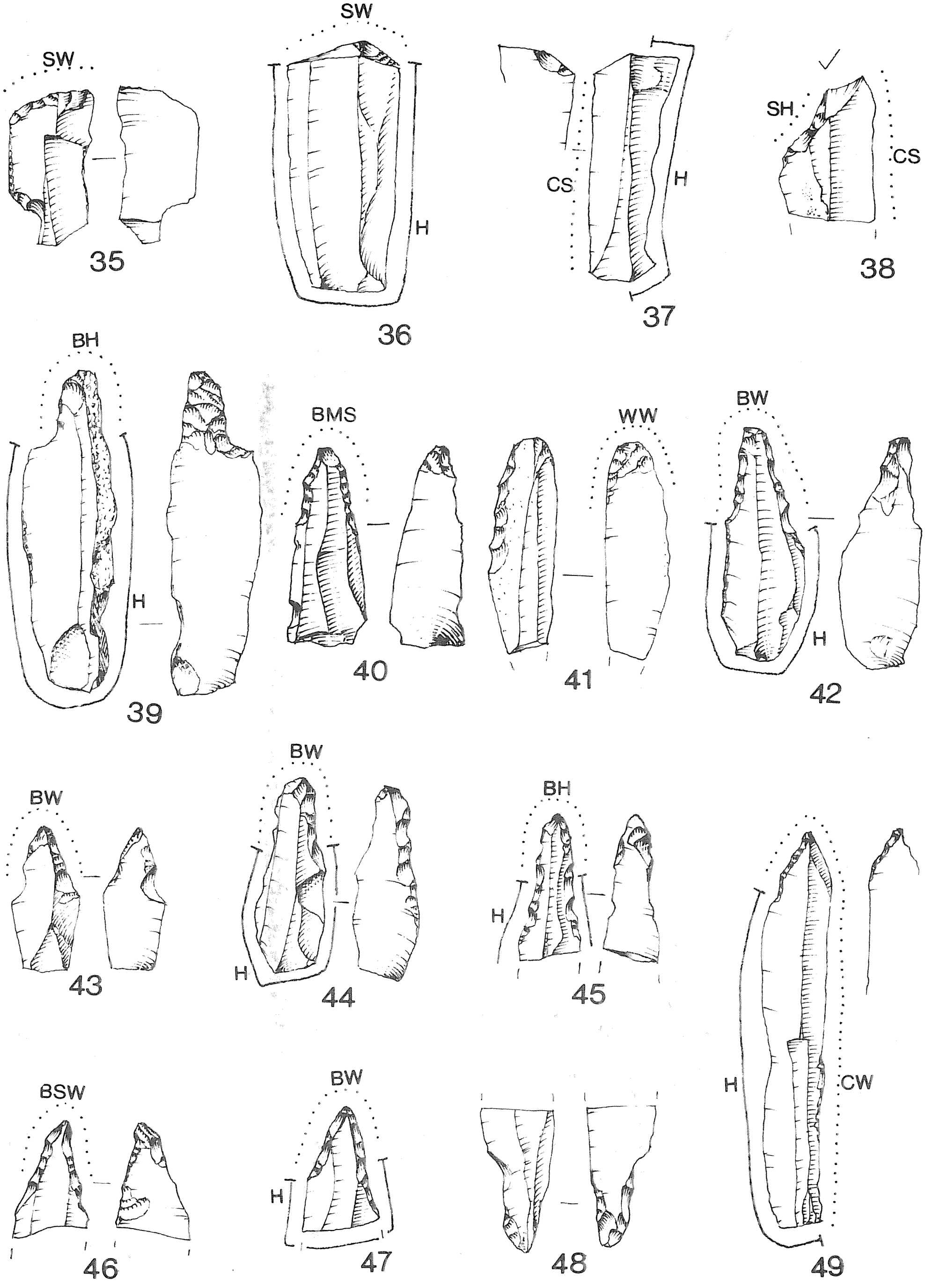

Fig. 13 - Campo Ceresole, Pit XVIII. Truncations (35-38), Borers (39-49) (1:1) (drawn by G. Almerigogna).

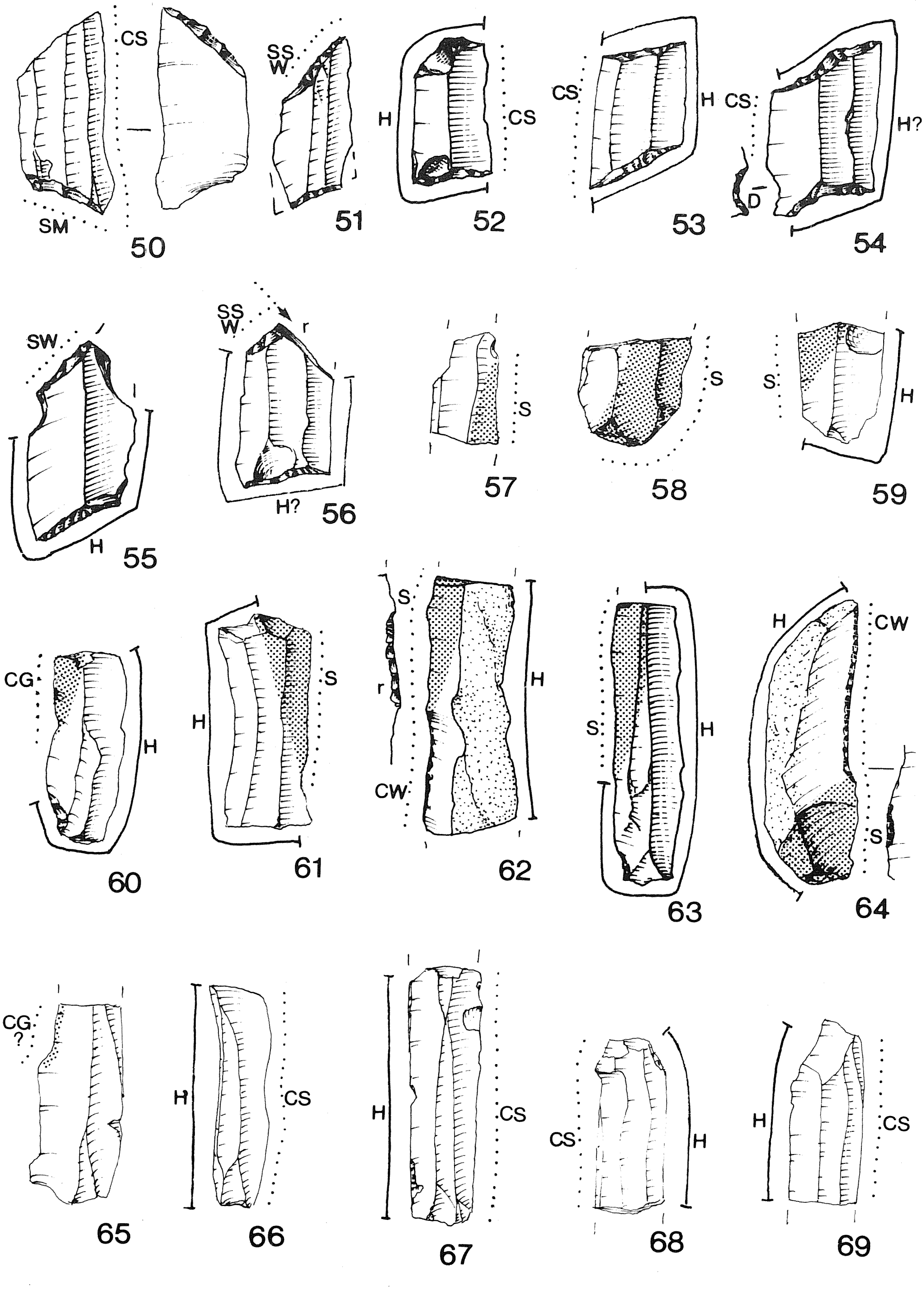

Fig. 14 - Campo Ceresole, Pit XVIII. Geometric Tools (50-56), Sickles (57-64), Unretouched Blades (65-69) (1:1) drawn by G. Almerigogna).

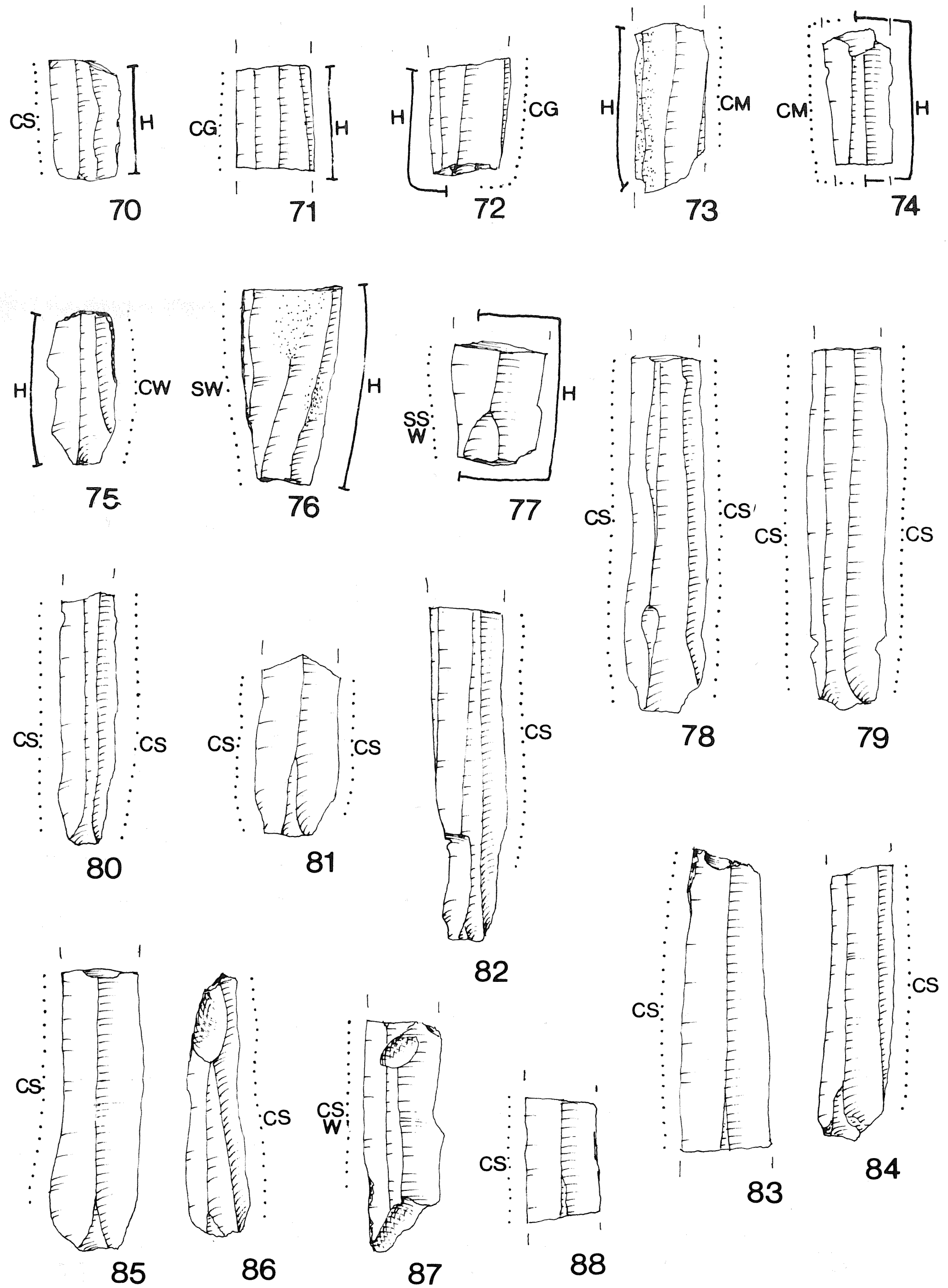

Fig. 15 - Campo Ceresole, Pit XVIII. Unretouched Blades (70-88) (1:1) (drawn by G. Almerigogna).

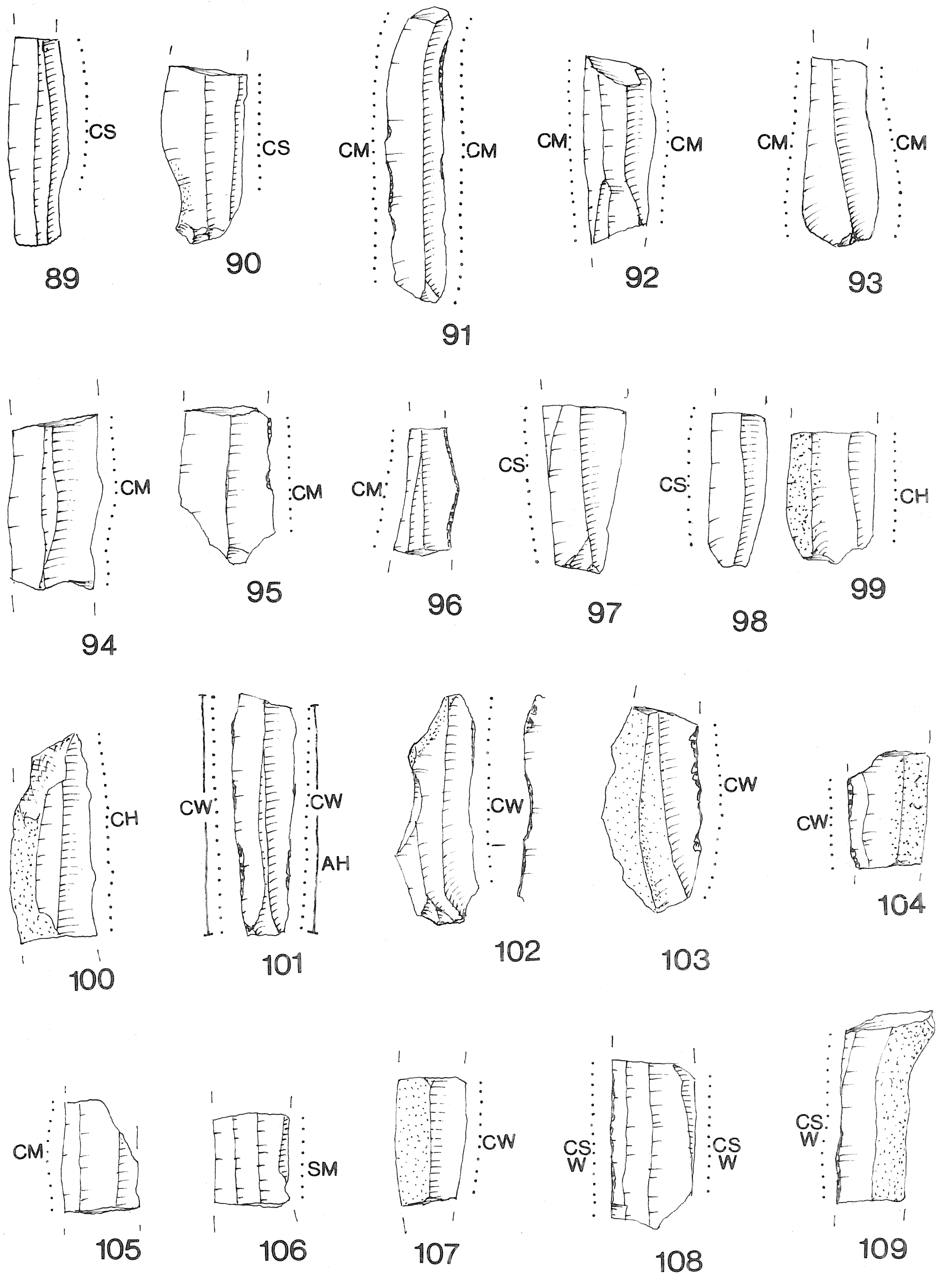

Fig. 16 - Campo Ceresole, Pit XVIII. Unretouched Blades (89-109) (1:1) (drawn by G. Almerigogna).

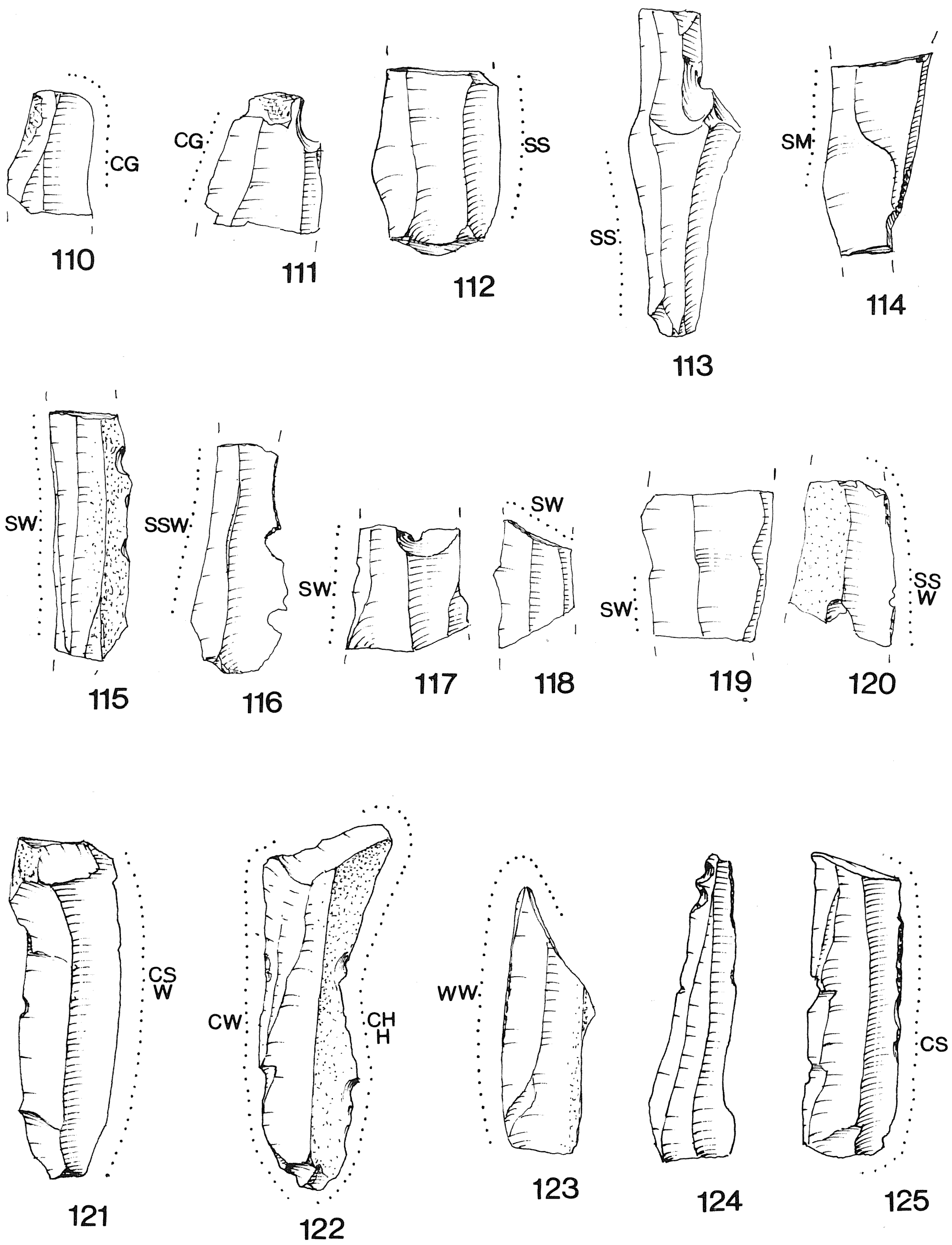

Fig. 17 - Campo Ceresole, Pit XVIII. Unretouched Blades (110-123), Retouched Blades (124, 125) (1:1) (drawn by G. Almerigogna).

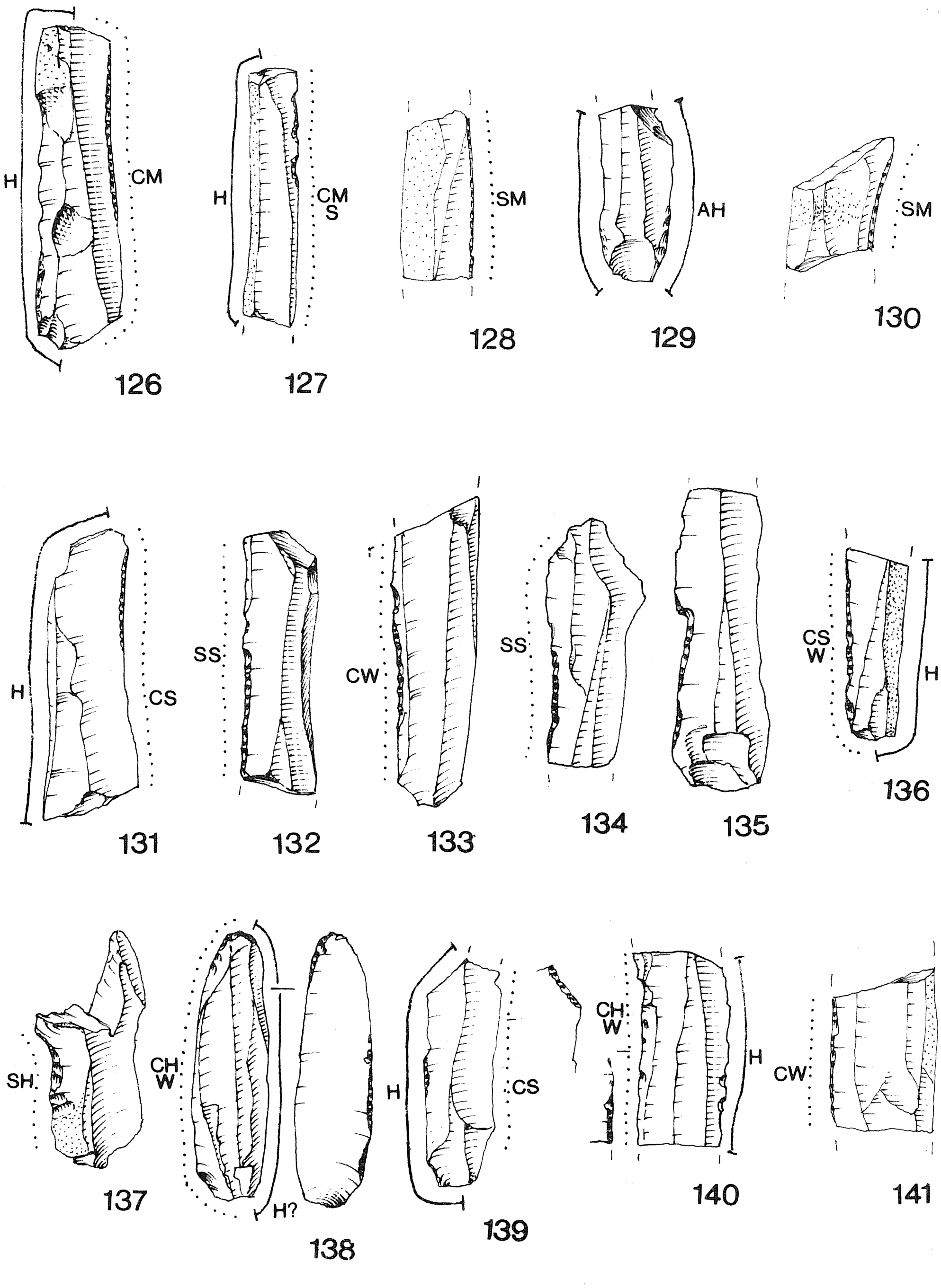

Fig. 18 - Campo Ceresole, Pit XVIII. Retouched Blades (126-141), (1:1) (drawn by G. Almerigogna).

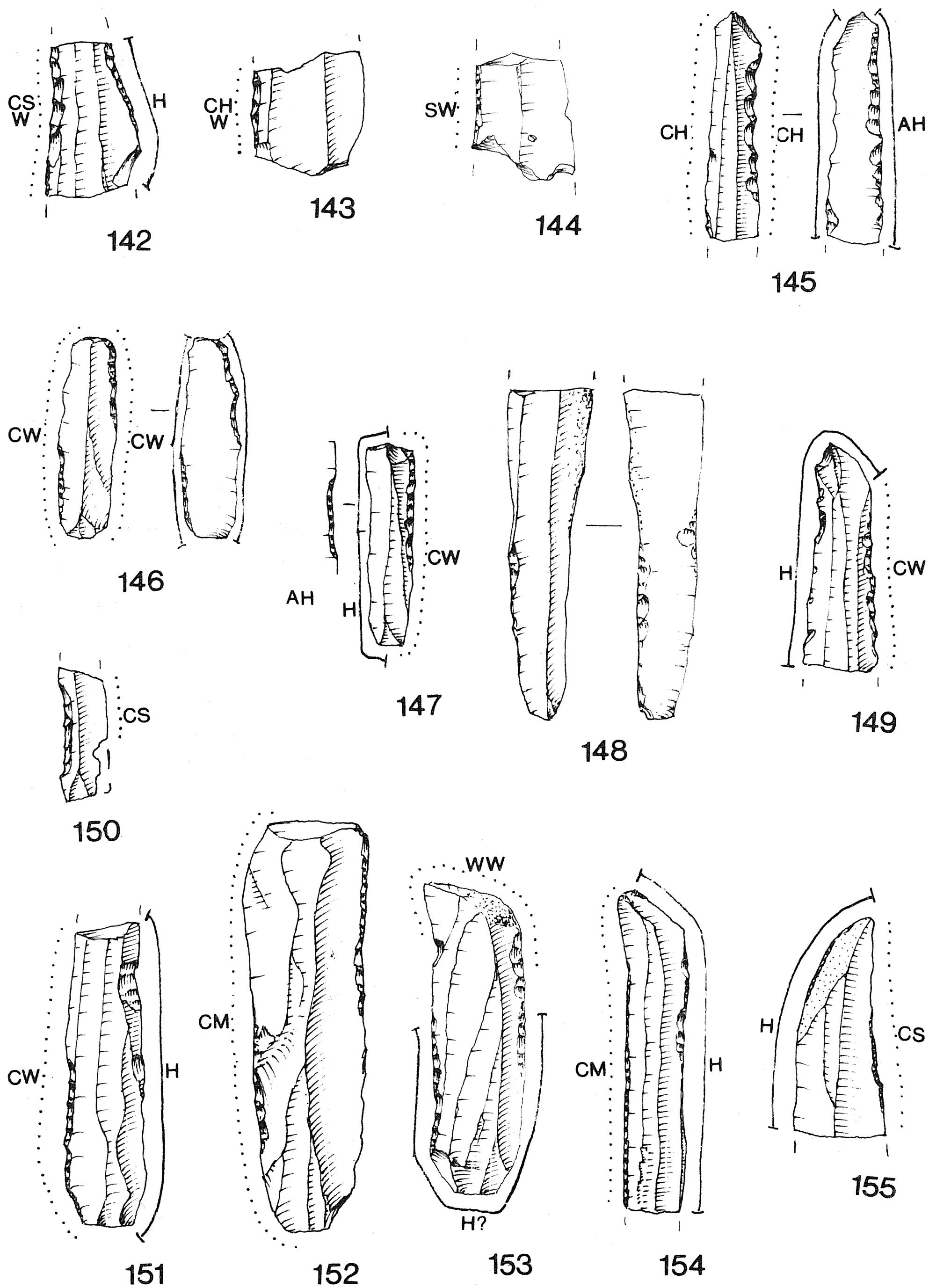

Fig. 19 - Campo Ceresole, Pit XVIII. Retouched Blades (142-155), (1:1) (drawn by G. Almerigogna).

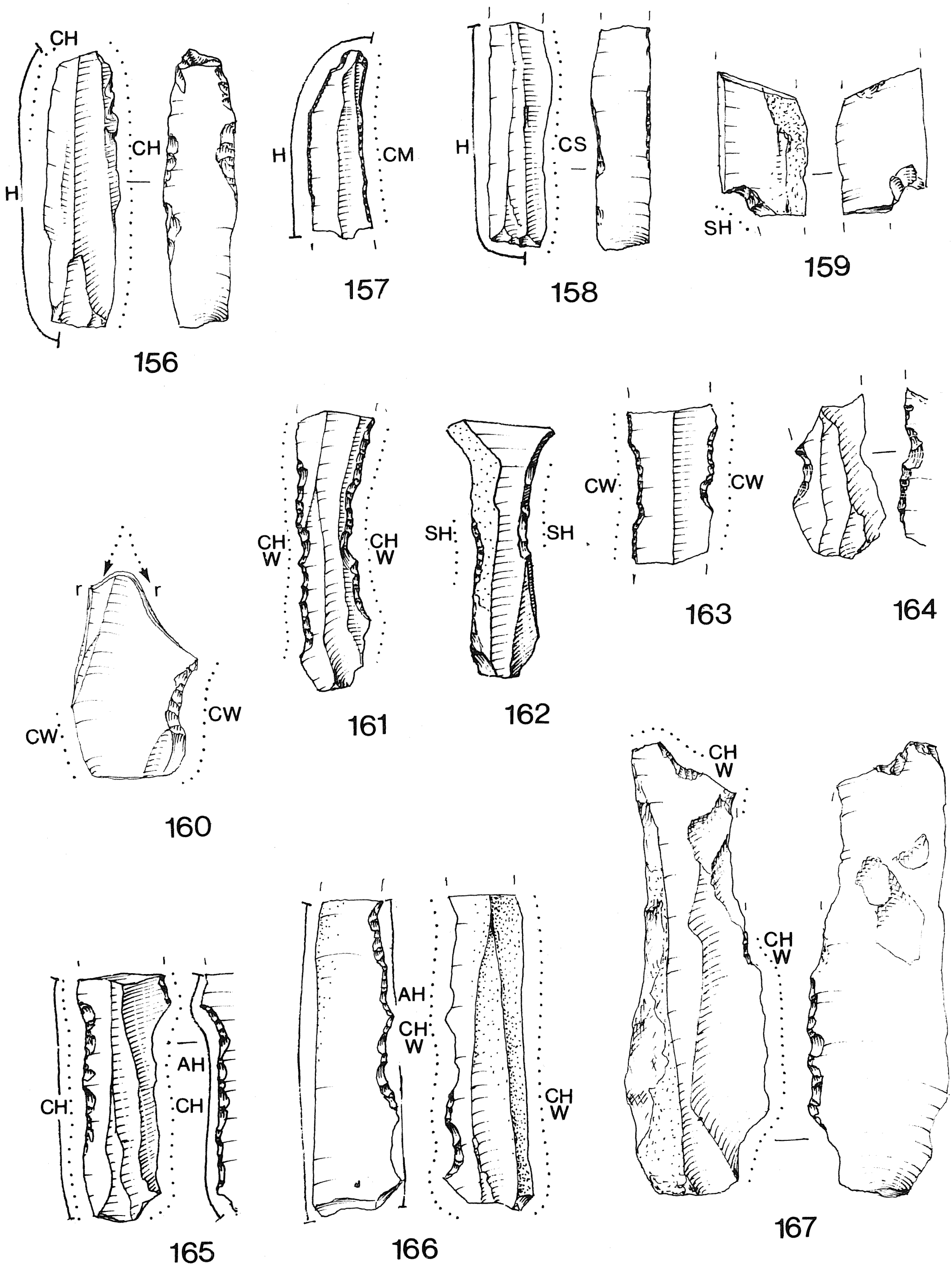

Fig. 20 - Campo Ceresole, Pit XVIII. Retouched Blades (156-158), Denticulates (159-167) (1:1) (drawn by G. Almerigogna).

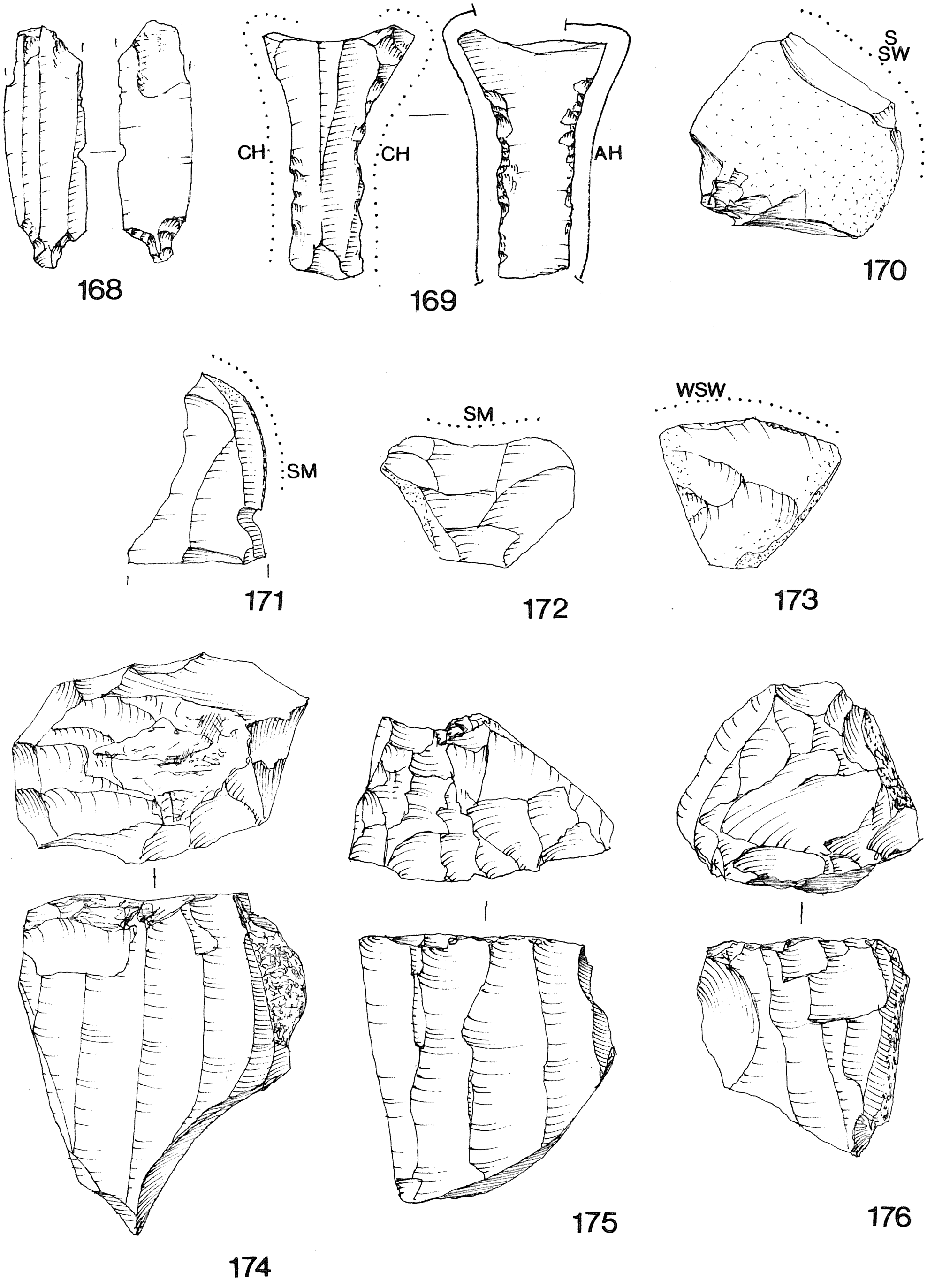

Fig. 21 - Campo Ceresole, Pit XVIII. Denticulates (168, 169), Unretouched Flakes (170-173), Cores (174-176) (1:1) (drawn by G. Almerigogna).

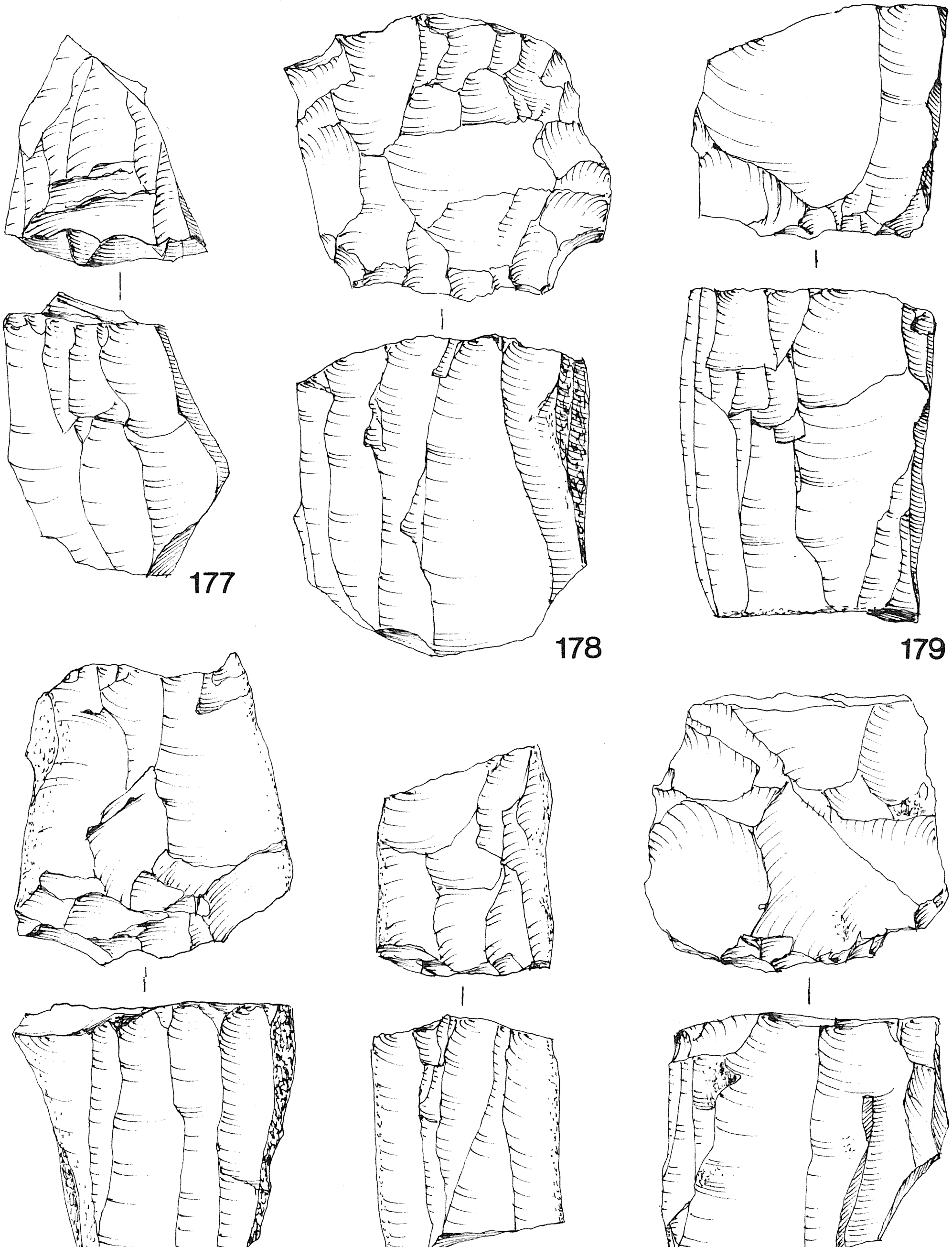

Fig. 22 - Campo Ceresole, Pit XVIII. Cores (177-182) (1:1) (drawn by G. Almerigogna).

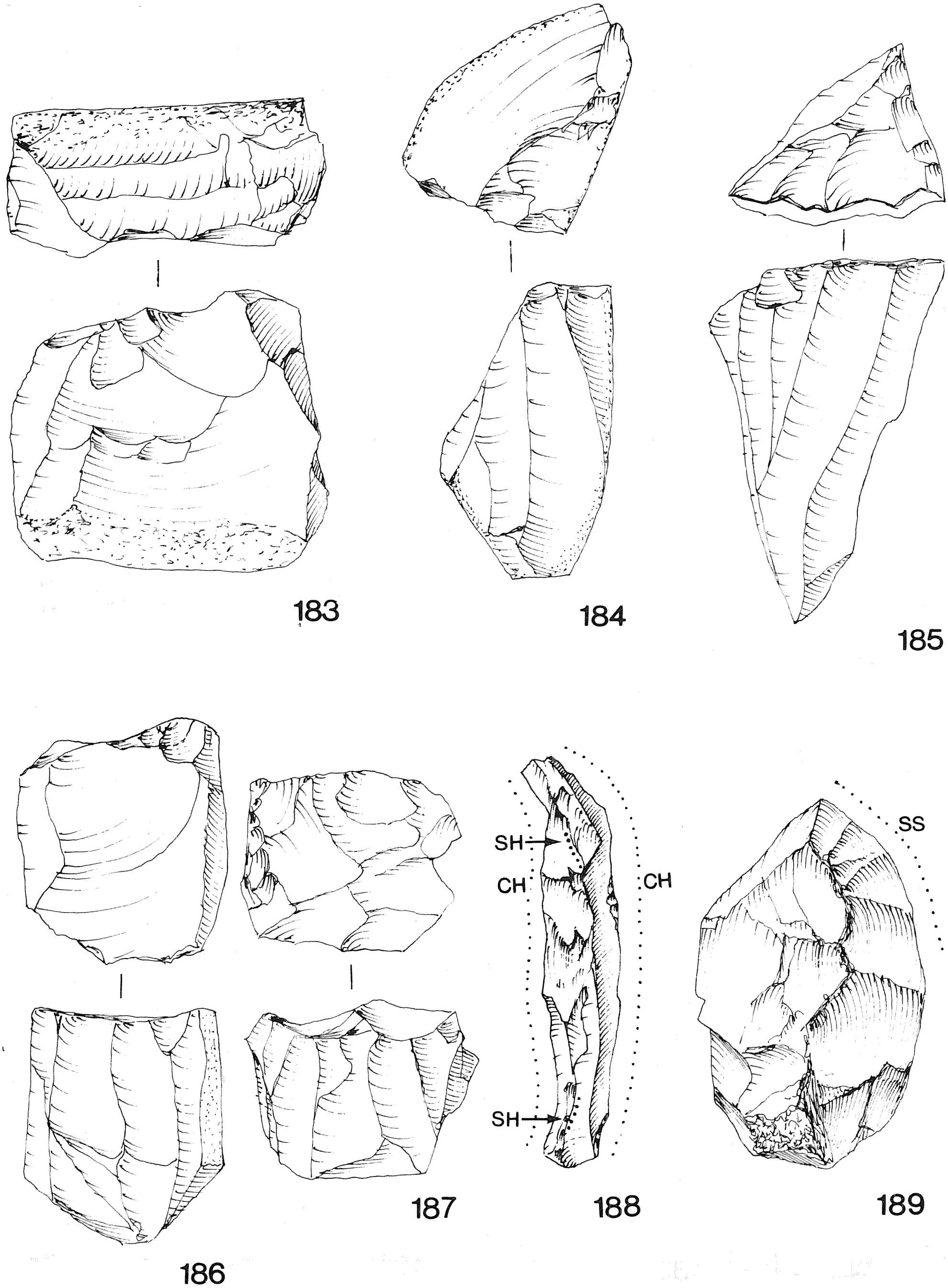

Fig. 23 - Campo Ceresole, Pit XVIII. Cores (183-187), Rejuvenation flakes (188, 189) (1:1) (drawn by G. Almerigogna).

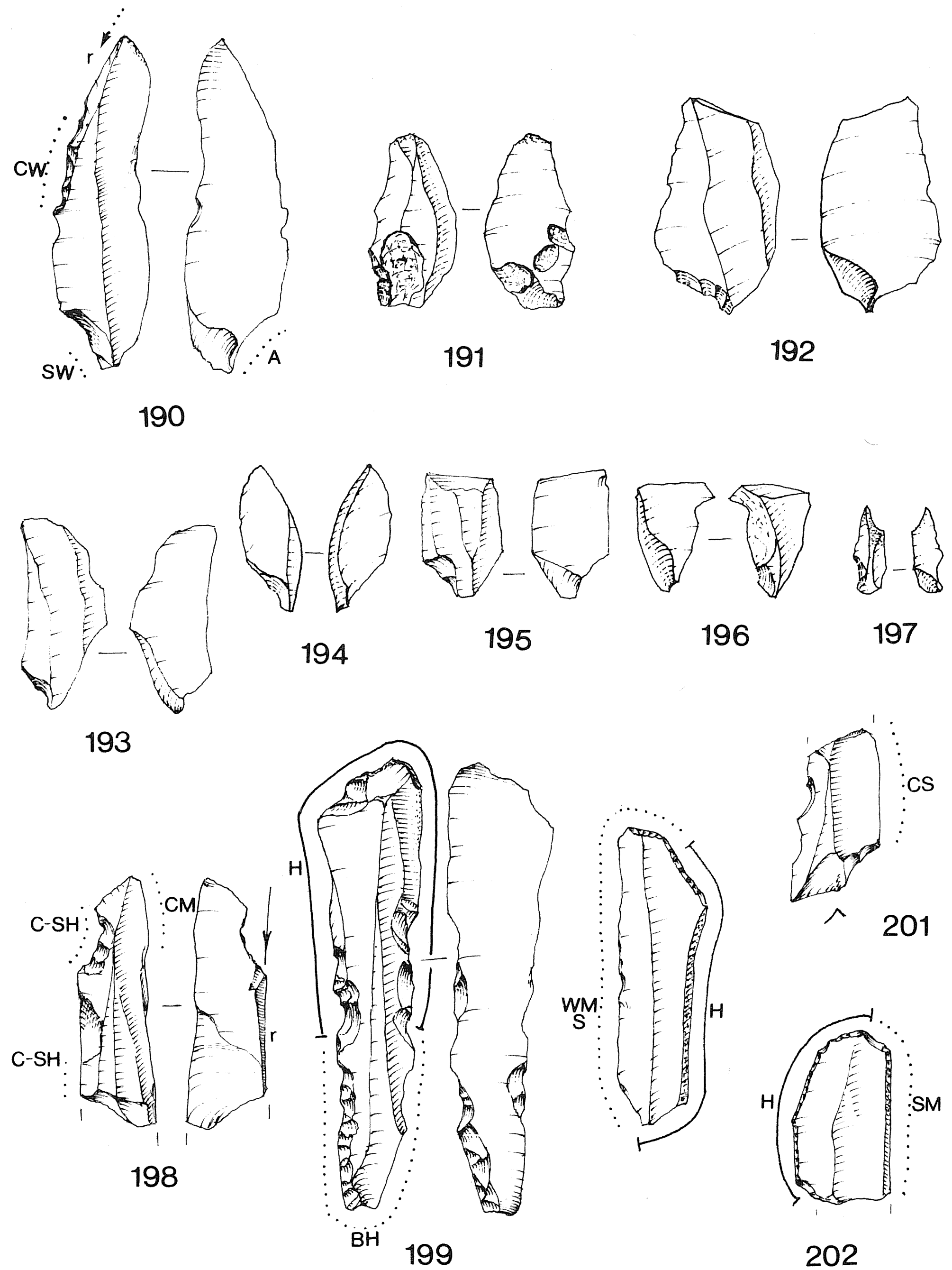

Fig. 24 - Campo Ceresole, Pit. XVIII. Microburins (190-197). Pit XXXII. Burin on a side notch (198), Borer (199), Truncations (200-202) (1:1) (drawn by G. Almerigogna).

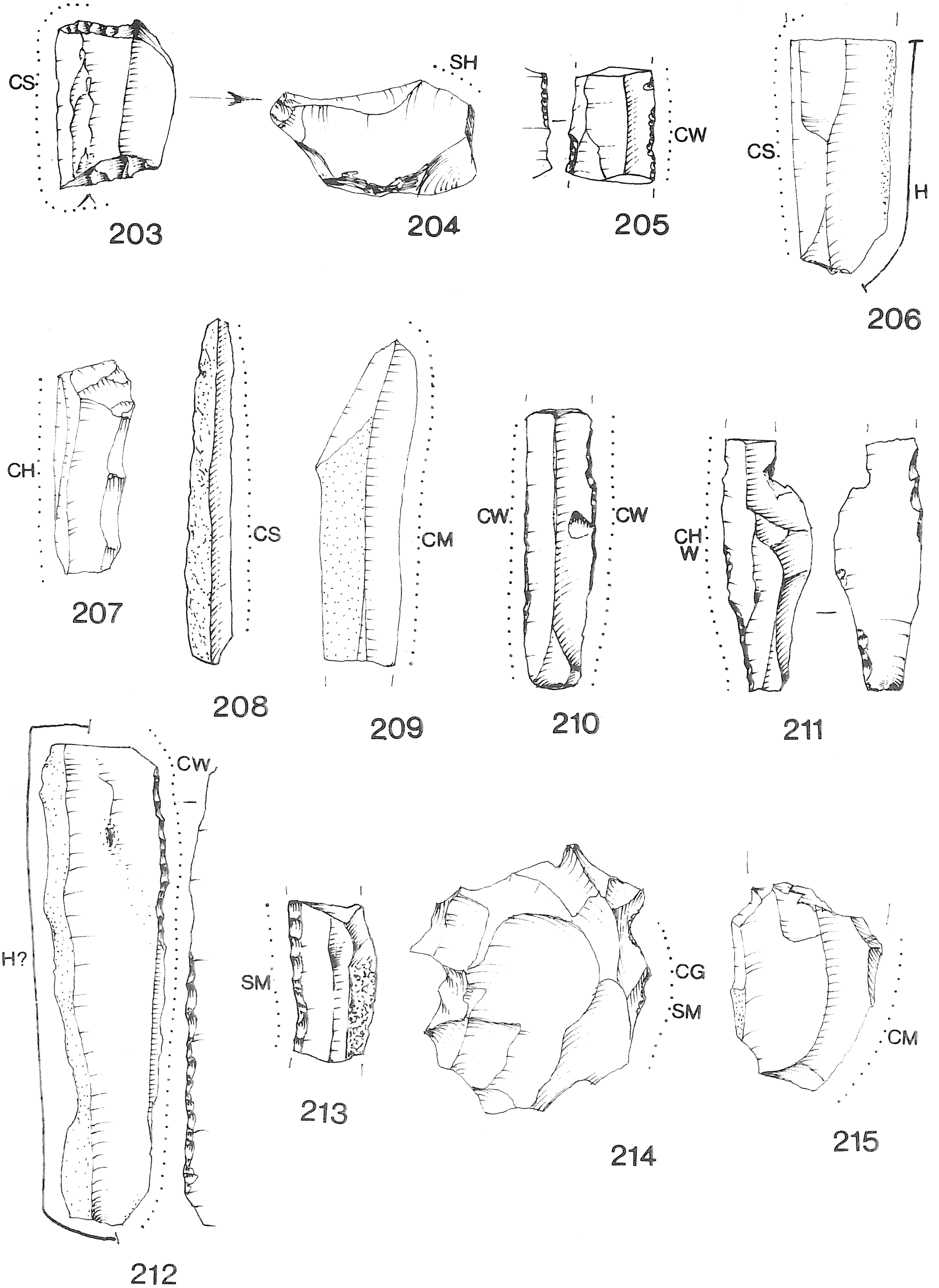

Fig. 25 - Campo Ceresole, Pit. XXXII. Geometric Tool (203), Burin on Truncation (204), Retouched Blades (205, 210-213), Unretouched Blades (206-209), Unretouched Flakes (214, 215) (1:1) (drawn by G. Almerigogna).

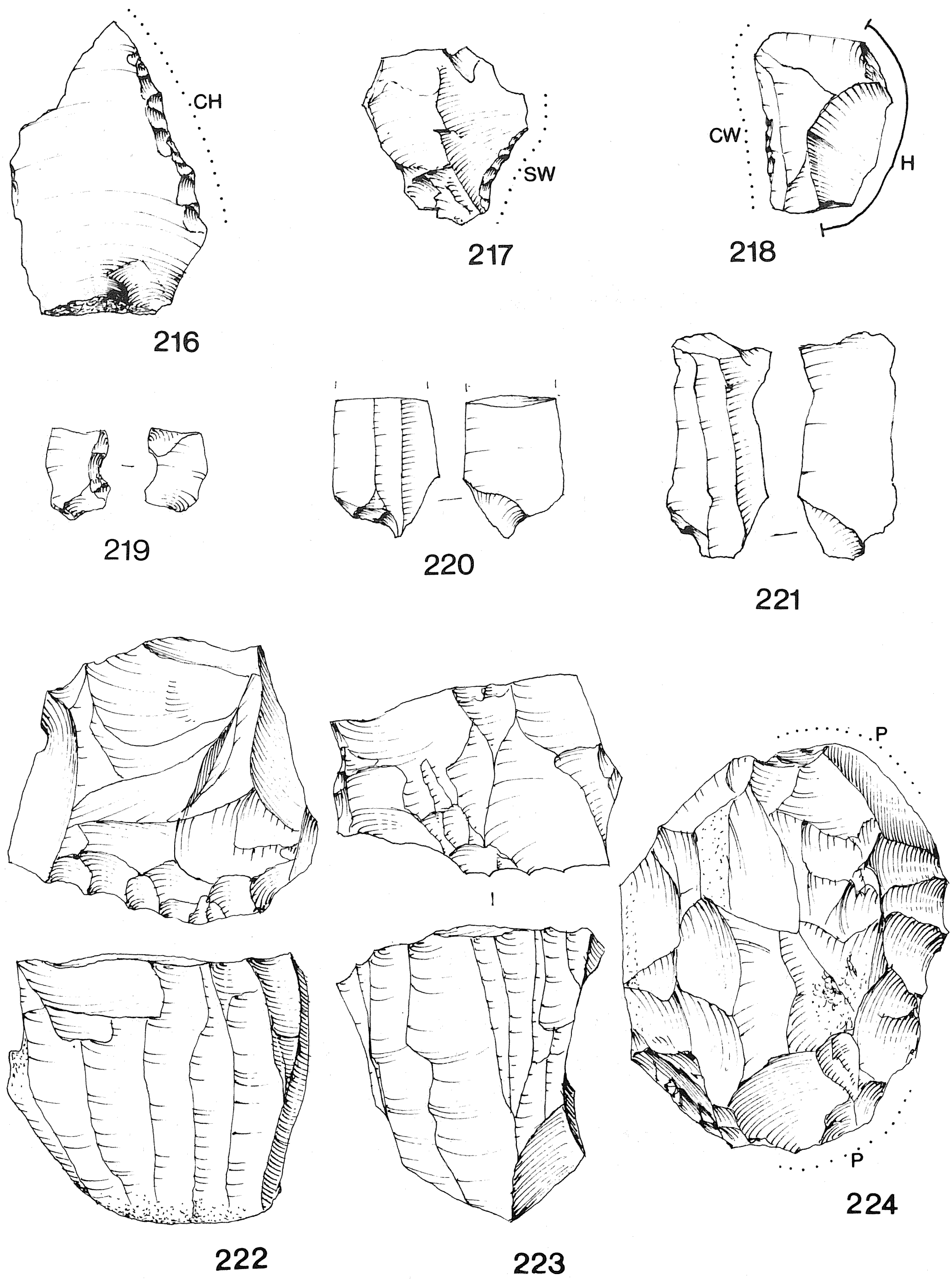

Fig. 26 - Campo Ceresole, Pit XXXII. Side Scapers (216-218), Microburins (219-221), Cores (222-224) (1:1) (drawn by G. Almerigogna).

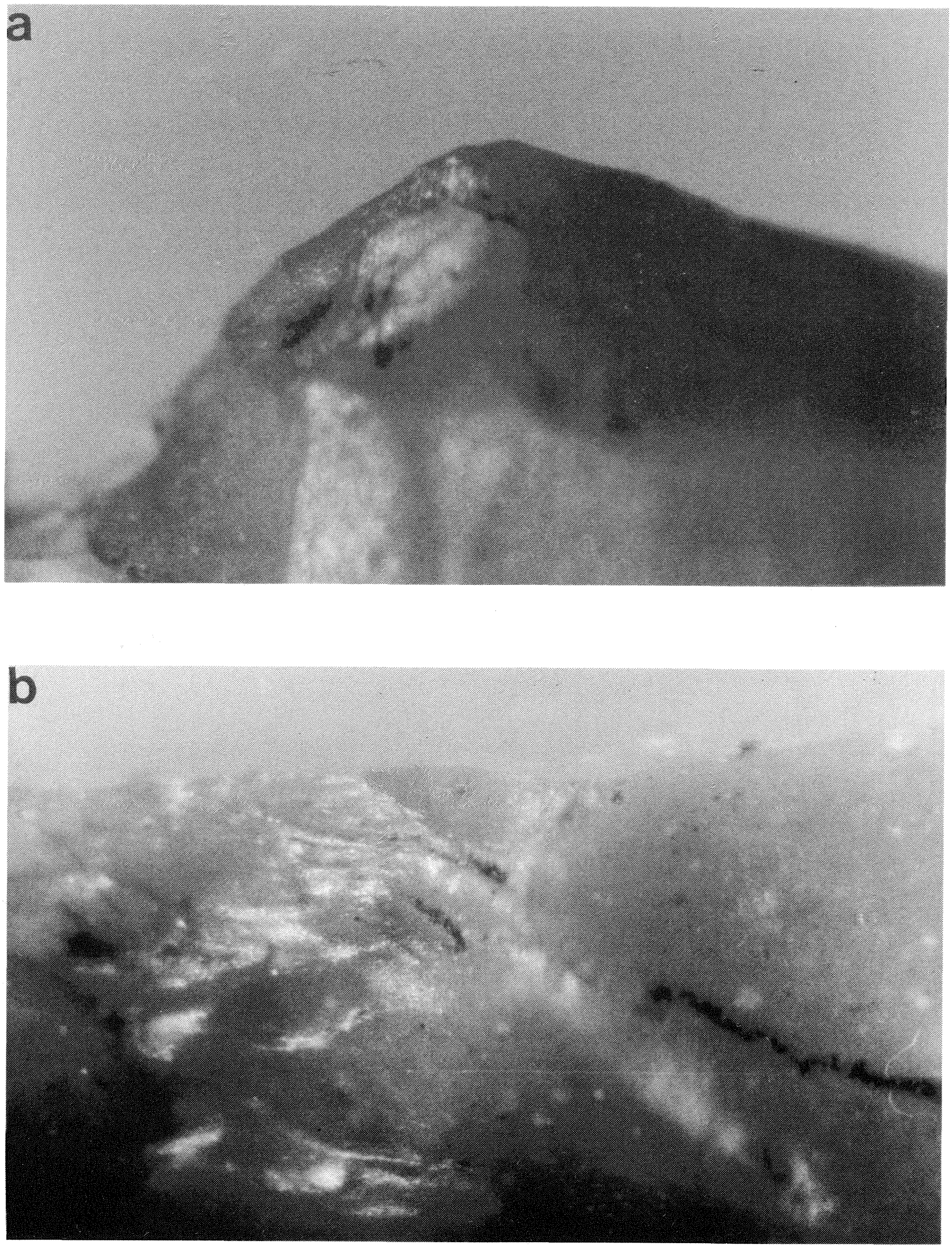

Fig. 27 - Piece 15. (a) Burin blow to resharpen/rejuvenate edge. Shadow to the right is the burin facet; left shows abraded scars from cutting hard. 0,7x. (b) Same as above at 1,5x. Line on the right is indicating burin facet; note lack of abrasion on the outline of the facet, when it meets the used edge (photos by B. A. Voytek).

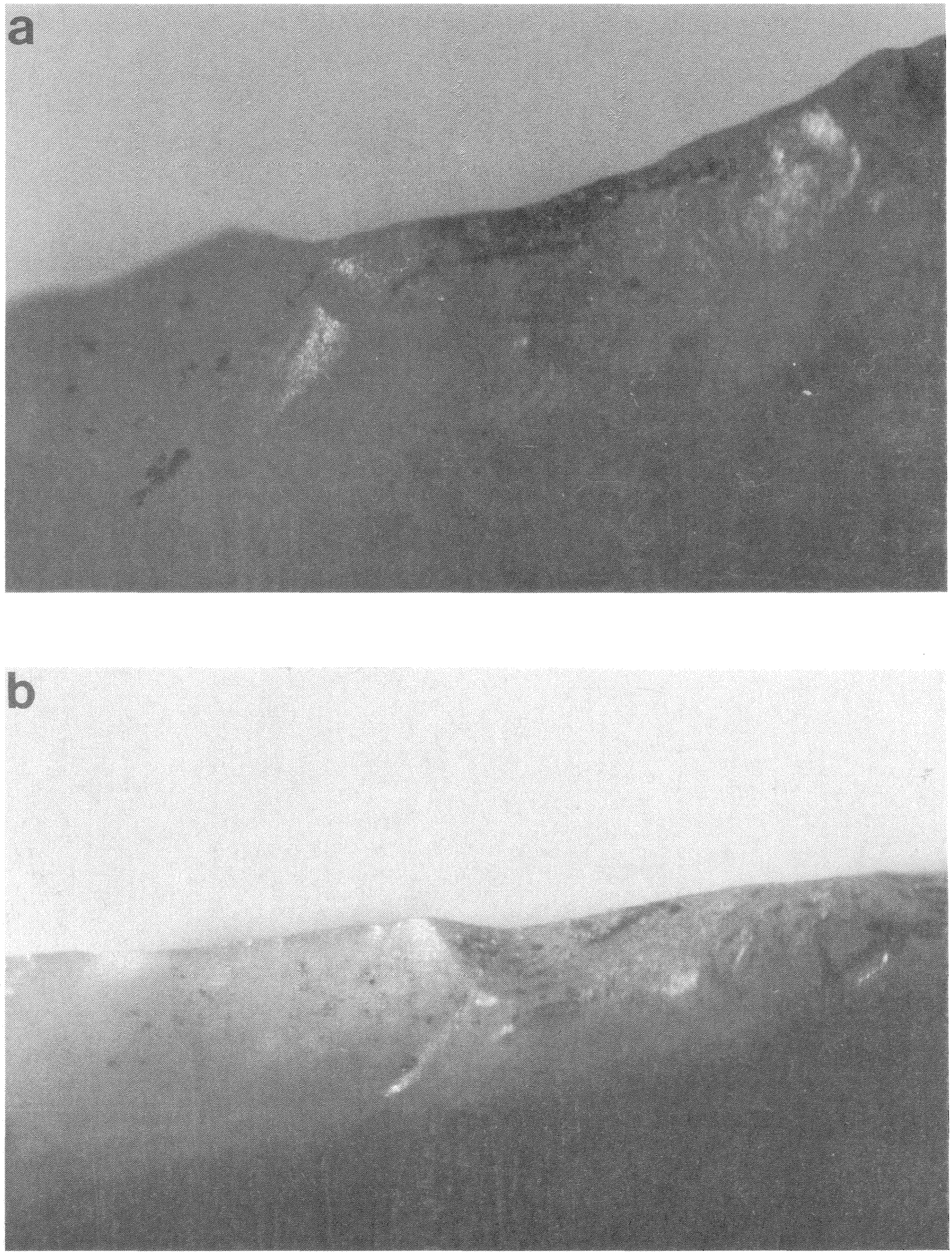

Fig. 28 - Piece 16. (a) Burin blow to resharpen/rejuvenate edge. Burin facet to the left; on the right scars and abrasion from cutting wood. 1,5x. (b) Same as above. 2,0x (photos by B. A. Voytek).

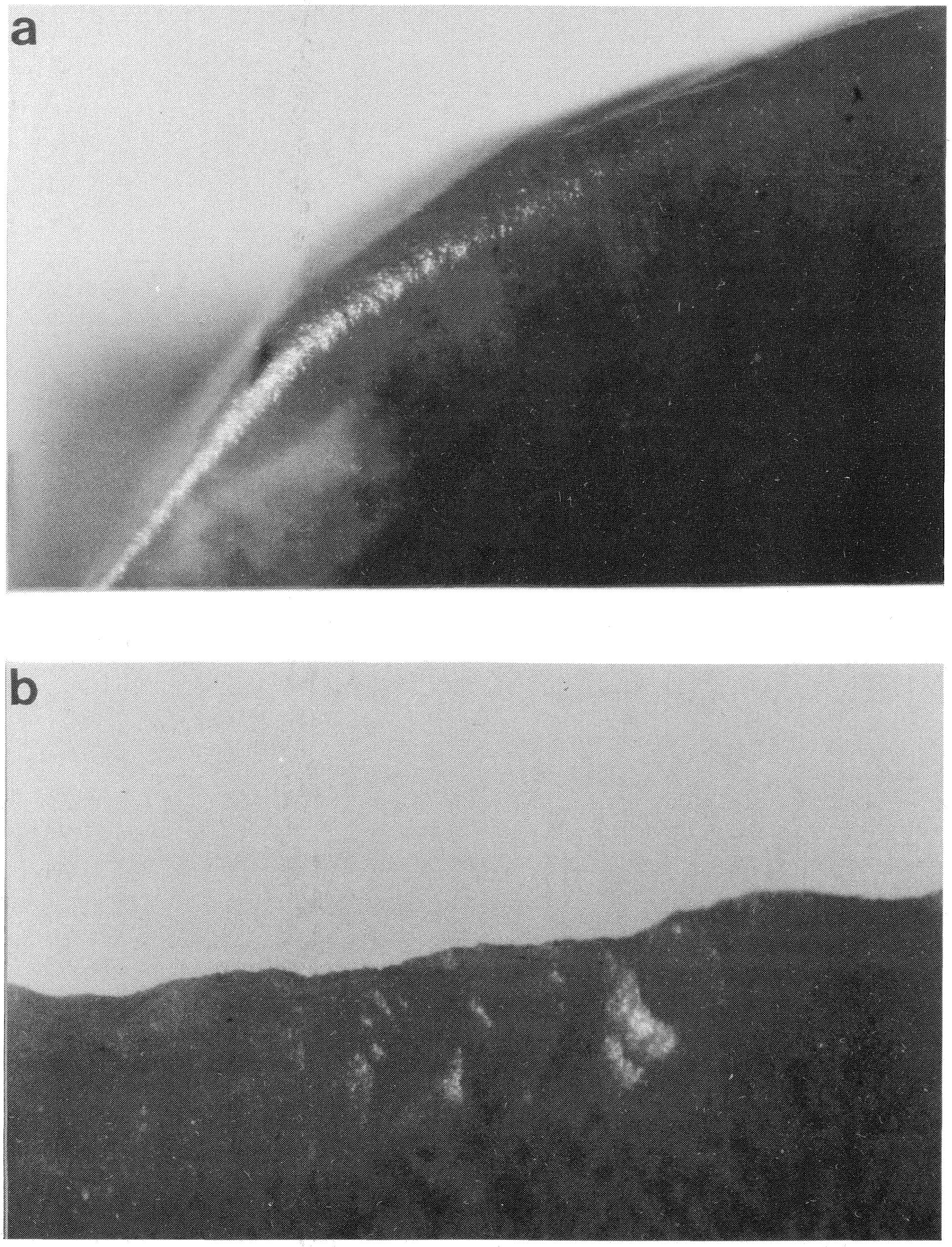

Fig. 29 - Piece 36. (a) Scrape wood. Abrasion on very edge of tool, view from ventral; on dorsal, can barely see smoothed, abraded flake scars from use. 1,5x. Piece 121. (b) Cut soft wood; ventral surface. Retouch had been used to thin and straighten edge or resharpen. 1,5x (photos by B. A. Voytek).

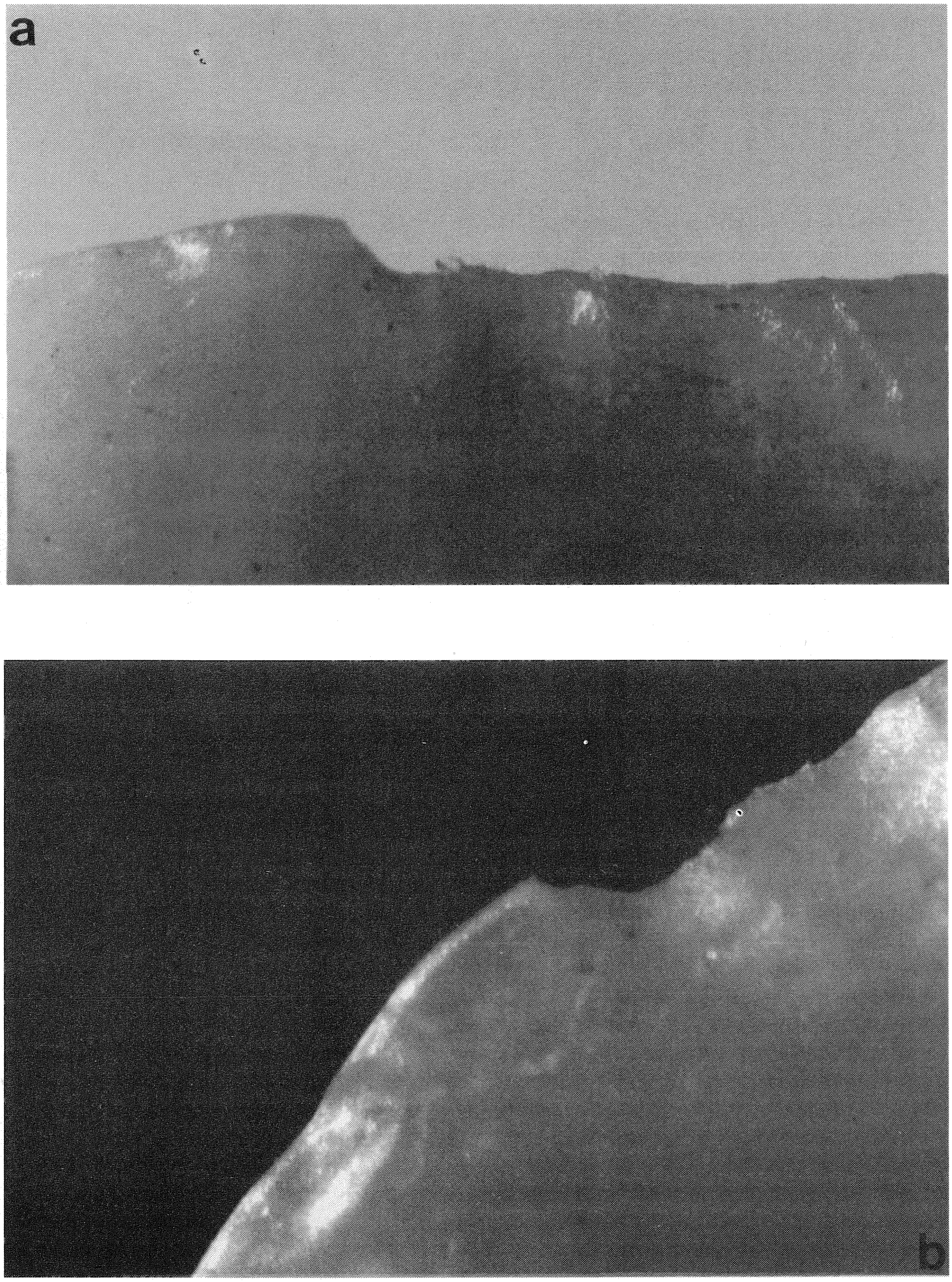

Fig. 30 - Piece 62. (a) Sickle which has been resharpened with simple retouch; retouched edge then used for cutting wood. 1,0x. (b) Same as above. Sickle which has been resharpened with retouch; reused as edge for cutting wood. 2,0x (photos by B. A. Voytek).

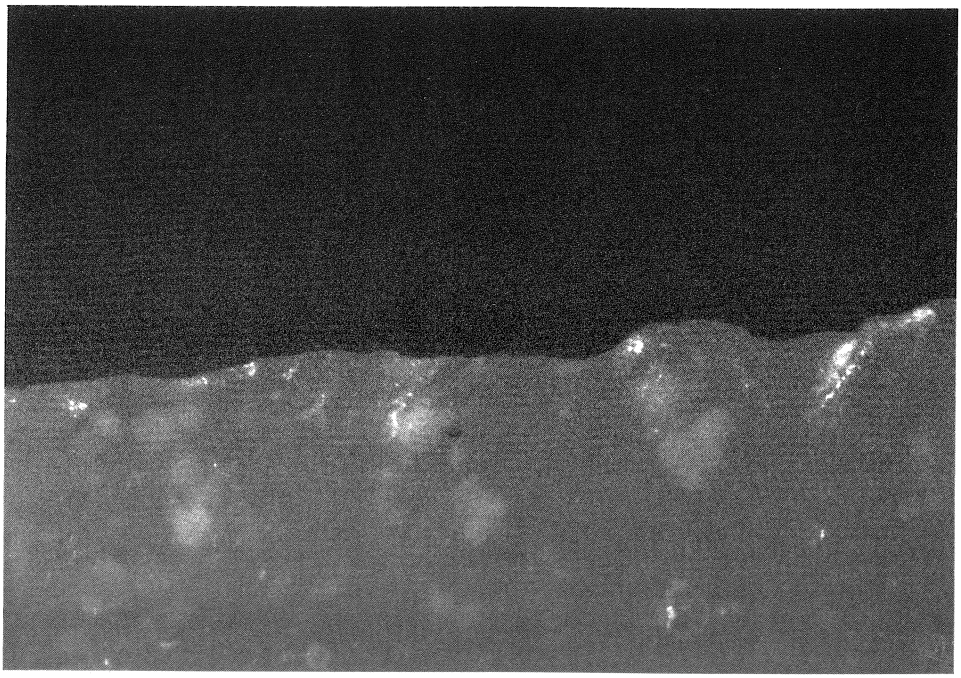

Fig. 31 - Piece 72. Edge used in cutting grass. Narrow band of polish. 1,5x (photo by B. A. Voytek).

Sickles and plant processing tools

The assemblage from Campo Ceresole provides a potential contribution to our knowledge of plant use during the Early Neolithic. Seven inserts were found with heavy or «thick» sickle gloss, extending onto the surfaces of the piece across an oblique area (57-59; 61-64; fig. 30). These pieces were considered «true» sickles that had been used for harvesting grain. They compared favourably with examples from, for example, neolithic sites in Southeast Europe (VOYTEK, 1985: 369). However, seven other inserts, although displaying gloss, had a different pattern (60, 65, 71, 72, 110, 111 and 214). Although well-defined, the gloss was less «thick» and shiny, being almost matt in appearence (fig. 31). In addition, it was less extensive on the surface of the pieces, running parallel in a narrow band along a single used edge. Often, it was found on one surface only.

Although all fourteen pieces appear to have been used on silica-containing grains or grasses, the mode of use had differed. There are several possible causes. The microwear experiments of UNGER-HAMILTON (1989) deal with several of these. For example, they showed that a long time is needed before a reasonably intense gloss develops on blades used to harvest cereals, and different polishes may thus be due to extent of use (UNGER-HAMILTON, 1989: 91). This fact could be the main reason for the variety in polish intensity noted at Campo Ceresole. However, differences in distribution and width of polish can ben due to factors such as the flexibility, structure, and width of the stems of diverse plant species or the sections cut. In her study area (Natufian and Pre-pottery assemblages of the Levant), UNGER-HAMILTON (1989: 96) found that polish width increased in time, possibly because of the watering and spacing of plants under cultivation which increased stem thickness. Other researchers have found that a narrow band of well-defined polish is often associated with cutting grasses (VAN GIJN, 1989: 40). This pattern seems most similar to that seen at Campo Ceresole.

Several other factors contributed to the width of the polish including position of pieces in the haft, number of strokes, width of the exposed part in the blade, the angle of the strokes, the number of stems blundled in the hand, and the edge angle of the blade. Furthermore, not surpresingly, it was found that slightly curved sickles tended to produce oblique patterns (UNGER-HAMILTON, 1989: 92). Needless to say, the small sample from Campo Ceresole allows one to apply these findings only with caution. However, on the basis of the excellent research by UNGER-HAMILTON (1989) and VAN GIJN (1989), it is safe to say that the variety noted in this assemblage reflects activities which involved the cutting of plants but not entirely as part of a cereal harvest. A spectrum of activities comes to mind and they are not all food-related (e.g., construction, basketry, obtaining fuel, fodder, etc.). Comparison of «sickles» from other neolithic sites in the Mediterranean would greatly help to expand this research. Similar variation within the sickle category was noted in the microwear analysis of the chipped stone assemblages from Arene Candide (STARNINI and VOYTEK, i.p.) and Suvero, in Liguria (VOYTEK, n.d.).

Geometrics

There are eight Geometrics in this assemblage (50-56 and 203). These tools had been used in a variety of ways, but not as armatures or projectile points. They had been hafted segments in tools employed as knives or scrapers on soft or medium resistant materials. The primary use of five inserts was cutting soft materials, while three had been used for scraping wood. It appears that the characteristics of the edge, rather than the overall shape of the piece, were the deciding factor for the function of these tools. In this respect, they contrast with Geometrics from other sites, for example, the Castelnovian mesolithic site of Laghetti del Crestoso. Microwear analysis of these Geometrics revealed that some had been used as armatures, while others had no wear traces (LEMORINI, n.d.: 4). The contrast between these two assemblages may be important in helping to confirm that apparent continuity of tool form does not necessarily mean continuity of function, and further, that although form does not occur independent of function, neither dictates the other (VAN GIJN, 1989: 144).

SUMMARY (B. A. V.)

The breakdown of action and worked materials represented by this assemblage is shown in Table III.

The overwhelming majority of the tools had been used for cutting (64.7% of total number of tools or 67% of total used edges, 221). This percentage is not unusual, compared with other neolithic assemblages (VOYTEK, 1985: 374; n. d.). However, the high percentage of tools used on wood contrasts with other studies. At Campo Ceresole, sixty-nine tools had been used on wood (eighty-six edges). Percentage wise, this means that over a third of the tools (37.5%) and used edges (38.9%) had been used on wood.

This percentage is comparable to Arene Candide (34.6%), but at Suvero, the percentage was only about 16%. Some neolithic sites in the Netherlands give a range of *ca.* 9 to 18% (VAN GIJN, 1989), which is comparable to the Southeast European neolithic sites (10-25%). An even higher percentage of wood-working has been noted within the epipalaeolithic assemblage of Arma dello Stefanin (over 50%; VOYTEK, i. p.) and the Copper Age/EBA assemblage of Uscio (over 40%; VOYTEK, 1990). Needless to say, these comparisons, to some degree, reflect environmental differences and similarities among the various sites. However, they also relate to activities - including the manufacture and maintenance of wooden weapons, tools, traps, construction, vessels and so forth - as well as the organization and application of lithic technologies.

Although some researchers have tried to relate evidence for wood-working with duration of settlement (VAN GIJN, 1989: 130), we would hesitate because of the number of variables to consider. One of these, of course, is the presence/absence of a ground-edge tool technology which would have complemented the chipped stone tool assemblage.

However, overall, it is fair to say that at Campo Ceresole, the prehistoric inhabitants had made good use of the resources available to them, especially plant resources. Interestingly enough, this does not appear to be the case regarding animal resources. That is, there is a relatively low percentage of tools within this assemblage (15%) with use wear from working medium resistant materials such as dried hides. This percentage is less than Arene Candide (*ca.* 20%), and the LBK sites mentioned earlier, in which hideworking provided the highest percentage of used tools (VAN GIJN, 1989). Again, several explanations can be evoked in the discussion of these comparisons. The microwear study of other assemblages from the Po Plain and Alpine regions would undoubtedly help support some of them.

It has recently been argued that the Alpine region had provided a diversified and rich environment which posed few challanges and little impetus for a subsistence system dependent on food production (CLARK, 1990; RIEDEL, 1990). The use of lithic resources, within the limitation of the Campo Ceresole assemblage, suggests this view as well. The emphasis on wood-working and the use of plant resources indicate that although perhaps not cultivated, these assets were the focus of much of the behaviour reflected by these tools.

Table I

	Pit XVIII			Pit XXXII		
		Burnt	Cortex		Burnt	Cortex
Flint Artefacts	985	564 (57,25%)	255 (25,88%)	93	14 (15,05%)	23 (24,73%)
Instruments	104	29 (29,88%)	34 (32,69%)	15	2 (13,33%)	3 (20,00%)
Unretouched artefacts with traces of wear	69	13 (18,84%)	20 (28,98%)	6	– –	4 (66,66%)
Unretouched artefacts	788	517 (65,60%)	191 (24,23%)	66	12 (18,18%)	14 (21,21%)
(complete)	(168)			(33)		
(broken)	(620)			(33)		
Cores	14	3 (21,42%)	10 (71,42%)	3	– –	2 (66,66%)
Microburins	8	2 (25,00%)	– –	3	– –	– –
Rejuvenations	2	– –	– –	–	– –	– –
Blade Index	95,2			64,7		

Table II

Typology	Instrument	Function	Hafting	Manufacture	Resharp.	Colour	Length	Width	Thickness	Condition	Cortex	Burnt	Feature	Number
B6 enc prox dext dir	Burin on a side notch		N	N	N		70	13	4	C	Y	Y	XVIII	1
B6 enc prox dext dir	Burin on a side notch	first CH, SH, second SM	N	N	Y	62F	22	10	3	F	N	N	XVIII	2
B6 enc prox sen dir	Burin on a side notch		N	N	N		42	10	5	F	Y	Y	XVIII	3
B6 enc prox sen dir/.Sma	Burin on a side notch	CH	N	N	N		49	10	3	F	N	Y	XVIII	4
B6 enc dist sen dir	Burin on a side notch	CSW	Y	N	Y	61E	42	15	4	F	N	N	XVIII	5
B6 enc prox sen inv	Burin on a side notch		N	Y	N	62E	41	11	4	F	Y	N	XVIII	6
B6 enc prox sen dir/-D1.Smi	Burin on a side notch	CW	Y	N	N	62C	30	10	4	F	N	N	XVIII	7
B6 enc dist dext inv	Burin on a side notch	SH	N	N	N	61E	68	11	4	C	Y	N	XVIII	8
B6 enc prox dext dir.B6 enc dist dext dir.B6 enc dist sen dir	Burin on a side notch	SH, SH	N	N	Y	90H	59	17	6	C	Y	N	XVIII	9
B6 enc prox dext dir-Spd.B7 enc dist sen dir-Smd	Burin on a side notch	CW, CH, SH for Burin	N	Y	Y		54	13	4	F	N	Y	XVIII	10
B6 enc prox sen dir	Burin on a side notch		N	N	N		32	13	3	F	N	Y	XVIII	11
B7 enc dist dext dir-D1	Burin on a side notch	CW	N	N	Y	62D	32	13	3	F	N	Y	XVIII	12
B6 [T2 obl]	Burin on Truncation	SSW, CSW	N	N	N	61F	40	20	4	C	Y	N	XVIII	13
B6 enc prox dext dir.B6 enc prox sen dir	Burin on a side notch	SH, SH	N	Y	N		44	12	6	F	N	Y	XVIII	14
B6 enc prox dext dir.B6 enc dist dext dir.B6 enc dist sen dir	Burin on a side notch	CH, CH	N	N	Y	81E	45	13	5	F	Y	N	XVIII	15
B6 enc med dext dir/.Smd	Burin on a side notch	CW	N	N	Y	62D	34	15	5	F	N	N	XVIII	16
B6 enc dist dext dir	Burin on a side notch	CSW	N	N	N	10E	41	13	3	C	Y	N	XVIII	17
B6 enc med dext dir.B6 enc med sen dir	Burin on a side notch	CW, CW	N	N	Y	10B	61	19	5	C	N	N	XVIII	18
B6 enc prox sen dir.B6 enc dist dext dir	Burin on a side notch		N	N	N		49	11	3	F	N	Y	XVIII	19
B6 enc prox dext dir.B7 enc prox sen dir-D1	Burin on a side notch	CW, SH	N	N	Y	61F	62	10	5	C	Y	N	XVIII	20
B6 enc prox sen inv	Burin on a side notch		N	N	N		28	12	3	F	N	Y	XVIII	21
B6 enc dist dext dir.B6 enc dist sen dir	Burin on a side notch	SH, SH	N	N	N	61D	26	14	6	F	Y	N	XVIII	22
B6 enc dist dext dir.B5 prox dext	Burin on a side notch	SH	N	N	N	62D	22	16	5	F	Y	N	XVIII	23
B7 enc prox dext dir-Sma	Burin on a side notch	C-SW	N	N	N	62D	24	16	6	F	Y	N	XVIII	24
B7 enc med dext dir-Smi	Burin on a side notch	SH, SH	Y?	N	N	54F	24	12	3	C	N	N	XVIII	25
B6 enc dist dext dir/.Spd	Burin on a side notch	CW	N	N	N		23	13	4	F	Y	Y	XVIII	26
B6 enc dist dext dir	Burin on a side notch		N	N	N		35	16	5	C	N	Y	XVIII	27

B6 enc prox dext dir.B6 enc prox sen dir	Burin on a side notch		N	N	N	90D	20	13	3	F	N	N	XVIII	28
G1	Endscraper	SW	Y?	N	N	90A	23	18	4	F	N	N	XVIII	29
T1 conv [Amd]	Truncation	CM	N	N	N	68E	23	10	2	C	Y	N	XVIII	30
T1 rect [Amd]	Truncation	SM	Y	N	N	90C	35	9	3	C	N	N	XVIII	31
T1 rect [Amd]/.Amd bil	Truncation	C-SW	Y	N	N	82F	28	12	3	C	N	N	XVIII	32
T2 rect [Apa]	Truncation	SM	Y?	N	N	62D	28	11	3	C	N	N	XVIII	33
T2 rect [Apd]/.Amm	Truncation	CH, CH	N	N	N	61D	25	13	4	C	N	N	XVIII	34
T2 conv [Apd]/.Mb	Truncation	SW	N	N	N	62D	21	11	3	C	Y	N	XVIII	35
T3 rect [Apd part]	Truncation	SW	Y	N	N	90F	36	16	4	C	N	N	XVIII	36
T3 rect [Api part]	Truncation	CS	Y	N	N	61F	32	12	3	F	N	N	XVIII	37
T3 rect [Apd pt]	Truncation	SH, CS	N	N	N	62C	20	13	3	F	Y	N	XVIII	38
Bc2 [Spd + Spbil]	Borer	BH	Y	N	N	63E	45	13	5	C	Y	Y	XVIII	39
Bc2 [Apd + Apd]	Borer	BMS	N	N	N	63F	29	11	3	C	N	N	XVIII	40
Bc2 [Apd + Api]	Borer	WW	N	N	N	90F	30	10	3	F	Y	N	XVIII	41
Bc2 [Apd + Apd]	Borer	BW	Y	N	N	63F	33	11	2	C	N	N	XVIII	42
Bc2 [Apd + Apd]	Borer	BW	N	N	N	62E	20	9	3	C	N	N	XVIII	43
Bc2 [Apd + Api]	Borer	BW	Y	N	N		27	10	3	C	N	Y	XVIII	44
Bc2 [Apd + Apd]	Borer	BH	Y	N	N	63E	20	8	3	F	N	Y	XVIII	45
Bc2 [Apd + Apd]	Borer	BSW	N	N	N	90E	17	10	2	F	N	N	XVIII	46
Bc2 [Apd + Apd]	Borer	BW	Y	N	N	61B	17	10	2	F	N	N	XVIII	47
Bc2 [Apd + Api]	Borer		N	N	N		20	10	2	F	N	Y	XVIII	48
Bc2 [Amd + Ami]	Borer	CW	Y	N	N	90E	56	10	4	C	N	N	XVIII	49
Gm5 [T3 rect dir + T3 rect inv]	Scalene Trapeze	CS, SM	N	N	N	61E	28	12	2	C	N	N	XVIII	50
Gm8 [T3 rect dir + T3 rect dir]	Rhomboid	SSW	N	N	N	62D	24	11	2	F	N	N	XVIII	51
Gm7 [T2 rect dir + T3 rect dir]	Rectangular Trapeze	CS	Y	N	N		20	11	3	F	N	Y	XVIII	52
Gm8 [T3 rect dir + T3 rect dir]	Rhomboid	CS	Y	N	N	62C	19	12	2	C	N	N	XVIII	53
Gm8 [T3 rect dir + T3 conc dir] /.D1 inv	Rhomboid	CS	Y?	N	N	62E	26	15	3	C	N	N	XVIII	54
Gm8 [T3 rect dir + T3 rect dir]	Rhomboid	SW	Y	N	N		28	16	3	F	N	Y	XVIII	55
Gm7 [T2 rect dir + T3 rect dir]	Rectangular Trapeze	SSW	Y?	N	Y		23	13	2	F	N	Y	XVIII	56
L0	Blade	S	N	N	N	10C	16	10	2	F	N	N	XVIII	57
L0	Blade	S	N	N	N	54C	16	15	3	F	N	N	XVIII	58
L0	Blade	S	Y	N	N		18	13	3	F	N	Y	XVIII	59
L0	Blade	CG	Y	N	N	61E	28	19	3	F	N	N	XVIII	60
L0	Blade	S	Y	N	N	61D	31	13	3	F	N	N	XVIII	61
L1 [Smm sen]	Retouched blade	first S, second CW	Y	N	Y	90B	27	13	5	F	Y	N	XVIII	62
L0	Blade	S	Y	N	N	90F	40	10	3	F	N	N	XVIII	63
L1 [Smm dext]	Retouched blade	first CW, second S	Y	N	N	61H	41	14	5	C	Y	N	XVIII	64
L0	Blade	CG?	N	N	N	42C	28	13	3	F	N	N	XVIII	65
L0	Blade	CS	Y	N	N	90B	32	8	3	C	N	N	XVIII	66
L0	Blade	CS	Y	N	N	90D	37	11	2	F	N	N	XVIII	67
L0	Blade	CS	Y	N	N	90B	25	10	2	F	N	N	XVIII	68

Typology	Instrument	Function	Hafting	Manufacture	Resharp.	Colour	Length	Width	Thickness	Condition	Cortex	Burnt	Feature	Number
L0	Blade	CS	Y	N	N	90E	26	11	4	F	N	N	XVIII	69
L0	Blade	CS	Y	N	N	90C	17	10	3	F	N	N	XVIII	70
L0	Blade	CG	Y	N	N	90E	15	11	2	F	N	N	XVIII	71
L0	Blade	CG	Y	N	N	61D	17	11	2	F	N	N	XVIII	72
L0	Blade	CM	Y	N	N		24	10	3	F	Y	Y	XVIII	73
L0	Blade	CM	Y	N	N	61E	20	10	2	F	N	N	XVIII	74
L0	Blade	CW	Y	N	N	56E	21	10	2	C	N	N	XVIII	75
L0	Blade	SW	Y	N	N	61D	28	14	4	F	Y	N	XVIII	76
L0	Blade	SSW	Y	N	N	90B	17	14	3	F	N	N	XVIII	77
L0	Blade	CS, CS	N	N	N	90E	50	11	2	F	N	N	XVIII	78
L0	Blade	CS, CS	N	N	N	90D	51	12	3	F	N	N	XVIII	79
L0	Blade	CS, CS	N	N	N	46C	36	9	2	F	N	N	XVIII	80
L0	Blade	CS, CS	N	N	N	61D	25	12	3	F	N	N	XVIII	81
L0	Blade	CS	N	N	N	90E	47	12	3	F	N	N	XVIII	82
L0	Blade	CS	N	N	N	10C	43	13	4	F	N	N	XVIII	83
L0	Blade	CS	N	N	N	90C	38	10	2	F	N	N	XVIII	84
L0	Blade	CS	N	N	N	90E	40	13	3	F	N	N	XVIII	85
L0	Blade	CS	N	N	N	74E	37	9	2	C	N	Y	XVIII	86
L0	Blade	CSW	N	N	N		32	11	2	F	N	Y	XVIII	87
L0	Blade	CS	N	N	N	54F	18	10	2	F	N	N	XVIII	88
L0	Blade	CS	N	N	N	90E	30	9	3	F	N	N	XVIII	89
L0	Blade	CS	N	N	N	90D	24	12	2	F	Y	N	XVIII	90
L0	Blade	CM, CM	N	N	N	90D	41	9	2	C	N	N	XVIII	91
L0	Blade	CM, CM	N	N	N	10D	26	11	2	F	N	N	XVIII	92
L0	Blade	CM, CM	N	N	N	48D	27	11	3	F	N	N	XVIII	93
L0	Blade	CM	N	N	N	90B	25	13	4	F	N	N	XVIII	94
L0	Blade	CM	N	N	N		22	12	2	F	N	Y	XVIII	95
L0	Blade	CM	N	N	N	72D	18	8	2	F	N	N	XVIII	96
L0	Blade	CS	N	N	N	90C	23	11	3	F	N	N	XVIII	97
L0	Blade	CS	N	N	N	90C	22	8	2	F	N	N	XVIII	98
L0	Blade	CH	N	N	N	90F	19	13	3	F	Y	N	XVIII	99
L0	Blade	CH	N	N	N		29	13	5	F	Y	Y	XVIII	100
L0	Blade	CW, CW	Y	N	N		34	9	3	F	N	Y	XVIII	101
L0	Blade	CW	N	N	N	90C	32	10	2	C	Y	N	XVIII	102
L0	Blade	CW	N	N	N	62D	29	14	6	F	Y	N	XVIII	103
L0	Blade	CW	N	N	N		16	11	3	F	Y	Y	XVIII	104
L0	Blade	CM	N	N	N	90D	16	11	2	F	N	N	XVIII	105
L0	Blade	SM	N	N	N	90D	16	11	2	F	N	N	XVIII	106
L0	Blade	CW	N	N	N		18	10	4	F	Y	Y	XVIII	107
L0	Blade	CSW, CSW	N	N	N	90C	24	12	2	F	N	N	XVIII	108

L0	Blade	CSW	N	N	N	90C	28	12	2	F	Y	N	XVIII	109
L0	Blade	CG	N	N	N		17	12	2	F	N	Y	XVIII	110
L0	Blade	CG	N	N	N		20	16	2	F	N	Y	XVIII	111
L0	Blade	SS	N	N	N	90B	26	18	5	F	N	N	XVIII	112
L0	Blade	SS	N	N	N	90B	46	16	7	F	N	N	XVIII	113
L0	Blade	SM	N	N	N	61C	28	14	3	F	Y	N	XVIII	114
L0	Blade	SW	N	N	N		35	12	4	F	Y	Y	XVIII	115
L0	Blade	SSW	N	N	N	62D	32	13	2	F	N	N	XVIII	116
L0	Blade	SW	N	N	N		20	19	5	F	N	Y	XVIII	117
L0	Blade	SW	N	N	N	90C	17	11	2	F	N	N	XVIII	118
L0	Blade	SW	Y?	N	N	90C	22	19	2	F	N	N	XVIII	119
L0	Blade	SSW	N	N	N	61D	22	15	6	F	Y	N	XVIII	120
L0	Blade	CSW	N	N	N	61F	47	16	4	C	Y	N	XVIII	121
L0	Blade	CW, CH	Y	N	N	82F	51	18	4	C	Y	N	XVIII	122
L0	Blade	WW	N	N	N	90C	37	13	5	F	Y	N	XVIII	123
L1 [Smd dist bil]	Retouched blade		N	N	N	41D	43	7	4	C	N	N	XVIII	124
L1 [Smd dext]	Retouched blade	CS	N	N	N	61D	41	13	3	C	N	N	XVIII	125
L1 [Smd dext]	Retouched blade	CM	N	N	N	61D	45	12	2	F	Y	Y	XVIII	126
L1 [Smd dext]	Retouched blade	CMS	Y	N	N	62D	36	8	2	F	Y	N	XVIII	127
L1 [Smd dext]	Retouched blade	SM	N	N	N	90E	24	10	4	F	Y	N	XVIII	128
L1 [Smd prox dext]	Retouched blade		Y	N	N	90D	25	10	2	F	N	N	XVIII	129
L1 [Smd dext]	Retouched blade	SM	N	N	N	74E	18	13	4	F	Y	N	XVIII	130
L1 [Smd dist dext]	Retouched blade	CS	Y	N	N	90C	40	13	4	F	N	N	XVIII	131
L1 [Smd sen]	Retouched blade	SS	N	N	N	72D	36	10	2	F	N	N	XVIII	132
L1 [Smd sen]	Retouched blade	CW	N	N	Y	90F	43	12	2	F	N	N	XVIII	133
L1 [Smd sen]	Retouched blade	SS	N	N	N	90E	35	14	3	F	N	N	XVIII	134
L1 [Smd sen]	Retouched blade		N	N	N	61E	42	14	2	F	N	N	XVIII	135
L1 [Smd sen]	Retouched blade	CS	Y	N	N	62D	26	9	3	F	Y	N	XVIII	136
L1 [Smd sen]	Retouched blade	SH	N	N	N	54F	33	17	5	C	Y	N	XVIII	137
L1 [Sma]	Retouched blade	CHW	Y?	N	N	64E	37	11	3	C	N	N	XVIII	138
L1 [Smi dist sen]	Retouched blade	CS	Y	N	N	90C	32	10	3	F	N	N	XVIII	139
L1 [Smm sen]	Retouched blade	CHW	Y	N	N	61C	27	12	3	F	N	N	XVIII	140
L1 [Smd sen]	Retouched blade	CW	N	N	N		24	15	4	F	Y	Y	XVIII	141
L1 [Smd bil]	Retouched blade	CSW	Y	N	N	90B	22	12	3	F	N	N	XVIII	142
L1 [Smd sen]	Retouched blade	CHW	N	N	N	81E	17	16	4	F	N	N	XVIII	143
L1 [Smd sen]	Retouched blade	SW	N	N	N		17	13	3	F	N	Y	XVIII	144
L1 [Sma]	Retouched blade	CH, CH	Y	N	N	61E	31	7	3	F	N	N	XVIII	145
L1 [Smm bil]	Retouched blade	CW, CW	Y	N	N	90C	28	8	3	C	N	N	XVIII	146
L1 [Sma]	Retouched blade	CW	Y	N	N	62C	29	7	2	C	N	N	XVIII	147
L1 [Sma]	Retouched blade		N	N	N		46	11	3	F	Y	Y	XVIII	148
L1 [Smd dext]	Retouched blade	CW	Y	N	N	61E	32	10	3	F	N	N	XVIII	149
L1 [Smd sen]	Retouched blade	CS	N	N	N		19	6	2	F	N	Y	XVIII	150
L1 [Smd prox sen]	Retouched blade	CW	Y	N	N	62F	43	11	2	F	N	N	XVIII	151

Typology	Instrument	Function	Hafting	Manufacture	Resharp.	Colour	Length	Width	Thickness	Condition	Cortex	Burnt	Feature	Number
L1 [Smd dist dext]	Retouched blade	CM	N	N	N		57	19	6	C	N	Y	XVIII	152
L1 [Smd part bil]	Retouched blade	WW	Y?	N	N	54F	44	14	5	C	Y	N	XVIII	153
L1 [Smd part bil]	Retouched blade	CM	Y	N	N		45	10	3	F	N	Y	XVIII	154
L1 [Smd part bil]	Retouched blade	CS	Y	N	N	54F	31	13	3	F	Y	N	XVIII	155
L1 [Smd part bil]	Retouched blade	CH, CH	Y	N	N		39	11	3	F	N	Y	XVIII	156
L1 [Smd bil]	Retouched blade	CM	Y	N	N	62J	27	8	2	F	N	N	XVIII	157
L1 [Smd med bil]	Retouched blade	CS	Y	N	N	61E	32	9	2	F	N	N	XVIII	158
D1 prox sen [Spb]	Notched blade	SH	N	N	N	42F	20	13	3	F	Y	N	XVIII	159
D1 prox sen [Spd]	Notched blade	CW, CW	N	N	Y	61C	30	19	3	F	N	N	XVIII	160
D2 [Amd]	Denticulated scraper	CHW, CHW	N	N	N	61F	40	11	2	F	N	N	XVIII	161
D2 [Smd bil]	Denticulated scraper	SH, SH	N	N	N	64F	37	15	3	C	Y	N	XVIII	162
D2 [Smd bil]	Denticulated scraper	CW, CW	N	N	N	62D	22	12	2	F	N	N	XVIII	163
D2 [Sma]	Denticulated scraper		N	N	N		22	13	3	F	N	Y	XVIII	164
D2 [Amm]	Denticulated scraper	CH, CH	Y	N	N	90B	35	13	3	F	N	N	XVIII	165
D2 [Smm]	Denticulated scraper	CHW, CHW	Y	N	N	41J	45	12	3	F	Y	N	XVIII	166
D2 [Smi dext]	Denticulated scraper	CHW	N	N	N		65	21	11	C	Y	Y	XVIII	167
D2 [Smb bil]	Tanged blade		N	N	N		34	11	3	F	N	Y	XVIII	168
D2 [Smb bil]	Denticulated scraper	CH, CH	Y	N	N	61E	35	21	9	C	N	N	XVIII	169
E0	Flake	SSW	N	N	N	90A	29	31	7	C	Y	N	XVIII	170
E0	Flake	SM	N	N	N	61C	27	20	3	F	Y	N	XVIII	171
E0	Flake	SM	N	N	N	90C	19	28	4	C	Y	N	XVIII	172
E0	Flake	WSW	N	N	N	61D	22	26	6	C	Y	N	XVIII	173
I class 3	Subconical core		N	N	N	90E	50	40	26	C	Y	N	XVIII	174
I class 3	Subconical core		N	N	N	56E	36	33	20	C	N	N	XVIII	175
I class 3	Subconical core		N	N	N	61D	31	31	28	C	Y	N	XVIII	176
I class 3	Subconical core		N	N	N	54F	41	29	29	C	N	N	XVIII	177
I class 3	Subconical core		N	N	N	90F-72B	31	39	37	C	Y	N	XVIII	178
I class 1	Subconical core		N	N	N	90D	48	35	30	C	Y	N	XVIII	179
I class 1	Subconical core		N	N	N	90F	38	38	40	C	Y	N	XVIII	180
I class 1	Subconical core		N	N	N		38	30	24	C	Y	Y	XVIII	181
I class 3	Subconical core		N	N	N		39	36	40	C	N	Y	XVIII	182
I class 1	Subconical core		N	N	N	62D	44	39	18	C	Y	N	XVIII	183
I class 1	Subconical core		N	N	N		40	32	26	F	Y	Y	XVIII	184
I class 1	Subconical core		N	N	N	10H	50	28	22	C	Y	N	XVIII	185
I class 3	Subconical core		N	N	N	90D-63C	33	34	31	C	Y	N	XVIII	186
I class 1	Subconical core		N	N	N	54F	26	31	24	C	N	N	XVIII	187
Rj	Rejuvenation blade	CH, CH, SH, SH	N	N	N	62D	56	11	8	C	N	N	XVIII	188
Rj	Rejuvenation flake	SS	N	N	N	61D	49	38	13	C	N	N	XVIII	189
Mb dist	Microburin	SW, CW	N	N	Y	72D	46	14	4	C	N	N	XVIII	190
Mb dist	Microburin		N	N	N		24	13	3	F	N	Y	XVIII	191

Mb dist	Microburin		N	N	N	61D	31	16	3	C	N	N	XVIII	192
Mb dist	Microburin		N	N	N	62C	26	11	2	C	N	N	XVIII	193
Mb dist	Microburin		N	N	N	10F	21	8	3	C	N	N	XVIII	194
Mb dist	Microburin		N	N	N	61E	17	11	2	C	N	N	XVIII	195
Mb dist	Microburin		N	N	N		16	11	3	F	N	Y	XVIII	196
Mb dist	Microburin		N	N	N	61D	12	5	2	C	N	N	XVIII	197
B6 enc dist sen dir	Burin on a side notch	C-SH, CM	N	N	Y		35	10	5	F	N	Y	XXXII	198
Bc2 prox [Apd + Api]	Borer	BH	Y	N	N	90C	63	15	7	C	N	N	XXXII	199
T1 obl [Smd]	Truncation	WMS	Y	N	N	90E	41	13	3	C	N	N	XXXII	200
T3 rect [Apd pt]	Truncation	CS	N	N	N	90E	22	13	3	F	N	N	XXXII	201
T1 conv [Amd]/-Smd sen	Truncation	SM	Y	N	N	61C	24	15	2	F	N	N	XXXII	202
Gm7 [T2 rect dir + T2 rect dir pt]	Rectangular Trapeze	CS	N	N	N	90D	23	16	2	C	N	N	XXXII	203
B6 [Spd]	Burin on retouch	SH	N	N	Y	54F	21	30	8	C	N	N	XXXII	204
L1 [Smd.Smm]	Retouched blade	CW	N	N	N	90E	16	12	3	F	N	N	XXXII	205
L0	Blade	CS	Y	N	N	90D	32	16	3	F	Y	N	XXXII	206
L0	Blade	CH	N	N	N	62C	30	11	5	C	N	N	XXXII	207
L0	Blade	CS	N	N	N	90E	49	8	3	C	Y	N	XXXII	208
L0	Blade	CM	N	N	N	61E	47	13	5	F	Y	N	XXXII	209
L1 [Smd bil]	Retouched blade	CW, CW	N	N	N		39	10	3	F	N	Y	XXXII	210
L1 [Smm sen]	Retouched blade	CHW	N	N	N	90F	36	12	4	F	N	N	XXXII	211
L1 [Smm dext]	Retouched blade	CW	Y?	N	N	41D	68	18	4	C	Y	N	XXXII	212
L1 [Smd sen]	Retouched blade	SM	N	N	N	90B-54F	22	12	3	F	Y	N	XXXII	213
E0	Flake	CG, SM	N	N	N	90D	38	34	6	C	N	N	XXXII	214
E0	Flake	CM	N	N	N	90D	29	24	4	F	Y	N	XXXII	215
R2 lat [Spi sen]	Side scraper	CH	N	N	N	90D	42	28	10	C	Y	N	XXXII	216
R1 lat [Smd dext]	Side scraper	SW	N	N	N	90C	25	24	4	C	N	N	XXXII	217
R1 lat [Smd part sen]	Side scraper	CW	Y	N	N	CW	25	19	6	C	N	N	XXXII	218
Mb prox	Microburin		N	N	N	54F	12	9	4	C	N	N	XXXII	219
Mb dist	Microburin		N	N	N	61C	20	15	3	F	N	N	XXXII	220
Mb dist	Microburin		N	N	N	90E	32	14	3	C	N	N	XXXII	221
I class 1	Subconical core		N	N	N	81D	39	43	41	C	Y	N	XXXII	222
I class 3	Subconical core		N	N	N	61D	44	38	28	C	N	N	XXXII	223
V class 13	Oval core	P	N	N	N	90D	59	50	31	C	Y	N	XXXII	224

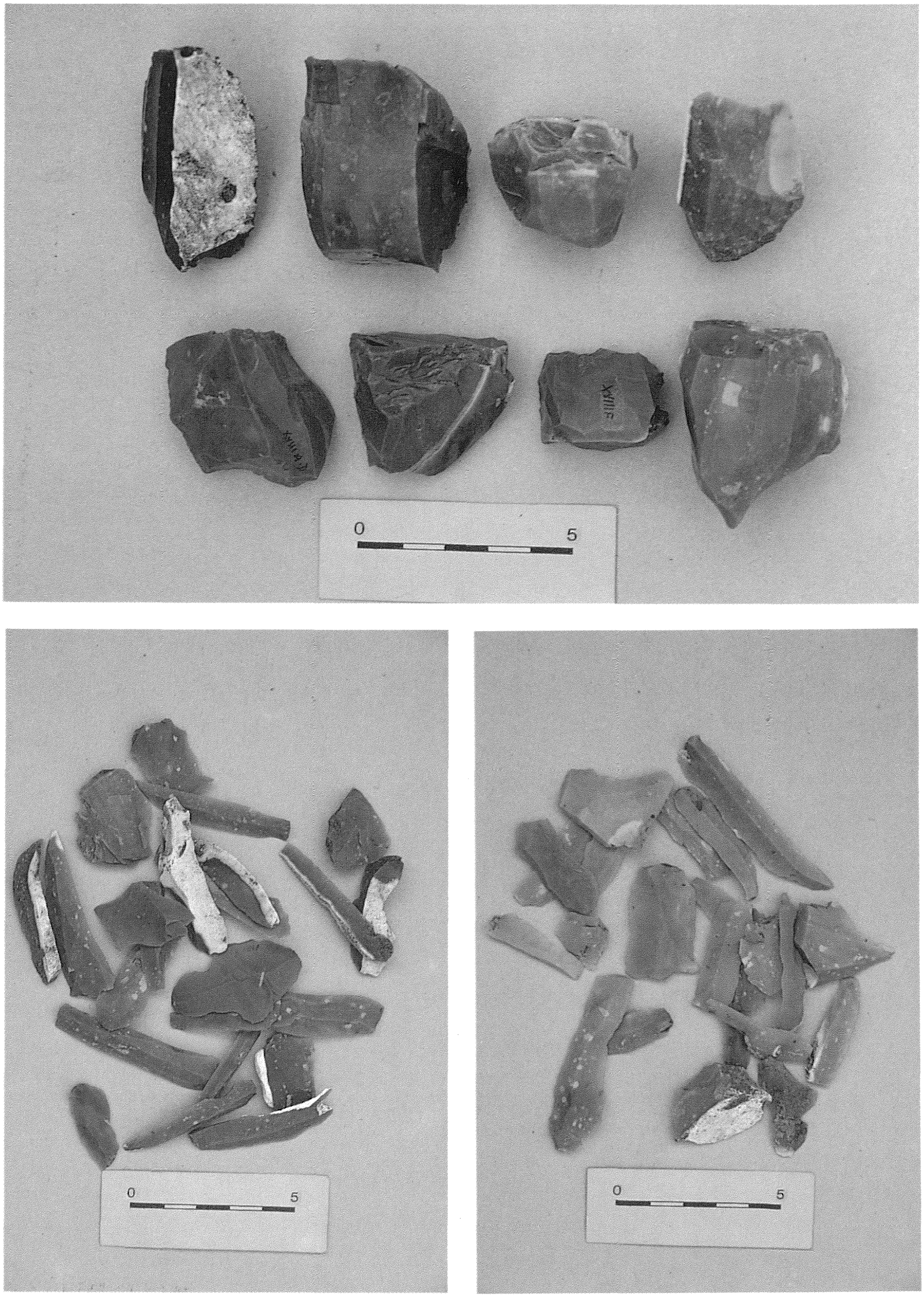

Plate I - Campo Ceresole, Pit XVIII. Cores (above) and main flint colours (below) (photos by P. Biagi).

Table III

	cut	scrape	bore	work	totals	
wood	25 (11)	11 (1)	4 (–)	5 (1)	45 (13)	58
soft	34 (5)	5 (–)	–	–	39 (5)	44
hard	14 (5)	13 (5)	3 (–)	1 (–)	31 (10)	41
medium	16 (4)	10 (3)	–	–	26 (7)	33
swood	8 (2)	7 (–)	1 (–)	1 (–)	17 (2)	19
hwood	7 (2)	–	–	–	7 (2)	9
grain	7 (–)	–	–	–	7 (–)	7
grass	7 (–)	–	–	–	7 (–)	7
msoft	1 (–)	–	1 (–)	1 (–)	3 (–)	3
totals	119 (29)	46 (9)	9 (–)	8 (1)	182 (39)	221

plus one pounder and one tool which had only hafting scars = 184
( ) = secondary use (opposite edge or second, new use)

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APPENDIX 1

Flint colours according to CAILLEUX and TAYLOR (n. d.).

Colours		Number per Pit XVIII	Number per Pit XXXII
A 90	White	2	—
B 10	Light grey	1	—
B 61	Very pale yellow	1	—
B 90	Very light grey	9	—
C 10	Light grey	2	—
C 42	Light reddish brown	1	—
C 46	Yellowish red	1	—
C 54	Very pale brown	1	—
C 61	Pale brown	4	2
C 62	Very pale brown	5	1
C 90	Light grey	15	2
D 10	Grey	1	—
D 41	Brown	1	2
D 48	Reddish yellow	1	—
D 61	Light brownish grey	14	1
D 62	Brown	14	—
D 72	Yellowish brown	3	—
D 81	Light brownish grey	—	1
D 90	Grey	9	6
E 10	Grey	1	—
E 56	Strong brown	2	—
E 61	Dark greyish brown	11	1
E 62	Greyish brown	3	—
E 63	Yellowish brown	2	—
E 64	Yellowish brown	1	—
E 68	Strong brown	1	—
E 74	Light olive brown	2	—
E 81	Greyish brown	2	—
E 90	Grey	11	5
F 10	Dark grey	1	—
F 42	Reddish brown	1	—
F 54	Dark brown	7	2
F 61	Dark greyish brown	5	—
F 62	Greyish brown	2	—
F 63	Dark yellowish brown	2	—
F 64	Dark yellowish brown	1	—
F 82	Olive	2	—
F 90	Dark grey	6	1
H 10	Dark grey	1	—
H 61	Dark brown	1	—
H 90	Very dark grey	1	—
J 41	Very dark greyish brown	1	—
J 62	Dark brown	1	—
B 90-F 54	Very light grey-Dark brown	—	1
D 90-C 63	Grey-Very pale brown	1	—
F 90-B 72	Dark grey-Pale yellow	1	—

APPENDIX 2

Abbreviations used in figs. 10-26.

CS	Cut soft
CM	Cut medium
CH	Cut hard
CW	Cut wood
CSW	Cut soft wood
CHW	Cut hard wood
CG	Cut grass
SS	Scrape soft
SM	Scrape medium
SH	Scrape hard
SW	Scrape wood
SSW	Scrape soft wood
C-SH	Cut-Scrape hard
C-SW	Cut-Scrape wood
BH	Boring hard
BW	Boring wood
BMS	Boring medium soft
BSW	Boring soft wood
WW	Work wood
WSW	Work soft wood
WMS	Work medium soft
S	Sickle
P	Pounding/Hammering
H	Haft
AH	Alternative Haft
r	Resharpening
m	Manufacture
A	Abrasion
D	Damage
ND	New Damage

Fratelli Geroldi - Brescia, 1992