The "Clactonian" of Le Havre and its bearing on the English Clactonian

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with Pl. VII–VIII

Abstract

The long-accepted Le Havre Clactonian is questioned on chronostratigraphic, technologic, and typologic grounds. A new interpretation is advanced envisaging the "Clactonian" of the Stations sous-Marines at Le Havre, northwestern France, as preparatory areas where Acheulean people acquired raw material and produced blanks. It is suggested to view the "Clactonian" occurrences in England in the same manner. Namely, these latter are also merely representations of preparatory areas of Acheulean flintknappers.

Introduction

The Palaeolithic sites called Stations sous-Marines are scattered along the beaches of Le Havre in a general northward direction from the modern port (fig. 1). The Collection of stone artifacts and bones from these beaches has been going on since 1883, the most remarkable result of which was the recognition of an Acheulean site by Romain (1914). This site came to be known later as Station Romain (fig. 1), now all covered by beach constructions. Most of the material from this site was destroyed in a bombardment of Le Havre during World War II; only a few specimens were saved, but some have been described and illustrated before in the literature. Following heavy storms in 1928 and 1929, a dozen underwater find spots (stations) were uncovered, and numerous artifacts have since been collected at low tide periods from the shore[1]. In addition, collection has been done by mechanical scraping of underwater holows, mostly by Duteurtre (1930, 1942), Cayeux and Guyader (1957), and others.

Following Breuil's description and definition of the Clactonian (especially Breuil, 1932, but see also his former references there on p. 126, footnote 1), the large, thick, bulb-protruding flakes collected from the stations were definitely ascribed to the Clactonian (e. g., Duteurtre, 1930, 1932, 1933, 1936, 1942; Breuil, 1932; Cayeux, 1963; Cayeux and Guyader, 1957), the very same Clactonian as at Clacton-on-sea and Swanscombe in England, and clearly of a different nature from the material of Station Romain. This renowned "Le Havre Clactonian" was recently questioned by one of us (Lechevalier, 1972, 1974) who doubted the connection to the Clactonian and suggested the stations as some kind of frontline areas visited by Acheulean people on the then-exposed shores.

According to this latter suggestion, the stations were utilized for the primary flaking of large flakes by the very same Acheuleans who were inhabiting camps like Station Romain a little further inland at the feet of the cliffs. The Acheuleans would apparently go from their habitations to the nearby beaches where blocks of flint

[1] One of us (M. O.) is most grateful to Gerard Breton, Director of the Muséum d'Histoire Naturelle of Le Havre, who took the trouble to guide him very early in the morning to Le Becquet, where they strolled among the blocks in the slippery mud and even picked up several artifacts.

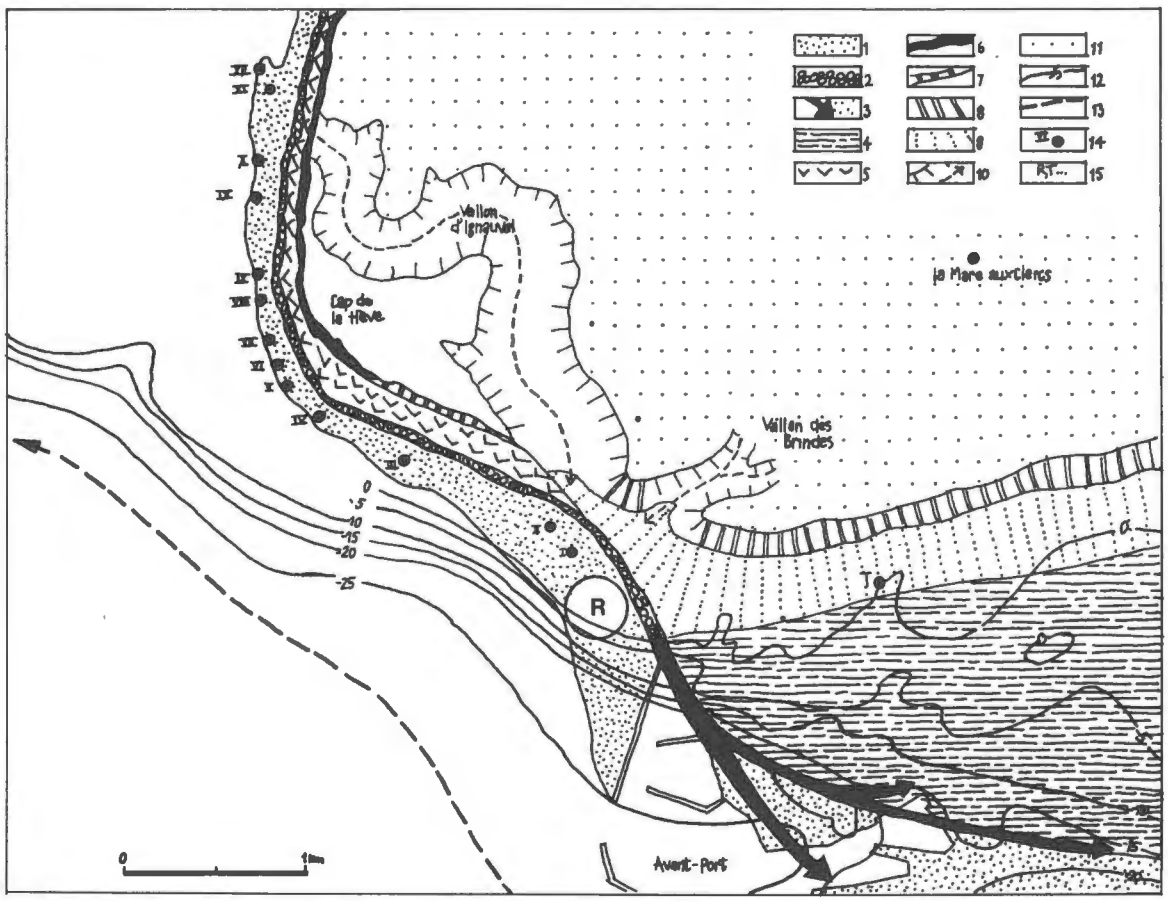

Fig. 1. Le Havre littoral, Station Romain, and the Stations sous-Marines: the morphological context. 1 to 7: Recent littoral forms: 1. beach sands; 2. littoral cordon (pebbles); 3. littoral arrows (pebbles) and sand accumulations; 4. marine swamps; 5. bluff feet (breached clayey sands); 6. abrupt chalks (Cenomanian); 7. shrunk slope (by man); 8. talus derived from an ancient dead bluff; 9. weatherd limestone slope; 10. dry valleys; 11. Plateau de Caux. 12. sealevel curves from top of the substratum (sea curves: after Guyader); 13. ancient talweg of the Seine; 14. location of the Clactonian stations (numbers of Duteurtre and Cayeux); 15. R: Station Romain; T: Place Thiers site; La Mare aux Clercs: old brickyards. (Adopted from Lechevalier 1974: Fig. 3.)

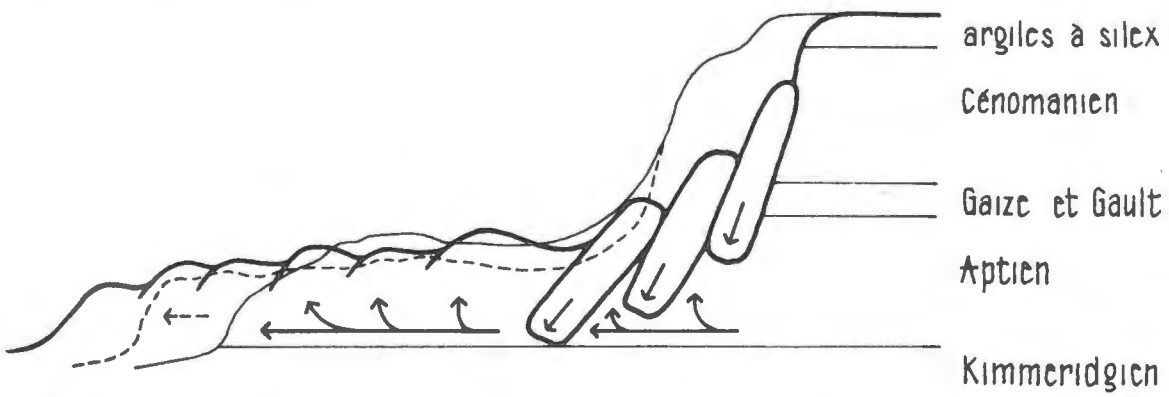

Fig. 2. Mechanism of bluff collapsing at Le Havre littoral. Thin line: before collapsing; broken line: phase 1, sliding of the bluff feet; thick line: phase 2, collapsing. (Adopted from Lechevalier 1975: fig. 75.1.)

were plentiful, as a result of the weathering of the flint-bearing layers of the cliff (for the process of alteration and weathering at Le Havre littoral, see fig. 2). Presumably, the men would not have carried the heavy flint blocks back to their habitations. They had apparently used other flint rocks as anvils, as well as hard sandstones resting on the bedrock of the beach, to strike off large blanks (moderate-sized and smaller ones also occur), which they would then carry back for further modification and shaping into handaxes and various typical Acheulean flake tools.

Fortunately, those blanks that were left behind at the stations became stuck and locked among the large blocks and stones and fastened, later, to their original, or almost original proveniences by the muddy sand matrix. That they are presumably *in situ,* or only very slightly moved, may perhaps also be inferred from the thick seaweed coating the large sandstones among which the flakes are trapped. These coated sandstones are known to have constantly endured the most rigorous coastal storms at Le Havre for the last fifty years. Contrary to these steady blocks, the movable material is amassed in wide, thick, lengthy piles of rolled, smooth pebbles further up on the littoral talus clearly beyond the boundary of the large blocks' areas (see fig. 1). In addition, most of the raw material of the blanks from the preliminary work spots (the Station sous-Marines) and of the finished products (flake tools and handaxes) from Station Romain is identical: a black-brownish flint with a thin greyish cortex — a unique color that can be easily recognized (usually not patinated).

Within the framework of a wide-scale study of the Clactonian in England and its relationship to the Acheulean, one of us (Ohel, 1977a) had the privilege of exploring the lithic material from the Stations sous-Marines at the Museum d'Histoire Naturelle du Havre (MHN) and Guyader's collection (CG) at the Section Géologique du Port Autonome du Havre. Given the results of this study and the ensuing interpretations of the Clactonian (Ohel, 1977b), the recent reappraisal of the "Le Havre Clactonian" seems to acquire greater importance, perhaps even to the extent of a paradigm for reshaping the views–as traditionally held–about the phenomenon called Clactonian of England as well (see also Ohel, 1978). The present paper will attempt to substantiate this line of interpretation by discussing first the current state of data evaluation from Le Havre, then the bearing of such an evaluation on the problem of the Clactonian in England.

Reappraisal of old data and some Complementary Observations (C. L.)

The Acheulean Site

According to the first observations of Romain (1893), later confirmed by Babeau (1906), artifacts and bones were exposed among benches of "gravels" (flint and Kimmeridgian calcareous fragments) outcroping underneath sand veneers of the Le Havre strand, in the proximity of a "vast deposit of yellow clay or the plains' lĭmon.". With the aim to establish the nature of the deposits at the precise spot of the Le Havre Palaeolithic site (later called Station Romain), Romain attempted to reach a determination about the stratigraphy. Since it was "impossible to gain an exact cross section" he replaced it by "the succession of several deposits" (Romain 1894, 1914), assimilating the flint benches with the "superficial terrain." Obliged, under such conditions, to define the stratigraphic position of the discovered objects, it is not much of a wonder that Romain could hardly be decisive on this point (fig. 3).

The artifactual assemblage collected was reported to have consisted of some 600 pieces (see figures in Romain 1893, 1894, 1914; Babeau 1906), on 420 of which Romain (1906) furnished an account. He noted 40% of bifaces (handaxes) of diverse forms, the other specimens mentioned comprising choppers, side scrapers, blades, points, borers, and end scrapers. The flakes, "large and thick", and the waste chips were not accounted for although their association with the tools was stated as obvious. The bulk of this assemblage, the great majority of which was made of black-greyish Cenomanian flint, generally displayed artifacts of large dimensions, a few cores weighing up to 15 kg. Some rare pieces were made on pebbles.

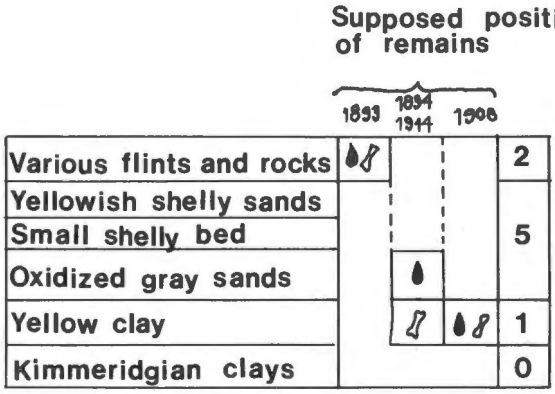

Fig. 3. Romain's cross section (The column on the right suggests the correlation of layers to a later section of Station Romain: see figure 4.) (After Lechevalier 1974: fig. 2:1.)

The interpretation advanced rested upon well-accepted criteria at the time: the bifaces were assigned to the Chellean or Acheulean (according to their degree of perfection) while the unifacial tools were ascribed to the Mousterian. Yet, there was no explanation to the fact that these very same periods were represented within the limons of the de Caux plain by artifacts of the very same type except that the latter were more "delicate".

Faunal remains were recovered as well, often embedded in the "yellow clay". These were rather hardened in contrast with the bones observed at the plateau's brickyards. Most of the specimens were identified as those of probosciadians: molars, ribs, cranial fragments, and a nearly complete pelvis of *Elephas primigenius* (see photograph in Romain 1914), and molars belonging to *E. antiquus*. Other animals represented were the doe, *Bos* or *Bison*, a large form of stag, and the horse. More precise diagnoses do not seem to have been established.

The Clactonian Stations

A dozen of small sites, within a range of 4 km north of Station Romain and up to Cap de la Heve (see fig. 1) were discovered by Duteurtre between 1929 and 1932, and studied by him until 1950. Complementary research was conducted by Cayeux to the point when these station became covered with sand by 1960.

As at Station Romain, the lithics here too were exposed on the intertidal portion of the beach. However, the artifacts in this case were found admidst large, highly heterogeneous, coarse flint stones, pebbles, and blocks of Kimmeridgian limestone. The artifacts differed from those of Station Romain in their size, and bifaces (hand-axes) occurred among them only exceptionally. All knapped objects were claimed to have been systematically procured, lending – as a whole assemblage – the overall appearance of a distinctive flake industry. For want of finely shaped tools, the most marked characteristics attributed to this assemblage were large dimension and the crude aspect of flaking (wide inclined striking platforms, pronounced bulbs, protruding cones, etc.).

Based upon these technical criteria, Abbé Breuil assigned the lithic assemblage from the stations to the Clactonian: an industrial complex defined by its crude knapping technique (supposedly the anvil technique) and by the absence of bifaces. This view, incidentally, was not shared by A. de Mortillet who stated on examining the collections that all these artifacts were "the same as those from Station Romain". Duteurtre confirmed indirectly the latter view by disclosing that Romain had in fact found such large flakes as those of the stations also on the beach of Le Havre (the Acheulean site), but those had not been kept. Breuil's opinion prevailed, meaning that the stations of Sainte Adresse (Stations sous-Marines) continued to be considered as equivalents to Clacton and Swanscombe in England.

Typologically, this latter interpretation led to a distinction of a number of series (Duteurtre 1932, 1933): the Clactonian series of large-sized flakes crudely knapped and only slightly modified, and a more reduced flake series, less crude, sometimes accompanied by bifaces, and attributed to the Mousterian and the Acheulean, or else to the Chellean and the Levalloisian. The identifications rested more, then, upon the appreciation of techniques than on a typological analysis.

Stratigraphically, and despite the absence of conclusive observations, Station Romain gained a state of reference. The cross section, the ambiguity of which has already been pointed to above (see fig. 3), was consequently reinterpreted as generally corresponding to the stratigraphic section as established for the English sites. Duteurtre (1936) forwarded the view that while the large flakes coming from Le Havre beach belonged to a Clactonian level, the Acheulean ones resulting from the "limon" belonged to a level overlying the former (Clactonian). According to Duteurtre, this stratigraphy, obliquely destroyed by the sea, could be explained by the distribution of the industries in three parallel bands of the shore. He did not affirm, however, the chronological signification. In contrast, Cayeux (1963), who has used, but through systematization, quite a number of ideas of his predecessor, provided a rich figuration of the assemblages. Yet, he too masked the uncertainties under a voluntarily produced synthesis.

As a result of this analysis it seems that the interpretations advanced in the past with regard to the assemblages recovered from the littoral merit a renewed discussion, to say the least. In addition, the stratigraphic correlation of the different deposits mentioned above remains to be established.

Examination of the Collections

As far as I am aware, no more than about forty lithic specimens from the "Palaeolithic site of Le Havre beach" (Station Romain) still exist (at the Musée de l'Homme and at the Laboratoire de Préhistoire de Bordeaux; to these should be added a few pieces as yet not accounted for in the collection of Duteurtre and Cayeux at the MHN). These consist essentially of bifaces (limands, ovals and cordiforms) and of some crude blades, side scrapers and flakes (two of which present an inclined striking platform). The specimens do not bear signs of congelation but their main ridges are frequently slightly abraded. All show a fine lustre with the exception of a few more or less deeply covered by a creamy olivegreen patina. The latter character, as well as the presence of several rolled specimens, do not seem to obey to any particular typological distribution.

This series should be added to some thirty pieces illustrated in various publications so as to form together an assemblage of high homogeneity although it is clear that bifaces are over represented in the assemblage. These characteristics lend sufficiently assuring ground for attributing the assemblage to the Middle Acheulean. With the exception of the inidentified long bones, the sole faunal remnant now known is the tooth of a horse, *Equus caballus,* either of the *germanicus* variety (Würm) or *piveteaueī* (Riss).

As for the artifacts extracted from the Clactonian stations of St. Adresse beach, their bulk is preserved in the Duteurtre and Cayeux Collections (MHN). The physical condition of these artifacts is the same as that of the artifacts from Station Romain, although the thick patina is more represented, especially for those procured from Cap de la Hève.

The examination of the collections from the stations (Stations sous-Marines) does not bring forth the necessity to regard them as a distinct industry. The previous interpretation that did ascribe these collections to the Clactonian rests on an incorrect definition of the Clactonian. If defined by its knapping technique the Clactonian does not seem to signify any specific nature since "Clactonian" flakes are rather frequent throughout a number of Neolithic sites of Pays de Caux.

Prior to any evaluation of any profound typological study, the following three points seem to be necessary of underscoring:

(a) Bifaces (handaxes) are not absent, though rare, and they seem to reflect the earliear stages of modification (studies of F. Bordes). Those specimens described under the term amandes (almond-shaped) are indeed for the most part partial bifaces. The large so-called pointes à main and pointes trièdres must not necessarily be considered finished tools, but rather blanks and preforms in the preparation of bifaces.

(b) The proportion of shaped tools is very low. Overall the assemblage is composed of a profusion of large unmodified flakes struck off big cores, and of numerous percussion waste (crusts and broken pieces).

(c) It is true that the large-sized objects dominate, but not exclusively. There exist also flakes of moderate and small dimensions. In any case, even if the smaller specimens do show an "evolved" form, this is to be simply attributed to their stage in the technological elaboration process; they thus do not bear any chronological significance.

This character of the assemblage cannot support, on typological grounds, the existence of a Clactonian industry. What it represents in my view is the débitage of an early Palaeolithic technology. These stations served as the knapping places of flints contained in the large blocks of Cenomanian chalk weathered off the cliff (see fig. 2). This explains the limited aspect and the unequal amplitude of the known sites, as well as their geographic distribution along the talus. There remains to determine the industrial complex to which these stations should be attached. The proximity of Station Romain suggests Middle Acheulean. A stratigraphic and morphologic study of this sector of the littoral permits, however, to place the stations in a preciser context which helps in reinforcing the above interpretation.

Morphostratigraphic Observations

A transversal cross section of the littoral at the location of Station Romain rendered some information about the residual nature of the formations as already observed earlier upon the beach (fig. 4:A). The mostly undisturbed stratigraphy (fig. 4:B) seemed to appear at the base of a yellow clay (1), the analysis of which revealed a

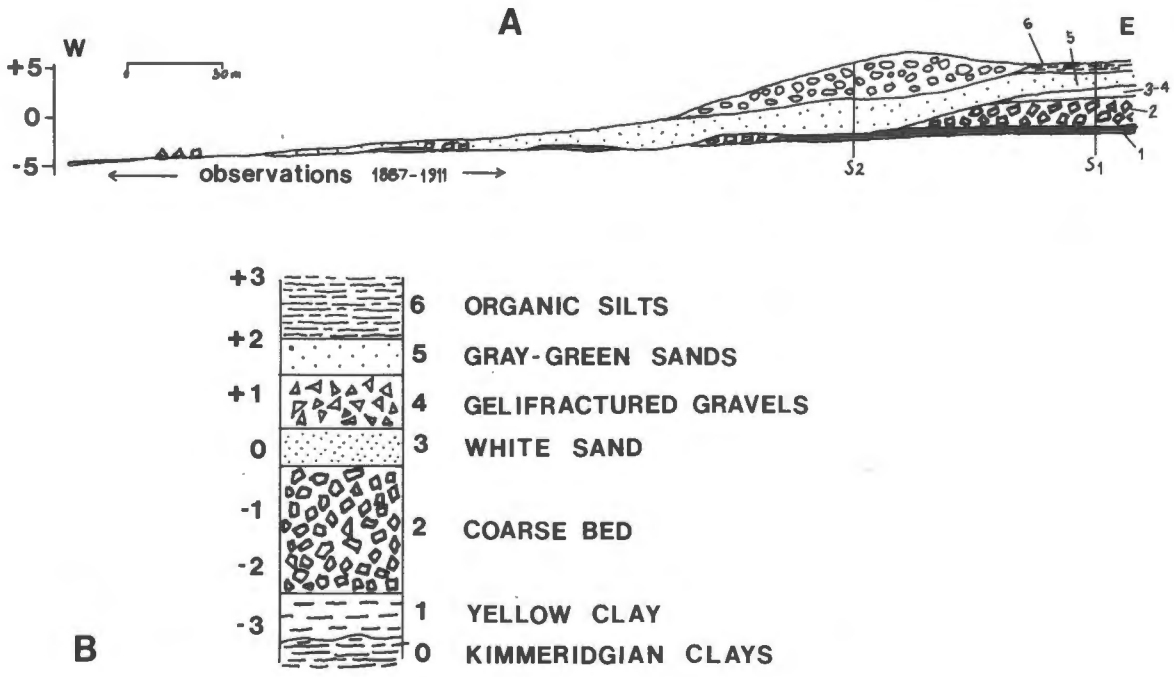

Fig. 4. Stratigraphy of Station Romain: A. Transversal; B. Vertical. (After Lechevalier 1974: Fig. 1 and Fig. 2:2).

chemical alteration at the top of the Kimmeridgian clays without modifying the structure. It is therefore neither an eolian limon nor a lehm as previously implicitely suggested. Above the yellow clay had developed a coarse layer (2) formed of angular or blunted flints and of marine pebbles within a gravely sand matrix.

The lower part contains shell fragments, some microfauna (beach-marine), and – in spite of the limited depth aquired in the sounding – several very small flakes and splinters of worked flint. Toward the top the pebbles disappear and the eolian effects become apparent (eolized sand and microfauna in reused, whitening condition).

The middle part of the cutting is characterized by fine shell sand (3) underlain by frost-fractured gravel (4). The upper layers consist of gray to gray-green sands of variable thickness (5) and of organic silts (6). It is of importance to emphasize that the above sequence is not of a restricted character but, on the contrary, it matches a series of other closeby observations, which facilitates the interpretation.

As regard the two layers of the cutting recognized in the estuary (Guyader 1968, Lefebre *et al.* 1974), the sequence described constitutes of a single upper layer, the surface of which is inclined toward the river, and generally stretching from +2 to −15 a.s.l. (see fig. 1). Still lower, beyond the elevation of a steep slope it develops the incutting forms of a Würmian valley between −30 and −40 a.s.l. This upper layer runs at the feet of a weathered, moderate slope situated in front of the talus that forms the northern border of the estuary, and is derived from an ancient dead bluff. It is in this zone that the described sequence is best preserved (Lechevalier 1972). Conversely, in the southern direction, the sequence is strongly truncated and is recovered through the Holocene eastuarine deposits.

Toward the west, the sediments between the coast and the bluff have cut in obliquely ancient forms and formations. The lower part of the sequence exists now merely in a discontinued fashion along the littoral as far as the Vale of Ignauval. Beyond that point no trace could be recognized except in the tidal zone (Guyader 1952). There is therefore no chance to be able to establish a stratigraphy at the very spots of the "Clactonian" stations (apart from Nos. I, II and III: see fig. 1, where one can discern with precision the alteration of the substratum and the traces of the coarse layer).

According to the results now obtained for Le Havre region as a whole (Lechevalier, in preparation), the following interpretation may be advanced:

6, 5: Fluvio-marine formations of Holocene times (final Atlantic and Postatlantic);

4: Soliflucted gravels from the beginning of Würm (revealed by the cover of eolian limons);

3: Part of a silty-sand littoral series bound to a marine layer of approximately +10 a.s.l., probably of Riss-Würm age;

2: Bed resulting from weak remnants of a littoral formation, probably dating to Mindel-Riss (or Riss I/II), and representing a marine layer above +2 a.s.l.;

1: In-place alteration of an ancient pedogenesis.

It is worthy of mentioning that worked flints are of sufficient abundance in bed 2 to frequently attest to those previously procured from small cuttings, and to those meanwhile aquired from the first excavation into this bed, recently attempted (Place Thiers: see fig. 1).

Some Inferences

The juxtaposition of the prehistoric and morphostratigraphic data allows the clarification of a number of important points:

(a) Artifacts and fauna of Le Havre beach site (Station Romain) originate from the coarse bed 2, dismantled upon the shore. The objects collected from the yellow clay are of a derived state. The remaining formations do not have any direct relationship with the industry.

(b) These remains are from a phase posterior to a maximum sea level and in fact contemporaneous to the initiatory phase of the regression. They are attributed to the Middle Acheulean. However, the conditions as

represented by bed 2 do not permit a determination as to whether the objects correspond to one or more periods of occupation.

(c) Bed 2 represents a major morphostratigraphic element, and the traces are sufficiently conclusive to allow the inference that the lithic knapping areas belong to this bed. Even if it is as yet difficult to conclude decisively that these knapping areas are contemporaneous with the occupation site of Station Romain, this assumption is nevertheless perfectly compatible with the stratigraphy.

(d) Considering the palaeoenvironmental setting of Station Romain, it seems obvious that the Cenomenian flint so amply utilized by its inhabitans (especially for the large specimens) could not have been obtained on the spot, which implies the necessity of a distinct supply source.

These givens seem to me sufficient for submitting the idea that a contemporaneity is manifested between the knapping sites and the Acheulean habitations.

As a result of the evidence presented here and the hypothesis advanced, it becomes feasible to formulate a new reasonable interpretation of the remains collected during three-quarters of the present century.

The prehistoric sites of the beaches of Le Havre and St. Adresse are the results of Middle Acheulean settlements on the terrace border. The flints were searched for among the weathered blocks from the ancient bluff, at a distance of several hundred meters from the habitations; undoubtedly close to these latter since the distribution of the blocks proved to have been quite uniform. The primary knapping was performed on the spot.

Those habitations corresponding to the knapping areas that were situated beyond the Vale of Ignauval are unknown to us due to them being submerged now by the sea. On the other hand, there is the likelihood that the knapping areas which were the sources of supply for Station Romain are buried under the feet of the erosed surface northeast of the St. Vincent quarter. In any case, these stations, considered in the past Clactonian, represent merely a knapping stage.

Human occupation in this zone was stretched along seven kilometers, and it is as well confirmed by locatities on the plateau (the brickyard of Mare aux Cleres). They are likely to have belonged in the outset of Riss I.

The interpretation here forwarded is not immune to criticism, to be sure, being as it is for the time being based upon arguments of inequal weight. However, in the absence of proper excavations – such are bound to encounter, unfortunately, numerous technical obstacles: digging in the heart of an urban milieu, moving earth, and manouvering among walls – this interpretation provides an explanation in coherence with the prehistoric observations as they are fitted in a palaeotopographic framework.

Comparison of the lithic assemblages from the Stations sous-Marines and those from Clactonian and Acheulean sites in England (M. O.)

Great quantities of flint blocks and flakes from the Stations sous-Marines are mostly located now at the MHN. These are scattered among many drawers, as yet not fully separated to the different stations. Numerous other artifacts belong to some private collections, especially that of CG (pl. VII). I measured a sample of 160 flakes from MHN and 109 flakes from CG – a total of 269 flakes. Among the relatively small number of recognizable cores encountered in the above two locations – particularly from Les Regates – some possible handaxe blockouts could be detected (pl. VIII: A, note in first row second item, and the one in bottom-center under the large flake; pl. VIII: B, first row third item, and second row second item, and an extremely rolled, but obvious handaxe in pl. VIII: B second row third item; see also Bourdier's [1969] assumption that the artifacts from Le Havre and Sainte-Adresse represent Abbevillian or Early Acheulean complexes).

The overall visual impression gained from Le Havre's flake component was that, although it contains various sizes of flakes, it also includes such huge ones that are almost absent from Clactonian assemblages in England. This detail of dissimilarity seems to be readily explainable, however. The large flakes from the stations were mostly produced by using the block-on-block, or anvil technique (see above), whereas the flakes from the Clac-

tonian assemblages in England were mainly struck off by manual hammerstones (Ohel, 1978). Otherwise, a majority of the moderate and smaller size flakes from Le Havre are broadly similar to what are traditionally called Clactonian flakes from England (see pl. VII and fig. 5). In fact, the flakes from Le Havre generally adhere more truly to the traditional characterizations of the Clactonian flake than anything found in England. As we have already suggested, separately, neither should the artifacts from the Stations sous-Marines be relegated to the Clactonian (Lechevalier, 1972, 1974, and see above), nor can so-called Clactonian flakes from England serve as criterion for determining whatever distinct industrial complex through time or space (Ohel, 1977b, 1978).

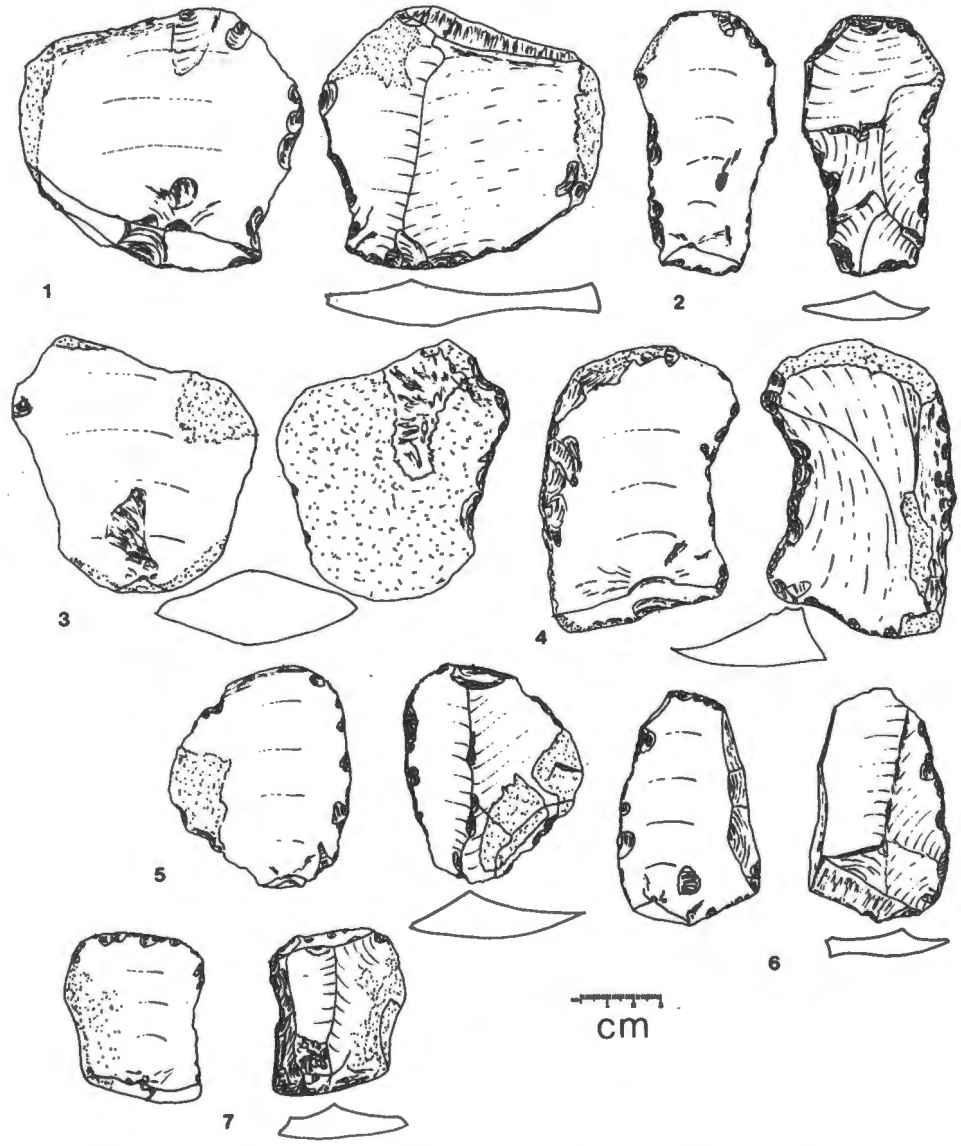

Fig. 5. Examples of "Clactonian" flakes from the Stations sous-Marines.

Turning now to the actual measurements carried out on the flake sample (269) from the stations, their results are compared here to those from nine Clactonian (1,555 flakes) and 14 Acheulean units (2,344 flakes) from

England. The set of measurements comprised the following 12 formal (or numeric) variables: weight (W), length (L), breadth (B), breadth to length ratio (B/L), thickness (T), butt thickness (BTT), thickness of striking platform (TSP), width of striking platform (WID), bulb length (BL), bulb thickness (BT), flaking angle (FLANG), and inclination angle (INC). Explanations and justifications for these measurements, as well as descriptions of the techniques for their practical application cannot be outlined in the present paper; the reader must refer to Ohel (1977a). It will also be impossible to present here the detailed data, calculations and computations that were involved in recording and statistical analyses (which may be available from M.O. by special arrangement). Therefore, the results will be expressed here in summary form only, so as to enable reasonably easy comparisons and inferences.

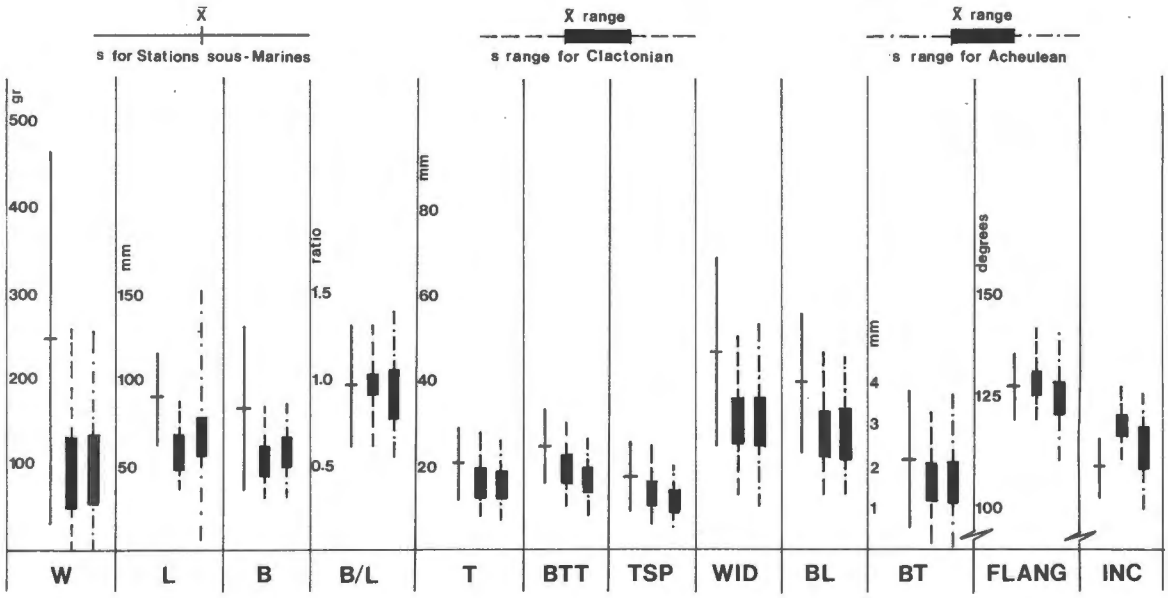

Fig. 6. Plotted means ($\bar{X}$) and standard deviations (s) for the flake sample from the Stations sous-Marines against the mean and standard deviation ranges for the combined Clactonian and combined Acheulean samples from England. (For the meaning of the abbreviations, see text.)

Figure 6 plots the means and standard deviations (one standard deviation on each side of the mean) of the measured flake attributes from the Stations sous-Marines sample against the ranges of means and standard deviations of the same attributes from the combined sample of the English Clactonian on the one hand and the combined sample of the English Acheulean on the other hand. The combined Clactonian sample includes the following individual sample units:

Clacton-on-Sea:	Lion Point, Collections
	Jaywick Sands, 1934 Excavation
	Golf Course, Gravel, 1969–70 Excavation
	Golf Course, Marl, 1969–70 Excavation
Swanscombe:	Barnfield, Lower Gravel, Collections
	Barnfield, Lower Gravel, 1912 Excavation
	Barnfield, Lower Gravel, 1968–72 Excavation
	Rickson, Lower Gravel, 1934 Excavation
	Little Thurrock, 1954 Excavation

The combined Acheulean sample includes the following individual sample units:

Whitlingham, 1925 Excavation
Elveden, 1938 Excavation
Hoxne: Moir's Collection
Lower Industry, 1971–74 Excavation
Upper Industry, 1971–74 Excavation
Bed 6, 1971–74 Excavation

High Lodge, Collections

Warren Hill, Collections

Round Green, Worthington Smith's "Palaeolithic Floor"

Furze Platt, Collections

Swanscombe: Barnfield, Middle Gravel, 1912 Excavation
Barnfield, Upper Middle Gravel, 1955–60 Excavation

Bowman's Lodge, Tester's Collection

Cuxton, 1962–63 Excavation

The most remarkable feature manifested in figure 6 is of course the entire overlap between the Clactonian and Acheulean from England as far as formal attributes of flakes are concerned. Not one of the Clactonian mean ranges falls outside any Acheulean standard deviation range, and *vice versa*. Moreso, in all twelve variables even the mean ranges themselves overlap to a greater or lesser degree. This manifestation will be discussed in detail elsewhere; in summarized, verbal form, the conclusions reached on the basis of these and other results, as related to the problem of the Clactonian in England and its relationship with the Acheulean, have already been stated (Ohel, 1977b). For our purpose here, it should suffice to say that the measured flake attributes do not surrender any clue for a distinction between Clactonian and Acheulean industrial complexes. There is no significant evidence whatsoever in separating the Clactonian from the Acheulean by the physical and technological features of their flakes, as is traditionally accepted. This by itself considerably supports the recent suggestions concerning the relationship between the Stations sous-Marines and Station Romain.

Now, to our central point in the present discussion. What figure 6 also shows us is, that in no one of the twelve measured flake variables either the Clactonian or the Acheulean mean ranges fall outside one standard deviation of the Stations sous-Marines' means. This means, on the one hand, that on grounds of the twelve formal flake attributes no clearout distinction can be established between either the Clactonian or Acheulean and the Stations sous-Marines assemblages. On the other hand, however, some tendencies seem to be apparent when examining specifically the precise place occupied by the stations' means in several flake attributes. In seven of those the stations' means – albeit within one standard deviation from the Clactonian and Acheulean means – are always marked by somewhat higher values (see fig. 6: L, T, BTT, TSP, WID, BL, and BT). Moreover, in two other attributes (W and B), the stations' means are placed parallel to the uppermost reaches of the Clactonian and Acheulean standard deviation ranges.

Plotting the minimum-maximum and mode ranges of measured flakes for the 12 formal attributes may perhaps add some strength to this argument. As seen on figure 7, in seven variables (W, T, BTT, TSP, WID, BL, and BT) the minimum-maximum ranges of the stations are greater than either combined Clactonian or combined Acheulean ones. Admittedly, this must not necessarily bear significance, since only a few exceptional flakes may stretch the minimum-maximum range in either direction. The more meaningful observation seems to be that in five attributes (W, L, B, WID, and BL) the stations' modes fall outside the Clactonian and Acheulean

mode ranges and the former are of higher values, while in another three attributes (BTT, TSP, and BT) the stations' modes are parallel to the uppermost reaches of the Clactonian and Acheulean mode ranges. As regard a ninth attribute (T), only one Clactonian and three Acheulean units reach higher modes than that of the stations'.

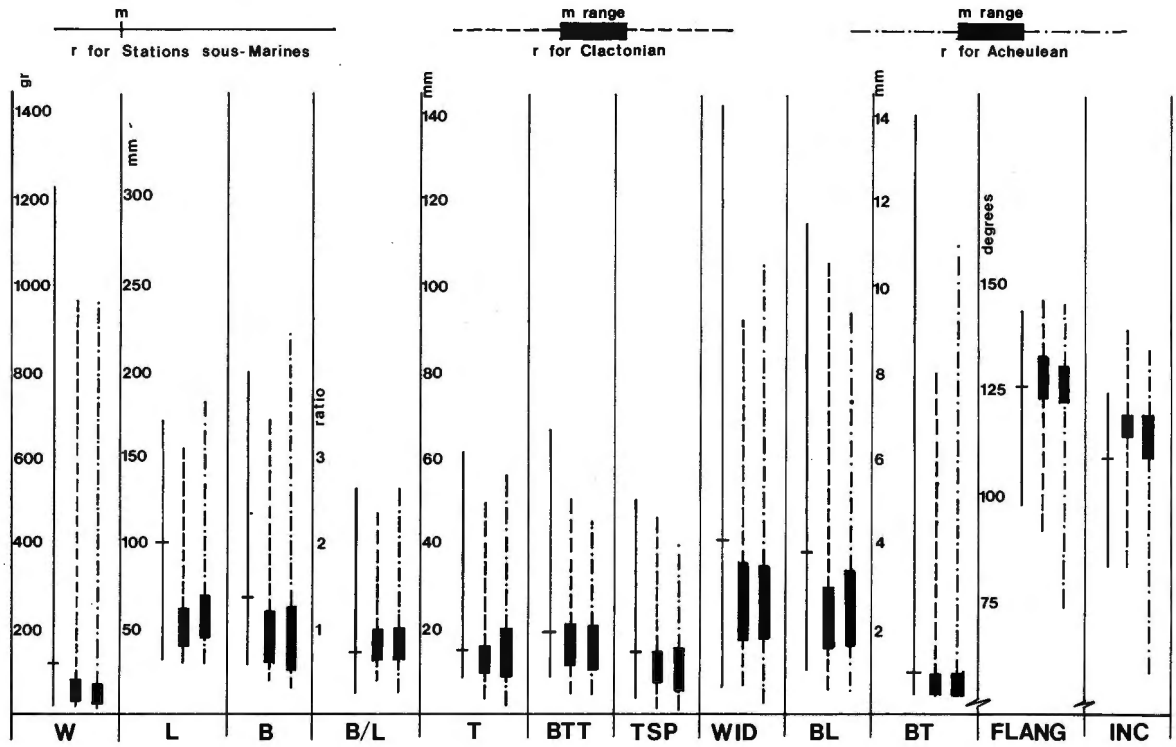

Fig. 7. Plotted minimum-maximum ranges (r) and modes (m) for the flake sample from the Station sous-Marines against the minimum-maximum and mode ranges for the combined Clactonian and combined Acheulean samples from England. (For the meaning of the abbreviations, see text.)

On the whole, figure 7 reinforces the inferences already made from figure 6, merely pointing out in a subtler way, perhaps, the slight, but important differences between the stations' and the other samples. In other words, while there is no ground for distinguishing separate industrial complexes on the basis of the formal flake attributes, it would seem appropriate to state that more flakes from the stations are heavier, longer, broader, thicker, with thicker butts, thicker and wider striking platforms, longer and thicker bulbs than from Clactonian and Acheulean assemblages.

Let us consider now briefly some additional comparisons involving several other flake attributes processed by proportional calculations. Figure 8 shows, first, that the proportion of flakes with conspicuous cones of percussion (C:c) from the stations is larger than in any Acheulean unit, but nicely falls within the range of the Clactonian, which by itself stands above all Acheulean units but two. A conspicuous cone is understood here as a cone of which one half of the circumference, at least, protrudes from the body of the bulb (sometimes called semi-cone). Such cones are generally taken to reflect forceful, solid knapping by using either a hard, manual stone percussor, or the block-on-block technique. The proportion of flakes produced in either/or the above manners would apparently testify to cruder knapping habits in the stations' and Clactonian sites as against most Acheulean sites where also more delicate flaking, incorporating non-stone hammers as well, was certainly taking place.

Figure 8 shows, secondly, that the proportion of flakes with prepared (faceted) striking platforms (SP:p) is remarkably low both in the stations' and the Clactonian units; this proportion does not exceed 5% except in a

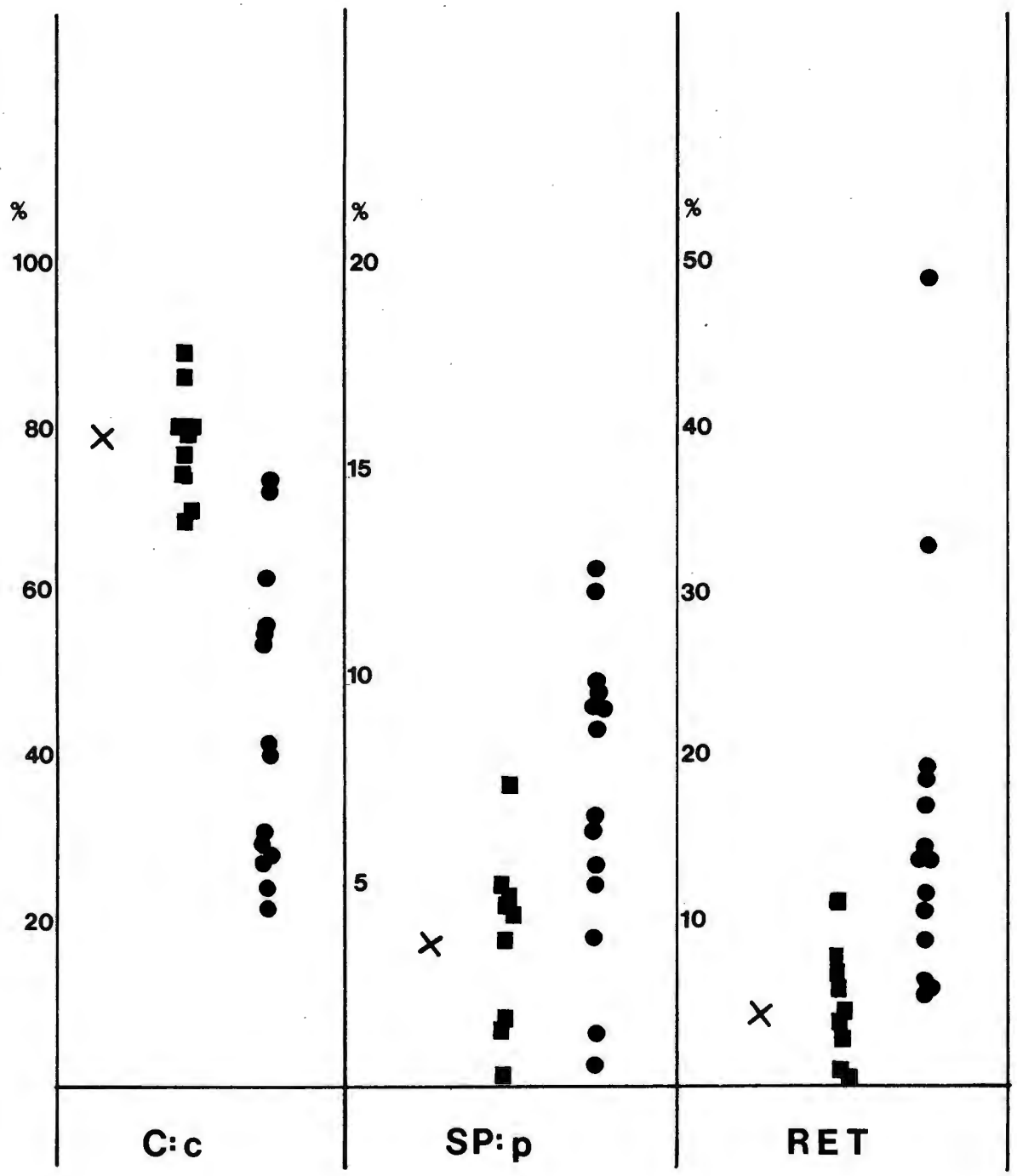

Fig. 8. Proportions of flakes with conspicuous cones (C:c), prepared striking platforms (SP:p), and obviously retouched (RET) from the Stations sous-Marines (x) compared to those from Clactonian (squares) and Acheulean (circles) units in England.

single case. While there are a few Acheulean units that also fall under 5%, most of them contain greater proportions of flakes with prepared striking platforms than both the stations' and the Clactonian units. This too would generally be accepted as a testimony for more careful, subtilized, and more strictly purposeful knapping on behalf of the Acheulean units.

Finally, we can see on figure 8 that the proportion of flakes modified by obvious deliberate retouch (RET) is rather low in both the stations' and the Clactonian units; this proportion does not exceed 7·5% except in a single case. Again, while a few Acheulean units as well fall under 7·5%, most of them exhibit greater proportions of obviously retouched flakes than both the stations' and the Clactonian units. Retouch is of course unequivocally taken as representative of an advanced stage in the production process of human-made artifacts.

Interpretation of the comparisons and some suggestions (M. O.)

From the discussion in the previous section the following two points emerge:

1. No distinction of separate industrial complexes, namely Clactonian and Acheulean, can be sustained on the basis of formal flake attributes either from Clactonian or Acheulean sites in England, or the Stations sous-Marines of Le Havre. This confirms Lechevalier's aforementioned suggestion that the stations are an integral part of the Acheulean of Le Havre littoral as represented by Station Romain.

2. Nevertheless, from the great majority of the numeric variables as well as from the proportional occurrences of the nonmeasured ones it is rather clear that mostly cruder flakes were manufactured at the stations than at the Acheulean sites. To this should be added the less specialized appearance of the stations' assemblages in contrast with that of the Acheulean ones (note, however, that within the measured sample of 269 flakes from the stations were also included 32 mostly thick, roughly triangular, poined forms, 33 quite questionable but possible scrapers [probably unfinished], seven borers, two notches, 11 Levalloid flakes, one Levalloid blade, three true Levallois flakes, one Levallois point, three blades, and 15 trimmers). The various stratigraphic and other nontechnological arguments brought up at the outset and throughout the present article, must also be added here. It would seem, therefore, that the most economic and reasonable interpretation for the nature of the stations is indeed the one already suggested earlier by one of us (C. L.). Namely, the stations are not Clactonian, but rather Acheulean preparatory areas where Acheulean people carried out, to a greater or lesser extent, the primary stages of the process of their tool manufacture.

One may justifiably enough be tempted at this point to ask one simple question. That is, even if the nature of the stations and their relationship with the Acheulean of Le Havre littoral are indeed as now suggested, what significance do they carry for the Clactonian in England and its relationship with the Acheulean?

True: I cannot as yet put my finger precisely on an identical case in England to that of Le Havre, the latter being supported by stratigraphical, topographical, and technological evidence. However, there seems to be sufficient ground to suggest a similarity in broad terms. (By all means do I not attempt to claim precise similarity between the stations and Clactonian sites in England in details of workmanship, forms, raw materials, and a host of other factors. It should be obvious, I think, that every geographic area, even every limited locality of sites, was submitted to different environmental and cultural conditions, which in a constant feedback created dissimilarities of a greater or smaller degree even within one "unified" framework).

First, it has been initially demonstrated here that as far as formal attributes of flakes are concerned, no distinction is feasible between the Clactonian and Acheulean in England. Ohel (1977b) has already suggested two alternative overall interpretations of the Clactonian, based on various considerations most of which were not discussed here; one of the two is that no Clactonian existed at all, the so-called Clactonian occurrences in England having been merely Acheulean preparatory areas. (A detailed publication on the whole problem forthcoming). It should not be forgotten that the "Clactonian of Le Havre" has been considered an equivalent to the Clactonian of England for almost 50 years, until very recently. It was already mentioned that, if anything, the

"Le Havre Clactonian" is a far more orthodox Clactonian than any in England, as traditionally viewed. What we discover now is that that very Clactonian of Le Havre has conceivably nothing whatsoever to do with any Clactonian; it is apparently a technological stage of the Acheulean industrial complex. The coincidence between this new comprehension and the most recent, new interpretation of the Clactonian problem by Ohel must at least invoke – so it seems – some intriguing questions as regard the Clactonian in England.

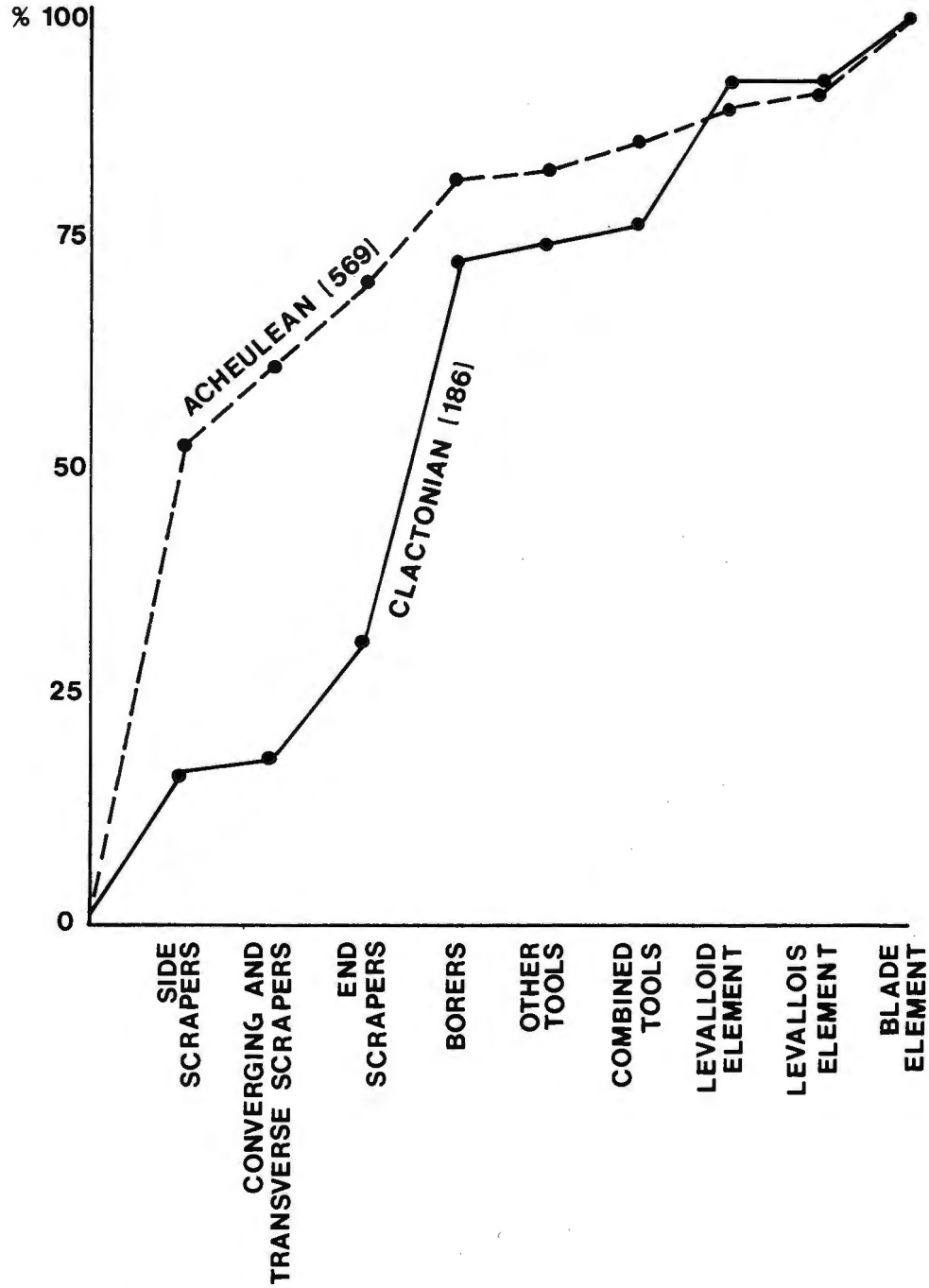

Fig. 9. Cumulative graph for flake tools from Clactonian and Acheulean units in England.

Second, as manifested by the analysis of the nonformal attributes (fig. 8) which are commonly accepted to be fairly good distinguishers for stages of artifact modification, the Clactonian in England demonstrates similarity to the Stations sous-Marines, and considerable dissimilarity to the Acheulean in England. Based on these attributes, there is no reason to interpret the Clactonian/Acheulean relationship in England differently from the "Le Havre Clactonian"/Acheulean one.

Third, as do the stations' assemblages present a less specialized phenomenon than the Acheulean, so do the Clactonian assemblages in England compared with the Acheulean ones (there are 12% flake tools in the former as against 24% in the latter; and see fig. 9). The Clactonian assemblages do not seem, however, to be absolutely nonstandardized and unspecialized as Wymer (1974) describes them; but this is also the case with the Stations sous-Marines. In my view, less specialization but not absolute lack of specialization, in the situation under examination, testifies to preparatory areas; at least more logically so than to distinct, separate industrial complexes. I assume that preparatory areas were usually not far away from habitation areas. It would seem only sensible that some finished tools were either made on the spot in the preparatory area, or brought to it and left behind.

Fourth, one of the strongest arguments in favour of an idiosyncratic Clactonian "culture" is that Clactonian assemblages are completely devoid of handaxes. Let us first remember that the same has been claimed with regard to the Stations sous-Marines. It has been already mentioned that this claim is not accurate. Some handaxes and handaxe roughouts were found among the material from the stations. Whether some more exist must await the careful sorting and ordering of the great quantities of artifacts at the MHN and other collections.

As for England, the claim of a complete absence of handaxes from Clactonian sites does not seem entirely justified as well. Authorities in the past had to admit the possible presence of Acheulean handaxes within Clactonian assemblages (e.g., Breuil, 1932:149, 152; Warren, 1933:21; Oakley and Leakey, 1937:235; Roe, 1968:59). Wymer suggests that three handaxes which were found in Clactonian layers at Clacton-on-Sea were derived from the top of the cliffs (in Singer *et al.,* 1973:47, 49). His suggestion cannot, however, be considered decisive. I have found throughout my recent study in England not a few probable handaxe roughouts and/or possibly unfinished handaxes in several pure, classical Clactonian assemblages like Clacton and Swanscombe (see Ohel, 1977a). With the generous permission of J. d'A. Waechter, I examined a sample of 343 flakes and 45 cores procured from the Lower Gravel at Swanscombe during the recent excavations there (Waechter and Conway, 1969; Waechter *et al.,* 1970, 1971, 1972). In this sample, I detected one beautiful, nicely finished Acheulean handaxe (Ohel, 1977a: Fig. 26:5) marked as coming from the lower part of the Lower Gravel. Waechter (pers. comm., 1976) thought that this undoubted handaxe was either derived from a higher layer (Middle Gravel?) or that its position was mislabeled by the person who dug it. This is of course possible, but not certain. From my point of view, the sporadic presence of true handaxes and especially handaxe roughouts within definite Clactonian layers should not cause any alarm. If the Clactonian levels could be considered Acheulean preparatory areas, as I now suggest, then one would naturally not expect to find in them numerous handaxes, since such were finally shaped outside those areas. But, several exceptions to this "rule" seem only to logically confirm the "rule" in the setting I am suggesting. These sporadic handaxes may have also been dragged into the preparatory areas, or even deliberately brought to them, then left behind for one reason or another.

Finally, the heaviest single argument for an autonomous existence of a Clactonian tradition rests perhaps upon the core component of the Clactonian assemblages. It has been consistently established for many years throughout the literature that the Clactonian is characterized, aside from its specific flakes (but see Ohel, 1978), by three core forms in particular: chopper-cores, biconical, and conical cores. As regard chopper-cores, these can clearly not exclusively signify a Clactonian independent industrial complex; and for that matter, not any other complex. They appear, in larger or smaller proportions, in every complex from the Oldowan through Neolithic assemblages, in whatever name they may have been called: choppers, chopping tools, or chopper-cores.

In England, they constitute 20% of the core component (total of 600 measured) in Clactonian units; 14% in Acheulean (total of 249) – some individual units contain rather higher proportions than the average; 23% in the mixed assemblages (where Clactonian and Acheulean elements are traditionally judged to have been admixed by natural, postdepositional agents; total of 108); and even in the ALT (Acheulean with Levallois technique) units they comprise not less than 11 % (from a total of 269 measured). If indeed many, or most of these Clactonian chopper-cores were worked merely for the production of flakes, as viewed by the proponents of the Clactonian as a "flake industry" (e.g., Breuil, 1932; Oakley and Leakey, 1937; Paterson, 1942; Grahmann, 1955), I would consider the fact as a considerable support to my suggestion of the Clactonian as a preparatory stage in the manufacture of Acheulean flake tools. However, my suggestion would lose absolutely nothing in the event that the supporters of the Clactonian as a "core industry" (e.g., Warren, 1951) were correct. Being a relatively simple tool, usually not requiring any further delicate modification, the chopper (or chopping tool) could have been easily accomplished within the preparatory area itself. Consequently, the interpretation advanced here can also accomodate without any difficulty the notion that the Clactonian was both a "core and flake industry" (e.g., Dewey, 1932; Riet Lowe, 1932; Leakey, 1960; Wymer, 1968, 1974; Waechter and Conway, 1969).

This latter argumentation may be applied, in approximately the same fashion, to biconical and conical cores. Whether they were end-products or by-products, the preparatory area interpretation still embraces them, undisturbed. It should be also noted that quite a number of biconical cores may fairly easily be "mistaken" for handaxe blockouts, which in fact they might have well been, abandoned to their actual state for one reason or another. The same is true even for some conical cores. Among these, such are found that are quite reminiscent of primitive (or proto-) Levallois cores prior to the removal of the desired Levallois flake. One of them, from Lion Point at Clacton, was portrayed by Ohel (1977a: Fig. 16:3). In the same assemblage was found a nicely prepared, almost perfect Levallois core including the scar of the Levallois flake removed (Ohel, 1977a: Fig. 16:4). A classic Levallois flake (not adhering to the above core) was also detected (Ohel, 1977a: Fig. 16:5).

Furthermore, and again, biconical and conical cores are not exclusively restricted to Clactonian units. Biconical cores comprise 12% in the Clactonian, 3% in the Acheulean, 2% in the ALT, and 16% in the mixed assemblages (totals of cores measured, see above). Biconical cores appear in various assemblages, including pure Acheulean ones, in other parts of the world as well (for one example, see Clark and Kurashina, n.d.). The proportion of conical cores in England was found to be even greater in the Acheulean units (15%) than in the Clactonian (8%), with 2% in the ALT, and 8% in the mixed units. This universal occurence of such cores may-perhaps be explained by the supposition that they were mainly used, after all, as sources for flakes. Thus it should not be unexpected to find relatively greater quantities of them in preparatory areas, and there seems to be no convincing justification for them to become, as most widely thought in the past, distinct characteristics of a specifically separated tradition called Clactonian.

With all said, I am yet clearly aware of the fact that thus far no chronostratigraphic correlation between Clactonian and Acheulean levels has been established in England, as is the case at Le Havre. I assume, however, that such a correlation is due. Although by all means not meaningful for the time being, it is nevertheless interesting how similar an impression one gains by walking today along the beaches of Le Havre on the one side, and of Clacton-on-Sea on the other side of the Channel; in particular when trying to discover artifacts upon the exposed shores during low-tide periods. Perhaps we will never be, however, sufficiently fortunate to uncover a duplicate of the now-buried Station Romain, for both at Le Havre and Clacton nearly every inch of beach is covered by cement.

Conclusion

In this paper we have attempted to substantiate the suggestion that the long-renowned "Le Havre Clactonian" is not Clactonian, but rather the product of Acheulean people performing the early stages of their industrial process at certain working spots which we prefer to call preparatory areas; in the case of Le Havre these

are represented by the Stations sous-Marines. Applying this interpretation to the Clactonian sites in southeast England, and incorporating results from an independent study of the Clactonian-Acheulean interface in England, we further suggest a new interpretation for the English Clactonian. Namely, that the so-called Clactonian occurrences do not represent a distinctly different and separate industrial complex (or tradition) from the Acheulean, as traditionally believed, but rather, like the Stations sous-Marines, they represent the early stages of the industrial process of Acheulean people.

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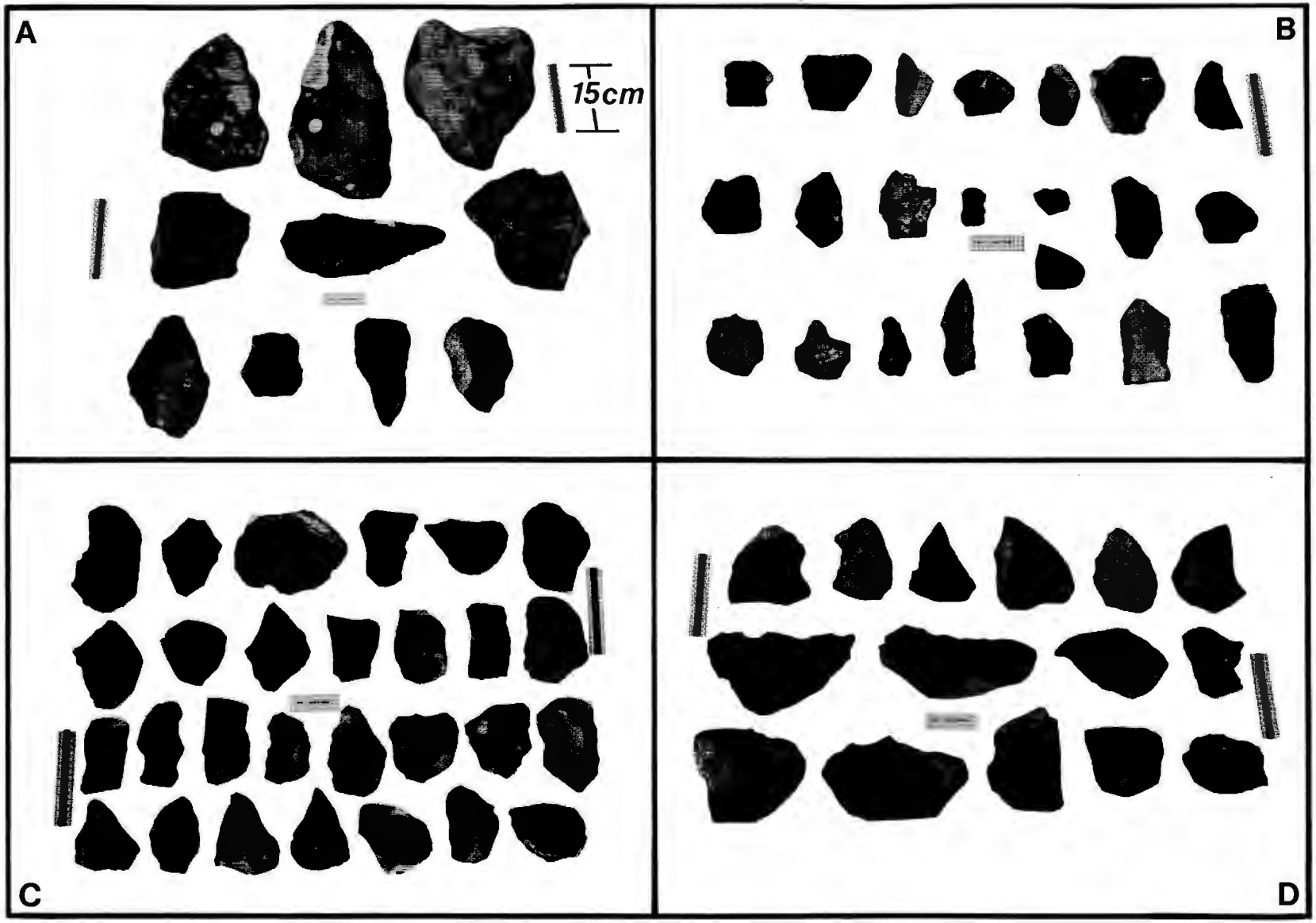
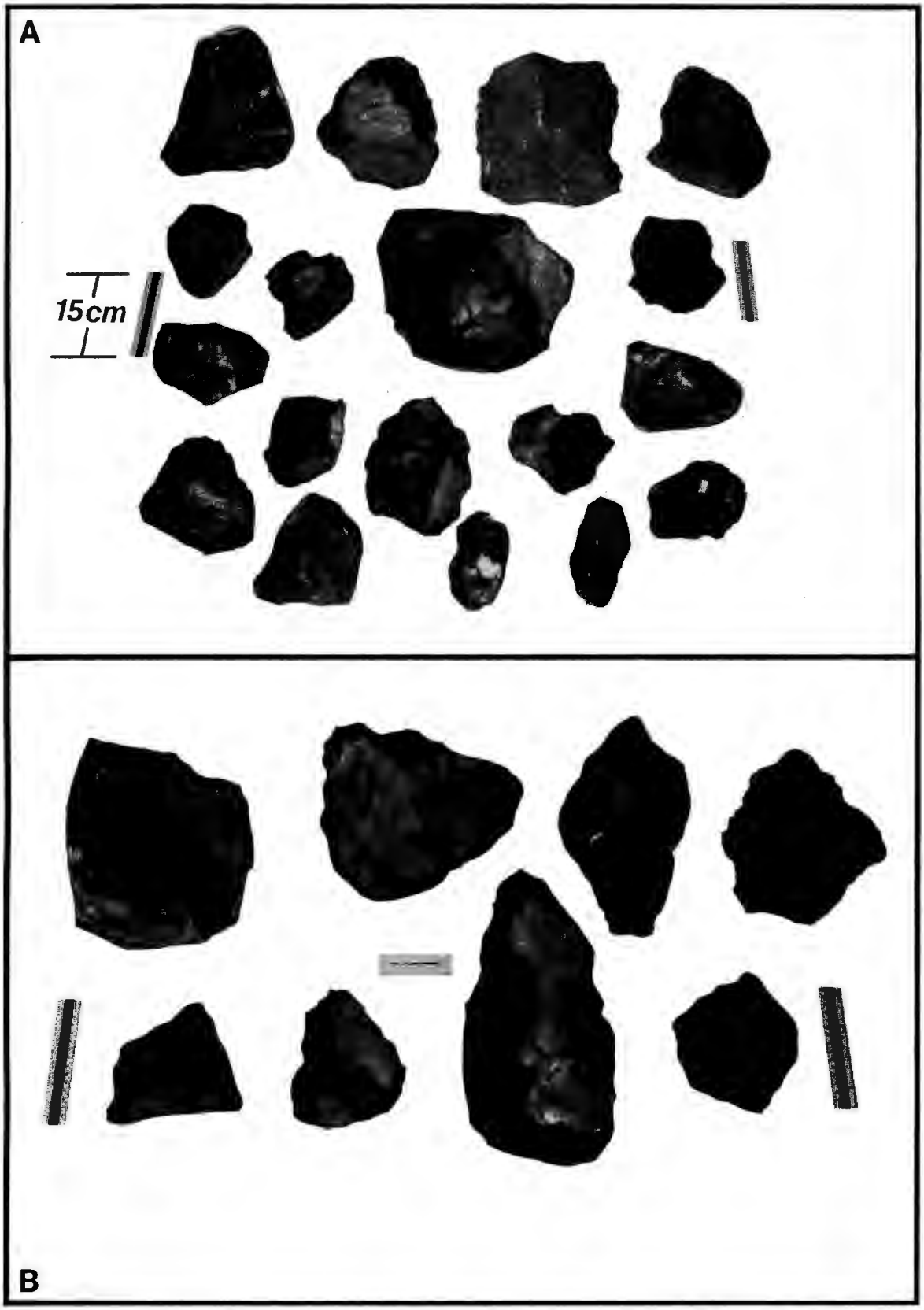


Examples of material collected from the Stations sous-Marines: A. Large cores and flakes from MHN; B. "Clactonian" flakes from MHN; C. "Clactonian" flakes from CG; D. Large flakes from CG.



Examples of material collected from the Stations sous-Marines: A. Chunks, cores (?), large flakes and handaxe roughouts from MHN; B. As above from CG.