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New Data on the Middle Palaeolithic Assemblages from Douara Cave, Syria: Progress Report of the 1974 Season's Excavation*

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I. Introduction

Since the Middle Palaeolithic contex was first established through extensive investigations at sites such as those at Tabun, and Yabrud, dozens of succeeding investigations have presented results that confirm and at the same time modify the Middle Palaeolithic context as first established. In regard to the Levalloiso-Mousterian, which is a separate component of the Middle Palaeolithic sequence in the Levant, it has been actually manifested that the frequency of the Levallois technique, which is one of the most important criteria defining its assemblages, has a high degree of variability in each assembalge. However, these assemblages usually have been reported under the single nomenclature of Levalloiso-Mousterian.

According to the extensive studies of the Middle Palaeolithic of Western Asia presented by SKINNER (1965), the Levallois Index (IL) of the Levalloiso-Mousterian industries differs widely from around 40 (e.g., Abou Sif B, C) to over 90 (e.g., Yabrud Shelter I: 4, 6). Since these indices are based on the museum collections that do not include all materials from each site, special attention must be paid in discussing the relationships between these values. However, these results do help to support the suggestion that the Levalloiso-Mousterian of the Levant has exhibited a strong tendency toward techno-typological variability.

Recent re-examination of certain sites such as Tabun (JELINEK *et al.*, 1973), and a general review of the Palaeolithic assemblages in the Levant (e.g., PERROT, 1967; HOURS *et al.*, 1973; COPELAND, 1973) have definitely increased our understanding of the Middle Palaeolithic in the Levant. These works have provided a new outlook for a framework in regard to the above tendency to which future work can be related.

In contrast, there were very few systematic investigations of the Palaeolithic in inland Syria until the excavation of the Douara Cave. Up to then, the site at Jerf Ajla, excavated by Carleton COON in 1955 and Henry Bruce SCHROEDER in 1966, had been

* The 1974 season's expedition was organized as one of the overseas field study projects by the University of Tokyo, headed by Professor Kazuro HANIHARA of the Department of Anthropology, the University of Tokyo. It was financed by the Grants for Overseas Research in 1974 from Japanese Ministry of Education.

the only Palaeolithic site fully reported in the region (SCHROEDER, 1969). Thus, there had been a regional difference in the quantity of information available between the Levantine coast, which had a long history of Palaeolithic studies, and other regions of Western Asia. This fact presented an obstacle to a comprehensive understanding of the Palaeolithic in Western Asia.

Through partial excavations of the Douara Cave in the 1970 season, it was found that the cave had a deposit more than 4 m in depth, divided into several geologically and culturally defined layers with two distinct lithic assemblages: Middle Palaeolithic from the Lower Horizon and Upper Palaeolithic from the Upper Horizon (AKAZAWA, 1974). These findings have assured its particular importance in studies of the evolution of the Palaeolithic at a single site. But the 1974 season's data brought to light yet another important fact—that the sequence of Middle Palaeolithic assemblages in the 1.5 m thick Lower Horizon manifests significant differences, both typologically and technologically, among assemblages. These new data are on the way to becoming some of the most important evidences for examining the meaning of the variability seen in the Middle Palaeolithic assemblages.

From this point of view, the present paper will consist of three parts: one is the description of the general features of the cave deposits and the lithic assemblages of each stratigraphic unit at Douara. The second is the description of the techno-typological characteristics of the two particular assemblages that will, in effect, show the technological change through the sequence of the Lower Horizon; and the third is the examination of the relationship between the Douara Middle Palaeolithic assemblages and other relevant assemblages from sites in the Levant, in order to examine the meaning of variability of the Middle Palaeolithic in Western Asia.

II. General Description of the 1974 Season's Investigations of the Douara Cave

Analysis and comparison of the stratigraphic data from the 1970 and 1974 seasons have not yet been completed. For the present, therefore, only the general features of the cave deposits revealed in the 1974 season will be given as a framework for describing the lithic collections of the cave.

The purpose of the 1974 season at the Douara Cave was to excavate the deposits as extensively as possible in order to examine several problems that were raised by the 1970 season's excavations. The most important task was to expose the complete sequence of the cave deposits from the surface to the bed rock and to clarify the succession of industries. However, only about 100 to 140 cm of the deposits could be excavated, and some problems related to the geological and cultural sequences remain unsolved. Nevertheless, the volume of the excavation (39 m^3) was about twice as great as that of the former season. A large quantity of materials in good condition were collected throughout the excavated areas.

The excavation followed a grid system of 1×1 m (Fig. 2). The entire excavation area was marked by two axis (X and Y) which divided it into sampling units of 1 m^2

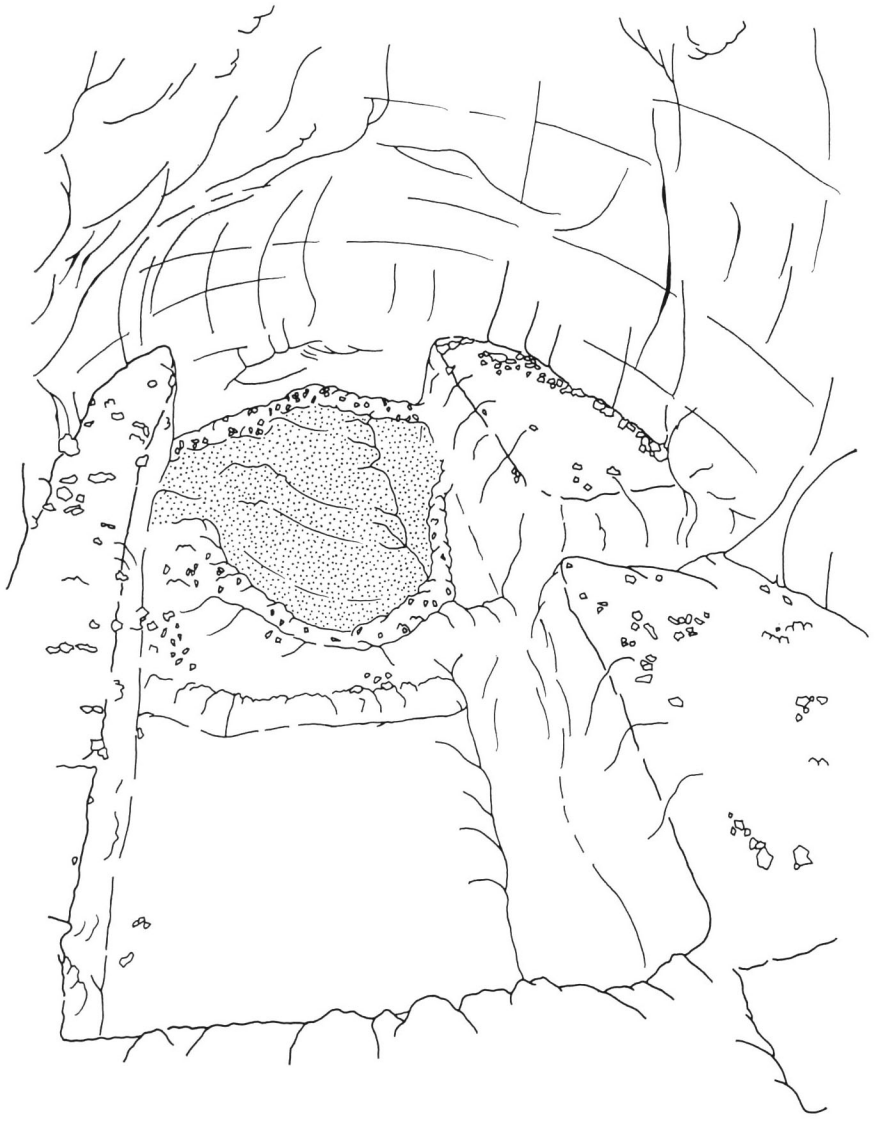

Fig. 1. View of the excavation site at Douara at the close of the 1974 season. Dotted area shows the surface of the Middle Palaeolithic hearth revealed in the fourth stratigraphic unit of the Lower Horizon. The hearth, which is about 5 meters in diameter, is intercepted by a series of compact concretion deposit.

according to the grid system. As to the level, symbolized by the letter Z, arbitrary levels of 10 cm each were used, while always taking into consideration the existence of the natural levels. Thus, the recordings of artifacts could maintain elasticity:

where two easily discernible natural levels existed within a single arbitrary level, its materials were gathered separately under two different natural levels. With such a method, all excavated materials were recorded according to sampling unit (100×100×10 cm) in order to obtain the basic data for the purpose of identifying articulations among the sampling units.

In 1974, twenty-three 1×1 m squares were excavated to a depth of 160 cm from the datum level (a total of 287 sampling units) in the interior of the Cave (inward from Y=9), and nine 1×1 m squares were excavated to a depth of 190 cm (105 sampling units) in the exterior of the Cave (between Y=9 and Y=12). A total of 392 sampling units were grouped into several stratigraphic units on the basis of articulation net analysis of the sampling units. Articulations among the sampling units were determined by analysis of all evidence, such as sedimentological features, amount and proportion of all non-lithic material and non-chipped material as well as all chipped bifaces and cores obtained from each sampling unit.

The stratigraphic units thus determined consist of three horizons: a Top Layer, and an underlying Upper Horizon and a deeper Lower Horizon. Within the Lower Horizon are four stratigraphic units; fourth or deepest unit is characterized by Middle Palaeolithic hearth deposits.

1. Top Layer

This horizon denotes the upper-most deposit that covers the entire excavated area. The deposit is blackish to dark brown sediment, composed mainly of animal faeces, with some boulder-sized rubble.

The collection of artifacts from the Top Layer is not homogeneous. Although it is a very thin deposit, it contains a small number of Upper Palaeolithic and Neolithic as well as a large quantity of Middle Palaeolithic artifacts in addition to some potsherds and bronze tools that presumably belong to the Islamic period. All these materials are more or less abraded, and a large number of lithic artifacts are broken and usually patinated black to very dark brown as a result of thermal action.

The above lithic assemblages of Middle and Upper Palaeolithic types have the same morphological and technological features as similar assemblages from the lower horizons. But no other horizon yields the lithic artifacts of Neolithic types or potsherds and bronze tools.

2. Upper Horizon

This unit broadly corresponds to Layers A, B and C as defined in the 1970 season's stratigraphy (AKAZAWA *et al.*, 1973; ENDO, 1973). The distribution of this horizon is restricted to grids 8–10, 8–11, 9–10, 9–11, 10–10 and 10–11 in the exterior part of the cave. It is missing in the interior of the cave, inward from grids 8–09, 9–09 and 10–09. The deposits of the Upper Horizon fill a basin-shaped depression and therefore have a crescent-shaped cross-section. In the middle of the deposits is a large upright piece of fallen limestone.

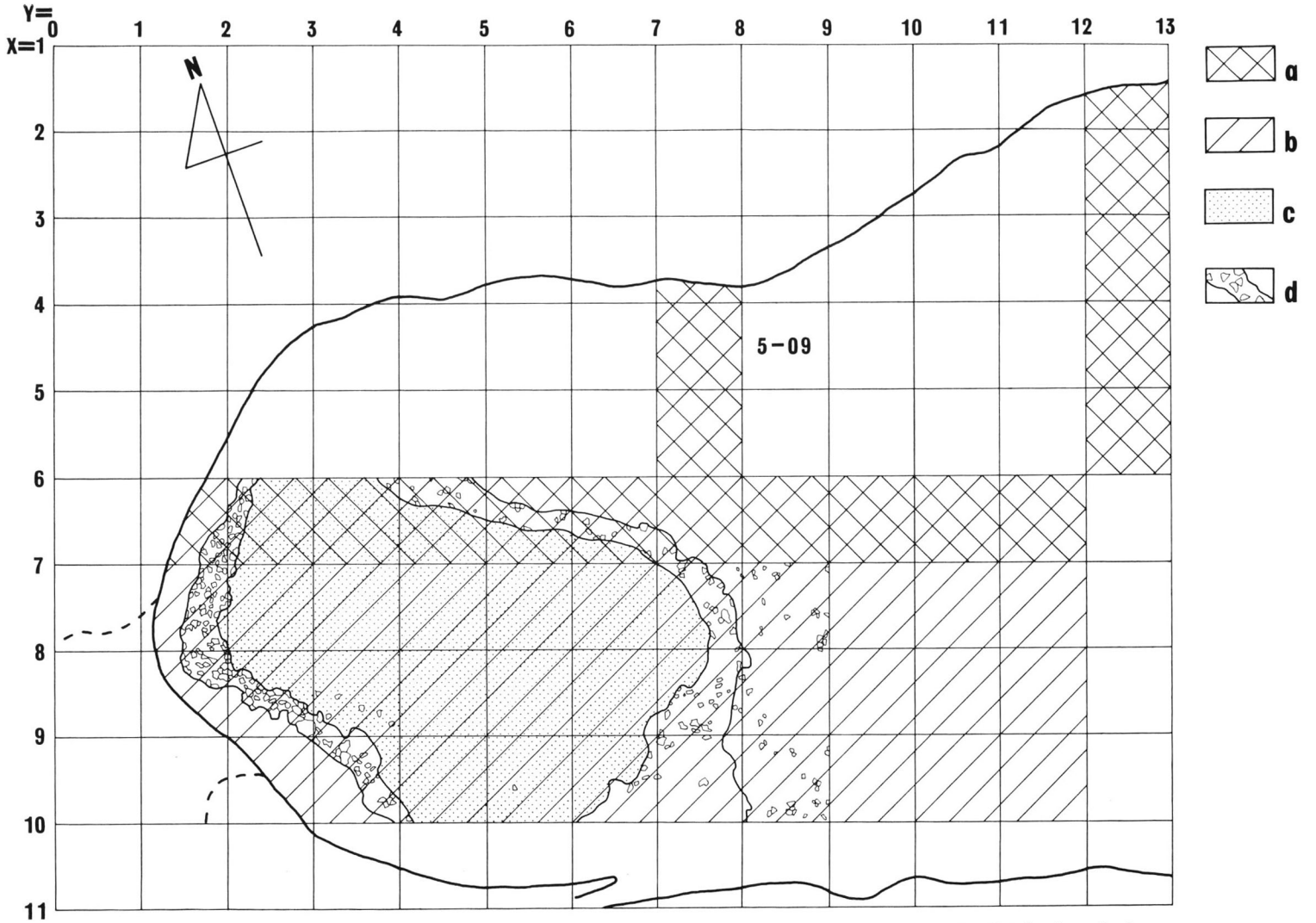

Fig. 2. Grid system of the excavation at Douara showing the area excavated in 1970 (a) and 1974 (b), and the distribution of ash deposits (c) and concretion deposits (d).

This horizon is a more or less porous, loose and yellowish to brownish sediment characterized by silty sand and a large quantity of angular limestone rubble. However, there is some variation in the characteristics of the deposits from the bottom to the top of this horizon. The upper part of the horizon is made up of a rather porous, loose sediment characterized by a greater frequency of limestone rubble than that of the underlying part. On the other hand, the lower part of the horizon is a generally compact and homogeneous deposit characterized partially by a series of massive, widespread calcareous concretions. These concretions are one of the most important traits of Layer C as defined in the 1970 season's stratigraphy.

The lithic assemblage found in the upper part of this horizon is of Upper Palaeolithic character while the assemblage from the lower part of this horizon is of Middle Palaeolithic in character. The upper assemblage is characterized by a high frequency of microlithic types of tools such as rectangles, micro-burins, and notched and truncated pieces made on bladelets, as well as a small number of scrapers and burins on normal-sized blades. Such assemblages correspond generally to the final stage of Upper Palaeolithic in this region. The lower assemblage is a Levalloiso-Mousterian lithic assemblage similar to the deposition in the middle of the Lower Horizon.

However, the above two assemblages intermingle in some places, especially in the middle of the horizon, and the upper assemblage contains a number of artifacts usually derived from the lower assemblage. On the whole, the materials found in the horizon are somewhat abraded and many of them have calcareous concretions adhering to their surfaces and are patinated gray to grayish brown. This contrasts with the fine, clean condition and usually brown color of the flints from the underlying Lower Horizon.

Such context and condition of the Upper Horizon deposit and artifacts imply that this horizon may not be a primary deposit. However, this question requires further analysis of the geology in order to determine the exact nature of the Upper Horizon, including its relationship to the Lower Horizon.

3. Lower Horizon

This horizon corresponds in general to Layers D and E as defined in the 1970 season's stratigraphy. It is distributed throughout the excavated areas and is the deepest deposit excavated in the 1974 season.

Lack of time prohibited complete analysis of the data from nine grids between the lines Y=9 and Y=12 at the exterior part of the cave, hence the relationship of the Upper and the Lower Horizons is not clear. The character of the Lower Horizon is best understood from the deposits in the interior part of the cave, twenty-three grids inward from the line Y=9. There, the Upper Horizon is missing, and the Lower Horizon is directly overlain by the Top Layer.

In general, the Lower Horizon is of a brownish sediment, mainly composed of fine materials. The deposit of this horizon is made up of four stratigraphic units determined by the articulation of the sampling units (Fig. 3). The lithic assemblages

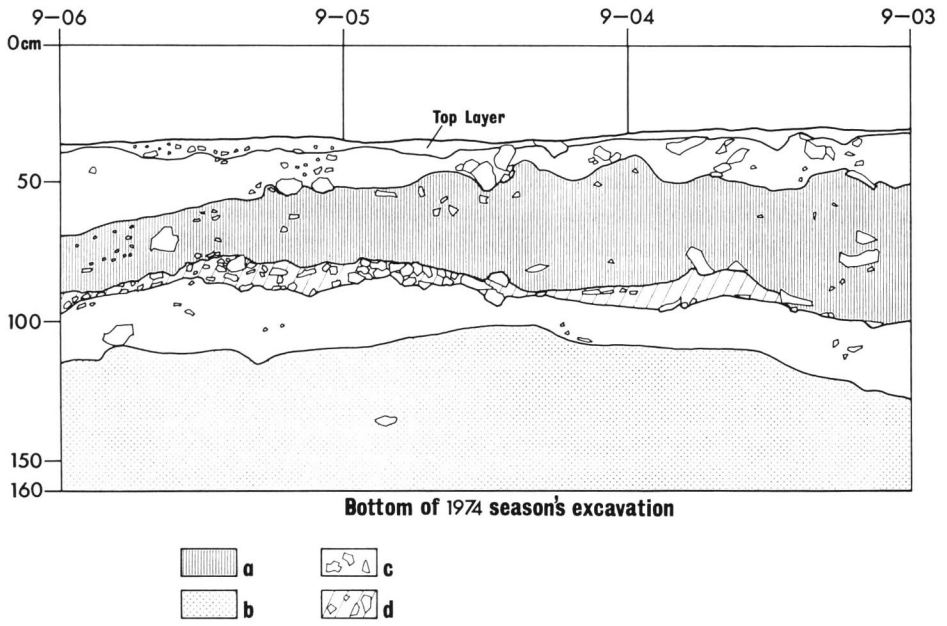

Fig. 3. Profile of the deposit along the longitudinal line, X=9, parallel to Y, showing the stratigraphic division of the Lower Horizon. a: 2nd stratigraphic unit, b: 4th stratigraphic unit, c: limestone rubble, d: Concentration of weathered limestone fragments.

from these units do not represent a homogeneous industry, but rather show significant typological and technological differences from the upper through the lower depositions within the Lower Horizon.

First Stratigraphic Unit

The first of these units is the upper 20 to 30 cm just below the Top Layer. As a whole, it is a more or less loose and brownish deposit, containing a large number of lenses of black to dark brown humus, black charcoal and a lot of limestone rubble, especially in the upper half. A great number of flint implements and animal bone fragments are among its constituents.

The lithic assemblage found in this unit is not as homogeneous as those from the underlying units. Most of the lithic artifacts closely resemble those of the Levalloiso-Mousterian assemblage from the unit below. But mixed with them are a very small number of potsherds, bronze tools and flint implements of non-Palaeolithic character. It is also noteworthy that a large proportion of the flints are broken and have a black to very dark brown patina, presumably caused by fire. This evidence suggests the possibility of this unit being a secondary or disturbed deposit.

Second Stratigraphic Unit

The second unit is a more homogeneous and compact deposit than the first, although in some places there are thin lenses of blackish charcoal and grayish to whitish calcareous concretions. This unit stretches from just below the first unit downwards to a series of concentrations of weathered limestone fragments.

The concentration is massive and widespread, ranging from 10 to 20 cm in thickness. The distribution of weathered limestone fragments does not cover all the excavated areas but is concentrated on grids 8–04 to 8–07 and 9–04, 9–05, 10–05 and 10–06 in the interior part of the cave.

This unit produced the largest quantity of lithic artifacts among all the units of the Lower Horizon. The flint materials are usually patinated bluish with fine and clean condition. The prominent feature of the assemblage from this unit is the high frequency of the Levallois technique used in the production of tool blanks and the high percentage of blanks having faceted striking platforms characteristic of the Levalloiso-Mousterian industries as defined in a number of sites in Western Asia.

A large number of ostrich (*Struthio* sp.) eggshell fragments are found in the deposits. They are concentrated mostly in this second unit. In other words, this unit is characterized by deposits with a rich Levalloiso-Mousterian assemblage, as well as a large number of eggshell fragments. Above (first unit) and below (third unit) this unit, a small number of eggshell fragments are found, but the lowest fourth unit does not yield such fragments.

Third Stratigraphic Unit

This unit extends from a band of weathered limestone fragments to the ash deposits of the Middle Palaeolithic hearths found in the deeper fourth unit. There is no great difference between the deposits above and below the band of weathered limestone, but the deposits below the band have a deeper brown color. A lithic assemblage of Middle Palaeolithic character is found in this unit.

Fourth Stratigraphic Unit: Middle Palaeolithic Hearth

The fourth and deepest unit corresponds to the hearth deposits containing a number of ash beds and hearth streaks in a matrix of whitish or grayish to blackish stained earth mixed with some organic matter. In particular, an alternation of such features is found in the deepest parts in grids 8–02 to 8–06, 9–02 to 9–06 and 10–03 to 10–06.

The hearth band is very thick, ranging from 50–60 cm in the thickest parts (8–04 to 8–06, 9–04 to 9–06) to 20–30 cm, and is outlined by an arrangement of limestone fragments and a series of very compact concretions. The stones are usually reddish yellow and are brittle as a result of thermal action. A dense ash concentration is found in the area defined clearly by a series of these stones and concretions (Figs. 1 and 2).

The lithic assemblage from this unit is markedly different from that of the overlying second unit. The flints are usually patinated bluish or blackish gray, or very dark

brown. A large number of them show breakage perhaps caused by fire, and are easily broken.

The most striking feature of this assemblage is a low frequency of the Levallois technique in the production of tool blanks. This contrasts with the dominance of the Levallois technique in the manufacture of blanks in the second unit. A large proportion of these blanks are characterized by an elongated form with a non-faceted striking platform.

III. Lithic Assemblages of the Second and the Fourth Units

As described in the preceding section, the Lower Horizon of the Douara Cave contains two distinct Middle Palaeolithic assemblages. These two stratigraphic units are characterized by very different depositional context (Fig. 3): 1) the second unit is characterized by a brownish-colored deposit containing a fair amount of gravel and ostrich eggshell fragments, 2) the fourth unit is characterized by dense ash deposits in association with a large Middle Palaeolithic hearth, and 3) between these two units is a widespread concentration of weathered limestone fragments, the upper-most part of the third stratigraphic unit.

Since the studies are not completed yet, further information concerning the detailed stratigraphy and the deposits in association with a large quantity of well-preserved bone fragments cannot be provided. But from what has been mentioned so far, it is clear that there is a considerable time-gap between the formation of the two main units.

The following part of this paper will introduce some analytic results for the technology and typology of the collections found in the second and the fourth units. Each assemblage will be described according to three techno-typological characteristics: 1) cores from which blanks were removed, 2) tool blanks, and 3) tools.

1. Second Unit Assemblage

The second stratigraphic unit consists of 67 sampling units (6.7 m^3). From those sampling units examined so far, a total of 2,982 lithic artifacts were found. The following description of the assemblage from this unit is based on 20 cores including one fragmentary piece, 12 by-products produced in the preparation of cores, 200 unretouched flakes (greater than 5 cm in maximum length), 12 tools characterized by secondary retouch, 766 cortex flakes, and 1,969 chips and other debris.

Cores

The nineteen whole cores can be divided into four categories: Levallois type, discoidal type, prismatic type and flake type. The proportion of these types of cores is markedly different from that of the fourth unit core types. That is to say, the most dominant core in this unit is the discoidal type (Fig. 4). The prismatic and flake types are the most common in the fourth unit but are rare in this unit. Accordingly, the

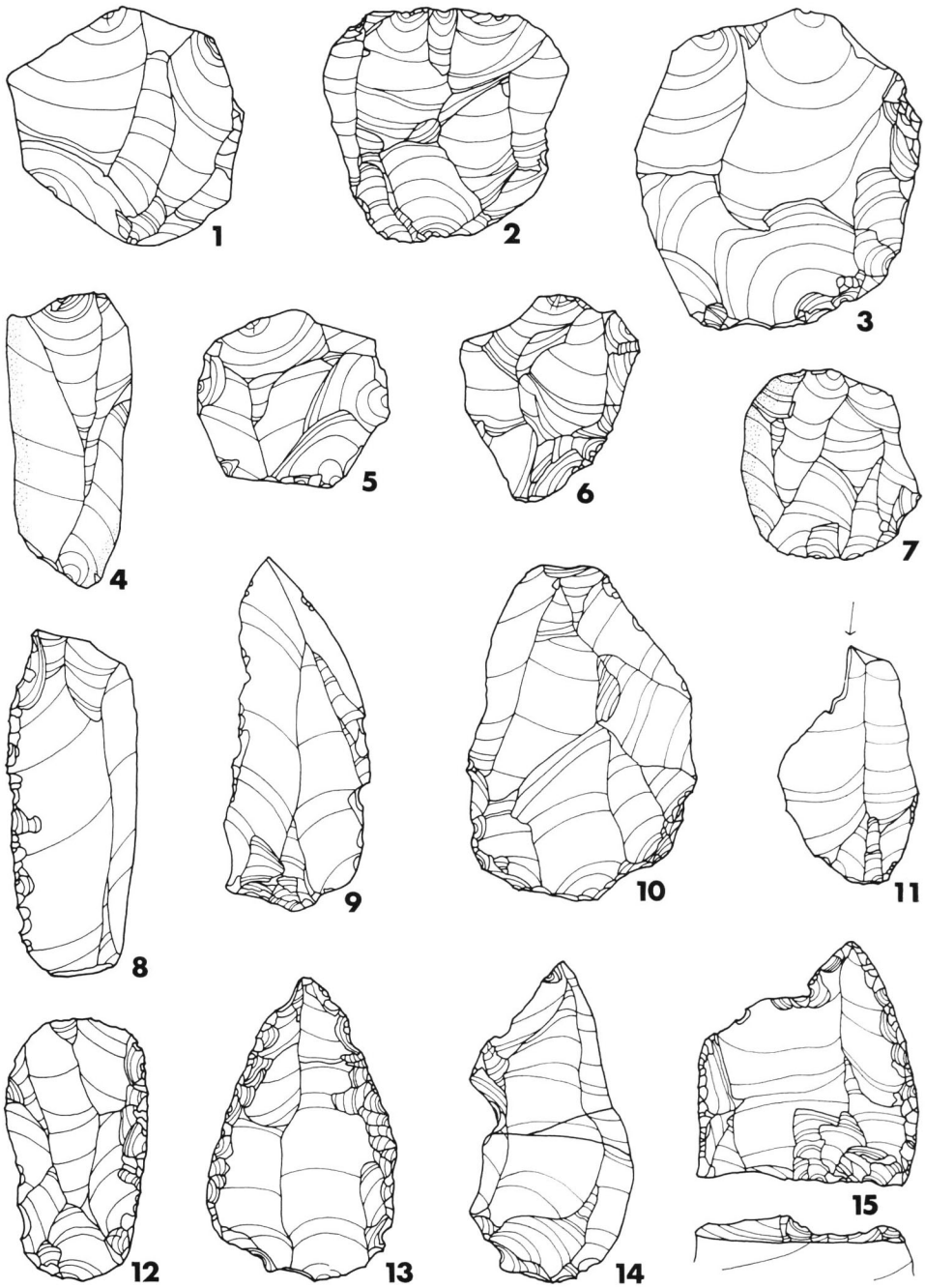

Fig. 4. Core and tool types of the 2nd stratigraphic unit of the Douara. Discoidal cores: 1,2,3,5,7. Prismatic core: 4. Levallois core: 6. Levallois flakes: 8, 10. Non-Levallois flake: 9. Burin: 11. Side-scrapers: 12, 15. Retouched Levallois point: 13. Notched flake: 14. (Scale: 1/2)

majority of cores from this unit belong to two types, discoidal and Levallois, which are usually the two most common types in the context of the Levalloiso-Mousterian industries of the Levant.

The discoidal type cores are somewhat variable in form, but all of them have preparatory flaking scars around the perimeter of their reverse surfaces. The preparation procedures are usually elaborate enough to completely remove the cortex from the reverse surface. The striking platforms are usually not so carefully prepared. There are two types of main flaking surfaces: one is centripetal, characterized by a series of flaking scars from the periphery to the center of cores, and the other is roughly bi-directional and characterized by a number of flaking scars from both ends but with clearly centripetal preparatory flaking scars on their reverse.

Tool blanks

The most striking feature of the lithic assemblage in this second unit is the dominant role played by the Levallois technique in the production of tool blanks. This is clearly seen in the large Levallois Index (IL) and Index of Faceting (IF), both of which are around 70. The Blade Index (ILam) is around 50.

The figures shown in the three indices correspond to the relative composition of core types found in this unit. The Levallois flakes with centripetal, preparatory flakings on their dorsal surfaces and with secondarily faceted striking platforms predominate over the non-Levallois type blanks. These Levallois flakes are detached from the Levallois and discoidal type cores. On the other hand, the number and the relative quantity of the non-Levallois type blanks and elongated flake blanks decrease in accordance with the decline of the prismatic and flake type cores from which these tool blanks have been removed.

Tools

The specimens classified as tools with intentional retouch are small in number: They consist of one retouched Levallois point, five side-scrapers, one burin, two notched pieces and one retouched blade.

The retouched point is a well-made specimen, characterized by having a series of regular, secondary retouch scars along both lateral margins of a typical Levallois flake with an elaborately faceted butt (Fig. 4: 13). But the patination color of these secondary retouch scars is different from that of the original blank, suggesting that this tool is a reused specimen of a Levallois point.

Blanks for the side-scrapers are all of the Levallois type, although a fragmentary piece is unidentified. All these blanks are well-made, typical Levallois flakes with thin cross-sections (Fig. 4: 12, 15). But the scraping edges are roughly on one or both lateral margins on flake blanks. The retouch is relatively shallow.

The burin is made on a typical Levallois flake with an elaborately faceted striking platform. The working edge is formed by the intersection of a burin facet and the snapped edge at the distal end of a flake (Fig. 4: 11). But this specimen is atypical

according to BORDES' classification scheme because there is no clear indication of the chisel-like working edge seen on a typical burin facet.

The notched specimens have single notches deeply formed from secondary use (Fig. 4: 14). The blanks for these notches are a typical Levallois flake and a non-Levallois blade.

A moderately large number of the flakes are unretouched, non-Levallois flakes, excluded from the tool assemblage of BORDES' classification scheme of Middle Palaeolithic industries (Fig. 4: 9). But the most dominant tool is the Levallois type as shown in the Index of Levallois type (ILty), which is nearly 90. All in all, the second unit assemblage generally belongs to the Levalloiso-Mousterian industries of the Levant.

2. Fourth Unit Assemblage

The fourth stratigraphic unit contains 65 sampling units (6.5 m^3) so far examined, in which 717 lithic artifacts were collected. Of the 717 lithic artifacts there are 21 cores including one fragment, 15 by-products produced in the preparation of the cores, 76 unretouched flakes (greater than 5 cm in maximum length), 9 tools characterized by secondary retouch, 154 cortex flakes, and 442 chips and other debris.

Cores

The twenty-one pieces classifiable as cores are roughly divided into the four types as mentioned in the second unit.

Of the four types, the most common type is the prismatic core (Fig. 5). These cores do not have a uniform shapes, but on most of them the preparation on the reverse surface (opposed to the main flaking surfaces) is very restricted and usually absent except for the striking platforms. The striking platform is plain and flat or coarsely made without any elaborate secondary faceting. A series of parallel, elongated flakes were removed from one or both ends of the cores, and a flaking surface usually extends around the piece rather than being a single flat surface as on the Levallois and discoidal cores. From these cores, tool blanks without centripetal but with a uni- or bi-directional flaking scars on their dorsal surfaces, and with a flat or coarsely prepared striking platforms, were detached.

The second most common core is the flake type (Fig. 5). Except for the form, all of these cores are characterized by having a single or a series of parallel flaking scars on the flakes. The striking platforms fall into two types: one is an unfaceted flat platform along the perimeter of the original flake, and the other is a faceted platform steeply truncated along the perimeter of the flake. The form of the flaking scars are generally elongated, suggesting that elongated flake blanks were removed. These flakes are large and irregular-shaped with cortex on the dorsal surface and/or along the perimeter of flakes, suggesting that these were originally the waste flakes produced in the preparation of flint nodules, but were later used as cores.

These two non-Levallois types of cores (prismatic and flake) are generally characterized by having a series of parallel or uni- and bi-directional elongated flaking scars

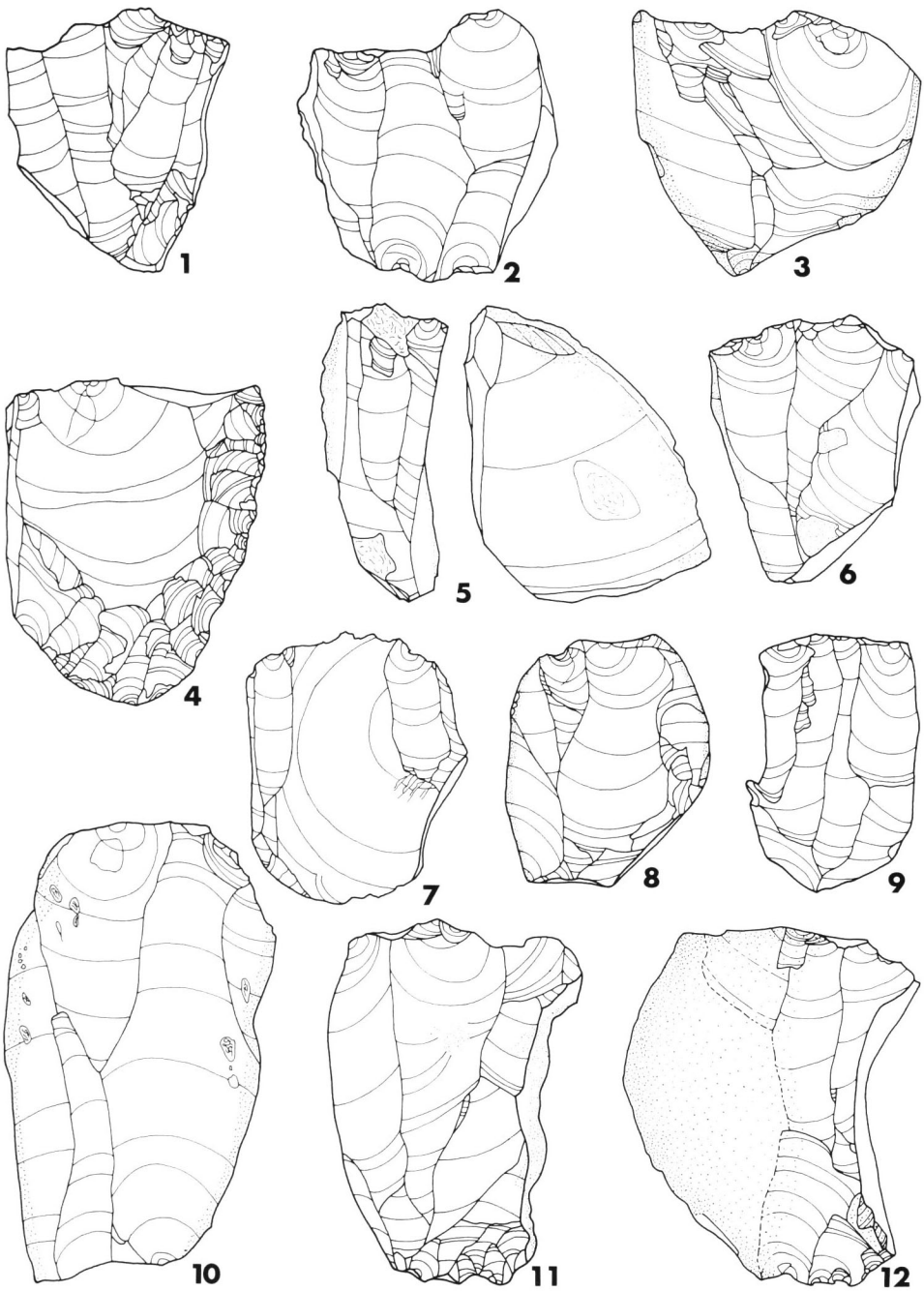

Fig. 5. Core types of the 4th stratigraphic unit of the Douara. Prismatic cores: 1,2,6,8,9,10,11. Flake type cores: 3,5,7,12. Levallois core: 4. (Scale: 1/2)

on their surfaces, suggesting the removal of blade blanks rather than flakes. This corresponds to the fact that this fourth unit produces a high frequency of blade blanks and many of these blanks are the non-Levallois type with plain striking platforms.

The Levallois and discoidal cores were elaborately prepared. There are only three Levallois type cores. They are somewhat variable in form, but all of them have flaking scars around the perimeter of their upper and reverse surfaces produced during the core preparation. The striking platforms are prepared but do not show any

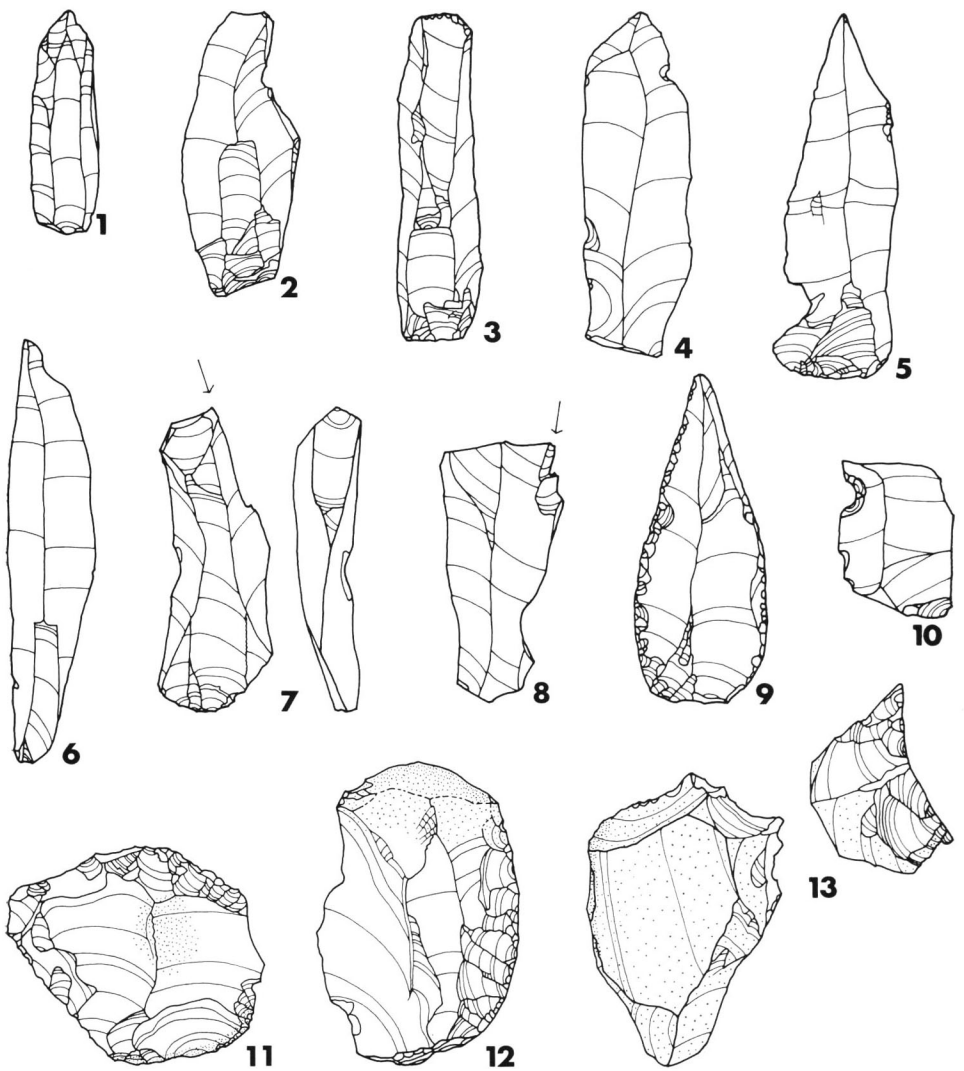

Fig. 6. Tool types of the 4th stratigraphic unit of the Douara. Non-Levallois blades with plain striking platforms: 1–6. Burins: 7,8. Retouched point: 9. Notched flake: 10. Side-scrapers: 11, 12. Steep scraper: 13. (Scale: 1/2)

intensive secondary faceting. The discoidal core is fragmentary.

Tool blanks

Tool blanks in this unit are made up of some twenty blanks of the Levallois type and more than fifty blanks of the non-Levallois type. The technological description of the tool blanks from this unit is as follows.

The Levallois Index (IL) is low, below 30. The Index of Faceting (IF) is about 50. On the other hand, the Blade Index (ILam) is high at near 70. These values reflect a very strong tendency for the production of elongated blanks. Almost all specimens classified as Levallois type blanks belong to flakes with elaborately faceted secondary striking platforms.

But, however minor the role it plays, it must be noted that the Levallois technique used in the production of the tool blanks marks one of the striking features of the fourth unit assemblage. The non-Levallois type, occupying a very high proportion of the tool blanks, consists of flakes and blades of which the latter make up the major portion of the non-Levallois type blanks.

The striking platform of the fourth unit blanks is generally coarsely made. What characterizes its faceting manner are a plano-type platform with an angle of approximately ninety degrees, or a coarsely faceted platform with a few lateral or vertical retouch scars on the platform plane. A large proportion of the non-Levallois blades have unfaceted striking platforms of the plano-, micro- and irregularly prepared types. These features notably correspond to the manner of the striking platform of the prismatic and flake type cores in this unit.

The non-Levallois blade blanks are generally characterized by a series of parallel, uni- and bi-directional flaking scars on their dorsal surfaces. These striking features observed on the dorsal surface and the striking platform correspond to the general features of the cores of prismatic and flake type. The very small proportion of the Levallois type blanks in this unit assemblage coincides with the fact that there are only three Levallois type cores among a total of twenty-one cores found in this unit.

Tools

The specimens classifiable as tools are characterized by secondary retouch, they are very few in number. One is a retouched point, three are side-scrapers, one is a steep scraper, three are burins and one is a notched piece. All specimens are made on flakes.

The retouched point is a symmetrical elongated flake blank with a pointed distal end (Fig. 6: 9). The secondary retouch is relatively shallow and steep, and is observed along one lateral margin and at the proximal end of the other margin of a blade.

Among the side-scrapers, two are fragmentary. Two specimens are characterized by having a well-made scraping edge along one lateral margin, formed by a series of parallel, deep and narrow retouchings (Fig. 6: 11, 12). The blanks for these scrapers are non-Levallois flakes with a patch of cortex at the distal part.

The steep scraper was made on a massive cortex flake produced in the preparation of the core (Fig. 6: 13). Along the top part of the flake, the indented working edge perpendicular to the ventral surface is formed by a series of extensive retouchings.

The burins are all well-made specimens on non-Levallois type blanks. These typical burins have clear, chisel-like working edges. One specimen has a working edge formed by the intersection of a facet with a retouched truncation at the distal end (Fig. 6: 7). A second specimen has a working edge formed by the intersection of the spall with the snapped edge of a broken blade (Fig. 6: 8). The final specimen is unusual in having a working edge formed by the intersection of two series of spalls crossing at the lateral margin of a massive broken flake.

The notched piece was made on a broken flake (Fig. 6: 10). The notch is deeply made by intensive retouch.

In the classification of the fourth unit assemblage according to BORDES' typological grouping, the amount of tools (typological groups I through IV) is very small and the majority of the flakes examined are unretouched flake and blade blanks produced by the non-Levallois technique. Evidence such as the common use of unretouched Levallois type tools and a low percentage of Mousterian and Upper Palaeolithic type tools verify that typologically the assemblage is dissimilar to any known Levalloiso-Mousterian assemblage in the Levant.

3. Summary

The blank forms and their production technique in the second unit assemblage are allied with those of the Levalloiso-Mousterian industries already defined in the Levant. They make use of the Levallois technique for the removal of blanks, and have faceted striking platforms and unretouched Levallois type tools. But this assemblage possesses its own characteristics in the Levalloiso-Mousterian context, with its strong tendency towards the production of elongated blanks.

The fourth unit assemblage conforms to the tendency towards elongated blanks, too. But this tendency as observed in both assemblages should be explained as being markedly distinctive in terms of technological process, for the majority of the elongated blanks constituting the fourth unit assemblage were produced by a non-Levallois technique, while many of the flake blanks, although small in number, belong to the Levallois.

The relationship between the two assemblages of the second and the fourth units are broadly summarized as follows:

1) The figure of the Levallois Index of the second unit assemblage is significantly larger than that of the fourth unit. This is the result of the high proportion of Levallois and descoidal type cores as well as the Levallois type blanks in the assemblage of the second unit. On the other hand, the Levallois Index of the fourth unit is low compared to the second unit, though it should not be ignored. In this fourth unit, the non-Levallois technique predominates in the forms of specific cores of the prismatic and flake types.

2) Both assemblages contain a collection of elongated blanks, although the quantities

differ. The fourth unit assemblage holds an exceedingly high Blade Index, a tendency which is unlikely in the Middle Palaeolithic context of the Levant. Of the elongated blanks, the majority are produced by the non-Levallois technique in the fourth assemblage and the Levallois technique in the second assemblage.

3) Secondarily retouched tools are rare in both assemblages. Since there are very few Levallois type blanks in the fourth unit, it naturally has very few unretouched tools, that is, Levallois flakes and points. This evidence ascertains that the assemblage from the fourth unit is typologically dissimilar to any known Levalloiso-Mousterian industry of the Levant. In contrast, the typological characteristics of the second unit conform to the Levalloiso-Mousterian assemblages.

IV. Discussion

The significant differences which have been explored in the previous section between the two assemblages will present new data that will encourage the examination of the variability of the Levantine Middle Palaeolithic in terms of chronological and adaptational views. Of all the facts mentioned earlier, special attention must be paid to the high proportion of elongated blanks in both assemblages, as seen in the high Blade Indices (ILam) of around 50 in the second unit and near 70 in the fourth unit. In order to examine this noticeable point in the long sequence of the Middle Palaeolithic industries of the Levant, it is best to take comparative data from other relevant sites.

The proportion of the elongated blanks to the total blanks is fairly variable in each flake industry belonging to the Middle Palaeolithic of the Levant. Among them, the Middle Palaeolithic assemblages from Tabun D (JELINEK *et al.*, 1973), Abou Sif B and C (SKINNER, 1965), Jerf Ajla B, C and E (SCHROEDER, 1969), Larikba (VANDERMEERSH, 1966), and Yabrud I: 7, 8, 9 and 15 (BORDES, 1955) show a high proportion of elongated blanks to total blanks. In addition, Amud B (WATANABE, 1968 a, b, 1970), and the Amudian levels of Tabun E (JELINEK *et al.*, 1973) and Abri Zumoffen (GARROD & KIRKBRIDE, 1961) are also described as showing a remarkable frequency of elongated blanks.

Although these assemblages can be broadly categorized into a single group, all sharing the same tendency toward elongated flakes in the blank production, they are divisible into several groups based on the interpretation of the original data, with the help of recent re-examinations.

A) The first group consists of the assemblages from Yabrud 15, Tabun E and Abri Zumoffen. These assemblages are named as the pre-Aurignacian/Amudian industry, belonging to the earlier phase of the Middle Palaeolithic of the Levant. This group is characterized by having a large amount of true Upper Palaeolithic techno-typology and by the absence or very low frequency of the Levallois technique in blank production.

B) The second group consists of the Tabun D, Abou Sif and Larikba industries and possibly the Amud B industry. All these assemblages belong to the Levalloiso-

Mousterian of the Levant. While Group A is distinctly marked by the non-Levallois technique in blank production, the assemblages of this second group are characterized by an intensive use of the Levallois technique for the manufacture of points and elongated flakes. A high percentage of the Mousterian type tools such as points and various scrapers, and a low amount of Upper Palaeolithic type tools, are other features of this group.

C) The third group consists of the assemblages found in all other levels of Yabrud and Jerf Ajla. These assemblages are also categorized as the Levalloiso-Mousterian industry characterized by having a high percentage of the Levallois technique in blank production. However, in some instances, they differ significantly from Group B. The most dominant tools in these third assemblages are the unretouched Levallois type tools. But the secondarily retouched tools, such as Mousterian points and various scrapers which are common in the assemblages of Group B, are negligible in this group. In addition, the percentage of Levallois points is also very low in contrast to Group B.

Amud B industry

The lithic assemblage from the single Palaeolithic layer (B) of the Amud Cave was originally reported as an industry intermediate between the Middle Palaeolithic and the Upper Palaeolithic in the Levant (WATANABE, 1968 a, 1970). This evaluation was based upon the fact that the assemblage consists of two distinct lithic elements: one is Upper Palaeolithic type tools such as end-scrapers, burins and backed knives, and the other is Middle Palaeolithic type tools such as various retouched points and scrapers. Both these tool forms and their proportion in the total assemblage were described as showing a remarkable difference from the so-called Levalloiso-Mousterian industries in the Levant. This assemblage was also described as consisting of a special manufacturing technique of blanks which is different from the true Levallois technique (WATANABE, 1968 b).

Some comments opposed to the above observations have been announced. In short, scarcity of complete data from the Amud Cave is responsible for the difficulty in presenting definite conclusions as to the nature of the Amud B industry.

The material of the Amud B industry examined for this occasion numbers a total of some 1,000 specimens, being a part of the material from Layer B that was deposited in the University Museum at the University of Tokyo. The classification and description of these specimens aim at providing a quantitative and qualitative account of the material that is readily comparable with data from the Douara Cave. Hence, BORDES' classification system is utilized just as in the case of the Douara Cave.

The cores are variable in form but they share the same characteristic features: almost all of them are coarsely made on a small-sized pebble or flake with cortex on the reverse surfaces (Fig. 7: 5, 6). WATANABE (1970) divided these cores into one-sided (Core A of WATANABE) and two-sided (Core B) prepared cores, discoidal cores (Core C) and flake type cores including other miscellaneous cores (Core D). This assemblage

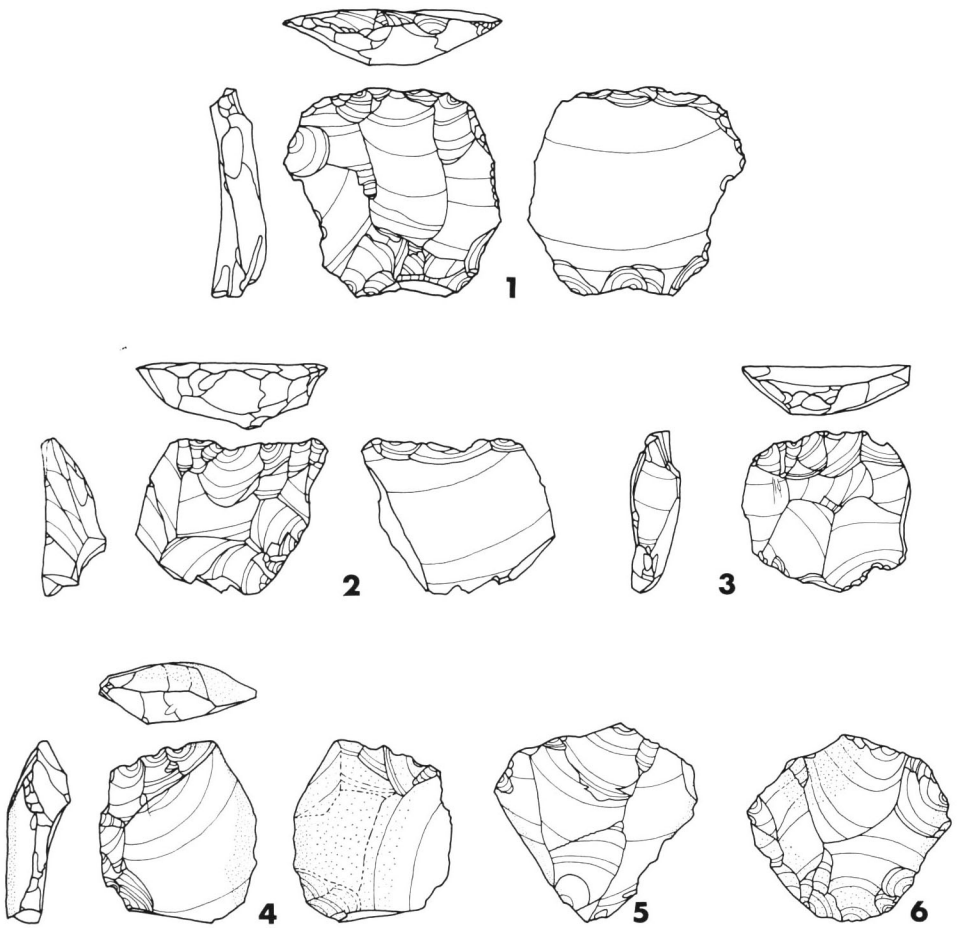

Fig. 7. Truncated flakes and cores of the Amud and the Douara. Truncated flakes of the 2nd stratigraphic unit of the Douara: 1,4. Truncated flakes of the Layer B of the Amud: 2,3. Levallois core (two-sided prepared type of Watanabe) of the Amud: 5. Discoidal core of the Amud: 6. (Scale: 1/2)

was described by him as consisting of a special blank production technique different from that of the Levallois that utilizes tortoise-shaped Levallois cores.

I propose that the one-sided and two-sided prepared cores, which are the most dominant type, should be categorized as a point type of the Levallois core (BORDES, 1950), although their preparation is too coarse to be called typical Levallois cores. They are continuously reworked until they show such characteristics, or are regarded as a temporal and/or local variant in form as a result of shape differences imposed by the raw material utilized.

Another type of core in the Amud B industry, described as showing a special core

technique is the flake type (WATANABE, 1968 a, b). The majority of this type cores have the same characteristic features as those of the cores described as showing a special flaking technique in the Middle Palaeolithic assemblage from the Nahr Ibrahim Cave (SOLECKI and SOLECKI, 1970). These cores consist of intensive truncation and usually, secondary faceting along one or both ends of flakes, and the utilization of the truncated portion thus created as a platform for flake removal (Fig. 7: 2, 3).

However, after examining the forms and the manufacturing process of these cores, it becomes uncertain whether these flakes are reworked for the reutilization of them as cores. The secondarily truncated portions functioned as the striking platform from which a series of small flakes were struck off. But those flaking scars are usually too small to produce the tool blanks found in association with them. It is doubtful that these cores are continuously reworked until they become reduced in size and then are abandoned. That is, the truncation and flaking of the flakes are the distinctive techniques for making a special type tool characterized by the zig-zag and thinned margin produced by the intersection of the truncation with the flaking from the resulting platforms.

Accordingly, the core technique of the Amud B industry is not distinct from the Levalloiso-Mousterian of the Levant. Almost all of the cores consist of the Levallois type although they have been described as one-sided and two-sided prepared cores different from Levallois and discoidal cores. These characteristic features mentioned so far coincide well with the core technique of the Levalloiso-Mousterian context of the Levant.

The blank forms and their production technique in the Amud B industry were described as consisting of some unique features different from the Levalloiso-Mousterian (WATANABE, 1968 a, b, 1970). The most remarkable distinctions are the absence of the normal Levallois technique of flake production and the large number of elongated flakes and points mostly with scars of preparatory flakings directed from the butt end.

Certainly, Levallois flakes with centripetal flaking scars on their dorsal surfaces are rare in the collection examined. If the absence of the normal Levallois technique is concluded from the above facts alone, it might cause considerable discrepancy concerning the characters of the core forms as well as the whole blank forms.

In the Amud B industry, the points and elongated flakes occupy a large proportion of the total blanks. The forms of these blanks are usually characterized by having uni- or bi-directional flaking scars on their dorsal surfaces, resulting from their detachment from the point and blade types of the Levallois cores reconstructed by BORDES (1950). Accordingly, it is natural that the blank form of the Amud B assemblage should show a remarkable tendency toward uni- or bi-directional preparation scars since the point types of the Levallois core, described as one-sided and two-sided cores, are the most common in the assemblage.

Only a part of the collection of the Amud B has been studied and this assemblage is strikingly characterized by the high proportion of points, retouched and unretouched, and various side-scrapers. Included in the retouched points are a number of Mous-

terian points characterized by having well-made, pointed tips formed by a series of usually abrupt, extensive retouches along both their margins. The side-scrapers are variable in form, but they usually have well-made working edges retouched extensively and elaborately along one or both margins.

On the other hand, Upper Palaeolithic type tools, such as burins and end-scrapers, which are manifested in the original report, are rare in the assemblage examined. A chamfered piece is absent.

According to the description done so far, the Amud B industry is a chronological and/or local variation within the Levalloiso-Mousterian context, rather than being distinct from the Levalloiso-Mousterian industry defined in the Levantine region. Although it is difficult to establish with certainty a close relationship of the Amud B industry and any of the assemblages from other sites, it resembles the Abou Sif B, C assemblages. Each of them has a frequent use of the Levallois technique, a relatively frequent use of elongated blanks, and a relatively high proportion of various points and side-scrapers in the total assemblage. Furthermore, the tendency torard unidirectional blank production is manifested in both the assemblages from Amud B and from Abou Sif B and C (WATANABE, 1968 a, b; MARKS & CREW, 1972: 593).

On the other hand, these Abou Sif industries fall into the same group as Larikba and Sahba referred to by PERROT (1967: 345) as *Moustérien à pointes allongées.* This kind of industry also appears in Tabun D, suggesting that it is a distinct and widespread horizon of the Levalloiso-Mousterian in the Levant, intermediate in time between Yabrudian and pre-Aurignacian, and the later phase of the Levalloiso-Mousterian (JELINEK *et al.,* 1973: 177). Accordingly, the Amud B industry requires further information and data from other relevant sites in order to find its relation to them and to determine its definite chronological position in the long sequence of the Middle Palaeolithic industry of the Levant.

In comparing each of the Douara assemblages examined earlier with the three groups mentioned above, the Douara assemblage of the second unit seems to match wholly with Group C. For example, *technologically,* they both have a moderate to high usage of the Levallois technique, a frequent occurrence of faceted striking platforms and a relatively frequent occurrence of elongated blanks. *Typologically,* they are characterized by showing a high percentage of unretouched Levallois type tools and a low frequency of secondarily retouched tools of Mousterian and Upper Palaeolithic types. Besides, a very low frequency of point type tools in the second unit assemblage is important evidence for identifying this assemblage with Group C.

On the other hand, the assemblage of the fourth unit is unlikely to match wholly with any of the three groups, although it comes slightly closer to Group A than to Group B or C in its low use of the Levallois technique. However, even within Group A, the assemblages of Yabrud 15, Tabun E and Abri Zumoffen are distinct from the Douara assemblage with their high percentage of Upper Palaeolithic type tools such as burins, backed knives and so forth.

Among several features characterizing the fourth unit assemblage, there is one

prismatic core showing a special core technique. This core, together with the flake type, predominates over the so-called Levallois core in this assemblage. The cores classified as the prismatic type in this paper have the same features as those of the semi-Levallois blade cores found in the pre-Aurignacian level of Abri Zumoffen (COPELAND, 1973: Fig. 11, nos. 6, 9) and the blade cores from Yabrud 15 (RUST, 1950: Fig. 37). In addition, the above type core was discovered in the pre-Aurignacian level of Haua Fteah in Cyrenaica (MCBURNEY, 1967: 75–104). Furthermore, in this assemblage, flake type cores are associated with the prismatic core, just as in the fourth unit of the Douara. Probably, it can be said that a special flake industry, as shown in the popularity of the prismatic core technique and blade-like industry, appeared in the very early phase of the Middle Palaeolithic context.

Interestingly, cores having the same morphological features as those of the prismatic type mentioned in this paper also resemble the evolved Levallois core described by COPELAND (1976: 40). According to COPELAND, this type of core seems to be characteristic in the Levalloiso-Mousterian industry of the Levant. And it grades into the prismatic core of the early Upper Palaeolithic as exemplified in the majority of the Ksar Akil Phase A assemblage from the Antelias Cave (COPELAND, 1970).

It cannot be denied that the prismatic core discussed in this paper commonly appeared twice, once prior to and once subsequent to the Levalloiso-Mousterian context of the Levant. Although the subsequent appearance can presumably be taken to show that this kind of core marked a transitional type core technique in the evolutional change from the Levallois core to a true blade core, the prior appearance is too mysterious to be explained by present knowledge.

Moreover, from its few occurrences, it is not yet possible to clarify the meaning of the first appearance of the prismatic core. But one possibility is that during the closing stage of the Acheulean industry and the establishment of the typical flake industry represented by the Levalloiso-Mousterian there came about evolutional and technical changes such as shown in the core techniques and blank production. From this point, one possible explanation arises that the prismatic core with primitive core preparation appeared at first as a proto-type of the carefully prepared Levallois core.

The fourth unit assemblage from Douara is broadly characterized by two features. One is the non-Levallois core technique, utilizing the prismatic and flake type cores. The other is a strong tendency toward elongated blanks most of which are produced by the non-Levallois technique. The above two features are wholly compatible since the elongated blanks that have been classified techno-typologically as non-Levallois pieces were probably removed from these non-Levallois cores just as the Levallois type blanks were removed from the Levallois and discoidal type cores in the second unit assemblage of the Douara.

Apparently, the discovery of the Douara assemblages can supply the more precise knowledge concerning the beginning of the Levalloiso-Mousterian that we are in great need of. The unusual evidence from the two assemblages of the Douara promises new perspectives toward examining the origin and evolution of the Levalloiso-Mous-

terian and the relationship of the Levalloiso-Mousterian to the pre-Aurignacian and Yabrudian industries in the Levant.

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