

FROM HUNTER TO FARMER AND TRADER

STUDIES IN THE LITHIC INDUSTRIES OF ISRAEL
AND ADJACENT COUNTRIES

(FROM THE MESOLITHIC TO THE CHALCOLITHIC AGE)

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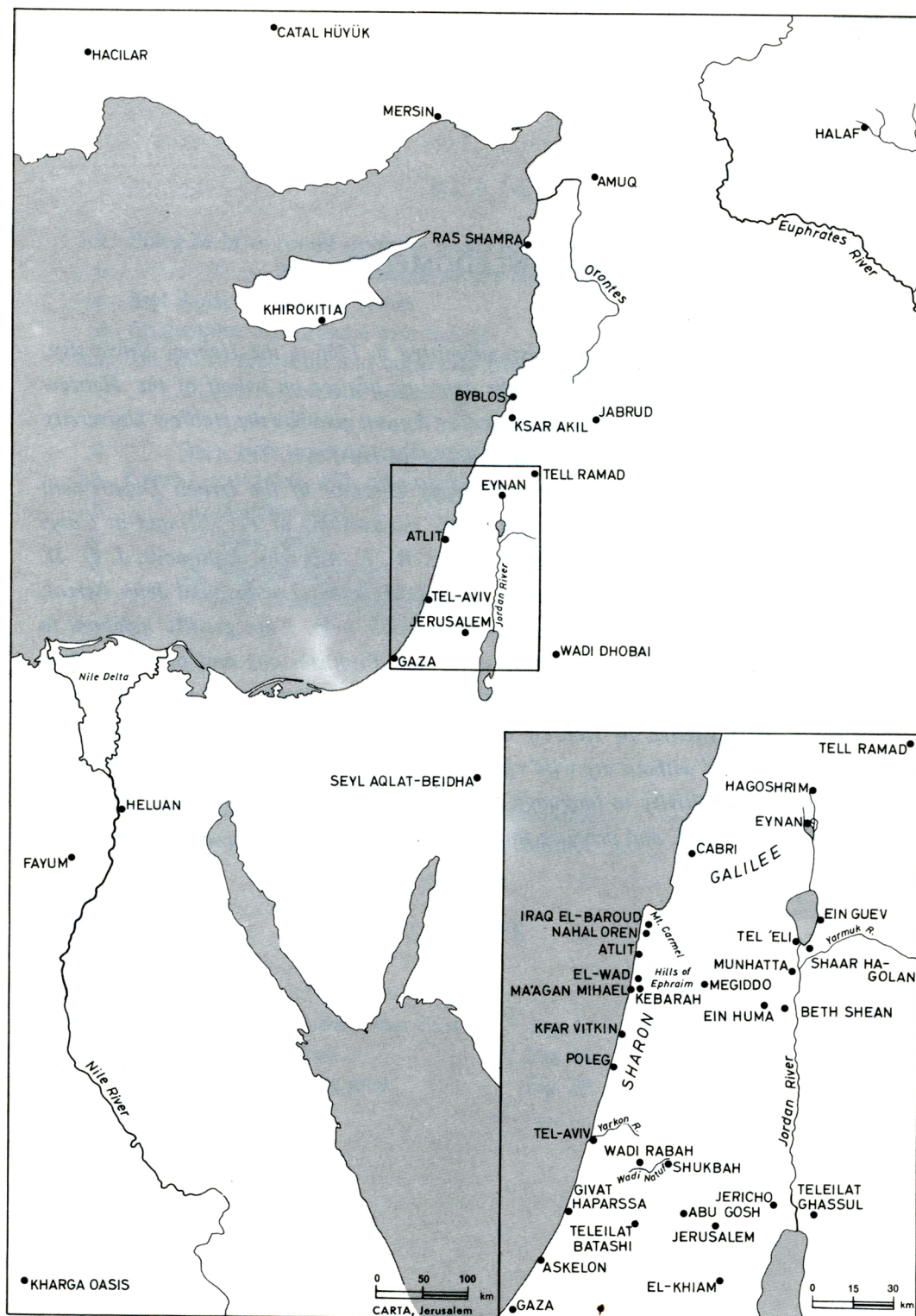
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M. W. Prausnitz



Sites in the Ancient East

FOREWORD

Along the eastern shore of the Mediterranean Sea from the forested Taurus Mountains in the north to the Sinai desert in the south there lies a fairly narrow strip of arable land, the Levant. This geographical unit squeezed in between the sea and the Syrian Desert is now occupied by four states: Israel, Jordan, the Lebanon and Syria with its northern edge forming part of Turkey.

The Levant is a land of contrasts, that clearly reflect its geological structure. An Alpine mountain range of Tertiary date lies on the western edge of the Arabian platform, tilting westwards, and separated from it by a great Rift Valley, now occupied by the Gulf of Aqabah, the Dead Sea, the Jordan, Litani, Orontes and Karasu valleys, all of them seismically active. This rift can be traced from the foothills of the Taurus Mountains to the Red Sea, and incidentally formed a natural highway. Other traces of crustal disturbance are to be seen in the basalt plateaus and occasional volcanoes that accompany the rift valley on its eastern edge from southeastern Turkey to Aden. The three geographical elements, the coastal mountain range, the rift valley and the western edge of the Arabian platform all provide different environments for flora fauna and human habitation.

The present appearance of the western edge of the platform is probably deceptive for earlier periods. Its present semi-aridity was modified by elevation (Jordanian and S. Syrian uplands), the presence of forest and of streams and springs, often in oasis, such as that of Damascus, or Petra. Eastwards towards the drainage basin of the Euphrates, arable land gives way to steppe or stony desert, yet here also oases provide an opportunity for early settlement, such as at El Kom northeast of Palmyra.

The Rift valley itself, occupied by alluvial deposits and well watered by springs and rivers, is fertile and seems to have been favoured by early agriculturists a fact probably facilitated by easy communications. Its southern end, however, falls within the present arid belt, but the absence of typical irrigation crops in the Pre-Pottery Neolithic A and B deposits of Jericho may indicate that conditions were less severe in the eighth and seventh millenium B.C. Further south, springs, like those of Beidha, Eyn Gedi and in the Wadi Araba led to early agricultural development at the same time or somewhat later. Dry farming is common from the northern Jordan

valley northwards, as it was of course also in the greater part of the belt of mountains from Amanus, Lebanon, Galilee highlands and its southward extension up to Jerusalem. South of here the Judaeian desert begins, now a desolate waste, yet able to support Natufian villages with fish in now desiccated wadis. In the Negev and Sinai deserts there is no lack of prehistoric occupation, indicative of changed conditions.

There remains the coastal plain of varying width. At its narrowest at the far northern end near Iskenderun (in Turkey) it enjoyed an unsavoury reputation for malaria and at its southern end near El Arish it merges with the sands of the Sinai desert. Yet, between these two extremes, the coastal plains of the Levant with sandy, rocky or shingle beaches, well-watered and covered with woodland or forest, provide a lush environment which has attracted man since the Early Palaeolithic, a real paradise for hunters and food gatherers, but less suitable for early agriculturalists, who may have preferred the Rift Valley, on present evidence.

Throughout the Levant the natural lines of communication run from north to south, and east-west routes, though by no means absent, are less common and generally more arduous. Only in the far north, in the region of Aleppo, can one talk of a natural route leading from Mesopotamia to the North Syrian coast. The mountains of the Lebanon and Anti-Lebanon moreover divide the Levant into a northern and a southern part. North is open to contact with Mesopotamia, Cilicia and the high Anatolian plateau. The south (South Syria, Lebanon, Israel and Jordan) forms a different group, somewhat more isolated, but accessible by several routes from the north (coast road and Beqa' routes from Lebanon) or by the desert track via Palmyra from the Euphrates valley near the junction with the Khabur, which leads to S.E. Anatolia.

It is highly significant that this system of trade routes was already in operation in early postglacial times. Evidence for trade with C. Anatolia goes back to the late 9th millenium, when obsidian from the Ciftlik source near Niğde reached Proto-neolithic Jericho. In the 7th millenium, Vannic obsidian reached Tell Ramad near Damascus, evidently by the desert route (via the Palmyra region, Bouqras and the Khabur valley). The similarities in domestic crops and their preference, seen c. 7000 B.C. at such diverse sites as Beidha in Jordan, Ali Kosh in Iranian Khuzistan (Susa area) and Aceramic Hacilar in S.W. Anatolia is probably an indication of an unsuspected exchange of ideas and information, the result of trade an interaction. Occasionally too, the Sinai desert must have been crossed by hunters such as the group that settled at Helwan on the Nile with their Natufian traditions. In fact far too little is known of the culture known as "desert Natufian" or for that matter of the tribal groups that left carvings in the Negev and Transjordanian deserts. Even

coastal contacts with other regions, such as e.g. Cyprus, should not be ignored, now that we have evidence in the Aegean for seafaring in the late 8th millenium (Melian obsidian at Franchthi cave in the Argolid).

Unfortunately far too few climatological and ecological studies are available for such marginal regions as the Levant where even small changes in climate, rainfall and groundwater level may mean the life or death of a settlement. Certain deteriorations of environment are evident from the archaeological record, but it is not often clear whether this was caused by natural or human agencies. Deforestation, misuse of the land, seismic disturbances of the watertable all come into consideration. That conditions in early times were different is clearly demonstrated by the presence of elephants, hippopotami and ostrich in Syria and wild cattle as far south as Petra.

It is against this background, similar in some aspects to the Levant of today, but different in others, that Dr. M. W. Prausnitz's account of the lithic industries and the various communities that made them, whether hunting, fishing, gathering or already agricultural, must be viewed. It is in Israel that much of the recent work has been achieved, but a summary of the evidence has not yet been presented. This book attempts, just this, and should therefore fill a gap.

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INTRODUCTION

Within the comparatively short period of 6000 years — less than one percent of the span of Man's prehistory — human society progressed from an economy based on hunting and fishing to one based on farming and trading. This rapid evolution was traced to the Ancient Near East and, particularly, to the Fertile Crescent.

It is intended to present and examine the archaeological evidence, such as the remains unearthed in recent excavations in Israel and neighbouring countries, some of them as yet unpublished. The archaeological evidence is, of course, interpreted in terms of stratigraphy, typology and technological developments.

Man's progress from a nomadic and pastoral to an agricultural and eventually urban way of life cannot be illustrated by the work of the archaeologist alone. Many details belong to the realms of specialised research of the botanist, zoologist and anthropologist. Primarily, the task of the historian and of the prehistorian is to work out the sequence of development and of human achievement. Hence, the main emphasis of archaeological work in the field is directed to unravelling the sequence of archaeological layers, which also provide the order and measure in terms of time.

The subject of this study is the typological and stratigraphical analysis of stone tool industries of Mesolithic and Neolithic times. Typological comparison and stratigraphical analysis will be the methods employed to establish the nature and sequence of the lithic industries under consideration. Some thirty years ago Mesolithic as well as Neolithic and Chalcolithic levels were revealed for the first time at Jericho, at Jabrud, Wadi-Natuf, at Teleilat Ghassul and in the Fayum. During the subsequent decades additional lithic material was excavated. Further progress can only be expected if the new lithic material is examined and arranged in the light of the work done and partly published within the last few years. Before the advent of pottery the lithic material is the major archaeological evidence in the hands of the excavator of prehistoric sites.

The stone tool is the embodiment of the success — or failure — of a society in adjusting itself towards its physical environment. Physical conditions surrounding primitive prehistoric societies can act as both stimulus and hindrance to progress. Therefore the stone tool, like any other tool, will be used as long as it can be use-

fully employed by the society which fashioned it. The tool is not just the product of the art of a single craftsman, but together with all the tool-kit will reflect and fulfil the needs of the entire community.

The distribution of certain types of tool within an area and the quantitative and qualitative relation of the tool to the tool-kit will indicate changing functions of and relations to the tool. In the eyes of the community the purpose and meaning of a tool may undergo radical changes. For example, the discovery of the advantage of composite tools we take to characterise the Mesolithic age. Microlithic flints were produced in great quantities and stuck into wooden slots, bone handles or sticks to serve as arrows, knives, harpoons or barbed reaping knives. Ever since, these tools have remained an important part of the equipment and armory of Man. After the introduction of the axe in Neolithic times their social significance underwent a total change in the estimation of men. In due course the axe became the most coveted symbol both as weapon and as token of authority, while the beautifully decorated bone handles of knives of Mesolithic times disappeared.

Within the framework of this study we distinguish three stages, which have even been called "revolutions", in the progress of Man:

A. In the period reviewed we witness the transition from food and plant collecting to the cultivation of noble grasses, to the domestication of animals, to the beginning of horticulture and the first semi-sedentary settlements. The knowledge how to increase the means of living and food finds immediate expression in the tool-kit Man uses. Hence new working tools accompany the transition to and evolution of new ways of life.

B. The second development also has been distinguished by the name 'revolution'. Within this stage centers of settlement arose which, like Jericho, were of urban size. Distribution of labour and diversification of trades were natural results of this development. With the help of the division of labour and a new order of society a more efficient exploitation of the environment was made possible. Specialised selected tool-kits belonging to craftsmen and artisans are found within these centers. As a corollary a higher standard of workmanship and a better and wider choice of raw material was sought.

C. The third development is characterised by the advances of the Neolithic and Chalcolithic craftsmen in the knowledge of stones and their chemical composition. In short, the extraction of ore from cut and crushed and ground stones, the discovery of baking and melting opened up new possibilities for working and exploiting valuable stones and ores. These discoveries eventually led to the working of metal and the displacement of flint as basic material for the fashioning of tools.

The typological study of the context of the finds must be brought into relation

with the geological data of the area and should also be connected with the changes in the ecological environment. The course of change in climatic conditions could provide an absolute chronology in Prehistory. In view of the fact that three different climatic zones meet within this comparatively small area, there exists a particular difficulty in the Israelite post-Pleistocene Age. The proximity of three climatic zones with different ecological conditions must have stimulated, if only through interaction, the selection of tools suitable for regional needs.

The chronological evaluation of prehistoric sites and stratigraphically disconnected habitation levels should be based on the sequence worked out by geologists, zoologists, botanists, as usual in prehistoric archaeology. On the other hand, stratigraphic levels superimposed one upon the other and retained within caves or by walls and terraces encircling the settlement will be judged in accordance with the criteria generally accepted in archaeology.

It is known that until the establishment of national frontiers nomadic tribes were capable of moving within a year over distances of 2000 km, if the climatic conditions and seasons made such moves imperative. Prehistoric sites exist along the route where the nomadic peoples travelled. It is therefore a commonplace to say that the study of nomadic groups has to cover a very wide area and actually an investigation of the lithic industries of the Levant, in its widest sense, is required for the proper understanding of the emergence of local developments. With the advent of permanent settlements, the field of investigation narrows. The exploitation of the particular resources of a locality may produce a regional culture with its own preference of tools according to its needs. Thus the stone tool types will also form a common basis of reference between nomadic and sedentary ways of life.

It is evident that all collection of scientific data is a meaningless occupation unless the data is generally understood and properly defined. In prehistory as in any other scientific discipline there must be, to achieve proper results, a terminology, a typology which is both meaningful and consistent. There are three alternative possibilities for doing this. It is well known that stone tools can be recorded by: (a) description of shape, or (b) description of function, or (c) designated by number and/or letter. It seems to us that there is little point in recording information which is obvious and plain; whenever the function of an object can be identified beyond reasonable doubt, the description of shape, which is plain to see, will be secondary to function. Yet there are also many instances of multiple use of instruments. The way of solving the problem of terminology of tools of many uses may be to develop a standard terminology and typology through the use of numbers or letters, which have already been defined and accepted. This, however, can only be a later development beyond the scope of this work. A terminology of established meaning greatly

facilitates the work of elucidating the development of lithic assemblages within a given period. Tools can be examined not only as types within a temporary framework, but also as comparable groups of artefacts within successive periods and in different regions. In order to become reliable indicators the stone tool groups must show changes in form and must be sufficiently numerous and in common use. Through the change in evolution and in time variations in the contents of the group can be recognized indicating the survival of the old and the arrival of new forces within the group. Correlation and comparison of the stone tools may show one or several developments. There are bound to be several alternatives within the variety of experience and environment. In the last resort archaeological reconstruction of preliterate society is based on our belief that Man is reasonable. Given a set of similar conditions homo sapiens will choose the tools best suited to his needs. Archaeological study has shown the wide-spread use all over the world of certain tool-forms in areas distant and unconnected. Change may be the result of adaptation to a changing environment, but progress is due to the genius of Man who successfully chooses and adds new tools to his tool-kit.

CONCLUSION

The study of the flint industries from the Mesolithic, Neolithic and Chalcolithic Ages has revealed a great amount of facts and a pattern of change and culture contact within the very long period under review. Three main trends were discerned: the survival of nomadic and semi-nomadic societies with their characteristic tool kits; the evolution of an agricultural regime with the appearance of tools and vessels used to exploit and store the produce of the land and, at the same time, the emergence of specialised implements to serve new crafts. Because of its three climatic zones, Israel formed a meeting place, where people from the desert met tribes descending from the mountaineous forests and others roving the flat plains along the coastline. In the deserts and on the sand dunes microlithic flint tools survived at a time, when tool-kits of totally different composition were already firmly established in rural and urban centres.

In the course of research it became clear that the vast differences of environment within a small area like Israel, made it unwise to expect rigid and mutually exclusive changes of material culture. The rules and forces of culture contact and change are thus illustrated in the varied content of the flint assemblages.

In spite of the variety of cultural and ecological environment, the tables endeavour to relate in terms of time, the evolution and arrival of tool types and flint techniques. It was realised that technical progress did not follow an inflexible pattern of causal sequence. We ventured to ascertain the stratigraphical sequence of typological changes. We noted that the sequence of events within a general area frequently moved at the same time into different directions. The summary evaluates only the major developments of the main tool types from the Mesolithic to the Chalcolithic Age.

The summarised presentation of the lithic industries by their leading tool types over a period of over 5,000 years cannot claim to be complete. As a result of the progress of science, new discoveries and new techniques will add to or even modify the links in the chain of development described.

Our study of the sequence of flint industries began with the appearance in Syria, Israel and Jordan of geometrically shaped blades, squared and truncated. Next, the appearance of back blunted microlithic bladelets, pointed, double-pointed,

squared and truncated ushered in what, by definition, was described as the Early Mesolithic Age.

With the appearance of the Natufian tool-kit the Middle Mesolithic Age began. The innovations in the working of flint and stone are:

- a. the appearance of the double-ridge retouch, also called the Heluan retouch;
- b. the appearance of crescents;
- c. the appearance of sickle-blades, i.e. blades which have a working edge made lustrous through use.
- d. the existence of composite tools, flint and bone handles is archaeologically attested in the Levant.
- e. the arrival of a novel set of stone tools and vessels made of basalt or limestone, like pestles, mortars, crushing slabs, whet-stone, which served for crushing, crunching, grinding, rubbing.

The existence of Kebaran stone cultures, which continued and evolved into the so-called developed Kebaran industries was related to the Middle Mesolithic Age. They retained their Early Mesolithic tool-kit, admitting only those new tools, which could be usefully employed in accordance with their needs. In the Middle Mesolithic Age the rise of the Natufian phenomenon led to the co-existence of at least two very different stone cultures within the area of Israel and Jordan (the developed Kebaran and the Natufian).

Subsequently, the innovations of the tool-kit of the Late Mesolithic Age are:

First:

- a. the appearance of the micro-burin, called Tardenoisian;
- b. the appearance of segments of blades such as trapezes, symmetrical triangles and other geometrics;
- c. the appearance of notched blades frequently long and with a pointed tip;

Secondly:

- d. the appearance of notched arrow-heads and tanged bladelets.

The appearance of microlithic industries in Syria, Israel and Jordan can therefore be divided into three stages marked by stratification as well as by typological criteria: the Early-Middle-Late Mesolithic Ages. The position of the Kebaran of Israel and Jordan and the Nebekian of Syria as the earliest microlithic industry is undisputed. The stratified sequence of lower and upper Natufian has never been questioned. The quantitative typological examination of microlithic, stratified and one-stratum sites revealed the contemporaneity of developed Kebaran and lower Natufian industries. Continued contact between these two cultures became manifest in the Late Mesolithic Age because of the specialised composition of the tool-kits, which agreed with the local environment.

The proposed division of the Natufian into 4 stages, I-IV, was based mainly on the excavations in the semi-arid area of the Judean desert (Neuville, 1934^b, Pl. XV). The description of the el-Khiam lithic industries — or similarly composed tool-kits — as “Natufian” was questioned (p. 43-44)*. Under the influence of Neuville, Garrod abandoned her stratigraphic two-fold — Upper and Lower Natufian — division. She then divided the Natufian into the Lower, Middle and Upper stages with Shukbah B as the representative of the Middle Natufian (Garrod, 1957, p. 224). We note that Shukbah B had a very advanced Middle Mesolithic industry and, owing to the apparent absence of micro-burins, would be contemporary with the Lower Natufian (pp. 31-34). In accordance with tool-analysis and stratigraphy, a two-fold division of Lower and Upper Natufian is suggested, placing the first in the Middle Mesolithic and the second in the Late Mesolithic Age. Once this division of the microlithic industries of the Levant into three Mesolithic stages is accepted, the Natufian phenomenon, its dramatic beginning and subsequent evolution agrees readily with the sequence of the Mesolithic industries of the area and with the stratigraphy established by excavation.

The notched blades, the tanged bladelets, the notched arrowheads are the typological links connecting the Late Mesolithic tool industries with the Tahunian and the Proto-Neolithic and Pre-Pottery ‘A’ Neolithic of Jericho. The change from the Mesolithic to the Neolithic Age, so decisive in the history of Man, was gradual to judge by the evolution of stone tool types. The proto-Neolithic and the Pre-Pottery ‘A’ Neolithic of Jericho were compared with the Tahunian industry. The picks, the axes, long saw and sickle blades prepared by new flint working techniques provide archaeological evidence for the transformation which had taken place in the economic basis of human existence. More soil was worked and more villages were founded.

The excavations at Jericho in the Jordan valley provided a stratigraphic sequence from the Late Mesolithic Age through the Proto-Neolithic, Pre-Pottery ‘A’ to the Final Pre-Pottery Neolithic ‘B’ of Israel and Jordan. The excavations at Tel ‘Eli, also in the Jordan Valley, continued the stratified sequences from the Pre-Pottery Neolithic ‘B’ through the Pottery Neolithic and until the Chalcolithic Age. These excavations provided a sequence of deposits to which the occurrence of tool types from other sites could be related.

The following tables present the results of the analyses of tool-types and sequence of related deposits from the Mesolithic unto the Chalcolithic Age.

* Independent support for our argument that the el-Khiam industries should not be called “Natufian” was forthcoming from the renewed excavation at el-Khiam, after this work had been completed. The excavators rejected the Neuville-Perrot terminology and adopted the names “Kebarien I”, “Kebarien II”, “Kebarien III”, which are developed Kebaran industries. The so-called Natufian was now called “Khiamien” (J. Gonzalez Echegaray, *Nouvelles fouilles a El-Khiam*, *Revue Biblique*, 1963, pp. 104-110).