Chapter IX

A DISCUSSION OF Solutrean ORIGINS

A culture is constantly being transformed by development and decay, and in a sense it is also without any beginning if it is not traced back to its very source at the emergence of mankind. If, however, the problem is kept within reasonable bounds, we must define the origin of a culture not as the origin of its separate elements, but of their synthesis; and not any synthesis of these elements, but as the formation of that particular complex which distinguishes it from other forms of culture.


(A) Introduction

An earlier chapter of this paper, dealing with the historical aspects of the Solutrean, has mentioned the various hypothesis regarding the nature and origin (usually the two are inseparable) of the Solutrean. They may be briefly singled out as follows:

(1) The Solutrean is not a distinct culture or industry at all but simply a fashion or technique of stoneworking;

(2) It was derived from North African Aterian or S'baikian, entering Europe via Spain;

(3) It entered Western Europe as an "alien" culture
after developing somewhere in the East, probably from the Szeletian;

(4) The Solutrean developed in France indigenously from earlier local cultures. According to the writer, the roots may be in the Aurignacian, the Perigordian or the Mousterian.

The first hypothesis need not be discussed further here. It is hoped that the evidence brought out in this paper, especially from Laugerie-Haute, will provide further support, if it is needed, to the arguments offered by de Sonneville-Bordes (1960) for the identity of the Solutrean as a distinct and continuous tradition within the Upper Palaeolithic. It is clear by now that the integrity of the Solutrean rests on a firm stratigraphic and typological foundation which need not be questioned. The Solutrean has a configuration, a structure or identity of its own, statistically as well as qualitatively, and is as distinct from the other recognized Upper Palaeolithic industries as they are from each other.

(B) The North African - Spanish hypothesis:

It has already been outlined in Chapter II how the idea of seeking the origins of the European Solutrean in North Africa took root in the 1930's. Although the hypothesis was toyed with for several years before, it attained
its greatest popularity after Pericot published his results from Parpalló, in Eastern Spain, in 1942, and especially after very Solutrean-like objects had been found in the Late Aterian at the Mugharet el 'Aliya in Tangier (Howe and Movius, 1947). Caton-Thompson's essay of 1946 also provided a strong support for this view, claiming as it did that the three Solutrean levels at Parpalló could be equated with three stylistic horizons of the Aterian, and that the Spanish (and ultimately, the French) Solutrean was the result of a "current of Aterianism" which swept briefly through the well-consolidated "Gravettian" world, adding thereto certain serviceable and "warlike" elements such as foliates and stemmed points. These points, she thought, were originally derived from a Tumbian-Lupemban source in the Congo Basin. Breuil (1950) criticized her conclusions at some length, mainly on the grounds that (a) not a single Aterian point had been found at Parpalló (an argument that really misses the point of Caton-Thompson's reasoning, since she was proposing stylistic horizons rather than absolute identities), and (b) the Aterian industry is purely Levalloiso-Mousterian in technique and associated with Neanderthal-type man, whereas the Solutrean is technologically an Upper Palaeolithic laminar industry linked, as far as is known, with men of sapiens type. Nevertheless, in the same article Breuil reaffirms his belief that Spain did play a
part in producing the (or rather, a) Solutrean in the
Manzanares Valley; other centres of origin and development
were, he considered, to be found in Hungary, the southern
part of the Rhône Valley and the Franco-Cantabrian zone.

Vaufrey has consistently opposed the idea of a
North African influence on the Upper Palaeolithic of Europe,
though not denying connections between the two: any
similarities between the Aterian and the Solutrean are, he
believes, due to Iberian influences on the Aterian and not
the reverse. He, like Breuil, emphasizes that no Aterian
points are known from Spain, and that the stemmed and winged
points found there did not require inspiration from the
rather crude Aterian at all -- rather, that craftsmen with
the originality of the Solutreans who had already invented
the single-shouldered point would have no trouble adapting
it to double-shouldered (tanged) points if they wished.
The bifacial foliates of the Aterian came from Spain, he
feels, and perhaps went from there to East and South Africa
(Vaufrey, 1953a; 1953b; 1956).

Balout, in conversation with the writer and in his
publications, has also expressed the belief that the
Aterian had no influence on the European Solutrean, indeed,
he believes firmly that there was no sea travel at all
between Europe and North Africa until the Neolithic (Balout,
1954). For both Balout and Vaufrey, of course, it is
axiomatic that Africa has been a receptor rather than a donor culture area since Middle Pleistocene times. Nevertheless, the curious concentration of Aterian foliolas in the Tangier Zone, nearest to Iberia, as contrasted with their relative scarcity elsewhere in the Aterian, does suggest that if there were any connections across the Straits of Gibraltar during Upper Palaeolithic times, Vaufrey's hypothesis of an Iberian influence is more probably the correct one. If North Africa were the place of origin of foliolas such as occur at the Mugharet el 'Aliyah and Taforalt, one would expect to find them more widespread in North Africa than is the case, and to find more Levalloisian technique and Mousterian flaking in Spain than is known had the direction of movement been northward across the Straits. Vaufrey believes that the so-called S'Baikian industry, hitherto known only from surface finds, owes part of its foliolas to the Aterian, that is, that it is only a "surface Aterian". But a good deal of material attributed to the S'Baikian seems merely a Capsian of Neolithic tradition (Gruet and Diard, 1954:311). Balout (1955:457-58) is also inclined to regard the S'Baikian, insofar as it can be regarded as a homogeneous complex at all, as Neolithic, in no way related to the Solutrean.

Pericot's views about a North African origin for the
Spanish Solutrean have become more cautious in recent years. In 1950 he believed in direct origins from Africa by invading bands (Pericot, 1950:115-16). At the Second Panafrikan Congress in Algiers in 1952 he listed the positions taken by the principal authorities on this question; although only Caton-Thompson had supported the thesis, and Breuil, Santacolalla, Menghin, Ruhldmann, Balout and Antoine all opposed the idea of Aterian influence on the Spanish Solutrean, nevertheless Pericot held that the morphological similarities and the chronological overlap of at least part of the Aterian with the Upper Palaeolithic of Western Europe suggested some kind of contact. While he still favoured an African origin for the Solutrean, he conceded that any attempt at precision was premature at that time (Pericot, 1952; 1955). He maintained, however, that the numerous recently-discovered flake elements in the Spanish Solutrean indicated a closer relationship to a Mousterian-Aterian tradition than had usually been realized.

Antoine has recently (1956) reviewed the question once more and maintains that the Aterian evolved in situ, without contacts with the Solutrean in Europe.

Jordá Cerdá, in his recent extensive discussion of the Spanish and Portuguese Solutrean and its origins (1955), has reversed his earlier stand, which was modelled on Pericot's, and now regards the Mugharet el 'Aliyah foliates
and stemmed pieces as indigenous outgrowths of a Final Aterian (Aterian V) rather than the evidence for any contact with, or beginning of, the Solutrean. His reasoning, like Breuil's, is based on the difference in technology between the Aterian and the Solutrean, i.e., the Levalloiso-Mousterian flake industry versus the blade industry, as well as on the fact that the type resemblances between the two are really only relative, not total; though both Aterian and Solutrean have stemmed implements, the stems are made by wholly different methods. In any event, Vaufrey's argument that workers capable of making single-shouldered points would find it quite natural to go on to double-shouldered ones, is a good prop to Jordà Cerda's view.

It is certainly possible that the Spanish Solutrean and the latter part of the Aterian were not far separated in time, but any relationship between them is far from demonstrated at present. For one thing, it is legitimate to ask whether, if such exchanges had taken place, they would have remained restricted to foliates and stemmed implements. But we are concerned here not so much with any possible influence of the Solutrean on the Aterian as with the question of the origin of the Solutrean. On other grounds, derived internally from the Solutrean itself, an African origin is highly improbable, since the conclusions of this writer are that the first Spanish Solutrean is later, not earlier, than the
earliest phases of the French Solutrean. If this point of view is accepted, the question of an African genesis for the Solutrean immediately loses much of its significance.

The Spanish Solutrean had been known since de Sautuola's explorations at Altamira (see Harlé, 1881), but until the work of Breuil and Obermaier in the first decade of this century it was thought that the Solutrean had not done more than trickle across to the nearby Cantabrian provinces from Southwestern France. As the new Spanish sites were found there seemed to be no difficulty in arranging them in the stages by now recognized in France since Payrony's work at Le Ruth in 1908: Lower, Middle and Upper Solutrean. Shouldered points were obviously present, and laurel leaves also though somewhat different in form. It was not difficult to select some poorly excavated sites, with rather crude unifacial pieces, to represent the Lower Solutrean.

Now, one of the conclusions reached during the writer's research on the present paper is that the Proto-Solutrean and the Lower Solutrean do not exist at all in Spain, and that the earliest phase in the Iberian Peninsula is equivalent to the Middle Solutrean of France -- and a late Middle Solutrean at that. The reasoning for this conclusion may be presented as follows.¹ The Solutrean in France is a

¹This topic has been discussed in greater detail elsewhere (Smith, 1960).
continuous tradition from Proto- and Lower Solutrean to the Final Solutrean, as the evidence from Laugerie-Haute demonstrates. The earliest occurrences of the French Solutrean do not have bifacial foliates. If the Proto- or Lower Solutrean had penetrated Spain from France, then one would find levels in Spain with pointes à face plane but without laurel leaves. But this does not happen; instead, as in the Mayenne sites and at Solutré, in France, the earliest Spanish Solutrean already has laurel leaves. On the other hand, if the first Solutrean had travelled from North Africa to Spain and then to France, it would be quite normal to find -- as we do -- bifacial foliates representing the earliest Solutrean in Spain; but it is hard to believe that when the Solutreans reached France they then gave up bifacial foliates in favour of pointes à face plane and did not again take up laurel leaves until some time later when they "became" Middle Solutreans. Obviously this latter position is untenable, yet it is the one we must accept if the Spanish Solutrean, whether Africa-derived or not, is given temporal priority over the French Solutrean. But the dilemma is resolved easily enough if one accepts the view that the Spanish Solutrean at its beginning was an overflow from the Middle Solutrean of France.

Jordá Cardá's memoir of 1955 is a most useful treatment of the sixty or so sites in the Iberian Peninsula which
contain or are known to have contained Solutrean, and the present writer owes much to it and to conversations with the author. By and large, Jordá Gerdá’s distinction of two Solutrean groups or facies (the Cantabrian and the Iberian) seems a good one, and his chronological divisions of Solutrean I, II, III and IV for each of these facies also are worthwhile, especially after his most recent modifications (1958). When I part company with him is in his hypotheses (1) that the "Protosolutrense" (read: Lower Solutrean in France) is distinct from, and not ancestral to, the later or "true" Solutrean phases; and (2) that there is any Proto-Solutrean or Lower Solutrean in Spain at all. The argument against the first hypothesis has, I think, been given by the presentation of the French data earlier in this paper, especially that from Laugerie-Haute. As for the second hypothesis: in his 1955 memoir Jordá Gerdá could list only four sites in Spain as showing evidence of this "Proto-Solutrean" -- Parpalló and Los Mallastes in the Levant, and Candamo and Cueto de la Mina at the Asturian end of the Cantabrian range. (He considers the poorly known Manzanares sites near Madrid as being "Pre-Solutrean" and Cantabrian-type Solutrean, rather than "Proto-Solutrean".) But it should be remembered that Candamo was badly excavated and its evidence is inconclusive; at Cueto de la Mina the lowest Solutrean level does contain crude pointes à face
plane, but this level also has bifacial foliates, so the situation is equivalent of the Middle Solutrean, in Southwestern France where pointes à face plane are often numerous. As for Parpalló and Los Mallaetes, after examining these two collections in Valencia in 1959 I am reasonably certain that no true Proto- or Lower Solutrean exists here either. For example, the "Proto-Solutrense" and "Solutrense inferior" of Parpalló is so called by Pericot on the basis of three or four points of which only two really qualify as pointes à face plane (see Pericot, 1942, fig. 9, nos. 1, 3; fig. 11, no. 5). They are associated with "Gravettian" (i.e., Mediterranean or "Salpêtrian" type) shouldered points and the possibility of intrusion from the Solutrense medio just above ought to be considered, especially when the thickness of the arbitrary excavation levels are taken into account. Certainly there is not enough evidence to support a Lower Solutrean if that term is going to have any meaning, apart from a purely local one.

In conversations with the present writer in 1959, Jordá Cerdá no longer insisted that a Lower or "Proto-Solutrean" existed at all in Spain, although he was still convinced that the "Proto-Solutrean" (i.e., Lower Solutrean in the sense of this paper) in France was not directly related to the true Solutrean. This, it will be recalled, is also the opinion advanced by Escalon de Fonton (Escalon
de Fonton and Bonifay, 1958). Jordá Carad also believes that no true Middle Solutrean exists in Cantabria, and that his Solutrean I, II, III and IV are equivalent to the Upper Solutrean in France. I do not know if this is wholly true, but it does fit well with the data already discussed from the French Pyrenees region which indicate that these sites (whose relationships with the Cantabrian ones are obvious) were more or less contemporary with the Upper and Final Solutrean in Southwestern France, if not with the Early Magdalenian.

To return to the question of the origin of the Solutrean, I believe it can now be accepted that, whether or not there were ever any exchanges across the Straits of Gibraltar in Aterian-Solutrean times, the Solutrean could not have occurred in Spain before it did in France. This is based on the existing evidence, of course; but it is hardly likely that the present sampling of Spanish Solutrean sites has missed a level of pure Lower Solutrean with points a face plane unaccompanied by laurel leaves or shouldered points. In other words, the origins of the French Solutrean are not to be sought in Spain, nor the roots of the Spanish Solutrean in Africa. The Spanish (and Portuguese) Solutrean is best considered as being originally an extension of the French Solutrean industries from Southwestern France and along the ends of the Pyrenees, after which it developed
regional stylistic tendencies of its own. Two things are urgently needed in the study of the Spanish Solutrean at the present time: some Carbon-14 datings which would permit a comparison with the French phases, especially to see how great the postulated time-lag in the late Solutrean of the Cantabrian area is and whether it is really contemporary with the early Magdalenian elsewhere; and statistical analysis of a number of the industries to see if they differ structurally as well as morphologically from the French ones.\(^1\) Unfortunately, up to the present time not a single Carbon-14 measurement has been reported from a Solutrean site in Spain or Portugal.

(c) The Eastern European Origin

The discussion of this question must necessarily be based, even more so than with the Spanish data, on published material rather than on first-hand knowledge. I have no competence to discuss the "Solutrean" industries of Central

\(^1\) Recently (in February, 1962) I have been able to examine the results of a statistical analysis made by D. de Sonneville-Bordes of a Solutrean industry from Cuesto de la Mina (Asturias) in the collections of the Museo de Ciencias Naturales in Madrid. The assemblage was from level E (presumably from the excavations of the Conde de la Vega del Sella), and contained a small number of laurel leaves and pointes à face plane, and a single shouldered point. The resulting graph (based on 136 pieces) is very similar to a number of graphs presented in this paper from the Middle and Upper or Final Solutrean of France, and especially, for whatever it may be worth, to those from Solutré (Graph no. 20). This seems to indicate, at least, that the statistical structure of the Cantabrian Solutrean industries is essentially the same as those of France.
and Eastern Europe in any detail, and indeed the present unsatisfactory state of knowledge of them does not encourage such a treatment. However, the data which are available appear sufficient to suggest that the origins of the Solutrean of Western Europe are not to be found east of the Rhine or Rhône Rivers.

Something of the historical background of the East-West hypothesis has already been sketched in this paper, in Chapter II. The best history of this whole question has been given by Prosek (1953) in what is also an excellent summary of the status of the Szeletian problem.

The idea that the foliates of Eastern Europe were older than those of Western Europe took hold immediately after Kádió's publication of the Szeléta Cave finds in 1909. Wiegers and Obermaier took up the fight for this viewpoint shortly after, to be followed, of course, by Breuil and Hillebrand. It should be remembered that this argument was based on two premises. The first was typological: that since the Eastern foliates were more archaic-looking than the Solutrean ones of France and Spain, they must be earlier. The second premise was inferential: that since foliates were supposed to have appeared very abruptly in France, they must be intrusive and not due to local development. Because the Lower Solutrean was poorly known at this period in France (Peyrony had just published the finds from Le Ruth) and
the Proto-Solutrean was totally unrecognized as such, these arguments could be treated with respect, especially since bifacial foliates of various kinds were often found in the intervening region of Germany and were thought to be Solutrean. They need not be treated so respectfully today, yet the belief in a sudden appearance of laurel leaves in the Solutrean of Western Europe is still widely accepted by many writers.

Hillebrand's paper of 1919 seemed an authoritative support for the Hungarian origin of the Western Solutrean. He recognized (at Széleta Cave) a "Proto-Solutrean" with very crude bifaces, and a Solutrean proper characterized by true lance points. For him the European Solutrean had travelled from East to West, with the primary centre of evolution in Hungary and a secondary centre, derived from Hungarian inspiration, in France at Laugerie-Haute (Gábori, 1954:64). Breuil's famous "voyage paléolithique" to Central and Eastern Europe a few years later stamped the official seal to this interpretation. On the basis of the interpretations of the Bükk Mountain sites of Széleta, Kiskévély, Balla and Pusakaporos and of the Danubian Valley sites of Dzerava Skala (or Pallfry) in Slovakia, and Jankovitch, Breuil distinguished three phases of the Eastern Solutrean. The Lower Solutrean (or Proto-Solutrean as it was sometimes called) was, he thought, derived from a Tata-like Mousterian
through perfection of the Mousterian bifaces. The Middle
Solutrean (found only at Szeléta) offered a high proportion
of fine, regular laurel leaves. Finally, the Upper Solutrean
(found at Huskaporos only) had pointes à face plane like
those in the West, and it was this Upper Solutrean industry
which travelled westward and gave birth to the Solutrean in
France (Breuil, 1923:343). This construction of Breuil's
was largely based on Hillebrand's sequence at Dzerava-Skala
which was in vogue at the time; but it is now clear that
Hillebrand had reversed the true stratigraphy at this site.

According to Prochek (1953:188) it was I. L. Červinka
in 1927 who coined the word Szeletian in order to avoid the
term "Předmostian" which had been introduced by Wiegers to
describe the Eastern branch of the Solutrean. Although the
term Předmostian is a poor one (since that site contains a
number of industries, none well known), it continued to be
popular among German prehistorians. Absolon (1957:8,10) has
recently denied that there was ever any "Solutrean" or
"Proto-Solutrean" at Předmost, and even claims that there
is no Szeletian at all in Moravia. Andree (1939) is one of

Vertes (1956:331) denies that there is any real
connection or even resemblance between the Szeletian and
French pointes à face plane. He argues that while the French
ones were probably derived from Aurignacian retouched blades,
the rare ones found in the Szeletian (e.g., at Jankovitch)
developed out of broad Levalloisian or Mousterian forms. In
any case, he states that the piece Breuil classified as a
pointe à face plane from Huskaporos is merely an unfinished
or misshapen implement.
the few Germans who adopted Cervinka's term "Szeletian".

In 1929, Obermaier and Wernert showed that the blattspitzen found in Central and Eastern Europe, Spain, France and North Africa were not Solutrean at all but belonged to distinct industries rooted in the Lower Palaeolithic. Later (1938) Mottl cast further doubt on Hillebrand's hypothesis of the Hungarian origin. As already described, however, this case had already begun to lose ground in the 1930's among Western prehistorians as more popular hypotheses were disseminated, such as the one concerning a North African origin or the idea that multiple, independent centers of birth might be more reasonable.

In 1951 Bohmers, as a result of work done at Mauern in Germany, took up the problem of the blattspitzen or Solutrean-like foliates in Germany and decided that a new name, the "Altmuhlian" should be used to designate the foliate industries arising out of the Late Acheulian. (For these industries the Abbé Breuil (1960) has recently suggested the term "Weinbergian" instead.) Bohmers supposed that the Szeletian industries of Eastern Europe were probably derived from the Altmuhlian, but emphasized that the retouch represented was in the Early Palaeolithic tradition and entirely different from that of the Solutrean in Western Europe (Bohmers, 1951:98-99).

This corresponds at some points with the views
presented by Freund in her extensive review of all the foliate industries of Europe (Freund, 1952, 1954). She recognized two great culture groups, as she put it: a Lower Palaeolithic "Pre-Solutrean" existing during Wiirm I, I-II and II times, and two Upper Palaeolithic Solutreans, one centred in France and Spain, the other in Hungary. The "Pre-Solutrean" industries had arisen separately and quite independently of each other from the several Acheulians in Spain, France and Central Europe, and included in this grouping were Bohmer's Altmühlian of Mauer, Kösten, Ransis and Klausen, as well as the Szeletian of Hungary and the foliate industries of the Crimea, Poland and Moravia. For her, the "Pre-Solutrean" is a variable industry which in some way forms an intermediary with the Upper Palaeolithic. She stated that there was no true Solutrean in Germany at all, all the foliates found there being "Pre-Solutrean". This "Pre-Solutrean" disappeared in most regions in the face of the Aurignacians and "Gravettians", but was bottled up somewhere to emerge later as the "Proto-Solutrean" bearing unifacial foliates but not bifacial ones. This Proto-Solutrean, which Freund thought led to the true Solutrean of France, probably evolved in the region west of the Massif Central in France (she hazarded a guess that it was perhaps near Badegoule) and contained many Aurignacian and Mousterian elements. In the same way she believed that the Pre-Solutrean
was in some cases (e.g., in Moravia and Poland), transformed into a local Solutrean under the influence of the Aurignacian. She claimed that this was best manifested at such sites as Moravany-Dlha (dug by Zotz) in Slovakia, and belonged to the Würm II-III interstadial. However, Freund does not believe there was any direct relationship between this Eastern Solutrean and the Western; and she discredited any suggestion of an African origin for the Solutrean.

The term "Pre-Solutrean" is very unfortunate, of course. So, to the present writer, is the expression "Eastern or Hungarian Solutrean" if the term Solutrean is going to mean anything more than a general expression for industries with foliates. It is only a step from this to using the terms Solutrean, Magdalenian, etc., in the sense in which the Soviet archaeologists have used them, to refer to complexes which have only faint resemblances to those in Western Europe. Nevertheless, Freund's is a useful summary, painted in broad strokes, and though some of the interpretations given in the present paper differ from it, we are not yet close enough to precise truth to be able to discard Freund's hypotheses entirely. The influence of Freund on the work of Jordá Cerdá for the Spanish Solutrean is -- or was -- very marked. But I find it difficult to accept her belief that the "Pre-Solutrean", represented in France by the blattspitzen at sites such as Baume-Bonne (Basses-Alpes)
and some others, had any direct influence in giving rise to
the Proto-Solutrean, even with the help of the Aurignacian.
If it had, one would naturally expect to find bifacial
foliates in the Proto-Solutrean, which is not the case.

In 1951, Zotz had affirmed that the "Pre-Solutrean"
(or Altmuhlian, or Weinbergian) had, during Gravettian times
(Würm II-III in his correlation), given rise to the Solutrean
of Central Europe. In a more recent work he has gone further
than Freund in postulating that such sites as Kösten in
South Germany might provide the link between Freund's
"Pre-Solutrean" and the classic Solutrean of the West, as
well as of the Eastern "Solutrean" (Zotz, 1959:149-45).
Zotz disagrees with the very sensible suggestion made by
Vértes and Prošek that the name Szeletian should be retained
and used instead of "Hungarian Solutrean" which Freund had
employed. As Prošek (1953) emphasized, the Szeletian has
no genetic relationship at all with the Western Solutrean,
and the term Freund advocates only causes unnecessary
confusion. Prošek sees the Szeletian as an independent
assemblage composed of Mousterian and Aurignacian elements,
with the former predominant, resulting from an Aurignacian
which had influenced a Mousterian in the Carpathian Basin.
For him, the Lower Szeletian occurred in the Czech Würm I-II
interstadial (corresponding to the Würm II-III of France,
according to the correlations worked out by Valoch and
Bordes, 1958), while the Upper Szeletian lasted at least until the Czech Würm II (French Würm III) although the problem of its ending is not at all clear. Stratigraphically, the Szeletian would be parallel to the Early and Middle Aurignacian, i.e., to what is usually known as Aurignacian I and II.

Vertes (1956) would derive the Szeletian from a Mousterian with blattapitzen in the Czech Würm I-II inter-stadial, radiating eastward to form the Moravian, Slovakian and Hungarian Szeletians. He agrees with Prošek that there is no Szeletian in Eastern Hungary and that it occurs in its purest form in the Bük Mountains. Most significantly, as already mentioned here, he denies any real relationship between the Hungarian foliates and pointes à face plane and the French ones, and specifically rules out the possibility (as once suggested by Breuil) that the pointes à face plane of the Upper Szeletian could have given rise to the Proto-Solutrean or Lower Solutrean of France. He gives also a long reconstruction of the ethnic composition and economic behaviour of the Szeletians; they were originally a cave-dwelling, bear-hunting people in the high mountains who gradually moved down to lower altitudes, and their industry reflects their relationships with the contemporary Gravettians and Aurignacians of the plains. (Compare this with the construction set out by Dupont in 1874, described in Chapter
II of the present paper.}

Gábori's opinion of the "Hungarian Solutrean" is that it developed autochtonously from the first stage of the Lower Solutrean, and that it was derived from some interaction of the Mousterian and the Aurignacian. The Solutreana (or Szeletians) and Aurignacians lived more or less side by side, with somewhat different economies. The "Solutreana" had little or no bone work. He sees a Proto-Solutrean, followed by a Lower, Middle and Upper, and at first he placed it in the Würm I-II and Würm II periods (Gábori, 1954), but more recently he has put it earlier, in the Würm I-II Interstadial (M. and V. Gábori, 1957); these would of course correspond approximately to Würm II-III and III, Würm II-III respectively in Western Europe. It appeared later than the Aurignacian, and developed parallel to it until the beginning of the Magdalenian. In general, Gábori's interpretations are not accepted by most Central European prehistorians, such as Prošek. It should be remembered that Gábori's 1954 work was mainly prepared before the Second World War, and was already out of date when published.

Valoch's views are more substantial and, like those of Vértess and Prošek, constitute real contributions to a knowledge of the Szeletian. He indicates (Valoch, 1955) that the Szeletian lasted at least until the last Würm interstadial (which he calls Würm II-III) and so he seems
certain that it, as represented at Moravany-Dlha (dug by Zots) existed until the "Gravettian" or "Evolved Perigordian" of Dolni-Věstonice. This would probably correspond to some part of the Main Phase of the Middle Würm in Western Europe, or to what Bordes would call Würm III-IV, although the correlation is not precise. At any rate, Valoch's 1955 scheme suggests that the Final Szeletian was more or less contemporary with the French Solutrean. But, even more important, Valoch has made the first statistical examination of the Szeletian and has tried to diagnose the assemblages in terms other than merely impressionistic typological ones based only on the foliates (Valoch, 1967). He shows that the Szeletian differs from other Upper Palaeolithic industries in the relative frequencies of certain types; for example, there are very few burins and a great many side-scarpers. End-scarpers are common and are mostly made on flakes. There are no typical Aurignacian carinated or nosed scrapers. Foliates, retouched on one or both faces, are the dominant class, just as in the French Solutrean. The Levallois technique occurs frequently in some localities. He describes the Szeletian as a blade industry in the Upper Palaeolithic tradition, though with a strong increment (30%) of flake tools. Composite tools are rare, and the "archaic" component which he emphasizes includes massive perforators, tranchets and cleavers, in addition to the side-scarpers. All in all,
he concludes that the Aurignacian element in the Szeletian is slight, and is due mainly to direct contact by the contemporary Aurignacians with the Szeletians. (It must be kept in mind when references are made in this paper to the "Aurignacian" of Central Europe that the so-called Aurignacian I and II are really most un-Aurignacian-like stone industries, though with numerous split-based and Mladěž bone points, and that they are more likely related to the Clochewan culture found by Vayer in the Eastern Alpes.)

Valoch underlines the important facts that the Szeletian differs from the Solutrean in its temporal range, in the manner in which it evolved and in the typology of the stone work. Nevertheless, he points out that the Szeletian cumulative graphs (based on those of de Sonneville-Bordes, but with separate graphs for the Mousterian elements and the Upper Palaeolithic ones) bear a certain gross resemblance to the graphs of the Solutrean in France; there is the same small proportion of burins, the same relative importance of end-scarpers and the same large importance of foliates of one kind or another. Wisely, however, he does not force the point, and for the time being this cannot be regarded as more than an interesting statistical parallel which may, like the typological parallel with the foliates, be regarded as a convergence.
In several papers, Valoch and Bordes have attempted to line up the loess sequences of France and Czechoslovakia. In 1953, in a joint paper (amended in Bordes, 1958a), they suggested that the Upper Palaeolithic seems to have begun in both regions at the same time; the Aurignacian and Szeletian in the Czech Wärm I-II (i.e., the French Wärm II-III) at a time when the Final Mousterian, Aurignacian 0, Perigordian 0 and Perigordian I were developing in France. The Czech Wärm II (Young Loess 2-3, or Paudorf soil) contained the Gravettian and (Final) Szeletian, while the parallel French Wärm III had the Evolved Perigordian of Northern France. Finally, in the Czech Loess III (equivalent probably to the early part of the French Wärm IV) occurred the Gravettian, while in France there were the Final Perigordian, the Proto-Magdalenian, Aurignacian V, Proto-Solutrean and Lower Solutrean in the loess-deposition phase; at the end of the loess deposition occurred the Middle and Upper-Final Solutrean and the early Magdalenian (I and II). According to this scheme, therefore, the Szeletian would have disappeared in the last a very short time before the first appearance of the Solutrean in France, and there was no temporal overlapping after all.

Valoch has recently (1958-59:140-42) set out the Czechoslovakian sequence again along much the same lines. The correlations between France and Central Europe is still
not well fixed in the later phases, however, and since as Movius (1960:365) has pointed out, the Czech Young Loess III seems to have no equivalent in France1 or Belgium, it is not possible to align the late Szeletian with the Solutrean development more closely until some Carbon-14 datings are available for the Szeletian. This is all the more true in view of the vagueness surrounding the end of the Szeletian. Possibly its last stages were more or less contemporary with the beginning of the Solutrean manifestations in France; but a transplantation of a disappearing culture from Central and Eastern Europe to the West is by no means called for by this evidence. Delporte is another student of Central European prehistory who has recently come to the conclusion that there is no chronological or archaeological link between the Solutrean of Western Europe and the industries of Central and Eastern Europe (Delporte, 1959:35).

The Szeletian, then, seems to be an industry with a high proportion of bifacial foliates, few burins, many end-scrapers and side-scrapers, an apparently high "Mousterian" content, and with some "Aurignacian" influence; it seems to have developed in Central and Eastern Europe about the time the earliest Perigordian and Aurignacian were appearing in France, it persisted parallel with them, and apparently

1In a personal communication, however, Bordes states that Bonifay has recently found in Provence a Young Loess IV, equivalent to the Central European Young Loess III.
disappeared about the same time they did in France. In Hungary and Czechoslovakia the Szeletian seems to have had two main centres of occupation: in the Bükk Mountains to the east, and in the sites near the Austrian border to the west. Soviet prehistorians such as Okladnikov and Efimenko have insisted that the Bükk-type Szeletian did extend eastward into the Soviet Union, and is found at Kostienki I and Telman in the Ukraine (Childe, 1956). Whatever Childe or Efimenko may call them, the so-called atypical Solutrean shouldered points found at these two sites are certainly not derived from the Szeletian in spite of the flat retouch on parts of their lower faces, for the Szeletian contains none of them at all (Vértess, 1956:331). But there is nothing incredible about finding this "Solutrean" with bifacial foliates underlying a "Gravettian" in the Ukraine, since the same thing occurs at Dzerava Skala (or Pallfy) in Czechoslovakia, dug by Prošek, and in the latter case there seems to be a true Szeletian involved. According to Childe (1956), however, Okladnikov has claimed that the "Solutrean" at Telman and Lower Kostienki I was derived locally from the Mousterian of Acheulian tradition (though interrupted by the inflow of "Middle and Upper Aurignacian" from Western Europe), and that the real origin of the European Solutrean is encompassed in a westward spread from South Russia to Spain. This Soviet claim cannot be taken seriously on the basis of present
evidence.

Some valuable light on the nature of the Soviet "Solutrean" industries at Kostienki I and Talman, as well as on the East European foliate industries in general, has recently been provided by Chmielewski's investigations in Poland, especially at Nietoperzowa Cave (Chmielewski, 1961). In essence, he distinguishes a new culture, the Jerzmanowice "civilization" which he considers different from the Szeletian structurally though more or less contemporary with it, and possibly derived from the Altmuhlian of Bohmers or the Pre-Solutrean of Zottz and Freund (ibid., p. 76). The elements of the Jerzmanowice culture found at Kostienki and Talman in the Ukraine are younger, he believes, than those in Poland and seem to reflect an offshoot from the original culture in Poland; at least the older stages of the culture are not known in the Soviet Union. It does not appear to have expanded in Europe west of Poland.

Most important for our purposes here, Chmielewski firmly rejects any direct connections between the Jerzmanowice culture and the Solutrean of Western Europe (ibid., pp. 68-72). For one thing, the former seems much too old: the earliest stage, represented in his couché 6 with unifacial and bifacial foliates including implements resembling the Solutrean pointes à face plane, has given a radiocarbon dating of 38,160 ± 1250 B.P. (GRO-2181) and he places it in the Wärm 1-2
Interstadial (apparently equivalent to the French Würm 2-3). No dates have yet been obtained for the upper levels although these may be available soon (personal communication, L. III. 62), but the Jerzmanowice culture had certainly ended by Würm 3 (or French Würm 4) times. But, even more significant, he states (ibid., pp. 71-72) that only the foliate points are the common features of the two industries, and that the Jerzmanowice industry lacks even such characteristic tools as end-of-blade scrapers. In addition, the evolution of the foliate points in Poland is quite different from that in the West: in Poland they appear in a fully bifacial state in the lowest levels but they tend to disappear as one goes up through the sequence and yield place to blade points with scanty retouch on the base and at the tip; many of these retouched blades resemble fairly closely the pointes à face plane of the French Solutrean. The Jerzmanowice unifacial points in the Soviet Union are shown from the site of Tölman (or Talmanskaia) in the report by Efimenko and Boriskovskii (1957, figs. 14, 15, 16).

Thus it would seem, on the basis of relative chronology as well as on typological grounds, that the foliate industries of Poland and the Soviet Union can be eliminated as candidates for the parentage of the Solutrean of Western Europe. There would seem to be an interesting parallel of one or two instrument types in the two cultures, and nothing more. It
might be argued that the Jerzmanowice culture, in its last phases when bifacial foliates had disappeared or nearly disappeared, had expanded to France and established the Proto-Solutrean industry there as seen at Laugerie-Haute-West, Bedegoule and the Grotte du Trilobite. In the absence of absolute dates for the Upper Jerzmanowice culture, this might seem worth considering; but it does not explain where the French Proto-Solutrean obtained its load of Upper Palaeolithic-type tools which, according to Chmielewski, the Jerzmanowice assemblages do not have. Nor does it explain why this "Solutrean", after having discarded its bifacial foliates in Poland, should have adopted them again in the new homeland in the West.

The Szaladian industry (or rather, industries) might seem to offer better candidatures in view of the typological and statistical parallels which have already been described in this chapter. Nevertheless, as intimated here earlier, any hypothesis of a westward expansion by the Szaladians from Central Europe to give rise to the French Solutrean can be pretty well ruled out. One reason, though not in itself a conclusive one, is based on the absence of any true Solutrean in Germany, or east of the Rhine or Rhone Rivers in France.¹ This argument, based on a blank area on

¹Baudet has recently (1960) published some bifacial foliates from Luxembourg and various sites in the département of Aisne (France), and tries to tie them to the German (cont'd)
the map, might be overruled if the resemblances between
the foliate industries of western and of Central-Eastern
Europe were striking enough. But they are not, and it begins
to look more and more as if prehistoric man for a half century
have been pursuing a chasseur in seeking an Eastern origin
for the French and Spanish Solotrenian. The clinching point
is much the same as the one used to deny a Spanish or North
African origin for the Solotrenian of France: since Vértes has
shown that the Solotrenian points a fact plane are unimportant
quantitatively and quite unlike the French Solotrenian ones
morphologically, one would assume that a westward spread of
the Solotrenian into France would give bifacial foliates to
the earliest Solotrenian manifestations there. But this is
not the case, unless we again entertain the hypothesis that
the incoming Szeletians abandoned their bifacial foliates
during the Proto-Solotrenian and Lower Solotrenian phases in
France and developed them again later. The truth is that
the origins of the solotrenian in France (and hence in India)
will have to be sought in an industry which bears a close
resemblance to the Proto-Solotrenian of Langierie-Hauter-Vest,
Badegoule and La Tillolobite, and the Szeletian does not
qualify in this respect. And, to anticipate another

\(^{1}\) (cont’d.) "Pre-solotrenian", especially to western. Neither
morphologically nor stratigraphically are they very convinc-
ing as being related in any way to the Solotrenian of western
Europe, however.
objection which might be made, it cannot be maintained that
the Szeletian's share in the evolution of the French Solutrean
was in introducing bifacial foliates (laurel leaves) into
what is called the Middle Solutrean, since the evidence
already presented in this paper from Laugerie-Haute supports
the view that such laurel leaves could quite well have
developed from certain types of pointes à face plane in
Southwestern France itself. No outside agents for the job
were necessary.

(D) Indigenous Development in France

The historical outline given in Chapter II will have
shown that the idea of a local development of the Solutrean
inside France is not a novel hypothesis. Although it wavered
after the first decade of the present century -- especially
after Breuil's classic paper read at Geneva in 1912, "Les
Subdivisions du Paléolithique Supérieur et leur Signification"
(Breuil, 1913) had popularized the idea of an eastern origin
and shown the degree of discontinuity in the Upper Palaeolithic
as a whole -- nevertheless it has always kept a small core
of believers. In the last decade, since the majority of
reputable Middle and Eastern European prehistorians have
discredited the notion of a Szeletian origin for the
Solutrean, and since the North African hypothesis has fallen
back from its original crest of popularity as its contra-
dictions became apparent, the idea of indigenous evolution has become more acceptable. Breuil came to regard France as one of the foyers of the European Solutrean; Freud believes it evolved in France somewhere west of the Massif Central; Jordá Carda finds the place of origin in the Cévennes region; D. Payrony (1948a:328) seemed to see the French Solutrean as originating in the Perigordian of Provence and Italy, with a little help from the Perigordian of Central Europe; Laplace-Jauretche also sees it springing from the Upper Perigordian in France; Martin, who excavated at the Grotte d'Oule (Gard) suggested it originated in the Gard-Ardeche region (Martin, 1949), and Breuil was sympathetic to his guess.

None of these opinions has been greeted with great enthusiasm, but at least they have been accepted as respectable if not very illuminating. The trouble is that these statements of opinion seem to have been tossed off as impressionistic beliefs with little intensive examination of the details involved. In many cases they are equivalent to drawing a ticket from a hat, with the feeling that since the Solutrean must have some ancestor one cannot be far wrong in choosing the Perigordian or Aurignacian or Mousterian. In this paper the several possibilities will be examined in the light of the Solutrean data described earlier, in an attempt to indicate the degree of probability of each as a candidate for Solutrean ancestry.
Now, the fundamental premise of the present discussion is that the origin of the Solutrean must be found in the development of the pointes à face plane and flat retouch, and not simply in the development or diffusion of laurel leaves. The laurel leaves represent a secondary feature which developed internally later; but the basic character of the Solutrean was already set earlier, during the Proto-Solutrean and Lower Solutrean, in what might easily be called the "Solutrean Formative", to use a term popular among New World prehistorians. And, like all Formatives, the earliest Solutrean is diffuse and difficult to recognize, for good reasons which will be elaborated later.

If the Solutrean is considered as having developed within France, then its ancestor should be found among the industries of the post-Göttweig (or perhaps even of the Göttweig) stage of the Würm; in other words, in the Aurignacian, Perigordian, Proto-Magdalenian or Mediterranean-type industries, or even in a survival of the Mousterian if such a survival can be demonstrated. The chances that the Proto-Magdalenian or the microlithic Mediterranean industries such as the Salpêtrieran donated anything essential to the birth of the earliest Solutrean are so small, I think, as to be not worth considering in this paper. The other three, however, are more worthy candidates.
(1) **The Final Perigordian origin:**

The statement of D. Peyrony (1948a:327) that "le Périgordien supérieur porte en germe la technique solutréenne" is only one more statement of the long-observed occurrence of flat "pressure" retouch in certain phases of the late Perigordian.¹ This has been reported from a number of sites in France, and has sometimes been too easily regarded as indicating some kind of ancestral relationship of one to the other. A closer examination suggests that this is by no means conclusive. The following section is a study of each of the sites where this flat retouch is found in the Upper Perigordian.

As Bordes has recently discussed (1960), a developmental scheme for the Upper Perigordian is still not clearly demonstrated. Perigordian IV may be the common trunk, but it is still not certain whether Perigordian V-a, V-b and V-c stand in a linear relationship to each other everywhere, as they do at the Grand Abri de la Ferrassie (Dordogne), or in a parallel relationship. Perigordian IV may have given rise directly to Perigordian V-c (with Noailles burins) without the intermediary of V-a and V-b, as de Sonneville-Bordes has

¹Actually Peyrony thought of the Solutrean as having a double origin: one from a Perigordian and eventually from an "evolved Mousterian" of Central Europe, a second rising in the Gard-Ardèche region of France. From this latter center it supposedly radiated out to Spain, Southwestern France and the sites in Northern France.
pointed out (1960:218), with V-a and V-b representing local, contemporary variants one of which led to Perigordian VI. What I am trying to say is that we are not sure the Font-Robert assemblages (V-a) are always earlier than the Noailles burin ones (V-c). Thus, if the succession were strictly linear, one would expect to find the more Solutrean characteristics in the last, or Noailles burin, levels which are presumably closer in time to the Solutrean. In point of fact, however, the whole of Perigordian V (at the Abri Pataud, Dordogne) is now shown to be separated from the Proto-Solutrean (at Laugerie-Haute) by three other industries the Perigordian VI, the Proto-Magdalenian and the Aurignacian V. This makes the presence of Solutrean-like retouch in the Font-Robert horizon even more intriguing, since apparently the makers of the Font-Robert pieces and the earliest Solutreans must have been separated by a considerable interval in the Southwest of France - unless there were time lags involved.

Grand Abri de la Ferrassie (Commune of Savignac-de-Miremont, Dordogne)

In the earlier discussion of the Grotte de la Ferrassie, situated just above the Grand Abri, it was shown that the Solutrean found on the surface of the Palaeolithic deposits could not be considered as having any direct relationship to the Perigordian. Although the Solutrean
artifacts seemed to lie immediately over, and perhaps in physical contact with, the Perigordian V-a, V-b and V-c industries, the fact that it is a Solutrean with shouldered points clearly shows that we are dealing merely with a brief subsequent occupation by the Upper Solutreans, long after the Font-Robert Perigordian occupation. Had the Solutrean occupation been Lower or Proto-Solutrean there would undoubtedly have been claims that this represented a true Perigordian-Solutrean contact.

But the situation in the Grand Abri is a little different. Here the levels were more carefully distinguished during excavation, and the pieces with flat Solutrean-like retouch seem to have been localized in the level with Font-Robert points (couche J of Peyrony) and absent in the superimposed Perigordian V-b and V-c levels. So there seems no doubt about their contemporaneity with the level. The question is, are they really Solutrean-like? Morphologically the resemblances are very vague; there are about four pieces which might be called Solutrean (see Peyrony, 1934, fig. 82, nos. 1, 2, 4, 5) and only one of them (no. 2) really approaches the point a face plane form; the others are more likely only pointed blades with a little flat retouch (see fig. 14, nos. 11, 12 of the present paper). Nevertheless, it must be remembered that such pointed blades do occur in the Solutrean (the sub-type E pointes à face plane are little
more), and we should not expect to find fully developed pointes à face plane in such an early level. A number of the Font-Robert points also have some flat retouch, either marginal or on the lower face around the tip. None seems as fully covered as are the specimens from Laroux (Vienne) and Les Vachons (Charente) to be described later.

All in all, then, it would appear that a Solutrean-like influence manifested by flat retouch (possibly but not certainly achieved by pressure) was active during the Perigordian V-a level of the Grand Abri de la Ferrassie. It cannot be explained away here in terms of contamination from the later Solutrean. However, the absence of clear-cut Solutrean types do not encourage the supposition that the makers of the Perigordian V-a industry here were visited by actual Solutreans, or that the latter followed immediately on the heels of the former. Something more diffuse than this is necessary as a satisfactory explanation.

**Fongal** (Commune of Peyzac-le-Moustier, Dordogne)

On several occasions (e.g., 1934:62), D. Peyrony stated that pieces with "retouche solutreenne" had been found here in a level or levels with Gravette points, Font-Robert points and Noailles burins. Unfortunately, this site was destroyed by Hauser, and Peyrony's reconstruction (1941) is based on the objects abandoned by Hauser in Les Eyzies in 1914. Peyrony mentions "lames appointées de forme
triangulaire, rares et peu épaisses, avec retouche rappellant des prototypes solutréennes (ibid., fig. 1 no. 4)

but the piece he shows, a fragment of pointed blade, is not particularly Solutrean-like. A few of the Gravette points have some slight marginal retouch (not flat) on the lower face (e.g., see de Sonneville-Bordes, 1960, fig. 125, no. 3). The lack of an authenticated series from this site makes it difficult to be explicit regarding the "Solutrean" elements here.

**Abri du Roc de Combe-Capelle** (Commune of Saint-Avit-Sénieur, Dordogne)

This is one of the best locations to yield evidence of a Solutrean-Perigordian interaction -- Bordes (1960) has gone so far as to suggest that it may have provided the transition or link between the two -- but the destruction of the site by Hauser makes it impossible to prove this intriguing point. Basing ourselves on the observations of Breuil and D. Payrony, it would seem that the Font-Robert level and the Lower Solutrean were either mingled at some points, or were in direct contact with each other. Breuil stated that "ainsi qu'il est facile de le saisir, cette couche III correspond au passage du niveau de la Font-Robert au niveau à pointes protosolutréennes" (Breuil, 1909a: 272).

Payrony's level G contained, in addition to Font-
Robert points, some Noailles burins and perhaps a truncated element; but Payrony pointed out that, had the excavations been performed more scrupulously, the Solutrean elements would have been found above the Perigordian ones. I am inclined to agree that we ought not to assume hastily that this was the ideal site offering a direct Perigordian-Solutrean contact or continuation, and probably the apparent contact is merely accidental. It should also be kept in mind that all the pointes à face plane found in this level G with the Font-Robert points and illustrated by Payrony (1943) are very well made and "evolved", clearly belonging to the Lower Solutrean rather than to the Proto-Solutrean; whereas one would expect that any Perigordian contact would have been made with the Proto-Solutrean which would have been nearer in time. It is for this reason that I find it hard to believe in a direct Perigordian-Solutrean contact or transition at Le Roc de Combe-Capelle.

Nevertheless, as mentioned earlier in this paper, one thing might be pointed out for evaluation; it is the fact that a stemmed point, rather like a Font-Robert, has been made on a fragment of a sub-type C pointe à face plane with Solutrean retouch (fig. 17, no. 8 of the present paper). I do not know anything like this elsewhere in the Solutrean, and it is tempting to suppose that the Perigordian fashion of stemming implements was making itself felt here on an early Solutrean piece. But the significance of this
occurrence can only be guessed at under the unsatisfactory circumstances surrounding the excavations. To conclude, the evidence that at this site there may have been a mutual influence between Perigordian and Solutrean more substantial than mere stratigraphic contact is highly inconclusive.

Abri du Poisson (Commune of Les Eyzies-de-Tayac, Dordogne)

This is Girod's Gorge d'Enfer B, where he claimed to have found Solutrean implements associated with the Aurignacian (see Girod, 1906, Pl. LXV-LXVI, where pointes à face plane seem to be represented). D. Peyrony (1932b), though exposing the inaccuracies of Girod's stratigraphy, seemed willing to accept the reality of Girod's Solutrean pieces since he himself had found in the Niauxles-type Upper Perigordian a basal fragment of what he called "un éclat présentant sur sa face plane des retouches d'allure solutréenne" (ibid., fig. 5, no. 11). Later (1934:82), he repeated that Solutrean-like pieces had been found in the upper horizon of this site, and compared it with the Solutrean-like occurrences in the Upper Perigordian of the Grand Abri de la Ferrassie. But according to Breuil (1910) who examined the collection, the majority of pieces shown by Girod "de forme pseudo-moustérienne" are not really Solutrean, while the large bifacial foliate (possibly a laurel leaf ébauche) showed a different patination from the rest of the collection and must have come from the adjoining
field. It is highly unlikely, then, that the Upper
Perigordian at this site really contained any Solutrean-
like elements; the small fragment Peyrony illustrates from
his finds is altogether inconclusive, and Girod's data cannot
be trusted. Perhaps new excavations in the remaining portion
of this site will reveal this more definitely.


described, and Bourlon noted that this flat
retouch was found only in level B. In addition, several
end-scrappers had flat retouch on the lower face (fig. 25,
no. 6 of the present paper). Most striking of all, there
were two rough laurel-leaf ébauches found in the upper part
of the level (see fig. 25, no. 7).

Before unwarranted conclusions are drawn concerning
this site, however, it must be pointed out that level B is
really a scattering of at least four hearths or lenses.
Since laurel leaf ébauches would seem to suggest a Middle or
Upper Solutrean rather than a Proto-Solutrean or Lower
Solutrean, and since the two here described were noted as
coming from the top of the level, it almost certainly indicates a later deposition. The end-scrapers with flat retouch are more ambiguous; they do not look exactly like those with flat ventral retouch found in the Middle or Later Solutrean of some other sites, and may very well be Perigordian experiments, just as at the site of Font-Robert (Corrèze). As for the Font-Robert points with Solutrean-like retouch, there can be no doubt of their proveniences, and Masnaigre seems to qualify as a site where the Upper Perigordians were experimenting with flat retouch; but this does not mean Bourlon was correct in assuming that the site showed "un excellent terme de transition entre l’Aurignacien et le Solutréen" (ibid., pp. 265-66).

Laussel (Commune of Marquay, Dordogne)
The "Aurignacien supérieur" of Lalanne probably comprised the three subdivisions of the Perigordian V found in couches J, K and L of the Grand Abri de la Ferrassie, since Font-Robert points, Noailles burins and truncated elements are all found here. Nothing resembling the so-called pointes à face plane described by Peyrony at La Ferrassie is reported by Lalanne and Bouyssonie (1941-46), but their Figure 60 shows some Font-Robert points with flat retouch near the tip on the bulbar side. They mention, without illustrating, some simple blades with flat retouch found here and at Font-Robert. Some Gravette points of the type
formerly known as Les Vachons points also show the same idea. But the Solutrean hints in the Perigordian of Laussel are restricted to retouch and not to form. Incidentally, J. Bouyssonie (Lalanne and Bouyssonie, ibid., p. 102) does not think the retouch is related to the Solutrean but is only "une coïncidence, ou un premier essai, bien antérieur au Solutréen".

Font-Robert (Corrèze)

This site, often referred to as indicating Solutrean "influence" in the late Perigordian, has already been discussed and the conclusion was reached that it probably reflects a later contamination by the Solutrean. But, as admitted earlier, this view is not altogether conclusive and is based partly on the presence of a single pointe à face plane (fig. 16, no. 2 of the present paper) which is similar to one found in the late Solutrean of Pré-Aubert (Corrèze). Nevertheless, even if such an intrusion can be substantiated, this does not explain the presence of flat retouch on the Font-Robert points here, and again we seem to be dealing with a site where the Perigordian exhibits a Solutrean-like style or fashion without anything more concrete which would indicate contemporaneity or direct contact between the two groups.

Noailles (Corrèze)

As already mentioned, the later researches of the
Abbés Bardon and Bouyssoune have changed their original (1905) opinion that this site represented an "Aurignacien" with Solutrean influences. The nature of the specimens recovered supports the belief that it is only a case of a minor late Solutrean occupation, just as is suspected for the site of Font-Robert itself.

Pré-Aubert (Corrèze)

Peyrony (1948a:325) described the Perigordian here as a "Périgordien final à retouches proto solutréennes" and suggested (p. 327) that in Bas-Limousin the Perigordian had persisted throughout most of the Solutrean duration in the département of Dordogne. However, the piece he illustrates as evidence of the Proto-Solutrean retouch in the Perigordian (ibid., fig. 7, no. 7) seems to be the specimen already mentioned in this paper with flattish retouch near the tip, found on bedrock below all the Perigordian deposits and bearing a different patination from the Perigordian industry. Whatever it is, whether intrusive from the Solutrean above or resulting from some other source, it does not seem to have anything to do with the Perigordian. Indeed, it might be worth pointing out that this particular piece is identical to one found at Abri No. 1 at Les Vachons (Charente) in level 2, and there it is attributed to the Aurignacian typique évolué (J. Bouyssoune, 1948, fig. 6, no. 6).
Les Vachons (Charente)

The Font-Robert horizon (couche 3) of Abri No. 2 here also yielded a number of Font-Robert points with flat retouch on parts of the upper and lower faces; one shown by Bouyssonie and de Sonneville-Bordes (1957, fig. 10, no. 21) has the entire lower face covered. Some of the Gravette points also have small portions of the lower face lightly retouched.

Abri No. 1 also yielded Font-Robert points with flat retouch on part of the upper and lower faces. A very striking piece is a blade whose lower face has been entirely covered by flat retouch (see fig. 25, no. 8 of this paper); this gives it a characteristic Solutrean appearance although it falls into no particular Solutrean typological category.

In both shelters at Les Vachons, the stratigraphy is the same for the Perigordian sequence; the "Solutrean" manifestations are limited to the Font-Robert horizons which are separated in time from the true Solutrean (present at the Grotte des Vachons nearby) by a Perigordian V-b and V-c, and possibly by a "Perigordien évolué" as well (de Sonneville-Bordes, 1960:130). No typologically Solutrean forms seem present to indicate a mechanical intrusion from the true Solutrean, and we are faced with an exact parallel to the situation at the Grand Abri de la Ferrassie and other sites: Solutrean-like retouch in pre-Solutrean times.
Fontéchevade (Charente)

In level 3 of this site, in an industry which is probably Upper Perigordian, there was found a scraper on a broad flake (G. Henri-Martin, 1957, fig. 66, no. 11) with the lower face almost wholly retouched by what J. Bouyssonie (ibid., p. 202, footnote 1) refers to as "retouche en pelure", stating that "ce mode de retouche est un net prélude de la retouche solutréenne". The piece looks rather like an attempt at making a disc. This, again, is an interesting example of the utilization in the late Perigordian of the retouch traditionally attributed to the Solutrean.

Laraux (Vienne)

Undoubtedly the most striking case in France of Solutrean-like retouch in the Upper Perigordian is given by the two Font-Robert points found here by Pradel in a small lens under the truncated-element and Noailles-burin levels (Pradel, 1949, fig. 1). They are reproduced here as fig. 25, nos. 9, 10. The entire upper face of each is fully retouched by what seems to be careful flat flaking identical with that found in the Solutrean. Most other Font-Robert points hitherto described have only small patches of flat retouch which might be brushed away as converging on the Solutrean style but not necessarily representing the same idea. The Laraux finds, however, make this position hard to defend, and it is difficult to explain these phenomena away...
as merely coincidence or convergence.

The Belgian Sites

The Font-Robert horizons at Spy, Goyet and Trou Magrite (or Pont-à-Lesse as the last site is sometimes called) have also yielded pieces with Solutrean-like retouch. Eloy has discussed these in his 1956 paper, although his use of the term "Protosolutréen" to describe these manifestations of the Solutrean in a Perigordian context is at odds with its meaning as used in the present paper. A fragment from Spy, reported earlier by Breuil (1912) has retouch very similar to the Solutrean type on one face, while Trou Magrite yielded a Font-Robert type stemmed point with wide "invasive" retouch. But the most outstanding example is from Goyet: a very large Font-Robert point with the upper face entirely covered by regular flat retouch which would do justice to the average Solutrean laurel leaf (Eloy, 1956, fig. 2, no. 6). This case, like those at Laraux (Vienne), seems to offer the proof that the late Perigordians were fully capable of working with this kind of retouch. A number of blades in this level from Goyet showed flattish retouch on the bulbar face, although they are not really pointes à face plane.

La Sénatrière (Saône-et-Loire)

Combier (1950, 1955) has indicated that the Font-Robert type Perigordian here contained "prototypes du
pointes à face plane" (1955) and blades with flat irregular retouch made by pressure, heralding the "Proto-Solutrean" work. The stratigraphy here, unfortunately, is not secure.

**Solutré (Saône-et-Loire)**

The stratigraphy here is more reliable than at La Sénétrière, and probably serves to confirm the latter. Combier (1955, fig. 22, nos. 7, 12) shows Font-Robert points from the magma with the same flat retouch on the upper and lower sides near the tips, as well as some retouched blades (ibid., fig. 25, nos. 4, 5; fig. 24, no. 8) which he compares with "mauvaises pointes à face plane protosolutréennes" (p. 186). They are from old excavations, but can probably be accepted as being in association with the Font-Robert points whose authenticity is not questioned.

**La Colombière (Ain)**

In the D-1 horizon at this site, Pissot and Mayet found some pieces with Solutrean-like retouch (Movius, with Judson, 1957, fig. 28). The specimen shown as no. 119 seems to be the tip of a pointes à face plane with flat retouch, though it is a very generalized form, perhaps corresponding to sub-type E in the French Southwest, and is very possibly only a pointed blade rather than a true Solutrean pointes à face plane (which, it will be recalled, are not found at all at Solutré.) Flat retouch on any pointed blade would, of
course, give the same effect. There seems little doubt that the peculiar late Perigordian at this site did exhibit a kind of flat retouch. But Combier has indicated to the present writer in 1959 that he is now inclined to think that some of the pieces here have retouche écaillée rather than Solutrean retouch: for instance, the end-scraper illustrated (Movius, with Judson, 1957, fig. 27, no. 103), has been streaked by pick-axe blows and the scale-like retouch seems to be due to this.

Conclusions regarding the Perigordian-Solutrean relationship:

To summarize: of the eighteen or so sites in France and Belgium which have been mentioned as showing Solutrean indications in the Upper Perigordian, three (Abri du Poisson, Pré-Aubert and Noailles) can be eliminated entirely, and the rest regarded as sites exhibiting only Solutrean-like retouch in the Pont-Robert horizon rather than any morphologically Solutrean artifacts or any unmistakeable sign of direct contact or communication between Solutrean and Perigordian groups. Even Le Roc de Combe-Capelle, the site usually quoted as supporting this last hypothesis, does not offer conclusive enough evidence in this respect. On the basis of these sites described above, therefore, it might be thought that the Solutreans and the Upper Perigordians were nowhere contemporary or overlapping. But there is a hint, or rather several hints, from the sites of Oulen and
Chabot (Yard) that this may not have been the case everywhere. In 1951, a Pont-Robert point and some Gravette points were found in association with the "Proto-Solutréen" (i.e., the Lower Solutrean) at Ouln, and the same association occurred also at Chabot (see fig. 22, nos. 5, 9); backed bladelets were also present (information from J. Combier). I examined the artifacts in 1959 and there seems little doubt that they are Pont-Robert points -- the only ones found so far in the Lower Valley of the Rhône, the nearest others being at La Sénétrière and Solutré (Saône-et-Loire). This raises the question of whether the Pont-Robert types might have persisted in this isolated region into early Solutrean times, or whether the pieces at Chabot and Ouln were brought in by the Solutreans. The latter explanation, while sufficient to explain one site, stretches coincidence too far to account for two in the same region, and for the time being we must keep in mind the possibility, however nebulous, that in at least one corner of France the Solutrean and Upper Perigordian may have overlapped slightly. Certainly there is nothing outlandish in this supposition when we consider the position of the Aurignacian V at Laugerie-Haute, posterior to both the Perigordian VI and the Proto-Magdalenian.

But the Gard region seems to be exceptional, and does not go far in resolving the problem of whether the Solutrean
industry, or even the Solutrean retouch, was derived from the Perigordian. The position taken in this paper, already expressed in more abstract form in Chapter III, is that although individual elements or types can be exchanged between cultures after the fashion of loan-words in linguistic contacts, yet the basic form or structure of the language is far more resistant to change and is incapable of transforming itself suddenly into one with a very different emphasis. One of the difficulties in seeking an origin for the Solutrean in the Final Perigordian lies in the short time which seems available between the Font-Robert horizon and the Proto- and Lower Solutrean (when we know the basic Solutrean form had already crystallized out). The interval may have been only about a thousand years or less, judging by the indirect evidence of radiocarbon datings of other industries.

An even greater difficulty lies in the fact that the statistical forms or structures of the two industries are so different. Granted that we still know almost nothing of the ways in which Palaeolithic industries changed or developed, yet it is hard to account for such an abrupt change as would convert an industry with a great emphasis on burins, backed bladelets and blades into one where burins play only a small and insignificant part while end-scrapers and a small group of very specialized implements (starting
with pointes à face plane and going on to bifacial foliates and shouldered points) are emphasized to an enormous degree over all else. The question of retouch has probably been exaggerated in the past; the abrupt retouch of the Perigordian has been over-emphasized, as has the "pressure flaking" of the Solutrean, while the respectable amount of abrupt and semi-abrupt retouch in the Solutrean has usually been overlooked; but it cannot be denied that there is here an important difference in emphasis of the two "cultures" which must be taken into account.

It seems fairly safe to state that there was not, in Southwestern France where most of the Solutrean is concentrated, any direct contact between the late Perigordians and the earliest Solutreans. For one thing, there are no stratigraphic overlaps in this region such as one would expect if this were the case, and there seem to be no exchanges of distinctive tool types (with the possible exception, it must be admitted, of the Font-Robert-loke point made on a probable point à face plane already described from Le Roc de Combe-Capelle). For another, the normal points of contact of the Solutreans in the Périgord, Charente, Vienne or Solutré regions would have been with the Perigordian V-b and V-c (if the sequence is everywhere the same) or even with the Perigordian VI, the Aurignacian V, and Proto-Magdalenian, rather than simply with the Perigordian V-a (Font-Robert)
where most of the flat retouch is found. Until we know more about the origin and nature of the "Solutrean" retouch, this problem will remain unresolved; but it is suggested here as a working hypothesis that in some region other than Southwestern France, the emerging Font-Robert variant of the Perigordian industry came into contact with a culture -- probably the emerging Solutrean -- long enough to absorb one of its characteristics, flat retouch, and experimented with it briefly and intermittently without ever treating it seriously. The finding of Perigordian in the hitherto blank area south of Lyon in the Rhône Valley might help solve this problem. It remains unexplained, of course, why no other Upper Perigordian group seems to have adopted the flat retouch from the Font-Robert group.¹

It may be, too, that the opinion expressed on several occasions by J. Bouyssonie is essentially correct, and that the occurrence of this kind of retouch in the late Perigordian is not related in any way to the Solutrean but merely represents a convergence (e.g., Bouyssonie, in Lalanne and Bouyssonie, 1941-46:102). However this may be, the real point of this discussion is to show the obstacles which lie in the way of attributing the ancestry of the Solutrean to

¹However, it should be recalled that there is often some flat retouch in the Perigordian IV also, especially on the variety of Gravette point formerly known as the Poinçon des Vachons.
the Perigordian. Perhaps when a good, unmixed sample of artifacts is finally available from a Font-Robert level of the Perigordian, this question can be answered with more certainty.

(2) The Aurignacian and the Mousterian

In some respects, the Aurignacian seems to offer better qualifications. A definite case for this is very far from being demonstrated yet, but there are some interesting indications.

It will be remembered that Jordé Cardé (1955) has already suggested that the Aurignacien typique gave rise to the Solutrean proper in France. His claim, briefly summarized, is that during Würm II times an "interaction" of the Mousterian coup-de-poing (from a persisting Mousterian) with Aurignacian blades and especially with what he calls Aurignacian pointes à face plane, produced the "Protosolutrense" (i.e., the Proto-Solutrean and the Lower Solutrean of the present paper); he supposes that this transformation took place when percussion by wood was substituted for percussion by bone. The area of development of this "Protosolutrense" he places in the South of France somewhere between the Cévennes Mountains and the Gardon River. Later, at the end of the "Protosolutrense", bifacial foliates were added from the "Pre-Solutrean", probably from
Central Europe, and out of this *mélange* the true Solutrean developed.

Unfortunately, his arguments are not well buttressed by concrete details as far as France is concerned, and are expressed in the most generalized terms. Certainly it is difficult to see any justification for locating the genesis of the "true" Solutrean in the area between the Cévennes and the Dordogne River, for this region is precisely one where the earlier forms of the Solutrean are not found at all; the Solutrean indications in this area are all late, apparently. In addition, as already suggested in presenting the evidence from Laugerie-Haute, his hypothesis that the "Pre-Solutrean" of Central Europe donated bifacial foliates to the earlier Solutrean is quite unnecessary, for no outside source need be sought for this particular development. Nevertheless, divorced of these details, there may be some justification for seeing Aurignacian and Mousterian influences behind the earliest Solutrean manifestations.

As already proposed here, the immediate ancestor of the French Solutrean should be one whose composition and structure will be reasonably consistent with what we know of the structures of the Proto-Solutrean and Lower Solutrean. Our ignorance of precise statistical details about the Proto-Solutrean is regrettable, but since typologically and temporally it is quite close to the Lower Solutrean (as the
evidence from Laugerie-Haute: West shows), we can probably assume that its general lines are the same. Therefore, one might take the hypothetical progenitor of the earliest Solutrean to be an industry (or industries) with a rather high proportion of end-scrappers, a low proportion of burins, and a tendency towards retouched blades and towards flat, scale-like retouch in general. Now, in some respects the Aurignacian fills these requirements. In the Périgord region we know that the ratio of end-scrappers usually ranged between 40% and 60% of the total industry, while burins were much less important, between 10% and 20% (de Sonneville-Bordes, 1960:1147). The general evolution of the Aurignacian in this area is characterized by a progressive abandonment of Aurignacian retouch and of retouched blades, as well as by the growing importance of burins (ibid., p. 150). We know from stratigraphic evidence at Laugerie-Haute that in the Les Eyzies region the Aurignacian survived until immediately before the first Solutrean occupation of Laugerie-Haute: West; indeed, the radiocarbon datings suggest that the gap between them might be measured in terms of centuries rather than of millennia.

It might not require a great deal of change for an Aurignacian industry to give birth to the Solutrean type of flat retouch. It is true, of course, that the resemblances in the respective modes of retouch are not too close; the
Aurignacian is usually semi-abrupt and irregular, rarely flat, while the Solutrean tends to be more regular and extensive (envahissante) even as early as the Proto-Solutrean, and is made (according to verbal information from F. Bourdais) by a quite different technique of flaking. But many retouched blades in the Aurignacian do approach certain sub-types of Solutrean points à face plane, especially sub-type E, and it does not require too great a conjectural leap to see here the origin of this distinctive Solutrean implement. It should be kept in mind, however, that these Aurignacian retouched blades are most frequent at the beginning of the Aurignacian, in Aurignacian I and II, and are rare thereafter.

The relative scarcity of worked organic material in the earlier Solutrean is an argument against supposing any very close relationship between the Solutrean and the Aurignacian. But it might be recalled here that one variety of Aurignacian (the Aurignacian V of the Dordogne region) is also not particularly rich in worked bone or antler (though the quality of that produced is high) and, as already discussed here, the Solutrean is not as deficient in this respect as is traditionally thought. A better understanding of the relationship between lithic and organic artifacts in Palaeolithic industries might help dispel this apparent stumbling-block.
One of the more promising clues to the origin of the Solutrean has come to light in recent years in the Rhone Valley, through the researches of J. Combier. At such sites as the Grotte de Néron, The Grotte du Faguier and the Abri du Maras (Ardèche) and the Grotte d'Oulen (Gard), there is a peculiar industry, undoubtedly derived from a Mousterian with Levallois débitage, which seems to have survived into the Upper Palaeolithic of other regions. It may be related to the Micro-Mousterian Industries of the Mediterranean, e.g., to that of Romanelli in Italy. As Néron and Le Faguier especially, this industry "comporte un ensemble de type Aurignacien très accusé" (Combier, 1960:1890).\(^1\) It is without bifaces or thick backed knives, but has many end-scrapers, burins, blades, perforators and backed blades with fine semi-abrupt inverse retouch (Combier, 1959:207). It also has retouched flakes or blades (pointes de Soyons) (e.g., see fig. 2, no. 3 from the Grotte de Néron, in Veyrier, Beaux and Combier, 1951). The industry of the Abri du Rond (Haute-Loire), which D. Payrony (1946) attributed to the Lower Solutrean on the basis of certain retouched pieces he called pointes à face plane, is possibly of the same type.

\(^1\) However, F. Bordes is of the opinion that the Néron industry is basically a Quina-Ferrassie type Mousterian, where the occurrence of Aurignacian-like implements is quite normal.
There are now some indications -- not yet fully demonstrated, unfortunately -- that in Eastern France certain Mousterian industries may have survived late to be contemporary with some of the Upper Palaeolithic industries in other parts of France. De Lumley and Sottet (1960) have suggested that at Baume-Bonne (Passes-Alpes) the Mousterian lasted to the beginning of their Würm III and was contemporary with the Early Perigordian and, perhaps, with the Middle Aurignacian of La Ferrassie type; at Arcy-sur-Cure (Yonne) the Mousterian may also have lasted later than the Götweig Interstadium. The survival of a late or evolved Mousterian until relatively recently times in the Lower Rhône Valley would, according to Combier (1960), help to explain why the Perigordian and the Lower Aurignacian never penetrated into this part of France. The first true Upper Palaeolithic industry here was what he calls the Rhodanien (corresponding to Escalon de Ponton's Salpêtrière), an industry of Mediterranean type containing many backed bladelets, triangles, microburins and shouldered points, probably originating along the Mediterranean coast. This industrial sequence was interrupted at Chabot, Oulen and Le Figuier by what Combier calls the Proto-Solutræen (which I prefer to call "Lower Solutrean" rather than confuse it with the Proto-Solutrean of Dordogne and Yonne), and after a period of Solutrean occupation (which Combier labels "Solutrean moyen et supérieur de faciès"
the Rhodaniens returned and lasted until the appearance of the Magdalenian with harpoons.

In other words, here in the Rhône Valley there are indications of a very late Mousterian which had survived into or past the Wöttweig and probably until the Feudorf (Combier, 1960:1890), possessed many Aurignacian-like traits and was contemporary with the first half of the Upper Palaeolithic in Southwestern France. Combier has expressed to the writer his belief that it represents some kind of transitional industry. The hypothesis tentatively advanced in the present paper is that it is in this kind of transitional or hybrid industry that we may expect to find the roots of the Solutrean. Certainly this particular industry as reported by Combier seems, though still poorly defined, to possess many of the typological and chronological qualifications for the hypothetical Solutrean ancestor which has been outlined here. Of all the candidates reported to date, this one is perhaps the most satisfactory, although the process of the supposed Mousterian-Aurignacian interaction, and the relative importance of each in the result, is far from clear.

However, at a time like the present when the great complexity of the whole Middle Palaeolithic world is only beginning to be understood, it may be wiser to refrain from selecting too dogmatically any one variety of the Mousterian as primarily responsible for what later became the Solutrean.
It may well be that the Mousterian of Acheulian tradition was also an important ingredient in the formation of the earliest Solutrean. Many of the points from this industry closely resemble some Solutrean points à face plane (e.g., see those shown in Bordes, 1961, Pl. 10, no. 10; Pl. 11, no. 4; Pl. 12, no. 5, from Pech de l'Azé, Dordogne); and, as already mentioned here in Chapter V, there is often flat, parallel flaking on the edges of implements from the Mousterian of Acheulian tradition (ibid., fig. 2, c-d).

Whether the "Epipérigordien" industry at Baume-Bonne (Basses-Alpes) is really intermediary between the Italian Epi-Perigordian and the Proto-Solutrean of the Rhône Valley, with indications of "Solutreanization" as de Lumley and Bottet suggest (1960:298-99), is not clear. It is not impossible, but the results from this site are not yet sufficiently well known and it seems best to reserve judgment. But what does seem increasingly obvious, as research proceeds, is that in Eastern France and especially in the Rhône Valley, a wider latitude must be allowed for peculiar crosses and blends of industries than has hitherto been considered.

Conclusions

The aim of this chapter has been to narrow down the possibilities for the origins of the Solutrean in the hope that a suitable candidate or candidates will be more clearly visible through the existing thickets of guesses and
hypotheses. But it must be admitted that even after the North African, Spanish and Eastern European cases have been rejected, the Perigordian evidence found insufficient and the Aurignacian and Moustierian selected as the most promising, we still lack sufficient specific data to pin it down further. Nevertheless, on the basis of what is now known of the Solutrean and of what is becoming known about the Aurignacian, it is possible to make a prediction which future research may validate. It is that the Solutrean emerged, probably in the Lower Rhône Valley in France, out of a generalized Upper Palaeolithic industry formed by a local Aurignacian which had been influenced by a surviving Moustierian-type industry such as was found by Combier at the Abri du Maras (Ardèche). Out of this the Proto-Solutrean ultimately crystallized which, after spreading to Le Trilobite (Yonne), Biadegoule and Laugerie-Haute: West (Dordogne) and possibly to England and Belgium, developed into the closely related Lower Solutrean of Southwestern France. The origin of the Lower Solutrean of Chabot, Culen, Le Figuier and La Salpêtrière in the Gard-Ardèche region is not yet clear; it may have developed locally, but if so the transitional links with the Proto-Solutrean are not yet recognized. Its close resemblances with the Lower Solutrean of Southwestern France suggest that it may represent a back-flow from the Lower Solutrean of the Dordogne region at
a somewhat later time. The presence of Middle Solutrean with laurel leaves at La Salpêtrière supports this hypothesis of limited direct movements in Lower and Middle Solutrean times between Southwestern France and the Gard-Ardèche region.