

Crabtree These are serrations

Tipier It is common in the Sahara and in French Guiana

Crabtree It is not particularly common

Tipier What serration?
Crabtree Yes, serration
Tipier That serration, one touch each side in the notch, see.

Crabtree In the notch - right

Tipier: In the notch.

Crabtree It leaves a distinctive sort of character here ^{with} the ridge down the center, actually a diamond ~~shape~~ cross section.

Tipier I think it needs a very thin compressor. Very narrow tool.

Crabtree Very narrow tool ^{in order to do this.} On this one the retouching is very good, ~~on this~~

Tipier Is it a ^{pressure} one?

Crabtree: Yes on both sides ^{and has basal thinning} and ^{these} does appear to be a difference in age between ^{the} ~~the~~ ^{time the pressure flaking was done and} ~~the notching was done, at the time the basal thinning was done,~~ however the original work was very excellent and ^{there is} just a ~~very~~ slight retouch ^{showing not} here ~~not~~ nearly the control ~~then they did with the~~ ^{first work on the} ~~original~~ artifact

Tipier Phaytry to flate it?
~~... flaking~~

Crabtree: Yes, both sides. ..

Crabtree These ~~very~~ heavy ^{massive} objects ^{appear} ~~to be done~~ ^{all} by percussion. ^{No pressure} No retouch on any ^{all the percussion method.}

of these. This appears to be altered. We might check these out to see if ~~whether~~

~~this technique of all~~ ^{from} ~~this carries through this form all~~ ^{carries on thru} to one side, and it apparently does. ~~These first~~

~~that I did~~ ^{of} however, here it shows up again using the two sides, but not quite the

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refinement, ^{of this one,} But the ^{same} feathering out ^{at} of the center, ~~that this one has here~~

From indications on this side of this stone,
~~This one here appears to be of a heat-treated material. on this side here, I am~~

~~on this side here,~~ However not having any of the ~~fl~~ flakes or the cores

one can't make that a ^{final decision.} ~~final~~ ^{am} and looking for one facet level ^{on} of this. But

~~to~~ these ^{three four} 3 or 4 pieces appear to have been altered. I think that is all I have

to ~~offer~~ ^{this group.} for these ~~right here~~. This ^{shows} has quite a distinctive basal thinning, it

almost appears to be fluting using a flake technique or a blade technique

Bordes. ~~it~~ ^{it} may be made by percussion yet.

Cerabtree I am about through with this one.
 ~~Maybe~~ ^{maybe} some of the edges, ~~might~~ ^{with} slight retouching but they appear to be,

This is ^{almost entirely by percussion} a portion of a blade. ~~in~~ In order to get the diamond shape ^{he was working} ~~on~~ here you would

~~work~~ ^{on} instead of ~~of~~ this ridge ~~here~~ ^{to} you would bring ~~this~~ ^{the flakes} over ~~on~~ both sides ~~on~~

to get ^{the} your contours to form a roughed-out ^{preform,} and by using this blade

instead of ^{the core} ~~of~~ fork..... Did you get to examine these, Dr. Bordes? ^{These appear}

~~sleek but~~ ~~but~~ I can't see any basal ^{grinding} ~~grinding~~ on them.

Bordes No. They have certainly been made by percussion .

Cerabtree I don't see any sign of pressure ^{retouch on any of them.}

Bordes No. No. That's percussion.

Dr. Williams ~~This Cynthia speaking.~~ I wonder if you could comment on the ^{possible methods of} production of that

~~Levallois~~ —like Blake, ^{What kind of method} could have been used. ~~Also on~~

the blade ... *P. de gray blade over there near the scraper.*
~~scraper.~~

Bordes. *s.t. is quite defined.*

Orvin Williams Yes, well, I wondered if you could comment on them.

Bordes Well, there is not much more to say about *the Levallois flake when you say* ~~flake since it is a~~ *flake* since ~~it is~~ *it is its* own definition in itself. *That* means a flake that has been

made ~~from~~ *on* a *prepared* core ~~is~~ *to have the* the shape of the *flake pre-determined* ~~flake~~ before you struck it off. *And that* means that *somewhere* you have *prepared* cores. No

question. This one *I am positive* it cannot be *even a chance of Levallois*. It's too much typical.

Orvin Williams Well, that's very interesting. I wondered if there was any *possible method* of telling whether a flake of this kind *would have been* ~~was~~ struck *it with* from an anvil, as you demonstrated, or with a percussion instrument.

Bordes Oh, that's another question. *But* ~~Well, I wouldn't hesitate to say that it was struck~~ *would* ~~with a hammer not an anvil.~~ *from the way* This size of a *Levallois* flake is *very easy* ~~very not hard~~ to get off with a stone hammer. It's when they are bigger that you would like to use an anvil technique.

Knottree I should say something about this. ~~Whether this is from the ancient man site?~~ *this* ~~They seem to be all flaked from one edge on this graver,~~ *AN* There is a little unique edge to that sort of a graver.

Bordes That's a *barer* ~~core~~ all right.

Wheat This is a fairly typical thing in the *recent basin horizon*. We have a variety of these.

Some of them, incidentally, are flat pointed on the end, a little chisel point rather than this. And this, along with the very tiny, what we use to call graters, ~~nobody~~ ^{nobody} knows much about them or the use for it..

really *you might suggest a use for it too*
Burdes! *Oh, his, well*
Well, is it not in the Folsom that you have *needles*..... with ~~eyes?~~ *eyes?*

Wheat Yes.

Burdes With that you can make a hole in the *needle*. Oh, ya, I did it. *with this one* It ~~will~~ ^{would} be quite

all right. You have to sharpen ~~in~~ ^{it} a tiny little pit and then it works. ~~Then the~~ ^{after}

~~article~~ ^{that it} becomes blunt and you sharpen it again, and *can make a hole in a needle very easily* ~~it is easy with~~

that. I would not be surprised if it were something like that. Or like the ~~barers~~ ^{barers}

of the Upper Paleolithic. You can ~~ruin~~ ^{ruin} your good needles. It's better to make a hole

in the ~~skin~~ ^{skin} before you ~~use~~ ^{use} with the needle, *it goes much better.* ~~That you could make a hole and~~ ^{can make just hole and} then you push needle thru it. *no question.*

Epstein: Mr. Crabtree, you mentioned looking at that material ^{and} also the material we saw

this morning. You distinguished between thinning and fluting and I was just wondering

if you could explain that just a little bit better. As to how you can determine

which is which.

Crabtree ^{with the fluting} Gerry, ~~that~~ there is a platform preparation. And what they are ~~tr~~ striving

for is a basal thinning ~~the~~ ^{on this point} ~~removes~~ from the base to the ^{tip} ~~point~~ for ~~the~~ specialized

~~hatching~~ ^{hatching} technique. Such as this. This one ^{indicates that} the flake was probably ~~quite~~ ^{removed from}

a platform projecting high above the base. ~~the channel flake has been shortened on the base of~~ ^{removed from}

~~the~~ ^{to prepare a hump} normal thing is ~~the~~ ^{projection} or projectile here, to serve as a

platform. Then when ~~you~~ ^{the} flake is ~~striking~~ ^{flaking} and bent ~~into~~ ^{bending, it is} a single controlled operation.

While Basal thinning is merely ~~you~~ ^{to take} taken off surplus material ~~that you have a~~ ^{from a thick, weighty piece,}

~~piece here that you don't need that it's not suitable for hafting~~ ^{When the artifact is} ~~is thinned~~ ^{It}
~~down here by just indiscriminate~~ ^{percussion blows, that do not require the accuracy}
~~striking~~ ^{of the fluting techniques} ~~of your special thinning~~ ^{Fluctuating}

~~requires~~ ^{requires} a refinement ~~of~~ ^{technique} placing ~~the~~ ^{and preparing the platform properly:} or arranging ~~for a special~~

~~thinning and~~ ~~but whether there is a difference between~~ there appears

to be a difference between ~~this sort of thing~~ ^{basal thinning} and ~~the~~ ^a regular fluting technique.

And I imagine two different ~~methods~~ ^{Techniques} were used ~~between~~ ^{on these two} artifacts, ~~and~~ ^{one} this one they

have started ~~back~~ ^{you} here with a fairly heavy ~~mass~~ ^{mass}... ~~to~~ ^{to} guide the flake, ~~and~~

this ~~is~~ ^{must have been} a fairly high ridge, to have held that narrowness ~~of~~ ^{the artifact,} the full length of ~~the~~

~~where you have~~ ^{Here we have} a basal thinning ~~which~~ ^{which} might, ~~be~~ ^{be mistaken for} fluting, but, ~~that~~ ^{it has been}

~~are indiscriminate~~ ^{thinned by} ~~sets of things~~ ^{simple percussion} while these are single flakes and ~~are~~ ^{are} actually

fluting flakes. Some of these ~~where~~ ^{may be} ~~they have made~~ an attempt to produce fluting,

but ~~it's~~ ^{then} miscalculated ~~and~~ ^{and ended with} ~~you have~~ ^{blows.} indiscriminate ~~things~~. It's a little hard

~~to~~ ^{describe} the difference between the two, ^{Techniques} but I feel that there is quite a difference

between a fluting technique and a basal thinning. ^{Close examination of the scars}

- Bordes: Ohs ya, ya.
- Epstein: Are these from the same site, Dr. Coe.
- Coe: No.
- Grathey: This one would demonstrate, I shouldn't probably get into this, I'm sorry.

~~Go to~~ ~~but while~~ ~~on~~ a very definite technique here of a

fluting process ~~or here~~ ^A shearing off the tips ~~of these~~ ^{with both the first and} after it was done in that

~~manner on there~~ ^{second flaps} and this is a very definite ~~tend~~ ^{tend}
~~and the first flakes and the second flake are~~ ^{very different, how would}

~~you say this, you might say a diagnostic technique, was used to determine the~~
~~difference between this and the basal thinning.~~ *Quite different*
 actually ~~is~~ a specialized technique while ~~the other can happen with a person who~~
~~would like the base of his artifact thinner,~~ *fluting is* to facilitate the ~~happening~~ *basal thinning is generally* *flaking*.

Tiflier: What about —

Bordes: ~~This is Tiflier speaking~~ What is something else — first speak about the other.

Boe: Maybe it would be better to take them in the order ^{that} they are on the table. You may

have more room. Before we go to the Kentucky sample, I would like to say that

it is a direct connection between France and this site in addition to the *Levallois*

flakes. In 1914 the French Company started to develop a hydroelectric plant

on this very piece of property.

Bordes: That's French *Colonies*

Boe In developing the backward area, ~~in 1916 work was transferred and continue~~ *But in 1916 other events transpired*

~~and work was continued~~ by the ~~Hartely~~ *HARDAWAY* Company hence the name ~~Hartely~~ *Hardaway* site. So the Kentucky sample includes

a few point types ^{of} random again, all from surface. One ~~type~~ type ~~that~~ is called a

Cumberland. *That's the* long usually fluted type, Clovis. Then a fourth point which is unfluted

and one they call ~~Preserve~~ *MESERVE,* *flakes* Then a few ~~points~~ *flakes* and end scrapers. This is

~~not~~ *about* right.

Bordes You call this type Cumberland?

Boe That is called the Cumberland type.

Bordes: Yes, because it so happend that I have one in my ~~lot~~ *box* from Tennessee which is

exactly a little longer . What? A little longer. It was a beautiful thinning

Ahh this one, well, I think this one is ~~fairly~~ ^{badly worked} or something like that. I don't think it's a ^{graver, a burin it} burin. ~~It~~ ^{Think it} just fell hard ~~to~~ on some stone. It ~~is~~

~~that~~ happens also in the ^{Solutrean} and it did happen to me, ^{when I shot a} ~~a short time ago~~ how with flint head and I got a beautiful set of burins like that.

Boe It never was fluted, ~~even~~,
Bord. Yes. that's an amusing thing. And all that comes from ^{around} the same part.

Boe Now, ^{the next lot} ~~that~~ comes from Alabama.

Bordes Ah, yes, this level.

Boe From one site.

Bordes Ah, ya, this. ok.

Boe This lot is all from Alabama. ~~same~~ site. This is all surface, from anywhere in Kentucky.

Bordes Always the same way to compare the ~~the~~ scrapers with retouch ^{like in the Solutrean} ~~where~~ But where is Mr. ^{Solutrean?} Solitern. 'Oh, he is ^{pure} ~~leaving~~ ^{dreaming} ~~something~~ ^{SAME THING.} And always the ^{sites get} ~~side~~ ^{worse.} ~~scrapers~~ ^{Could well be Mousterian or Solutrean also}

And ^{Oh} this, oh well, pleasant culture. ~~won't~~ This kind of small bifacial points or something like that.
 And also ~~beautiful~~ beautiful retouched blades. Look. ~~it is~~ ^{it is} almost ~~a variant~~ of a variant.

And lots of retouched blades ^{and} scrapers, concave and convex, ^{and} blades and small blades with fine retouch. And those, ~~that~~ that's a kind of scraper,

you could find that in Mousterian too. Retouched blades, reused.

A ~~flake~~ ^{flake} with some tetouch ^{utilization.} Typical ^{Levallois.} Yea, yea, again.

associated with ^{Fluted points.} Yes. ^{with a channel} flake

Tipier ^{But} ~~with~~ what beautiful ^{Levallois} technique!

Bordes Yes, yea. ^{That's the same thing!} ~~Something~~ ^{A.....} This is another ^{Solutrean-like} scraper. Well.

~~And this one.~~ ^{But perhaps} Oh, ~~perhaps~~ Mr. Crabtree has something to say on some of this.

Crabtree's Not a great deal. I did notice the refinement ~~here~~ of spacing of this ^{type}

of ^{the} point of ^{force} ~~one~~ ^{on this one, but this} is not as well defined. This one ^{shows} ~~nothing~~ ^{nothing other than} I feel

^{we have} an occurrence of these. ^{at a site} in Idaho. ^{They} These have a "parrot ^{beak"} sort of thing,

^{carefully chipped} ~~very chipped~~ back as many ^{as five}. Probably ^{beaks on the same tool.} a very definite ^{quite} ~~function~~ ^{use for} of these, - for

^{grooving bone etc} ~~rubbing of material.~~ They are always made of jasper never of obsidian. The end

of this flake ~~is~~ ^{end} appears to be almost a square. Without too much preparation

but certainly well-controlled ^{and unifacially flaked}

Bordes About that ^{I will say it is not the} ~~kind of thing~~ that is not the kind of thing we call a Parrot Beak.

I will show you ^{that that} ~~that~~ in the museums, it is something quite different. I can make

one and show you exactly what it is. That's a kind of ^{backed-beak} ~~well black~~ beak,

but nothing to do with the ^{preparation.} ~~Upper Paleol.~~

Crabtree These, don't you think, have quite a change ^{or} ~~is~~ difference between this and

the regular core.

Bordes. { Oh, this one. Yea.
It's flatter. It's more thinning than fluting.

Crabtree It's seem like almost a whole different method ^{or style} between these two.

Bordes The technique of flaking is not the same. That is something different. ^{yes, of course}

~~Ya, of course.~~

Wheat: ~~speaking~~. I have a question here, Dr. Bordes. You called this a Levallois technique, ~~isn't it~~.

Bordes: No. that's a kind of joke.

Wheat: I know it's a kind of joke. I follow your reasoning here. But my question actually concerns whether the flute ^{is} before the side chipping or, in other words, which came first the side chipping or the ~~fluting~~ ^{fluting} fluting?

Bordes: Ah, well, that's something not easy to tell. Here ^{with this one}, I wonder if the flute was not before the flake. Look at it.

Wheat: That goes in there you see. That's what I was getting at, because several places the side shipping actually truncates the flute.

Bordes: But in other places ^{there were on other types, you know that tool} ~~there~~ here. No question, ^{here}. Yes, there is no question. On this one ^{it} could be, but it is very difficult to tell, you know. If it ^{was} ~~were~~ ^{really the} ~~here~~ on the end of the flake or, if it is a section of this flake by ^{the} fluting, it is not very easy to tell.

Crabtree: With the glass, ^{you can see the compression and rings.} ~~as I said, I did not mean to interrupt. But when you gets~~ ^{When you look at} ~~the compression and rings,~~ if the rings have been sheared at the ends, they will have been intersected by ^{the channel} ~~this~~ flake. ^{These channel flakes will be intersected by the retouch if it is done after fluting.} I mean...

Bordes: ^{Yes but} You can see most of them, but not always.

Crabtree: But ^{on this} ~~at~~ the point it is quite obvious there.

Bordes: Yea, it seems there ^{is rather} ~~are~~ two of them.

Coel: ^{The} Next lot is.

Dr. Williams

Could I interrupt for a second? I wonder if you could comment, Dr. Bordes, on possible methods of producing these blades here ^{that you mentioned}

Bordes: Oh, well, this one is difficult to tell. It could ~~be~~ ^{well} be wood struck. It could also be ^{with a punch.} ~~a punch~~. You know, sometimes the difference is so little ^{between} that it is almost impossible to tell and I am very sorry that I can't say, ^{no} ~~You see~~ you have

^{seen} yourself on blades I have made some difference. ^{of striking platform when the punch} ~~distance~~ is ^{nearer or further} from the edge. ^{And} We are to strike ^{more or less strongly.}

Dr. Williams

So a wide variety of techniques could ^{have been used to} make these kinds of blades.

Bordes: Oh, yes, certainly. If we ^{had} ~~are~~, let us say, one ^{or more} of the blades from this site, we could tell ^{statistically that they used more of this or this} ~~that they used more of this technique than this technique~~, but on ^{five or six - no soap.}

Tipier: we need the raw material

Bordes: Ya, ya,

Coel: The next lot is ^{also} from Alabama but ^a little to the West. The six at the top are similar to what you have seen but the other two are more triangular in form and somewhat ~~is~~ different. Either that or ^{what we call} redstone.

Tipier: ^{The concave bladelet} ~~This type of blades~~ is always long.

Bordes: Yes, Yes, yes.

Crabtree: This one was broken, ^{in manufacture,} I'm sure. This is a ^{well} well defined, spaced blade.

Crabtree We'll go back a little bit ~~to the difference between~~ ^{to the difference between} the difference between basal thinning

and the spacing of this one here. ~~and~~ This type of a pressure point is very characteristic of the fluting type ~~flake~~ ^{black with} of the distal end ~~coming in here~~ ^{of the channel step-fracturing.} However, when they

finished the blade they would take these ~~is~~ ^{little diagonal flake off on each side of the bulb occur} ~~is~~ ^{What} is the reason, with the Folsom, we always

have these side flakes on the ~~end~~ ^{basal} ~~removed~~ ^{or} the heavy bulb and ~~straight~~ ^{gave a} ~~through~~ ^{line on}.

~~So they just took off that stuff.~~ This is a very interesting example of fluting ^{flaking} technique. ~~flaking~~.

Byers ~~This is Byers speaking.~~ This is very interesting, indeed, because, in the ^{Bullbrook} ~~site~~ site this β flake is taken out first and then this is taken out later,

We have some points, some blanks, that show the two side flakes taken out first ~~and~~ ^{like} this piece isolated ^{prepared} ~~prepared~~ for to take out this flake. And then it was

turned over and the platform ~~doubled over~~ ^{beveled} on the other side and a piece isolated in the same way ^{just} taking out this fluting flake. It's interesting to see the

difference ^{or} order in detachment of the flakes.

Crabtree! Yes, that's a real interesting operation ^{observation} ~~of alteration~~ of clearing the channel flakes so that it is ~~free~~ ^{released} more easily by ~~parting~~ ^{parting with the artifact,}

Tipier: Is there a special name for these flakes? coming from Fluting?

Bordes: ^{Channel} ~~Sharon~~ flakes. - Don.

Crabtree: This is interesting. If they ~~had gone another quarter of~~ ^{an inch, it would have} broken. ^{to observe} ~~step fractures~~ is an interesting thing, direct downward pressure ~~and~~ ^{and making a hinge} ~~and the flakes still adhering to the artifact and they were able to follow~~ ^{Almost} ~~adhering to this and they were followed directly on through and~~ ^{stop them} ~~needed to stop~~ ^{stop them}

has always amazed me where they ~~able to chip~~ ^{wanted them to terminate right next} where they wanted right next

to the tip. ^{This type of a step fracture is} ~~portion but they didn't~~ ^{occurrence} make it a common thing here of this sort

~~of a step fracture~~ ^{and is not} not a hinge fracture ^{and} the flake is still actually ~~adhering~~

~~adhering~~. To break this loose it would almost still be attached to the bottom

~~end of this flake this type of a break on this one.~~ This one has, of course, a

little different form and it doesn't seem to be ~~of foreign~~ ^{to} characteristic of the

normal wide ends ^{necessary to keep the flake from spreading.} ~~in order to hold the flake~~. You would make this wider and a

little heavier here ^{at the tip} in order to carry the flake through. ~~where they were~~ using

a narrow thinning ^{technique} sort of thing which increased ^{the} your chance of losing ^{the} your distal

end of the ^{point} blade which ^{it is interesting that} is kind of a unusual thing to have this technique developed

with this particular ^{shaped} ~~shape~~ of point. ~~This is a redstone type.~~

Coe: This is a Redstone type.

Tilley: ^{are} ~~Some~~ points which are fluted ^{shaped like this to determine} ~~is this point determined by~~ the intention of

fluting.

~~Created~~: Somewhat, ^{now are going to feather out the channel at the distal} because ~~for supporting you are going to feather the flake out at~~ ^{end and you need this shape for it} ~~straight cut also for supporting the tip.~~

this end. I mean to carry ^{the flake} ~~it~~ ^{entirely} through to the tip ~~end~~, you must have

a fairly solid rugged ^{perform} ~~end~~. I have found now, that ^{I must have a little additional} ~~in order to support this~~

^{material at the tip} ~~the same thing is~~ ^{to prevent the channel flake from hinging} ~~flakes over there, the blocks to get them to come~~

~~straight through with out curling back under we must have this support,~~ otherwise ^{the}

~~tip will be removed.~~ ^{Actual you are splitting the point} ~~they drop back through. I mean we have seen it so many times as how they'll fall up~~

~~three pieces~~ ^{to the core}. When you get into ~~splitting the~~ ^{flake} ~~this would be a disk blade~~

⁵
 If the ^{mid} section of the artifact is not thick enough and we split this blade 3 ways like this, ~~well it's~~ all it has to do is extend down does not have a ridge, or a double convexity, the flake will to where we are breaking the material and by the laws of mechanics, you have to spread and break the artifact. So, the force, must be directed lose the other end of it like that ~~so you must provide a set~~ of forces from this end at the proper angle from the base to the tip in order to get a not bipolar but the angle between this point and this point ~~with~~ must be close perfect termination of the channel flake. in order to get a perfect point... without losing the

~~end of the point.~~ So to answer your question ~~how~~, you do need ~~need~~ this ^{this} area specially designed preform. The channel flake is and you get a little thinner at this end... at this end. part of a cone and, therefore, tends to spread and to So it goes have a tendency to spread..... You're having a ~~same~~ and it's prevent this, ^{spreading, the} shape of the preform must have mass wanting to spread is going to guide that flake in a relation to to contain the forces.

the place.... start.... very fine basal thinning

which is as thin as some of the Folsom type

Orwin: Was this flaking done before ^{to see whether} after the fluting? This is rather much lighter ^{having it} in addition to heavier. This is a Folsom style

Boe: The next lot of material is from 200 miles north in Tennessee. ^{There are} Three

points. Two are ^{the} Cumberland type and one is called Clovis type, then the other items are from the ^{Nuckolls} ~~site and~~ ^{site} in North Central Tennessee

Fairly large ~~with~~ blades to start with.

Dougherty: ~~Don't~~ Don, could I ask you what kind of flake do you think ^{of} that flake part started out ^{with} thickness of that. ~~is that~~ ^{is that} ~~the~~ ^{just} ~~the~~ ^{the} ~~actual~~ ^{actual} size or is that usual,

Erathie It would ^{have} be considerably larger. *I* In doing this sort of work my preference is to *start*
~~do it~~ ^{with} from a very thick blade. Shocks and strains, ^{are present} in ^a the thing fairly thin, ^{blade}. I mean,
~~you might say by using a miniature core technique, and to bring it in in a~~

~~that will have great....~~ Because if you use a blade that is fairly close
 to the thickness of the artifact ~~you~~ ^{it has strains which will not absorb the shock.} strain ^{a sharp} ~~ax~~ and I prefer to use a
 shearing ^{between the base and the tip so the forces do not} ~~which may not be the proper term but may be I can't think of anything else~~
^{oppose one another. This eliminates a bi-polar break where} ~~to the edge where two points shears would come together where you are just missing~~
^{the forces would oppose each other} ~~the edge.~~ The point I am trying to bring out ^{is that} in shearing ^{eliminates this opposition} ~~of forces.~~

Dougherty: Another question, ~~Dougherty~~. Does this material and this material over here and
 those scrapers ^{and} point similarities, is this about the same material, ^{from different sites?} ~~Frank.~~

Coe: The Stone?

Dougherty: Yes, I mean ^{culturally are they similar?} ~~approximately the same.~~

Bordes: Well, I have something to say about ^{this.} Here is a ^{double end} scraper,
 And if I am ^{right, the first I have seen} there is a scraper at both ends, ~~and~~

Coe: The next lot is again from Northern Alabama. ^{IT} ~~ITS~~ shows a number of early types.

Some we haven't seen before and in the lower corner this small lot of material from
^{Stanfield Worley} ~~Stanfield Worley~~ rock shelter lower level. I think ~~that~~ some might be interested in ^{the}

^{so-called "QUAD"} ~~.....~~ points. And in what they are calling ~~that~~ Dalton in.. ^{Alabama.}

^{QUADS,} These are the ~~quads~~ these are the Daltons. This is a Dalton from the lower level
 of the rock shelter.

Crabtree These are amazing in the refinement of the retouch of these particular ones here

This one here has been abraded ^{on the} edge, but if you notice ~~with~~ these two ^{with very} this fine, ~~the~~

extremely fine ^{work on the edges} almost a ^{sinuous} edge. They are very finely worked. ~~They're very fine.~~ That one is and this one too.

We have a little different ^{order of flaking} ~~display~~ on the side. And the other one

This one is edge-ground. ~~And this edge round~~

~~This one appears~~ This is ^{it} apparently ~~was~~ the last flake ^{here} then they didn't bother to take these off ^{the little diagonal flakes like they did on the Folsom point.} ~~than the Folsom point.~~ Folsom ^{took} these ^{two} laterals off to clear ^{what bulb was left} of here but they did clear ^{the platform} prior to ^{fluting.} taking it off it appears.

But these are considerably finer and much better retouch ^{ed} than the others ^{that we have} seen so far,

~~Are quite characteristic of these~~

This is some Very unusual material. ^{hardly} ^{identify} identifiable - I haven't seen any like this before.

The flaking ^{of the edge} characteristics ^{is} are very similar to the fluting style

Bordes! Look at this one ^{set looks like} with the fluting here. That's something.

Crabtree! ~~this is~~ a very coarse material but ^{oh} ~~quite~~ lustrous. Here, ~~on this one~~ me, I thought we had another one of your burins ^{type} things here but ~~we~~ ^{we just missed and that was a} flat, ~~on this~~

It might give some indication ~~how~~ ^{of the method} of manufacture. ^{of manufacture.}

The question came up ^{by} from Dr. Dougherty ^{whether} ~~how~~ this was done ^{from} by a core or a blade, but ^{this indicates that it is} ~~that it is~~ almost a part of a core.

Bordes It ^{could} would be. It ^{could} would also be ^{a point that was longer at first - then broke} ~~and then~~ ^{again.} ~~and then~~ again. Something like ^{that} ~~that~~ which was ^{done again.} done again. Could be - I don't know!

Crabtree: Another retouch. It was flexing just as it was coming off. It was chattering slightly. Considerable pressure right at the far end,

Dougherty Does that have anything to do with the type of blow?
Crabtree: Well, ^{with this} percussion ^{is} a little more pronounced. But sometimes this can be caused if the surface is a little irregular. However this is - ^{caused by} was a compression ^{as the} and ~~your~~ flake was ^{parting from} leaving the back portion and before ^{this happened} it did it ~~was~~ undulated just before it ^{took loose} ~~left~~ and was detached. ^{it was slightly flexing this point.} ~~as it being slightly flexible from here as this one was not~~ and say it moved two millionth of an inch, and your angle started to change, ~~and~~ you get ~~it~~ this chattering here at the end. I mean it's actually ^{flexing} going like ~~this~~ as it comes off the end. While here it ^{tears via pattern} is ~~true~~ till it hits the weak point and ^{as the} flake is leaving ~~the~~ over ^{the irregularity and up and down and still hangs} in and out and ~~is still hanging~~ hanging on as it ^{hinges,} ~~comes~~ out. I ~~didn't~~ didn't explain that very well.

Crabtree: Well, ^{with this} percussion ^{is} a little more pronounced. But sometimes this can be caused if the surface is a little irregular. However this is - ^{caused by} was a compression ^{as the} and ~~your~~ flake was ^{parting from} leaving the back portion and before ^{this happened} it did it ~~was~~ undulated just before it ^{took loose} ~~left~~ and was detached. ^{it was slightly flexing this point.} ~~as it being slightly flexible from here as this one was not~~ and say it moved two millionth of an inch, and your angle started to change, ~~and~~ you get ~~it~~ this chattering here at the end. I mean it's actually ^{flexing} going like ~~this~~ as it comes off the end. While here it ^{tears via pattern} is ~~true~~ till it hits the weak point and ^{as the} flake is leaving ~~the~~ over ^{the irregularity and up and down and still hangs} in and out and ~~is still hanging~~ hanging on as it ^{hinges,} ~~comes~~ out. I ~~didn't~~ didn't explain that very well.

Crabtree: The ^{Holland} ~~of this point~~ is from Florida. It's not a very good example of a Clovis type. They call it ~~Swanee~~ type, Dalton type. You see there is very little resemblance between what they call a Dalton in Florida and a Dalton in Alabama. Then a notched variety. Some ~~the~~ interest to some of you is this specimen ^{which is} ~~that's~~ called a gouge

Crabtree } ~~is called...~~
This ^{Neolithic} kind of tool exists in the ~~Paleo~~ in Egypt. It was ^{studied and discussed} ~~studied and discussed~~ by ~~Thompson~~ ^{by} Thompson it ~~was~~ ^{was} Arkin.

Coe: This specimen is not an accident. Quite a few of them have been excavated from ~~this~~ ^a particular level.

Tipier: These are so in the ~~the~~ ^{Sahara} ~~the~~ ^{Neolithic} and the Paleolithic. but a little polishing ^{here} there and ~~it~~ ^{it} seems to be ~~working~~ ^{with} wood, making bows and

the removing is. as little polishing and then ~~percussion~~ ^{percussion} then polishing, percussion, polishing, percussion and so on.

Coe: In that corner there we have O'Howell material. ^{you} go back north now. Two old specimens, three old specimens, and I have some more in a box ~~before we get to those.~~ ^{is shown here.} ~~before we get to those.~~ ^{just a little bit.} ~~before we get to those.~~ ^{before we get to those.}

Crabtree: It's surprising the variety of fluting techniques that ~~have been used that we~~ ^{is shown here.} ~~have come up with all ready and I have 3 or 4 with me that are still different.~~ This

appears to be ~~quite regular~~ ^{Flintbridge, Ohio} material. These are, no doubt, heat-treated. This tabular

piece is ~~of silicious flake~~ ^{day and is} ~~to be a~~ ^{granular} ~~silicified flake~~

~~They~~ are fairly ~~regular~~ ^{granular} but after they have been treated they ~~are~~ ^{work} very well. These ~~have~~

~~are~~ the wide ~~collateral~~ ^{collateral} flakes. This is quite a collection of ~~styles~~ ^{different}. This is quite a classic style of that particular one. They were able to stop the ~~flake here rather than hinging off.~~

But ~~that~~ they kept their line of force ~~directly down~~ ^{going} and were able to stop at the right time. ~~This indentation has been~~ ^{These are} basally ground. ~~Collateral thinning and~~

~~very nicely done.~~ ^{is} The detaching of these flakes ~~has~~ ^{is} part of the blade technique, ~~flakes on both~~

sides ~~this is still~~ ^{show} evidence of this.

Bordes: What material is it?

Crabtree: They call this ~~flint ridge~~ ^{Flintbridge} Ohio flint near the ~~.....~~ ^{Buckeye} Lake out of Columbus, Ohio

~~.....~~ ~~these two over here, you see from across~~

the Ohio River, in Southern Ohio, ~~whether it does, I don't know, I mean~~ ^{this is their contention.} ~~this was~~

Techniques?

Bordes: What do you make of the thing. It looks percussion.

Croftree Percussion, yes it is. And well done, extremely well done.

Bordes Is there not a little pressure in that part. *here perhaps?*

Croftree: *I think so but the flatness of these collateral flakes is amazing!*
~~But these collateral flakes are extreme flat ones are amazing.~~

Bordes: Oh, ya, ya, ya. Oh, that's beautiful. You see, this one they didn't dare make it fluting on ~~this~~ ^{the two} sides, *we think*.

Croftree There just wasn't sufficient curve in order to flute ~~bits~~ on this side. It ~~wouldn't~~ ^{was too} flat to contain the forces for removing, *if this spacing* ~~have held the flake and they knew that before they did it. This Cynthia was kind of~~ ~~were better it would resemble Hell Gap.~~ ~~cut up but if there was a little better spaced.~~ Well, it's not like the alternate, opposite

Hell Gap technique: ~~held out sort of thing~~ but they are wide collateral ^{terminating} flakes that ~~are terminating~~ and there is a slight similarity ^{to Hell Gap} but a different technique ^{was} used. ~~Not~~ nearly the refinement of the Hell Gap point, ~~type of point you were finding~~

Bordes: That looks like percussion too. The other side I am not so sure, but it could be percussion and end pressure, ^{but if it is pressure if it is} then ~~it is~~... rather wide flakes.

Croftree They're almost too wide for pressure. I mean, you limitation ^{with this} on the type of material ~~is too great to remove that width of flake by pressure,~~ ~~for that width is very difficult~~ and how they ~~avoided~~ ^{getting} the deep bulbs, ~~in~~

I don't know. It's a very interesting technique ^{that} and I don't fully understand. ^{the} ~~This in~~ *bulbar scars are diffused.* ~~here where you get these regular ones without any points of force in here.~~ No pressure points.

See *yes but perhaps it has been slightly cut - this flake*
 Bordes *See how... has been.....*
Here you have severed flakes.
~~Here are certain flakes possibly~~

Crabtree Very nicely done

Coe: That one that you are identifying is Plano. ~~long~~
Tixier Bordes: *This is Plano point?*
Crabtree: This is a jewel of persuasion *work* Very fine.

~~.....~~ This one is ^{*all flaked from*} ~~altered~~ on one side curved ^{*from this*} to this point
~~.....~~ ^{*here to*} Through ~~.....~~ of the opposite edge ^{*and well over*} ^{*an inch wide*} ..

Bordes And there are small cores here *with the same technique.*

Tixier ~~heat treating yes.~~
~~heat treating to treat~~

Crabtree *You can see the heat treatment.*
 Very evident.

Tixier Very, easy. *See it very easy*

Bordes: That's a core.

Crabtree Dr. Coe, is this a common type of ^{*their cores?*} ~~their cores?~~ ^{*in*} ~~to~~ make the polyhedrals with the flats?

It's the first one I've seen . . .

~~We were able to take off~~ ..

Crabtree: *This is a beautiful collection from the*
~~And this is~~ Eastern U. S. along with ^{*Bullbrook*} ~~Holbrook~~ and ^{*other*} ~~some~~ assemblages ^{*We have*} ~~there~~ covered
 a lot of ground.

PIÈCE ESQUILLÉE

Tixier May I show you some ^{*from*} North Africa?

Alan Smith: While Mr. Tixier is ^{*moving*} ~~using~~ his specimen, I wonder whether it would be a good id ea

before we break up tonight, if we could take ^{five or ten} minutes, I wonder if it would be a good idea for Dr. Bordes and Don Crabtree to give us a brief summary perhaps using the blackboard of how you tell percussion from pressure

Crabtree
Alan Smith: I have.

But All the time you ~~are saying~~ pressure and percussion, now what are you looking for?

say I think this is ~~and~~ this is. The question is,

What seems to be

Bordes: Now that can be done up to a point, do it with the help of Crabtree. I shall try to go into the adaptation. Well, it is just

the kind of thing you see, and you are very much embarrassed to explain, but I shall

try anyway. That ^{is} one of the reasons ~~for which you will~~ be good. ^{why it would} for typologists and

archaeologists to work flint by himself even if he does not come to the efficiency of Crabtree, you know.