

Crabtree
quite distinct

On the other side which is quite different, ^{an} ~~any~~ unusually piece of palm wood ^{which} is in this array of fossil wood, ~~being used with that.~~ ~~With these,~~ I ~~can't~~ ^{can't} see ~~these~~ ^{one}

that end of the table

very well, and ~~so~~ I think Dr. Bordes can see ^{them better} ~~these~~ ~~on this sort of thing~~ and tell

a little more about them. This is a little out of my category, so I would like to turn this over to Dr. Bordes .

Bordes

Well, these tools which are just to my right, looks as though ~~all~~ ^{they could all} of them could

pass for ~~unmediated~~ ^{grades} of Mousterian. Almost all of these there are a kind of

crude

stone scrapers, choppers, and better scrapers, ^{thick?} kind of ~~six~~ nose scrapers or something

like that, bad cores, and here ^{one} chopping tools. Chopping tools worked on two edges,

an occasional blade which is retouched on two sides, ~~and these are all~~ ^{and} that's

an end scraper with very flat retouch, very, very flat. That's a bit of a bifacial

tool and not very good. Scrapers, scrapers are everywhere. ^{End} ~~A lot of them~~ and side

scrapers, big flake, ^{They hit} ~~put~~ a hard blow on ~~it~~ this one. Not much else to say except

that they seem to have done a lot of ~~the~~ retouch on the flat face of this one too.

This one also. Bit of bifacial tools, broken. This doesn't belong to this thing.

Well, but scraper. Oh, I should say a flake with a badly faceted striking platform

not too well defined on ~~the face~~ ^{bifacial by several scars & so on,} and then some retouch

with step retouch from one side which is perhaps due to the nature of the material

rather than the technique of the type. That's all right but it ~~detects~~ ^{takes} five or six

lines. ^{you would} ~~you~~ call that, you know ^{ascina} a ~~hard~~ scraper.. ^{and I think that they are the same}

As for this obsidian ^{debitage} ~~debitage~~, well, I am not too well ^{today} ~~with~~ them, but I think I could

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do better. It's not a very good job. Well, these poor people, they had no ^{real} culture yet .

Orvin Williams
Yes, they probably did.

Bordes ... it is hard to explain. That's a peasant culture. Peasantts culture , yes
Well, ~~they didn't do~~ they didn't do much with obsidian ~~And~~, for the points, they look not so bad considering the material. What's this, petrified wood?

Orvin Williams
Yea.

Bordes Yes, that's hard ~~to work~~. This is ~~very~~ ^{rather} fancy but I wonder if it was very effective as a point. They did not know better, probably. What. ^{yes!} Rather strange ^{this one!} All right, but that's a later one?

Orvin Williams
Yes, this is later. That's basketmaker.

Bordes Yea, that's better. Much better. Well, ^{if you want to be optimistic.} ~~this is artistic.~~ They ^{succeeded up to} ~~find it out~~
~~to~~ a point. And here, ^{other} ~~rather~~ end scrapers. Some ^{side} ~~end~~ scrapers.

Orvin Williams
These are ~~some~~ ^{late}

Bordes Ah, that! A kind of bifacially worked ~~is~~ flake ~~with~~ with ^{longer} retouch on ~~the~~ one side and ^{shorter} on the other. But I would call it a bifacial scraper, which can be ^a knife , of course. That's something else? ^{That's obsidian?}

Orvin Williams
Yes, that's a kind of cloudy obsidian.

Bordes
That's nice material. - ^{This one}

~~This one?~~

Uh-huh.

Bordes And that's what's that one?

Orvin Williams Just more material from the same *late series*.

Bordes Ah, that. What do you think of this? Is it not your state?

Craftsman No, I don't believe it is. I rather think that this had been in a fire.

Accidental or not there is no way of knowing.

Bordes Same stuff.

Craftsman Excuse me, Cynthia. This one right here appears to be also—More wood.

Bordes That's the same stuff, I see. Some obsidian. Ah, Ah. This one is *backed*.

No question. *pocket* ~~bucket~~ knife, *yes* no question. Small, but no question, this is the first

one I have seen in all this Am. *erician* material. Yes.

Phil Smith What is it Prof. Bordes?

pocket ~~bucket~~ knife. A *pocket* knife.

Orvin Williams That is because he was a very backward people.

....

Bordes You're sure that it didn't drop from your pocket

Orvin No, I'm sure sure sure.

Bordes That's the first example of *backing* ~~breaking~~ I have ever seen in Am. *erician* stuff. I don't

say that they do not exist, but.

Orvin I mean that's not preparation, that's just actual *backing* ~~breaking~~.

Bordes No, no question. Not *backing* ~~breaking~~ all right. *these* is no preparation. That is

not the side of a core. They took off the little blades and made this from here, you

see. A little platform here but a lot from here. Now, that's an interesting tool.

Irwin Are there many of those?

Irwin Williams No, that's the only one. I brought it along because I thought it might be interesting.

Bordes That was ingenious.

Crabtree Dr. Bordes, I found one ^{that redeems} ~~it redeems~~ them slightly. This one right here. This one looks like they knew how to take off long blades. There is only one, but the percussion work is very good.

Bordes Yes, yes, yes.

Irwin Williams I would imagine that's intrusive.

Bordes Ah, well, well, well, don't fight them.. They are your people, after all.

Phil Smith What type is this?

Irwin Williams Well this is not necessarily that.

Tyler; what type is this does it go with these? But not necessarily that.

Tyler Well This ~~stuff~~ does. I have never seen another quite as finely made as that one. Like upper Palaeolithic.

Irwin Williams And I would guess - a Progression and.. degeneration. But we get this kind of thing.

Crabtree Yes, it appears to be.

Tyler But on the other hand, you see.

Crabtree Little preparation. It's a shame they waste obsidian like this.

Irwin Williams Well, they didn't know what they were doing. It can be seen by the points that

they turned out, or at least the tools, . Well, these people ^{was} main interest was in

grinding up either wild or agricultural materials. They have dozens and dozens of grinding stones for every projectile point, ^{apparently} and hunting is ^{kind of} a very secondary pursuit.

With
~~The~~ one interesting thing, ^X you mentioned that you thought that perhaps these had been made because they needed a ^{sturdy} heavy kind of point. Well, certainly the kind of point game that these people were hunting doesn't necessitate this kind of thing.

Probably ^P primarily deer, and rabbits and this sort of thing.

Bordes Rabbits, ah yea.
Erwin Williams Rabbits.
Bordes

Rabbit's hide is hard. And if you know, if you shoot a rabbit, you shoot downward, and so if you miss it, your point is gone except if it is very strong.

Erwin Williams In other words these people were also bad aims.

Bordes! Try to shoot a rabbit with a bow and arrow. That's not so easy as it seems .

Erwin Williams Well, this was probably with dart points, spear.

Bordes Spears are even worst.

Erwin Williams Well, I would assume that most of the, not all, but most of this has been done apparently by percussion.

Crabtree It appears to be .

Bordes All of that anyway.

Crabtree ~~Even the little sections~~ ^{with the exception} of the ^{little} serrations on this side here, and some of this, but ^{mark here}

this is very simple, ^{to do} with ~~the~~ tiny pebble ^{or with} or an extra piece of sharp flint you can do this. They are even ~~abraded~~ ^{abraded}, the notched.

Bordes That's percussion, here. Perhaps a little pressure, but, they were not ~~more~~ ^{much} farther on pressure flaking than I am, rather less.

Erwin Williams Rather less.

Tipier And their arrow heads ^{arrowheads} are more beautiful in quartzite than obsidian.

Bordes Yes.
Bordes But you know, that it is easier to work quartzite than obsidian, except when you know. Oh yes. Oh, yes, I would rather work this than obsidian.

Epstein We agree, we agree.
Cerabtra It depend on ^{the} different ⁱⁿ technique

Bordes On the technique you use and ^{quality of} the quartzite, ^{of course} No, no. no.

Cerabtra It looks almost like a blade whether it is accidental or not. ^{there is not} enough there to tell.

Erwin Williams ^{ponder if} you thought that might have been heated.

Cerabtra Yes, I'm sure it has. I'm sure it has.

Bordes That's an ^{important thing,} ~~something~~, you know.

Erwin Williams Well, all right, we'll make it ^{a little later,}

Tipier ~~()~~ scars on obsidian - an end scraper

Erwin Williams The ancient mariner. Yes, it ~~is~~ ^{looks like it}

Erwin Even that, ^{is} characteristic. ^{Erwin Williams} Well, does anybody have any more comments or

shall we ^{more} ~~move~~ to another group of materials.

Bordes All right, let's move.

~~Geary Epstein speaking.~~ The material on the table now consists ^{of material from} ~~of~~ two sites

in Mexico. The heavily patinated, tan patinated material comes from San Isidro site which is an open site about 40 miles east of Monterey in Northeastern Mex. in the lowland section of that area. It's a very ~~to~~ hot, dry region. And this site was discovered in 1960 and excavated in 1962 with very little results of excavation.

~~The material has been~~ The site seems to have been ^{uncovered} ~~uncovered~~ rather recently, but how many times this last recent exposure ~~is~~ ^{the} represents in history ^{of} the site, I do not know. But there are a whole series of fire hearths that seem to be in almost perfect condition, that is, there are circles of concentrations of rocks ^{maybe} ~~maybe~~ 3 feet

~~feet~~ in diameter and in and around the ^{hearths} ~~hearts~~ are these heavy artifacts. Most of the artifacts ^{are} ~~are~~ heavy percussion bifaces of this general kind. Some ~~are~~ twice, sometimes three times, ~~are~~ as large as the ones on the table, and they vary in size, ~~and~~ ^{number} second in ~~are~~ are these pebble choppers which are unifaces, ~~on~~ unifacial and bifacial and some of these weight ~~is~~ as much as four and five pounds.

Going along with that, are such things ^{as} ~~as~~ what we call in Texas, bifacial

^{clear fork} ~~three or four~~ gouges of which this is a representative. ~~And~~ ^{are} thru-out ~~are~~ whole series ^{of} what I think of as very heavy percussion flakes. Some of them ^{have} ~~are~~ relatively straight platforms and some have rather faceted platforms. These flakes that

I am bringing here are the smaller flakes. Some of the flakes are enormous, being of this kind. ^{in terms} ~~Of~~ the faceted flakes, most of the flakes that are faceted are struck at the high point of the platform. Also, in this area, ~~by~~ ~~area~~ in this region of

Mex^{ico} projectile points are the most common single artifact one can find. And yet at the San Isidro site projectile points were very uncommon. We found a few, once, to lump these things together and call^{ed} them something or other. We found 14 of these. And they were all within essentially a very small area of the site.

We found 5 of these, or thing^s identical to this. ^{from Tamaulipas} Actually this is almost identical to a specimen that ~~the~~ MacNeish found ^{of his stuff} when Tom Lake ^{Lerma} was called ~~beaver~~. Almost identical in terms of the photograph ^{and} going along with something like ~~this~~ this.

These are some of the projectile points found. There is also some very recent projectile points, found at the site. The material itself is a highly ^{silicified} ~~silicified~~ limestone. Where is that ^{clear fork gouge?} ~~gouge?~~ And it ^{consists} ~~is~~ ^{essentially} consisted of a black material.

which is patinated, as you can see. There was no context in which this could be surely dated except ^{that} the material that we found in the survey was not like this.

And recently, as a matter of fact, I am working on the site now, we stopped digging just to come up here. There is a site near ^{Tanores} ~~Tanores~~, on a second terrace, ^{it is} a two terrace arrangement, ^{and} and this is the high terrace, the cave up in the high terrace is

about 75 to 80 feet above the ground. There was a 5 foot ^{culture} deposit lying on top of gravels in it and ^{then} because I had been to ^{Congruente (Ch)} ~~Congruente~~ and ^{Combe Dainelle} ~~had~~ seen Bordes excavations, I decided to go thru the gravel and there was about 5 to 5 1/2 feet of gravel in the section of the cave that I dug thru and this was lying under the

gravel, ^{and} and so far the kind of material found with that are the large flakes of this kind but, so far, none of the thinning flakes that one would find in making a biface

such as this or something like this. We have ~~carbon 14~~ abundant carbon 14 sample on this material, but we won't have that run until about a week from now.

Bordes: That's a pity. ...

Epstein: In terms of typology one thing that comes up at this site which does not come up here ^{are} these. The pebble tools, unifacial ^{miserly} we have, but these things, which are pebbles largely that have been ^{miserly} unifacially worked, with just a little bit of ^{bifacial} bifacial working, do come up at this site, but do ^{not show up at} at San Isidro. This material is known as

Quevedo ^{is a zone}, because it is very close to a zone of rock fall in that area.

That's all.

Bordes: ~~Well, Bordes speaking~~ This material is very strange. And it seems from what Epstein says that they are always ~~small~~ flakes. The biggest flakes ^{not being there,} Well, of course, there were flakes ^{which} that were struck rather hard but most of them not by stone ^{perhaps,} but, rather, a soft hammer. This is more ^{the} characteristic of wood ^{on the first flake}. This one, no, I don't speak of this one. This one perhaps, but soft hammer anyway, not a very hard ^{rock,} This could be stone struck. It is difficult because patination is so heavy, but on the other hand this one does not seem stone struck. Seem they used it ^{as some kind of stone hammer}... This belongs to same.

Epstein: It's the same open site. That's all I can tell you.

Bordes: But you have not found ^{it} ~~this~~ here. And the ^{else} projectile points are rather surprising and I wonder if these two are not ^{intrusive}... I wonder. I don't know ~~the material~~, the site, and so on.

Epstein I wonder too.

Bordes: This one could be a *laevius* ~~This~~ They seem rather much fresher.

than the other, as far as patination goes. Perhaps it is not the same material

I ~~am not~~ - don't know if this is the same material as that. *Looks like.*

Epstein: On the patination, it is very difficult to tell. There is deffin- definitely a

reuse of tool ^{is} evident at this site. In other words, some tools will have been used,

some bifaces have been used and then ~~and then~~ the new flakes on it, the patination

is much less. Of course, patination can vary with the amount of exposure and it

is difficult to tell looking at this open site *which side has been exposed.* ~~how many~~

Bordes ^{of course} Ye, yea, but it seems rather strange that the four projectile points, ^{all 4 of them} seem

which seems to be ~~all of them~~ even the ones of the same material not much less heavily patinated

that the others. This is a little bit. Not the same kind of patina, you know.

This is, you know, I would say, let's say ^{it is worse} ~~this~~ was in France on the plateau, I would

say that this is Paleolithic and this is Neolithic. Of course the patina can be

but I think that if you have enough material, as ~~stat~~ statistical as this of the

differenet elements following patination could, perhaps, give you something interesting.

It works here, and on the plateau. ^{of course} you will find on every patina ~~some~~ *some that are not so hard*

^{and} something like that which is not very patinated. I would be rather surprised if there

was the same ^{preparation} ~~patination~~ in the two kinds. This looks very good, it doesn't mean

much. Could be a ^{pleasant} culture, you know. And this you ^{say} see comes from ~~below~~ *below*

the gravels in the cave.

Epstein: ^{Pardon me.}
~~Part of them~~

Just one thing. This has a slight ^{sheen} sheen to it because point one when these were found they were heavily encrusted with limestone and when the finish of the limestone after it was ~~finished~~ ^{thru} with acid was so difficult that I decided, I just touched it up with oil. ^{So} ~~But~~ there is a sheen to it because of an oil finish on it.

Bordes Yes, yea, yea, It doesn't matter.

Epstein: ^{set also} Photographs better with ~~an~~ oil.

Bordes Ya ya.

^{we have} Seen this. Yea. After all, not only the soil ^{Solutrean can} ~~keeps~~ ^{do thinning} ~~swimming~~ but ^{also} ~~show~~ the people with the chopper, ^{chopping} tools. That looks very much like the old culture of ~~the~~ ^{that Robert}

I don't say it is. I don't say it is, but if you find a little. ^{like,}

well, why not. Who can tell. That's really quite different. Even this one.

Epstein: Try fluting on that, or thinning and I was wondering whether Mr. Crabtree would think of that as fluting or thinning or what?

Crabtree: It's reminiscent of some of the very rudimentary Clovis sort of thinning with

the step fractures, ^{they} ~~expressed~~ and then stopped, or ~~attempted~~ ^{the flake} to stop, without going

on thru. He ^{got a} ~~was~~ step fracturing here, ~~he~~ ^{he} was letting it go as far as ~~he~~ ^{he} could

~~get it,~~ ^S ~~and~~ the pressure would ^{allow} ~~allow~~ it before he let it come outwardly

But ~~the thing~~ ^{it} in this material ~~is~~ appears to be comparatively soft and your

observation of ^{Their} ~~them~~ utilizing a ~~ridge~~ ridge for the impact, is quite important

~~and~~ to concentrate the force of the blow, ^{up} on this projection so that they can

carry their cone on thru, ^{but} because of the softness of the material, these seem to

be ^{going} ~~inwards~~ inwards from the leading edge ~~of most of these tools and this one~~

~~demonstrating~~ . Shows almost a shattering before that one. It demonstrates considerable toughness, ^{of material} yet they have the ability to come up with a point such as that. It's quite amazing if this is all the same material.

Bordes: This is what I call in France a ^{dihedral} ~~diagonal~~ striking platform and it is ~~a~~ very, very ^{common} ~~peculiar~~ one, but ^{very peculiarly} the point ^{of impact} is not just on the ridge, but just beside.

Epstein: What kind of a platform is it?

Bordes: ^{Dihedral} ~~Diagonal~~ striking platform.

Epstein: ^{Diagonal} ~~Diagonal~~?

Epstein: ^{Dihedral} ~~Dihedral~~.

Bordes: ^{Chapeau de gendarme} ~~Chateau de gendarme~~ ^{it} ~~it~~ Now what is the ~~chateau de gendarme~~?

Bordes: ^{Chapeau de gendarme} ~~Chateau de gendarme~~, ^{Oh,} ~~of~~ something quite different. It would be. Have you

a pencil somebody and a bit of paper? Here is a pencil and a bit of paper and

the ^{chapeau de gendarme} ~~chateau de gendarme~~ would be . Oh, ^{God damn, this tool!} ~~damn~~. A striking platform like that

with ^{small} ~~small~~ faceting, you know, with this shape. What you have here is a diagonal striking platform, ^{and generally} ~~and~~ generally a point of percussion, not just here but here just

beside. Because just try to strike ~~the~~ exactly on the ^{edge and} ~~edge~~, you catch a ridge and, ^{pop!}

(Noise with threat).

Tijer: I think that you have to make one. You have to make one.

Bordes: Yea, yea, It's not difficult. And here I would say is a striking point. Here was a ridge and a striking point ~~was~~ is just ^{here,} just beside. Why they use this kind I don't know, but perhaps this is just a flake ^{taken off} of one of these chopping tools

~~is no bigger.~~
bigger.

Epstein I think.

Bordes: Well, here is ^{indicative of a} ~~convex~~ convex striking platform. This material. Yea, yea, yea.
That's a good one

Tifner That's a good one.

Bordes It is not bad from what I have seen here.

Epstein Interestingly enough, in the ^{area where Sam is working} ~~area that we are in~~ there are apparently no burins

Tifner What kind of raw material?

.....

Phil Smith There's one almost. as good

Bordes ~~is almost~~ almost not quite ^{except for the true} ~~retouch position there it should~~

~~be a little~~ That's a convex striking platform ^{in the valley of} ~~...~~ ^{C. pasand's gouge} it is like that.

No, no, no, they did not quite get ^{to the chapeau de gendarme} ~~the chateau de gearm harm~~. That's a convex striking platform. ^{The chapeau de gendarme is a} ~~The chateau de gearm harm is a~~ convex striking platform which

looks like the old old... ~~in the old french...~~

That in the french gendarme.

Yea, and this kind of tool, how you call it?

Epstein We call ^{it} ~~in~~ a clear ^{fork} ~~four~~ gouge, in Texas.

Bordes Clear four?

Epstein ^{clear fork} ~~clear fork~~, a gouge.

Bordes A gouge. - oh, yea.

Tifner ~~But we call it in Egypt a adze.~~ But we call it in Egypt, an adze.

Bordes ~~this~~ ^{this} is known in ~~the~~ ^{other} cultures in America?

Epstein Yes, it has a very wide distribution in the American Plains, largely, ~~but outside~~

~~and~~ I think, the well stratified evidence in Texas indicates that this is associated with ^{Plainview} plain view, so called ^{Plainview} plain view points and ^{Zlerma} ~~points~~, when the evidence is well documented.

Bordes Could be. Could well be that ~~all~~ ^{those} ~~that~~ belong to the same thing but it is rather surprising but anyway, nothing is impossible. That is very rough work, huh? I would not call that a projectile point. That's rather ~~exact~~ rough. This, this, I don't know what it is. Here a kind of bad scraper. Chopping tool. Their best tools are chopping tools, by far. Oh, well, ~~oh~~ have you seen anything like that in Siberia, Marie?

Wormington', Some of these big things, and even larger than this, are the sort of things that they call skreblo that you get at ~~Monte~~ ^{Fontana Laura} ~~Monte~~. That's part of the tradition which is quite different from ^{Alta} ~~Alta~~ ^{guierieres (?)} and there is now a radio carbon date in somewhere in excess of 11,000 years for the lowest level of the ~~Font~~ ^(a font together) ~~Font~~ ^{Fontana Laura} where you do get this general type of thing.

Bordes Yea, that's a small ax.

Epstein ~~These by the way are found,~~ These large triangular things which is here about 2 1/2 inches ~~long~~ wide and ~~may~~ ^{maybe} be 5 inches long. These have been found in Texas ⁱⁿ ~~by~~ ^{dry} caves hafted to a branch, in other words a branch about this large, which has been split in ~~both~~ half and then tied at both ends.

.....

Bordes Yea, yea, I am not at all surprised.

Tipier Hafted like this or like this?

Bordes No, like that.

Epstein This is the branch here. Yea, like this.

Tipier ~~that~~ away

~~SS~~

Bordes: Looks like. Rather nice thing. Yea,

strange. These Americans are crazy. No more comment?

Epstein Do you have any more comment on this? *me Crabtree?*

Crabtree I haven't any at all. *set to* Strange material.

Epstein Well, here, may I ask you one question. ~~Epstein's speaking~~. I think that I

have seen points called Palasaides points in, who's the author of ["]the old ~~Cordilbran~~ *Cordilbran*

["] culture ["] Butler? I think he ^{illustrates} ~~illustrated~~ a point like that that he calls Palasaides ,

Orwin
Mullmanis Cascade A.

Epstein: Cascade, I'm sorry, ^{is at all} and it has a certain amount of serration in it and I was wondering if it ~~was~~ related.

Crabtree This is unique, ^{I'm getting} ~~again~~ in the away from ^{this part} ~~the source~~ of pressure, which is very rare.

I mean , I thought I had seen many, many points in the Northwest but we never see this

type of diagonal ^{feeling} ~~either~~, ^{than} holding down, ^{the artifact} and pushing away, ^{from the body or they are,} or these ^{doing} left-handed men ~~are~~

if this way ~~and here~~. ~~This sort of thing here~~. ^{Solutrean} ~~For~~ the ~~solutreans~~ are straight in,

straight in like this, ^{but} or to turn it like this is ~~a bit of~~ ~~strange~~ ~~with this~~

There are
~~and~~ well defined bulbs in here ~~the~~ ^{if} pressure flaking moving ahead instead of following the ridge and staggering their flakes exactly right, without the ~~aid~~ ^{help} of the ridges.

A slight step fracture there on that side, but not a great deal of regularity. ^HHowever, the direction of the flakes certainly indicate ^{going} towards the tip rather than towards the base of the point. I'm not familiar with the ~~Eastern~~ ^{Cascade} points.

Bordes Nothing more?

Crabtree No, I wouldn't like to say anything about ~~that~~ ^{them}.

Bordes Any question?

Ervin Williams Well, no, except that I think the ~~Cascade~~ Cascade points generally have considerably more ~~bifacial~~ ^{biface-pointed} bipointed effect.

Wormington! *You have some there!*

.... I think that Dick has a Cascade point that you can use to compare it.

Ervin Williams ~~Nothing that the general~~. Oh, good. — a ~~cascade~~ ^{cascade}.

Dougherty This is coming closer to what we are talking about.

Ervin Williams See the point of balance is considerably farther up, the widest point is

considerably farther up the point ^{than} the Cascade stuff. Here it is essentially at the base.

Bordes Finished?

Ervin Williams Well, the only other comment that I have is that I think that both Gerry's and to ^a somewhat lesser ~~amount~~ ^{extent} from my stuff from the Southwest, indicates at least

^{the} possibility, and in my case ^{the} a probability, of the association of relatively well made points and these ~~extraordinary~~ ^{extraordinary} ~~made~~ things. ^{and} I think it is interesting to think

about the problem, anyway, of the many comments that have been made on our early cultures, the cultures that have no context, surface materials, etc. which are sometimes considered to be very early just ~~from~~ ^{on} the basis of pure typology. The point is that it is perfectly possible for people to make stuff like this or like the Cochise, San Jose choppers, ~~scrapers~~ ^{scrapers} ~~and~~ ^{and} planes etc. and at the same time be producing ~~striking~~ ^{perfectly} functional bifacial projectile points for spears or whatever. That's all.

Dougherty: However that was without heat treatment and I'm sure ^{it is} older than that. Geological studies have suggested that it is probably a couple of thousands years older than that. But we have, I didn't bring the whole assemblage, there are a lot of bone tools with this, long bone shafts like you find with Clovis, serrated bone point, a variety of scrapers. They are flake scrapers ~~as~~ ^{as} well as these heavy steep angle scrapers, ^Pprojectile points, you'll notice are of considerable variety, different materials involved. There is one of these crescents, actually two were found. These have a very wide spread ~~distribution~~ ^{throughout} ~~throughout~~ the intermountain ~~intermountain~~ ^{intermountain} West and down ^{into} ~~thru~~ ^{into} Mexico I think that I'll stop at that point and let you look at those.

Bordes ~~Bordes speaking.~~ ^{date} What's ~~that~~ did you say? What date?

Dougherty The radiocarbon was 8500 ^{BP} ~~B.C.~~ and 9500 ^{B.P.} ~~B.C.~~

Bordes (~~Bordes confused~~) ^{what?}

Dougherty Nine thousand five hundred.

Bordes Yea, yea, yea.

Dougherty And I think that it would be more likely between 10,000 and 11,000.

Bordes O. K. Well that's certainly fine ~~to~~ work on this one.

Crabtree Very fine.

Bordes Good material but fine work too. And that is a projectile point.

This is a kind of bad. ^{carinate} scraper, thick scraper. This is a thick scraper not much ~~cut in it~~, ^{cutting edge} and that is a projectile point. This crescent is amusing. Looks a little ~~were made a little~~ ^{well made} less big like Egyptian or Danish stuff. That's smaller and not so well made.

Dougherty There were larger points in the assemblage. ~~We~~ didn't find any larger complete points, but we found ~~the~~ stems on the order of this point but ^{maybe} ~~may~~ be 3 times as

large as that.

Bordes Don.

Crabtree This one here is a little unique between these two points ^{with} ~~of~~ apparently the same sort of ~~points~~ ^{pressure technique}. ~~These two~~ ^{These two} appear ^{to be the same} and this ^{one} no doubt is the base of another

^{POINT} ~~one on here~~ They have basal grinding on them. Some of ~~them~~ ^{the flakes} carry ~~over~~ ^{the surface}

while this ^{point} shows a different technique used with the short ~~flakes~~ ^{flakes} ending in ~~an~~ ^{the} ridge

giving a different contour than this ~~one~~ ^{unique point}. This one appears to be ^{of} untreated

material. ~~This~~ ^{This} one appears to be treated material, which is a little unique, ~~in~~

~~this right~~ ^{flakes} here. These are spaced with the ~~straight~~ ^{straight and} sides, ~~that~~ almost

appears ~~parallel~~ ^{But} to be parallel, well-controlled flakes, ~~but~~ they are of the very broad

style with almost no indentation ~~of the~~ ^{for the} placement of the tool, ~~which~~

This poses the question - how were
~~these wide flakes~~ *now these wide* ~~flakes were~~
 detached ~~without~~ *half of pressure* without having a ~~flat~~ *flat* of the characteristic ~~shape that you would~~
 normally be set back *the tool would* ~~here in order~~ *away from the edge* to produce ~~the~~ *this type of* flake. So far, I haven't been
 able to replicate this *technique.* ~~thing~~. I'm working on it, but I don't understand it
 yet.

Bordes I wonder if this is not ~~this~~ part of *a much bigger flake*

Cerutti's Yes, I think so.

Bordes Yes, it could be. It's a rather big one.

Cerutti's *Lets see*
 This bunch here.

Dougherty *There*
 This is a large form of bison found with these . The identification was just a

large form they didn't find anything that was diagnostic to suggest that it was
 a non-existent type but, on the other hand, it was extremely large ~~from-up~~ for modern
 bison. This next group comes from Marmos Rockshelter , a site that we have just
 finished excavating . We worked three years on this. There is a large collection of
 material radiocarbon dates received so far run from 10,750 and right on up ~~to~~ *to*
 modern times. This 10,750 date was not at the bottom of the deposits there was
 3 feet of material below that. So we have no idea yet how far it goes back beyond
 that but I would guess not too much earlier. The earliest points, interesting
 enough, are the stemmed points very markedly edged ground and quite a variety of these.
 Then you come up to certain lancelet forms like this with the distinctive basal notch.
 Then the so called Cascade type come in about 8,000 years ago and this happens all

over the plateau. It's not nearly as early as Butler originally suggested.

About 5500 t/p § to 6000 years ago you get these large basalt side notched ^{ed. right in}

*the midst of the
active*

thermal when it is hot and dry & economic conditions apparently rather grim. ~~the~~

The fine

material change almost exclusively to basalt and this form develops. After that

when things improve you get this is an example of large corner notched points

giving way to smaller corner notched points and finally I didn't bring any, some very

tiny side notched points, which are just about the beginning of the historic period.

These large ~~blades~~ blades, five of them were found with an infant burial about 7,000

years old. All right I'll stop.

Crabtree

These appear to be very well done. This basalt has extreme toughness ^{and} ~~is~~

appears to be made

by percussion, ~~not on here~~. It's hard to say whether blade or core technique was ^{used}

used with these particular ones, ~~on here~~. Apparently, a big blade ~~with~~ ^{the flakes were removed from} ~~was utilized~~

showing

~~to do this~~ -- nice meeting and thinning of the collateral flakes -- well controlled.

Good edges here.

~~These are there~~. No doubt a finished tool.

Dougherty

Do you think it's finished tools.

Crabtree

It appears to be, yes. They are nice straight sides, ~~there with that on there~~.

This basalt is very ^{Tough} ~~rough~~ material, however, this one here may not have been basalt

it looks like an overfired piece of the dark flint. Like it has been burned on

the edge of ~~the one here~~ and it was starting to break down. Perhaps not, I don't

know. It's hard to identify from one piece ~~of here~~ as to ~~what~~ what the range of

material was.

~~Border~~
Crabtree

Basalt material is very difficult to work. ~~It is~~ However, the variety and grade of the basalt is ^{or} variable ^{almost} as quartzite. And these show quite a refinement ^{of} using small flakes and slight retouches on the edge ~~with~~ nice pointing. ^{also} ~~Is~~ there is anything distinctive about the pointing? Notice how they are flaking these back ^{from the tip} to control ^{the flaking break} and not ~~hold~~ the ^{Tip} point, and still retain the ^{Tip. The flakes} point ^{tip} starting ^{are worked} from the ~~tip~~ and working back on both sides of the point leaving a little projection. ^{at the tip} ~~There~~ almost ^{They are} serrations ^{ions}

Border

Heated.

Crabtree

Oh, yes.

Border

No, question. Heated or burned.

Crabtree

~~It is~~ this one appears to be a little more lustrous ~~on~~ on this side

~~but~~ but the color would certainly indicate it ^{was} burned, all right, ^{However,} but the ^{the} flaking surface is ^{fairly} fairly coarse ^{like untreated material} not more reminiscent of the unfired, but ^{it may} it may ^{have been} burned accidentally ^{embedded in} or ^{during cooking} with the meat or something like that. ^{Because} Because

it doesn't appear to have been heat treated, yet this one ^{from} the older sites does appear to have been ^{altered}. This one shows a reverse again. I mean ^{there are} several styles ^{and} and

^{changes} changing in flaking technique on this particular one, ~~but~~. This goes back at this angle ~~and~~ and ^{yet it shows} then you come up with a collateral ^{style of flaking} with a bending ^{technique} over the

edge ^{but} still leaving the sharp ridge, which is quite different from this ^{style} style of flaking ^{in this point shaving} here ^{of this} very fine, smaller retouching on the side. ^{This thick} ~~one~~ one here ^{looks} looks

~~It~~ like some pressure retouch after percussion on ^{the} ~~that~~ side of that one, ~~there~~.

This one here looks like another ^{piece of} petrified wood that has been altered ~~by~~ by heat, however, there are still no facets that remains ~~there~~ on that side.

Dougherty

This last group over here, ^S since obsidian is quite rare in our sites up at Washington, I brought some from a site that has been excavated in Oregon. Very late material. ~~I thought~~ ^I ~~to~~ show ^S the technique that they were using, ~~is~~, ^T this site was occupied within the last 1000 years. There was no clear way that it could be dated but it is late. ^{but it is} Of obsidian material, exclusively.

Crabtree

Percussion with a slight retouch on the ^{edge}

Bordes

^{Something here}
~~Something~~

Crabtree

Slightly diagonal but quite deep indentations of placement of the tools, fairly heavy bites on the edge. These ~~are~~ and the same thing with the other ~~one~~ one. ~~There~~ There may be some difference in ~~random~~ random flakes ^{and} smoothing, ~~on~~.

The notching ^{and} ~~the~~ the flaking ~~on~~ were done at the same time ^{on} ~~with~~ this one

No doubt a very small pressure tool ^{was used}, single flakes ^{were removed} from both sides in their notching,

Bordes

Apparently the same ^{Technique} ~~thing~~ with these ~~one~~, single flakes, ^{Crabtree} ~~on~~ yes it is, this serration is from both sides ^{serration is different} on here. This edge wasn't serrated, ~~peculiar~~ peculiar one side serration.

Dougherty

One final point. ^{Help??} This is ~~help~~ and how does the flaking of that compare ^{to} the flaking on the Lincoulie material.?

Crabtree Very different on this particular one. They are not nearly the same ~~in~~

~~with~~ ^B because here they have ^{the flakes} ~~this~~ bending ~~over~~ over the surface ~~while~~ while ^{here,} ~~these~~ the flakes terminate right here, here, here, and here. And ^{the flake scars} ~~they~~ are not nearly as well defined

Dougherty How about that one? Still different, isn't it?

Crabtree Still different. Still different from the edges of that one there.

This one ^{has} ~~is~~ quite ^{an} angular direction of flaking ~~on~~ while this one ~~is~~ ^{shows} ~~the flakes were removed at right angles.~~ ~~at~~ ~~there~~. This one has a slight angle in comparison with this one over here ^B but here ~~we~~ again ^{we have the} ~~is~~ ^{or back-hand} ~~this reverse,~~ ^{type of} ~~any thing.~~ ~~flaking~~
~~This is my~~ ⁱⁿ first experience ~~in~~ finding this ^{back-handed flaking} ~~was~~ ~~finding,~~
~~of seeing this backhand~~ ~~sort of~~ ~~flaking~~ ~~on~~ ~~here.~~

Dougherty They held it behind their back.

Crabtree ^{Oh,} They must have. They must have had some genes that brought on this left-handedness.

Dougherty Any others questions about this? ^{Well,} ~~will~~ do it.

Crabtree: Something ^{interesting, Dick} ~~is~~ ^{is the dating of the heat-treatment,} ~~is~~ ~~evading~~ ~~this~~ somewhere ^{around} the time of 10,000 years, ^{for positive evidence}
~~you~~ ~~are~~ ~~not~~ ~~sure~~ ~~of~~ ~~it~~. There is not a sufficient array of this material, but it is quite interesting ^{to note} the ~~early~~ occurrence of ^{alteration} ~~it~~ ~~is~~ ~~even~~ ~~to~~ the Clovis and ~~the~~ Folsom, and yet in Europe ^{there is no evidence of alteration!} ~~you are finding none.~~ I was ^{only} ~~only~~ ^{hope} ~~hoping~~ that with ^{here in Europe} such a tremendous range of time, that we ~~found~~ ^{find} could ~~pick~~ some particular horizon in one of these sites ^{that would indicate heat treatment and} ~~that this would be~~ ~~existent~~ ~~and~~ ~~that~~ we would be able to

its development,
follow, but it just wan't here.

Cynthia Irwin Williams ~~has~~ We have here a collection this morning from Central Mex. on the Mesa Central the highland plateau of ^{central} Mexico just North of Mex. City . This is material from two caves which covers ^{probably the} period of around 6500 B. C. to perhaps 1500 B. C. The material is typical, but not necessarily representative of the entire industry because I don't have , still left down in Mexico , very much of the original collection-- just a few projectile points for casting and a few other artifacts. Well, in any case, they are arranged more or less chronologically over here the projectile points and ~~h~~ over there, to their right ~~their~~ there is a relatively typical group of tools which would be typical of the early Pecalote or ^{Hidalgo} ~~Hidalgo~~ complex which would--of perhaps 5000 or a little more B. C. This bunch of ^{debitage} ~~debitage~~ on the right ^{is} ~~as~~ again relatively typical of this period and, I think, a pretty well developed small blade industry . In addition, not seen here, are a whole bunch of large blades made in approximately the same way but about twice the size, or more, of these that we got here. There is a number burins that I would very much appreciate any comments on as well as some forms and knives and things of this sort. So fire away.

~~Burins~~ Well ~~this is~~ ~~debitage~~ ~~debitage~~ I will leave the projectile points to Crabtree ^{and}
I look at the burins. Well this one is on a broken point or let's say a bifacial tool to please / Berry. ^A And it seems, really, to be a true burin , not a result of an accidental fracture. This one is also a projectile point broke ⁿ and then there is

a burin all right. This one is the best, by far. It's a burin on one end and an end scraper on the other, and it's really absolutely typical, no question.

This one is, or was, a double or perhaps a triple burin, no question. This is just a broken piece of bifacial tool.

Orvin Williams This is simply the kind of broken bifacial tool that they did convert into a burin.

Bardes And that could well be also a burin. Not very, very good but obsidian does not take the burin blow easily, and that is amusing. It looks like a channel flake *a little*.
~~with~~ They made a burin on it it seems because it is not only a fracture I don't think, there is a burin blow, all right, on the end.

Orvin Williams The point of bringing these burins here, outside of *just* indicating the kind of material that we do get in Central Mex. for burins is that these are not a minor tool in this assemblage. There are more burins in these early levels than there are projectile points. They make up to 30% of the entire group of materials so that these are really a major tool. ~~It~~ They aren't just a minority piece, some of which could have been caused by chance.

Bardes Oh, no some of them are not definitely not by *chance!* ~~change~~. They can't. This tool it is quite impossible. Now I leave it to Crabtree.

Crabtree This assemblage ~~is here~~ is quite a typical roughing out, preforming, assemblage, ~~the same thing is here~~. Some of these are well refined. *These* They seem to be ~~with~~ a *Some indicate the use of* ~~platforms~~ difference in preparation of the platforms, ~~like here you would have a billet~~

on obsidian. Possibly they utilized the ridge to guide and make a series of flakes. Flakes were, no doubt, detached with considerable regularity. It does indicate that there has been a little extra platform preparation. However, these flakes are well controlled from the edge of the artifact. This does not look like a typical core tool. I mean, the flakes do not appear to have been detached from a core because when they are detached from a core there is a lot of regularity in this type of an edge, with a slight bending of the flake where it hangs onto the side of the billet. They were able to force these flakes clear across, using a small tool, while here it appears they may have used a stone percussion tool. When there is a great deal of shock, you lose the platform. There is also a shock pattern at the ends of these flakes ~~from~~ where the flake was ~~detached~~ ^{broken from} and the shock ~~has broken this flake~~ ^{during} while being ~~struck~~ ^{striking} ~~by following~~ ^{and it leaves} these lines or fissures. Notice the compression

of the flakes. It appears to be the result of a blow by a hammer-stone. The deep heavy scars and the bulb here on the top and the striations indicate the direction of force. There is a hinge fracture where the force was dissipated. Because the platform ~~collapsed~~ collapsed, they were not able to remove this flake. Back to this other group. The surface of the scars, with the exception of this

one, and perhaps this one, have indications of being core tools or well-defined flakes. And this one most certainly is prepared in the same style as some of our pressure flakes, refining of the platform so that the flake is released ^{easier}. It does indicate the pressure technique of lifting the long flake off, but it is difficult to tell their original length. Not having an assemblage, but just one flake, it is difficult to tell but it does show that they had the refinement of a pressure technique. The rest of these flakes required more than pressure and this one indicates a sort of a percussion thinning flake, yet still following the outward ridge. Back to Gerry's problem. These are quite interesting preforms ~~xxx~~ made by simply roughing out with the flake technique to avoid transporting a lot of material back to the campsite. There is no refinement in this preform and it is not a tool, but the work was done merely to remove surplus stone. Another percussion type of a little preform that could be later shaped into an artifact. Now with this one, I don't know. Because you find many of these ~~very~~ sort of thick objects that do not appear to be preforms, but used as tools as they are. So to sharply define the difference between this tool and this tool is a little difficult because the edges on this one right here show they haven't created a platform to thin it down and make a better

artifact. So, this, no doubt, was the artifact itself. And the functional scars on this artifact indicate it has been drug toward the person. Wouldn't you agree, Dr. Bordes.

Yes, I think so.

Bordes
Evolution This is not a preform, but looks like a sort of little gouging, digging tool because it has been abraided back from this edge and it is not designed particularly for a preform. Each artifact must be appraised and one must determine the difference between a tool and a preform. This, of course, is a little difficult. This one certainly looks like a preformed object with no retouching.