

NOTES ON FLAKES , prompted by Norman Tindale.

The writer has formed certain conclusions based on experiments and *as a result of seeing 16mm movies of the* relating them to from ~~the~~ theories to actual function by being able to

*and related them to actual function*  
~~see photos in motion of the~~ Australian aboriginals securing ~~the~~ animal

food and the lithic tools used in obtaining the food source. The majority of their

lithic industries is related to food gathering and *plays little or none used in*

*in* the preparation of clothing and protective garments as the people are unclad.

*The body they seek*  
~~Their~~ only protection being needed is from the intense rays of the sun. *which* This is

*they* partly overcome by the use of red ochre and animal fats. As stated by Tindale,

The red ochre is *also* used ceremonially as is common in other parts of the ~~the~~ of the ~~the~~

old and new world . The ~~use of the~~ milling stone served a dual function ~~and~~

being used for grinding hematite and the reduction of wild seeds. This *brings*

*the question*  
up the thought of which appeared first - the milling stone to grind hematite

to protect the tender skins of the nude Aborigines or was it primarily used

*to grind seed,*  
to make seeds into an edible form. ~~More~~ often one will observe red ochre *occurs*

imbedded *in* the vesicles and cavities of a milling stone ~~the~~ than they will *and a lack of*

husks and seed residue, *This may be due* probably partly because of the perishable nature of the

organic material. These comments are made only to point out that because

of the lack of natural covering of the human animal and ~~only~~ being partly

covered by hair that an artificial protective means would have to be devised

in the form of unguents and pigments, ~~before a thought was given to~~ *man's vanity.*

Therefore, *the study of* when observing the occurrence of milling stones, the functional purpose *should include an analysis of the*

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*which may*  
 may not necessarily indicate that the people that used them were gatherers but  
*user was grinding his cheek*  
 as a cosmetic for protective covering of the skin  
 nearly commotologists, trying to save their skins, by concocting a long proven  
 sunburn lotion.

The film revealed actual techniques of lithic technology *which are* that were of un-  
*invaluable to the experimenter who covered a variety*  
 estimateable importance to one who has been groping and experimenting  
*of techniques for it*  
 in all varieties of techniques in the methods of fashioning stone into usable  
 implements. The film demonstrated that there *varying* were all qualities of work depending  
*use of the tool*  
 on its proposed function. Tools were made that were devised to perform  
 multiple functions not a singular one as is commonly thought to perform some  
 some specific task. The need for bifunctional implements is clearly understood  
 when one can observe the native with no pockets of carrying medium and at the  
 same time needing the use of both hands to throw spears# and perform the hunting  
 arts. both hands must be unincumbered and the hunter prepared to dash after  
 game that has been wounded or frightened <sup>e</sup> to deliver a second blow to his adversary. <sup>er</sup>

The remarkable film recordings of Tindale will cause modern theorists  
 to recapitulate and oft ~~time~~ change their way of thinking, ~~to have such a medium~~  
~~to be able to factually regress in time many millia, 6000 to 10,000 years ago~~  
~~and be able to view the same scenes that probably happened throughout the world~~  
~~in different degrees and climatic conditions. #~~



There were the of  
 Of interest was the similarities in forming stone implements and the contrasts  
 of techniques used to accomplish the same function. It was mentioned by  
 Tindale that the Australian aboriginal placed the flakes in the ashes of the fire  
 for apparently purification and left for approximately twelve hours, ~~when questioned,~~  
 the flakes were heated slowly and cooled slowly by keeping them carefully covered  
 with fine wood ashes. the only observation ~~was~~ <sup>was of</sup> made with ~~them~~ using flakes  
 and not large massive material that could subsequently be used as cores for  
 the removal of additional flakes. The slow heating and cooling of lithic material  
 by the use of indirect heat is a basis for preliminary treatment of chalcedonic  
 rocks to make them more vitreous prior to pressure flaking. There are numerous  
 examples of this method of altering the material prior to fracturing in both the  
 old and new worlds, yet at this time usually not recorded archaeologically. It  
 is of great interest to me as an experimenter to find this ~~was~~ being done to-day  
 by the stone age people of Australia. My experiments show that in order to  
 heat lithic material larger than flakes for projectile points that considerable  
 control of the heat is necessary to avoid fracturing the material, ~~because~~ the  
 larger the objective piece the more slowly it must be heated and cooled without  
 being in contact with the air, unprotected. A device of some degree of refinement  
 would be <sup>Necessary</sup> ~~necessary~~ to alter lithic material that constitutes any mass larger than  
 detached flakes for projectile points or lumps suitable for cores from which blades  
 or flakes may be removed.



The manner in which the aboriginal held the projectile point while pressure flaking the piece was <sup>deed</sup> ~~indeed~~ strange to me. it <sup>was</sup> ~~being~~ unlike any technique attempted in any of the experiments conducted over the past many years.

The Australian aboriginal made use of a support composed of a rounded stone appearing like a cobble or small waterworn boulder and this was placed in the sand or slightly buried in the soil to further immobilize the rest medium. The surface was covered with bark from the paper tree to act as a pad. The ~~pre~~ performed artifact was then placed on the several layers of paperbark and held at an angle to expose the leading edge which is away from the worker rather than next to him. <sup>Right</sup> the ~~right~~ hand held a wooden shaft made from hard wood which was gripped by the fist of the right hand with the thumb held vertical and parallel to the wooden pressure tool. The thumb didn't seem to play an important part in <sup>1</sup> actually applying pressure as it sometimes rested on the shaft and at other times was free from the shaft. The shaft is between three-quarters <sup>to</sup> and one inch thick and about eighteen <sup>to</sup> and twenty inches long. The end used against the objective piece is not sharp but of a blunt and rounded nature. The wrist and forearm appear to be held quite rigid by the worker while the upper body and the shoulder supply the force that removes the flake from the artifact. The fingers of the left hand and the thumb must have endured long training to furnish an opposing force exerted by the right shoulder and arm. The objective piece must be caused to be inert by the fingers of the left hand before a



flake may be removed from the artifact being worked on. The fingers of the left hand do have some assistance from the <sup>stone</sup> rest but the rest gives little assistance when the base and the point are being formed. # My feelings were that it was ~~imperative~~ <sup>imperative</sup> that I attempt to replicate the Australian technique of removing flakes by their pressure technique. <sup>S</sup> so far the results are negative as I find the method very awkward and extreme weakness in the in the fingers of the left hand when holding the objective piece. In order to make a copy of the aboriginal work and at the same time use their method of removing flakes, <sup>it</sup> will take several months of intensive work and even then there will be no <sup>AS</sup> insurance that one will master the problems of holding and applying pressure by the use of a wooden pressure implement. The film fails to show exactly what kind of a support is devised under the bark of the paper ~~bark tree.~~ <sup>Cannot</sup> the film, or for that matter any pictures, ~~can~~ show the direction of the forces. one can, however, observe the result of the application of both downward and outward force. <sup>when</sup> the aboriginal worker ~~upon~~ thrusting downward does so with such exertion that the knees of the worker are lifted from the ground. <sup>Y</sup> yet the observer of the film will get the impression that the force is directed away from the worker and the rest causes the objective piece to remain static or stationary with little effort in holding with the left hand. The strength of my hands should compare to that of the aboriginals as they have had long practice in replicating techniques common to North <sup>A</sup>merica.



The viewing of the film of the Australian aboriginal does, however, point out that muscular control, habit feel, traditional instruction, and individual aptitude are characterized in various groups of peoples that are identifiable and may be associated with people using sets of traits performed in the lithic industries. ~~Several of these~~ <sup>certain</sup> traits <sup>of the</sup> that aboriginals, and those that have been done in the experiments have certain parallels, first the preparation of the blank and then the preparation of the preform by percussion; unfortunately, I was unable to observe these stages of development but only saw the preformed artifact prior to being pressure flaked. Of interest ~~was however the individual preparation of the platforms,~~ <sup>sc 296</sup> first by grinding the edges and the lateral margins to give more strength to that part, ~~the~~ <sup>the</sup> resultant flakes would upon examination show this particular trait. Another trait ~~##~~ that we have in common is ~~is~~ the preparation of individual platforms prior to applying pressure. <sup>The S 62</sup> ~~they as~~ in the experiments select areas directly over and above a ridge left by the previous flake (this is determined by the first finger of the left hand), and then using the ridge to guide the flake and prevent its expanding. The force is applied in such a way that the flake is terminated at the center of the face of the blade part or the longitudinal median axis causing the finished folliate point <sup>to</sup> ~~as~~ be diamond shaped in transverse section. The flake termination is caused by the rapid thrust after the pressure tool is set. The flake scars are usually at right angles to the lateral margins yet ~~##~~



may be directed away from the worker and the flake scars at the tip of the projectile point are directed <sup>o</sup>twards the base to prevent the tip from being snapped off.

The next stage is to serrate the edges, <sup>and</sup> this is done by changing the pressure tool to a sharpened piece of bone rather than one of wood. ~~the~~ pressure is applied differently by pressing more downward rather than inward as in the other pressure <sup>technique</sup> using the hard wood pressure tool. <sup>and</sup> the flakes are short and expanding. The application <sup>of</sup> the bone pressure tool is from one side only to the lateral margins causing the serrating flake scars to be unifacial. Careful <sup>le</sup> study of the film with several replays would be necessary to determine the order of the flakes removed both the first retouch and the serrating. Several years ago a similar projectile point was examined prior to viewing the film, <sup>and</sup> the point was provided through the courtesy of Alan Bryan who obtained the point while in London. <sup>of the point</sup> The history is not known other than it was made of bottle glass by the Australian aboriginals. The techniques employed in it's making certainly permits it to be placed into the category of those made by the native Australians. Bryan and I discussed the techniques used in making the point of bottle glass, <sup>ed</sup> and the conclusions reach were in accordance <sup>A with</sup> to those <sup>in</sup> actually used after seeing the film furnished by Tindale. <sup>ed</sup> <sup>One film</sup> demonstrating that ~~by~~ a study of the flake scars will show that the last stage or final flaking does show several distinct technological traits that can be related to techniques.



Tindales' film of the Australian aboriginals' methods of survival

and their actual use of tools appeared to range from the early Paleolithic to the Neolithic. The paleoliths were of great interest <sup>for they</sup> ~~as they~~ not only

showed actual function but were most serviceable to perform many functions. These functions provide one with factual knowledge rather than ~~theoretical~~ <sup>theory</sup>.

First one must consider the people <sup>of the Paleolithic period</sup> who without clothes ~~and~~ able to survive

in a most hostile environment ~~were, have been and still are able to exist~~

~~and propagate~~. They are ~~the~~ people that cannot be encumbered with any surplus

of possessions and can only take with them the necessities for survival, (and

what they can carry in their two hands) and still be able to pursue any game

or food animals at a moment's notice. (One cannot but think) that if he were

in the same habitat would he be able to survive such an environment <sup>ROH</sup>.

undoubtedly, people of our modern civilization would no doubt perish. An

interesting quote by Claude Levi-Strauss, "A primitive people is not a

backward or retarded people; indeed it may possess a genius for invention,

or action that leaves the achievements of civilized peoples far behind".

The Australian aboriginal <sup>with</sup> ~~is~~ the use of a single flake of silicious material

was able to devise an implement to perform many functional needs. The throwing

stick (atlatl) was used as a handle to secure the flake on the end opposite

(that with) the hook to cast the spear. The flake was affixed by using an

adhesive called spinifex, a type of natural resin blended with sand and hair



to secure the flake to the throwing stick. The platform part or the proximal end of the flake is placed on and in line with the shaft part of the stick by first heating the adhesive on a stone that will not crack when heated, such as sandstone, then a small fire is kindled to cause the spinifex to soften.

While it is softening the stick and the flake are heated at the same time.

The spinifex is heated slowly so that it will not smoke or burn and lose its adhesive qualities. As soon as it is soft a portion is placed on the

stick that is sufficiently hot <sup>and</sup> ~~that~~ a good bond is made between the stick and the adhesive. <sup>T</sup> the adhesive is then added until it is of size great enough

to secure the flake to the stick. The hot flake is then thrust into the spinifex and the whole mass heated so that the flake may be positioned and the adhesive formed around the flake and the stick. When the spinifex has cooled the flake

is formed by unifaceal flaking on the end protruding from the adhesive. The percussor is a pebble or a piece of wood. The ventral side of the flake is left unflaked

*flame*, it ~~being~~ smooth and slightly convex, this surface acts as a gouge if the

tool is used for forming wood. The flakes are specially selected for this quality, such a tool is then readily available to perform a variety of cutting

needs and is comparable to our pocket knives. For more rigorous use a shaft of hard wood is used having a slight curve and of a size that will suit

its intended function. When the flake has been exhausted by resharpening



it is then discarded and replaced with a fresh flake. Such a flake if found in North America would be lost in a collection of what we call scrapers or objects that denote a specific function. Whereas the object was used as a knife, a gouge, digging implement, and miscellaneous functional purposes. The use of adhesives may have been also important in the New World and conceivably change<sup>e</sup> ones outlook of possible uses of stone implements.