

7. NOTES ON THE HUNTING STICKS (LUGHRANA),  
SPEARS (PERENNA), AND BASKETS (TUGH-  
BRANA) OF THE TASMANIAN ABORIGINES.

PL. IX., X., XI., XII., XIII., XIV., XV.

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INTRODUCTION.

In the papers previously published in the Society's journal I have conclusively proved, and it can now be considered as an established fact, that the stone relics of the Aborigines represent implements only, and not weapons. This is a fact of the greatest importance, and its significance will only be fully realised when we apply it to the study of archæolithic man in Europe. The Tasmanian Aborigines had made at least one great invention, viz., they had discovered that a certain kind of rock yielded sharp-edged flakes when broken. (1). They also found that these sharp-edged flakes could be used for most of the requirements of their simple life. But here again we come upon one of those curious psychological problems that are so difficult to explain. The Aborigines had undoubtedly discovered that these flakes were excellent cutting implements, as they have generally a fine edge, and often enough terminated in a sharp point. To us it seems easy enough to turn the good qualities of the sharp flakes to other uses than merely as tools. The instinct of self-preservation is paramount in all human beings, and, as has often been stated, it is the mother of all those inventions that have changed the life of our prehistoric ancestors into that of modern mankind. A modern mind cannot understand how it was possible that such a suitable material as the siliceous rocks from which the implements were manufactured, was not also used for weapons.

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(1) This seems very insignificant to us, yet it was a great invention, when we consider that probably previously to the use of sharply-edged, artificially detached flakes, only thin columnar pieces of diabase or similar volcanic rocks which had a naturally sharp edge were used as implements by human beings.

To us it seems unintelligible, why the Aborigines did not fix a suitable flake to a piece of wood, thus producing a weapon far superior to the primitive wooden spear. Yet this was apparently an invention the Tasmanian Aborigine never made. His mind was just as unable to conceive the idea of providing the wooden spear with a stone head, as it was to chip the *tero-na-watta* on both faces, or to provide it with a handle, or to improve it by polishing the surface. It is a common theory that primitive man used as his earliest weapon a stick picked up by him during his wanderings through the primæval forest. The anthropoid apes are said to use a stick in self-defence. Now, there is no doubt that such a stick is an efficient weapon only at close quarters, unless, indeed, it is thrown at the aggressor. A modern man armed with a stout stick would, if suddenly surprised, await his enemy and attempt to disable him by a hard blow. Primæval man probably acted differently under similar circumstances; he threw the stick at his aggressor, and run away as quickly as he could. Speed of foot was still one of his chief means of defence. It is more than probable to assume that the primitive stick at first was simply hurled at the aggressor, and it is also more than probable that a methodical linear discharge of such a stick was a subsequent invention.

Now, if the Tasmanian Aborigines had neither weapons made entirely of stone, nor used stone as a supplementary material to give greater strength and efficiency to wooden weapons, what kind of weapons did they use? Fortunately, we are well informed on this point; in fact, the information is more complete than on many other features of their daily life, yet the records are again silent on some important points, as we shall presently see.

Ling Roth (2) has carefully collected all the information available, and the observations made by many explorers. These accounts, though somewhat differing in detail, agree in this that the Tasmanians possessed two kind of weapons: a short stick and a much longer spear. Both weapons were made solely of wood, and they were never provided with stone heads. Now it must be of the greatest interest to the student of Archæolithic civilisation, to know whether the accounts, as handed over to us, can be corroborated by the examination of actual specimens. Fortunately, the Hobart Museum has among its greatest treasures 7 authenticated spears and 3 short sticks. As these weapons have never

(2) Aborigines of Tasmania, 2nd edit., pages 67-72.

been properly described, and, as to the best of my knowledge, there is no pictorial reproduction of either sticks or spears, I thought that in the interest of science this information should be made available to students of archæology.

I desire herewith to acknowledge my obligation to the Trustees of the Tasmanian Museum for their courteous permission to examine and describe these valuable relics.

## I. THE LUGHRANA (HUNTING STICK).

According to Milligan (3) the Tasmanian words for this implement, which he calls "waddie," a truncheon-like weapon used as a missile in war and hunting," were:—

(1) Lerga or lughrana (tribes from Oyster Bay to Pitt-water).

(2) Lughrana (tribes about Mount Royal, Bruny Island, Recherche Bay, and the South of Tasmania).

The Norman Vocabulary (4) gives the name as

(3) Lillar,

while Dooe calls it lerga, and Roberts

(4) Lorinna.

Jorgensen states that the Northern Tribes call it

(5) Rocah,

while others call it

(6) Runna.

This is quite a number of names for such a simple implement, but we are able to reduce them to a smaller compass. "Lerga" and "lughra-na" are obviously the same word, and it is probable that "lillar" as well as "lorinna" were the names in certain dialects. We would therefore have lerga—lughrana—lillar—lorinna—a waddie, truncheon-like weapon used as a missile in war and hunting. The word "rocah," to which "runna" (Jorgensen) is apparently closely related, is, however, quite different from the above. We will presently see that Dove gives the word "rugga" for spear, and Jorgensen calls the same weapon "raccah." As all others who collected words of the Tasmanian language agree that the "spear" and the "waddie" were distinguished

(3) Vocabulary of the dialects of some of the aboriginal tribes of Tasmania. Pap. and Proceed. Roy. Soc. of Tasmania, Vol. III., Part II., 1859, page 239.

(4) The Norman Manuscript. Pap. and Proceed. Roy. Soc. of Tasmania, 1910, page 340 (page 29 of the manuscript).

by two different names, it is more than probable that Jorgensen must be wrong if he calls the "waddie" "rocah" and the spear "raccah." In fact, if it were not for the testimony of Dove, who also uses the word "rugga" to designate a spear, I should feel inclined to think that this word is an error altogether.

As it is, I do not think that it means a spear—all the vocabularies agree as to the chief word for spear as we will presently see—it may be possible that it means a special kind of a "waddie." The evidence of the specimens preserved in the Tasmanian Museum seems to support such a view, but it is not sufficient to decide on anything definite. On the whole, I am not inclined to think that, though the hunting sticks may have differed in the finish, they were not distinguished by different names. For the present, I therefore consider the words "rocah—runna—rugga—raccah" as doubtful (5).

The lughrana has been designated by the early settlers as "waddie" or "throwing stick." The word waddie or waddy is apparently of Australian origin, and most probably borrowed by the early settlers from the New South Wales Aborigines. I am unable to say anything definite as to its origin, except that it is a foreign word which does not convey a better meaning to the general mind than the word lughrana. I therefore prefer to discard it altogether.

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(5) Mr. Ritz, with whom I frequently discussed these questions has kindly supplied the following remarks:—

"According to my classification of the Tasmanian speech-sounds, we have in the names given two ideas represented, viz., 'motion' and 'sending forth,' or 'motion from.' We have also pena (Roth, p. xxxvi., sub. spear (wood), which contains the idea of 'aiming at' or 'motion towards.' Wina is phonologically identical with pena. Simple motion is expressed by the liquids: r, l, n, m. 'Motion from' is expressed by gutturals: k, g, ng. 'Motion to' is expressed by labials: p, b, w. We may then classify the names of the spears, etc., as follow:—

"Simple motion: Lilla, runna, lo-rinna; also, muna lina (Roth., p. lxvi., Lix.).

"Motion from: Lerga, lugh-rana, rocah.

"Motion to: Penna.

"As the spear or the simple stick might be denoted by any of the above names, the divergencies in the vocabularies were probably due to the accidental circumstance that in each case the aboriginal gave the word that occurred to him first. This does not exclude his having the other names in his vocabulary as well as the one given to his questioner on a particular occasion. Therefore, I cannot see the cogency of 'Jorgen-en must be wrong' (at foot of p. 4), and must regard the whole argument on this point as doubtful.

"It is evident that any of the words for 'spear' did duty for the designation of any other things possessing the qualities indicated by the sounds."

I am unable to say how far Mr. Ritz's theories are acceptable or not; to me they seem to be interesting enough, but I must decline all responsibility for the views expressed by Mr. Ritz.

Worse, however, is the designation, as "throwing stick." No doubt the lughrana was "thrown," that is to say, it was passively thrown as a missile, but to call it a "throwing" stick is altogether wrong. The "throwing stick" or "womerra" is an implement used to impart greater force or velocity to a spear which was thrown by means of it. It is therefore an accessory implement which was used actively, and not passively like the lughrana. The retention of the word "throwing stick" might therefore lead to very grave misunderstandings, because those who are not intimately acquainted with the habits of the Aborigines might be led to believe that the Tasmanians used the womera. As the lughrana was chiefly, though not exclusively, used in hunting animals and birds, I think the word "hunting stick" is much more appropriate; it is certainly not misleading (6).

As far as my knowledge goes, only three lughrana have been preserved, and these are in the Hobart Museum. It is possible that a few more are in Paris, and perhaps in the British Museum, or in possession of private individuals, but if they exist, they have neither been described nor figured. Two of the Hobart specimens, No. 4268 and No. 4269, were originally in Milligan's possession, and we may take it as granted that they are authentic. The third specimen, without a number, is said to have been found in some swampy land while a trench was dug, but, unfortunately the exact locality where it was found is no longer known. As it differs in a material point from Milligan's specimens, this uncertainty is greatly to be regretted. The following table gives the measurements of the three specimens:—

	No. 4268 (No. 1)	No. 4269 (No. 2)	No Museum Number. (No. 3)
Length .. .. .	633 mm.	584 mm.	660 mm.
Thickness .. .. .	25 mm.	22.5 mm.	22 mm.
Circumference .. .	88.9 mm.	76.2 mm.	69 mm.
Length of shorter point ..	42 mm.	36 mm.	—
Length of longer point ..	76 mm.	82 mm.	—
Weight .. .. .	265 gram. (9 oz.)	195 gram. (6 $\frac{7}{8}$ oz.)	120 $\frac{1}{2}$ gram. (4 $\frac{1}{4}$ oz.)

(6) It has been suggested to me that the word "missile-stick" would be a very appropriate designation for the lughrana. No doubt the lughrana was chiefly a missile, but as we shall see later on, it was also used in a different way, not as a missile. As it was apparently chiefly used for hunting purposes, I think the designation "hunting stick" preferable to that of "missile stick."



The most prominent feature of the above measurements is the shortness of the lughrana in relation to its relatively heavy weight. Specimens No. 1 and No. 2 weigh in the average for every 100 mm. (4 inches) in length 37.6gr. (about  $1\frac{1}{4}$ oz.), while the perenna (spear) gives only 15 to 18 grammes (slightly over  $\frac{1}{2}$ oz.) for the same length (7).

Specimens Nos. 1 and 2 are exactly alike, so the description of one serves for the other as well. In general appearance the lughrana is a short stick, pointed at both ends, and apparently made of the wood of a shrub commonly known as tea-tree (8). It is of almost uniform thickness throughout, and both ends taper, forming a blunt conical point. The appearance of the ends is, however, very different. One end is smooth, the other rough and notched. The smooth point tapers rather suddenly, so as to form a short conical point; No. 4268 still shows the marks of chipping, while in No. 4269 they have been carefully smoothened off.

The rough point is rather peculiar, and its appearance is almost exactly like a pine cone. It tapers more gradually than the other end, and forms a rather long point; all over its surface for a distance from 76 to 82 mm. from the end it is made rough by numerous short, little cuts made with a *tero-na-watta*. Small portions of the wood have thus been broken off, and there was unquestionably an attempt to place the cuts in a regular ring round the end. The whole surface is smoothened, but the knots and knot holes were just scraped over without entirely being effaced.

Both specimens balance in the middle.

No. 3 somewhat differs from the other two. It is slightly longer than either, though this may not be of great importance. But the greatest difference consists in the appearance of the ends, which are both smooth. One end terminates in a short, smooth conical point, while the other tapers very gently, and ends in a smooth point, having no greater thickness than 6 mm., and a length of 125 mm. The thickness, 22 mm., is fairly uniform almost throughout the length. The surface is smooth, but it has unquestionably been affected by weathering. As already stated, the locality where it was found is not known, but I remember that the late Mr. Morton told me that a specimen was found

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(7) No. 3 is omitted for obvious reasons, but it may be remarked that the wood from which the lughrana and spears are manufactured is the same.

(8) Probably *melaleuca*.

while a trench was dug in a swamp. The specimen here described is unquestionably the lughrana referred to by Mr. Morton, as it has quite the appearance of wood that has been under water for a long time and then became exposed to the air, for the surface shows cracks, and along these cracks the wood is slightly raised. Besides these cracks, there are numerous marks and cuts made with a European knife; it almost looks as if the finder had tried to test the hardness or the quality of the wood.

We will now examine how far the various accounts and descriptions given of the lughrana agree with the actual observations made on the specimens under discussion. The length of the lughrana is stated to be 2 feet by Henderson (9), 2 feet 6 inches by Thirkell, 2 feet 3 inches by Bligh, and 2 feet 6 inches by Lyne. Only Norman gives the length much smaller, viz., 1 foot 6 inches; but I feel inclined to believe that he understates the length, because he gives the circumference as  $1\frac{1}{2}$  inch (38 mm.), a measurement which is undoubtedly too small. These measurements agree exceedingly well with the length of the specimens here described, and it may be taken as certain that the length of the lughrana probably never exceeded 2 feet 6 inches (760 mm.), though the average length was probably not more than 2 feet (608 mm.).

The thickness is given as 1 inch by Backhouse and  $1\frac{3}{4}$  inch by Lyne; this also agrees well with the above measurements. It is therefore certain that the lughrana was a short implement, and rather heavy for its size. Backhouse speaks of it as a "short stick brought suddenly to a conical point at each end and at one end a little roughened to keep it from slipping out of the hand." The tapering at both ends is confirmed by Norman and West. Both Thirkell and West point out that one end is roughened or notched, but Norman, who is otherwise so explicit, does not mention this.

All these accounts agree very closely with the appearance of specimens Nos. 1 and 2, the only somewhat different description is given by Norman. Calder further states that it was held by the thinner end, but he does not say that one end was notched or rough. Now, I hardly doubt that Calder as well as Norman would have noticed the difference

(9) All these quotations are taken from Ling Roth, *Aborigines of Tasmania*, 2nd edition, 1899, pages 65-82, where, under the heading "War," numerous references are given. It would be useless to quote again the titles of the original books, as a full list of literary references has been given by Ling Roth.

in the appearance of the ends if one had been rough or notched, and we must therefore assume that both Norman and Calder examined hunting sticks that were similar to No. 3, that is to say, thinner at one end than the other, but not notched. This would indicate that there were really two kinds of hunting sticks in use, viz., one kind having both ends almost of the same thickness, with one of them notched, while the other was smooth; the second kind having one end much thinner than the other, and both ends smooth. It is impossible to say whether these two kinds were used simultaneously, or whether they were manufactured by different tribes. It is also impossible to say whether they were distinguished by different names or not; as already said I do not feel inclined to think that such a small and rather immaterial difference was sufficient to give rise to different names.

One of the most interesting observations as to the way the lughrana was thrown is that of Backhouse, who states that they threw it "with a rotatory motion." This is confirmed by Breton, who says: "It can be thrown with ease forty yards, and in its progress through the air goes horizontally, describing the same kind of circular motion that the boomerang does, with the like whirring noise."

It is, therefore, absolutely certain that the lughrana was primarily a missile, which was thrown horizontally, or almost horizontally, with a rotatory motion like a boomerang. This can only be done if it is gripped at one end, and not in the middle. The lughrana was therefore, when used as a missile, thrown quite differently from the way the spear was thrown, and its character appears, therefore, to be quite different from the latter weapon.

Unfortunately, the statements as to its use are scanty, and somewhat conflicting. If it was used as a missile, was it used in that capacity in war as well as in hunting, or was it solely used in hunting expeditions, in order to kill animals and birds at a distance?

The various accounts seem to agree well on these points. The encounters between Aborigines and Europeans were numerous, and murders of Europeans only too frequent, but there is not a single instance on record that during these conflicts the lughrana was used. The killing of the enemy was always effected by means of the spear. In fact, the account of the first encounter between Europeans and Aborigines on May 3rd, 1804, near Risdon, lays



great stress on the fact that the Aborigines were "armed (sic!) with waddies only (short, thick hunting clubs), while they drove a herd of kangaroo before them." It is emphatically pointed out, that this was the surest sign that on that particular occasion they had no hostile intentions towards the Europeans, because they were not armed with spears. The whole regrettable incident is stated to have arisen from a misunderstanding or lack of knowledge on part of the Europeans, who did not know that the "short, thick hunting clubs" were only used in hunting, and not in warfare (10).

There are, however, accounts which seem to indicate that the lughrana was used for other purposes. Henderson states that it was used to despatch the wounded victim, and Melville says: "If any quarrel took place among the men of the same tribe, it was the waddy that decided their affairs of honour." According to Breton, "it is the custom for one to receive a blow on the cranium, and then to return the blow on that of his adversary." The last statement is confirmed by Norman, though, according to him, the women chiefly settled the quarrels in the manner above described.

All these accounts indicate that the lughrana served a twofold purpose, viz., at a distance as a missile, in order to kill animals and birds, and, at close quarters, as a kind of club in personal quarrels, and to "despatch the wounded victim," at least, according to one authority. Unfortunately, it is not stated whether the "wounded victim" was an animal or a human being. There is no doubt that smaller animals, like a kangaroo or a wombat, could be killed by a blow with the lughrana; but was a wounded human being killed in a similar way? The skull of a Tasmanian could apparently stand a good deal of hammering, and we may well ask, "was it really used in that way to despatch the victim," or was it, perhaps, used as a stabbing instrument? Calder states that the mutilation of the body, and particularly of the head always followed the killing of a victim, and "this was done either by dashing heavy stones on the corpse or beating it savagely with the waddie."

Though, therefore, the lughrana was primarily a missile for hunting purposes, it seems to have been often enough used as a kind of club in personal quarrels, or to batter the body of a wounded enemy. It is, however, very doubtful

(10) J. E. Calder, *Some Accounts of the Wars, Extirpation, Habits, etc., of the Native Tribes of Tasmania*, 1875, page 6.

whether it was used as a stabbing instrument, though it seems to be well fitted for such a purpose.

There may yet have been another use for the lughrana, though there are no accounts of it. It seems well fitted to dig up roots and fungi; in particular, fern roots and the truffle-like *Melitta australis*. According to Brough Smith the West Australian Aborigines use a similar, though somewhat longer, instrument, and it is therefore not altogether improbable that the lughrana was used for a similar purpose. It may even be possible that the smooth-ended lughrana was used for digging roots, while the rough-ended was used as a missile.

The lughrana can, therefore, not be considered as a weapon, strictly speaking; there is not the slightest evidence to show that it was used in inter-tribal fights or in war, but there is at least one very emphatic statement that it was solely used for hunting purposes. We must, therefore, exclude the lughrana from the list of weapons, and we have to consider it as a special implement, belonging to that class of which the Australian boomerang is the typical representative. The general idea that the Aborigines of Tasmania did not know the use of the boomerang has to be considerably modified. They did use a short stick, which was thrown like a boomerang, and the only difference between it and the lughrana is in the shape; the character of the two implements, viz., a wooden missile thrown with a rotatory motion at a distant object is exactly the same.

This fact opens a wide view, and it may, perhaps, explain the curious accounts that recur ever and ever again of European tribes having used the boomerang. The boomerang seems to be such a peculiar instrument, which, according to a general belief, was solely restricted to the Australian Aborigines, that it was thought that any other race using such an instrument must, of course, be related to the Australians. But we can now give quite a different explanation; the boomerang is by no means an instrument special to Australia; it is only the highly-specialised form of a primitive implement that was common to all human tribes. I have above pointed out that we are very fond of imagining that primitive man picked up a convenient stick to defend himself with, and it is generally assumed that this stick was used as a club in a hand to hand fight. If we, however, assume that this stick was hurled with a rotatory motion like the lughrana, at a distant object, we shall probably be nearer the mark.

It is very probable that at first any stick of short length, just as picked up on the ground, was suitable, later on the ends were pointed, and one end was notched to ensure a firmer grip. It was probably soon discovered—though apparently the Tasmanians never made the discovery, or, if they did, never turned it to a practical use—that curved sticks were more suitable to be thrown with a rotatory motion than straight ones. This curved stick was capable of many improvements, without losing its character as a missile, notably with regard to its thickness; instead of being round like the primitive instrument it was flattened, and the natural result was the boomerang (11), or instruments like it. It is, therefore, hardly astonishing to find boomerang-like instruments pictured by the ancient Egyptians, or the similarly-looking trombash made of iron, and used by the negroes of Central Africa up to the present day. All these instruments represent nothing else but highly specialised forms of the primitive human implement, the lughrana or hunting stick. This view is certainly more plausible and probable than to assume that there is in Australia a race of men of Indo-European origin, and that the boomerang was one of the weapons introduced by this race into Australia (12)."

It is very interesting to note, that while the Central African negroes substituted iron for wood, thus producing a very effective weapon, the Australian natives have only quite lately learnt to use metal in the manufacture of the boomerang. A paragraph in a weekly paper published in Sydney, seems to indicate that the Clarence River tribe on the Orara (N.S.W.) use strips of tin-plate in the manufacture of boomerangs (13). Of course, this statement requires further confirmation, but, if true, it would mean another interesting stage in the evolution of man's primitive instrument.

(11) Brough Smyth (*Aborigines of Victoria*, vol. I., page 311, has conclusively shown that that type of the boomerang, the wonguin, which returns to the feet of the thrower, is "usually regarded as a plaything," though it is occasionally used in battle, and sometimes for killing birds and small animals, it is not so handy as the short stick named konnung, and on page 302 Brough Smyth says: "A weapon of very similar character was in use amongst the natives of Tasmania.

The barn-geet, the war-boomerang, used in battle does not come back to the thrower.

(12) Ferguson, on the antiquity of the killee, or boomerang *Transact. Royal Irish Academy*, 1838. (I quote from Brough Smyth), as I have been unable to obtain this paper in Hobart).

(13) "Yalgun." Seen the tinerang yet? I have—among the remnant of a Clarence River (N.S.W.) tribe on the Orara. Billy cadges the raw material, which consists of a strip of tin plate from the local canning works, and having twisted the goods into the required shape, he does the same old tricks with it as he does with its wooden brother, the boomerang.—"The Bulletin," Vol. 32, No. 1,628, April 27, 1911, page

## II. THE PERENNA (SPEAR).

According to Milligan (14) the following words were used for the designation of the wooden spear:—

(1) Perenna (tribes from Oyster Bay to Pittwater).

(2) Pe-na (tribes about Mount Royal, Bruni Island, Recherche Bay, and the South of Tasmania).

(3) Pœna, pilhah (North-West and Western Tribes).

The Rev. Norman supplies three more words (15), viz.:  
—(4) Arlenar. (5) Peeerner. (6) Pleeplar.

And according to Calder, Dove uses the word

(7) Rugga;

Jorgensen the word

(8) Raccah;

and Roberts the word

(9) Preena;

while Scott in Milligan's Vocabulary (1890) uses

(10) Preana.

This is again a large list of words for a weapon about which there cannot exist the slightest mistake, but, as usual, this list can be greatly reduced.

In the first instance, pe-na and pœna are identical, as well as perenna, preena, preana, and peeerner. In fact, to me it seems that there is no difference between the two words of the first and the three words of the second group, and that the word for spear can be spelled in any of the above variations.

From these differ, however, the words pilhah (Mill.) and pleeplar (Norman); it may be probable that both words are identical, but even if that be so it would be difficult to explain the different spelling.

But worse still are the words arlenar (Norman) and rugga (Dove). or raccah (Jorg.). The last two words are identical, but as exactly the same words have been used by the same authors for designation of the hunting sticks, their meaning is, to say the least of it, very unreliable.

(14) l.c. under spear (wood).

(15) l.c., page 335 (page 9 of the manuscript).

All accounts agree, and the records are corroborated by the evidence of the specimens preserved that only one kind of spear was used; in fact, that the Aborigines used no other weapon but the spear. It is therefore very improbable to assume that the words pilhah — pleeplar, and arlenar represent different kinds of spears, but what their exact meaning is I am unable to say, unless we accept the very improbable theory that, besides the spear, they used another weapon of which there is neither record nor specimen preserved.

The words rugga or raccah may apply to a different kind of hunting stick, of which, as we have seen, two forms are known, and I think they had better be excluded altogether. (See above.)

We have, therefore, the following words for the designation of spear:—

(1) Perenna — peearner — preana — preena — pe-na — poena, a wooden spear.

(2) Pilhah—pleeplar, correct meaning unknown.

(3) Arlenar, correct meaning unknown, a very doubtful word.

In speaking of the spears I use the word perenna, leaving it to others to settle the question which would be the correct way of spelling (16).

(16) The following contains Mr. Ritz's opinion on these words:—  
These words may be classified, according to my theory, thus:—

1. Pe-na, pecarner equal to pienna (where the two vowels may indicate a curve corresponding with the motion of the vocal organs from one position to the other.)
2. Pe-ren-na, where the "ren" would indicate speed, cf., "run" (Eng.); preana or preena would be variants of perenna.
3. Pilhah equal to pe-illa, equal to the moving thing (illa) aimed at (pe) something. We had "illa" before; arlenar equal to illa-na. Pleeplar equal to pilla-pilla, a very effective missile.

I am disposed to think that the Tasmanians used all these words indiscriminately for "missile;" the phonology does not support a distinction between a simple stick and a fashioned lance.

I think Mr. Ritz is greatly mistaken if he assumes that all these words were indiscriminately used for "missile," and that there was no distinction between a simple stick and a fashioned lance. He has apparently entirely overlooked that in all probability the hunting stick had been in use for immemorial times before the invention of the spear was made. But even if this theory is not accepted, there is a fundamental difference between the hunting stick and the spear. The former was thrown with a rotatory motion, the latter in a straight line, spinning round its longitudinal axis. However primitive the language may be, I cannot consider for a moment the idea that the aborigines did not distinguish carefully between two instruments, used for distinctly different purposes, and thrown in quite a different manner, quite apart from the view that the hunting stick was probably the older instrument.



The number of spears preserved is far greater than those of the hunting sticks. The Tasmanian Museum has now seven spears (17), which were originally in the possession of Milligan, and perhaps half-a-dozen more are owned by different private persons. The character of all the specimens that came under my notice is so similar that the description or picture of one specimen is sufficient to illustrate the features of them all.

In the following table I give the measurements and weights of the seven spears in the Tasmanian Museum, examined in detail by me:—

	No. 1	No. 2.	No. 3.
	(No. 4265 H.M.)	(No. 4267 H.M.)	(No. 4266 H.M.)
Length.	4.457 metres	4.432 metres	4.420 metres
Greatest Thickness.	21.5 mm.	21.6 mm.	16.0 mm.
Smallest Thickness.	5.0 mm.	6.2 mm.	5.0 mm.
Distance of centre of Gravity from pointed extremity.	1499 mm.	1575 mm.	15.12 mm.
Weight.	773 $\frac{1}{4}$ grm.	914 $\frac{1}{2}$ grm.	666 $\frac{1}{4}$ grm.

	No. 4.	No. 5.	No. 6.	No. 7.
	(No. 4264 H.M.)	(No. 4260 H.M.)	(No. 4262 H.M.)	(No. 4259 H.M.)
Length.	4.077 metres	3.531 metres	3.520 metres	2.984 metres
Greatest Thickness.	16.7 mm.	12.5 mm.	23.0 mm.	13.0 mm.
Smallest Thickness	5.3 mm.	3.0 mm.	3.0 mm.	3.0 mm.
Distance of centre of gravity from pointed extremity.	1486 mm.	1257 mm.	1283 mm.	1067 mm.
Weight.	666 $\frac{1}{4}$ grm.	283 $\frac{1}{2}$ grm.	737 grm.	255.15 grm.

The general appearance of all the specimens I examined is much the same; they represent simply a straight shoot of *Melaleuca* spec., which was freed of bark and lateral shoots, and ends in a sharp, smooth point at the thicker end. The finish of all is exactly the same, except that one may be a little more knotty than another. If we go into details, we observe that the perenna shows an extraordin-

(17) The register implies that there were originally 10 spears, but three have mysteriously disappeared.

any length; none of the above seven specimens is under 3 metres in length. This extraordinary length will only be fully realised if a perenna is held by a man of average height.

The above measurements agree very well with the statements made by most of the former observers, but Melville mentions that they were varying in length from 5 to 8 feet, while Henderson says that they were commonly 6 feet in length. I cannot help thinking that both these statements are not quite correct, because the majority of observers agree that the spears were at least 10 feet (3 metres) in length. The longest I examined has a length of 4.457 metres (14 feet 7½ inches), but according to La Billardiere they reached a length from 16 to 18 feet (5 to 6 metr. app.).

However that may be, we may safely assume that on the average the perenna had a length of 4 metres—13 feet (the average of the above seven spears is 3.917 metres), and though occasionally smaller or larger specimens were used, the minimum length did not go below 3 metres (10 feet).

The next remarkable feature is the small thickness: the thickest (No. 6) does not measure more than 23 mm. (0.9 inch) at its thickest part, while the thinnest (No. 5) is only half of this thickness. The thickest part is always just behind the point, and from there the perenna tapers almost immeasurably to the opposite end, which apparently does not exceed 6 mm. (¼ inch) in thickness, but comes down as low as 3 mm. (⅓ inch) (18). Widowson says that the spears were "as thick as the little finger of a man," but other observers, except Mrs. Prinsep, took very little notice of this feature. Yet it is an important one: the extreme thinness of the hinder end, in conjunction with the peculiar position of the centre of gravity, precludes the use of a woomera or throwing stick. Even if it were possible to grip the thin hind end in the hook of the woomera, the heavy pointed end would hang down to such an extent that it would be practically impossible to throw the spear. Hand in hand with the great thinness goes lightness: the heaviest (No. 2) weighs only 914 1-3 grammes (2lb. ¼oz.), and the lightest (No. 5) weighs only 283½ grammes (10oz.), the average being 613 grammes (1½lb. a.d. app.). Of course, it might have been anticipated that being no thicker than the little finger of a man, the spears were light, notwithstanding their great length, but nobody has apparently noticed

(18) I may mention that the ends of every one of the specimens examined were broken off, and they may, therefore, have been somewhat longer and also thinner at the end.

this fact. If we calculate the weight for a given unit of length, say, 100 mm. (4 inches), we find that it weighs:—

No. 1—17.343	gramme	}	Average 17.891 gr.
No. 2—20.622	„		
No. 3—15.068	„		
No. 4—16.335	„		
No. 6—20.087	„	}	Average 8.2801 gr.
No. 5—8.0147	„		
No. 7—8.5456	„		

Grand average, 15.145 grammes for every 100 mm.-of length, which is therefore less than half the weight of the lughrana for the same length.

Another peculiar feature is the position of the centre of gravity; whatever the length or weight of the perenna may be, it balances slightly more than  $\frac{1}{4}$  of its length from the pointed end. In other words, that the perenna was grasped with the hand in such a way that  $\frac{1}{4}$  of its length was in front and  $\frac{3}{4}$  behind it.

The accurate figures as to the position of the centre of gravity from the point expressed in a fraction of the length would be:—

No. 1	=	0.29733
No. 2	=	0.29330
No. 3	=	0.29233
No. 4	=	0.27436
No. 5	=	0.28113
No. 6	=	0.27435
No. 7	=	0.27966

These figures seem to indicate another interesting feature, namely, that the position of the centre of gravity shifted somewhat with the length; in the shorter perenna it was only slightly forward of the ratio 0.25000, while in the longer perenna it nearly approached the ratio 0.30000. This really means that the longer spears were grasped somewhat farther back from the point than the shorter ones. In round figures about  $\frac{9}{12}$  of the total length were behind the hand in the shorter and  $\frac{8}{12}$  in the longer perenna. The perenna is invariably pointed at the thicker end, and the greatest care was taken to produce a smooth, sharp point. Very little is known as to how the perenna were made, but the examination of the specimens, together with other observations, enable us to form an approximate conjecture.

There grows in the Tasmanian bush a kind of shrub popularly known as tea-tree (*Melaleuca*). This shrub grows up in long, straight shoots, and the wood is, when dry, of considerable hardness. These shoots were used in the manufacture of the perenna. It is not quite certain whether the

shoots were pulled up with the root, or whether they were cut off in situ. In either case, the root end was cut off by means of a *tero-watta*. According to Lyne, the green wood was held over or passed through the fire "to soften and supple it." The bark was removed by means of a *tero-na-watta*, and the same instrument was used to smoothen the knots and knot holes. One of the specimens (No. 4265) shows the traces of the work of smoothening a spear in a particularly fine way, and I have taken a photograph of a portion of it. This shows that by means of such a primitive, clumsy instrument as the *tero-na-watta*, long regular splinters could be sliced off; the knot holes were smoothed by cutting off short chips. We must assume that the point was produced by slicing off long, narrow splinters, gradually bringing the thicker end to a tapering point. Scott states that the end of the *perenna* was hardened by being a short time in the fire, a statement which is corroborated by Lyne and Raynor. The latter is particularly explicit in stating that they pulled up the young shoots, burnt off the roots (19), and placed the thick end on the fire again till it was slightly burnt; then they would rub off the burnt part with a rough sandstone, and repeat the operation till they got a sharp point. If this account is correct in every point, it would appear that the *tero-watta* never came into use in the manufacture of the point except as a scraper (20), in order to scrape off the charred portion of the wood, and to smoothen it. Considering that three different observers, who are generally very reliable, and to one of whom we are indebted for some of the most important information, have stated that fire was used in the production of the point, we must assume that it really was so. On the other hand, though I very carefully examined the points of the seven spears with a powerful magnifying lens, I could not discover even a minute trace of charcoal. It must, however, be admitted that, though the marks of the *tero-watta* are very clear and distinct on the hinder portion of the *perenna*, none are visible on the point, which, as will be seen from the illustration, is as smooth as possible.

Inasmuch as the *tero-watta* was unquestionably used to shape the back portion of the *perenna*, I question to

(19) Be it noted that Raynor says "burnt off," and not "cut off" the roots. If this was the regular practice, the *tero-watta* would not have come into use as a chopper to cut off the root end.

(20) Of course, the word "sandstone" used by Raynor is not correct: it ought to read "flint," or *tero-watta*. If sandstone had really been used to smoothen the point, specimens of it would have been found on the old camp sites. The camping grounds are, however, singularly free of pieces of sandstone, and I never found even a small piece indicating that it was used for polishing.

some extent Raynor's statement. To me it seems that the point was rough-hewn by means of a *tero-watta* exactly like the point of the *lughrana*, as conclusively proved by specimen No. 1; after the rough work was done the point was held in the fire, and the slightly-charred surface carefully scraped off by means of a *tero-na-watta*, and eventually rubbed with grease to make it quite smooth (21).

I cannot quite understand what Backhouse means by stating that in straightening their spears the natives used their teeth as a vice to hold them. The shoots of *melaleuca* or *leptospermum* are very straight, and do not require straightening, but owing to the extreme length and the peculiar distribution of the weight, a *perenna* will assume a somewhat curved line if kept in a horizontal position, and this feature probably explains why, according to W. B. Walker, "at their places of rendezvous" the spears were "carefully tied to straight trees, with their points at some distance from the ground."

All eye-witnesses agree that the *perenna* could be thrown to a considerable distance; according to Mrs. Prinssep it could be thrown to the distance of 60 yards, while Lloyd says that 40 yards was the extreme range; Breton estimates the range to be from 40 to 50 yards: Calder gives 60 to 70 yards. All accounts further agree that this primitive weapon could inflict severe wounds; Meredith, in describing the murder of one of his father's stockmen, states that a spear had been driven through the thick boot-sole into the foot of the murdered man; another had penetrated his loins several inches. According to West, a man named Franks was, while riding, attacked by Aborigines, "and within 30 yards a savage stood with his spear quivering in the air. This weapon, ten feet long, penetrated the flap of the saddle and the flesh of the horse four inches." According to Kelly, when the Aborigines attacked his party near Cape Grim, "one spear went through the side of the boat."

All these accounts prove one fact conclusively, viz., that the *perenna* was thrown with great force, and this is the more astonishing if we consider that no *woomera* was

(21) It must be particularly mentioned that the statements that the spears had jagged points, or that they were pointed at both ends, or even that the points were poisoned, are entirely unfounded. There is not a single specimen known which shows a jagged point, and the statement that they were pointed at two ends is probably due to the mistake of thinking that the naturally thin end of the fusiform spear was artificially made thin or pointed. Melville's statement of a fatally poisoned barbed spear is unquestionably erroneous, as quite out of harmony with the general customs of the aborigines.



used. Now, how were the *perenna* thrown? It is obvious that they were thrown differently from the *lughrana*. The latter was, as we know, thrown with a rotatory motion, like a boomerang, but it is obvious that the *perenna* could not possibly have been thrown in such a manner. The *perenna* must have been and was thrown in a straight line, but the force that sent it to a distance of 40, 50, even 60 yards, and made this crude weapon penetrate through thick leather must have been considerable.

Now, how was the *perenna* grasped, in order to make it such an effective weapon? The ordinary modern man would grasp it in his fist, as shown in Pl. xi., fig. 1, but it is very doubtful whether this way of grasping could supply it with such a great energy on being thrown. In fact, in dealing with the manner in which tools and weapons were grasped by archæolithic human beings, I have become rather suspicious of the way the hand of the modern man involuntarily grasps these same implements. I have come to the conclusion, that it is almost certain that archæolithic man did things and held instruments in quite a different way from that which a modern man would do or hold them.

Now, a most remarkable passage in Mrs. Prinsep's letters gives apparently the key to the problem. This passage runs as follows:—"They threw the spear for our amusement. This is merely a slender stick, nine or ten feet long, sharpened at the heaviest end; they poise it for a few seconds in the hand, till it almost spins, by which means the spear flies with great velocity to the distance of 60 yards, and with unerring aim."

They poise the spear in the hand till it almost spins! Now, how can we interpret this peculiar remark; if the spear was gripped by the closed fist it certainly could not spin. Therefore, we must assume that it was not held or grasped with the closed fist, with which I or any other modern man would grasp the *pilum*.

We may further take it that the words "till it almost spins" mean that it rotated round its own longitudinal axis, and not in a circle. Now, such a motion can be produced if the spear were held, as shown in Pl. xi., fig. 2. The front part of the spear rests on the middle finger, the hinder portion on the base of the first finger, which grasps the spear on its upper side. The thumb presses well against the lower side, and the moment it is thrown the thumb, by a quick upwards movement, imparts to it a rotating motion,

exactly the same a bullet acquires by the rifling of the barrel, or as a "spin" is imparted to cricket ball by the peculiar action of the thumb and forefinger. This spinning motion probably enabled the perenna to travel to distances, which it would never have reached if thrown without it, and the long range which astonished everybody is thus easily explained by the peculiar way the perenna was held by the hand when thrown. Now, we also understand why the perenna shows such a small thickness. A perenna having the thickness of a lughrana could not well be held by three fingers, and the thumb could not impart to it the spinning motion it could to the thin perenna. The thinness was, therefore, the essential feature of the perenna; without it, it could not be thrown with a spinning motion, and without the latter it would never travel the distance it did, nor probably have the penetrating power.

I need hardly mention that the perenna was never provided with a stone head, and in this conjunction it must be mentioned that the so-called Tasmanian word, "poyeenta" or "poyeenna," which Milligan gives as designating the "point of spear," is most probably an adopted English word; the Tasmanian did apparently not distinguish between the different parts of a spear as we should do, and there was no reason to do so, because the perenna did not consist of head and shaft, but was made all in one piece.

Like the *tero-watta*, but unlike the *lughrana*, the perenna could not be improved upon or altered without losing its character. If it was made thicker it could no longer be thrown with a spinning motion, and, of course, there was a limit below which the thinness could not go. If ever it had been provided with a stone head; it would have been no longer a perenna, though it might still have been thrown with a spinning motion. As long as it remained as it was the *woomera* could never be used in conjunction with it, even if it had been invented by the Aborigines. Though there cannot be the slightest doubt that the *pilum* of the antique world evolved from the perenna of archæolithic mankind, this weapon had reached its highest perfection, and could not be improved upon without losing its essential characteristic features.

In conclusion, I may mention that the Aborigines were frequently in the habit of trailing the perenna along the ground, holding it between the toes, appearing to be unarmed, with the intention of deceiving the enemy. At a moment's notice the perenna was transferred to the hand,

to be thrown at the enemy. Without doubt the perenna was well adapted for such a ruse, but it seems unlikely that it was habitually carried in this way, as this would greatly hinder the march through the bush.

### III. THE TUGHBRANA (BASKETS).

Milligan gives the following words for basket:—

- (1) Tughbranah (tribes from Oyster Bay to Pittwater).
- (2) Trenah (tribes about Mount Royal, Bruni Island, Recherche Bay, and the South of Tasmania).
- (3) Tille (North-West and Western Tribes).

And as usual the Norman vocabulary (22) gives four words, all different, viz.:—

- (4) Tringherar.
- (5) Poakalar.
- (6) Meerar.
- (7) Parnellar.

And as, if this list was not formidable enough, Calder mentions two more names, viz.:—

- (8) Terri (D'Entrecasteaux).
- (9) Tareena (Roberts).

Finally, Milligan, in the list of short sentences, translates the words: "The woman makes a basket" with "lowanna olle tubbrana," in which the last word stands for basket. Though "tughbranah" and "tubbrana" are apparently identical, as well as "trenah" and "tareena," to which might be added the word "terri," there remain seven different words to designate a basket. Even if one were to go as far as to assume that all the words beginning with a "t" were identical, and represented only different spellings or local dialects, there still remain four entirely different words.

It is impossible to say whether these words represent different kinds of baskets, or baskets used for different purposes, if they really apply to baskets. Norman, who is responsible for most of these words, does not even hint in his explanatory note that there were different kinds of baskets, or that those that were used for different purposes were dis-

tinguished by different names. In fact, his note seems to indicate that there was one kind of basket only, a view which is fully borne out by the specimens still preserved.

It is impossible for me to explain these words, and I must leave it to others better acquainted with the Tasmanian language than I am to explain them. In my opinion, the last three words of Norman (5, 6, 7) have probably nothing to do with baskets (23).

The Tasmanian Museum in Hobart possesses 10 baskets, the measurements of which are given below:—

	1	2	3	4	5
	No. 1247	No. 4280	No. 4282	No. 1248	No. 4274
Diameter at top ..	20 cm.	15 cm.	16 cm.	15 cm.	18 cm.
Greatest Diameter	37 „	21 „	23 „	18 „	25 „
Height .. ..	35 „	26 „	23 „	21 „	25 „

	6	7	8	9	10
	No. 4276	No. 4279	No. 4277	No. 4278	No. 4281
Diameter at top ..	15 cm.	15 cm.	12 cm.	10 cm.	9 cm.
Greatest Diameter	19 „	20 „	17 „	16 „	12 „
Height .. ..	21 „	19½ „	18 „	16 „	11½ „

(23) Again I am indebted to Mr. Ritz for an ingenious explanation of these words. Mr. Ritz says:—

My theory would explain the words as follows:—

1. Tughbrana, tubbrana equal to tuga, perina breone equal to eat fish.

The basket represented as swallowing the fish or oysters.

2. Trenah, tareena, terri, tille, equal to terina, skeleton. The baskets were not solid, but open worked, for fishing. Those for carrying water (see Roth, p. 142) were, of course, nearly watertight; they were nitipa (Roth, p. xviii.) equal to ni-tapa equal to not dripping (tap, the noise of falling drops).

3. Tringherar is given by Norman also as meaning “to swim.”

Poakalar, parnellar—Norman gives to these words also the meaning of mussel.

Meerar is probably a form of peri-na or breo-ne fish.

In my “Speech of the Tasmanian Aborigines” (p. 33) I suggested that Norman was likely to mistake his own presumptions for the information given by aborigines. Here we find several likely instances. He pointed to a fishing basket, and asked for its name. One would tell him it was used when the women went swimming (tringherar), another would say it was for mussels (poakalar, parnellar); and a third said it was for holding shell fish (mera-na, or perana). He quite seriously assumed that these words meant basket.

Incidentally we find a remarkable similarity to buckalow in poakalar, warkellar (p. 7 of Norman’s MS.).

Mussel equal to round, swimming, or floating.

Again, the words are apparently not names of different things, but different names of one thing.

From the above measurements it will be seen that some of the baskets were of considerable size; the cubical contents of the largest (No. 1247) (24) being  $26\frac{1}{2}$  litre (26522 cub. cent.). The smallest (No. 4281) contains, on the other hand not more than 905 cub. cm., that is to say, less than one litre.

Though in general appearance remarkably alike, it almost seems as if two kinds were made, a spherical and a cylindrical kind. The largest (No. 1247) is a typical spherical basket, which is widest in the middle and narrower at the opening and the bottom. No. 4280 (see pl.) is of cylindrical shape, maintaining its width throughout. Only two cylindrical baskets have come under examination, all the others are of the spherical type. This difference in shape may, however, only be accidental; at the same time it cannot be quite denied that the different kinds may have served different purposes, and this theory would explain the different names.

The plaiting is exactly the same in all the baskets, whether of spherical or cylindrical shape; the only difference is that sometimes the meshes are smaller, sometimes larger, but the work is of the simplest kind.

A careful examination of the specimens has convinced me that they were made differently from the modern basket. The modern basket is commenced at the bottom; the Tasmanian basket was commenced at the top.

The basis of the tughbrana was a ring of twisted flat fibres of about 6 to 7 mm. thickness. The vertical strands were not twisted, but the flat fibres were nicely rolled. These were inserted into the basal ring, and kept in position by a thin twisted chord, which was firmly wound between the vertical strands round the basal ring. Each ring of the horizontal strands consists of two pieces of rolled grass, which were twisted round the vertical strands in a very regular way, which the figure illustrates very well.

The illustration also demonstrates how the vertical strands were joined, and how eventually the bottom was made.

The baskets were probably all made of a reed, *juncus acutus*, which grows in abundance in the swamps of

(24) This specimen, as well as No. 4, has been figured by Ling Roth, Aborig. Tasman. Plate to face page 153.



Tasmania, and which yields a very strong fibre. Bunce stated that they were made of the leaves of *Anthoricum semi-barbala*, as well as *Dianella*. That may be so, but no specimen made of these plants has come under my examination; those in the Hobart Museum are all made of *Juncus*-fibre, as has already been noticed by Ling Roth (25).

The baskets are very strong, and even now, though years have passed since they were made, they are very elastic, instead of being brittle, as might be expected after this long time.

It is difficult to say how the baskets were carried; most of those that are in the Hobart Museum have a short string of twisted grass tied at two opposite points of the basal ring. This would indicate that they were carried by the hand and not on a long string across the shoulder. If they had been carried this way, the longer string would have again to be tied to the shorter string, an assumption which is not very probable.

We practically know nothing about the manufacture of the baskets, though several of the early explorers watched the operation. Bonwick says that he watched a woman making some string, and the chief point of his observation is, that the woman "began to twist the threads by rolling the material up and down her thigh." The strands of which the baskets are plaited look exactly as if they had been rolled in such a way.

The baskets were principally used to bring up shell fish collected at the bottom of the sea, and to carry the same afterwards to the camping grounds. It is very probable that chiefly the larger baskets were used for such a purpose, because the smaller ones hardly contained enough room for even a small quantity of oysters or *haliotis*. They were probably also used to collect the raw material (pebbles) for the manufacture of *tero-na-wattas*, or to carry to the camping grounds suitable specimens that were obtained at the quarries. To me it seems probable that the smaller ones were used to carry the *tero-watta* that were in use for the time being, as well as the material required to make fire.

In the 1st edition of the *Aborigines of Tasmania*, Ling Roth figures on Pl. I and Pl. II., two baskets said to be of

Tasmanian origin, and now in the British Museum. These baskets were originally in the possession of G. A. Robinson, from whom Milligan obtained them. There cannot be the slightest doubt that these two baskets are not of Tasmanian workmanship. The plaiting is so different from the Tasmanian baskets, and discloses also a much higher style, that it would be most remarkable had the Aborigines practised simultaneously such different kinds of plaiting (26). Likewise, the woodcut, fig. 3, from a basket in the Museum of Oxford, is certainly not taken from a basket made by Tasmanian Aborigines, and Ling Roth's assumption "that a race who appear to have been lower in the scale of civilisation than many races whose industrial remains have lately become known to our times, should have known the stitches which form, in fact, the foundation of our modern point lace (27)" is unfounded. It is greatly to be regretted that the learned author of the *Aborigines of Tasmania*, who gives in the 2nd edition a wood cut of the pattern of basket work from Queensland, which is very similar to that of the Oxford basket, has not corrected his errors in the 2nd edition. Such statements as the above are very misleading, and are apt to throw quite a wrong light on the Tasmanian civilisation.

Ling Roth remarks that the plaiting of the Tasmanian baskets is similar to some fabric from the Lake Dwellings of Robenhausen and Wangen. I am unable to verify this statement; the only two illustrations of basket work from the Lake Dwellings I have at my disposal are two figures in Reinhard's "*Der Mensch zur Eiszeit in Europa*", which are apparently copies from Heierli, "*Urgeschichte Der Schweiz*." Both, figures 341 and 342, represent specimens of basket work from Wangen, but the pattern is unquestionably much superior to the Tasmanian one, and of quite a different workmanship (28). This might have been expected; the Lake Dwellers (Robenhausenian) had attained a much higher stage of civilisation than the Tasmanian Aborigines,

(26) Though Ling Roth had already expressed his gravest doubts as to the authenticity of these baskets (2nd ed., 1899, page 144), these more than doubtful specimens still seem to figure as Tasmanian baskets. In an article on the early history of Tasmania ("*Tasmanian Mail*," December 12, 1908, by Ida Lee, one of these selfsame baskets is figured as a "relic of the natives of Tasmania in the British Museum." It seems about time that the authorities of the British Museum removed these two questionable baskets, or at least marked them with a great query.

(27) *Aborigines of Tasmania*, 1st ed., page x.

(28) The pattern of plaiting given by Mortillet (*musée préhistorique*, Pl. LXVII., fig. 739, from Wangen) is exactly the same as that described by Reinhard.

and it would, therefore, be more than remarkable had the latter already reached such a high perfection in basket plaiting as to be equal to the Lake Dwellers.

I am unable to say whether the baskets found in the Lake Dwellings were manufactured like the Tasmanian ones, viz., commenced at the top. However that may be, I consider the Tasmanian baskets as the most primitive type of human basket work (29). The great probability that the tughbrana was commenced at the top, and not at the bottom, renders this kind of work absolutely different from any later work. It would be of the greatest interest to ascertain when the invention was made to plait the baskets in the modern way.

Though, outside the scope of this paper, I may mention that the Tasmanians possessed a kind of pitcher called *moirunah*, and made from sea-weed (*Fucus palmata*). The only specimens that are known are in the British Museum and in France (30). A wooden "spatula" was used to loosen the *Halotis* from the rocks to which it firmly adhered. There is no *moirunah* in the Hobart Museum, and as to the "spatula," I do not think that any specimen at all has been preserved. Neither can I find a name for this implement, and I do not think that it was more than a short stick, ending in a chisel-shaped edge.

One word about the so-called canoes, the *mallana* or *nunganah*. The accounts agree that they were nothing but bundles of reeds tied together, but the figures of models in the British Museum, and similar models in the Hobart Museum (31), are so suggestive of a real canoe having stem and stern, that I cannot help thinking that their original shape has been greatly improved upon by those who made the models. Those in the Pitt Rivers Museum seem to be more like the real *mallana*, and more in harmony with the state of the Tasmanian civilisation than the canoe-shaped models in the Hobart and British Museum.

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(29) According to Brough Smyth, *Aborig. Vict.*, vol. I., page 343, basket of exactly the same pattern as the Tasmanian ones, and similarly in shape, are still manufactured by the Queensland aborigines. The figures of baskets made by the aborigines of Victoria, page 343, 344, and 345, particularly fig. 159, make it more than probable that the so-called Tasmanian baskets in the British Museum, and in the Oxford Museum, are really of Victorian origin.

(30) See Ling Roth, *Aborigines of Tasmania*, 2nd ed., page 142.

(31) Ling Roth, *Aborig. Tas.*, plate to face page 153.

## CONCLUSION.

Modern researches have shown that stone implements, which cannot be distinguished from the rougher *tero-watta*, have been found as far back as the Middle Oligocene (Fagnian). Unfortunately, there has lately arisen a discussion as to the authenticity of these specimens. Verworn (32) holds in opposition to Rutot that these specimens were made by natural agencies, and not by human beings. Not having seen the locality where the specimens were found, I cannot speak with the same authority as Verworn, who advances some seemingly strong arguments in favour of his theory. All I can say is, that I cannot distinguish the *Archæolithes* from the Fagnian, which Dr. Rutot kindly sent me, from the Tasmanian *tero-watta*, and unless absolute proof is forthcoming that natural agencies can produce *tero-watta*-like specimens, I maintain with Rutot the artificial origin of the Fagnian specimens.

However, to be quite on the safe side, I will begin with those specimens whose nature as human handiwork nobody now doubts: the *Archæolithes* from the Upper Miocene (Cantalian). As these implements are exactly like the *tero-watta*, we may fairly assume that they were used for the same purposes as the former. The chief purpose for which the *tero-watta* was used was unquestionably the manufacture of the *lughrana* (hunting stick) and *perenna* (spear). All other purposes were subordinate to this one. We may therefore conclude that the *Archæolithes* from the Cantalian were used for a similar purpose, and, what is more, as, during the Upper Miocene, a mild if not warm climate must have prevailed in Europe, the necessity of warm clothing did not exist. The race that hunted the *Hipparion* and manufactured the Cantal *Archæolithes* was probably quite as naked as the Tasmanian Aborigines. There was therefore no necessity for the use of a scraper in order to prepare skins for clothing.

Now, a difficult question arises; we know that the Aborigines used, together with the true weapon, the *perenna*, an implement which cannot quite be considered as a weapon, namely, the *lughrana* (hunting stick). It may have been used as a weapon, and a true weapon has eventually evolved from it, but the *lughrana* was, in the first instance, made and used for hunting purposes only. It is further very probable that the *lughrana* is the nearest an-

(32) *Korrespondenzblatt, Deutsch. Gesell. f. Anthrop. Ethnol. and Urgesch.* XLI. Jahrg. No. 5 and 6, 1910.

proach to the stick, which primitive man hurled alike at human enemies and animals required for food.

Now, did the human beings who made the Cantal Archæolithes already manufacture spears of the perenna type, or had they not made that invention yet, and solely used their stone implements in the manufacture of hunting sticks (lughrana)? The question is an intensely interesting one, as the lughrana is the primary implement, the perenna the later invention. Now, when was the invention of the perenna made? If, as Dr. Rutot and I hold, the Archæolithes from the Middle Oligocene were made by human beings, it is very probable that these human beings used them for the manufacture of the hunting sticks only, and it is, perhaps, possible that the Cantalians had not advanced further.

If this theory be correct, the invention of the perenna (spear), i.e., the weapon which was thrown with a spinning motion in a straight line at a distant enemy, must have been made some time between the 1st Glacial Period (Guenzian), representing the Kentian industry and the beginning of the Middle Interglacial Period, representing the Strepyian industry. The Che'lean industry at the end of the Middle Interglacial period had already learnt to provide the spear with stone heads, and had therefore, in all probability, discarded the wooden spear (33).

If we knew for certain which of the Archæolithic industries, from the Fagnian to the Mesvinian, used the hunting stick only, and which used the wooden spear besides it, a great stride in our knowledge of the development of the human race would have been made. To judge from the Archæolithes from the Mesvinian, Maffelian, and Reutelian, which my friend Dr. Rutot sent me, I have no doubt that the representatives of these industries already used the wooden spear. If that be so, the invention of the wooden spear as a weapon would have been made either in the 1st Glacial Period (Guenzian) or in the 1st Interglacial Period, both of which are now considered as Pliocene, forming the end of the Tertiary Period in Europe (34).

According to this theory, the human beings of the warmer Tertiary epoch, i.e., the Oligocene and Miocene

(33) This may have already commenced during the Strepyian.

(34) It is quite possible that a lucky find may solve this question; if human bones have been preserved it is to be hoped that some day the remain of a lughrana-like instrument or of a perenna-like spear may be found.



used for an enormous period, that can only be counted by millions of years, nothing else but the hunting stick, which was thrown with a rotatory motion, and which, as I said, cannot be considered as a weapon, strictly speaking. When the first ice sheets covered Northern Europe, perhaps the first invention of a real weapon, the wooden spear, which was thrown in a straight line, probably spinning round its own axis, was made. Wooden spear and hunting stick were again the only weapons of the human race for an enormous period, though, if measured in absolute time, the earlier part of the Archæolithic stage, which was characterised by the use of the hunting stick only, was incommensurably longer than the latter part in which hunting stick and wooden spear were simultaneously used.

The period when the wooden perenna was superseded by the stone-headed spear can be very accurately fixed; this must have taken place about the time when the Palæolithic implement took the place of the Archæolithic, namely, during the Middle Interglacial Period in the Strepyian industry. It is very probable that at first spear heads of an Archæolithic type were used, and specimens of this type are still used on the Admiralty Islands and in Queensland. It is, however, very probable that owing to its unequal balance the Archæolithic spear head was not long in favour, and was soon superseded by the Palæolithic head.

• Probably at the same time as when the wooden spear was provided with a stone head, the shaft was made stronger, and it was no longer gripped like the perenna, but with the whole fist. The spinning motion of the perenna naturally became impossible, and the spear was thrown in a straight line, without rotating round its longitudinal axis. It would go beyond the scope of this paper if I were to follow up the evolution of weapons; it only seems to me that the period during which a certain type of weapons was in use quickly became shorter till it is now only as many months in use as it was formerly centuries, and at a still earlier period thousands, even hundreds of thousands of years. In connection with this we notice a peculiar feature; primitive man fought his battles at a long range (35), which, of course, was measured by yards only:

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(35) The Tasmanian aborigines did not like a hand to hand fight: in preference they sent a shower of spears from an ambush at the unsuspecting enemy, but they did not come to close quarters except to dispatch the wounded when the enemy took to flight. For this reason I do not believe that primitive man used as its first weapon a club, that is to say, a weapon ending in a heavy knob. A club is essentially a weapon to be used in a close combat, but primitive man, like the Tasmanians, did not fight at close quarters, so the club was of no use to him.

modern man fights again his battles at a long range, with the difference, however, that the distance between the combatants is now almost as many thousands of yards as it used to be yards. Between the two stages falls the period of close combat; this period must have commenced with the invention of the dagger and the sword, the axe, and the club, the weapons suitable for a close fight. Perhaps this invention coincides with the Magdalenian, though I should feel inclined to date it somewhat later. Ever since, probably all through the Neolithic and Bronze age, human beings fought their battles hand to hand. All the great battles of the antique world were fought at close quarters, and so were those of early middle ages. Only with the inventions of gunpowder the combatants separated again, and the distance gradually increased, and is apparently still increasing. There will, however, be an end to this ever-increasing distance; at present the range of some of the big guns is such that it is impossible to discern a small or even large object at that distance. There must, therefore, be an end to this increase of the horizontal distance, and I think we are pretty near that end. What would be the use of a gun having a range of 30 or 40 miles if the object to be fired at is below the horizon, and cannot be seen? But what is going to happen then? Are we to expect that the pendulum swings back and the combatants again come to close quarters? I hardly think so, even if an invention were made that one man could annihilate a whole army at close quarters, the other side would take the greatest care that that one man would never come to close quarters. I almost think that as fighting in the horizontal plane has come to its practical limit, the next movement will be the shifting of the plane, and instead of in the horizontal plane the fighting will be carried out in the vertical plane, which very likely means coming to close or relatively close quarters again.

## APPENDIX.

### THE DUTERRAU ENGRAVINGS.

Mr. J. W. Beattie, who is so indefatigable in hunting up old records and other relics connected with the early history of Tasmania, has kindly drawn my attention to some quaint old engravings, which bear on the subjects discussed in the above paper.

These engravings were "designed, etched, and published by Bn. Duterrau" between July 15th, 1835, and March 23rd, 1836, in "Hobart Town, Van Diemen's Land."

As Bn. Duterrau has been careful enough to add even the day of the month when he published his engravings, we know that they were made after the Black War (1830), probably just before the Rev. George Augustus Robinson brought the last 203 survivors to Flinders Island. The first engraving published, July 15th, 1835, is entitled "Tasmanian Aborigines," and represents a group of ten Aborigines (7 men and 3 women) cordially receiving Robinson, who is wearing a quaint sort of a cap. The Aborigines are depicted as naked, except for a loin-cloth, which is unquestionably an invention of the artist, and a concession to public taste. All the women have the hair closely cropped, three of the men have the peculiar wig-like head dress, while four have it in apparently its natural curly state.

Four of the men are simply armed with spears, while two others who are squatting down are apparently making spears. It will be noticed that two of the men are holding their spears in the left, three of them in the right hand. Robinson is grasping a native's left hand with his left, while his right is held up in teaching or preaching position.

Now, I shall presently show that, in all probability, these engravings must be reversed, and we have therefore three men holding the spears in their left hand, two in the right, while Robinson's right grasps the right of the native, and his left is lifted. Unless we assume that Robinson was naturally left-handed, we must accept the view that the print of the engraving ought to be reversed.

Now, the second engraving published on August 24th represents exactly the same two figures in exactly the same attitudes, with that difference, however, that while in the above engraving they are separated by two women, Robinson and a man, and two dogs, they are in the second close together, each sitting, so to say, on a large bundle of spears, which are absent in the above engraving. This seems to indicate that the pictures were not taken directly from life, but were composed in the artist's home, from rough sketches made elsewhere. This may somewhat reduce the value of the engravings as evidence, because it is hardly necessary for me to say, that memory even supported by a sketch is deceptive, and in the process of composing groups from sketches errors are very likely to creep in. This view also accounts for a certain discrepancy in the proportions which will be noted in the different groups.

The second engraving represents two "Aborigines making and straightening spears." The two men are represent-

ed sitting cross-legged, with three bundles of spears under their legs, a small fire burning between them. The right hand figure holds a spear under his right arm, closely pressed to the body by arm and hand, while the left hand holds a cutting implement. We know that this implement must have been a *tero-watta* and it is very suggestive that it is completely concealed by the fingers. This proves that the *tero-watta*, which was used, was of such a small size that it did not even show above the first finger. The view expressed by me in a previous paper that the *tero-watta* was on the whole an implement of small size, is therefore fully confirmed by this engraving. But what is more important still, the position of the bent-in thumb suggests that it must rest on one face of the *tero-watta*, pressing it with the opposite face against the curved first finger. The position of the hand and fingers, as drawn in this picture, is therefore completely in harmony with the view time and again emphasised by me, that the *tero-watta* and all other Archæolithic implements were grasped in such a way that the thumb invariably rested on the flat face, which I therefore called *Pollical facé*.

The most remarkable feature of this figure is, however, quite a different one. The left hand holds the implement used for making the spear, not the right one! If it could be proved to a certainty that the position of this Aborigine is drawn correctly, the conclusions that could be drawn would be far-reaching. However, I rather feel inclined to think that the artist has made a most unfortunate mistake; we may safely assume that he first made a pencil sketch on paper, and then transferred that sketch exactly as he had made it on the copper plate, forgetting that by doing so the print must naturally become reversed. What he ought to have done was to transfer his pencil sketch on the copper plate, such as it appeared in a looking-glass, but not as he had designed it (1).

The second Aborigine sits like the former, cross-legged, and full front, gripping a spear between his two fists, while his teeth are holding it like a vice. The inscription says: "Straightening" the spear. The only reference I could find that the spears were straightened with the teeth is in Backhouse's book, page 172. and I confess that I was somewhat doubtful as to this practice.

(1) The scrawly character of the legend greatly supports this theory. In order to appear correctly on the print he had to draw it inversely on the plate. To judge from the almost childish scrawl, this has caused him a good deal of trouble, and therefore the theory that he did not take the pains to engrave the human figures inversely on the plate is more than probable.



Now, unless we assume that the Duterrau engraving, representing an Aborigine holding a spear with his teeth, is an invention pure and simple, a view which is certainly not supported by other evidence, we must admit that the Aborigines used their teeth in connection with the manufacture of the spears. To me it seems probable that the repeated process of placing the wood in the fire and scraping it, afterwards, curved or bent the straight shaft, and that in order to straighten it, the teeth gripped it (like a vice!), while the two hands, by slowly effecting an upward pressure, gradually bent it straight.

This view is greatly supported by the position of the hands. The back is turned outside, the muscles of the arm are in rather a strained position. Now, as everybody can observe for himself, it is very easy for the arm to exercise an upward pressure by simply moving the elbow outwards, if in the position as depicted by Duterrau. A downward pressure is much more difficult to exercise, because the points of the elbows will have to be brought together; if the Aborigine straightened the spear by a downwards pressure, which, by the way, would involve a severe strain on the lower jaw, he would have gripped the spear in such a way that the back of the hand was turned towards his own face, because in such a position the arm can easily exercise a downward pressure.

It is further interesting to note that, unlike the *terowatta*, which were made whenever required, the spears were made in advance for further use, the two men having made nearly 50 spears.

The fire burning between them apparently confirms the view that it was required in the manufacture, otherwise there does not seem to be any reason why there should be a fire.

These two men are depicted without the curious head dress, in their naturally curly hair, both showing rather a strong beard.

It is obvious that these two figures are the same as those shown in the larger group, and the only question that could arise is, which represents the original sketch. I almost feel inclined to think that Duterrau actually saw the two Aborigines making spears, and having sketched them, afterwards composed the group in which these same two figures are so prominent. It will, however, be noticed that in the second engraving the front portion of the spear held by the



Aborigine is longer than the posterior, while the reverse is shown in the group. Likewise, the left portion of the spear held by the man with his teeth is much longer in the group than in the second engraving. This unquestionably shows a certain amount of carelessness of observation, and reproducing observed facts, and this may tend to minimise the value of those recorded.

Engraving No. 3, published on March 23rd, 1836, bears the curious inscription: "A wild native taking a kangaroo, his dog having caught it, he runs to kill it with his waddy."

Now, we know for certain that dogs were unknown to the Aborigines previous to the arrival of the Europeans. The hunting scene, as depicted by Duterrau, can therefore not have taken place in older times, and the "wild native" must have caught his kangaroo by other means than by a dog before "killing it with his waddy." The chief interest of the engraving is, however, the fact that the "waddy" (lughrana) was used to kill animals. The sketch of the "waddy," as given by Duterrau, fully agrees with the shape of the specimens in the Hobart Museum, even the notches at one end are distinctly depicted. The hand, however, grips the lughrana, not at notched end, but fairly in the middle, and from this we may conclude that the animal was killed with a blow.

There is, however, another curious feature connected with this scene; the "wild native" grasps his lughrana with the right, while the left gets hold of the kangaroo. Now, if we assume that this engraving, not inversely etched on the plate, but transferred directly, the "wild native" grasps the kangaroo with his right, and holds the lughrana, with which he means to deliver the blow, in his left. \*

The last etching, published on the same date as the former: "A kangaroo caught by a wild native's dog," is of very little interest. It practically shows nothing but two very crudely-designed figures of a kangaroo, which a dog, apparently a collie of most ferocious appearance, having claws like a bear, has caught by the ear.

The only interest is in a very crude figure of an Aborigine holding a spear in his left and a hunting stick in his right hand, of which the legend says: "The native then seizes the kangaroo and kills it with his waddy."

This engraving seems to contradict the view that spears were not used in hunting expeditions; but though Duterrau has depicted this "wild native" in the position of throwing the spear at the kangaroo, the legend, which says that "He kills it with his waddy," does not make it appear as very

probable that his dog, having caught the kangaroo, the "wild native" throws first his spear at it, and then "runs to kill it with his waddy." I rather feel inclined to think that the "wild native" is shown, though in a picturesque attitude, armed with spear and hunting stick, is not represented quite truthfully. This certainly applies to the loin cloth which our "wild native" is wearing on his hunting expedition, which is rather a concession to the public of 1836 than a true fact.

Again, it appears to me very probable that the engraving ought to be reversed, because the wild native is holding the spear in his left and the hunting stick in his right.

We can sum up the value of the Duterau engravings as evidence regarding the Tasmanian Aborigines as follows:

(1) On the whole these engravings are somewhat fanciful compositions, which were probably made in the studio from rough sketches drawn from life.

(2) It is very probable that all the engravings were transferred directly, instead of inversely, on the copper plate. Hence the prints are all reversed. This detracts somewhat of their value with regard to any conclusions that may be drawn as to the use of the hands. Yet, even if it is admitted that the pictures ought to be reversed, it seems that the Aborigines used their left hand as often as their right, and were therefore ambidextrous (2).

(3) The use of a loin cloth, with which the Aborigines are provided in all the engravings, is a concession to the public, but not an actual fact.

(4) Notwithstanding these drawbacks the engravings are of great value, because they prove at least two facts which have hitherto been without corroboration, viz.: (a) That the spears were straightened by being gripped with the teeth and bent with both hands, moving probably in upward direction; (b) that the hunting stick was used to kill an animal by a blow. They further confirm the view as to the holding of the stone implement (tero-watta), and the hunting stick (lughrana), as depicted, fully agrees in shape, even as details are concerned with the specimens described in this paper.

P.S.—Since the above was written the original oil painting from which No. 1 engraving was made, and which is now in the possession of the Misses Cleburn, has come to light. This painting fully confirms my conjecture that all the engravings should be revised, because in the original the man holds the scraper in his right and not in his left as it appears in the engravings.

(2) This theory is confirmed by certain tero-watta which can only have been used with the left hand, if they were held in such a way that the thumbs rested on the Pollical face



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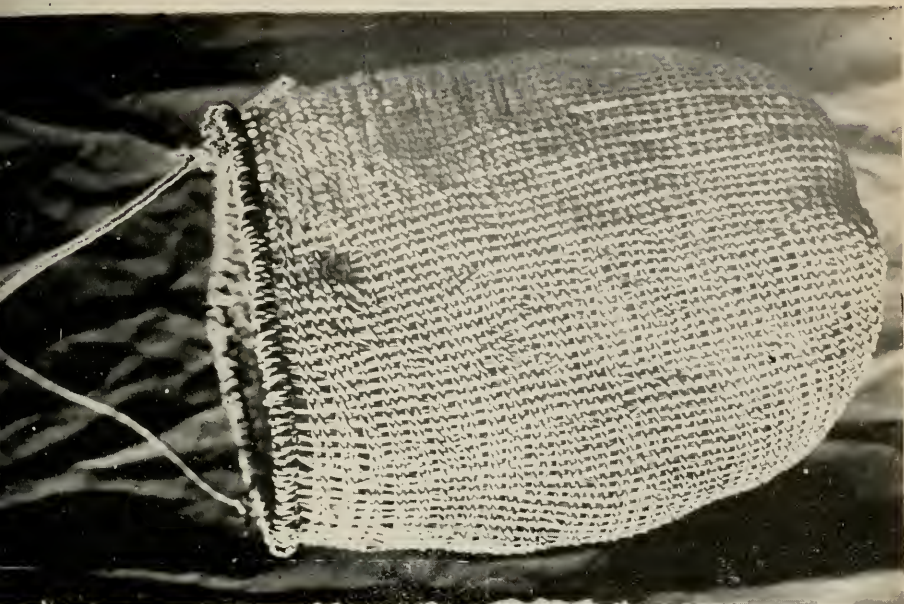
THREE HUNTING STICKS (TASMANIAN MUSEUM)  
THE PHOTOS OF NO. 1 AND 2 ARE 2/3rd SIZE.



POINTS OF SPEARS AND MIDDLE PORTION OF A SPEAR.





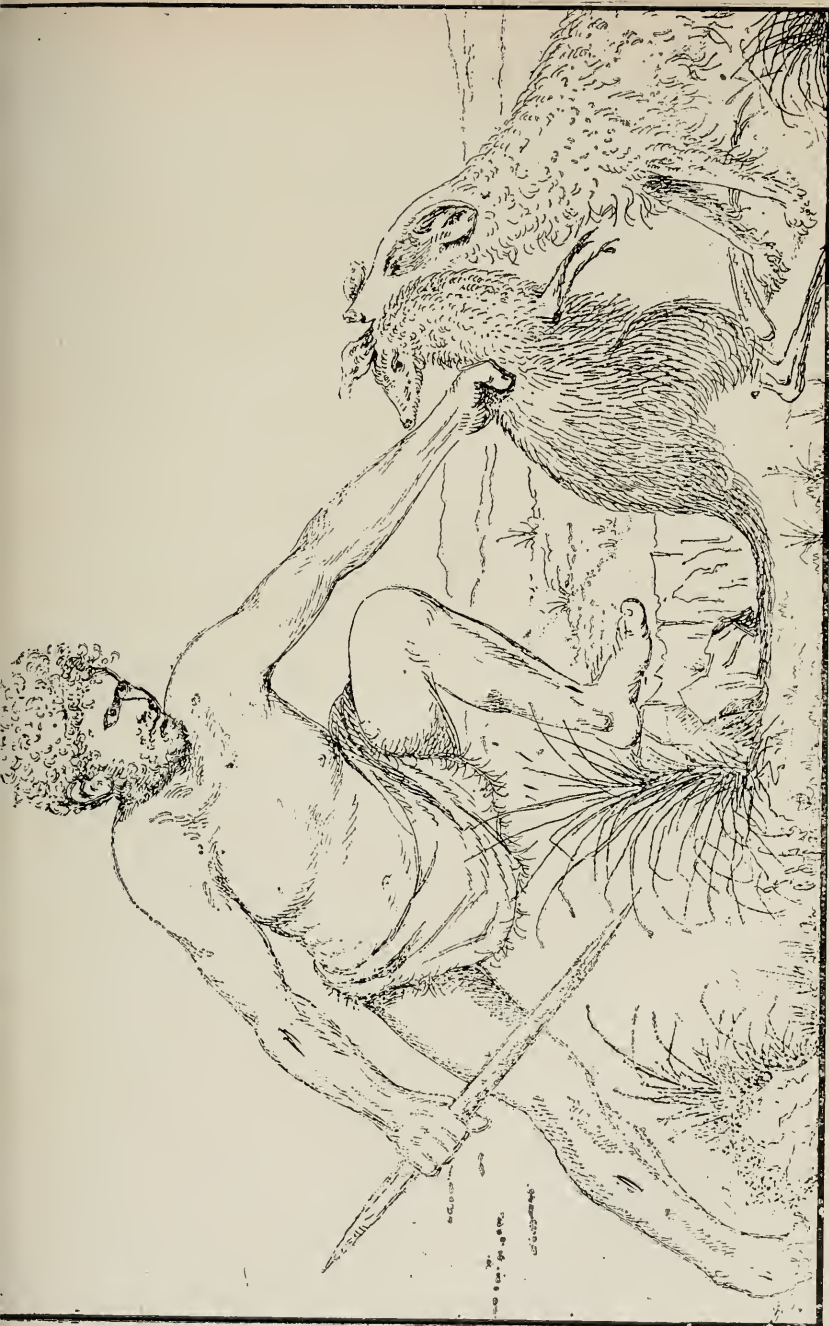


BASKETS.



*Designs, etc. & published by B. D. Dutton, July 15<sup>th</sup> 1885 Hobart, Tasmania.*

# TASMANIAN ABORIGINES.



A Wild Aborigine of Tasmania, his Dog having caught it; he used to kill it with his Wallaby  
 designed etc. by B. Dinnon March 23, 1836 Robert John Van Dinnon's Land



