BUSHCRAFT 1

AUSTRALIAN TRADITIONAL BUSH CRAFTS

Ron Edwards

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BUSHCRAFT 1

Australian Traditional BUSH CRAFTS

Ron Edwards

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I would also like to thank my many informants: Stormy who stole chairs from the council dump for me, Clark Parker who borrowed the beautifully plaited whip described later in this book, Frank who stole a slush lamp from the railways — come to think of it perhaps it would be better if I did not name all my informants here. Wherever possible their names are included in the text.

Contents

Introduction

This book began many years ago as a series of random jottings in various notebooks. My aim was not that of preserving folklore, but rather gaining knowledge that would be of use in everyday living. Having spent the greater part of my life in rural surroundings I have frequently discovered the advantages of being able to do a thing myself rather than having to wait until someone came along who could help me. There was no point in owning a fishing net unless one could mend it, and often the simplest way to acquire a chair was to make it.

Also I have always felt that one should try and be as independent as possible, if only as a protest against the ever growing mechanisation that is creeping into everyone's lives. Once we let our lives revolve around complicated gadgets we become slaves of the technocrats who make and service these things.

For instance, I had originally intended to illustrate this book with hundreds of photographs of the various items described, and with this in mind put to one side my old cameras and bought a beautiful new German model.

Two rolls of film later the whole thing suddenly seized. Cursing all camera makers with their super complicated products I loaded up my old German camera, which obliged by completely breaking down after ten photographs. The Japanese camera had been unreliable for years, and believe it or not, my American camera also broke down the same day.

I had to send off three cameras (and a tape recorder) for repairs in one day, and although one parcel has finally arrived back I have not even bothered to unwrap it, having at last realised that the only way to get what I wanted was to do it myself; hence the 700 or more sketches in this book, all produced with a little piece of metal stuck into a wooden stick, and a bottle of ink.

This book is concerned with traditional crafts I have encountered over the years, and for that reason it must be considered a somewhat regional study. For the past fifteen years I have lived and travelled in far North Queensland, and these are the things that I have learned about in that time.

It is not intended as an exhaustive study, for such a thing would be impossible in the space available. Almost any of the crafts mentioned in this book would make a book in themselves, or even a number of volumes if one wanted to treat the subject in depth.

Leather plaiting alone could be expanded into a large, and complicated book, while a number of books would be required to fully describe all the various building techniques employed by our pioneers.

What I have set out to do is not to describe the activities of highly skilled and specialised craftsmen, but rather to set out as clearly as possible the crafts that were necessary to the pioneers and the present day bushmen.

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Gates and Fences

EARLY FENCES

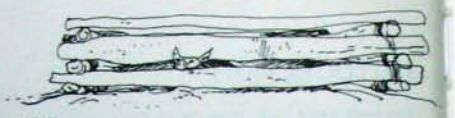
The earliest fences were formed by simply heaping up the timber that had been cleared from the land. After this came the dog leg fence, formed by zig-zagging the poles so that they became self-supporting. This style of fence has long since died out, but the principle remains in some bush pigsties, built without uprights in the same way. When builders are lifting a house they support it with structures called 'pigsties', in which the same principle applies.

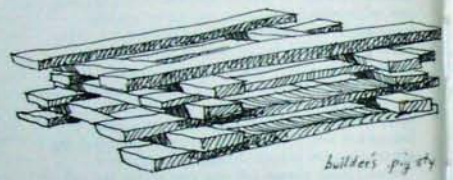
Saplings thrust into the ground and held at the top with wire may be seen in early photographs of sheep yards. Their production might have been time consuming, but they cost little in materials.

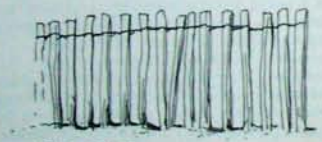
The post and rail fence was one of the most popular and attractive fences. Examples are still common.

The chock and rail fence was another early form of fence which has fallen out of favour. The rails of the fence were simply rested on short chocks. Its advantage over the dog leg fence was that it used much less timber and also formed a straight line. Also rails of unequal lengths could be used, whereas uniform length was needed for each panel of a dog leg fence.

Another disadvantage of the dog leg fence was that the builders would have had to put down one row of rails, then walk right back to the starting point to put up the next row. I am inclined to think that the use of this type of fence was probably not as common as some writers have suggested.







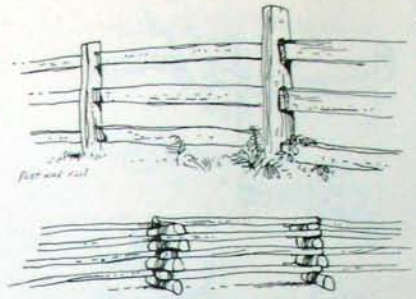
Sapling and wire

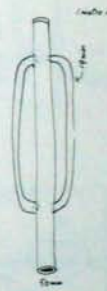
WIRED RAILS

In most stockyards in the north, such as this one at Starke Station, a housing is cut into the posts to support each rail. Holes are drilled in the rails and wires passed through and tied with a Cobb & Co hitch at the back of the post.

The same method was often used to build sheds. In this example, sketched on Southedge Station, all the timbers have been drilled and tied together with Cobb & Co hitches to make a very strong structure.

on Starke Station





STONE WALLS

Where ample stone and labour was available stone walls were popular because of their strength and permanency. The stone horse yard below was sketched at Standley Chasm in the Northern Territory.

Unfortunately many stone walls have been pulled down over the years because they harboured rabbits and snakes.

Another type of fence that I have not seen for years is the boxthorn hedge that used to be common around Geelong when I was a boy. Perhaps some still exist. Once the plants became established they provided a fence that was impervious to both stock and humans. They grew very wide and very high, and were studded with vicious thorns. I recall an old man on a big property near Drysdale who had a full time job simply keeping the hedges trimmed.

The use of existing trees as fence posts is not always the most satisfactory, though in this case (below, left) it has certainly created a permanent section of fence. These cabbage gums on Southedge Station must have only been saplings when the fence rails were fixed onto them, but now the rails disappear into the centre of the trees.

STEEL POSTS

Today the common fence is of the unromantic star section steel post construction. They are awkward to drive into the ground with a hammer, as I have found to my dismay, balancing on an oil drum and sometimes missing the post altogether as the drum slumped into sandy soil.

This is a tool that farmers frequently make up to do the job. A section of water pipe is sealed at one end, while handles of smaller size pipe are welded onto each side. This is dropped over the post and used to drive it into the ground. In sandy soil one man holds both handles, but in difficult conditions it can be used with a man on both sides.

WIRE WORK

Stockmen use a few simple but effective methods of dealing with wire when mending fences and erecting yards. The following were demonstrated to me by Les Calfope, an Aboriginal stockman working on Bulimba Station.

A This is the way to start a Cobb & Co hitch, used to tie the rails to the posts in stockyards, and similar jobs. The end of a file or the handle of the fencing pliers is inserted in the loop to act as a lever, and the looped end is twisted around the free ends until the whole is tight.

B This is a sketch of a Cobb & Co hitch used on a stockyard at old Speewah Station in North Queensland. The combination of Speewah and Cobb & Co is surely the ultimate in tradition?

C This is the start of a single strand Cobb & Co hitch, used when only a short piece of wire is available.

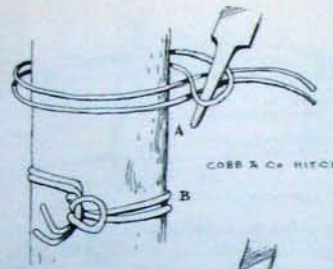
D The same hitch partly tightened.

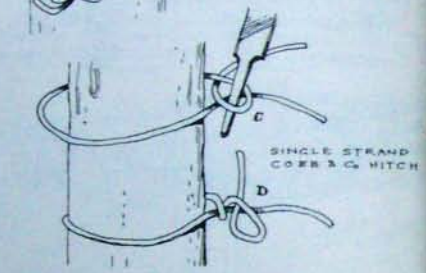
E A method of attaching fencing wire to the strainer post.

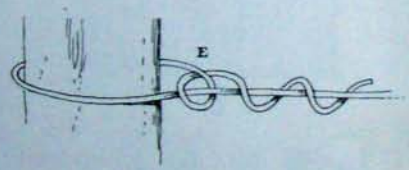
F Les called this 'A Number Eight', used to join fencing wire.

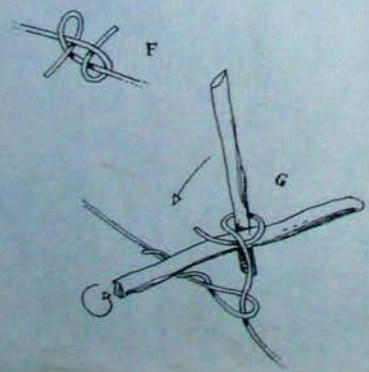
G An ingenious method of straining fencing wire when the normal wire strainers are not available. In some ways it resembles a Spanish windlass. The upright stick acts as a lever and is turned in circles so that the wire that is hooked onto it is wrapped around the horizongal stick. When the wire is strained sufficiently the horizontal stick is held at each end and pulled towards the right, putting a sharp bend in the wire which helps prevent it slipping through again. Tension is maintained as the wire is unrolled from the stick and bound back in the same manner as has been done already on the left hand strand.

Cobb & Co hitch





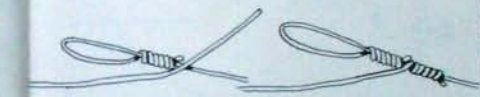


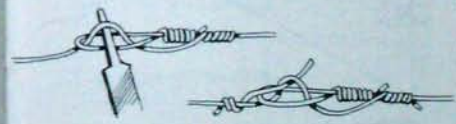


1. DOUBLE LOOP

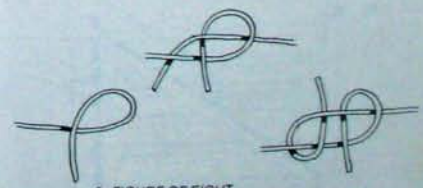
2. BULLWIRE

3. DONALD

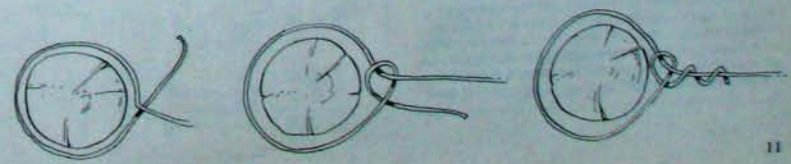




4. PIN AND LOOP



5. FIGURE OF EIGHT



KNOTS IN WIRE

After recording the above knots I discovered that the huge fencing wire manufacturers, Australian Wire Industries Pty Ltd had carried out research into the effectiveness of the knots commonly used in fencing. They discovered that the five most common knots were: 1 The Double Loop 2 Bullwire 3 Donald 4 Pin and Loop 5 Figure of Eight.

They also came to a number of conclusions about these knots.

1 In all types of knots and all fencing products a knot lowers the actual breaking strain of a line of wire.

2 This lowering of breaking strain is not of relevance.

3 In all plain fencing wires the Figure of Eight knot decreases the breaking strain less than other knots and tends to be the most consistent.

4 The Pin and Loop knot is quite satisfactory especially for short strains or where a minimum amount of tension is to be lost.

5 The higher the tensile of the wire the less consistent the knot and the greater the tendency to lower the breaking strain relative to the strength of the wire.

6 Knots in barbed wire, both standard galvanised twelve and a half 'Iowa' and sixteen HT do not vary sufficiently to justify a recommendation for a particular knot. Ease of tying becomes the deciding factor.

7 One feature of knots in barbed wire is that the barbs can be used to improve the holding power of the knot. Barbs should be positioned behind one another on the lines to be joined prior to forming the knot. The barb then tends to act as an anchor on the other barb.

Their final recommepdations are: 'Plain Wires; use Figure Eight whenever practical. On short strains use the Pin and Loop knot. Barbed Wire: all commonly used knots are satisfactory but barbs can be used to increase the efficiency of the knot, so should be placed one behind the other when mating the ends of the reels. Then one barb anchors the other.'

In the old days it was a common practice to drill a hole through a strainer post and thread the fencing wire through it. Although this looked neat, and gave a straight pull when straining the wire, it was later found that holes also let in the weather and caused the post to rot faster. They also produced draught holes during grass fires which caused posts to burn away instead of simply charring on the outside.

Today, wires are tied around the posts, and this is the common method.

It has been said that there are dozens, if not hundreds, of varieties of gates found in the Australian outback. A speaker on the Australian Broadcasting Commission in late 1973 claimed that in the southern states of Australia it was possible to tell the origins of the first arrivals by the type of gates that they introduced into various areas.

The gates that I have shown here are not restricted to any one area however, but are common through all the northern cattle areas. The cattle man needs a strong gate, but he also wants one as wide as possible for moving nervous stock easily. Cattle that have not been handled a lot will balk at a narrow gate. In any case with a large mob it is good sense to have the gates as wide as possible.

Where the road is also used by other travellers, the gates are usually made of timber rather than wire. This is to prevent people constantly driving through the wire at night, and also because travellers tend to get impatient with twisting wire and fancy fastenings, and are inclined to leave the gates open.

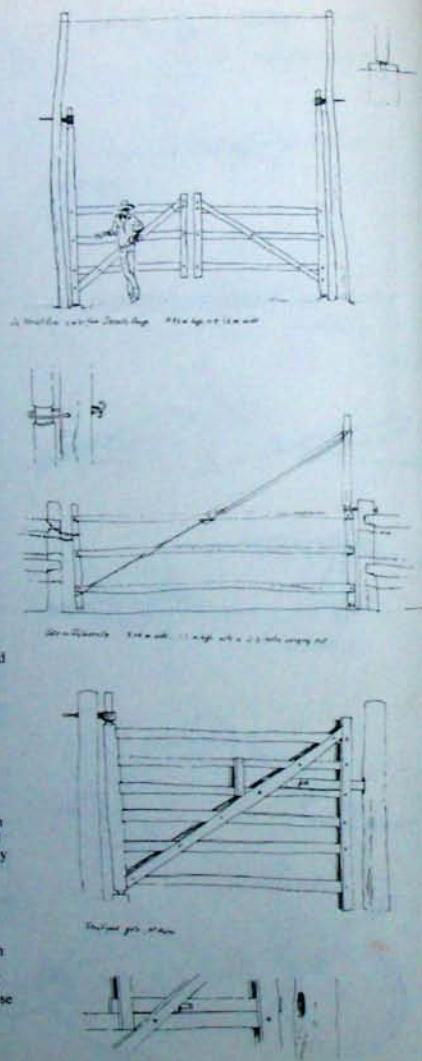
The gate sketched on the Mitchell River (top right) was on a road used by mining companies. It was unusually high, especially the supporting posts which nearly topped five metres. Local timber was plentiful, and the tall posts allowed a tie wire to be put between them which would be out of the way of stock transports and mining trucks.

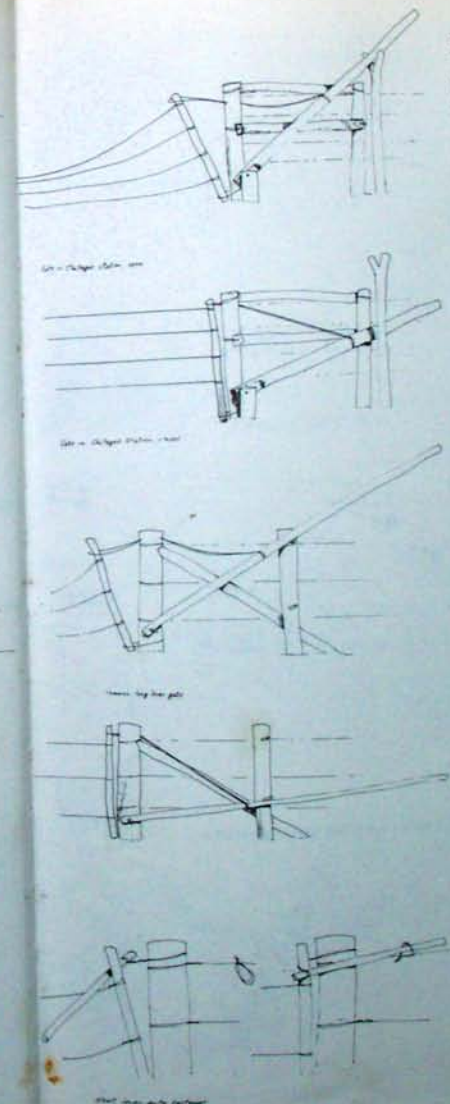
Like most of these large northern gates the lower part of the gate pivoted on a stump sunk into the ground as shown in the smaller sketch (top right). Although the pin can be made with a piece of iron rod, for the most part it is simply whittled from the lower section of the post. If the timber is very hard this arrangement will last for years.

This gate on Palmerville Station in North Queensland has been made with bush timber roughly squared to shape. Instead of the metal collar usually constructed for the top swinging point, a length of mild steel rod has been bent and pushed through holes in the post to do the same job (small sketch centre left). A piece of heavy twisted fencing wire serves to support the weight of the gate, and this has been augmented with an additional length of timber. Possibly this timber ran right to the lower part of the gate when it was first made.

Another variation of the timber gate is common in stockyards. In this case the rails have been morticed into the pivot post, though frequently they are simply bolted on. Stockyard gates have to be made so that they can be opened speedily, and the catch shown here is a common one.

The locking piece slides freely between the other pieces of timber, and is only prevented from falling right out by the rod which sticks out from it on both sides. Gates are being opened and shut all the time when drafting cattle, and only a bump on the rod is needed with this type of catch to either open or close it.





LONG LEVER GATE

The long lever gate is a favourite among northern cattle owners, though it is seldom found on roads used by the public. It is common on station tracks where those who use it are familiar with its workings, for the long lever gate can be a very perplexing problem to the uninitiated.

Its great advantage is that it allows an effective gate opening space far greater than any other form of construction. Even the gate with the almost five metre high posts described earlier cannot be constructed to give an opening as wide as that obtained with a long lever.

There are two types of long lever gates, but the general construction is the same for all. The gate itself is of wire with a post at one end, and tensioning of the wires is achieved through a loop of wire which passes around the movable gate post, through the fixed post and then to a long lever which pivots from a point at the bottom of the fixed post.

When the lever is in the raised position, the wire loop is slack and may be removed from the movable post to open the gate. When the lever is in the lowered position, the gate is pulled tightly closed.

The gate noted on Chillagoe Station in North Queensland depends on the sheer weight of the lever to tension the gate. To open it, the lever is lifted onto a forked stick, and to close it the lever is lifted from the fork and allowed to drop, where it hangs freely keeping the gate tightly closed. The only disadvantage of this gate is that it requires a certain amount of strength to lift the lever, and as a result the gate cannot be used where women or children have to go through it.

The second type of long lever gate is set out in the same general way, the only difference being that the lever is lighter and longer, and a holding peg is set into a post a few feet from the main gate post as shown in the sketch. A top holding peg may also be used, or a forked stick as in the previous example. In this case the tensioning is caused by pushing down on the lever and not by the weight of the lever. The length of the lever allows anyone to exert sufficient tension, and the lever is then held in place by sliding it under the lower holding peg.

The only disadvantage of this type of gate is that the people using it must always put the lever down in position otherwise the gate remains slack as the weight of the lever is not sufficient in itself to pull the wires tight.

SHORT LEVER FASTENERS

Dairy farmers do not require the large gates needed by graziers, so the long lever gate is not often found on smaller farms. Instead they will often use a short lever fastener which is equally effective over a smaller area. A common form of short lever is shown in the sketch, and consists simply of a length of timber attached to the main post with a piece of twisted wire.

The movable gate post is dropped into a loop of wire in the same way as with the long lever gates, and

the lever is placed around the top of the post as shown. At this point the gate should be as tight as it is possible to tension by hand.

The extra tension is obtained by pulling the long arm of the lever. This exerts a very considerable amount of force and will pull the gate tightly shut. The length of the wire holding the lever is adjusted whilst making the gate so that when it is fully closed the lever is parallel with the fence line. A loose loop of wire which hangs from the top wire of the fence is then slipped over the lever and the gate is held tightly shut.

While the short lever fastener mentioned above is fairly common, this next one seems to be rare, though it is a most ingenious system. It consists of a lever of any length (though around 760 mm would be the most convenient) with two holes drilled in one end. The relationship of these holes to each other, and their distance from the curved end of the lever is critical.

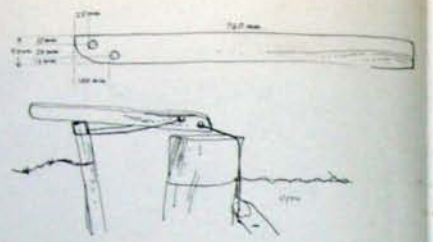
The hole furthest from the end holds a loose wire loop and the other hole holds a wire loop that ties back to the main gate post. When the loose loop is placed over the movable gate post the wires are extended to their fullest, as shown in the sketch. The lever is then pulled over to the opposite side, and as it does so, the curved end of the lever comes in contact with the top of the post. When the lever is pushed down far enough it passes its point of balance, or whatever the technical term is, and locks in place. The standing post prevents it going further down and slackening the tension. This fastener was sketched at Peermon on the Atherton tablelands, and a local farmer used a term in connection with it that I had not heard for some years. His farm was not far from the one using the fastener, and when I showed him the sketch he said, 'Yes, I took a patent off that a few years back'. I thought that he meant that he had actually applied for a patent for this type of fastener, but then a little later he explained, 'Those people on the next farm, they went down and took a patent off it as well.' I realised then that he meant that they had copied the idea, nothing more. I had heard the word patent used in this context when I was a lad, but had not heard it since.

This next clever gate fastener was noted on a station near Laura. The usual fastener is a chain with a hook, the hook generally having been salvaged from an old horse harness. The fastener shown in the sketch was made up from a piece of mild steel rod, bent into a keyhole shape.

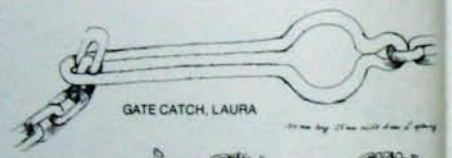
The eye of the fastener was made large enough to take the links of the chain, and the narrow section was made as narrow as the thickness of the metal that made up the chain links.

To lock the gate the chain is pulled through the large hold and let slide along the narrow section. As chain links lie at right angles to each other it is impossible for a link to slip through this section, and so the gate is easily locked without any chance of it opening accidently.

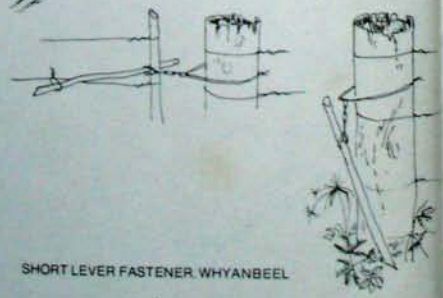
This variation of the short lever fastener was noted at Whyanbeel, near Mossman, Queensland. In this case the shorter end of the stick is placed around the



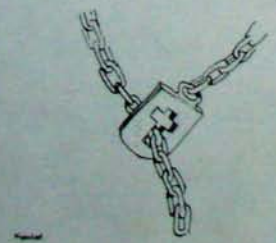
GATE CATCH, PEERMON



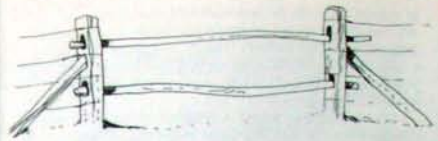
GATE CATCH, LAURA



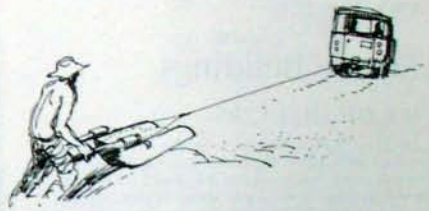
SHORT LEVER FASTENER, WHYANBEEL

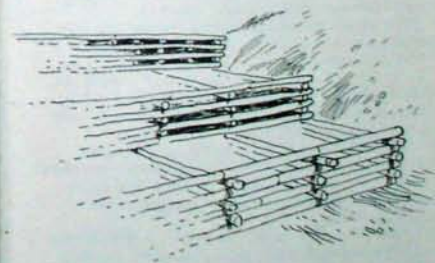


GATE CATCH, WHYANBEEL



SLIPRAILS





DAM WALL OF LOGS

WATER FROM SAPLINGS

movable post, and pressure applied in the opposite direction to the previous example, and the end of the stick being then secured by a loose loop on the gate wire.

The stick does not have to be firmly attached to its tethering wire, and in fact this stick could be slid out of the wire loop attached to the main post without any trouble.

This gate catch, opposite page, almost medieval in appearance, was noted on an old fence at Whyanbeel, near Mossman, Queensland. It works on the same principle as the previous catch, the chain is pulled through and let drop, and in the dropped position it cannot be undone.

SLIPRAILS

The sliprail is the simplest gate of all, consisting of only a couple of saplings thrust through holes in the fence posts, or resting on angle iron brackets. In the days when people travelled on horse back they were a convenient method. The rider would simply slip out both poles from one end and drop them on the ground and the horse could step through.

However, with the coming of the car they became a nuisance as they had to be carried clear of the gateway each time a vehicle passed through. Careless people would simply drop them on the ground and drive over them, frequently breaking the saplings, which had to be light enough to be easily handled.

Dam Building and Tank Sinking

My father once worked on excavating huge dams in the Mallee country of Victoria, and I recall him saying that he used to drive teams of fifteen and twenty horses abreast pulling the big scoops that were used for the work.

The small 'cocky' used fewer horses and smaller scoops for his dam building, and these may be still found around old farms. I have used one on our place, but with a four-wheel drive to pull it instead of horses. I also found that I needed the help of the heaviest friend that I could enlist in order to keep the handles pushed down.

When I tried to do this job myself the scoop would sometimes get overfull and too heavy to handle. It would then bite into the soil at the front, and I would be lifted high off the ground by the handles and thrown in a graceful curve.

A dam wall is subjected to immense pressures, especially if it is blocking up a running creek, and so it requires to be very strong. This is the way the early tin miners in North Queensland solved the problem, using only an axe and the timber they could obtain around them.

Notice how each log locks the one underneath in place. Only the top posts needed wiring to the one below, although sometimes everything would be wired for extra strength. The highest section at the back in

my sketch would be of twelve horizontal layers of timber, the middle one of eight, and the front of four. The longwise timbers locked each tier into the one behind it. The whole structure was then filled with earth. This particular dam was at the Vulcan Battery at Irvinebank and has stood for many wet seasons now.

This same principle is used today to prevent landslides by building up the slope of the hill in a similar manner using cement posts that interlock.

While on the subject of water, I am reminded of a useful tip that we put into practice on our first trip in search of the famous Hells Gates near Cooktown. We had to carry our water supply with us, and had been travelling along a high sandstone ridge for two days. In order to get some extra drinking water I decided to try out an idea that I had heard about some time before.

A number of small saplings were cut down, each one about as thick as a man's wrist, and were turned upside down, in this case down an inclined bank, with one of our prospecting dishes underneath as a container. In a very short time we had collected about a pint of sweet water which was very welcome. As we drank it we speculated about the early miners who had passed through here a century ago, and the fact that some had probably died of thirst while water was all around them locked up in the trees in this otherwise dry area.

However, this system is far from infallible, as I was to discover on another occasion. This time my companion and I had been looking for the site of an old mining settlement some miles south, on one of the branches of the Palmer River. On our return trip darkness caught up with us while we were on another high and dry ridge, and we had to make camp for the night.

We were both very thirsty, and I spent some hours cutting down a specimen of every type of damn tree that grew in the area, but not a single drop of water came out of any of them. Why this was so I do not know, perhaps a botanist could explain it. In both cases we were on high dry ridges, not many miles apart, and at around the same time of the year.

SOAKS

Quite often though a creek may appear to be dry there will still be water below the sand in the places that dried up last, and animals will frequently scratch through the sand to reach this moisture. Even when there is surface water it may not always be suitable for drinking.

On our last trip to Hells Gates, Queensland, we found a shallow pool of black water that was unfit for drinking, though the horses did not mind it. However, we dug small holes a metre away, and in a short time they were filling with clean, though still strong tasting, water.

When the bushman had to make a permanent camp in these conditions he dug a hole in the sand and put in a drum with the bottom knocked out. If this was still not deep enough he would get inside it and shovel sand out from the bottom. This would cause the drum to sink down until he could have it two drums deep, and so on. Working this way, there was no chance of the well caving in on him.

I am reminded of a near neighbour of ours who dug a well without putting any form of casing down. There was a tank full of water right next to his well, and when he was about ten feet down the piles that supported the tank collapsed, and the tank tipped over. Falling sand held him tight and the hole filled with water.

Simple Buildings

BOUGH SHELTERS

The most primitive dwelling found in the bush today is the bough shelter. Without walls or waterproof roof its sole purpose is to protect the users from the sun and heavy dew. They are constructed in the most casual manner imaginable and often provided the first homes for many early settlers in north Australia.

Forked sticks were buried in the ground and saplings placed in the forks. Leafy branches were then thrown up to complete the job. As the leaves dried and fell off more branches were added.

In a more sophisticated style of construction, wire netting was attached to the roof frame and the branches placed on this. This prevented most of the leaves falling down, instead they formed a dense mat which provided a certain amount of protection from light showers, though it would continue to drip water long after the rain had gone.

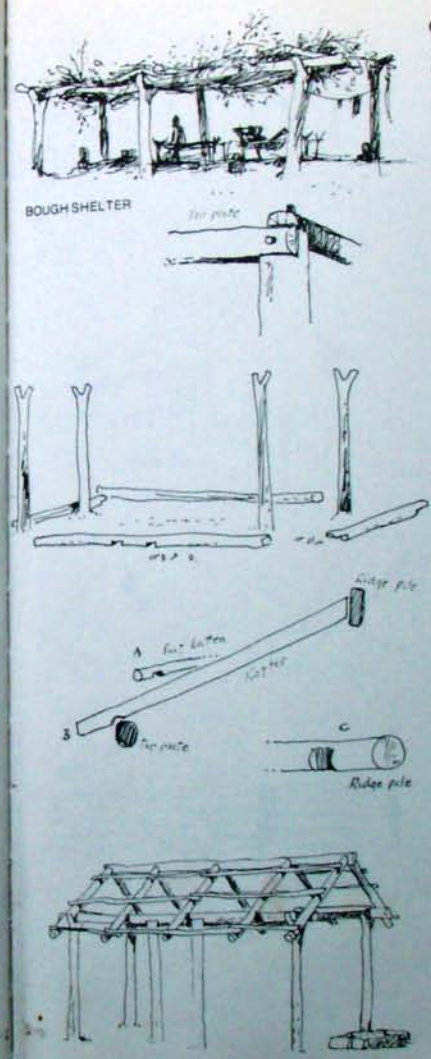
Bough shelters are still found in outcamps on stations. As well as a shelter for the men there is often another one some distance away that is used to dry and salt the meat that forms a staple part of the stockman's diet.

A rough table occupies this shelter, and the meat is covered with coarse salt. As the juices drain from it, the meat is turned and more salt added. There is no need for the shelter to be fly-proof as the salt prevents flies blowing the meat.

At night it is covered with fresh leaves to prevent dew dripping on it, and in a short time it becomes rock hard and almost indestructible as long as it remains dry. Stockmen say that well salted meat will keep for months — some tall stories are told about it keeping for years (or are they tall stories?).

When needed, it is prepared by being cooked with sufficient changes of water to remove the salt. If this is done correctly the finished meat does not differ greatly from fresh meat when used in a tasty stew.

Beds in bough shelters are often suspended from lengths of fencing wire from the roof rather than standing on legs on the ground in an effort to beat some of the insect pests.



CONSTRUCTION OF A BUSH HUT

Although there are dozens, if not hundreds, of ways of constructing the frame of a bush hut, the following is a fairly common method. Once this is completed the walls can then be filled in with bark, slabs, logs, or even earth or wattle and daub.

First, posts are sunk into the ground. One favourite method is to select posts with a fork in them to hold the top plate, but if this is not possible then they may be fitted together as shown in the smaller sketch. In this case the top plates can be secured with pegs, iron spikes or a binding of wire secured with the inevitable Cobb & Co hitch.

Note that the front top plate is housed while on the ground to take the door posts. The top plates for the end walls are also trimmed to fit at this stage.

With the uprights all in position and the top plate fastened on, the rafters are now cut to length, and have a triangular section, known as a bird's mouth, cut from them at the point where they meet the top plate (see B).

The ridge pole is also trimmed up. If it is good timber for working then it may be split to a rectangular cross-section. If not, then a housing is cut for each rafter as in C and the rest of the timber left in its natural shape.

If the hut is to be a wide one, then the ridge pole will often be supported at each end by two poles set into the ground, but this is not necessary if the rafters are firmly fixed to the top plate as they will then work together from each side to form a jamming action which will support the ridge pole. The angle of the rafters also causes the walls to be pushed out and to prevent this the top plates at each end have to be securely fastened.

The roof battens, which support whatever material is to cover the building are added now and these are usually housed so as to make the top surface as level as possible — thin battens will have little housing and large pieces will have a lot.

The hearth may also be added at this stage, and then the house will be ready for covering.

Here is another type of hut framework noted near the Queensland and Northern Territory border (next page, top). This homestead was built with a deep verandah all the way around it. It is built in much the same way as that described earlier.

BARK HUTS

The old bark hut immortalised in the verse of that name was very common in the early days of settlement. The example in the sketch, next page, second from top, dates from before 1914. If properly constructed it provides a simple, easy way to make a dwelling that is waterproof and lasts for a good many years.

Both walls and roof are made from bark. In fact the whole building is constructed from materials available in the bush around the site. Even nails are unnecessary, though fencing wire can be incorporated if it is available.

Suitable lengths of bark are peeled from the tree and flattened as much as possible. Sometimes stones are placed on them and this suffices, at other times they can be passed across a fire to make them more supple and then weighted down to flatten. If the builder is lucky he may find bark that can be used just as it is peeled from the tree.

For the walls saplings are used as cross battens to hold the bark in place. The common roof construction is both simple and ingenious, relying on the weight of the logs shown in the sketch to hold the bark firmly in place.

Logs are pegged at one end to form a V shape which is put right over the roof, as shown on the right. The lower legs of these Vs are in turn pegged to heavy cross members as shown on the left. If a verandah is added to the house, further cross arms are used and pinned in the same way. This can be seen in the sketch of an earth walled building at Hill End in the section on wattle and daub.

LOG CABINS

The log cabin was the trademark of the American pioneer, but it was not so common among early Australian settlers. The simple reason for this was the lack of abundant quantities of suitable timber. However, where timber was available the log cabin would be found.

The example in the sketch dates from before 1914, and was drawn from a photograph taken at that time.

It appears that light for the interior is provided not by windows but by leaving a gap between the logs instead of sitting them firmly together. In the more representative form of log cabin the joints between the logs are made as tight as possible, and then plastered with a layer of clay.

The logs are held in place near the doorway by short sections of notched timber. The door jams may be nailed to this, but more than likely they are held in place by a tightly fitting lintel as shown in the sketch, below, and a similar timber at the bottom of the door.

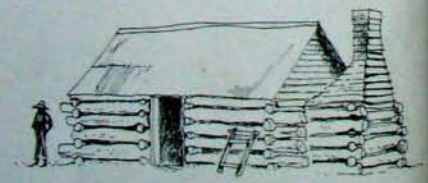
The chimney is constructed of logs, and these are given a heavy plastering of clay on the inside, or perhaps lined with iron.

In this case clay was most likely used, as the use of weatherboards for the top of the chimney indicates that flat iron was not plentiful when the hut was constructed.

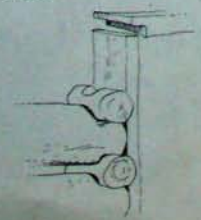
The object leaning against the wall is a saw clamp, and construction details for one of these is given elsewhere in this book.

Old Cavalier homestead

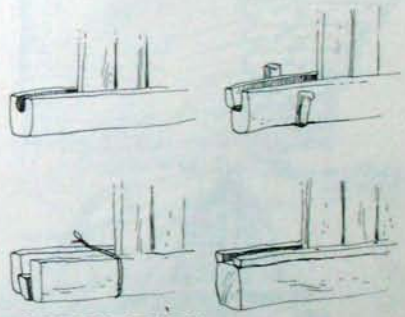
BARK HUT



LOG CABIN

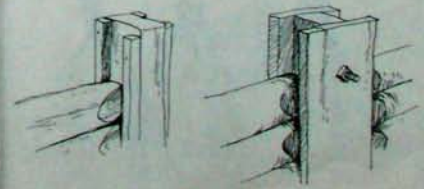


SLAB HUT



SLAB HUT CONSTRUCTION

HORIZONTAL SLAB CONSTRUCTION



METHODS OF HOUSING HORIZONTAL SLABS

SLAB HUTS

The pioneer's first building was usually a bark hut, but once he began to get established he built a more substantial type of dwelling. Frequently the second building to be erected was a slab hut, of the type illustrated, which was built prior to 1914.

The pioneer obtained his material by sawing trees into convenient lengths, and then splitting them into slabs with the aid of a sledge hammer and large steel wedges.

If sufficient lengths of timber could be obtained from the available logs then the slabs were used in a vertical position. They were bedded into the top and bottom plates in a variety of ways.

Although the groove cut directly into the timber looked the neatest method, in fact it was not the best as it acted as a gutter to hold rain water. A half groove allowed the water to escape.

Three timbers wired together were quite satisfactory, and another favourite method was to rest the slabs on a stout bottom plate and nail a rail on each side to hold them.

HORIZONTAL SLAB CONSTRUCTION

If the available timber was not easily split into long straight slabs then short ones had to be used and these were generally laid horizontally. The hut in the sketch was one from the Northern Territory and shows the characteristic push-out iron windows.

Although the upright posts were sometimes housed to take the ends of the slabs, the method shown in the sketch was an easier solution. The second method was also used.

WATTLE AND DAUB

There are frequent mentions of wattle and daub huts in early Australian writing, but the method seems to have fallen out of favour, while other ways of building with earth such as adobe bricks and rammed pise walls are still in use. The method seems to have been popular in Britain, but perhaps the lack of sufficient quantities of straight sticks readily available in the Australian bush caused the decline and eventual abandonment of this simple style of building.

The sketch shows a house at Hill End in 1872 with wattle and daub walls and a bark roof. I have also encountered various small outbuildings in the back country where the same method was used.

Once the uprights of the building are in place small straight sticks (or 'wattles' as they are known in Britain) are put in place. These may be nailed to the uprights, or attached with wire as shown in the sketch.

Another method is to slide them into a slot, and this allows more sticks to be used. Soil with a high clay content is then watered and trampled until it is worked to a plaster-like consistency. If it has a very high clay content straw chopped to around 150 mm can be added, otherwise the slurry is applied just as it is.

The sticks act as a support for the clay, and once the first layer has dried, further layers can be supplied if needed. The method is much faster than either adobe or pise, and needs far less soil, the walls generally being only half as thick. However, they are liable to show signs of cracking and flaking if bumped heavily, while the other forms of earth wall construction are fairly immune to damage.

THATCHED HUTS

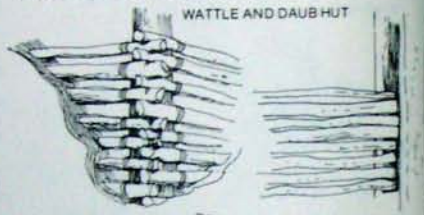
Up till a few years ago thatched implement sheds were not uncommon in the drier parts of Victoria and South Australia, and doubtlessly a few of them still exist. As a method of roofing it has all but died out except among the communes in North Queensland. The sketch shows a hut built by some friends of mine at Kuranda, and at one time there were quite a number of thatched huts along our beach until the council came and pulled them down.

Any sort of grass is suitable as long as it is long and plentiful. It is cut into convenient handfuls and tied together. Usually string is used for the job, but sometimes a piece of grass is employed.

This is the traditional binder knot used to tie up wheat sheaves in the days when this work was done by hand. A wisp of straw was used for the job.

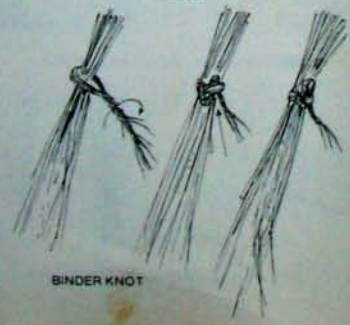
Long sticks are threaded through these bunches of grass, and these in turn either wired onto the rafters or held up by wooden pegs as shown in the smaller sketch next page. Another common method is to tie these sticks to the rafters at the start of the job, and then tie the bundles of grass to them with binder twine or similar cheap material. The threading method is the faster of the two as each layer is prepared on the ground and lifted into place with the minimum of fuss.

WATTLE AND DAUB HUT



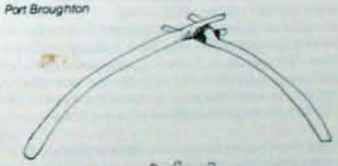
PLACING WATTLES IN POSITION

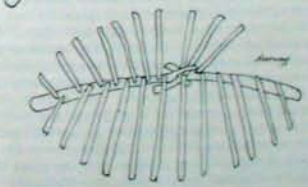
Kuranda

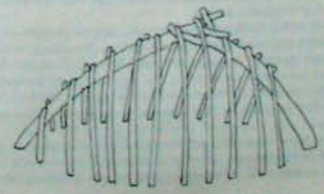


BINDER KNOT

Port Broughton







In dry southern areas a thatched roof will last for many years, but in the wet tropics two years would be considered a very good life.

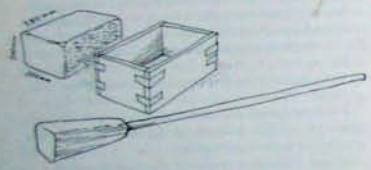
I came across this old thatched building near Port Broughton, South Australia, in 1948. The walls were built with solid lengths of timber set into the sand. They had not been placed with security in mind as the gaps between them were wide enough for a person to slip through. Probably they served to support the considerable weight of the thatch, and to provide some shade while at the same time letting through as much breeze as possible.

ABORIGINAL HUTS

Mention of present day huts being built in the jungle of North Queensland, particularly around Kuranda, reminded me of an early reference to the huts built by the North Queensland Aborigines. These were noted as having been built on a framework which depended on two interlocking forked sticks buried in the ground.

The framework was also set into the ground, and a space left for the doorway. It was then covered with whatever leaves came to hand.

I have also come across an old photograph of northern Aborigines making the same shaped huts but using a different method. Thin sticks are buried in the ground to form a rough oval, and are then pulled together to make the required shape. Other pliable saplings are then woven through the framework, so that no other form of tying is needed. This is then covered with whatever comes to hand, in this case the leaves of the Lawyer palm.



SOD HUT

The source for this sketch was a drawing made around the 1850s on the Victorian goldfields, and it shows a form of hut that was both easy to construct and fairly weatherproof.

It was constructed of mud bricks, though it is impossible to tell whether they were made from puddled earth, as described in the section or adobe building, or from rammed earth.

Because speed of construction would be an important factor with the miners it is quite likely that the rammed earth method was used, as the bricks could be handled much sooner. A form was made up as shown, similar to that used for adobe bricks, but designed to produce a thicker brick (this was because a drier mixture was used).

Soil, only slightly moistened, was put into the form and rammed down hard with some sort of tamper. When the form was lifted off the brick was complete. It would gain strength if left to cure for a few weeks, but for all practical purposes it was used straight away for low walls such as these. The bricks were put together with a mortar made of the same earth.

STONE BUILDINGS

Though stone buildings are quite common in the southern states, for the most part they are the work of skilled tradesmen, men skilled in the art of shaping stone as well as building with it. The bush-made stone cottage is a different thing again.

Ample time and the abundant supply of suitable stone were essential before any such building was attempted. No special skills were required except common sense and the ability to judge the size of a stone by eye to avoid the need to handle a number of stones before finding the right one for a particular space.

The old timers used to say that there was always the correct shaped stone for any odd space if you looked at the stone heap long enough, and when they finally picked up a stone it would fit. The secret of a good wall was to make the large stones support each other firmly rather than rely on too much packing with small pieces to make a good fit.

There were two types of stone buildings, dry stone, where the stones were simply set one above the other, and walls in which mortar was used. Either way the same method of laying was adopted, and the good stone pitcher claimed that a well-made wall should still be able to stand even if the mortar was scraped from between the stones.

This can be seen in practice in some of the old buidings still standing in the Northern Territory. In places I noticed sections of wall where the mortar had almost washed away during the years, yet the rocks still stood firm. In those days the mortar used was a lime mortar and did not contain cement as is the case today.

The lime was obtained by burning oyster shells, coral or limestone. Limestone kilns still exist in various parts of the country and people often wonder

what they were used for. I visited a lime burning centre at Ootann, west of Cairns, some time ago to see how the process is carried on. The methods used here are the same as a century ago, in fact this is probably the same method that the Romans used.

Deep pits are sunk into the top of a hill, preferably near the edge of a cliff. These may be around twelve metres deep and perhaps two metres diameter. The sides are bricked up. At the bottom of the cliff a drive is put in to get at the bottom of the pit.

A layer of logs is now put into the pit and then a layer of limestone, then more logs and more stone, and so on until the pit is full. The whole lot is then set alight. As the wood burns away the level of the pit is lowered, and more stone and timber is added from time to time to keep it up to the level.

The lime thus produced is taken from the bottom of the pit. In the one that I visited the operator pushed a small trolley into the side of the hill until he was directly below the pit, the bottom of which was closed off. He slid a small door open and the lime tumbled into the waiting trolley.

This was then tipped into a heap outside where unusable clinker and any stones or unburnt timber were sorted out. The rest was ground up into fine powdered lime.

Before the lime was used to make mortar it had to be slaked. This meant throwing it into a container of water, where it was left for some hours. This slaked lime was then mixed with sand, three parts of sand to one of lime, to make mortar.

According to one builder this mortar was then ready for use, but another source claimed that it should be left for three days before using. It will keep for up to a month if wet bags are kept on the container to stop it drying out. Present day builders will add ten per cent of cement to the mortar before using it for a stronger job, but the old timers used it just as it was, and the fact that most of the old buildings still standing in our cities are built with lime mortar shows that it was the right material for the job.

This difference in mortars explains why bricks from old buildings may be readily cleaned and reused, while bricks from modern buildings are sometimes impossible to clean without breaking the brick, which is often softer than the cement used as mortar.

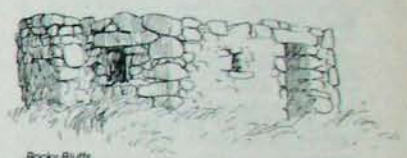
The ultimate failing point of most stone buildings in the bush was above the doors and windows. The bush stone worker did not have the knowledge or skill to make a keyed arch which was self-supporting, but instead relied on a stout piece of timber for a lintel (unless he was lucky and found a sufficiently long stone).

Once the house was neglected weather and white ants would combine to weaken these wooden lintels and eventually bring down the section of stone that lay above them.

A good example of dry stone wall was found at a deserted mining town called Rocky Bluffs. This was famous in North Queensland as being the only town in the country that had never had a wheeled vehicle through its streets. It was built in a gorge carved out by the Walsh River, and all supplies used to come down on a steep railway line, the trucks held back by stout wire ropes connected to winding gear in the hills above.

Nothing remains of the town now except for the ruins of the battery and this stone cottage. The walls are still sound, built with massive rocks, but the roof has long since gone.

At Arltunga, not far from Alice Springs, there are the remains of a number of stone cottages dating back to the mining days. Roofs, doors and windows have all gone, but for the most part the stone work is still in very good condition and a credit to the early builders. These cottages were made of local stone set in mortar.



Rocky Bluffs

Arltunga

STONE AND TIMBER BUILDINGS

This unusual building, known as Lagoon House, is on Gunnawarra Station in North Queensland. The lower parts of the walls are built with volcanic rock collected nearby. The upper walls are of bark, and the uprights of bush timber.

This is quite a practical method of building, the stone giving the building strength and stability where it is most needed.

STONEWORK IN COURSES

The trained stone mason had the skill and ability to trim his material to a regular shape and lay it in courses in the same way as brick walls are constructed. The bush builder had to use the stones as he found them, which meant that his walls had no regular pattern

One of the few exceptions is this stone hut on Rosella Plains Station in North Queensland. Close to the homestead is an unusual hill composed of basalt columns. These have a natural six sided formation and average 200 mm diameter. Because of the almost standard size of the columns they can be used in much the same way as ordinary bricks and in this hut they have been placed so that the columns in each row are at right angles to the one below it.

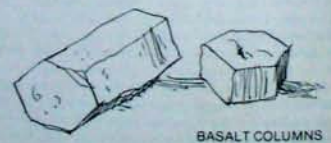
CHIMNEYS

In cold climates the emphasis was always on warmth. Look at this South Australian cottage of pre-1914 vintage; the thick walls, small windows and rear door, and the enormous chimneys which take up most of the back of the house and would have required as much construction material as the rest of the walls combined.

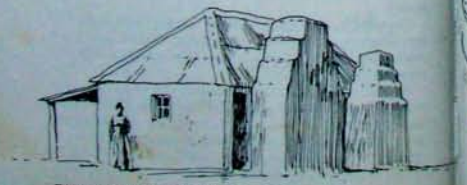
Here is another very large chimney, this time in a miner's cottage on Mount Spurgeon in North Queensland, next page, top. Although in the tropics, the climate on top of the mountain is frequently bitterly cold and often very wet.

Because of the need for ample warmth the fireplace occupies the entire end of the cottage. A row of stones has been laid across the floor and sand poured behind this to make a raised hearth. A large boulder acts as a sort of reflector behind the fire.

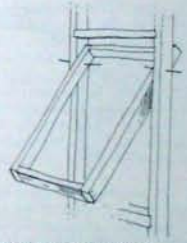
Because timber is plentiful no attempt has been made to insulate the cottage, which is made entirely of corrugated iron with an opening in the roof, slightly raised, to allow the smoke to escape. Instead warmth is achieved by using large quantities of firewood. Logs of two and half metres can be manhandled in and laid on the hearth to slowly burn away.



BASALT COLUMNS



EARLY SOUTH AUSTRALIAN COTTAGE



FRAMEWORK FOR IRON WINDOWS

IRON BUILDINGS

Houses built entirely of corrugated iron nailed to a light timber frame are still very common in North Queensland. They are extremely practical for the climate, but are generally the bane of local councillors who invariably aspire to make their districts conform as much as possible to the taste of the southern states.

I recall a building inspector telling me about a large number of these iron cottages around a seafront settlement near Mackay. Over the years the local council, infuriated by their rusty non-conformance to the middle-class ethic, had tried in vain to think of a legal way of removing them. Came a great cyclone and it seemed that the council's prayers had at last been answered.

The building inspector was sent to report on the damage, and returned to tell a dismayed council that the tin shacks were all safe and well, but many of the newer houses had been blown away!

As he pointed out to me a house built with walls and roof all of corrugated iron is almost impossible to pull apart let alone blow apart.

The traditional North Queensland house had not only iron walls and roof, but even iron windows! When they were closed the house presented a blank surface which was quite weatherproof. They were hinged at the top, sometimes with large strap hinges, but often by boring a hole through the wall studs and pivoting the window on a length of iron rod.

When opened, they were simply supported with a stick. The house in the sketch was on the beachfront at Flying Fish Point, and was unusual in that the complete end wall hinged up in two sections.

Another tropical solution to the window problem was the wooden louvre, and these are still commonly found on old houses in the north. They provided light and ventilation as well as being cyclone and vandal proof.

They were made of lengths of timber 150 mm by twenty-five mm. The timber mills used to run off timber specially for this purpose with rounded edges, or the builder would round them off himself with a spokeshave or drawknife.

The heads were sawn off galvanised roofing nails, or galvanised ordinary nails if these were available, and these were hammered into the centre end section of each louvre. Side timbers were then cut to shape, these were fifty by twenty-five mm with a hole drilled every 150 mm to take the louvre nails. A galvanised washer was placed between the louvre and the side timber.

The window was assembled on the floor and the whole thing lifted into place where it was secured to the wall studs with screws. Eyelets were then screwed into the centre top edge of each louvre blade, and another set of eyelets screwed into a length of twenty-five by twenty-five millimetre timber at 150 mm intervals. These eyelets were then partly opened, fitted over the ones on the louvres and closed shut.

Unfortunately, I have always found it impossible to obtain either brass or galvanised eyelets. The ones

obtainable are 'brassed', which means they are iron with only the thinnest of brass coatings which soon corrodes off in the moist tropics. Replacement of these eyelets is the only maintenance needed with wooden louvres.

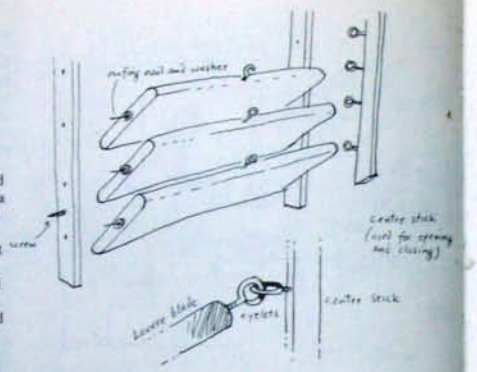
WATER TANK ROOFS

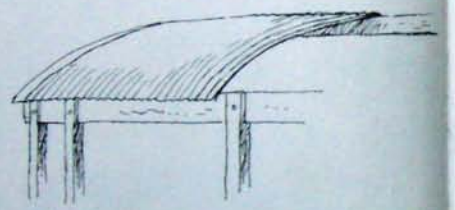
Many of the early pioneers and miners hit upon the corrugated iron water tank as the answer to their roofing problems. It required no rafters or ridges and was entirely self-supporting. The only problem with a water tank roof was that the room width was limited to the size of tank available.

Usually only small huts were made in this way, but the sketch shows the homestead at Kalpowar, Queensland, demonstrating how a curved roof could be incorporated into a reasonably sized home.

Curved iron was also used to cover verandahs, and it is surprising that this method has died out. It required no rafters from the house to the verandah plate and yet was probably stronger than the normal verandah of flat iron.

The late Stan Boyd of Cooktown had curved verandahs around his house, and they had stood strongly for close on a hundred years, until a section was blown away one night. Stan had been paying storm and tempest insurance for many years and this was his first claim. However, it takes a lot to shake money from an insurance company, and they ruled that it was not storm and tempest that had blown away his verandah but the trade winds, and there was nothing about trade winds in his policy.





Kalpowar Station

BUILDINGS OF EARTH

In areas where there was no accessible supply of good building timber, or climatic conditions warranted it, the pioneers built their houses and barns from earth. Even as late as 1933, there were still over nine thousand earth wall homes being inhabited in Australia according to the census figures, and there could have easily been ten times as many sheds, barns and similar buildings.

Earth construction was suitable for areas where other materials were hard to come by, but time and labour were readily available. Only simple tools were needed, and the end result was a solid structure that looked good, provided excellent insulation against heat, and would stand for centuries as long as the building still retained its roof, and the walls were reasonably well sealed against direct rain.

Even without a roof, the earth walls would still stand for a remarkably long time. I recall the remains of an earth wall on the side of the Ferntree Gully Road, not far out from Box Hill, that was said to be over a century old. The walls had been exposed to the direct Melbourne rain for fifty years and had washed away to something under half their original height. I think that they were finally bulldozed down.

The most central building in Australia was constructed of earth, and the walls are still standing only a few kilometres from Central Mount Stuart. Mount Esther homestead was built from the red soil of the centre, and although it has been abandoned for many years the walls show little sign of erosion — though of course they will eventually break down under heavy rain.

Earth walls were once common over most of Australia, except for the wet tropics where coolness was achieved by having the maximum open space rather than relying on the insulation of thick walls. With the passing of the pioneer days earth construction went out of favour, though the tradition remained alive in isolated pockets.

The most notable of these areas was Eltham in Victoria which boasts some of the most attractive earth walled houses in Australia. I once had land there, and most of the information on techniques given here dates from that period.

There are two distinctly different types of earth construction. In the adobe method the soil is moulded into bricks and these are laid in the same way as a cement brick house. The second style is called pise, and here the earth is put into a form directly where the wall is going to be and rammed solid.

Once the walls are rendered to make them waterproof it is not easy to tell which method has been employed — that is if a good plaster hand has applied the final render. The Hill End cottage of 1872, above, could have been built either way, though the odds favour pise, as this has always been more popular than building with bricks.

In actual fact the method employed was dictated by the type of soil available. If it was of a heavy clay type then mud bricks were called for and if it was a sandy loam then it would have to be a rammed construction.

Hill End Cottage, 1872

If it was an average sort of soil, as at Eltham, then either method could be used.

The only soil that could not be used were pure clays and pure sand — all the mixtures in between could be used in one way or the other. Today soil testing is an art, but the early builders judged the soil by feel, and perhaps a simple test. A handful of soil would be slightly moistened and formed into a ball, as firmly as possible, and then dropped onto a hard surface.

If it crumbled on impact then the soil was of the sandy type, but if it flattened somewhat before breaking then the soil contained a fair amount of clay. Another method was to simply rub the soil in the hands and estimate the proportion of sand present.

A more accurate method was to put a cup of dry soil in a mining dish, or a washing up dish if a miner's dish was not available, and wash the sample with ample water, in the same way as one panned for gold, until the water became clear. This meant that the clay had then been washed away and the remaining sand could be measured. If more than half the sample was sand then pise was indicated, if it was more than half clay then the adobe bricks would be best.

ADOBE (MUD BRICK) BUILDINGS

Soil containing more clay than sand is most suited to adobe building, though nearly pure clay is not suitable until sand or straw is added. In the Middle East mud walls have been standing for centuries, and they will do so in any climate providing that they are protected from the direct force of the rain.

To prepare the soil a pit is dug and the earth to be used (in most cases the soil that came out of the pit in the first place) is thrown in and puddled. The usual method is to add water and simply stamp around in the mixture until it becomes the right conistency, something like heavy porridge.

If the soil is one with a high clay content then straw should be added to it, and this prevents excessive cracking as the brick dries out. Unlike cement and similar building materials the mud can be mixed up in batches sufficient for several days work if need be.

To make the bricks a simple bottomless mould is used, made from four pieces of scrap timber. The moist earth is shovelled into this and kneaded to remove any air bubbles, and any surplus earth is scraped off with a short piece of timber to give the block a flat surface (needless to say the blocks are made on a clean flat area of earth so that their lower sides are also smooth). The mould is then lifted from the brick and laid down next to it, and another brick is made.

The bricks are not touched until they are dry enough to lift this should generally be about three days. They are then carried away from the casting area and stacked to cure, usually being stood on their edges with space between each brick so that the air can circulate. It generally takes three weeks for the bricks to cure sufficiently to be used.

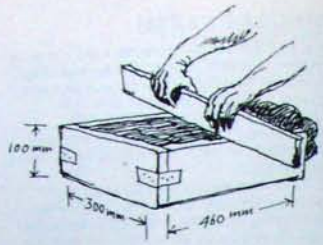
In the meantime the foundations of the house can be dug. The footings can be of cement or rock and cement. If neither is available the walls could be built directly on the ground, but this often leads to the weakening of the wall bases by water erosion, and there is always the possibility of the wall subsiding without strong foundations. The foundations are generally double the width of the finished wall — that is about 600 mm.

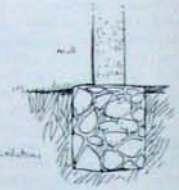
To speed the brick making multiple moulds are often used, allowing a number of bricks to be made at one time.

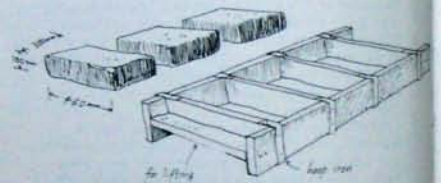
The mortar used to hold the bricks is made from the same mud as the bricks themselves, except that it is put through a sieve in the dry state to remove any stones and rubbish. Small pieces of wood are also set in between the bricks so that door and window frames can be nailed to them at a later date. Often door and window frames are built in as the job progresses.

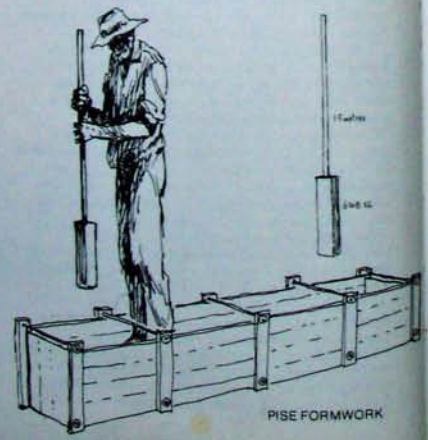
Timber or cement lintels are placed above door and window openings, extending well into the walls to give maximum strength. The top of the wall is usually finished off with a number of bolts sticking up, and these are used to tie on the timber wall plates on which the rafters rest.

If the building is to have wide verandahs then the walls are finished at this stage. If, however, they are

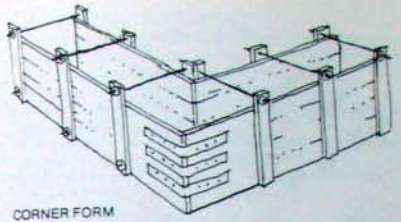




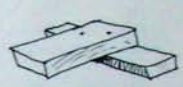




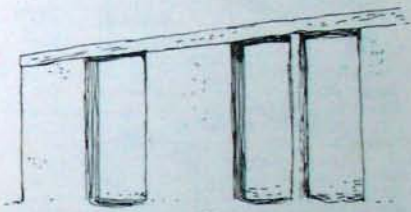
PISE FORMWORK



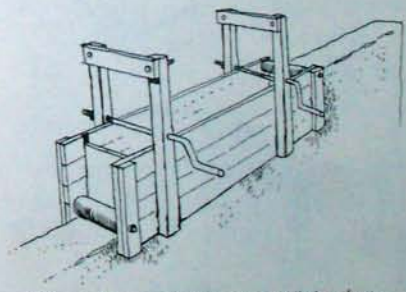
CORNER FORM



SCRAP TIMBER TO SET IN WALLS



BUILDING IN COLUMNS



subject to wetting then a plaster is applied to them. This is generally a cement render, a mixture of one part of cement to either four or six parts of sand and one tenth hydrated lime.

A builder explained to me that he prefers the one to six mixture as being less liable to cracking while it dries. He applies it to the wall with the minimum of handling, and leaves it until it has almost gone off before touching it. If it is trowelled over too soon, it has a tendency to become sloppy and droop off the walls. Sometimes, if he has left the mixture too long, he has to flick water onto it with a brush in order to get the final work done.

PISE (RAMMED EARTH) BUILDINGS

Although the same materials are used for both adobe and pise walls the methods are totally different. Adobe bricks are made by casting a wettish mixture of soil into a brick and allowing it to dry, while in the pise method the soil is only moistened, and is rammed hard directly into the wall.

To make pise walls the builder needs some simple moulds and a hand rammer. The rammer is generally made from a block of heavy wood and a piece of iron rod or water pipe for a handle, the total weight being between six and eight kilograms.

The forms are constructed to suit the individual. Generally they consist of two sides of stout timber with bolts through at the top and bottom to prevent spreading. The ends of the forms should be made so that they can be slid out.

Moist sandy loam is placed in the forms to a depth of about 100 mm and rammed down firmly to about half this depth. When properly rammed, a change in sound should be noted indicating that the section is sufficiently compressed. If the mixture is too wet it will rise in another area as the compression takes place.

A separate form is used to make corners, as it is obviously essential to get maximum strength at this point and this can only be done by ramming the corner in one unit.

As the walls rise small pieces of timber are placed into the forms to be incorporated into the walls. Door and window frames and suchlike are screwed or nailed to these later (see small sketch second from top).

One method of building in vogue around Eltham was the construction of columns instead of long walls. A form would be built after the style of the one illustrated at bottom of previous page and closed off at each end. This would be used to make as many columns, all of the one width, as needed. A cement beam was cast above to tie them all together and doors and windows were fitted into the spaces left.

Because there was a lot of earth wall construction in the Eltham area it followed that there were many innovations and improvements in techniques. In this type of form work for instance at left the form is rolled along the wall as it is completed, instead of having to remove the bolts and assemble the form again as happened with the form shown earlier.

Three pieces of timber are bolted together to make a clamp, and a piece of pipe or rod is threaded and bent to form a handle. As the handle is turned it tightens the form work onto the wall below it. The soil is then placed in and rammed as usual, then the handles are turned to release the tension, and the whole form rolled forward along the newly made section.

When the walls are completed they are rendered with a cement mixture as mentioned in the section on adobe.

A common practice among country people where cement was not available was to seal the walls with a mixture of wetted cow dung. Contrary to expectations

this did not smell when dry, and gave the walls a varnished appearance.

Walls are also made more water resistent by the application of linseed oil, usually followed by whitewash. Rammed earth is also used for floors if stone paving or cement is not available. In the north floors are made of compressed termite mounds, which provides an excellent surface.

I recall my father saying that in parts of the Northern Territory bullock's blood was poured onto these floors and it combined with the termite nests to form a hard, almost black, topping.

Pise walls are finished at the top in the same way as adobe. One method is to drill holes into pieces of scrap iron of about the size of one's hand. These scraps are fitted onto long bolts to act as anchors, and the bolts are set into the top of the wall. The timber top plate is then screwed down onto the bolts, and the roof is fitted on in the same way as with an ordinary timber building.

SHINGLE ROOFS

Bark was the earliest roofing material, but when buildings became more permanent something more lasting was sought. Tiles of split slate were used when they were available, but for the most part the builder split shingles from timber.

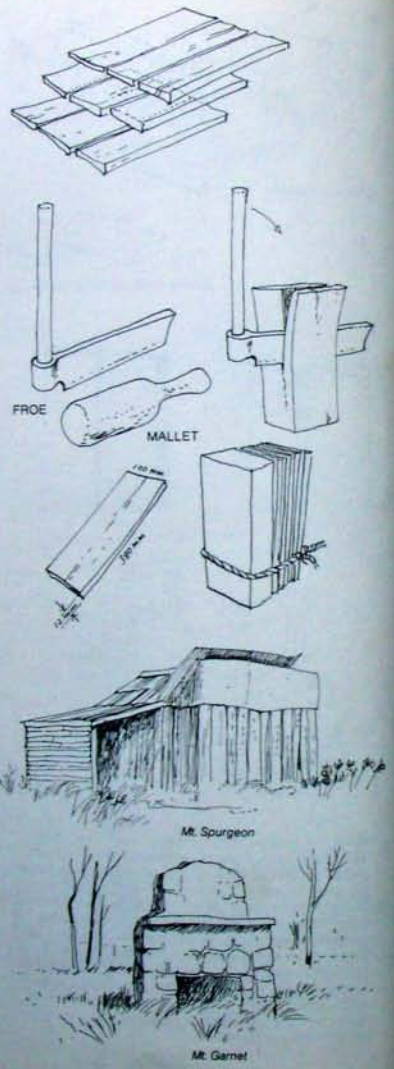
The type of timber varied from one area to another; anything that would split in a satisfactory manner was utilised. The shingles were relatively long in relation to their width because more than half their length was out of sight under the layers that were placed above. The aim was to lay the shingles so that the top end was placed far enough up to be protected by the leading edge of the next but one layer, as shown in the sketch at top.

The thickness of the shingle depended on the type of timber used, as well as the skill of the person splitting it. The pioneers used whatever tools were available for the job, the most common being an old axe head struck with a hammer. If a large number of shingles were to be prepared every effort would be made to obtain the correct tool, or have a local blacksmitth make one up.

This tool was known as a 'froe', and consisted of a long blade about 450 mm with a handle of similar length. This was struck with a wooden mallet, usually of the shape shown, and made from any local dense hardwood.

The block of wood to be split was stood on end, and the blade of the froe driven into it by striking the end of the blade, while controlling the direction of it by the handle. When the shingle maker judged the blade to be far enough into the timber, he would pull the handle towards himself as shown in the sketch, thus splitting off a shingle.

Sometimes the slab of timber would be tied with a piece of rope towards the bottom. This would allow it to stand upright until the whole of it had been split. My informant said that this method would only work with extremely clean splitting timbers, rarely found in actual practice.



FIREPLACES — SLAB AND TIN

Here is another example of the fireplace dominating the house opposite page, second from bottom. In this miner's cottage on the top of Mount Spurgeon, Queensland, the fireplace is the most important feature of the house. It is built from slabs and topped off with a chimney of tin.

Inside the timber was protected by being lined with a drystone wall of rock, and the hearth, which stretched from one side of the hut to the other, was raised 300 mm from the floor level.

STONE FIREPLACE

Although the early settlers were forced to construct their fireplaces out of anything suitable at hand, the stone fireplace always remained the favourite. It could be built up of dry stone, but was generally plastered in some way to avoid too much loss of heat. Any kind of stone was used, the only exception being round river stones which were tested by building a fierce fire around them.

Quite often these stones explode violently when heated and so it was always considered wise to test a few samples first. The same thing applied to the use of round river stones for lining a camp fire. I have been caught this way, and it is surprising how far and fast the fragments of exploding rock will travel.

Not far from Herberton, Queensland, I encountered a deserted house in which the kitchen had been constructed around the fireplace rather than the other way about. A few metres from the back of the house was a large granite boulder standing out from the side of the hill, and the kitchen had been constructed against it, so that it supported the roof and provided a good reflecting surface behind the fire.

The stone fireplace in the sketch opposite page, bottom, is near Mount Garnet. During the last war thousands of soldiers were camped in this area which can be bitterly cold in the winter. All that remains now are dozens of these fireplaces scattered for kilometres through the ironbarks.

MAKESHIFT CHIMNEY

This unusual chimney was noted at Evans Plains, New South Wales, in 1948, and I did a sketch and later an etching of it. The house was in two sections, one of slabs laid horizontally, and the rest of either mud bricks or stones with a plaster finish.

The chimney was of slabs with tin above that and surmounted by an old milk can.

Furniture

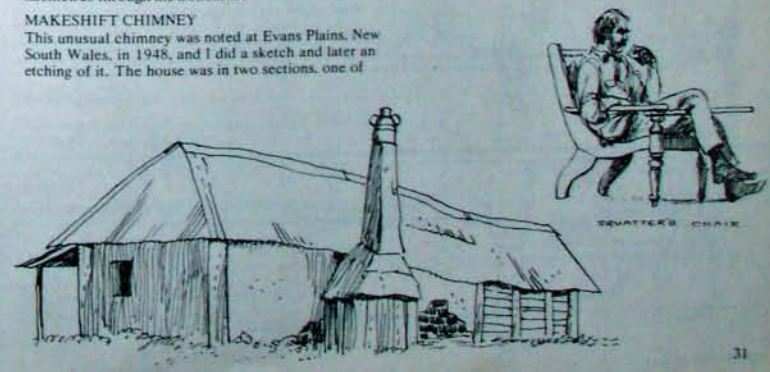
SQUATTER'S CHAIRS

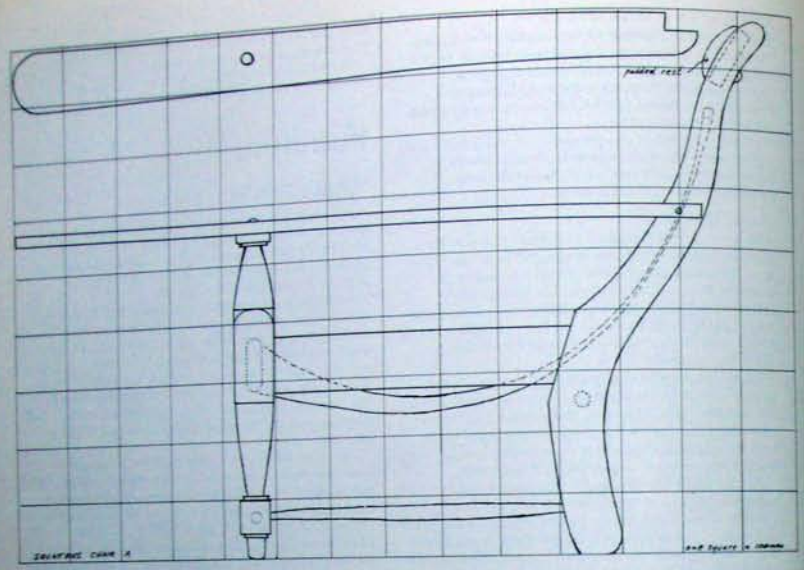
A few years ago every home in north Australia would have had at least one squatter's chair on either the back or the front verandah. This traditional style of chair was developed as one of the best answers to comfort in a hot and sticky climate.

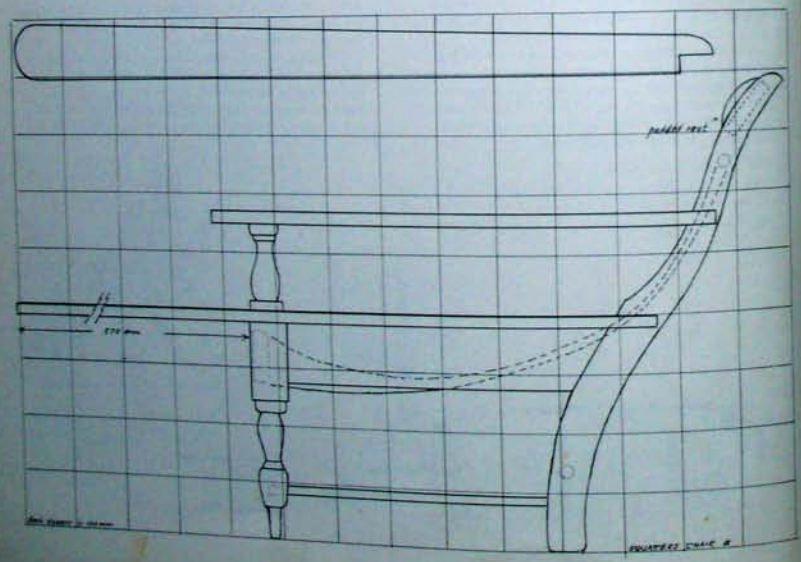
Although there are many variations of design, the typical chair always has three points in common. The most striking of these is the leg rest which sticks out from the chair for quite a distance. This allows one to rest ones legs out on it, and thus get the most contact with the air. In some chairs this rest pivoted around the front leg of the chair, allowing it to be folded back and out of the way when the chair was not in use.

Also the chair had a canvas back for maximum coolness. Various methods were employed for holding this in place. If only a single thickness of material was used then movable rods were slipped through loops in the material to lock it in place at the back of the chair, and a couple of turns around the front bar were sufficient to keep that rod in place. A simpler method was to use a double layer of material and have eyelets put into it, a piece of cord then pulling each end together to the correct tension.

The third characteristic had no practical function, but was purely traditional, and this was that all chairs had turned or shaped front legs and plain back legs. Even the roughest bush-made squatter's chair seemed to have a round front leg, even if it was only a natural







piece of untrimmed tree branch.

Chairs A and B are typical examples of the North Queensland squatter's chair. They were rescued from the Cairns rubbish dump by Stormy, one of my models. A appeared to be much older than B and shows stylistic differences, being taller and having the foot rest up much higher, as an extension for the arms.

The front legs are of simpler design, while I feel that the back legs have a much more graceful curve than those shown in B, though they would have required much wider planks for their construction.

Chair B is a much more genteel piece of furniture and lacks the rough pioneer grace of the older chair. The arm rests are lower down, for more dignified sitting, but for some reason they are considerably longer. Both chairs are built without any screws or nails, the whole assembly relying on good fitting of the pieces. There is one screw used at the back of the arm rest in chair A, but this is most likely a later repair job. Further along this arm rest it will be seen that the dowel that holds the front leg in position has a domed head raised above the level of the timber.

Squatter's chairs are still being made, and good examples of old ones are common in second hand shops in the north, but the introduction in recent years of cheap aluminium outdoor chairs has sounded the death knell of this unique style of tropical furniture.

DECK CHAIR

This simple non-adjustable deck chair was one of a group that stood outside the old Coolgarra pub. Because of the angle of the back it was also remarkably uncomfortable.

THREE LEGGED STOOL

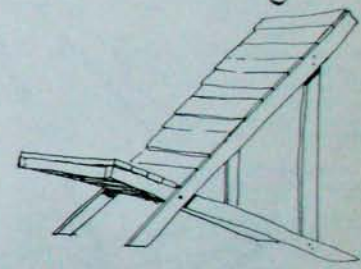
This type of stool may still be seen on the verandahs of many station homesteads. Any suitable piece of branching timber forms the legs and the seat is made from a slice of log. They may be pinned with dowel through the top, as in this example, or screwed through from the bottom.

BUSH CHAIR

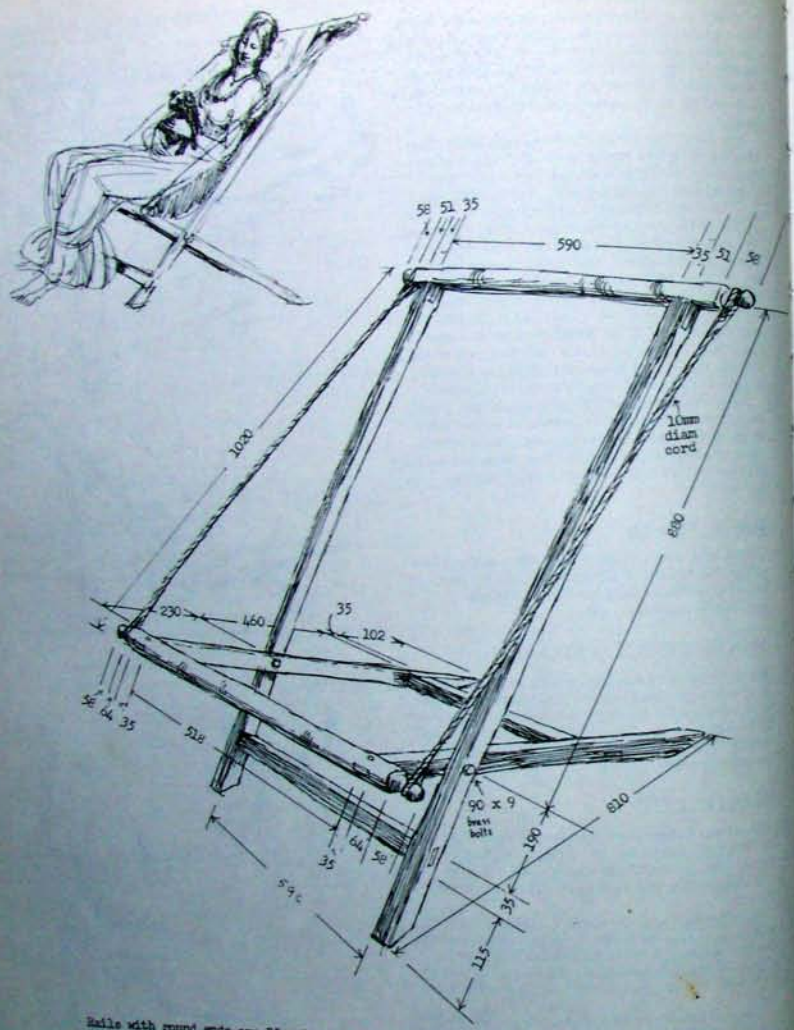
This unusual chair was found leaning against the wall of Dick Rumming's hut in the mining area of Kooboora, some 145 km west of Cairns. Unfortunately it has since been stolen by a passing tourist.

Its construction is ingenious, combining comfort with simplicity. The frame is simply a selected forked branch, supported by the wall of the hut. A rod is threaded through the bottom of a wheat bag and the top of the bag tied around the narrow section of the fork.

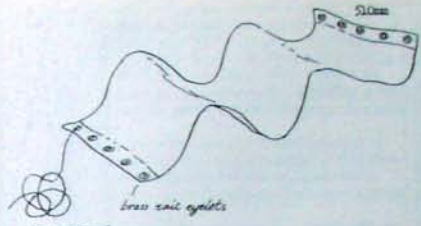
It seems that this construction was not uncommon. The late Bill Davidson, said that he had encountered the same idea on Northern Territory stations but with greenhide for the seat and a third leg attached at the back so that the chair could stand by itself. Jack

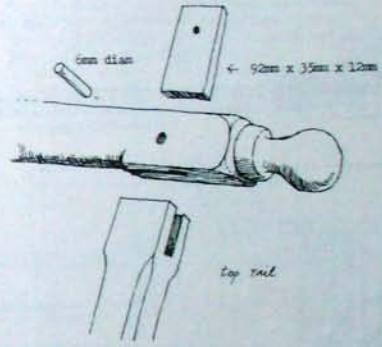


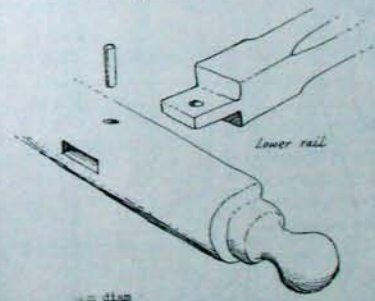
BUSH CHAIR

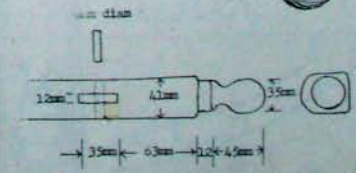


Rails with round ends are 35 x 35, others are 35 x 41
(all measurements in mm)









Lower rail front and side

Crossland, now manager of a cattle property, had this to say about them:

'You would select a good forked branch, and you'd mortise a crossbar about eighteen inches from the bottom, and another one across the top, put the bullock hide on it and lace it up all round, and prop it against a wall. You do this when the skin is green and it gets the shape of your body. It's the sort of chair you can carry anywhere.'

YONGALA DECK CHAIR

The night was dark and stormy,
The Yongala sailed on her way,
The passengers all were sleeping,
They would be in port next day,
But nobody knew the danger,
That threatened on every side,
A crash and a cry, all is over,
The Yongala beneath the tide.

Thus an old song mourns the loss of the steamer *Yongala* which sank with all hands during a cyclone off the Queensland coast early this century.

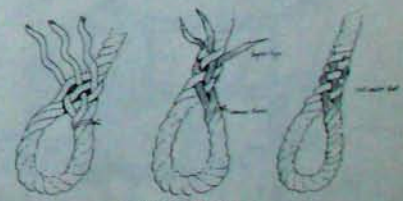
Billy Lees, who died in Cairns some years ago at the age of ninety-one was only a lad at the time, and his father was a lighthouse keeper. When the cyclone had passed, young Billy went exploring along the coast near the lighthouse and found a deck chair, which he identified as having been washed from the deck of the steamer.

It is of unusual design, of a type not encountered today, and had obviously been made by hand, each of the knobs on it being of slightly different shape.

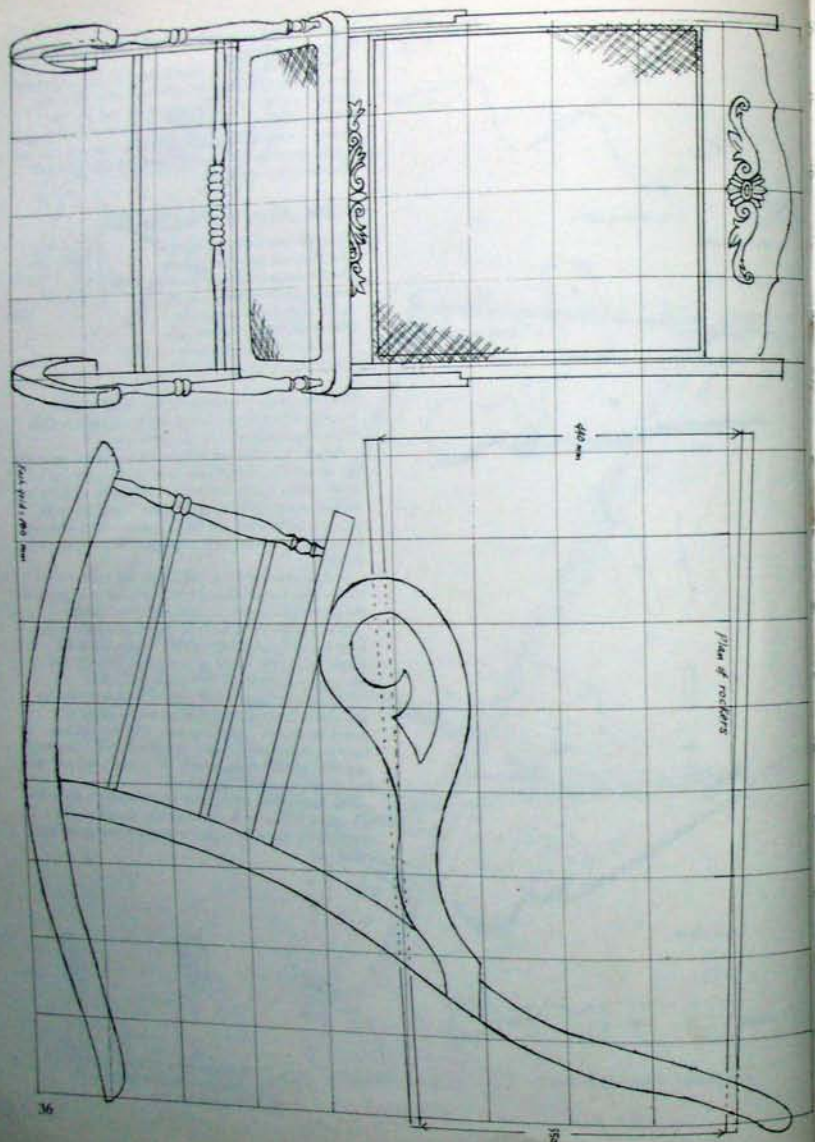
It was made collapsible by means of a rope with a loop at each end, which could be slipped off the knobs, though it would never fold completely flat. The seat was of canvas with brass sail eyelets.

The timbers were made firm by means of mortise and tenon joints pinned through with a piece of dowel, as shown in the diagrams. The top rail was fixed in an odd way, with a separate tenon. It is likely that this rail had been broken off at one time, and this was the method used to repair it.

The supporting ropes were finished with a sailor's eye splice as shown in the sketches, the eye being only just big enough to pass over the knob at the end of the rail.



SAILOR S EYE SPLICE



ROCKING CHAIR

This type of rocking chair was common in Australia early in this century, though the design may well have originated overseas. They were rather beyond the scope of the average handyman, and would have been constructed in the various small joinery shops around the country.

The example shown belongs to Bett Mitchell of Townsville, and was found in a cottage in rural New South Wales. It had stood on the verandah for so many years that the rockers had worn grooves in the cement.

It has a woven cane back seat, and the design on the deck does not stand out in relief but is simply incised into the wood with outline alone. I have shown a plan of the rockers, and it will be seen that they taper towards the back of the chair.

The chair appears to be a little too far forward on the rockers compared to other examples that I have seen, but in actual fact it is quite well balanced and very comfortable to sit it.

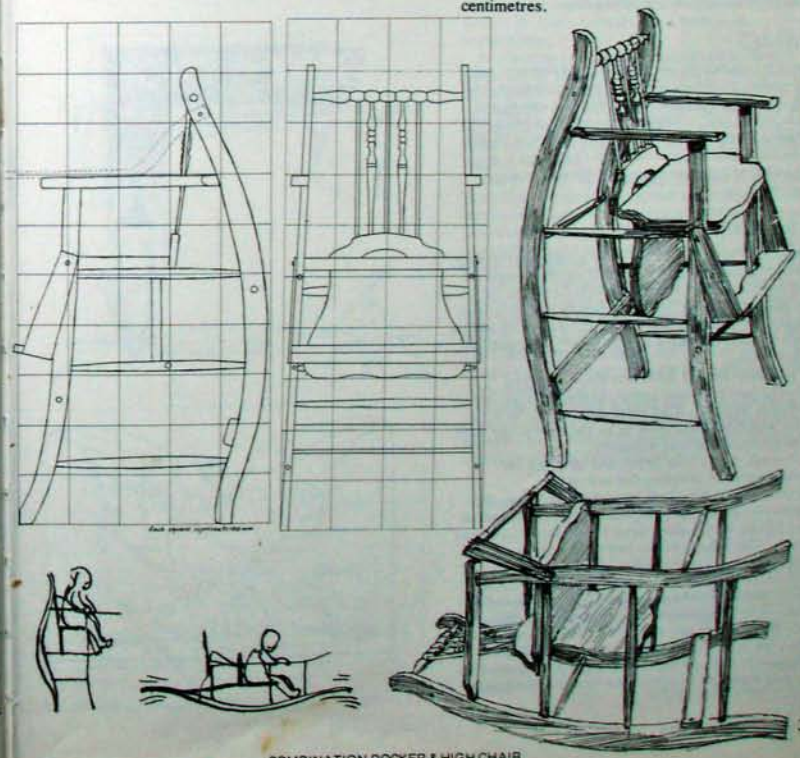
ROCKER HIGH CHAIR

This delightful combination rocker and high chair came from a collection put together by Brian and Margaret Nelson who had once owned a second hand furniture business at Stratford, North Queensland. When upright, it was a conventional high chair, laid on its back it instantly became a rocking chair. This was achieved by curving the back legs into rockers, and providing an additional fixed seat at right angles to the normal one.

Brian Nelson said that this type of chair was unusual but not rare. Over a period he had handled perhaps half a dozen in his business, but this was the best example. It appeared to be old, but in very good condition, except that it lacked the tray.

I have shown the original position of the tray by dotted lines in the side elevation. This would have been locked in place with a pin when the chair was used as a rocker.

The plan and elevation given here have been laid out on a grid, each section measuring ten by ten centimetres.



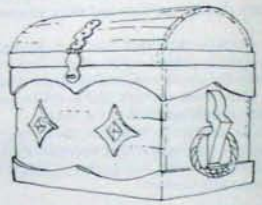
COMBINATION ROCKER & HIGH CHAIR

CARPENTER'S CHEST

The older generation of carpenters always built their own tool chests, and a similar type of chest was also used as a sea chest on the sailing ships. As well as being a useful storage place they also come in handy as a seat. I have noted quite a few examples of these chests, and the one illustrated is typical.

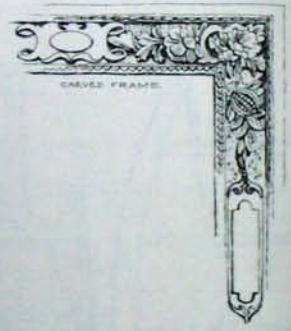
As will be seen it is attractive in appearance, and of simple construction consisting of a box made of light planks and bound around by three sturdier sections of fifty by twenty-five millimetre timber. There are also two lengths of similar timber nailed underneath to keep the base off the ground. The iron handles have also been made by hand, and on other examples rope and timber handles have been noted.

The next chest was built after the traditional pattern of the sea chest, with rope handles and curved lid. As far as I can discover the curved lid was developed because it was much stronger than a flat lid using the same thickness of timber, and also because it would shed water much better than a flat lid, an important feature in the old sailing days.



FRAMES

Frames for paintings, photographs and mirrors allowed the craftsman scope for his imagination, and many curious pieces may be found. The one shown here is a very fine example of carving by a small town craftsman. It came from a hotel in Herberton, North Queensland, and was carved from white beech, a local rain forest timber renowned for its carving properties.



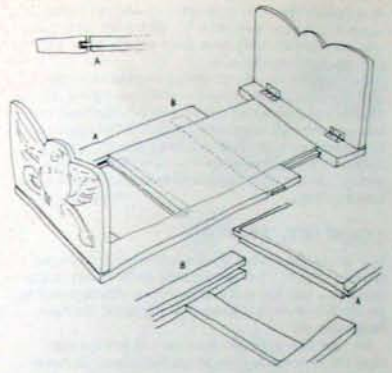
CARVED BOOKENDS

During the 1920s and 1930s there seems to have been a revival of interest in the use of Australian motifs in wood carving. This even extended to commercial mass produced items, and most people will have seen examples of the once common kitchen chair bearing a kangaroo (and was there also an emu?) embossed on the back rest.

The quaint carved bookends illustrated here probably date from this period, though they are not marked in any way. They were given to me by a friend who had found them in an old shed at the back of the house in which he was living.

They are made from cedar, and although the carving is a little primitive the rest of the workmanship is well done, and shows the signs of a competent tradesman. The ends are fitted with small brass hinges which allow them to fold down for easier storage. The base is in two parts and may be slid apart to allow for more books.

These sliding edges are tongued and grooved, the groove being of the normal kind and running full length. The tongue however is constructed differently, and I have shown this as A in the three sketches. When the board is pulled out to its furthest extent the small under strip of timber shown in A is stopped by the strip shown in B and this prevents it coming apart.



BUSH BEDS

The Australian bushman seems remarkably indifferent to sleeping comfort. On a recent trip searching for Aboriginal cave paintings our party came one evening to a small spring and decided to make camp. I shared my small camp fire with the stockman who was in charge of the horses, and after the evening meal I fussed around clearing a patch of ground of sticks and stones, and making it as level as possible for my sleeping bag.

In the meantime my companion squatted by the fire and chatted to me. When it came time for bed he simply lay down where he was, paying no attention to the uneven ground, stones and sticks. He had no blanket, and slept fully dressed, even to the extent of still wearing his spurs! He explained that it was hardly worth the bother of carrying a blanket on the horse as we were only out for a couple of nights.

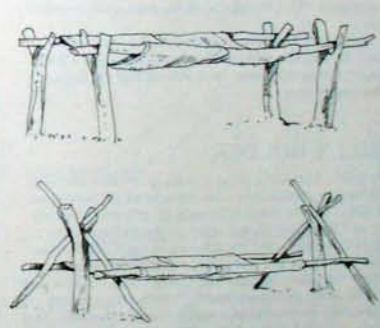
Ringers always sleep fully dressed when droving, in case they have to get up and stop a rush in the middle of the night, and as a result they always sleep roughly. However, in a permanent camp some attempt will usually be made to make life a little more comfortable.

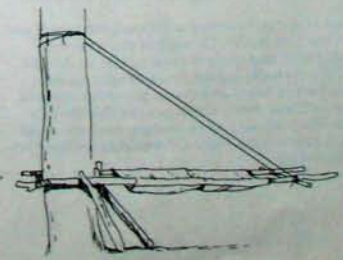
A common bush bed is constructed by simply burying four forked sticks into the ground. Poles go to these sticks, and bags are threaded through the poles to complete the bed. As the bags sag the beds become uncomfortable, and grass may be added to them to build them up a little, or the sleeper may graduate to a sliding pole bed.

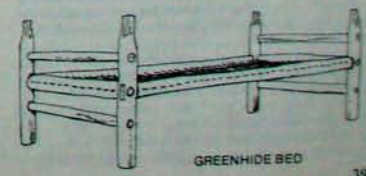
The principle of the sliding pole bed is that the long poles that support the bags are supported in turn by two pairs of poles arranged in the shape of a triangle. The sleeper's weight tends to force the long bag supporting poles down on this triangle, which in turn makes the bags spread out more instead of sagging.

There are variations on this principle, but the one shown here was of a type common on the Ebagoolah gold field of North Queensland around the turn of the century. Two forked sticks were buried in the ground and a pair of smaller sticks laid against them to form the triangle. The long poles for the bags rested on these sloping sticks.

I noted this rather strange bed while travelling in the Gulf country in 1960. It had been constructed around a large tree, and cantilevered out from it with a fencing wire support from above.







GREENHIDE BED

The aristocrat amongst bush beds is the greenhide bed and the example shown on the previous page, bottom right, is by far the best that I have ever encountered. I found it in a deserted hut, west of Burketown, and just over the Northern Territory border, a most isolated area.

The bed was over two metres long and had been built with great care and attention. Notice how the long sides have been mortised into the uprights with a rectangular section, and the shorter lengths pass through this in a smaller section.

The comfort of the bed lay in the webbing of greenhides laces, and the craftsman had drilled hundreds of holes to take each lace, rather than wrap them around the poles as is usually done.

BUSH MATTRESSES

The pioneer's home was a little more comfortable than the stockman's camp, but even so it was probably beds of sacking for the first years. Later mattresses would be constructed from whatever came to hand. The most favoured filling was naturally feathers, but if these were not available any suitable material would be used.

The outer covering of maize was common, and where rice was grown the husks were used and apparently made a very good mattress. It seems that they were popular amongst farmers in the Port Douglas area around the turn of the century.

In the wet tropics a material was sought that was not affected by humidity, and the best answer proved to be the shredded outer husk of the coconut. A mattress of this material will last for many years and will not develop the mouldy smell of other fillings.

Wool was an obvious choice in areas where it was available, and even horse hair was used. One type of filling was made from the inner bark of the paperbark tree. This soft, almost silky, tissue is supposed to be allergy free, and cot mattresses are still made filled with this fine bark.

The pillow would generally be filled with the same material as the mattress, one exception being pillows stuffed with hops that had been used to make the farmers home brew. These pillows were said to cure insomnia.

Cooking

THE CAMP OVEN

The drover's cook worked with few utensils. Usually an assortment of billies and a camp oven or two were sufficient. The billies were used for tea and stews, and the camp oven took the place of a stove providing roasts and dampers.

Travellers coming across old droving camps often wonder at the purpose of the small holes sunk into the ground and perhaps still holding a few ashes and are not likely to be much more enlightened when told that they are camp oven holes.

Their purpose is to provide a complete and constant heat for the camp oven. A fire is built in the hole before the oven is placed in it and the normal camp fire is also built close by. When the cook judges that enough hot ashes have been produced he will pop the oven into the hole.

He then takes a shovel and gathers some more coals from his main camp fire and pours these around the oven also covering the lid which is recessed for this purpose. All being well the food will cook as well in this way as in the best regulated electric oven. However, it takes some time to develop the knack of getting just the right amount of heat and for the right length of time.

COOKING TRIPOD

One of my old mining friends introduced me to the cooking tripod. They always used to have one in the camp as it was the quickest and most efficient way to get the billy over the flames and at exactly the right height needed.

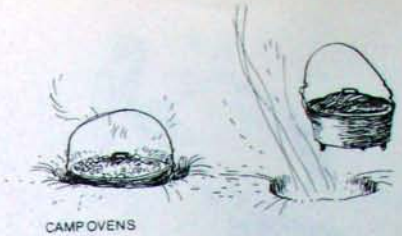
He said that generally they used to get the legs from the decorative ends of old bedsteads, as these upright pieces already had loops in them. If these were not available they would simply twist a loop into the ends of three lengths of mild steel. These were then held together with a large bolt and washers if necessary. Two lengths of chain were also threaded on.

Generally the billy was hung on the lower hook, and the height could be adjusted by raising it a little and hooking the upper hook into one of the links of the longer chain.

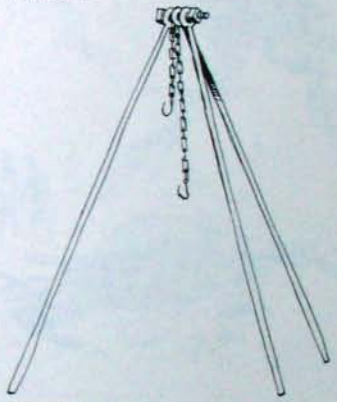
BILLY HOLDER

In 1973, I joined a party travelling on foot and with horses, to explore the country around the infamous Hells Gates in North Queensland. Miners travelling from Cooktown on the coast to the Palmer River goldfields had used Hells Gates to get from the low country up to the flat plateau that stood between them and the diggings. The Gates consisted of a split in the cliffs that stretched for kilometres in every direction and acted as a barrier to all travellers. The split was wide enough for a single pack horse to go through at a time and naturally there were many stories about miners being ambushed in this sinister place.

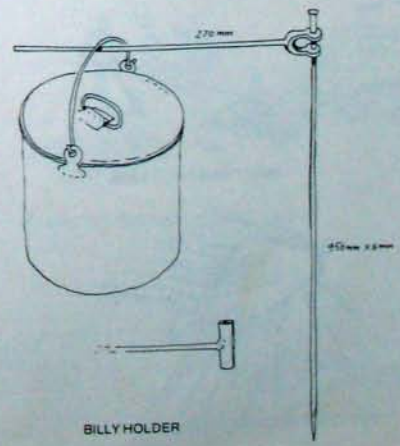
One of our party carried in his swag this simple and effective billy holder. The upright was a piece of pointed mild steel rod, and the arm was, he thought, part of a car brake linkage. It would slide up and down the rod freely until the weight of the billy was hung on it, and then it would jam and hold the billy tight. When it boiled it was swung around out of the fire. A tube welded onto a rod would do the same job as the linkage.



CAMP OVENS



COOKING TRIPOD



BILLY HOLDER

KUP MAORI

Kup Maori is the traditional Torres Strait Islanders' method of preparing a feast, and it is practised all over northern Australia, wherever the Islanders have settled. It is used whenever a celebration is called for and a number of people have to be fed.

The preparations are quite simple and the guests are usually expected to join in. The food is cooked in a pit on hot stones, and once this pit has been prepared, enough food can be cooked for a dozen to two hundred people. Preparations for a Kup Maori feast are as much a part of the entertainment as the eating itself and both guests and hosts usually spend the whole day in preparing and cooking the food.

Food cooked in this manner has a different flavour to any that has been cooked by European methods. The leaves that are used to wrap the food, the leaves that stop the steam escaping, and the type of wood used to heat the stones, all impart their own particular flavours which cannot be duplicated by any other means.

It will be noted that food cooked in this method is never described by the Islanders as a meal, but is always a feast. The main portion of the pit is devoted to some highly esteemed food, usually turtle or pig and the perimeter covered with vegetables and damper, and perhaps sop-sop, a tasty mixture of vegetables with perhaps chicken pieces all soaked in coconut milk.

Here then is the method usually followed to prepare a Kup Maori. First a pit is dug, anything from 1.2 to 1.8 metres square, depending on the number of people to be fed, and 300 to 450 mm deep. When large numbers of people are to be fed a number of pits may be prepared rather than increasing the size of the main one. If possible a sandy area is used for the pit, but any soil will do.

The pit is now filled with stones to a depth of 150 or 230 mm the stones being around 100 to 150 mm in diameter. Large stones are not suitable because they do not heat up evenly and also make a very uneven surface on which to lay the food.

Firewood is now heaped on the stones, sufficient to burn for an hour or more, and more stones are stacked on this wood, as many as can be managed conveniently. The object is to heat the stones as effectively as possible, so that the more stones that can be placed above the fire the better.

The fire is now lit and, if it has been properly stacked, will need very little attention, except to check towards the end that all parts have received a good quantity of heat, larger burning pieces being moved around to ensure this.

At the end of an hour most of the wood will have burned away and any remaining pieces are hooked off the stones and thrown away. The heat from the stones is so intense at this stage that it is impossible to get close to the pit so this work has to be done with long poles.

Using the same poles the stones are now pushed around to make a level surface and are also stirred up to allow the ashes to slip down below.

In the meantime the food has been prepared. The pig, or whatever animal is being used, has been quartered into convenient cuts ready for wrapping in palm leaves. Each piece is wrapped separately. It is very unusual for a beast to be cooked whole. Separate bundles allow easier handling and more even cooking.

The method used for wrapping each joint is simple and effective and looks most attractive. A short section of palm frond is cut, usually around 450 mm long, in any case about half as long again as the object that is to be wrapped, and the cook places this so that the leaves point towards him. The meat is placed on this with the thinnest end closest to the cook and a frond is taken from one side across the meat (1).

A frond is then taken from the other side across the first and the lower one bent so that they both face the one direction (2). The next frond is brought up and all loose ends are bent to join it (3). Weaving proceeds in this way, each time all the free ends being brought across to join the frond that has just been put in position.

The same weaving continues even when the meat is fully covered until all the fronds are in hand and a long tail has been formed (4). A knot is then tied in this (5) and a firm packet results (6).

Both fish and fowl are wrapped in the same way and so is damper, which when cooked has a delightful herringbone pattern embossed into it. This wrapping provides some protection against burning, facilitates handling (especially when lifting hot meat out of the pit) and holds together any loose flaps of meat.

Island women also weave coconut frond baskets to hold vegetables in the cooking pit. Unfortunately these attractive objects are always ruined in the cooking.

Banana leaves also provide a means for cooking vegetables, in this case a dish called sop-sop. Fresh unsplit leaves are used and a number of them are formed into a bowl shape, either by placing them in a bowl or placing them in a depression made by arranging a few half coconut shells into a circle.

Sweet potatoes, pumpkin, onion and perhaps pieces of fish or fowl are put into this depression and coconut milk poured over the mixture. The large unsplit leaves hold the liquid.

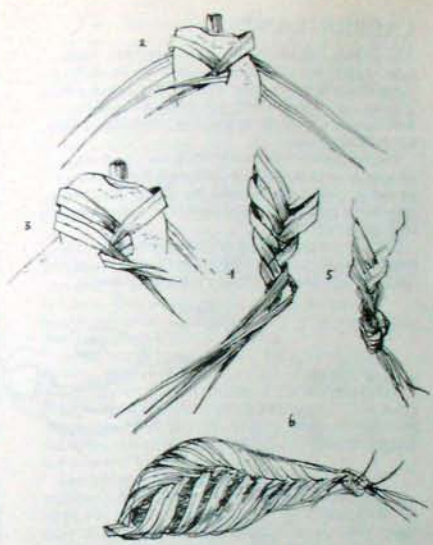
The leaves are then folded over the top and the whole tied together with strings (these of course are placed below the leaves before the vegetables are put in). The Islanders warm banana leaves over a fire to make them pliable and then peel off sections of the main rib, making strings one to one and half metres long and surprisingly strong.

Before placing the food bundles onto the pit, armfulls of green sticks or sections of palm fronds are thrown onto the stones to make a platform on which the food will rest and so avoid direct contact with the stones. Skill and speed are required to place the food into the pit because of the heat, and once placed there it must be covered as fast as possible or the green sticks and the food wrapping may burst into flames.

FILLING THE PIT

HEATING THE STONES

SMOOTHING THE STONES



The heaviest joints of meat are placed in the centre of the pit and the sop-sops on the outer edge. Armfulls of green leaves are now thrown on to a depth of perhaps one metre, to completely cover the whole pit.

The danger of everything bursting into flames is still very real and no time is lost covering this layer of leaves with a layer of bags or old matting. By this time smoke will have started to issue from the heap, and sand is hastily shovelled over the bagging to a depth of fifty millimetres, until all smoke and steam disappears.

The food is then left to cook itself and the cooking time depends upon the size of the joints and the heat of the stones. Three hours is probably the average cooking time, but the food will not spoil if left in longer. There is a certain amount of skill required in judging when the stones are hot enough to use, but this knowledge is soon acquired. Obviously if the stones are too hot food will burn before it has time to cook inside, while not enough heat will produce half cooked food. Even so a great latitude of temperatures is possible, if cooking times are judged accordingly.

When cooking is judged to have been completed the sand is carefully scraped away, care being taken not to disturb the bagging which has been placed there to prevent sand working down to the food. Bagging and leaves are removed and the food removed ready for serving.

PLACING THE FOOD ON THE GREEN STICKS

COVERING THE FOOD

COVERING THE PIT WITH SAND

CROSS SECTION OF KUP MAORI PIT

Lighting

CANDLES

I have heard of candles being made of tallow, but the most usual substance used was paraffin wax. Wicks were either bought ready made, or prepared from suitable string, which was hardened by soaking in either vinegar or alum. Alum was also used to harden the wax if this was thought necessary.

The wicks were tied onto a stick or on a wire wheel and dipped into the melted wax. As soon as the layer of new wax hardened they were dipped again, and so on, until the candles were thick enough. If a large container was used for the wax then a number of candles could be dipped at the one time.

SLUSH LAMPS

While the good farmer's wife made candles to give her house a clean light, the solitary bushman was content with a dirty smoky slush lamp. In its most simple form this was just a jam tin, cut down a little, filled with old fat or tallow and with a wick floating in it, usually poked through a wood shaving or something similar to keep it from sinking as the surface melted.

When I moved up to the Dandenongs, Victoria, in my bachelor days, we had no electricity, and used to use these slush lamps. After a time the fat would go rancid and as it became more and more smelly we would repeatedly tell each other that it was time that it was cleaned out.

We also discovered that extra wicks could be produced by throwing our cigarette butts into the fat, where they would burn for quite a long time, before sinking into the stinking mess. However, a slush lamp is quite satisfactory if it is properly maintained.

Slush lamps allowed the craftsman some latitude in self-expression. The example shown top right has the late owner's name stamped onto a piece of brass and soldered onto the outside. This lamp is only sixty-four millimetres high, but the ones used by train drivers stood up to 230 mm high.

An Aboriginal family just down the road from us in our first North Queensland home used the type of slush lamp shown in the second row. It was generally made from a small size powdered milk tin, around 150 mm high. A piece of copper tube was fitted through a hole in the lid, and a piece of wick threaded through this. The tin was filled with kerosene.

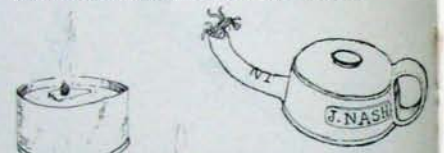
Centre left is the type of slush lamp used by railway men up till recently, and came from the last of the steam trains to work from Cairns. My loco driving friend says that they never used torches while oiling the engines, but always relied on a slush lamp. They came in a variety of sizes, being made up by the driver or anyone he could find who could solder, this one is of average size. The lid has a chain soldered on so that it would not get lost, and the wick goes down the spout down into the main container.

CARBIDE LAMPS

The carbide lamp is still the most frequently found light in northern mustering camps. It is one of the few lights that will travel reasonably well in a pack saddle. It gives a good bright light and is not affected by a light breeze. On the debit side it is sometimes a little too exciting to use.

The lamp shown in the sketch is the one most frequently seen in the bush, although there is also a smaller version with fold back handles of wire and a detachable pipe that can be packed in a much smaller space to transport easily.

The lamp shown here is in three main parts. The outside section has a handle soldered onto it and also has two indentations, one on each side. Water is poured into this container.

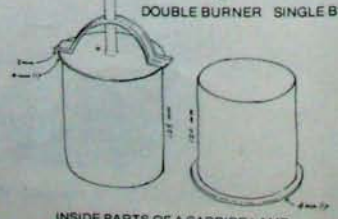


SLUSH LAMPS

RAILWAY LAMP

CARBIDE LAMP

DOUBLE BURNER SINGLE BURNER



INSIDE PARTS OF A CARBIDE LAMP

The inner section of the lamp is in two parts which fit snugly one over the other. The inner part is the container for the carbide, and it will be noticed that it has a wide lip at the bottom. This is to ensure that it will sit firmly inside the outer container, and yet have water all around it. A lump or two of carbide is placed in this lower part and the other section is placed over it.

This also has a wide lip, but on the top, for the same reason, and it also has the outlet pipe for the gas. This pipe is held in place by a curved strap which also acts as a handle with which to pull the two sections apart. This handle protrudes three mm over the upper lip which is a perfect fit when the double container is placed into the water. It is then given a half turn. This places the protruding parts of the handle below the indentations in the water container, thus preventing it from floating up.

At the top of the outlet pipe there is a burner allowing either two jets of gas to escape or one. The double burner has the nipples at an angle to each other, so that a single flame is produced. The amount of light given off by either type of burner seems to be the same, the advantage of the double one is that it is less affected by the wind.

The amount of water in the outer container is adjusted so that when the inner one is firmly put in place it is just covered by water. Even though the two parts of the inner container appear to be a very snug fit a small amount of water finds its way in and moistens the carbide which begins to give off pungent smelling acetylene gas through the burner hole. This is lit and the lamp is then working. To turn it out, the inner container is given a slight turn to free it from the indentations in the water container and lifted out. The flame then goes out of its own accord.

However, if the burners are faulty or if too much carbide or water has been added then all sorts of exciting things begin to happen. When too much gas is generated it has to get out somehow and so the water in the container will start to bubble as if it is boiling. When enough of this gas comes out at the one time it will frequently be ignited by the flame of the burner, and explode with a loud bang. This does no harm, but is extremely startling.

A mining friend told me that he had two old men living near him and he frequently visited them in the evening. They were very casual about the treatment of their lamps and often there were loud explosions which set my friend jumping from his chair in fright. The old chaps, however, had become so used to this sort of thing that they did not even pause in their conversations.

The only inherent danger of the carbide lamp occurs if the burning jet becomes blocked, and this is why a double burner is often preferred. If the inner container is lifted straight out from the water nothing will happen, but if it is left in, then gas will continue to form inside the container until it becomes dangerous. I recall an incident a few years ago when a ringer bent over to remove the inner container after it had become blocked, and the outlet pipe exploded right out of the top, drove into his head, and killed him outright.

However, this was an unusual case. If the carbide lamp is kept clean and well maintained, and the carbide container lifted from the side in the event of it suddenly going out, then it provides a very efficient bush light.

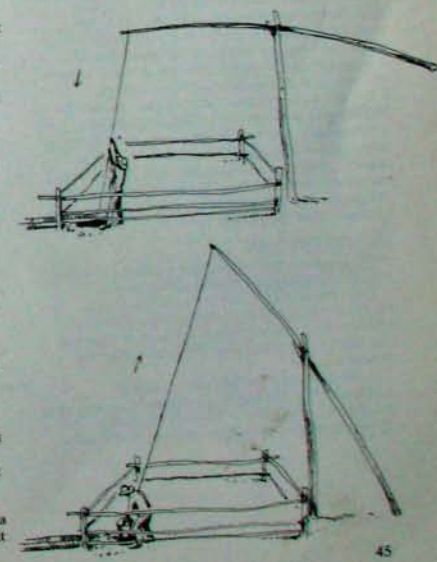
Bush Power

CHINESE WHIP

I encountered a photograph of this appliance in a Queensland newspaper of fifty years ago, and in the caption it was called a Chinese whip, so presumably this was its common name. It was probably introduced into this country by the Chinese miners. I recall seeing one in the Cooktown cemetery, near the Chinese section, some ten years ago.

It works on a counterweight principle, the weight of the log being balanced at such a point that it requires no more effort to pull the rope down and let the bucket into the water than is required to lift the full bucket of water out of the well.

In the illustration here the whip is being used to raise water from a well to fill cattle troughs, but the miners also used the same idea to lift out soil from shallow workings.



WINDLASSES

This is the most common form of windlass used by the miner to raise soil from his shaft, and by the ordinary householder to bring up water from his well. This example was sketched from one of Gill's drawings of the 1850s, and the same form is used by miners today.

THREE LEGGED WINDLASS

Examples of this rough and ready type of windlass construction will be seen in the drawings of Gill from the Victorian gold rushes of the 1850s. I noted a similar construction, but with four legs, on some old mines south of Burketown a few years ago.

SPANISH WINDLASS

This is a different type of windlass entirely, and generally intended for a horizontal pull, though it could be used in any direction. It is also used to tighten up a load.

A stick is placed under and over the rope as shown and then wound around to tighten the rope. When sufficient tension has been achieved it may be held in place with a piece of cord. The Spanish windlass is only effective for a certain number of turns. Once the twisted section becomes too long the lever is difficult to manage. Frequently the user will have two different sticks in different parts of the rope to avoid this problem.

STANDING SPANISH WINDLASS

This method was shown to me by an old bushman when we were trying to pull out some small tree stumps. Sinking a crowbar into the ground to act as a shaft he caught the rope around the crowbar as shown (the far end of the rope was tied to a thick tree).

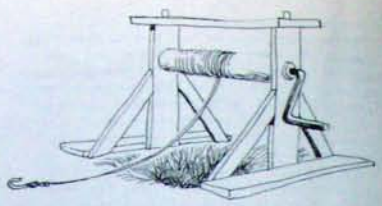
He then wound the stick around the bar, and this in turn brought the rope around and caused it to tighten and develop a tremendous pull on the stumps that we were trying to shift. In the absence of a crowbar a log could be used, but it would have to be set well into the ground, and in a direct line between the two fixed ends of the rope. If this was not done it would tend to lift and twist as the pressure built up.

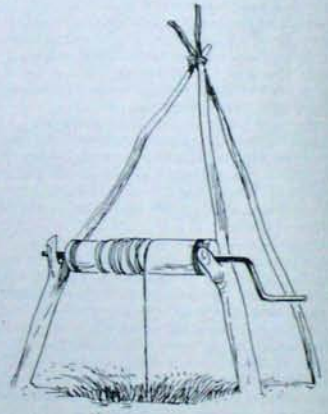
CHINESE WINDLASS

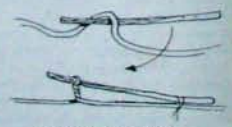
In this windlass, part of the rope goes around a large section of log, and part round a smaller section.

When the handle is turned one way the bucket on the hook is lowered, and when it is turned in the opposite direction it is raised. It needs considerably less effort to lift a load with this system than with a normal windlass.

A mining companion told me that he had constructed log windlasses on various occasions using a similar principle, but in this case the load was lifted by pulling on the rope rather than turning a handle.

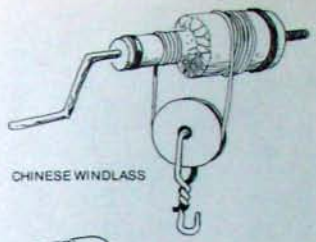




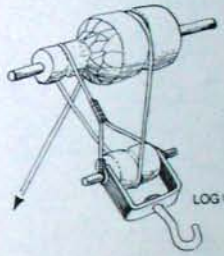


SPANISH WINDLASS

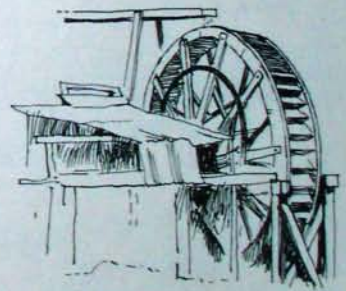
STANDING SPANISH WINDLASS



CHINESE WINDLASS

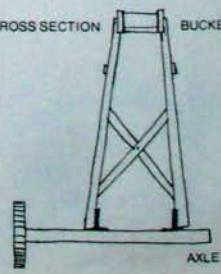


LOG WINDLASS

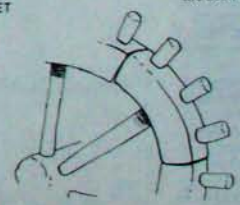


CROSS SECTION

BUCKET



AXLE



WATER WHEEL

WATER WHEELS

It seems strange that the water wheel disappeared from the Australian scene so many years ago and yet it provided an endless source of power at no cost to the user except for the occasional maintenance of the machinery. Wheels were used for any purpose requiring power. They could grind flour or work a stamping battery for a gold mine, and I have even heard of one being used to work a sawmill.

There are only a few remains left in this country, though one has just been recently restored on a property in Tasmania, and it is hoped that it will be used once again to make flour.

Many people think that the water wheel sits in a moving stream and is pushed around by the water flowing under it, but this is not the case. The water is brought from a source higher than the wheel, by piping or in open conduits as shown in the sketch and pours onto the wheel from above, filling the buckets and causing the wheel to revolve.

The wheel in the sketch was used on a Victorian gold mine before the turn of the century. The construction appears to be fairly simple. The rim of the wheel is made of short sections of timber that would have been shaped with a draw knife and the rest of the construction is fairly straight forward. I have shown a cross-section here to give an idea of the way it was put together. The buckets did not even have to be particularly waterproof as long as there was a sufficient flow of water.

Usually the wheel was attached to a steel axle and there was a cog wheel at the end of this. This was used to achieve the correct speed by gearing it into another axle and cog wheel from the machinery that was to be driven.

Although the axle was usually of iron the early builders were forced to use what was available, and even a wooden axle was used if nothing else was available. This turned a wooden cog wheel of the type shown, which is based on waggon wheel construction, or a wheel made by bolting planks together at right angles to each other and cutting out a circle, though at least three layers were used to prevent the wooden teeth from coming loose.

Sometimes cog wheels were not used and instead belts were driven by the main axle and the varying sizes of the wheels on which they revolved produced the desired speeds.

Domestic Crafts

COOLGARDIE SAFES

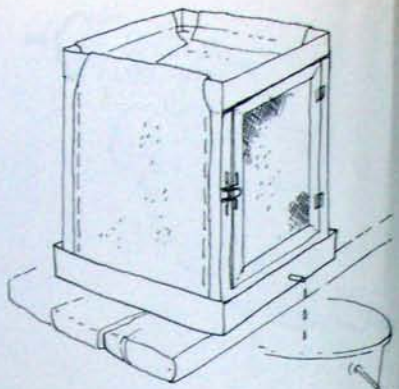
Not so many years ago bush folk had only the Coolgardie safe to keep the milk and butter cool in, and for the most part it did its job remarkably well. There are many patterns of safes, but they all work on the same principle, which is to keep the air around the food cool by evaporating water.

The framework of the safe was made from galvanised iron, with simple hinged door and a wire latch, the whole affair being about 700 mm high. The top of the safe was made in the form of a reservoir and it sat in a shallow trap with a drip pipe attached to it.

The sides and back of the safe were made of towelling stitched to the frame by means of holes in the metal. This towelling extended right up the sides and over into the reservoir, which was filled with water.

The water saturated the cloth, and slowly soaked down through it, at the same time cooling the interior. When the water reached the bottom it dripped out through the small pipe and was caught in a bucket.

Every so often, depending on the wind and temperature, the reservoir would have to be refilled, and this was the sole amount of maintenance needed.



BUSH WATER HEATERS

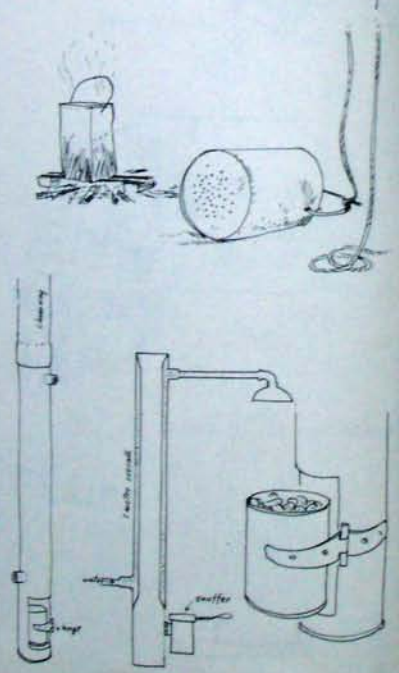
One of the most common bush showers consists of an eighteen litre drum with holes punched in the bottom and swung from the branch of a tree by rope and pulley. Water is warmed on the fire and poured into the drum, which is then hauled up above the bather. This is both simple and effective.

Before Dunk Island became a big tourist resort the accommodation consisted of a handful of small cabins and these were fitted with simple do-it-yourself hot water systems. The owner of the island at the time had seen this method somewhere on the mainland and had built them himself. I later built one for our house and so the idea was passed on from one group to another.

It was contrived by taking two lengths of ordinary down pipe, one of them a metre long by 101 millimetres diameter, the other one shorter and of seventy-six millimeteres diameter. The smaller one was fitted inside the other, each end of it being first spread out, and the two were soldered together. This made the water jacket.

Two ordinary water pipe connectors were soldered onto the outside, and the water inlet screwed into the bottom one. The shower came from the top one. When completed this made a water-tight jacket, the water came in through the bottom inlet, filled the jacket and came out through the shower rose. The next step was to make the water hot.

An ordinary jam tin was taken and a hinge curved and soldered to it. The other end of the hinge was



soldered onto the main cylinder. This tin was filled with pieces of broken coral and kerosene poured in. A match was applied and the tin swung into the cylinder where it would make a tremendous roar as the flames went up the centre of the jacket and up the chimney (the chimney was also made from a few lengths of downpipe — the taller the chimney the more draught and the hotter the water).

When one had finished showering the flames were extinguished with a snuffer made from the bottom of another, slightly larger jam tin with a wire handle.

Obviously in areas away from the coast a different material was used rather than coral. Each builder of one of these systems experimented with whatever was easy to obtain.

COUNTERWEIGHT SCALES

Just over a hundred years ago the great Palmer gold rush broke out and thousands of Chinese swarmed to the fields. It is said that at one stage in the 1870s there were more Chinese on the Palmer than the sum total of all Europeans in Queensland.

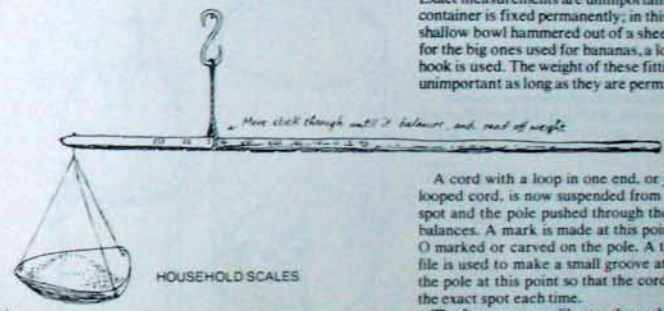
When the gold was worked out many Chinese moved back down along the coast and began growing fruit and vegetables for the southern market. In Freshwater Valley, just behind Cairns, rice was grown on the low land and banana plantations and citrus orchards fringed the foothills.

Now that part of the country is covered with sugarcane and the Chinese have gone, but one old lady still treasures a few relics of those long ago days. Among her bits and pieces are two counter-weight scales. One set is in fine brass and bone, only about 250 millimetres long, and probably weighs about thirty grams.

The second set is home-made with a pole over a metre long which would weigh up to one-and-a-half kilos. She said that the banana growers, Chinese at first and later Australians, used even bigger ones to weigh the bunches of bananas, weighing up to forty-five kilos and over.

Unlike other scales these require no springs or weights, being made of simply a pole, a looped cord, and a container or a hook to suspend whatever is being weighed. They will weigh objects as accurately as any other form of scales. The banana growers liked them because they cost nothing to make while manufactured scales to weigh such weights were very expensive.

To make household scales a pole is selected 1.2 metres long and twenty-five millimetres in diameter. Exact measurements are unimportant. At one end a container is fixed permanently; in this case it is a shallow bowl hammered out of a sheet of copper, but for the big ones used for bananas, a loop of rope or a hook is used. The weight of these fittings is unimportant as long as they are permanent.



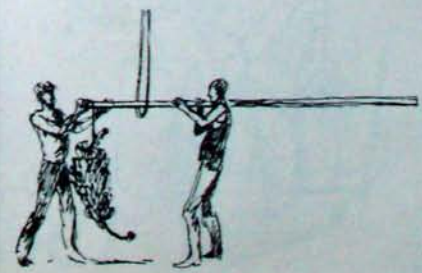
HOUSEHOLD SCALES

A cord with a loop in one end, or just a plain looped cord, is now suspended from some convenient spot and the pole pushed through the loop until it balances. A mark is made at this point and the figure O marked or carved on the pole. A three cornered file is used to make a small groove at the bottom of the pole at this point so that the cord can be placed in the exact spot each time.

The farmer now calibrates the scales using any objects around him of known weight — a packet of tea, a packet of sugar and so on; anything that arrived in a packet marked with its weight.

He holds the pole steady and pours the tea into the container, then moves the pole along until it balances. Where the cord touches the pole it is marked as that weight, and another small groove made in the pole. Another packet of tea is added. The pole is balanced again and the mark made for that weight and so on until all the usable pole has been marked off.

The example shown in the diagram above measures up to three pounds. The three pound mark is the one nearest the container, while the ounce marks are to the right of the cord as it is positioned at this stage. As more weight is added to the container, more of the pole is pushed through to the right.



LARGE SCALES

The lower sketch shows the much larger pole that was used to weigh bananas, requiring two men to move it along once the bunch had been looped or hooked on. The banana plantations have gone from Freshwater Valley, and none of these long poles seem to have been preserved, but it may be that some are still to be found in implement sheds around the Tully district.

JARDINIERES

These were quite often made from empty tins. In the most elementary form the tin was painted and given some simple decoration. In a more elaborate version the tin was slit vertically every twenty-five millimetres or less around its centre. The tin was then bumped down so as to cause the tin straps to buckle outwards.

Another unusual example of tin work was found on a grave at the deserted mining settlement of Thornborough, Queensland. It was on an unmarked grave, but as the area was abandoned around the turn of the century we can assume that it was at least seventy years old.

The whole thing had been constructed from a single tin in a most ingenious manner as shown in the diagram. The base piece was originally the top third of the tin. This had been removed by a straight cut right through. Each side had then had two angle cuts made vertically in it and the flap thus made was bent up and held the original lower part of the tin in place. This section also had flaps made in it.

Each of these flaps then had cuts made around their edges and the small straps thus formed were then twisted into scrolls. Although the final effect was rather home-spun the amount of work that had gone into making this ornament was a touching tribute to someone's love.

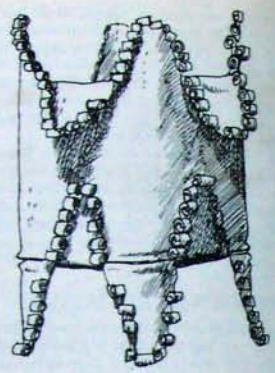
I thought that this example was unique, but in September 1972 I came upon the badly rusted remains of another one in the bush about two kilometres from the old mining town of Almaden, Queensland.

BUSH GLASSES

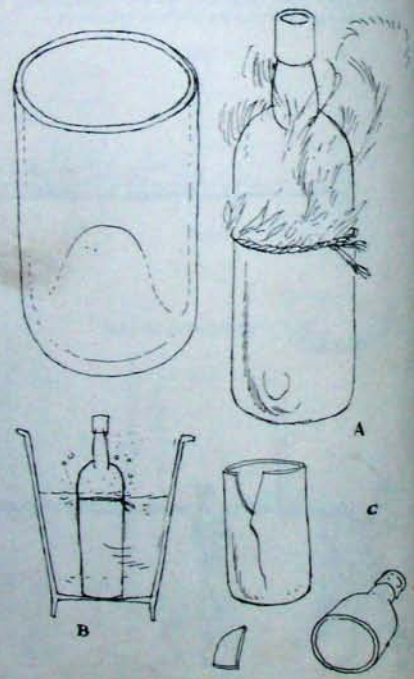
Examples of home made bush glass may still be picked up around the sites of old mining towns, unrecognised and passed over by the bottle hunters who by now have swarmed like locusts over every part of Australia where settlement might once have existed, digging for prize examples and smashing what does not interest them.

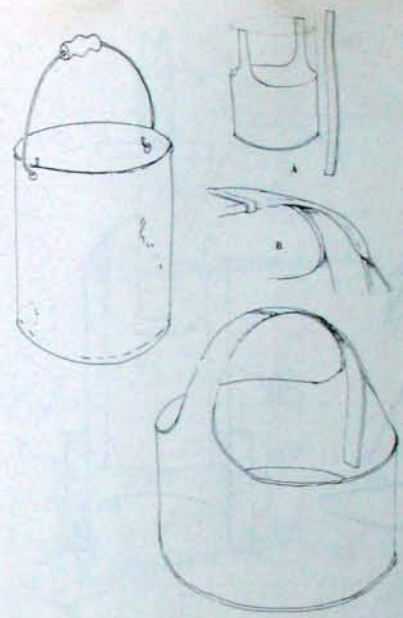
These old glasses were created because of the scarcity of the manufactured article and were made by the simple action of removing the top from a bottle. The one in the sketch was found at Maytown, and would have given a smaller drink than its size suggested, having been made from a vinegar bottle with an indented base.

The normal method of making these glasses is to wrap a piece of string round the bottle, the string first being soaked in kerosene. This is then set alight and



TIN JARDINIERE





left to burn until the flames began to die down. It is then placed into a bucket of water, which has previously been filled so that the water level comes to only just a little above the string, as in B.

The theory is that the bottle will shatter neatly around the string line, but in fact the actual result will be found to be more often than shown in C. Perhaps the old timers had another trick or two which they have not passed on. However, this is the traditional method and the carpenter who first demonstrated it to me used to make all his beer glasses in this way with very few losses.

TIN BUCKET

The usual bushman's bucket is simply an eighteen litre drum with a piece of wire for the handle. If it is being used constantly and with heavy loads then it may have the added luxury of a simple wooden hand grip. A few years ago it was always the kerosene tin, but today the oil drum has taken its place.

The small bucket described here was found in a deserted house near Cairns, and is much more elaborate than the usual home-made job. Figure A shows how the shape is cut from a full drum, the handle being given additional strength by the inclusion of a piece of hoop iron.

The iron is held in place with solder, and also by turning the cut edges of the tin over it as shown in B. The remaining cut edges are folded over outwards right around the tin thus avoiding any sharp edges that would cut a finger.

Where the two halves of the handle meet the top one is turned back and both are soldered onto the hoop iron.

TOYS

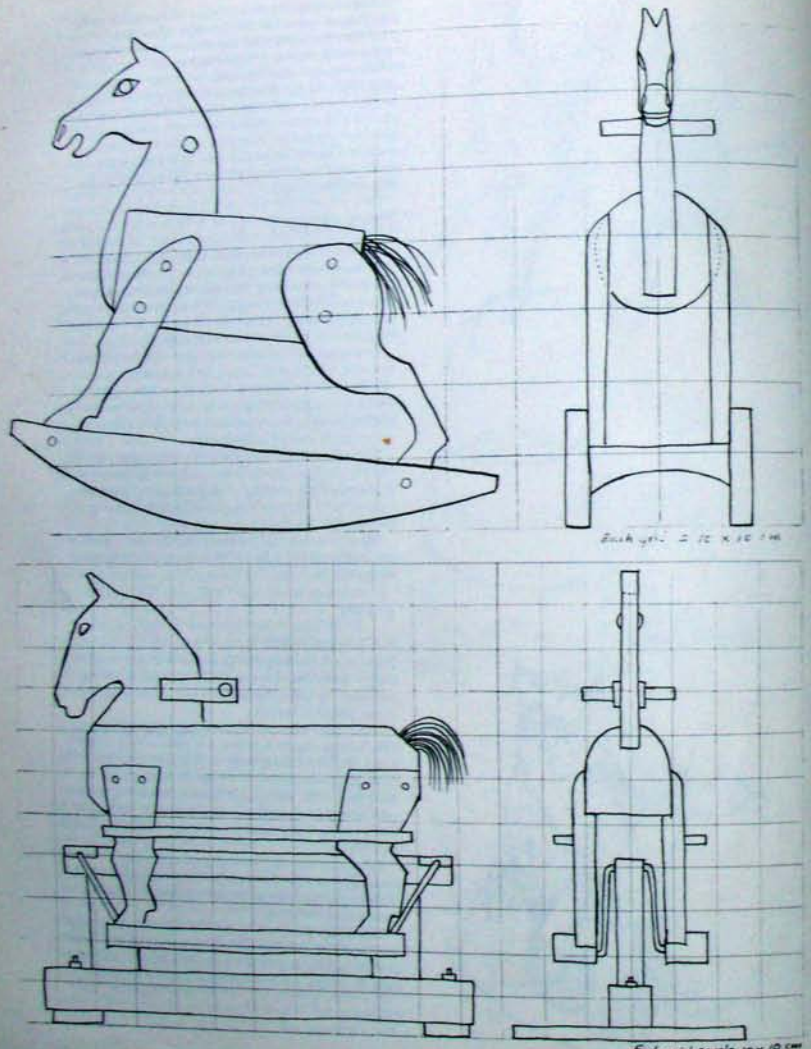
ROCKING HORSES

Home-made rocking horses came in a great variety of shapes and sizes, their ultimate proportions being governed by the materials at hand rather than the actual shape of horses.

I first encountered the prototype of this horse in the Dandenong Mountains, Victoria, about sixteen years ago and built a copy of it for my daughter. The body was constructed of scraps of timber, and the head and neck were made from a suitable tree limb, with ears attached. It was easy to make, and lasted for many years, being passed on to my brother in time for his children.

I also saw this one (next page, top) in the Dandenongs. It too was made from scrap timber, but in this case the body of the horse was constructed from a section of log.

The delightful horse at the bottom of the next page was made by Jim Scanlon of Cairns. He made his first one thirty years ago and has made a number over the year. It is very solid and designed to last for years.



SPRINGING HORSE

SPRINGING HORSE

This home-made toy shown at the bottom of the page, was noted on a dairy farm at Butchers Creek on the Atherton Tablelands, and was the modern equivalent of the old wooden rocking horse. The head was shaped with an oxy-welding torch from flat iron, and had a length of water pipe through it to act as a handle.

The body was an oil drum, and this was welded onto a heavy spring which had been sunk into a cement slab. When the small boy rode it he made it buck just like a real horse, nearly touching the ground with each bound.

SIMPLE SWING

This is a simple type of swing often made by Aboriginal children using a single cross stick and a length of rope.

Leatherwork

USE AND PREPARATION OF GREENHIDE

(This has been transcribed from a taped interview with stockman Les Callope, 1973. He is describing methods generally used in the Gulf country.)

'The fresh skin is first stretched over the iron rim of an old waggon wheel. We have turned inside out, the hair part we sort of pull underneath and leave the raw part out, and throw some salt over it and four or five days after that it's cured. You know the salt's gone right through it, and you just knock all the salt off it and use it for whatever you like.

'You cut the strips out in a circle, and sometimes, if you get a good decent hide, you can get a rope out of it about fifty feet long (this would represent two hundred feet of strands in a four plait rope).

'You'd use that for a bronco rope. That's a rope you use on a bronco horse to catch a calf in the big yard and pull him up to a bronco frame, and put a leg rope on him and pull him down and put the brand on him.'

R 'What sort of an eye would you have in it?'

L 'An ordinary hobble-chain — two rings. We cut the swivel off it (the normal hobble-chain consists of five rings with a swivel in the centre) and you can also use a full hobble-chain. You put a Turk's head on the end that you put onto the horse, so that calf can buck or go anywhere, and he doesn't get tangled up because the swivel is still going round.'

R 'How long is the average bronco rope?'

L 'Well, I don't like a long bronco rope, especially for throwing and that, but lots of people use those long ropes in the calf pen. You have the bronco horse outside the yard and the calf in the yard, and just hook it on the leg and the horse will pull it up, on the offside hind leg, whichever side you're going to brand. Then you put the front rope on as he comes up and flick him over. The leg ropes are made of greenhide, same thing but they are only about ten foot long — same thickness — one ring on it that you use to hook on his front leg.'

R 'What other things do you make out of greenhide?'

L 'Whips, packbags. Not so much packbags now because pack horses have gone out. We use it for lacing up anything. You keep the greenhide rope stretched out until it dries then take it down and give it a good greasing. It will be a bit hard for the first couple of days, but after you've used it in the yard pulling up calves it loosens up and gets like ordinary nylon rope. We plait it up very tight because it will come back, though not such a great lot.'

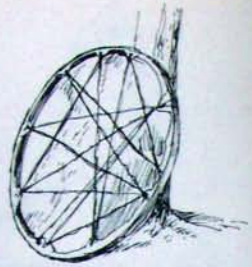
DRYING GREENHIDE

A common method of drying greenhide is to stretch it over an old iron buggy tyre. The skin is trimmed to a roughly circular shape and pulled tight with thongs also made from strips of greenhide.

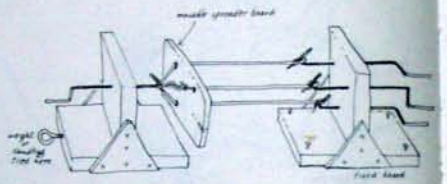
MAKING ROPES, GREENHIDE AND ORDINARY

The difference between a greenhide rope and an ordinary one is in the material used; the methods are similar. Greenhide ropes are still made on northern cattle stations, because the raw material is at hand and the finished ropes are immensely strong, much stronger than commercial ropes of the same size, with perhaps the exception of nylon.

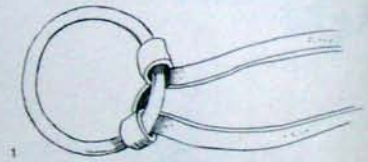
Apart from the stations, rope making is not a common craft, but they are sometimes made by fishermen and others when there is an abundance of small cord and a larger one is needed. When I was young we used to make up ropes from binder twine,



STRETCHING GREENHIDE ON A WHEEL RIM



ROPE MAKING MACHINE



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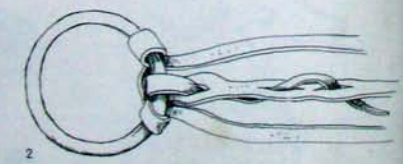

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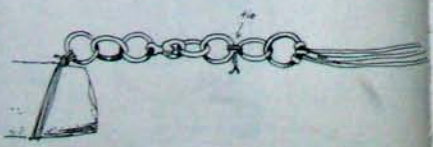


which was easily obtained, and we used a home-made machine similar to the one shown in the sketch opposite. In more recent times I have made up heavy set lines for fishing in the same way, using three lengths of thin twine.

Native people begin their ropes with the raw materials, rolling up twine from coconut fibre, human hair, flax or whatever they have. However, we generally begin with a ready made twine or, in the case of a greenhide rope, with strips of leather.

To make our ropes we would set up the gear as shown in the sketch on the previous page. At one end was a board with three pieces of fencing wire pushed through it and bent as shown. This was fixed so that it did not move. At the opposite end we placed another similar board, but this time with only one hook in it. This had a sandbag or similar weight attached to it so that it could move, but not very freely.

Three cords were then taken from the three hooks at one end, to the one hook at the other, but before being tied on they were passed through a spreader board, which was simply a piece of timber with three holes drilled in it.

Now we would begin at the end with the three hooks, and give each thread in turn as much twisting as it would take before it started to kink up all over the place. By the way, the wire hooks were a good fit in the board so that they could be moved with ease but would not untwist. As the cord was twisted up it became shorter, and slowly dragged the single hook end, and the weight, along the ground.

We would then turn to the other end and begin turning the single hook in the opposite direction to that of the three other hooks. The finished rope would then begin to form, and as it did so the spreader board was moved along until the whole rope had been twisted. This spreader board is very important, for without it the cords will get into a tremendous snarl.

GREENHIDE ROPE

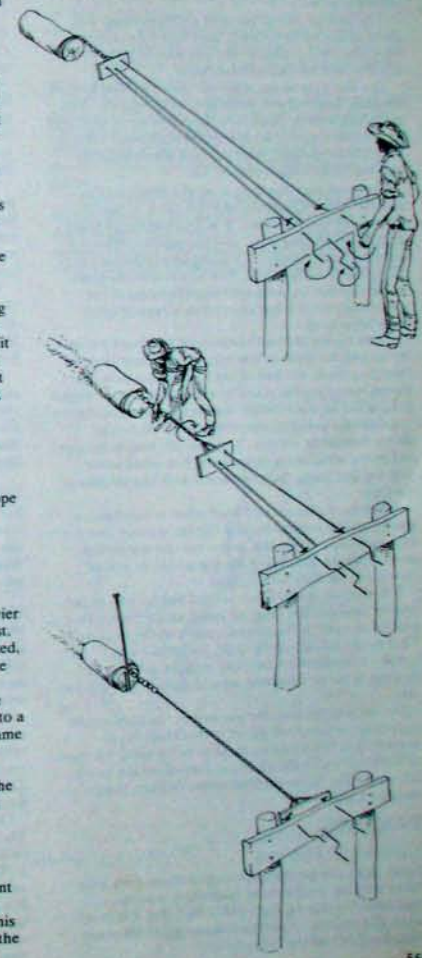
Greenhide ropes are made in the same way as ordinary ropes, but as the material is so much heavier the equipment has to be proportionally more robust. The hook arrangement described above is often used, but it is much larger and instead of fencing wire the hooks are made from 16 mm mild steel rod.

In the old days when waggons were common the ropes were often spun up by attaching the strands to a jacked-up waggon wheel, dividing them with the same sort of spreader board, and spinning the wheel to make the rope.

However, wheels are not so plentiful now, and the following method appears to be the most common used today in the Gulf country. My informant, a stockman, said that this was the 'proper old bush style'.

First the strands were cut, using a full hide and without bothering to remove the hair. My informant used the method described in the section on whip making, starting to cut in the centre and working his way out in a spiral, cutting one single strand until the whole hide had been used up. This produced an immensely long continuous strand about twenty-five millimetres wide.

Many bushmen cut the strands in the opposite manner, from the outside working in. They cut the largest possible circle from the hide and put a nail



through the centre. They then turn the hide around and around cutting as they go.

The long strand was then folded three times, and one third of it was cut off. The whole lot was then thoroughly soaked and the longer piece was attached to an iron ring with a ring hitch as shown in Figure 1, p.54.

The shorter piece was then slit three times and fixed as shown in figure 2. Although I have drawn only one ring, a double ring was most common, usually cut from old hobble chains.

The last ring of the rope was then attached to a log specially kept for the purpose of rope making. This had a full hobble chain with its swivel wired to it, and the double rings of the greenhide rope were wired to the end of this chain, until the rope was completed (see sketch at bottom of page 54).

The stockman began to wind the strands up as shown. This arrangement was the same as that shown for making smaller ropes. It was just made so much stronger by sinking posts into the ground. With the spreader board in position an equal number of turns was given to each strand. The actual number given would depend on the length and thickness of the greenhide, but it is less than when a rope is being made from cord.

When he felt that sufficient twist had been put into the strands he went to the opposite end and began to turn the ring at the end of the rope in the direction shown, using a short piece of stick. As the rope began to form the spreader board was slowly moved along.

As all this twisting was going on the rope was slowly becoming shorter. This was the reason for one end being attached to something that could move. The log slid along the ground but kept the tension of the rope.

When the full rope had been made a crowbar was stuck into the ground to stop the log moving forward any more, and it was left to dry out. As the leather dried it would shrink and the log would be pulled forward if not anchored in place.

When dry it would often be tied behind one of the station vehicles and dragged along sandy tracks for a few kilometres in the normal course of the days work. This would rub off all the hair, and also make it supple. It would then be given a heavy rubbing or soaking in fat or neatsfoot oil and would be ready for use.

Before this process, the cut end of the rope would have been finished off either by backsplicing as described in the knotting section, or by tying the type of Turk's head as shown in the section on the cow's tail whip. The latter method seems to have been the most common.

TANNING

TANNING WITH BARK

Apart from the preparation of greenhide, very little home tanning with natural material is done in Australia. Country people today find that it is much more convenient to purchase tanning liquids ready mixed and follow the instructions.

When I was a lad we used to earn a little extra pocket money by stripping tan bark. The common wattle that grew in our area was favoured by the tanneries, and we used to get ten shillings a bundle. We would cut around the trunk of the wattle as high up as we could reach and then strip off the bark all around. A full bundle weighed about forty-five kilos.

The trees were usually around eighty millimetre diameter, and the stripping killed them of course. However, by the following year a new crop would spring up ready for stripping.

I recall my father using this bark for tanning, and the method was very simple. The skin was carefully trimmed of fat and meat, rather a slow job and one requiring a very sharp knife and steady hand if one was to avoid cutting the leather. It was then placed into the tan bath.

This had been prepared by placing some bark into a tub and pouring boiling water over it. The skin was put in with the bark and left for three weeks, being turned over from time to time. The resulting leather was a very dark colour, and also very stiff, but it was tanned.

We used a wooden barrel for the job as it was considered that metal affected the tanning brew. We also added more bark during the tanning period throwing out the old stuff when we thought that it had been soaking for long enough.

Most of the wattles seem to be useful in tanning, and mangroves are also used. The mangrove bark also used to be used for 'tanning' (if that is the right word) fishing nets. They were said to last much longer after this treatment, which changed them from white to a dark reddish hue.

SALT AND ALUM TANNING

For small skins we used to use a mixture of salt and alum. This was rubbed into the pegged out skin and left on it for about a week. It was said to produce a better lasting leather than if only salt was applied, as with greenhide.

OIL TANNING

While greenhide served for most of the bushman's leather needs, there were occasions when he needed a soft leather, and the most obvious and simplest method of achieving this was by soaking the leather in some sort of oil.

The best oils were found to be neatsfoot and fish oils, the neatsfoot being the most popular, probably because it was more readily available. For best results, animal brains were rubbed in with the oil. This use of brains in tanning is very old, and has been noted in many parts of the world.

I have tried this method of tanning on a cow's hide. The skin is left in the sun, flesh side up, and a liberal amount of brains mixed with neatsfoot oil rubbed into it. Rubbing should take place daily for some weeks until the mixture appears to have penetrated the hide. It is then 'broken' by being pulled around a log or verandah post to make it flexible.

Another bush tanning mixture is soap and kerosene, used in the same way as the brains.

REMOVING HAIR

A Cairns saddler told me that when he was a young man working on a station they used to bury the hides in the warm moist sand of a nearby creek bed for a week or so. When dug out the hair would be easily scraped off the hide. He did not know whether that particular creek had a heavy lime or soda content but felt that the combination of moisture and warmth probably loosened the hair.

A more common method is to add lime to water, about the same weight of each. This is left for a day or two before the skins are added. If there is a lot of tanning being done then old batches of this mixture will be kept. The skins will be put into the old weak batch for a day or so before being put into the new solution. It is left in the lime, and turned regularly, until such time as the hair begins to come loose.

This process is not used with greenhide. If the hair needs to be removed from greenhide, it is scraped off with whatever tool seems the most effective, but for the most part it is left on, and allowed to wear off with use. This is particularly so with greenhide ropes.

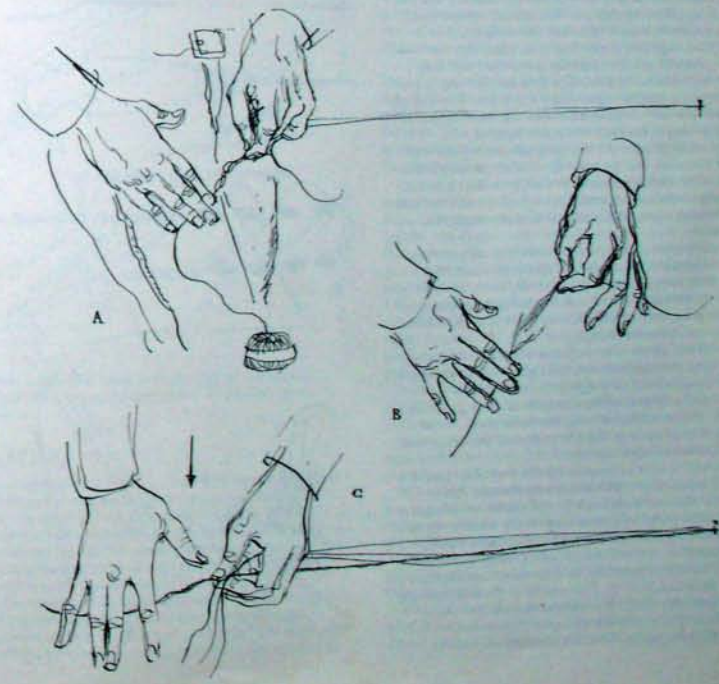
ROLLING A THREAD

(As shown to me by Ben Lanskey and Jock Mawdsley, saddlers, Cairns, 1973.)

For years I thought that saddlers, with their handmaking and beeswaxing of threads, were just a lot of stick-in-the-mud traditionalists. After all, today we have nylon threads, fine, white and twice as strong as any other, and it seemed remarkably shortsighted to ignore all these modern innovations and to have to roll a thread whenever one was needed instead of just using the ready made material.

Needless to say I always used nylon, and cursed and swore as I sewed, ever so slowly, pulling the needle through the leather with a pair of pliers, snapping needles with monotonous regularity as the threaded eye would jam in the hole I had pricked through the leather.

Finally I asked a saddler why he made his own threads for hand sewing when he was actually using ready made nylon thread on his sewing machine. His answer was that if he used the ready made thread for hand work then his needle would always be jamming



in the leather and getting broken! The reason was obvious enough when he explained it.

If a machine-made thread is put through the eye of a needle the result is that this will be the thickest part of the needle and thread, being a double thickness plus the thickness of the eye. Handmade threads are made with a long taper on the ends so that when they are threaded through the eye and doubled over they lay snugly in the groove at the eye of the needle and represent about the same thickness as the widest part of the needle. This means that once the needle passes through the leather, the thread follows without any trouble.

Threads are rolled from what is known as Common No. 2 flax thread, which is thin, hairy and quite unprepossessing in appearance. The saddler has a nail driven into his bench, and he takes a turn around this with the thread, brings it back to his thigh and holds it firmly with his left hand.

With his right hand he then rolls it down his thigh as in A until the fibres have become unwound. The right hand then holds the thread while the left pulls, and the thread breaks apart with no effort, and with a long taper, the longer the better. The saddler does all this in one flowing motion. The thread unwinds and pulls apart with such ease that one wonders how it ever held together in the first place. But this has come from years of practice and the newcomer will find that there has to be a lot of pulling and jerking before he develops just the right skill for this job. The ball of thread is usually kept in a tin with a hole in the lid to avoid getting it knocked about and tangled.

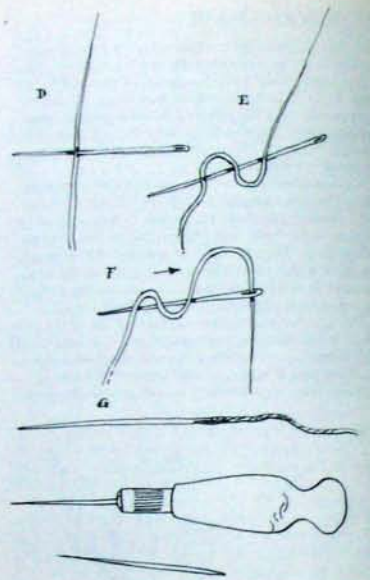
For most threads the saddler goes around the nail three times, so that he ends up with six strands in his hand. If he wants a heavier thread he will go around as many times as required, I have heard a saddler talk about using eight strand thread in some parts of a saddle.

The six strands mentioned above will only make a three strand thread, as the saddler is now holding both ends in his hands. The next step is to wax part or all of the thread. I noted one second generation saddler who only waxed the ends at this stage, while others wax the entire length.

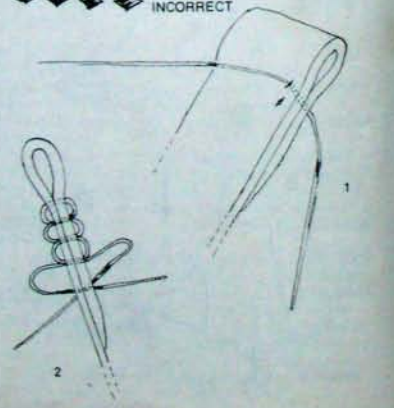
One set of three strands is now rolled down the thigh until the thread is twisted right back to the nail. The thread is held as in figure C, the left hand gripping the thread at the completion of each rolling action. When sufficient twist has been given to the thread it is gripped in the left hand and the other half is then rolled in the same way.

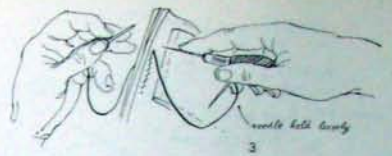
Beeswax is now rubbed along the thread to give it a good cover and the thread is ready for use. Some saddlers also run it through their fingers, or through a tightly held piece of canvas so that the friction melts a little of the wax and gives a better, smoother finish.

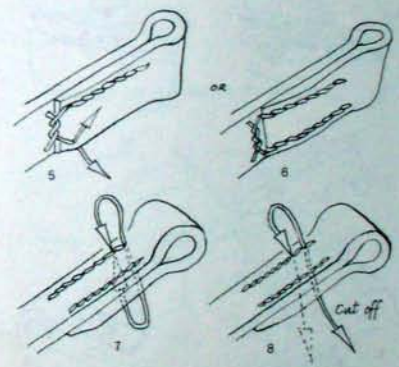
As saddlers sew with two needles, each end of this thread has its own needle, and these are attached as in the sketches D – G. The needle is pushed through the thread about eighty millimetres from the end, according to the amount of taper, then pushed through twice again. The eye is threaded and the



SEWING AWL AND SPARE BLADE







whole lot pulled back over the eye of the needle. When done properly the thread will never come undone.

SEWING

Most sewing of leather is done with harness needles. These are the same shape as ordinary needles but have blunted points. The reason for this is that the needle is not used to make the hole in the leather. An awl does this. As the worker works with two needles, pushing one from each side of the hole, he is less likely to prick himself with a blunt needle.

The thread is made as described, and the work is held in the clamp, which in turn is held upright between the knees. The correct traditional method of holding the clamp is not upright but leaning over at an angle across the left knee. This gives the worker a better position for making the holes in the leather with his awl, but it also means that the lower needle has to find the hole by touch rather than sight. Despite this, some saddlers maintain that they can get the needle through the hole easier than the one visible to them!

The amateur worker usually holds the clamp upright in order to be able to see both holes, and as a result his work is slower. The awl is held in the right hand and used to make the hole for the needle. The blade of the awl is diamond shaped in cross section, and is used to make a series of holes positioned as shown in the top row (opposite page, centre).

It will be realised that this position leaves the strongest amount of leather between each hole. If the awl was to be held so that the point of each diamond nearly touched the next one, as shown in the lower sketch, opposite page, then the leather would be very weak at this point.

With a needle at each end of the thread the sewing is begun as shown in 1, and proceeds in a straightforward manner. The holes are made sufficiently large enough to allow both needles to be pulled through together, and for this reason the worker will usually have at least two sizes of awl blade to suit different thicknesses of leather.

After the awl blade is pushed in with the right hand, 3, the left hand begins to push its needle in as the awl is withdrawn. When the awl blade is withdrawn the needle is then supposed to be halfway through. This is the professional method, but amateur leather workers usually withdraw the awl before beginning to put in the needle.

As well as holding the awl in the right hand, the second needle is also tucked away, and at this stage it is brought forward and pushed in alongside the first needle, the fingers moving the awl out of the way as this is done. At no time during sewing is the awl put down or the needles left to hang slack. When both needles are pushed through together they are held at a slight angle to each other, 4, otherwise they will poke into the tips of the saddler's fingers as they come through. When they are pushed through far enough to grasp, the fingers leave the lower needles and pull through the needle from the opposite side.

Some workers use a special pricking wheel to make regular marks in the leather to indicate the position of each stitch. Special wheels are made for the job, or a home-made one is employed such as that described later in this section. One bushman said that he used to use a fine spur rowel for the job.

When sewing a strap saddlers frequently move from one side of it to the other by twisting the thread on the under side as shown in 5 and 6. Note that one thread comes out just below the end of the folded back piece of leather. This is done so that the twisted section occurs in a place where it is most protected from chafing.

When the stitching is completed it is finished off by sewing back, 7 and 8. Sometimes the needles are simply passed through the second last hole and the

thread is cut off, or perhaps the worker will go back two stitches and cut the thread off. For the sake of neatness many leatherworkers go back one stitch with one needle and two stitches with the other as shown in the sketch 8. In this way the both ends come out on the back of the leather and are thus out of sight.

It may seem strange that no knot is tied to complete the stitching, but if the job has been done well and the threads pulled up tight then this backstitching is sufficient. However, if the holes have been made too large and the thread not pulled home properly, and if it is losing its twist and its wax, it will eventually come undone.

The thread can sometimes become untwisted as the sewing progresses, and a good saddler will give the needle a twist from time to time as he is pulling the thread through, and thus keep a good firm thread. He will also give the thread a rub with the beeswax lump if it begins to look at all hairy, but this is not necessary if the thread has been made properly in the first place.

SEWING WITH SHORT PIECES

If a saddler has to sew a number of short sections, sewing a lot of buckles on or that sort of job, he obviously will not want to have to stop and make a new thread each time just so that he can have a needle on each end. Having sewn on the first buckle using a full thread with two needles, he will cut off the threads and now have two fairly long pieces, each with a needle on one end.

As I explained in the section on thread making, it is not possible to just put a new needle onto one of these cut ends.

One of the main points noted when making the thread is the creation of a long tapered end. Without this the needle will become too bulky at the end and will have to be pulled through with pliers at every stitch. Attempts to taper the newly cut ends with a pen knife will be found to be generally unsuccessful as well as time consuming.

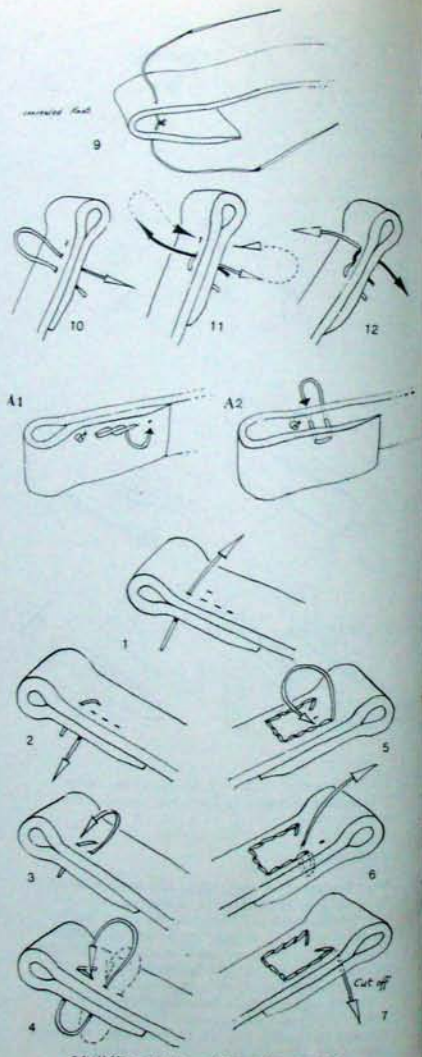
Instead the worker may simply tie a knot in the two cut ends and leave it at that. The knot will be kept on the bottom side of the work, or may even be placed in between the two pieces of leather so that it will be out of sight, 9.

Another neater method is to start the sewing in the same way as it is finished off, as shown in the sketches 10 to 12. One and a half stitches are made backwards, and then the needles are in position to begin sewing in the normal way.

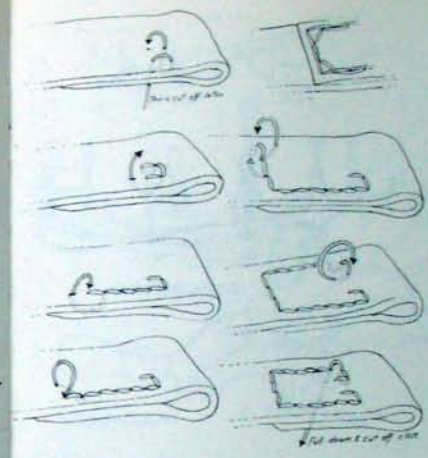
BACK-STITCHING

Back-stitching is another method used when small jobs are being tackled and there are only cut threads at hand with single needles in them. Only one thread is used and while the job looks neat on the face side the back is not so good.

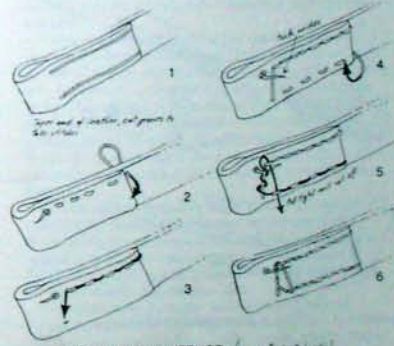
To begin, a knot may be tied in the thread as in A1 or concealed between the leather as in A2. A neater method is to begin the sewing in the same way as it is completed, as shown at right. This method was



BACKSTITCHING WITH ONE NEEDLE

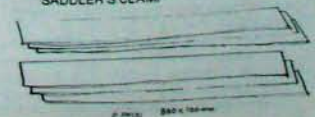


ANOTHER STYLE OF BACKSTITCHING



SINGLE THREAD METHOD

SADDLER S CLAMP



PLY FOR CLAMP

demonstrated to me by Cairns saddler J. Mawsley and in the hands of an expert makes a strong permanent job. However, if the thread is not pulled up tightly it may fray at a later stage.

The sketches at left show the same back-stitching technique, but with a slightly different beginning and end. I sketched this from an old bridle.

The extended head bridle from Birdsville, mentioned elsewhere, used yet another way of single needle stitching shown centre, below. This is slower than back-stitching but has the advantage of giving a finished job that looks equally neat on both sides. Note the rather elaborate method used to finish off. There is little chance of this coming undone even if the work is done by an inexperienced hand.

Leatherworkers are divided about the use of single needles. Some of them claim that when two needles are used, and pass each other through the hole, the thread remains untouched, and therefore at its maximum strength. When a single thread is used the needle is being pushed through holes which already have thread in them, and therefore the needle must sometimes disturb the lay of the earlier stitch. Other workers claim that this does not weaken the thread if proper blunt end needles are used.

SADDLER'S CLAMP

The purpose of the saddler's clamp is to hold the work firmly and leave the saddler both hands free, most saddle stitching being done with two needles. The clamp consists of two curved pieces of wood fastened together at the lower end. The tension of the lower bolts against the curve of the timber creates enough grip in the upper end to firmly hold the leather that is being sewn. The lower end sits on the floor and the clamp is gripped between the knees.

Proper saddler's clamps are made of two solid pieces of timber steamed to the correct curve and they will be found in every saddler's workshop. They are not so common in the bush, except on the big stations, and various home-made devices are used to hold work in progress.

Few people know how to steam a curve into timber, and so clamps are constructed of any ready curved timber that comes to hand. An old saddler told me that barrel staves were once used for bush clamps, being simply bound firmly at one end. Barrels seem to be a thing of the past, and the clamp described here uses plywood, a material unknown to the old timers.

The theory behind this is that a permanent curve can be built into plywood by simply gluing together a number of sheets. The curve is put in while the glue is wet, and once it has dried it cannot possibly be straightened permanently again. The reason is that the outer layer of ply is slightly longer than the piece that forms the inner curve, and before the piece could be straightened the entire glued surface would have to part company.

I do not know who developed this technique, so brilliant in its simplicity, but it was probably a boat builder, for cold-moulded boat hulls have been constructed using this method for some years now. A

boat builder friend has introduced the technique into his home, using it for the construction of curved seat backs and similar curved surfaces, and here it is shown as a simple fast method of making a clamp. (I have also seen it used for making a timber frame for a rucksack, the timber having more spring in it than the usual metal frames).

Each half of the clamp is made from three pieces of ordinary three-ply, or four pieces can be used if a heavier article is required. The length given here is 860 by 100 millimetres, but this can be altered.

When sitting on a stool the clamp should be high enough for comfortable working.

The three pieces of ply are well covered with glue, especially up to the edges and around the ends, and placed one on top of the other with a piece of paper on the top piece. The second three pieces are then glued and placed on the paper (the paper is only to prevent the two halves from picking up squeezed out glue and sticking together).

Any strong glue can be used, but 'Aquadhere' is one favoured by carpenters for this sort of work, being clean, cheap and not requiring any mixing. 'Resorcinol', a waterproof two part mix is another favoured glue for this sort of work. 'Araldite' is good, but expensive.

To bend the two halves a simple jig is made up from three pieces of scrap timber, laid out as shown in the diagram. The two pieces of glued ply are placed on this and a small piece of scrap timber placed so that it will bear down on the first 130 millimetres of ply. Once this has been clamped down firmly other clamps are placed along the length of the job, as many as are needed to squeeze the layers firmly together. Scrap pieces of timber are placed under each clamp to distribute the pressure and prevent the clamp from marking the finished job.

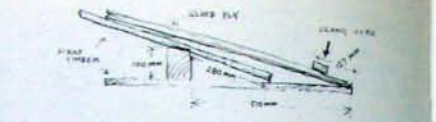
When the glue has dried it will be found that the two pieces are permanently curved, and the edges are then planed smooth. The jaws of the clamp are rasped down so that they meet snugly. It will be obvious that most of the nip is needed at the very top of the clamp.

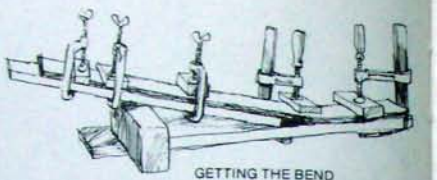
Four bolts complete the job. They are positioned to give the required grip, the higher up the clamp the more pressure will be exerted by the jaws. In the clamp in the sketch the lower bolts were fifty millimetres from the bottom, the top ones 230 millimetres from the bottom.

CUTTING STRAPS

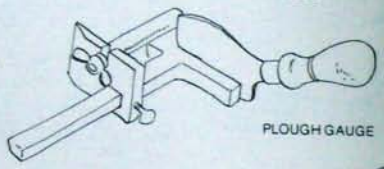
Cutting straps is a regular part of the saddler's work. Nearly everything that he makes will have at least one strap in it, and things like bridles consist of nothing else. For this reason the professional leather worker has a special tool for the job known as a plough gauge consisting of a chisel-like blade and spacing arrangement which he pushes through the leather.

It is interesting to note that as this tool runs parallel with the edge of the leather, there is no need to have the edge of the leather dead straight. In fact I have noticed a saddler cutting a strap from a very wavy

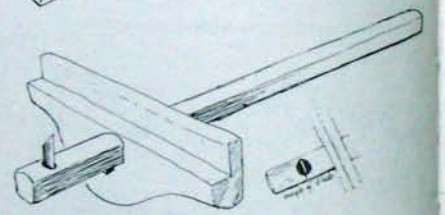




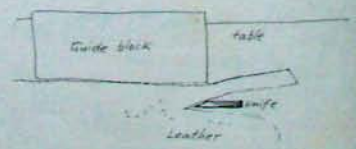
GETTING THE BEND

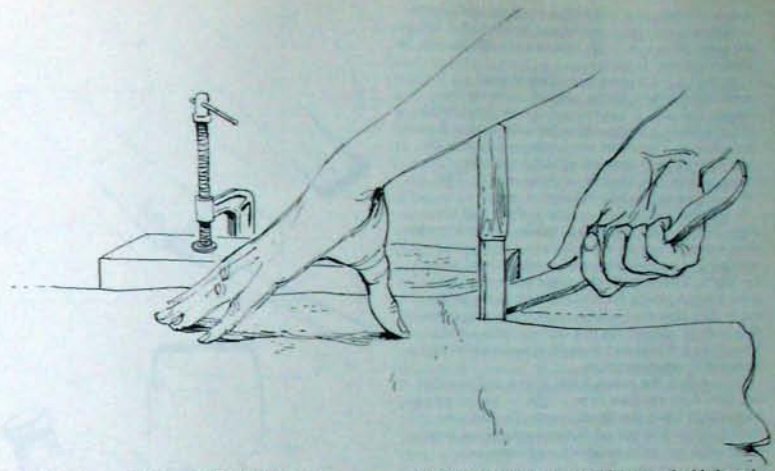


PLOUGH GAUGE



HOME MADE PLOUGH GAUGE





side of leather explaining optimistically to his customer, as he did so, that it would straighten out with use!

The plough gauge used by the professional is an expensive piece of equipment. I noticed one recently for thirty dollars and the bush craftsman seldom owns one. Instead he resorts to a number of short cuts to make strap cutting a little easier. One old saddler told me that he had seen bushmen cutting straps by holding their two hands together, a knife in one hand to cut the leather and a short stick in the other which was held on the outside of the leather and acted as a guide.

A more elaborate tool is illustrated in the sketch centre right. This bush tool must be fifty or more years old and is all hand-made. The cross-arm slides up and down to the required position and is held firmly in place by gently tapping a small wedge which fits into a slot under the main arm.

The blade was probably made from a piece of hacksaw blade. The problem of fitting it into the main arm was solved by drilling a hole a little smaller than the width of the blade and hammering it through. This blade is sharpened on the inside only, as suggested in the small section that I have drawn in plan (of course the blade is not nearly as thick as I have shown it in the sketch).

By sharpening the blade on this side, the leather tends to be pushed towards the cross-arm, and thus making a good parallel cut. If it was to be sharpened on the other side it would tend to pull the leather away from the cross-arm and so make a wobbly cut.

To use the gauge a small cut is made in the leather to start it, and then the tool is pulled towards the operator who usually keeps his thumb above the cross-bar and the leather and between the blade and the sliding arm in order to stop the leather from riding up.

Another simpler method of cutting straps was described to me by a bootmaker who said that he used to cut strips used for bootlaces as well as large straps in this way. The leatherworker simply drives his knife into the bench and then clamps a block onto the edge of the bench the required distance away from the knife.

The left hand holds the leather against this guide while the right pulls the strap, as shown in the sketch. There are two points to note with this method. First, the guide block should be clamped in roughly the position shown in the plan opposite, bottom. This saves ones knuckles banging against it as the strap is pulled free. Second, the knife should be very sharp, and it is even better if it is only sharpened on one side, as indicated in the plan. This tends to keep the leather pulled over towards the guide.

However, with care any sharp knife can be used, as long as the left hand keeps the leather hard against the guide.

SLOT PUNCH

Slot punches are used to make the slots that take the tongues of belt buckles. People who only occasionally do leather work have no need of such a punch, as slots can be easily made by making a number of close holes with an ordinary round punch.

Bushmen will often make their own slot punches and large round punches from odd scraps of steel tube. The punch shown in the diagrams was made for me by Cairns mechanic, Joe Sedlbauer. He took a

length of steel tube 110 millimetres long and fifteen millimetres internal diameter and hammered it flat to the shape shown in A. He said that one should aim for a long taper on the tube.

He then used a small cold chisel (a large screwdriver would do the same job) to form the correct size slot. It was easier if one person held the chisel in place while the other held the tube and used the hammer. The chisel was hammered in until the tube was the right dimensions and it was then hammered to give an even opening, as in B. This measured twenty by four millimetres inside.

It was then ground down as in C. Note that the angle changes just before the opening. Experience has shown that if the long taper is carried right to the opening the home-made punch tends to bend along the edges. Undoubtedly this could be avoided by correctly tempering the steel, but this is the job for the expert. However, a little rough tempering is better than none at all, and the end of the tube is usually brought to red heat and plunged in water to achieve a certain amount of hardness.

To complete the punch a bolt is dropped into the top. This does not have to be a tight fit, just as long as it spreads the hammer blows evenly. These home-made punches will not cut through very heavy harness leather, but are quite suitable for ordinary belt leather.

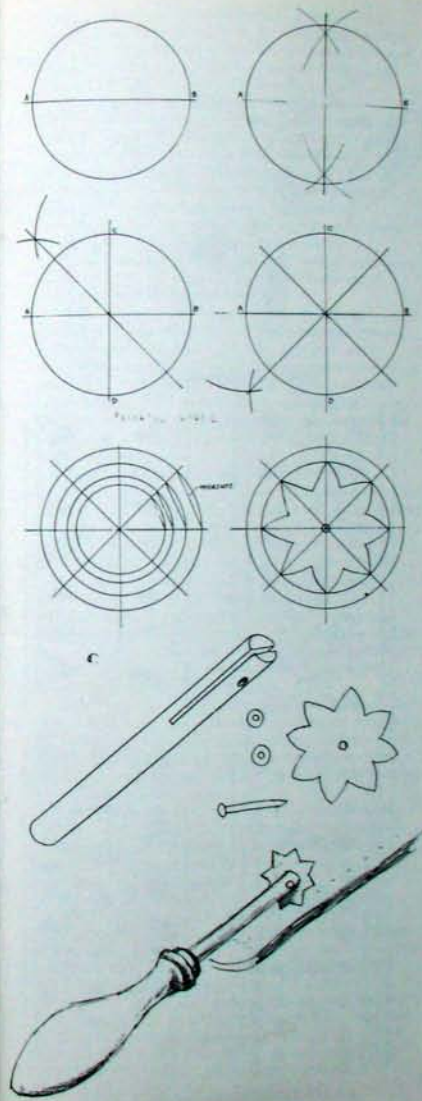
I have also collected a bush-made round punch, as shown in E. This was made with a piece of tubing of seven millimetres internal diameter. It had no stopper on the hammering end which consequently became burred and prevented the punched out pieces of leather from escaping. To avoid the leather jamming a slot was cut as shown. This went half way through the tube and performed its function quite satisfactorily.

PRICKING WHEEL

Pricking wheels are used to make a continuous line of small marks on leather to show where the stitches or lace holes are to go. They are only used by people who do a lot of leather work. If only a small amount of work is done then the marks are usually made with the aid of a ruler, or by using a speedily made single pricker of the type shown in the sketch. This is nothing more than two thirteen millimetre brads hammered into the end of a stick, but even so it will make the marks in the leather faster than can be done by using a ruler to measure them off one by one.

Despite their simplicity, pricking wheels seem to be rather expensive (around ten dollars at present) and where possible leatherworkers try to make their own. One simple method of doing this is to use the cog wheel out of an old clock. A wheel of around twenty millimetres is selected and sufficient of the teeth are filed away until the remaining ones will make marks at the right distance apart. The problem with this method is that one seldom finds a clock in pieces when it is needed, so generally the wheel has to be made from the beginning.

SINGLE PRICKER



A scrap of copper or brass sheet is the most suitable material to use. Its gauge is of no great concern, as long as it is not so thin that it will bend when being used. Using a small brad or a centre punch a small mark is made in the metal, just enough to stop the point of the compass from sliding all around the place. The correct sized hole is not made in the metal till later, otherwise the compass cannot be used with any accuracy.

An octagon is now drawn onto the metal in the following manner. A circle of about thirty millimetres is drawn and a line ruled across it (see diagrams) which we will call AB. The compass is then placed with the point on A and opened out to around two thirds of the diameter and an arc drawn. Another arc is drawn from B and where these intersect a line is drawn which will cut AB at right angles.

The compass is then set on A again, this time opened out to around two thirds of the distance between A and C. An arc is drawn, and another one from C. A line is then drawn from the intersection through the centre. This action is repeated at A and D and the circle will then be seen to be divided into eight.

Each of these intersecting lines represents a point on the finished wheel and so the distance between them must be the distance that you want to mark on the leather. It is most unlikely that the first circle to be drawn will show the correct measurement for the points, and so a number of circles are drawn and measured, until the correct distance is found. Points are then drawn in as shown in the final diagram in this series, and the metal is filed away. The centre hole can then be drilled out.

A piece of metal rod is selected for the shank, a slot is cut into it and a hole drilled through it as shown in C (if available, copper or brass is the best, both for appearance and ease in cutting the slot). A copper nail, a piece of welding rod or something similar is used for the axle, burred over at either end. If available, tiny washers on each side of the wheel help it run straighter and without rubbing on the side of the shank.

The handle is made from any convenient piece of wood. Wooden handles made to fit over file tangs make excellent handles for one of these wheels.

MALLET FOR LEATHER STAMPS

As mentioned earlier it is always advisable to use a soft headed hammer on leather stamps in order to avoid burring them. Also it allows one to exercise more control over the amount of pressure brought to bear on the leather. A metal hammer used on a small punch can almost drive a hole right through the leather. The suppliers of leather tools keep special rawhide mallets made for the job, but these are a little expensive, especially if only a small amount of work is to be done, and it is no great trouble to make a suitable one.

The heaviest wood available is used for the head, which is usually a cylinder fifty to sixty millimetres in

diameter and 100 millimetres long. A good overall length for the handle (including the part that goes through the head) is 260 millimetres. An ordinary hammer handle that has broken off at the head makes an ideal handle. A hole is drilled through the head, twenty millimetres in diameter, and the handle either glued into position, or tightened up with the use of hammer wedges.

In my own case I did not have any heavy wood at hand, the best I could find was a forty-five millimetre square piece of Queensland silky oak. Having made up the mallet with this, it proved to be too light for the job. It is hard to say what the correct weight should be, but it has to be sufficient to drive the stamps into the leather without tiring the arm after a short time.

In order to build up the weight of the head, I then drilled out a hole thirty-five millimetres diameter and about twelve millimetres deep at each end. Into each hole I hammered a couple of broad headed nails so that their heads were just clear of the bottom of the hole. These acted as anchors to hold the lead.

I then melted down a few lead sinkers. The electric stove provides enough heat for this. I poured the lead into each end. I also popped it under the tap for a second to prevent the lead from charring the wood too much, but in any case it would soon cool down and probably do no damage even if no water was used.

The lead shrinks slightly on cooling, and it might appear that it is loose in the hole, but the nail heads hold it in place, and after it has been used for a short time the hammering spreads it out and makes a tight fit.

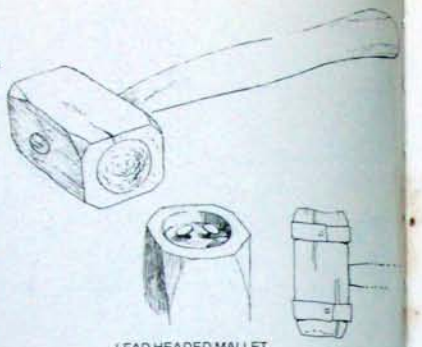
I would like to make a couple of points about the sketch. First a cylindrical piece of timber makes a better mallet head, and second, if you hit the timber edge instead of the lead it tends to split as shown in the sketch. A metal band would stop this if one could be easily fitted on. I subsequently tacked a scrap of copper around each end.

LEATHER STAMPS

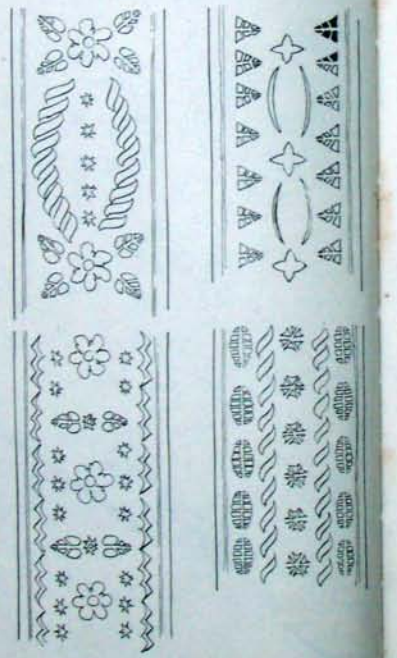
A considerable number of stockman's belts and fancy saddles have some form of decoration worked into the leather. Today, the most common designs are flowing patterns of leaves and flowers executed in a technique known as leather carving. For this work the design is first drawn out on the leather and then the outlines are cut in for a depth of around one millimetre using either a sharp penknife or a special tool called a swivel cutter (or swivel knife).

One side of the cut is then pressed down (the leather has been moistened before the cutting begins) using either a smooth flat-ended tool called a bevel, or a similar tool with a grained pattern called a background tool. Decorative textures are produced with camouflage tools and veiners.

Although a few tools are needed to produce carved leather work these veiners, seeders, camouflage tools, etc. are too intricate to be made by the average



LEAD HEADED MALLET



BELT DESIGNS WITH HOME MADE TOOLS

amateur. The American Craftool Company, which supplies most of these tools to the Australian market sells a complete beginners' outfit consisting of a small number of tools, swivel knife, a rack to hold them, and a well-produced instruction book.

The other style of leather decoration differs considerably from the carved work and consists of generally symetrical patterns produced with a variety of leather stamps. This type of design is more traditionally Australian, for the very simple reason that the leather worker was able to make his own tools at little cost and with the minimum of equipment. Recently home-made stamps have been used to execute complicated and extremely decorative designs, but the old time saddler was more inclined to use them to make fairly conservative borders around his leather work.

Leather stamps may be purchased in a large variety of designs, but I am not here concerned with these factory-made tools, but with the ones that can be made at home. The stamps described here would cost over $100 to purchase (the average price is $2.50 each). In fact they can cost little, except time, being made out of scraps of mild steel rod discarded by an engineering shop and worn out files, cut into 100 millimetre lengths.

The requirements to make them are a vice, grindstone, small three-cornered file, hacksaw and, in some cases, heat. The old files could not be used until they had been brought up to red heat and allowed to slowly cool in order to take the temper out of the metal. In other cases the rod had to be heated and beaten out while red hot into the shape required.

Getting the metal red hot can be the greatest problem facing the amateur. In the old days every station and mining camp had its own forge, as did the local blacksmith, but today such things are harder to come by, though most garages have oxy-acetylene torches which will do the same job.

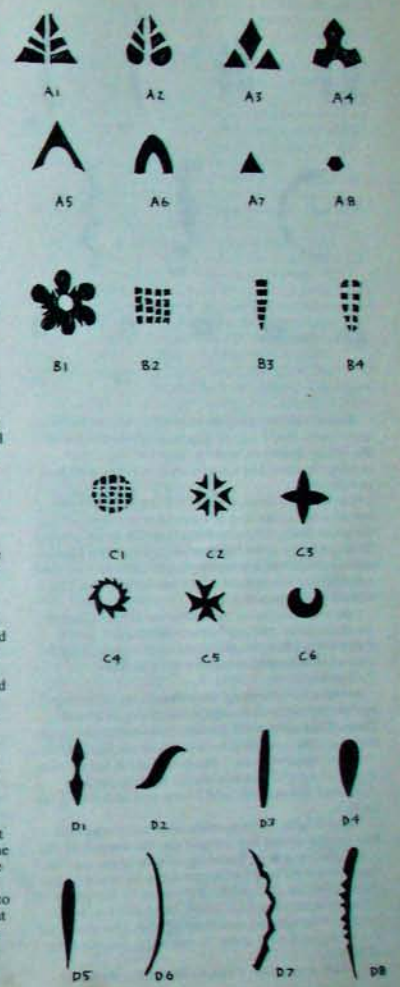
I was lucky enough to pick up a small hand wound blower with some old tools that I purchased and I had this fitted up to a small forge made for me by a local engineer, using a plough disc as a base (some home barbecues are fitted with vacuum cleaner blowers and these can be used as forges).

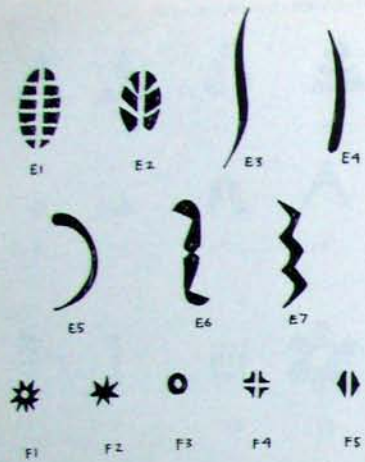
Originally, I used wood for fuel, but found trouble in maintaining heat as the timber had to be in small pieces and burnt away very fast. An old mechanic suggested that the correct stuff to use was coke and so I bought myself a bag full.

The next few sessions were hell, but without the heat. It seemed that no matter what I did to that damned stuff I could not get it to catch alight. In fact at one stage I decided that I had at last discovered the ultimate thermal insulator — fill the lining of a house with coke and it could never — ever — catch on fire.

However, in time and with further advice I began to master the stuff. The secret was to clear the forge out in the centre and get a good wood fire going. As this burnt down to make a deep bed of coals, still with a good fire going on top, walnut sized pieces of coke were added and the blower was kept going.

HOME MADE LEATHER PUNCHES





Soon it became possible to get the rods to red heat, and I knew that I was getting somewhere (even if in the wrong direction) when a small file that I was heating drooped like a limp candle and the steel tang melted off.

One obvious disadvantage with the forge for this sort of work is that too much time is involved getting the whole thing set up to make it worth while unless a lot of tools are to be made at once. I found it best to make at least half a dozen shapes at the one time, and perhaps take the temper out of a couple of old files while the fire was still going.

I drew on a number of sources for the designs for the tools. Some of them came from designs on old pieces of saddlery, while others I had noted being used on contemporary leather work in North Queensland.

At the time of writing, John Pace, one of the best leather designers in Australia, was living in North Queensland, and it was notable that he made most of his own tools, creating the most intricate patterns with the simplest tools. I also found some home-made stamps in an old tool box, dating back to the first decade of this century, and I have also included these designs.

A These have all been made from three-cornered files heated to red heat to take out the temper. If this is not done it will be found impossible to cut and file them. A simple and useful stamp can be made by just cutting the file off towards the end (A7). A number of different sized triangles can be made this way and a variety of interesting patterns made up with them. A8 is a hexagon simply made by cutting across the tang of the file.

B Tools made with a variety of shanks. B1 is an attractive flower made by filing the head of a large hexagonal bolt. B2 is an old stamp made by filing into a square section length of iron.

C These tools do not require any heat to make them, they are all made from scraps of 6.2 millimetres mild steel filed into shape. C4 and C6 also had a shallow circle drilled into them with a large drill.

D These tools were made with scraps of six-millimetre mild steel brought to red heat and hammered into the required shape, then finished with a file and with the help of the grindstone. It will be found that only a general shaping can be done at the heated stage unless one is an expert. It is mostly a case of generally spreading the metal and heating out the rough shape.

E E6 and E7 were simply beaten out to a rectangle and the pattern put in later with a file.

F These extremely versatile tools were simply made from 100 millimetre nails. The design was put into the head of the nail with a fine three-cornered file. F1 and F3 also had a hole drilled into the centre. F4 and F5 each created interesting long patterns when used for borders. F5 could be used as shown or on its side.

Before using the stamps the leather was 'cased', that is to say it was moistened to the stage where it would take the best impression. If the leather is too dry the design will not take at all well, while if it is too wet the leather will remain spongy and the design will tend to slowly fade as the moisture dries out.

Good embossing leather only requires being slowly pulled through a bowl of water to get it into the right condition. It is then moistened with a sponge from time to time while the work progresses to prevent it drying out. Some leathers have a slightly oily finish and these may need to be soaked in warm, not hot, water. Some leather workers moisten the leather and then leave it in a plastic bag overnight to get it to the correct state, but this is usually not necessary.

The stamps are hammered with a light tack hammer or with a proper rawhide head mallet. The softer mallet prevents the stamp damaging the leather and also saves the end of the stamp from becoming burred over. However, these mallets are expensive and not always readily available so I have included a description of a home-made one.

SOME LEATHERWORKING TOOLS

There are many and various leatherworking tools and most of the basic ones have already been mentioned in this section. The remainder are shown below. These represent the average tool kit of the bush leather worker, not the array of the specialist.

The bushman will often produce his leather articles with only one tool, his penknife. With this he will cut out shapes, the thickness of his leather, cut laces and even decorate the edges with grooving by using the end of the knife when the blades are closed. One side of the knife cover runs along the outer edge of the leather and acts as a guide, and the other side makes a groove in the leather, which usually has been dampened.

The screw crease does just the same job, but unlike the end of a penknife it can be adjusted with the aid of the screw on the side so that the groove can be varied in its distance from the edge. This groove gives a neat finish to the edges of leather work.

The compass racer can be used to cut circular grooves, but that is not its main job. It is used like the screw crease, but instead of making a groove, it cuts a tiny channel in the leather. This is sometimes used for decoration, but is generally used where leather has to be stitched. The stitches fit into this groove and are then flush with the surface of the leather.

The edge shave cuts a small bevel on the edge of the leather, and makes it look much more finished than just a straight cut. A skilled bushman can do this with a sharp penknife but this requires a lot of practice, and apart from that the edge shave is much faster.

The round knife is used to cut and shape the ends of straps, as well as thin ends where they are to be sewn. The saddler uses it for all sorts of cutting jobs, but it must be kept razor sharp and is not an easy tool to learn to use for anything other than short cuts.

The collar maker's palm is not used much except for very heavy leather work. It is used to push needles, either with the recessed section at the end of the tool, or with the large concave section that is held in the worker's palm, and is pitted so that the needle will not slip. this tool is not needed by the majority of bush leatherworkers.

Plaited Work

Plaited work would require a book in itself to describe in detail. There are so many various designs and patterns that can be produced. In hathands alone one finds everything from a wide plait of perhaps a dozen strands down to a single strip of lace with a tiny plaited sliding knot around it.

This is a four plait band. Note how it has been finished off. In this case where the ends crossed they were pinned together with a small stitch which also held them onto the hat. In other cases they would have been held together with a sliding knot or a Turk's head. The leather was worked so that the rough and smooth sides both show and provide a contrast.

Belts show a great diversity of pattern, especially when different coloured strands are used and worked into various designs. This belt is of sixteen strands.

FOUR PLAIT

Beginning at figure 1, bottom of page, plaiting proceeds as follows. The highest outside strand is always the next one to be worked — in this case it will be seen to be the white one. It is taken across the back of the work and brought to the front between the two strands on the opposite side and twisted across to its own side once more, as in 2.

The darkest strand on the opposite side is now the highest strand, and so it is now taken round the back, between the two opposite strands and returned to its own side as in 3.

The dotted strand has now become the highest and is treated the same way as in 4. Then the striped strand follows as in 5. This brings us back to the same position as shown in figure 1.

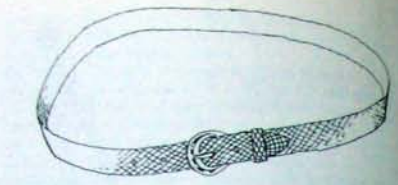
BEGINNING A FOUR PLAIT ON A RING

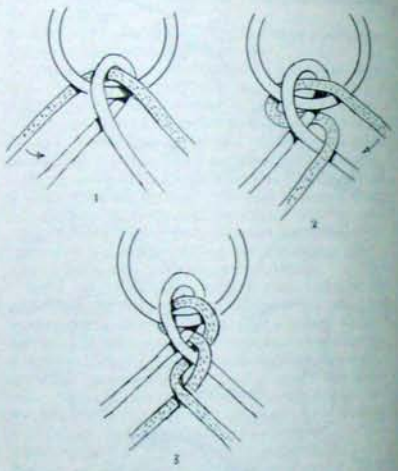
If sufficient length of leather is at hand then four plait reins can be worked directly onto the ring of the bit. The two long strands are arranged as shown in 1. As happens for the rest of the plait, the upper outside strand is worked each time.

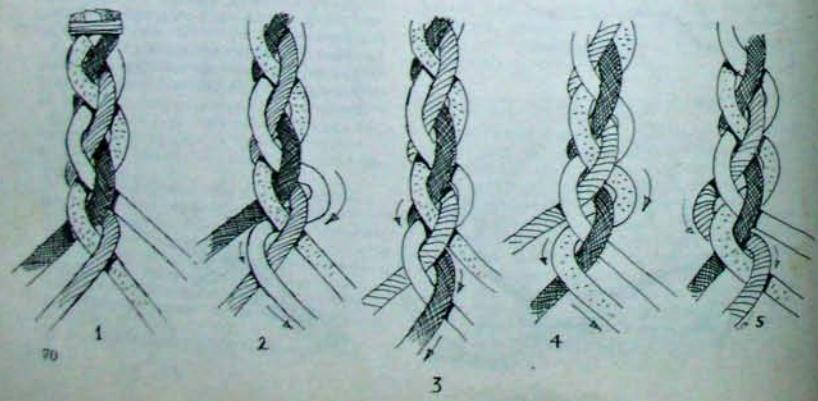
A glance at the first sketch will show that it must be the strand on the left side. If the strand on the right was brought across, it would end up laying on the same side of the white strand as the piece above it.

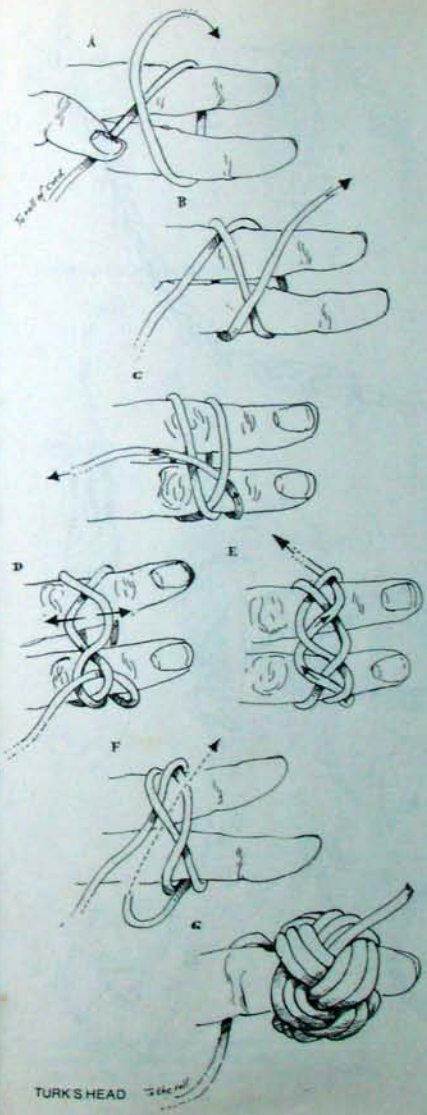
So the left strand is brought across as in figure 2, and then the extreme right hand strand is brought across in the same way. This results in the effect shown in figure 3, and from here on the normal four plait system continues — that is to say the highest strand, in this case the left one is taken across the back and out to the front between the two opposite strands, and then back to its own side, and so on.

Ending a four plait can be done with a diamond knot. See section on whips.









THE TURK'S HEAD

(See also the section on whips)

Some seamen and all whipmakers can tie the Turk's head knot, but few other people understand how it is done. It is a most useful and decorative knot, and Ashley explains some of its applications in his *Book of Knots*:

'A Turk's head is generally found on the up and down spoke of a ship's steering wheel, so that a glance will tell if the helm is amidships. It provides a foothold on footropes, yoke ropes, gymnasium climbing ropes, guardrails, and lifelines. It is employed as a gathering hoop on ditty bags, neckerchiefs and bridle reins. Tied in rattan, black whalebone or stiff fishline, it makes a useful napkin ring, and it is often worn by racing crews in one design classes as a bracelet or anklet. It will cover loose ends in sinnets and splices. It furnishes a handgrip on fishing rods, archery bows and vaulting poles. It will stiffen sprung vaulting poles, fishing rods, spars, oars and paddles. On a pole or rope it will raise a bole big enough to prevent a hitch in another rope from slipping. On edged tools it makes an excellent hand guard, and on oars and canoe paddles, a drip guard. It is found employed decoratively on whips, lanyards, telescopes, hatbands, leashes, quirts, and harness, on wicker chairs and basketry, on bell ropes and tassels. Old chest beckets, bell ropes and yoke ropes are resplendent with them.' Indeed a most useful knot.

In Australia it will be found used on yachts, whip handles and stockman's hatbands. Ashley demonstrates thirty pages of Turk's heads, each more difficult than the last. Indeed the five bight version shown here is considered so simple as to be given scarcely a mention, and I had to inquire elsewhere to discover how it was actually tied. It may be tied in cord or leather thong, and can also be tied around the object to which it is to be attached.

A and B show the beginning of the knot. The hand is then turned around and the knot continues as in C, D and E. The front of the hand is now brought forward again and it will be seen that only one movement is needed to complete the knot, that shown with the dotted line.

Having got to this stage, the knot is filled out by continuing to run another line alongside the first cord until a two or three strand knot is built up, as in G. Allow plenty of spare cord when tying this knot, and finally work it down to the required size.

KIT BAG HANDLE

While working on the coastal trader *Mahuka* some ten years ago, I acquired an old army kit bag with a decorative knotted handle and fastener. The bag has long since rotted away, but I still have the handle and recently recreated the same design to make a handle for a handbag.

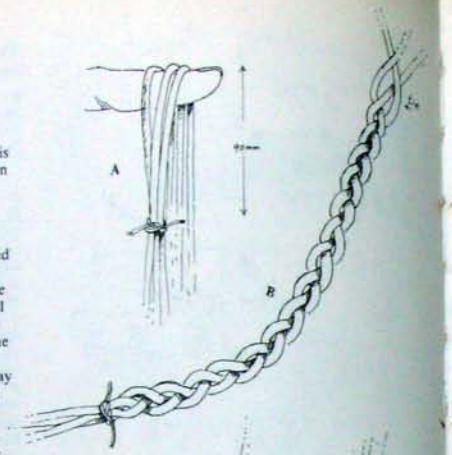
Three cords are taken, 1.8 metres should be sufficient for a kit bag handle, less for a smaller bag. The material used was nylon venetian blind cord just

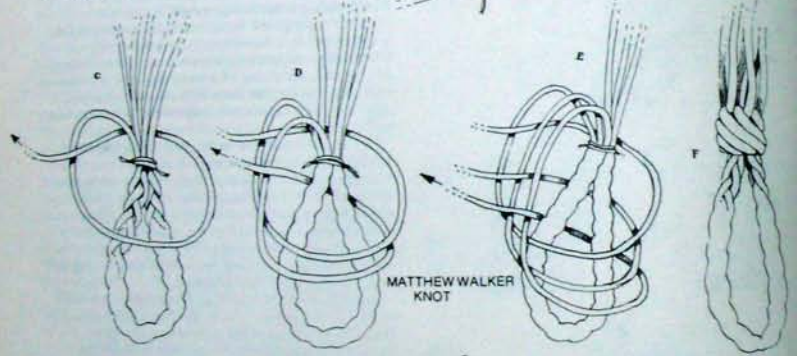
over three millimetres in diameter. The original handle was braided cotton cord of five millimetre diameter.

The cords are draped over the finger to find the middle, and a thread tied eighty-three millimetres down as in A. An ordinary three plait is then tied until an equal centre section has been made (B). This is then tied back to the other end to form the loop in the handle.

The six strands are then formed into a Mathew Walker knot. No one knows who Mathew Walker was, but he is the only person to have had a knot named after him. Any number of strands can be used to tie this knot.

A turn is taken as in C, then the next strand to the right is taken as in D, then the next (E) and so on till all the strands have been used. Each successive one goes around the back and then passes through all the other loops. Each strand is then gently pulled tight and worked up till it appears as in F. At first this may seem to be a difficult thing to do, but in fact it is an easy knot to tie after a little practice.

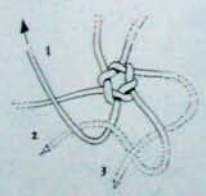


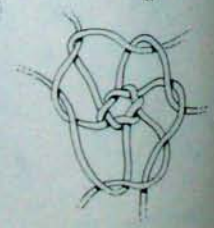


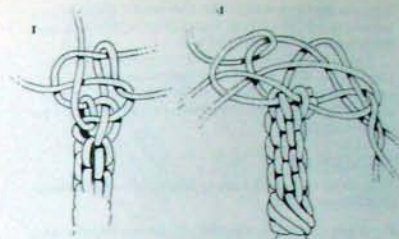
The next section of the handle is made with an Alternate Crown Sennit. Here again this can be tied with any number of strands. It is begun as shown in G. A strand is laid across to the left (1) and the next strand fed through the loop thus formed (2), the next strand through this loop (3) and so on until all are tucked through as in H.

I sketched the work in progress (J) but realise that this makes the whole thing look very complicated. Figure 1 shows the Sennit being formed with only four strands which gives a better idea of the way the work is done.

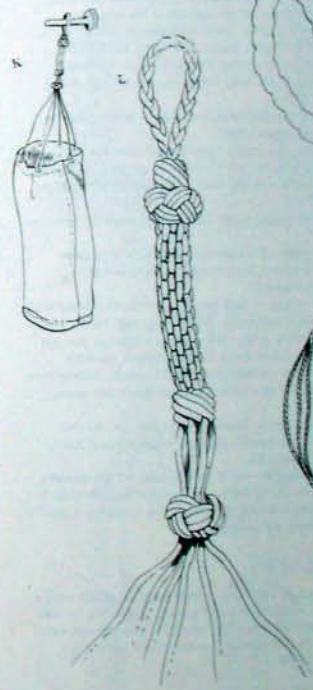
When sufficient of this Sennit has been formed, say ninety millimetres, another Mathew Walker knot is tied in order to finish it off. When used on a kit bag a Turk's head is formed, as described earlier, and the loose strands threaded through it. This is then slid down in order to close the bag.







ALTERNATE CROWN SENNIT



My original example, as shown in L also had another Turk's head formed just below the top Mathew Walker knot. This was simply a further decorative touch.

Whips

In the making of whips the bushman can demonstrate all the skill that he has at his fingertips. The basic whips consists of a handle with a leather keeper bound onto it, and the whip itself which is made with a belly around which is plaited kangaroo hide lacing (for preference), or whatever can be obtained.

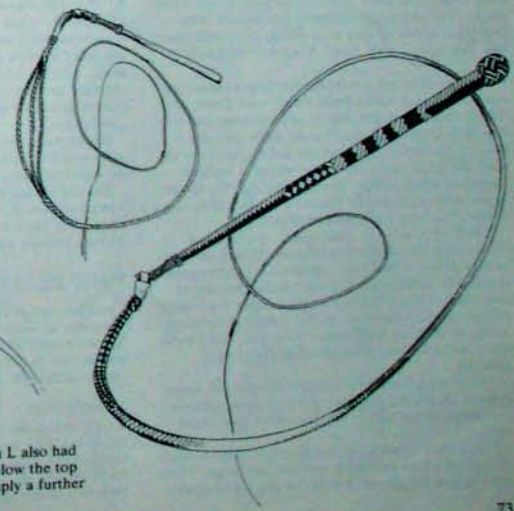
When only greenhide is available the worker is somewhat more limited in what he can produce, but even so a skilled bushman can still demonstrate his talents.

The greenhide whip below belonged to John Bashem of Bulimba Station, and was made for him by an Aboriginal stockman. It is most unusual in the way that it has been divided into three sections at one point. This serves no purpose in itself except as a demonstration of plaiting skill.

This next example is whip-making at its best. It was made by Artie Bauman of Charters Towers, who is known for his skill in this field, and was lent to me by Richy Hubner. Note the number of changes of pattern in the handle, and even in the body of the whip itself.

In addition he has used lacing of half the width found on most whips which makes his work appear even finer in comparison with the usual job. The main plait used here is the eight plait, included in the section on plaits.

The normal bush-made greenhide whip uses a six plait, or sometimes a four plait, both for speed and because of the thickness of the material.



WHIP MAKING

(Taken from an interview with Cec Cory, Holloway Beach, 1973.)

'Sometimes whipmakers put in twelve strands, though it isn't really a good idea. Six is a better strand, because it is a thicker one. With a twelve strand it is very easy to cut. A horse may put his foot on it and break a strand.

'Plaiting a whip is different to plaiting a rope. A rope is just straight out with the width all the way along, but a whip has to be tapered; small, then get bigger near the middle, at the belly; then taper right off to nothing. Then you put a bit of greenhide on for the fall, and that tapers off more still, so you won't have to plait too thin, and then you put a cracker on the end of that.

'The plaiting takes up a third of your leather, so if you want a nine foot whip you have to start off with twelve foot of stuff. To put the belly in a greenhide whip you just put in a twisted piece of greenhide, about two or three feet long, depending again on the length of your whip.

'You start off at the neck of your whip. You have a loop of course to fit onto your keeper, and the neck goes for about a foot, and then you get to the belly. You have this piece of greenhide and you just roll it around and twist it for the belly. You know you find all sorts of rubbish in the belly, like bits of twine and that. Any rubbish fills up the belly of the whip. It makes it a bit stiffer so that it doesn't just flop around.

'It's a pretty ticklish job getting strands ready for a whip. In the first place you take the hair off the whole piece. Then you start cutting out the strands. You start off at about an inch then you go to an inch and a half, and taper it right down. Then you have to split it.

'Some used to use something like a spokeshave and some could do it with a knife. Some were pretty good. They'd have the strand tied up to something, and bent over their finger, and they'd come along like this (holding the strand bent over the forefinger of the left hand, the knife in the right hand above it, and the remaining uncut leather threaded through the middle finger of the right hand). There's more in it than takes the eye. You've got to have a lot of practice.

'That's why, as I say, they used to spoil a lot of hides before they became proficient. Mostly they'd be bullock hides. A cow hide is thinner; it's not so good. A bull hide is thicker still. I don't know that they'd ever use a cow hide. When you're making ropes and things you want them strong. No, I don't think there would be that much difference between a bull's hide and a bullock's hide. Bullock's hides were more plentiful.

'If you are going to use a hide for ropes and whips you cut off the leg and flank parts and you just take the centre of the hide — the most even part of the hide.

'They used to use kangaroo hide for whips. It made very good whips because it was thin and tough. They used to just cut pieces of wire and peg the kangaroo hide out on the ground. The ants would actually do it a lot of good. They'd eat any stuff on it that shouldn't be on it like bits of meat and that.

'They wouldn't leave them out too long. They'd come home with the skins at night time and peg them out in the morning, and probably pick them up next afternoon. That would be plenty, otherwise they'd get dry and crackly.'

ON WHIPS

(This is the record of a taped interview with stockman Les Callope, 1973.)

R When you buy a whip do you always buy the whip and the handle separately?

L Well, some of the handles. You know the whip might be a bit light or the handle a bit heavy. Sometimes you'll drop them straight in front of you and they'll kick back, and it will most likely have a heavy handle or the whip too light. But I haven't bought a whip for a long time, because I just make my own you know.

R But when a stockman does buy a whip does he buy the handle separately?

L If you buy one made up it's probably not the right handle for it. You've got to hook it up and try it out. When you crack a whip, that whip shouldn't bounce back.

R When you make your own whips what do you use for a handle?

L Bamboo (the reference is to cane, not hollow bamboo), ironwood, lancewood, or beefwood.

R Why a hardwood?

L Well, if I want to belt anything over the head with it I don't want it to break. If it's a bit too heavy you just taper it down a bit with a glass bottle as you go along. You've got to keep them greased up with ordinary beef fat so that they won't crack. Sometimes I carve them, if I get time, but you don't see many carved now.

Sometimes I put a Turk's head plait on the end, you know four (strands) and sometimes I just carve the wood into a knob.

Making a whip we use four strands, or six strands. Kangaroo hide is the best, but I never bother with it when I can get a bit of greenhide for nothing. I prefer the four strands; it's stronger.

WHIP PLAITS

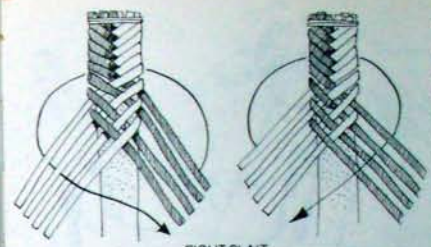
These are two of the basic plaits used to make whips. They can be worked around a core as shown, or can be woven without one. The use of different coloured leather lace in different sequences will produce a variety of designs.

EIGHT PLAIT

This is one of the most popular of plaits, and a simple one to tie. The strands are divided so that there are four in each hand. The highest one of the eight is now taken around the back of the plait, and under and over two of the opposite set, before returning to its own side.

The highest strand will now be seen to be on the opposite side, and this too is taken around the back, and under and over two of the opposite set before being returned to the bottom of its own group.

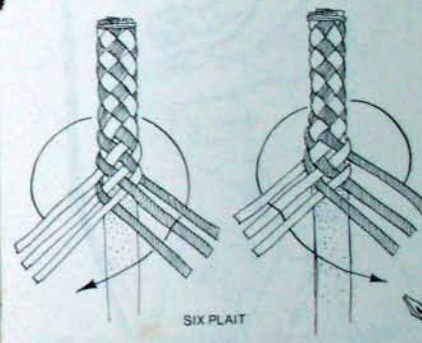
Then back to the highest on the other side and so on. To begin this plait eight strands are tied to the top of the core and are divided into two groups. The top one begins the plait as described above, then the top one on the opposite side, and so on until all four have been worked in.



EIGHT PLAIT

SIX PLAIT

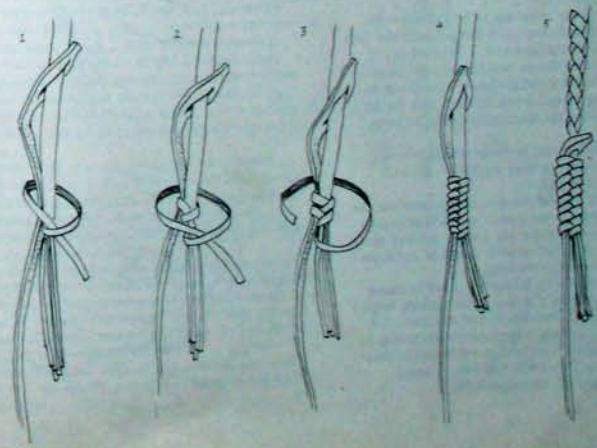
This is used with heavier strands than the eight plait, and is popular for greenhide whips. It follows much the same pattern as the eight plait. The highest strand is selected, taken around the back of the work, then under, over, and under the opposite group of strands before returning to its own group. This is repeated on the opposite side as this is now the one with the highest strand and so on.



SIX PLAIT

PUTTING A TAIL ON A WHIP

The tail of the whip is usually made with kip or red hide and tapers as shown in the sketch, with a slit at the thick end. This is put over the end of the whip and the strands of the whip are woven around it as shown. When the work is complete, as shown in 4 the tail is pulled down tight, and this also helps to make a firmer job as the wider end of the leather has a wedging effect.



WHIP CRACKER

The traditional whip cracker was made from horse hair or silk thread. Today, they are more often made from nylon or one of the other synthetics. The stockman who showed me how to make a cracker selected a few hairs from my horse's tail, which he pulled out instead of cutting (the horse paid no attention).

He held one end in his teeth and twisted the other as shown until the material could take no more twisting. He then took hold of it half way and twisted it together as shown in the next sketch, and a tight twisted cord was formed which would not twist undone when he let go of it.

A half hitch was put in the end to stop it fraying when in use and the cracker was complete. It was attached to the tail of the whip with the simple knot illustrated.

The same method is used when making the cracker from thread, a number of threads of about 650 millimetres being used.

UTILITY WHIP

This is a very basic design for every day hard usage in the yards. Stockman Les Callope said that this was the common type made in the Gulf country by the ringers, and would be generally made from greenhide, though they would also use redhide if it was available.

The whipmaker first selects a section of the hide from which he can cut a circle of around 500 millimetre diameter. He cuts a small hole from the centre of this, just large enough to get his penknife in, and begins cutting a spiral.

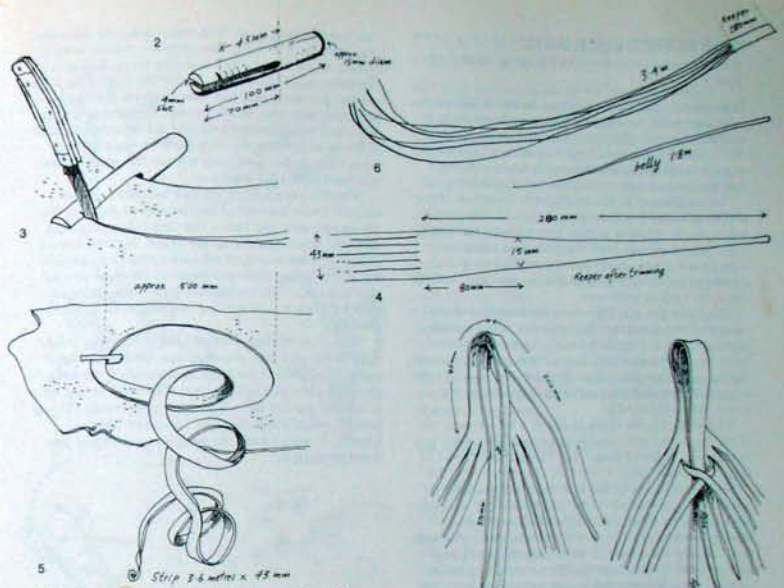
This spiral begins very narrow, and gradually widens until it is forty-three millimetres wide, 1. It is cut out with the aid of a wooden gauge. This can be made from an old style clothes peg or a short piece of dowel with a slot cut into it, 2.

The first part of the spiral has to be cut freehand, but when there is sufficient room the gauge is slid into place, and the knife held against it, 3. In order to get a gradual taper the knife can be held at a point near the beginning of the slot and gradually moved out as the cutting proceeds, until it reaches the mark on the gauge that shows that the maximum width has been reached.

Another method, which my informant preferred, was to cut most of the strip at the full width, and taper the strands down later.

When a strip of around 3.6 metres has been cut the strip is quickly tapered back and cut off. The reason for tapering it off was that it left a fairly smooth circle in the leather, and further strands could be cut from it if needed, for instance for the belly.

The last section of strip is tapered down to make the keeper for the whip. Cutting of the strands begins 280 millimetres down from the end of this leather, 4. The other end of the strip, where the spiral cutting first began is trimmed back until good sound leather is reached, the first 300 or 400 millimetres being generally rather twisty and not suitable, 5.

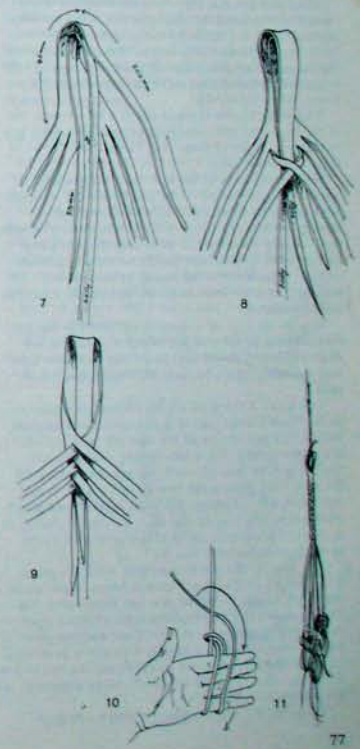


My informant next marked out the position of the strands, mainly by eye, and cut them freehand, 6. He then tied the top of the whip up to a post and began to trim the strands to shape with a very sharp knife. He gradually tapered them down for their entire length, a job that took quite a time. When the strands were considered ready a belly was cut from the leather. This consisted of a strip 1.8 metres long, and its purpose was to provide a core around which the top of the whip was plaited. He explained that sometimes the belly would be made from a section of tapered four plait leather, but frequently only a single strip was used.

The belly was now put inside the whip and the keeper folded over, 7. The three strands from each side were brought across as shown. Plaiting now commenced, using the six strand plait shown elsewhere, and beginning with the top strand, in this case on the right hand side, 8 and 9.

To avoid the hanging strands from getting into a hopeless tangle as would be the case of they were left dangling, he picked them up and folded them around his hand as shown. The bundle thus formed allowed the strand of leather to feed out from the middle as it was needed, a most useful idea.

Plaiting continued until all the strands were used up, and the tail was then attached as shown elsewhere in this section.



THE COW'S TAIL WHIP

(From a taped interview with Cec Cory, Holloways Beach, 7-8-72.)

Cec had brought me a whip that he had made many years ago while he was engaged in pastoral work in southern central Queensland, mainly around the Texas-Stanthorpe area. I did a drawing of the whip, and Cec explained how they were made with the handle covered with a cow's tail (see my sketch).

'The tail has to be taken off while it's green. When you're skinning it you don't split the tail. Generally when you're skinning a beast you split the tail down, while you're pulling it off the hide. But when you want to put it on a whip you slip it off. You put a couple of sticks each side of the tail and pull, and it'll come off, turned inside out.

'Then you put this back over the handle and peel it on so that it comes out the right way. They use all sorts of wood in the bush for stockwhip handles — some heavy woods. I just forget what sort they use. It doesn't want too much flex. You get all that from the keeper of the whip (this is the leather loop at the lower end of the handle).

'This whip handle is made out of a bit of cane, but in the bush you can't always get cane. They use hardwoods. A lot of times they carve them. Some of them are very good.

'But getting back to the tail. You just put the narrow part of the tail — the end of the tail — up the head of the stick, and pull it down over the stick, leaving the rest tailing off down the bottom. You split that hanging bit into four. You want at least a foot — the more the better. The handle would be eighteen inches I'd say and the tail would be three feet I suppose. You use the whole tail, and cut off what you don't want after.

'You tie the top up to something, and you hang a weight down at the bottom. While it's green it will stretch into any shape, and as it dries it shrinks tight over the stick, that's because it's been pulled down tight.

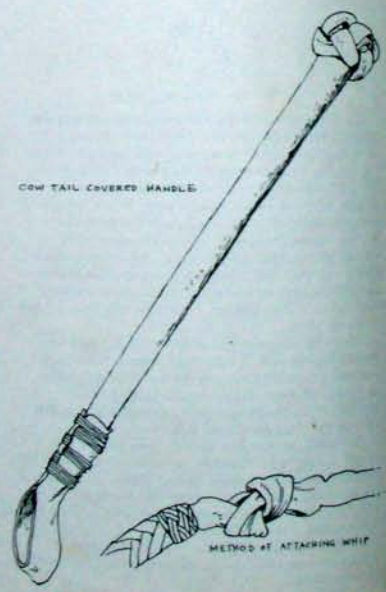
'You leave it there till it's dry. When you come to do the Turk's head part of it you soak those strands. Before this you scrape all the hair off, with a knife. It's a little bristly, but it soon wears away. It's not hard to get the hair off once you get the first lot off. It's a bit hard getting the first lot off, it's thick, and that takes a bit of doing, but once it gets down thin it soon wears off. You do this after it's dry. If you try to do it when it's green, the hide is pliable and you're likely to stick the knife into it.

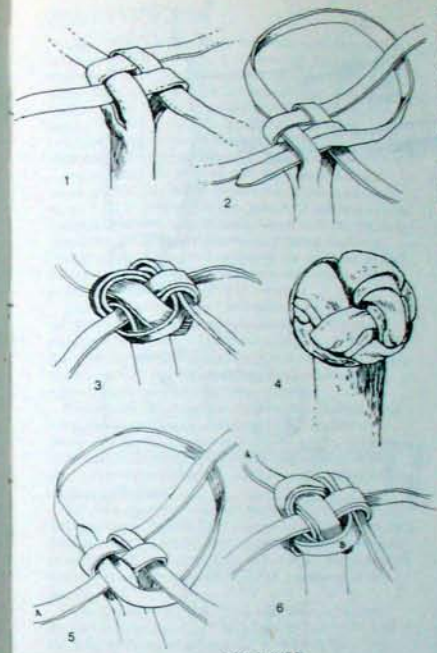
'You split it into the four strands while it's green. It's easier to do and it will stretch better. Now, at the other end of the stick, the skin just closes over that. You wouldn't use that (surplus leather) as a keeper — that is to put the whip on. You'd use another piece of leather over that with a loop in it to fasten your whip into (see illustration). You wouldn't use the tail to join the whip onto. It would break off, being untanned. It's not pliable enough.

'To make the keeper, you just make a loop of leather and bind it on. You don't make the loop too big, otherwise it makes the whip too wibbly-wobbly. About an inch and a half is plenty for it. You don't want too much play there, for on the end of the whip you've got some play too. (See diagram for method of attaching the whip to the handle. Handles and whips are often bought separately and are attached to each other by threading the whip back through its own loop.) The firmer you have it there the more control you have over your whip.

'You bind the keeper on with cobbler's waxed thread. There's a sort of special way of doing it. You lift up one side and take a few turns then you hold that side down and lift up the other. It gives it more of a grip. First you start off with a few turns around the whole thing, then you begin to lift them up one side at a time. The thread will hold on more firmly round the stick than around two pieces of leather (see drawing).

'Well after it's had a lot of wear the keeper would most likely give out, and then you bind on another piece. Of course if the loop on the end of the whip gives out then you're buggered. The loop on the whip is actually part of the whip. Once that breaks off you have to splice down through. I've never seen it happen. It would spoil the body of the whip to lace down through it.'





DOG'S KNOT

TURK'S HEAD OR DOG'S KNOT (CROWN KNOT)

Although the knot used on the cow's tail whip is referred to by bushmen as a Turk's head knot in fact it is an elaborate form of the crown knot. It is also sometimes known as the 'dog's knot' (a dog's testicles are referred to as dog's knots in bush slang).

The first sketch shows the beginning of the knot. This is the simple crown knot. It is now doubled in one of two ways. In the first method a strand is selected and is passed under the next strand and tucked back under itself at right angles.

The strand to the right is treated in the same way and so on until the four strands are tucked away as shown. They are then pulled up tight and cut off to complete the knot.

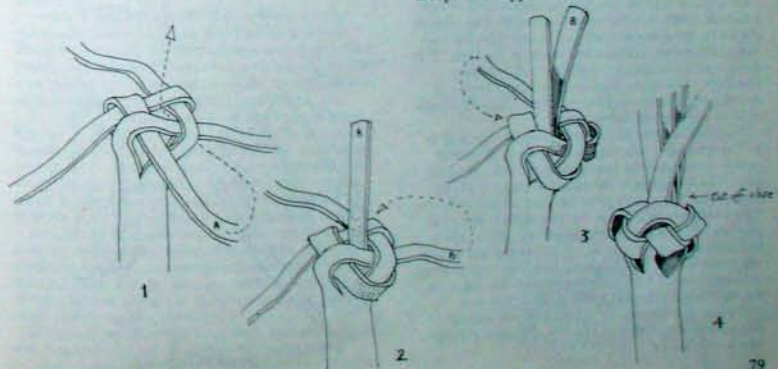
In the second method, 5 and 6, the selected strand is passed under two strands, which brings it back to its starting position as shown. Each strand is treated the same way, until the last strand marked A is arrived at. This strand passes around in the same way, but is tucked under the strand marked B in order to complete the knot.

DIAMOND KNOT

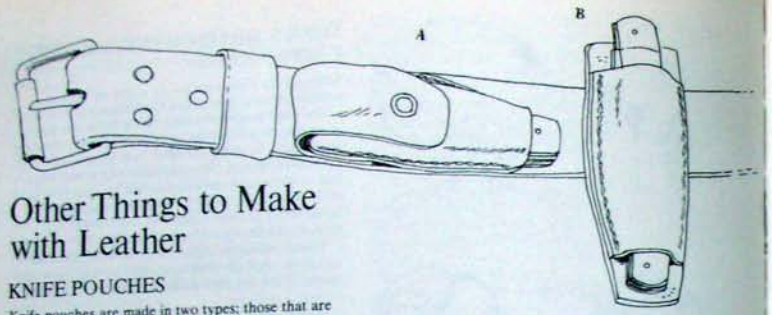
This knot begins in the same way as the knot described above. A strand is selected, shown as A in figure 1, and this is passed around its neighbouring strand and then poked up through the centre of the knot. The next strand B is now taken, passed around its neighbour and poked up through the centre.

This is repeated until all strands have been used, and the knot is then pulled tight and the ends trimmed off. As well as being made in a solid piece of leather as shown, this knot is also used to finish off four strand plaiting.

It is referred to by bushmen as a Turk's head knot, but it would appear to be a diamond knot, also used in rope as a stopper knot.



DIAMOND KNOT



Other Things to Make with Leather

KNIFE POUCHES

Knife pouches are made in two types; those that are sewn onto the belt in position and those that can be removed. The sketch shows one of each, and in fact it is quite common to find two pouches on the average stockman's belt. I have even seen three.

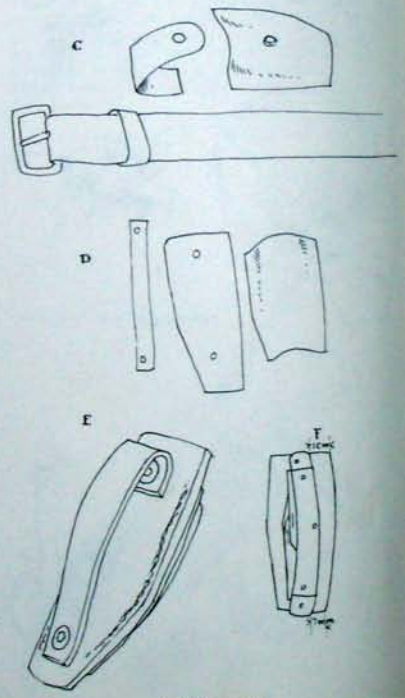
I found this belt, with one pouch on it, in the rubber vines opposite the Chillagoe pub the day after the races, together with seven bottles of beer. To leave a belt is one thing, but to leave full bottles of beer another — the ringer obviously had his mind on other matters entirely.

Pouch A was simply made with two pieces of leather (C) a front and a flap, fitted with press studs. An even more common version has no flap at all, the knife being held in place by the tightness and taper of the leather. A light bag leather was used to make this pouch.

Pouch B was made for me by a Cairns saddler some years ago and consists of three pieces of leather. The back has to be firm, and consists of a piece of harness leather, while the front, which takes the shape of the knife, is made of bag leather. Light bridle leather is also used for this type of pouch, and this also forms the loop that goes around the belt.

Ideally this type of pouch is custom-built to fit one particular knife in order to get a good fit. The knife is placed on the piece of leather that will form the back and a line drawn to follow the shape of the knife. This is not a uniform distance all round but becomes narrower towards the bottom (F) tapering from ten millimetres to seven millimetres. This allows the knife to be wedged firmly into the pouch.

The back loop is attached with copper rivets as in E. The purpose of curving the leather loop up and over is to prevent the belt bearing directly onto the rivet. The front flap is moistened to make it pliable and is then sewn down to fit the back of the knife (the right hand side in diagram F). The knife is placed in position, the leather tightly pulled into place, and a line drawn where it is to be cut off on the left side. It will be seen then that the front flap is not cut to shape in one section. First it is trimmed, top, bottom, and the right hand side, using the back section as a pattern to get the correct curve. The left side is trimmed to shape as described above, after the right has been sewn on.



KNIFE POUCHES

BELT POUCHES

Traditionally the Australian bushman has always kept his small personal goods in a pouch on his belt rather than in his pockets. In the rough and tumble of stock work things can slip from pockets and get lost, but if they are kept on the belt they are always ready at hand. Pocket knives and watches are the most common things kept on the belt, and pouches are also made to hold a box of matches.

I have given the pattern here for a standard size watch pouch (A). When made up it appears as in figure F. It is made from five pieces of leather, and is fastened with the special stud shown with the pattern. These studs have the advantage of being enduring, though there is always a tendency for the hole in the fastening flap to become enlarged and useless if the pouch is roughly handled over a period.

Using this as a pattern, and with some advice from the saddler who had originally made it, I set about making a pouch for a prismatic compass. It differed from the watch pouch only in that it was larger and I had to use a brass snap fastener to close it as the other type of fastener was not available.

Pouches of this type are made of bridle leather, or a leather of similar thickness (football leather or heavy embossing leather are equally good). It has to be of sufficient thickness to take the kind of sewing used, and also of course it has to act as a protection to the watch glass.

The first step is to cut out the back section. Because the compass has hinges and knobs projecting from it, a setsquare is used to get the correct outline, as in figure B. An extra four millimetres are added all round this outline to allow for the thickness of the gusset.

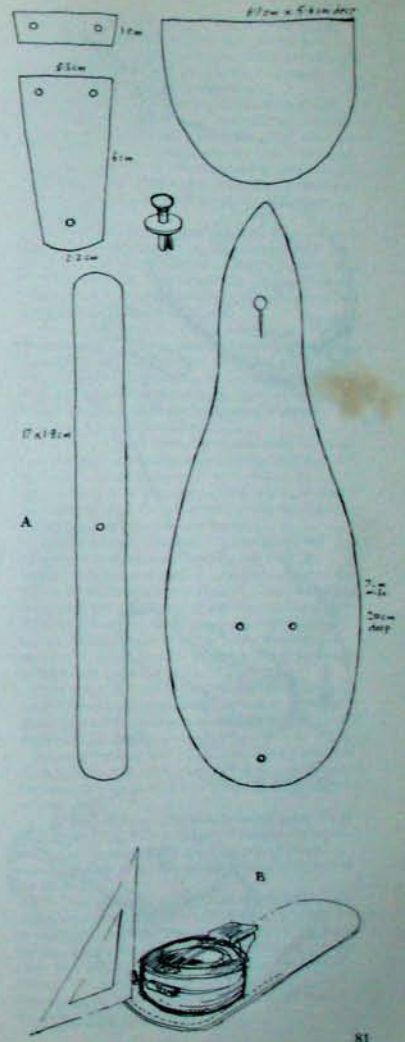
Now the front section is cut out, using the back section for the pattern. The gusset comes next, and the length of this is calculated by folding the strip around into the position that it will have in the finished job.

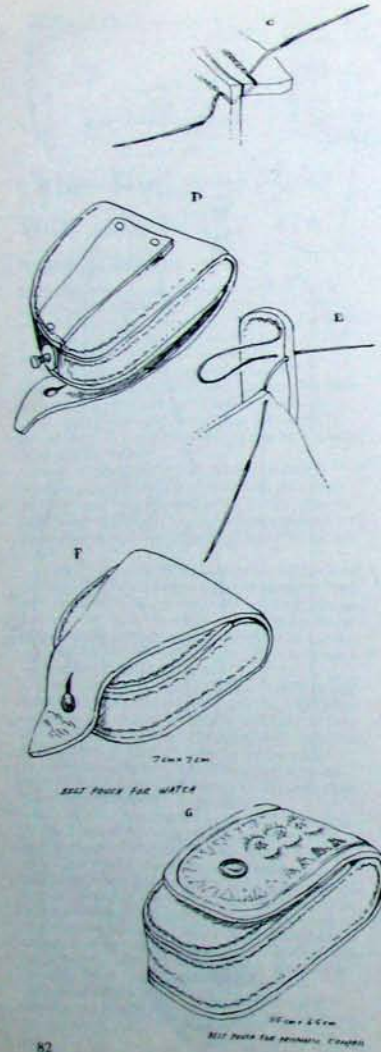
I made a mistake here by folding it around the outer edge of the front instead of sitting it on the actual leather, with the result that it ended up a little longer than it should have when sewn into place. This is no problem, as it is a simple matter to trim off any surplus when the sewing is almost completed.

The clip is then put in position on the front piece, but not on the flap. This is done when the sewing is completed and the compass in the pouch in order to get a good fit. If a solid stud of the type used in the watch pouch is available, it would be fitted into the gusset at this point, but here again the slit should not be made in the flap until the pouch is finished.

Two pieces of leather are then fastened to the back to make the loop that slides onto the belt. The smaller of these pieces simply acts as a spacer (see sketch D) and will also prevent the belt pressing directly against the rivets, thus equalising the weight of the pouch all along the loop.

Bifurcated rivets can be used here, but they tend to rust in time and a better job is achieved by using ordinary copper rivets. In D it will be noticed that the





bottom of this loop is also stitched. It would be easier, and equally secure, to simply use two rivets at the bottom rather than go to this extra trouble.

The back flap is placed in the saddler's clamp, or held firmly by some means or other, and sewing begins. The usual waxed thread with two needles is used, and holes are made with the awl. The gusset is butted against the back flap as shown in the cutaway diagram C.

Although this looks easy it is far from simple for a beginner. It is hard to get a neat join and, if the holes are made too close to the edge, the leather will tear and the thread pull right out. According to the saddler who made my watch pouch the aim is to get the thread line as far away from the edge as possible, but not to have any thread showing on the inside of the job.

The angle that the thread should take is shown in the dotted line in C. In order to get a straight line of stitches, the saddler cuts a groove in the leather, which I have also indicated in C. He does this using a tool known as a 'racer'. As well as giving a line to work to, the groove also allows the thread to sit flush with the surface of the leather. In the absence of a racer, a groove can be scored into the leather with any smooth edge piece of metal — a heavy table knife will do the job.

This type of angle sewing is slow, and the awl must be kept very sharp in order not to push the leather around too much. The threads must be also kept well waxed to allow easy sewing, and it is a good idea to rub on some more wax during the job if the thread looks anything but hard and shiny. It is also important to keep the twist in the thread. Professionals do this automatically but the beginner will have to retwist the thread from time to time.

Having sewn the gusset to the back, the thread can then be knotted on the inside and a new thread made up to do the front. However, it is quicker to run the thread round the top of the gusset and continue sewing with the same thread. A small problem, will arise here, and I have attempted to show the solution in figure E.

Having gone round the top of the gusset, one needle goes through the front section at the usual angle, but the other needle goes through the leather at right angles. Sewing then continues as before. If this is not done the thread will be seen to stretch from the gusset and across to the front of the flap, which is not very neat.

The front is sewn on and the thread taken back across the top of the opposite gusset to give it a uniform appearance. The watch or compass is then put in the pouch and the flap closed down, and then the position of the slot or top press stud is marked. This is fitted in place and the pouch is then complete.

CONCERTINA LEGGINGS

R. M. Williams describes concertina leggings as, 'A stockman's style that is as old as Australia and one of the best.' As the country's leading stockman's outfitter he should know. Williams makes his legging with centres of soft East India kip, reinforced with solid hide at top and bottom.

While the concertina is undoubtedly the most comfortable style of legging it is not the most common. The answer to this is plain economics. Concertinas take longer to make, and are therefore more expensive than springside leggings, the most popular style.

Springside leggings are made of pliable kip and fasten at the sides with a clip made of spring steel, while the concertina leggings are in one piece and must be pulled on over the feet.

The type of concertina described here was a common design in Queensland, at least some forty years ago. My informant, an old saddler, said that he had made a great number of them, but he had made even more springsides. Following his instructions, I made myself a pair, but found that they took a lot longer to make than I expected.

Figure A shows the pattern. Two pieces of leather are used, the smaller piece being of bridle leather or something similar, and the larger piece of thin pliable leather. Kip may be used, but my old saddler said that he preferred a 'more greasy leather that wouldn't dry out'.

It will be noted that in this pattern the top of the legging is folded over, while in the William's style the top is treated in the same way as the bottom is here, that is to say a heavier piece of leather is sewn on.

According to my saddler a special board was made for forming the concertinas, as shown in B. Like the Williams' pattern it made eight folds. He recalled that the grooves were around nine millimetres deep rounding out to three millimetres at tops and bottoms. The leather was dampened and rubbed down into this board and left to dry. He said that where possible two boards were used, one being clamped down on the other and this gave a better result.

I tried making one of these boards but found that they took too long to be worth the time involved for someone who only wanted to make a pair of leggings for himself. Inquiries amongst bush people suggested a variety of methods, but the quality and thickness of the leather was always the most important factor.

Good, thin leather is the easiest to crease, but the bushman has to use what is at hand, and this is not always the most suitable. Harness and bridle leather are commonly found on stations, but the lighter leathers are not used so much. Bag leather may be found, especially if the station makes its own saddle bags, and although this is heavier than desired, it is often the only thing available.

First, the pattern is cut out, both sides the same except that a slit is cut on one side for the left leg and on the opposite side for the right leg at the top of the leggings. If the leather is on the heavy side, the outer edges are thinned down along the concertina section. If this is not done it will form a bulky seam when sewn together, and trouble will be experienced in forming the concertinas at this point.

The leather is then moistened, and the folds put into it, with a grooved board if that is available but otherwise with whatever system suits the leather. With thin leather, it may be found sufficient to simply groove the leather with a smooth piece of metal, working on alternate sides as shown in C.

If this is not enough then more drastic measures must be taken. A groove is cut into a scrap piece of timber as shown in D and a piece of steel of less than three millimetres is clamped into the vice. The moist leather is laid across the steel and the grooved timber rubbed along it as shown in E. Working on alternate sides, this method should bring up the concertina in most leathers.

The leather is kept in the concertina form until it is dry, and one method of doing this is shown in F. One end of the leather is held firm by a stick nailed across it, or held down by weights, and the corrugations are pulled up as tight as possible and held in position by a couple of bricks until they are dry.

It is very important to get the concertina compressed as much as possible before the sewing takes place, as it is difficult to do it afterwards. The 228 millimetre concertina section should be worked over and handled until it will readily close to 114 millimetres, and when not being worn it should remain at around 139 millimetres.

The second piece of leather is now sewn on, as in G. If the leather is sufficiently light the legging is now turned inside out and sewn as in H. When the concertina section is completed the legging is turned right side out and the top section of the legging sewn from this side (this is shown in figure I).

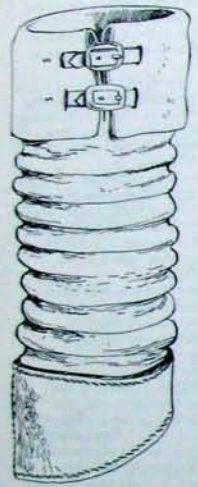
Unfortunately, if the leather is too heavy, the concertinas will not close up properly with this method, and a less attractive style has to be used as shown in the centre part of figure I. This takes longer to do than the other method and the stitches are also showing, but it may be the only way with thick leather. Stitches will also show in the lower section whatever method is used, but this is not so important, and can look quite attractive.

Once sewn, the concertina section has to be worked over again and pulled down to its correct shape. It may be necessary to moisten it, then work it down with the fingers, and tie it till dry as in J.

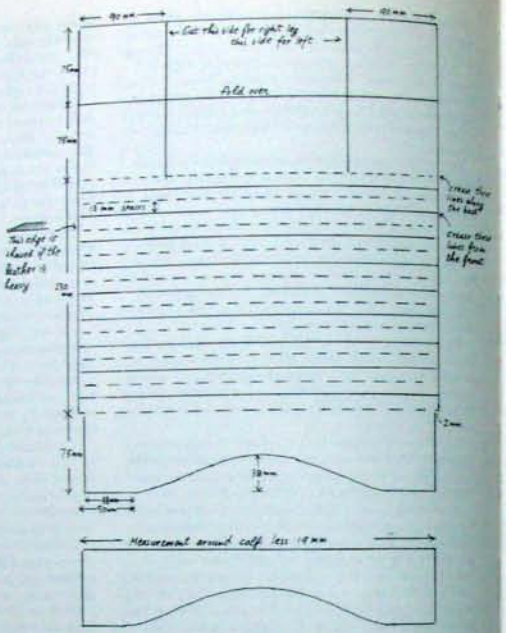
Another method is to pull it down over a piece of drain pipe as in K, tying each fold as it is pulled up. This can only be done if the correct diameter pipe is at hand.

The final desperate method for tough leather is to soak it once more for a couple of minutes then go round each corrugation with a big pair of pliers squeezing each ridge and paying special attention to the seam.

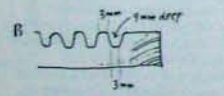
The final step is to cut out four twelve millimetre straps long enough to go round the wearer's legs, and fit them with brass buckles. Slots are cut in the top of the leggings as shown in L and the straps put through them. It is usual to put in a stitch at the buckle and through the legging to stop the straps slipping out if they are worn unbuckled. This stitch can be seen in the sketch of the finished job.



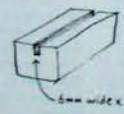
CONCERTINA LEGGINGS



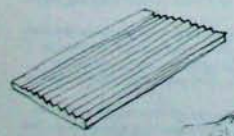
A



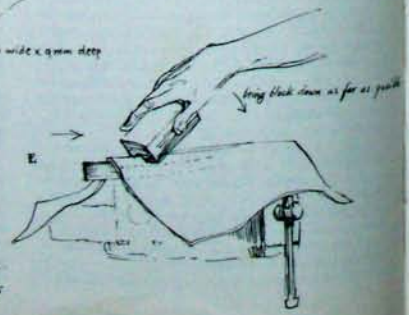
B



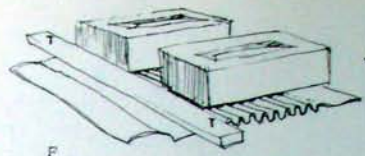
D



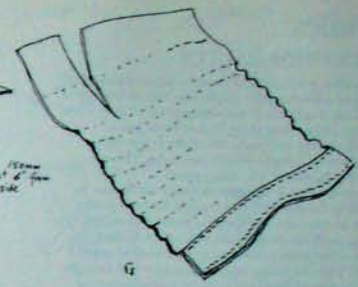
C



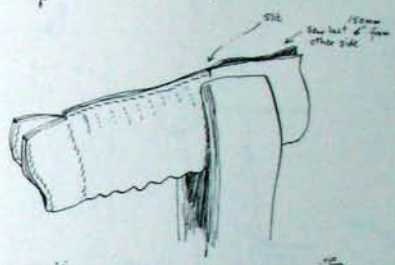
E



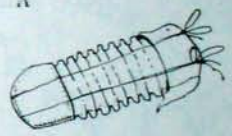
F



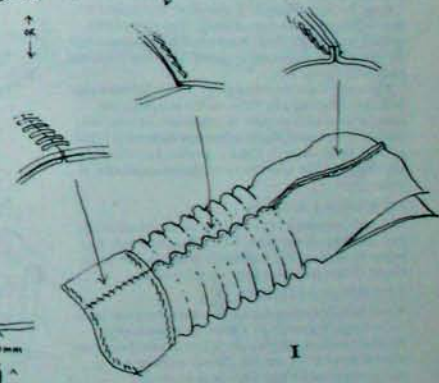
G



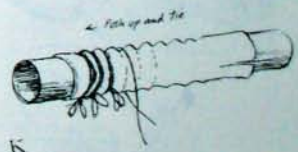
H



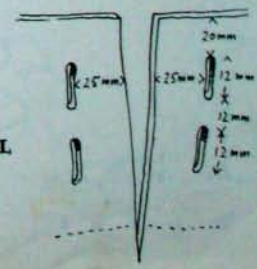
J



I



K



L

Bridles

GREENHIDE HALTER

This halter is an example of bush improvisation at its best, and allows a good insight into the techniques of greenhide work. Made with nothing more than a pair of metal rings, some strips of greenhide and a penknife as the only tool, this halter is not only stronger than a commercially made one, but will undoubtedly outlast it by many years.

When early man first tamed horses and began to ride them, he probably constructed his bridles and halters in this way. The halter is heavy and rough looking, with the beast's hair still on the leather though it has been rubbed away wherever it came in contact with the horse, and has a greasy feel brought about by liberal applications of fat and oil over the years.

It was lent to me by Ezzie Murray of Cairns, whose father had made it many years ago.

In the sketch, there can be seen two slits near the top of the halter. These were made to take either a cord or a piece of lace which could be tied under the horse's cheek when necessary. I have provided a plan of the halter with measurements, but the bushman would have worked direct, getting his measurements from the horse for which the halter was intended.

First, he took a length of greenhide and folded it three times to make a stout strap. He wrapped this around the horse's head, marked off his distances and cut the leather according to them. The nose band was made in the same way.

The holes were cut through all the folded layers at once. No stitching was done, all the straps having been secured with strands of greenhide, knotted for maximum strength. The leather was moistened while this was being done to make it pliable, and when it had dried out the knots became almost impossible to undo.

FOUR HOLE FASTENING

This knot was used to secure the cheek straps to the ring, and like all the other knots described here it is begun by first cutting a small slit into one end of the strand. When pulled up tight it is self-locking.

TWO HOLE FASTENING

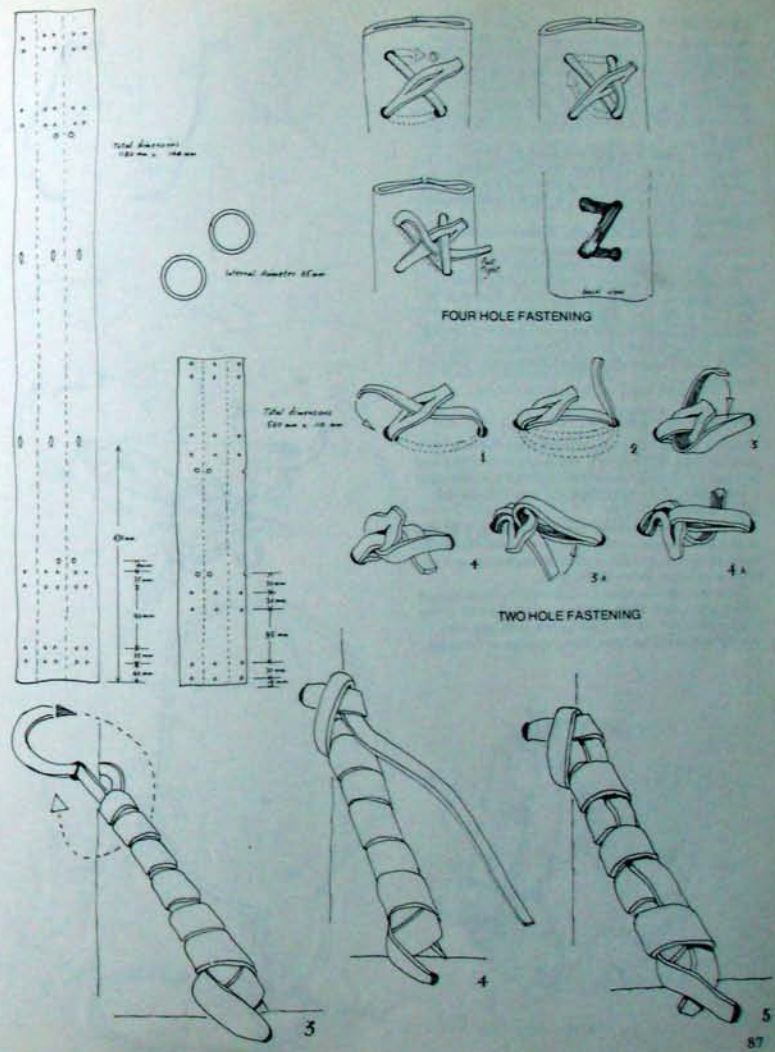
A two hole fastening is used to secure the nose band to the rings. Figures 1 to 4 show how this is tied. Another method begins with figures 1 and 2 and then concludes with 3A and 4A. This is perhaps not as neat in appearance as the previous method.

WOUND STRAP

To prevent the noseband slipping downwards it is tied back to the cheekstrap with this fastening. It will be noted that a similar method is used to tie monkey straps on saddles.

The noseband and cheek straps are linked together with a couple of turns of lacing, and this is adjusted to the right length. The rest of the strand is then wrapped along its whole length, and is secured by threading it back through alternate loops.

WOUND STRAP



CHIN STRAP

In my large drawing of this halter I showed a rope leading from one ring and through the other. This is the same method as is found in most rope halters. However, a stockman friend said that in the Gulf country a leather chin strap is used, usually an old hobble strap or a piece of leather cut to the same pattern.

When I asked how this was done my friend requested a piece of leather, but I had nothing suitable to hand, so with true bushman's nonchalance he removed his belt, cut off the buckle and proceeded to make a hobble strap.

This was fitted to the halter as shown in the drawing. The details and measurements of the strap may be found in the section on hobbles.

He also used a strip cut from his belt to make a throat strap, and this is shown in the sketch also. A slit is cut in the end of the strap and the rest of it threaded through. This remains permanently on the halter. The other end is tied with a simple hitch as shown, with enough spare lace at the end to stop it working loose.

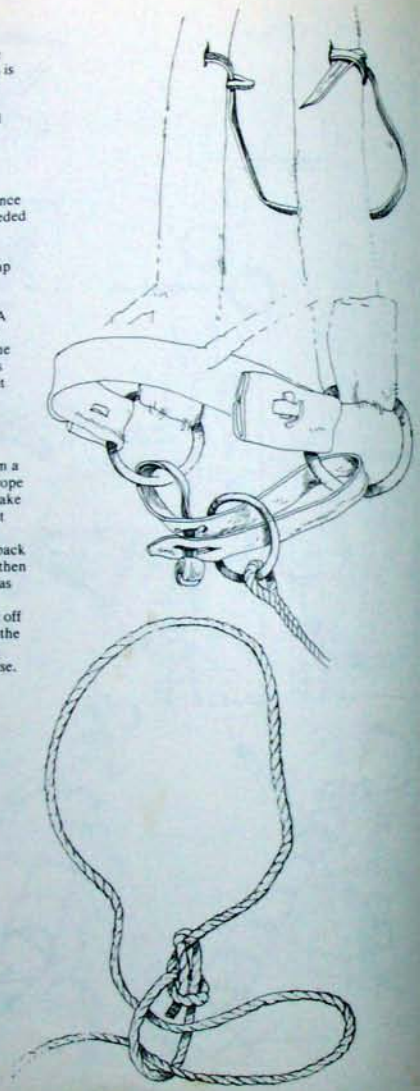
ROPE HALTER

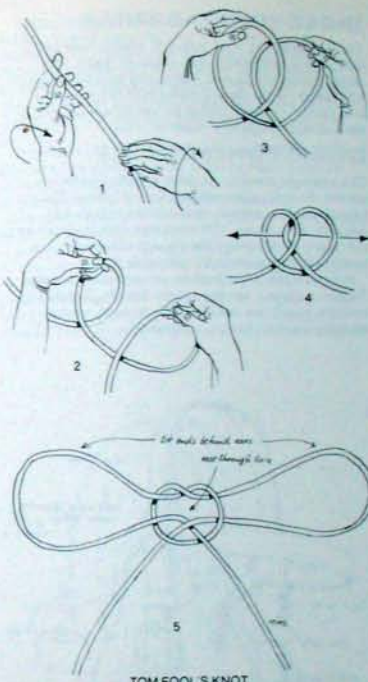
This is a method of constructing a rope halter from a piece of rope. A bowline is tied in the end of the rope and part of the rope pulled through this loop to make a nose band. It works all right for some horses, but others do not like it at all.

I have noticed with our horses that if they pull back at all then pressure comes onto their noses. They then begin to sneeze and throw their heads about, and as often as not they throw off the loop.

To avoid this the nose band should be loosened off a little and a half hitch taken in it with the end of the rope. This will stop the rope slipping off, and also prevent too much pressure being applied to the horse.

ROPE HALTER





TOM FOOL'S KNOT

ROPE BRIDLE

For a long time now I have studied the various methods people use to produce a makeshift bridle from a length of rope. I tried various traditional and not so traditonal combinations, and did not come across a satisfactory one. Under stress they all tended to either slip off or tighten up.

Of course a lot depends on the horse. One young girl I know sometimes rides her horse around with only a rope around its neck. If she wishes to turn to the right she pulls the rope in that direction, if she wants to go to the left she neck reins with her single strand. However, not many horses are as well trained as this.

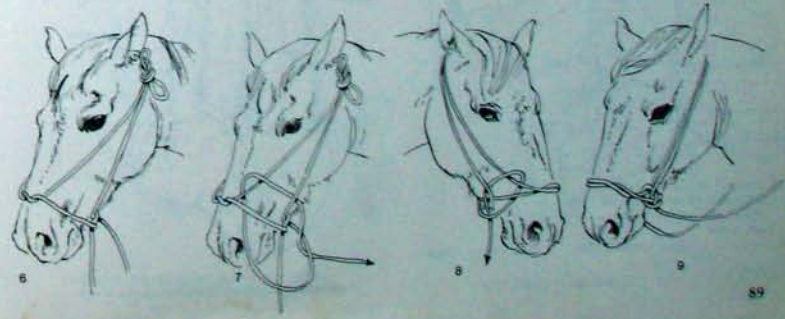
Having tried all the various methods I finally evolved this one myself. I use it with the horse's tethering rope when bringing them in to be saddled, and I have also used it for general riding. It seems to apply pressure where it is needed, and does not jam on the horse's nose. Even so, no rope bridle is a substitute for a proper one; it is just a handy thing to know when no bridle is at hand.

First, two loops are made and laid into a clove hitch.

Now the fingers feed through and pull out two ends to form a Tom Fools knot.

These two ends go around the horse's head and are tied behind the ears with a reef knot, 6.

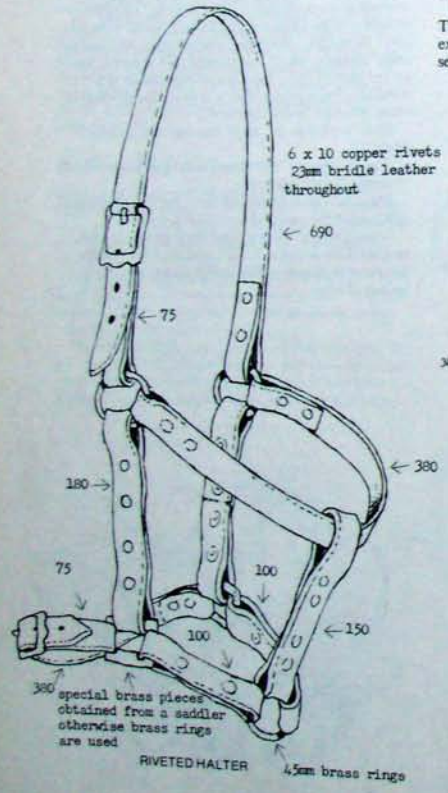
A hitch is now taken around the ropes at the chin to keep them in place, 7 and 8, and the ends that are left become the reins. This bridle takes about seven metres of rope.



SIMPLE HALTER

The diagram shows a simple riveted bush halter made of bridle leather. This particular one was in fact a little soft due to the nature of the leather, and I have noted that this is generally rectified by using more leather for the shorter straps so that the ends overlap and make a band of three thicknesses instead of two as in this example.

Special square brass pieces are used at the bottom of the halter, but if these are not obtainable then ordinary brass rings suffice.



RIVETED HALTER

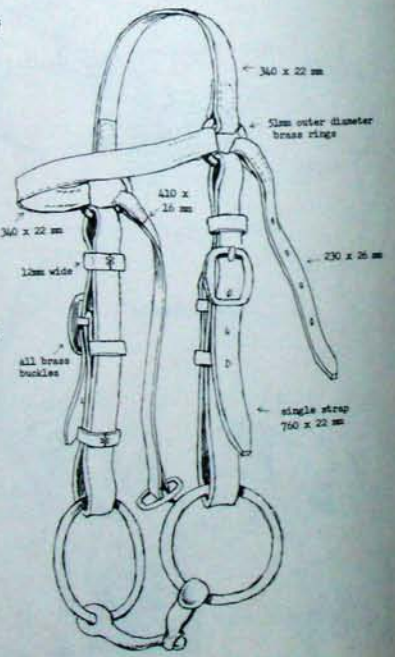
SIMPLE RINGHEAD BRIDLE

This would be the most common bridle found in the bush, being both strong and simple to make. The cheek pieces are formed with a long continuous strap. The lowest of the three keepers (which I note now was pushed up much higher on the right hand side in the sketch) is frequently dispensed with.

EXTENDED HEAD BRIDLE

This example came to me from a Gulf country station, liberally smeared with beef dripping. This type of bridle is seldom encountered though it is certainly not unique. The stockman who made it was not aware of the design having any advantages, but said that he just made it 'for a bit of style'.

Note that the lower buckles are on separate straps. This is to allow a housing for the buckle. In another example noted, the buckle was held in by a small separate strap at the back, as shown.



SIMPLE RINGHEAD BRIDLE

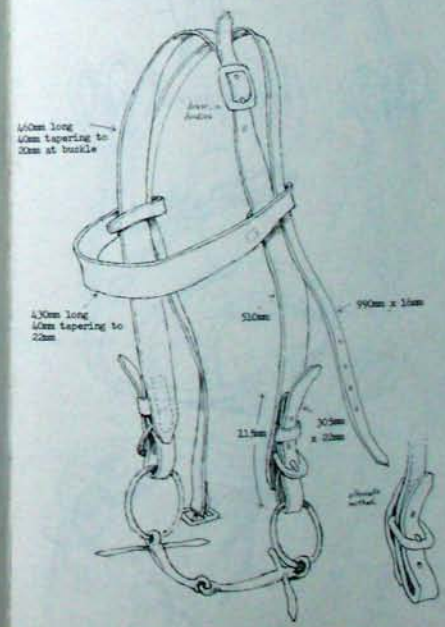
Bridles with extended heads are referred to as 'bush bridles'. I have been told that this style evolved because of the habit some horses have of rubbing their ears against the rough bark of trees, causing a bridle with a single headband to come loose. The fact that this style of bridle also causes the throat strap to lay further back may also have something to do with it.

The last bridle illustrated is a very good example of bush workmanship, and was made by Mark Paneros of Adria Downs Station, via Birdsville. It is more elaborate than most shop bought bridles, and incidentally much heavier, weighing just over one and half kilos including the bit.

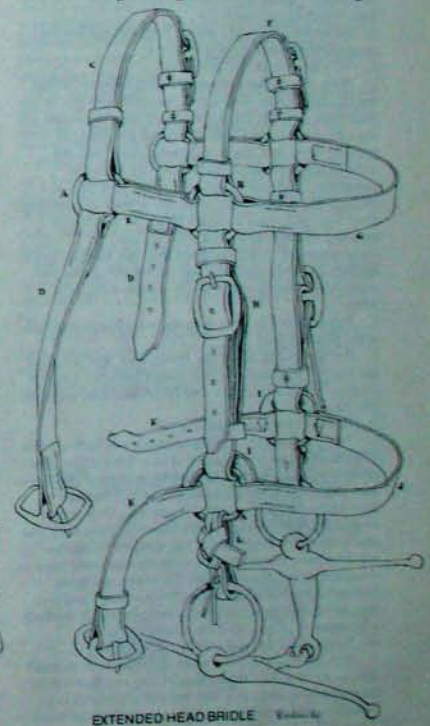
Leather used was three millimetre bridle leather, twenty-five millimetres wide. Other fittings included six twenty-five millimetre brass buckles, four thirty-three millimetre inside diameter brass rings (A) and two forty millimetre inside diameter brass rings (B).

NOTE: The following lengths of straps do not include the pieces that have been sewn back. This fold back is generally sixty millimetres long. This means that the extended head, given as being 850 millimetres long, is actually made from a strip of leather 910 millimetres long.

C Extended Head — 850 millimetres overall length.
D Throat Straps — 320 millimetres and 220 millimetres.
E The leather has been folded three times to make a strap ninety millimetres long.
F Head Strap — 900 millimetres.
G Browband — 340 millimetres.
H Cheek Straps — 620 millimetres.
I Leather semi-circles one centimetre wide sewn into the nose band.
J Nose Band — 390 millimetres.
K Chin Straps — both 170 millimetres long.
L Bit Strap — sixty millimetres long when done up, 270 millimetres undone. Tied together with lace, 130 millimetres long. The ingenious method of fastening



EXTENDED HEAD BRIDLE WITH SLIDING BROWBAND AND SEPARATE THROAT STRAP



EXTENDED HEAD BRIDLE

the bit to the bridle is shown in the sketches at right. Factory-made bridles are fitted with buckles.

The stitching had all been done with a single thread rather than with two needles (saddlers sew most work with two needles together as described elsewhere). See the section on leatherworking techniques for sketches showing how this single needle stitching was executed.

Reins

PLAITED REINS

Les Callope, an Aboriginal friend of ours who works as a stockman, made my daughter a pair of redhide reins. The loop is put through the ring on the bit and the rest of the rein passed through it, thus making a firm attachment. The two reins are not joined together, a common custom among northern stockmen. I discussed making the reins with Les, and here is part of our taped talk.

L Seven foot reins are plenty long enough for the average horse (that is for split reins).

R Why do you prefer split reins?

L Well, just riding around here is a different thing, but if a horse falls with you in the bush and you've got your reins tied up, there's a chance that you might get your leg hooked in it and you could get dragged. And another thing is if you're galloping along and you want to hop off and tie something up, a bull or something, and you've got split reins, well they just drop on the ground, and if the horse tries to run away from you, and there's no one there, he just keeps standing on those reins and he'll pull up.
If the reins are tied most times they get hooked up on the leg, and they just kick and smash the bridle and everything goes, and there you are left without a horse.

R Sometimes I've seen split reins held together with a thin piece of lace.

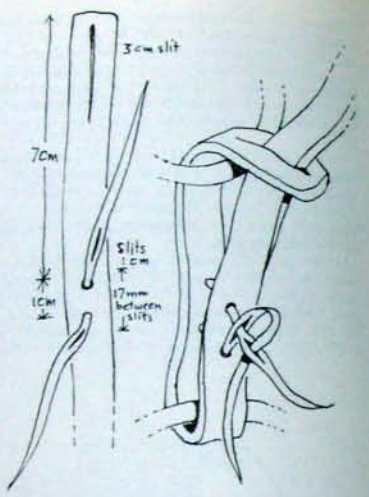
L For just riding along the beach, yes, and it's good for anyone who doesn't understand horses if you can tie their reins, but a little tiny bit of lace can make all the difference.

R How did you make these reins?

L You get a piece of redhide about two inches wide. Then you cut your strips out of it — four strips. Hook the piece up on a nail and slice them down. Then you pare them down with a knife (to get the correct thickness). Take the edges off one side then turn it over and take the edge of the other. Turn it back and do the same. It takes about ten minutes or maybe more to pare down one piece. Sometimes you have to take four cuts to get it right. Then you put them together and run them through your hands and you can feel if one is out of place, and you might peel off a bit more. You just do it by eye.

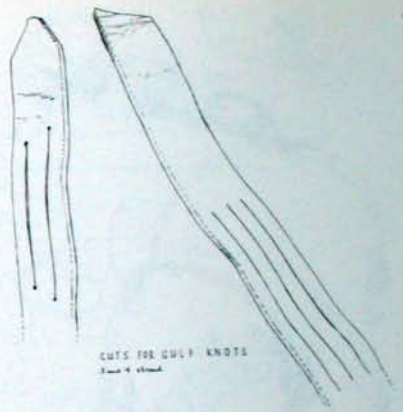
R Sometimes you put a belly in the reins.

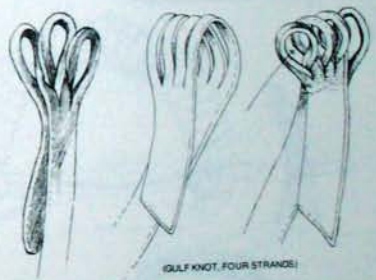
L Yes, to make it a bit more substantial. You don't always need it, but if you want it for any heavy work, campdrafting and such, you have to put a belly in it. When you're making reins you start off at the head



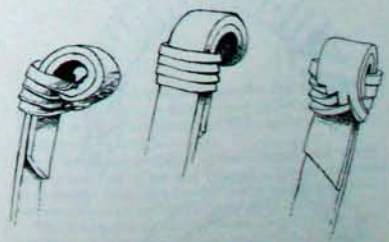
BIT STRAP (DETAIL)


REDHIDE REINS


CUTS FOR GULF KNOTS


(GULF KNOT, FOUR STRANDS)

FORMING THREE STRAND GULF KNOT


COMPLETED GULF KNOT

end and put the loop in after. That Turk's head (to hold the loop), I must have gone round that about four times to give it that size. (See the section on whips for directions for this Turk's head.)

R What is the advantage of redhide for reins?

L Oh, redhide is more easy to handle. It's softer than ordinary leather. I won't say that they last a lot longer. I just do them like that for style, that's all. We use redhide for whip-falls, patching up anything and making knife pouches.

GULF KNOT (KIMBERLEY KNOT)

The Gulf knot is used for attaching reins to the bit without the use of a buckle. In north-west Australia it is known as a Kimberley knot, and it may have other names in other areas. In North Queensland where these sketches were made it is known as the Gulf knot (from the Gulf of Carpentaria).

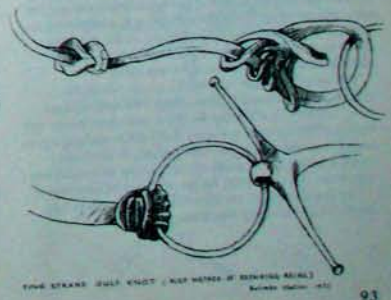
It may be made with three, four or five strands, depending on the width of the leather. The first step is to cut slits into the leather, commencing about fifty millimetres from the end, the slits being around seventy-six millimetres in length (depending on the thickness of the leather).

The slits are slightly longer on one side than the other, the strand that will end up being nearest to the bit having the shortest cut. Loops are formed as shown in the sketches.

After the loops have been formed, the end of the rein is passed through the ring in the bit and then through the loops. When the knot is drawn tight the fifty millimetres of uncut leather at the end of the reins also passes under the bit ring, providing a double layer of leather at the point of wear.

The great advantage of the Gulf knot is that it can be made in the camp without need of buckles, stitching etc., and when it is well made it looks very smart.

The three strand knot was demonstrated to me by John Bashem, manager of Bulimba Station, almost in the centre of the Gulf country. The four strand example was being used by one of his stockmen.


FOUR STRAND GULF KNOT

REPAIRING REINS

The sketch right, previous page, also shows an ingenious method of repairing a broken rein. A slit is made in each broken end about seven millimetres from the end. The free end is fed onto the end attached to the bit, and the whole remaining length of rein passed through the remaining slit and pulled tight to form the join shown in the sketch. The Gulf knot does not have to be removed from the bit to make this join.

Saddlery

MONKEY STRAPS

These are found on the front offside of stock saddles. They act as a grip to help in mounting, and of course can also be used as a panic handle.

The first example was on a saddle owned by Brian Carter of Yorkeys Knob, Queensland. It was made from a six millimetre wide strip of bridle leather about a metre long (the length varies in all examples according to the width and thickness of the leather used).

The drawing was made looking down on the saddle, so the knot is to the front. First, a lace hitch is formed, as shown next page, and this is attached to the front dee. The lace then goes through the back dee and the rest of it is wrapped around the single strand back towards the knot.

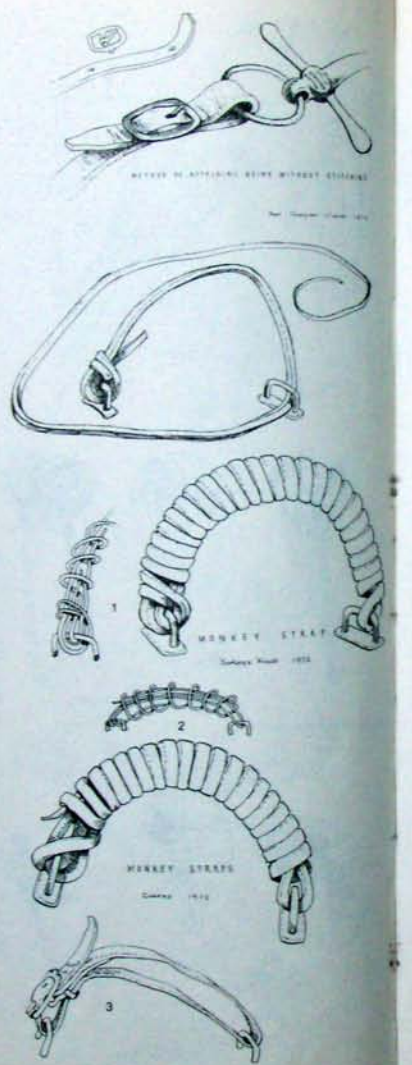
When this is reached, the end is fed through the two loops of the knot, round the dee, back through one of the loops (or through both if there is enough room) and is then fed back inside the loops for a short distance.

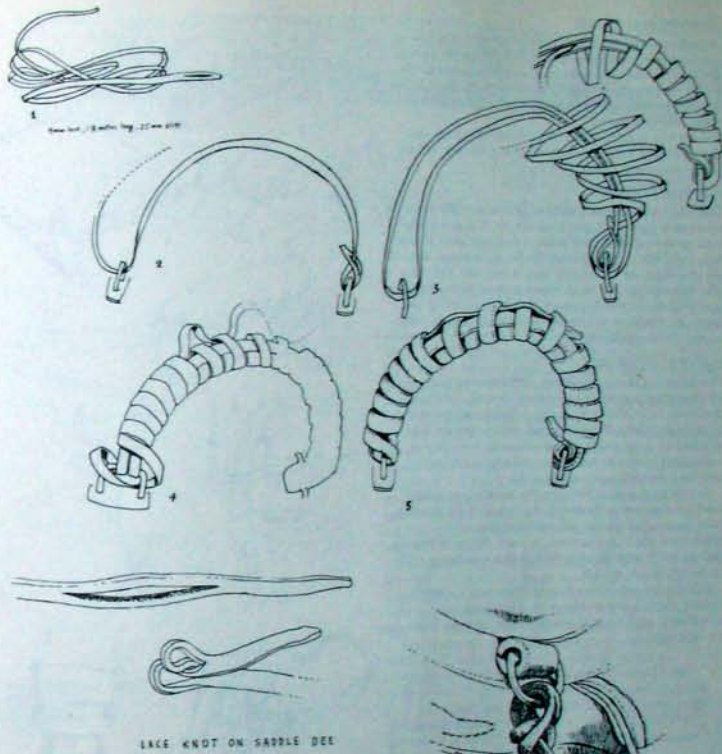
The next example uses the same amount of lace as the previous one, but is of simpler construction, though perhaps not quite so neat. It was noted on an old police stock saddle that came up for auction in Cairns, September 1972.

The lace begins half way between the dees, goes through the front one, then through the back one, even through the front once more. It is then wrapped around the two strands (the previous one went around only one strand). When the wrapping is completed the end is fed through the entire length of the loops to finish near the front dee. The tension of the loops holds it, and there is no need for any tying.

The third example was noted on an old stock saddle, and is simply a small strap 500 millimetres long, fitted with a keeper facing downwards below the buckle. This keeper prevents the buckle moving up to where it could catch the rider's hand. It does not make a particularly good monkey strap as it does not stand clear of the saddle as the previous examples do.

The final example on the next page was shown to me by a Gulf country stockman.





LACE KNOT ON SADDLE DEE

LACE HITCH

This small hitch is used to fasten the end of a piece of lace. It is actually a simple version of the same hitch used in the Gulf or Kimberley knot, using only two loops instead of three or four.

It is simple to construct and is stronger than simply poking one end of the lace through a hole in the other as is usually done. It provides two layers of leather to the wearing area, and it also looks quite attractive.

The example here was noted on an old saddle, and had been used to fasten things onto the saddle dees. The same hitch forms the start of one method of making monkey straps.

STIRRUP COVERING

A Gulf country stockman showed me this method of covering a stirrup in October 1972. It is used with a stirrup iron that has become excessively worn to the extent that the boots slip over the surface. Any scrap of stout leather can be used, and is laced on in the simple manner shown.

Note how a secure knot is ensured by taking the strand of lace back through alternate stitches before tying a ring hitch in it.

CINCH HITCH

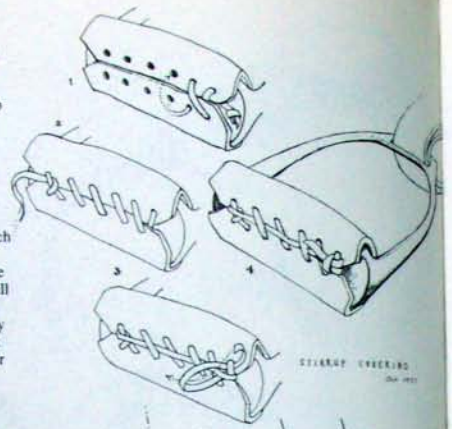
This hitch is frequently used to secure a redhide cinch between a cord girth and a surcingle. It is generally used on the off side, and a Bates fastener used on the near side. If a ringer has lost his Bates fastener he will use this hitch on both sides, and in fact the old chap who showed me this hitch first said that he habitually used this method to fasten on his girth, claiming that once one got used to it it was just as fast as any other method, and equally strong.

STRAP FASTENING

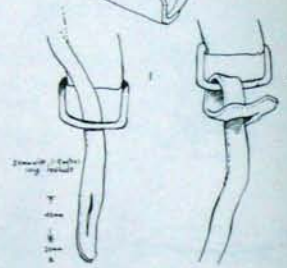
This is one of those ingenious methods that look so obvious after one has been shown. It was used by stockman Les Callope to fasten a redhide strap to the upper buckle of a Bates fastener, which in turn was attached to a surcingle. (More often than not the strap is attached to the actual fastener itself, but in any case the same method can be used).

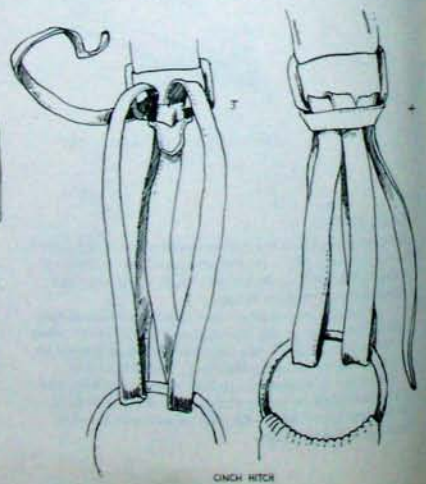
The strap is passed through the buckle and folded down seventy-six millimetres. Twenty-five millimetres from the top, two holes are punched twenty millimetres apart, going through both layers of leather and twenty-five millimetres below this two more holes are punched side by side.

A 304 millimetre length of redhide lace is passed through these holes as shown in the sketch, and it should be a very firm fit. Once pulled up tight it is self-locking.

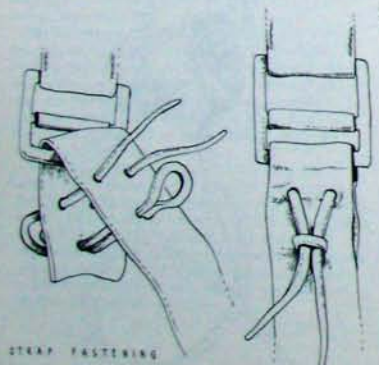


STIRRUP COVERING

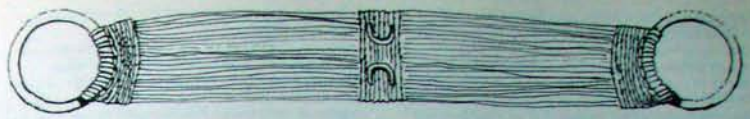


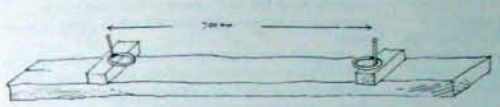


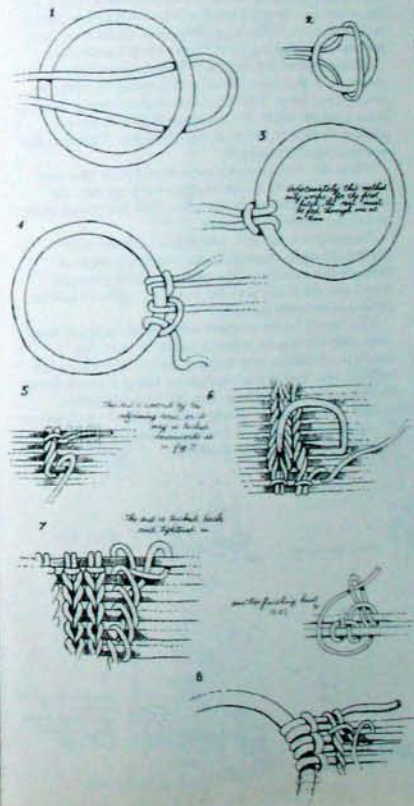
CINCH HITCH



STRAP FASTENING







CORDED GIRTHS

Corded girths do not chafe the horse as much as leather, and they are fairly easy to make, unless one wants to decorate them with fancy cross-work. They come in a variety of sizes from 600 millimetres to 800 millimetres overall, including the rings (but not any buckles that may be attached). They are usually of sixteen or eighteen strands.

If the cord is a particularly thick one, such as some mohair, the rings may be as large as ninety millimetres (outside measurement), but the normal ring used is a brass one of seventy-six millimetres outside measurement. For some reason my own saddler referred to these rings by their inside dimensions, and called them sixty-four millimetre rings.

The girth that I am describing here would be an average one, and was made for me by a stockman friend. He said that this was the sort of work that they used to do during the wet season, but that few ringers bothered about making their own gear today.

The materials used are a pair of seventy-six millimetre brass rings, twelve metres of nylon venetian blind cord (this has a diameter just over three millimetres) and a quantity of thinner cord for the cross work. On many girths the cross-work is done with the same material as the long cords, and this considerably speeds up the job, though it does not look as good.

For a cheaper job cotton cords are used, and for a very expensive one, mohair is preferred. Nylon is a good average.

To begin the job make up a frame out of scrap timber. This is very simple and consists of two blocks of wood around twenty-five millimetres high nailed onto a plank. 100 millimetre nails are used so that fifty millimetres of nail is left sticking up. The nails are 700 millimetre apart. The brass rings are dropped over these and the work begun.

Holding the two ends of the cord in the left hand and running it through the right, the centre of the cord is soon found, and this is looped onto one of the rings as shown 1 to 3. Looping then proceeds as shown in 4, a few loops being made on one side and

then a few on the other to keep the tension equal.

This looping can be done working from one side of the ring to the other, but is not as satisfactory as working from the centre outwards as double the length of cord has to be pulled through each loop, and the whole thing has to be pulled tight and even at the completion of the looping. By working from the centre the cord can be tightened as the work progresses.

Looping is carried on until sixteen or eighteen strands have been made. If a speedy job is needed the looping is so arranged that at its completion there is 800 millimetres or more of cord left loose at each end. This is then worked across the cords in the same way as shown in diagram 8, but only four to six crossings are needed to finish off each end. The cord is usually thinned down to improve the appearance. A similar band is then worked across the centre and the girth is complete.

However, my informant preferred to work the cross-bands in a cord of only about one third the diameter of the main strands. This took considerably longer, about half an hour for each band, but the effect was much more decorative. The diagrams show how this is worked.

A pair of brass Ds are worked into the centre, in this case their purpose is to form a loop (by tying a piece of cord between them) that will take the end of the strap from the Bates fastener, sketches 5 to 7.

Looking at other girths there seem to be a number of ways of beginning and ending the cords and various knots can be used. The method shown here, that of tucking the ends back, appears to be the neatest and least likely to come undone.

I have noticed professionally made girths that have been finished by tying the cords with a reef knot, and these have started to come undone hanging up in the shop. In this case the bush methods are the best.

The cross-banding is not pulled up too tightly. The reason for this is that the material will shrink when wet, and if the cross-banding is too tight the main cords will be pulled into bunches instead of laying flat across the horse's belly.

Another system of working the cross-bands is as follows, and is shown below.

When a braided cord is used for a girth then the cross-bands are usually made with some other material. If however the cord is a plain-laid one of three strands then part of it may be used for the cross-banding at either end. The examples shown here were obtained by pulling apart an old girth that came with a saddle from the Gulf country. The brass rings appeared to be very old, and the whole thing station-made.

The girth was made up as described earlier, and 900 millimetres of spare cord left at each end. This was then unravelled into three strands, and one of these was cut short and tied back as shown in 1.

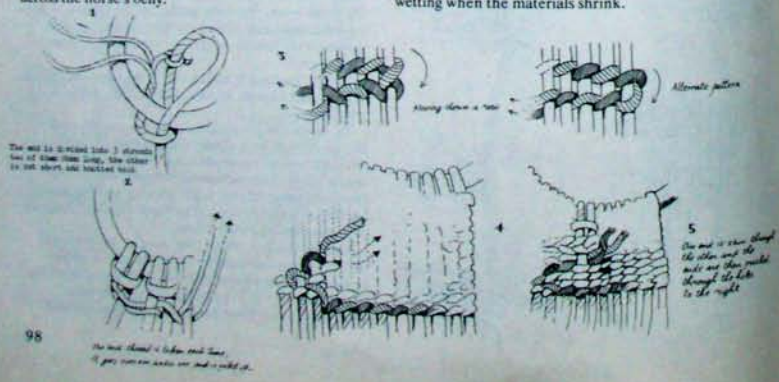
The ring hitch was worked up firmly so that this knot was just under the crossing and out of sight, and the other two strands were worked through as shown in 2. The action was to go over one under one, and pull upwards, taking an alternate thread each time.

At the end of the row the threads moved down as shown in 3 and here the weaving could be done in one of two ways. The top formation creates a herring-bone pattern while the lower method creates the pattern shown in the next two sketches. This was the one used in this example.

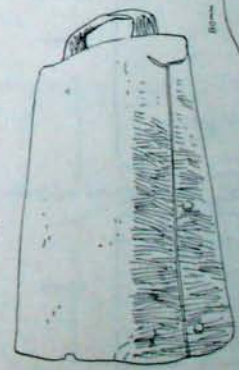
When the thread was nearly used up, in this case seven rows down, it was worked back up into the body of the band as shown in 4. This happened about two thirds of the way across.

To complete the job, one thread was sewn or pushed through the other and two holes pushed through the banding. The ends were fed through these, cut off flush, and the banding rubbed back to close up the holes (see 5).

This seems to be a better method of finishing than most, though a look through stock in most big saddlers will show that quite a variety of finishes are used. It also has the advantage of being a much faster method of cross-banding than the one described earlier. This binding should not be pulled up tightly or it will cause the girth to bunch up after the first wetting when the materials shrink.



"SUCCESS TO HORSE TEAMS"



Other Horse Equipment

SPUR STRAPS

Although there are many shop-fitted spurs with straps that go under the instep and another strap that buckles across the top of the foot, this home-made strap is the one most commonly used by ringers.

It consists simply of a strap with a hole at one end, and two or more holes at the other. It does up easily and speedily, and does not accidentally undo if the holes are the correct size. With flat heeled boots the strap is adjusted so that the spurs hang freely low down, but the strap is just short enough to prevent them falling right off the boot.

When the ringer walks, the spurs actually drag along the ground, and one hears the jingle of the spurs often mentioned by writers of outback books.

BELLS

According to the old song, 'Bullock bells at night keep me wake till daylight'. Droving legend has it that the famous Condamine 'Bullfrog' bell could be heard twenty kilometres away if the atmospheric conditions were just right. In normal conditions the sound of the bells was usually said to be heard at about five kilometres on a still morning.

The original Condamine bells were made from old crosscut saws. An interesting collection could be made of bells, for there was a different size and shape of bell for almost all domestic animals.

Even the camels in the early days had their own type of bell. The late Mrs Leonard of Lappa Junction, Queensland, picked up one of these bells in the creek sand below her home when she was in her seventies, and she told me that it must have been dropped by one of Adul Wade's camels when he passed through Lappa when she was a child.

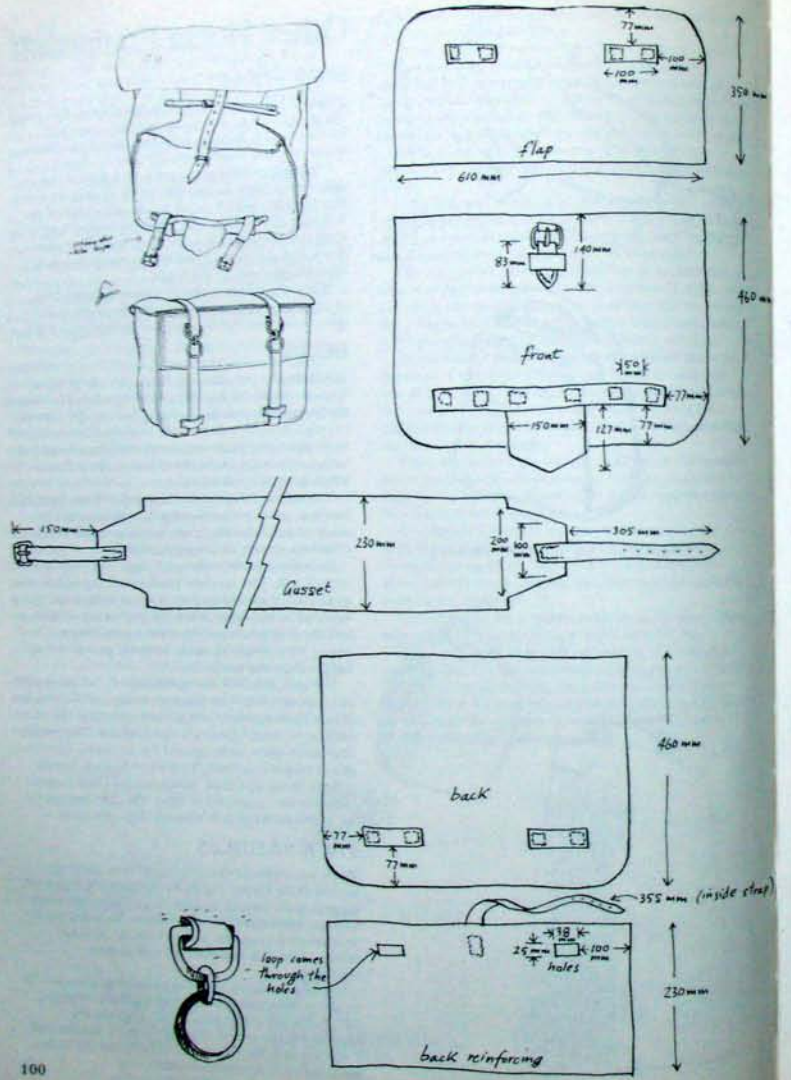
The common bell was hand-shaped, but there were also cast ones such as this with its legend 'Success to Horse Teams', which was picked up on the site of an old station near Einesleigh, Queensland. The people who made these bells catered for all tastes, for I have also seen one inscribed, 'Success to Bullock Teams'.

Bells come in a great variety of sizes and shapes. Here are two examples of mine, though they are by no means the largest or smallest that were used.

PACK SADDLES

When we explored the Aboriginal cave paintings around Hells Gates, out from Cooktown, some of our supplies were carried in saddle bags (see p. 100) made by Peter Mariot of Crocodile Station. Each bag would have taken a complete side of redhide, so their construction was expensive as well as time consuming.

The bags hang on a special saddle bag tree, and the weight of the contents has to be carefully balanced. Usually horses with a placid temperament are selected for the job of carrying the pack saddles and, if well trained, they do not have to be led but 'follow like a dog' as it says in the old bush song.



HORSE BRASSES

The early name for these decorative medallions was face-pieces, and they were attached to the bridles of draught horses and hung on their foreheads. When I was a child in Victoria all the horses that pulled the rubbish carts wore these brasses, as well as a great deal of other decorative gear. There were small polished swinging 'mirrors' that went off the tips of the hames as well as coloured brushes and small brass bells that surmounted the bridle.

These brasses were originally good luck charms, and it was only at a later stage that they were used purely for decoration. Originally they were regarded as being quite functional.

I have not encountered any Australian designs, but this is not to be wondered at. It was much simpler for a local founder to take a cast from an imported brass which, being a traditional design, would cost him nothing, than to pay a local artist to design a new one.

The designs shown here are from my own small collection. There are undoubtedly dozens, if not hundreds of other designs to be found in various collections around the country.

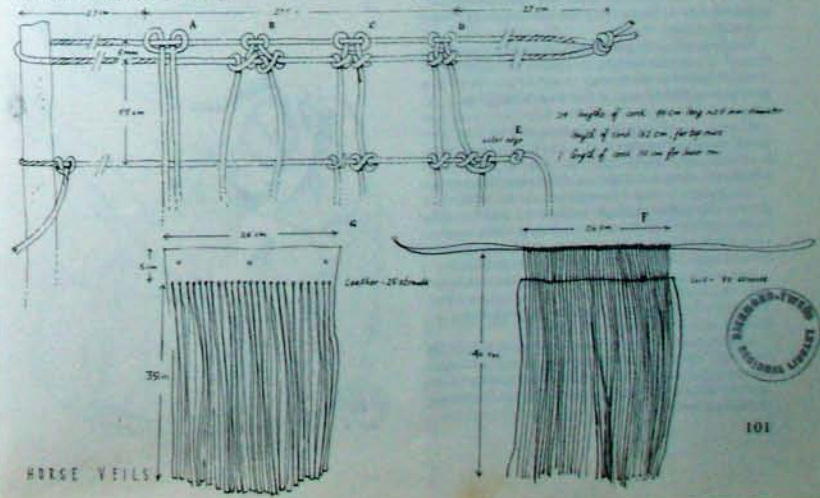
HORSE VEILS

Bush flies are as irritating to stock as they are to humans, and many stockmen and drovers fix a fly veil onto the browband of the bridle to give their horses some relief. One simple form of veil is made of leather, generally a light kip, simply cut into strands as illustrated (G).

A series of holes punched along the top of the slits helps prevent them from tearing further upwards. A few holes are punched above this to allow the veil to be riveted or tied to the browband.

Another common veil is made from stout cord, generally around 2.5 millimetres diameter. After cutting the cords they are often dyed various colours before being used, and so various patterns can be arranged. The one described here had the cords arranged in red, white and blue, in groups of eight strands of each colour.

These veils are quite simple to make as only two knots are used. A piece of cord 162 centimetres long is doubled and tied between two uprights to form the top two strands. Another cord 110 centimetres long is tied below this, fifty-five millimetres. These cords



have to be made as tight as possible otherwise the rest of the job becomes uneven.

The hanging strands of the veil are made from twenty-four lengths of cord 960 millimetres long. First, a ring hitch is made in the top cord (A) then two clove hitches are put into the second cord down, and another two clove hitches in the lower cord (B) and (C). As soon as this is done the cords are slid hard to the left and the next cord is joined on in the same way. The only variation comes on the very last strand on either edge.

Here an extra half hitch is added (D) and when all the strands have been firmly pushed together a thumb knot is tied in the lower cord (E) to stop them spreading out again. The remainder of this lower cord then hangs down and forms an extra strand at either edge, bringing the number up to fifty. The veil is fixed in place by tying the top pair of cords around the rings that hold the browband.

HOBBLES

GREENHIDE HOBBLES

John Bashem of Bulimba Station demonstrated a method of making greenhide hobbles using what he called a square knot for a fastening button. Two holes are cut in the double strap of greenhide and the length of strap pulled through to make the stopper shown in the diagram Figure 1.

Sometimes a square piece of heavier leather, also with a hole cut in it, is placed in the centre of the knot to give it more bulk.

As the holes in the leather have to be the smallest possible size in order to make the finished stopper as tight as possible, it is often difficult to pull the strap through. In this case a hole smaller than the stopper is made in a plank (or in the wall). The first twenty-five millimetres or so of the strap are forced through the stopper by hand.

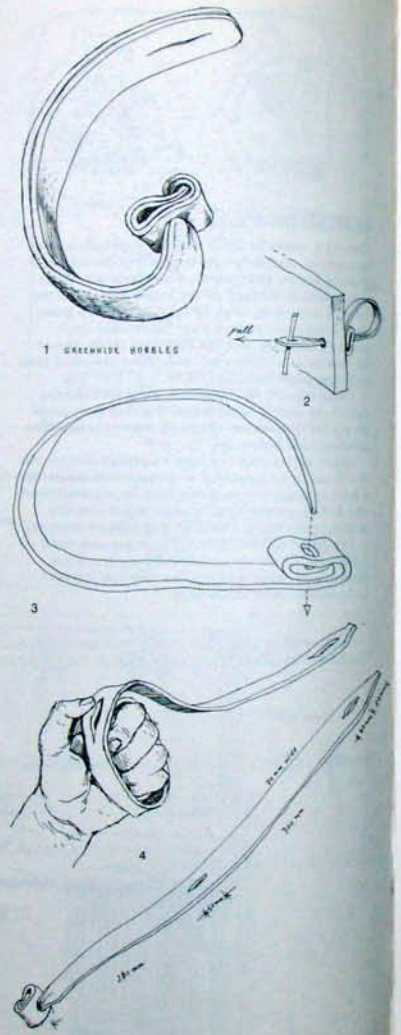
The protruding tongue of leather is then pushed through the hole in the plank, a piece of twig poked through the slit in the leather, and this provides a firm hand grip to pull the rest of the strap through the stopper, 2.

A variation of the preceding hobble strap was shown to me by another Gulf country stockman. A strap of around 900 millimetres by thirty millimetres is folded as shown in 3, and a hole punched through it.

The leather is then thoroughly soaked to make it pliable, and pulled through the hole. In order to make a good job the hole is left as small as possible, and some effort is required to get the leather through, even though it is wet. This forms the square knot.

Next wrap the leather around a clenched fist, and mark the point where it passes over the square knot. The clenched fist is a rough and ready guide to the finished size of the loop in the strap, 4.

A slit is cut at this point, and another at the end of the strap. The knot is passed through both slits and the strap is complete (the hobble chain having been also threaded on first). Figure A next page shows the completed job.



The hobble chains have a swivel in the centre (B) which identifies them as such. Visitors often pick up hobble chains around the sites of old settlements and wonder what they are.

Figure C shows another common hobble strap made whenever buckles are available. It is made from a single length of leather doubled over and secured at each end with copper rivets. Note that when it is opened out (D) the inside is seen to be shorter than the outside. This allows the hobbles to form a good circle without the leather buckling.

Frank Demsey said that he hated greenhide hobbles when he was a lad on Wellshot Station. They were made by folding a strip of greenhide over to make a double thickness strap, and poking a piece of wood through one end, while it was still pliable, to make a toggle. A slit was cut in the other end and the toggle forced through this to fasten the strap below the horse's fetlock. The two hobble straps were joined by a short piece of chain, usually 300 millimetres long consisting of four or five large links and a swivel.

On cold and frosty mornings the leather would become stiff and difficult to undo, and it seemed almost impossible to get the reluctant toggle through the uncooperative slit.

I asked Cec Cory about greenhide hobbles, and whether he had encountered the toggle idea when working in the Stanthorpe area and these were his comments:

'You have an ordinary piece of greenhide, and you double it over. It ends up just a bit over an inch. You don't want it too wide. It goes around the fetlock, and you don't want it rubbing up against the top. At one end you have a slot and at the other end a stick, and you push the stick through the slot, and it turns around flat and won't pull back through.

'Actually there's no need for the stick even. If you have a piece of hide and you cut it like that, like a fish head, and you shove it through, and the broad part comes back and it can't slip through — like an arrow head. There's plenty of grip in it.

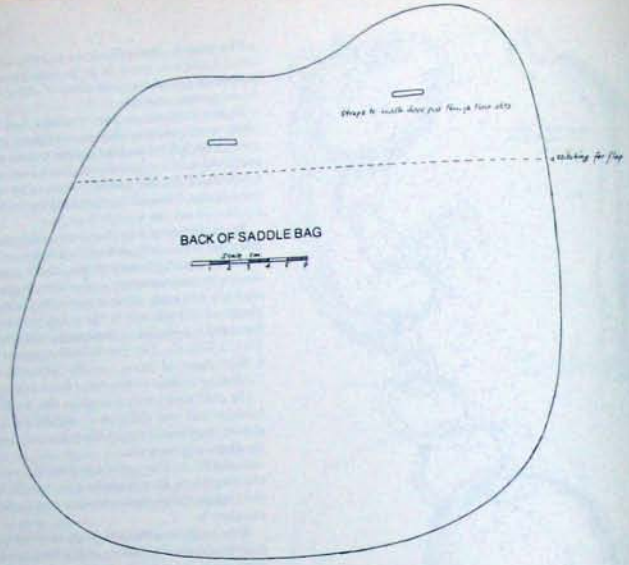
'They're very crude — greenhide hobbles — they get hard in the dew. I was only ever with one chap that used greenhide hobbles. When he boiled his corn meat and that, they'd call it the salt lick — the fatty water that was left over. He'd throw the greenhide hobbles in that to grease them up a bit, and they're all urgh, awful bloody things to handle; you're in grease all the time. Very crude that.

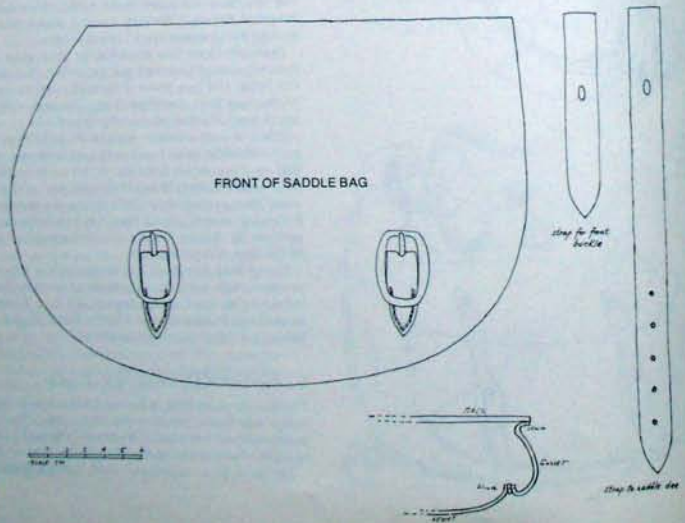
'Everything was made out of greenhide. They used to make chair seats out of greenhide — tack it round before it gets hard. You have to tack it so that it wouldn't pull the nails out when it dried. Leave the hair on it so that it was soft to sit on.'

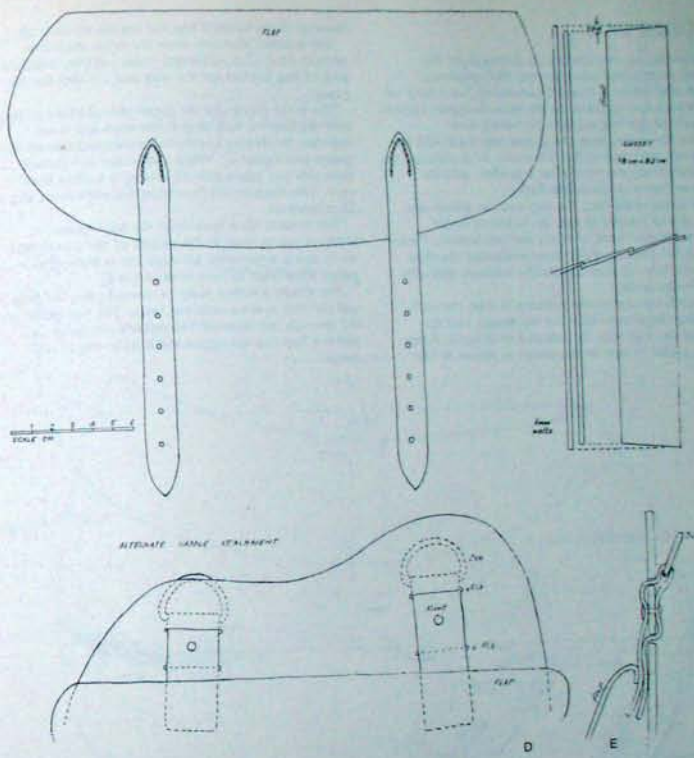
STANDARD SADDLE BAG

The design given here is the most common form of saddle bag encountered in the bush today. The measurements were taken from a bag brought back by a friend who had obtained it in Birdsville.

The back piece is made of stout harness leather







which is long wearing and is also firm enough to prevent the bag curling up and getting out of shape. The rest of the bag is made with either bag leather or a leather of similar weight. The buckles are of brass.

In most bags the back section has a pair of slots cut into it. These slots take two separate straps which attach the bag to the saddle dees. However the bag in this example had an alternate arrangement, and one which was probably not as efficient as that usually encountered.

Instead of just a pair of slots, two pairs of slits were made in the leather and a short pair of straps riveted on with a dee in each one. A small strap went from this dee to the saddle dee. One obvious disadvantage of this arrangement would be the inevitable leaking of a certain amount of rain water into the bag at the point where the two straps are sewn into the flap (see sketches D and E).

As with other saddle bags the front of the bag is sewn onto the gusset from the inside, with a small piece of light leather in between the two pieces to act as a welt. This prevents the stitches being visible when the front and gusset are turned right way out.

The gusset is sewn to the back of the bag with the stitches visible, mainly because it would be inconvenient to also sew this inside out and have to wrestle with the heavy harness leather turning the bag around the right way.

The flap is opened up and sewn from the inside so that the stitching is not visible when the flap is closed.

The pattern shown here is for a near side bag, and is reversed for a bag for the offside.

SADDLE BAG

The saddle bag described here differs from the pattern most often encountered. This particular design was noted in North Queensland, but I have no idea where it originated. In the most common version the back of the bag extends for twenty-five millimetres or so above the actual bag itself, and the straps are attached to this. However, in this design the bag completely covers the back leather, and the straps are sewn in behind the flap.

The front of the bag, the flap and the gusset are made of bag leather or kip, the straps of bridle leather, and the back of heavy harness leather. Figure A gives the pattern of the front, including the slots and rivet holes to take the buckle leathers, and also includes the seam.

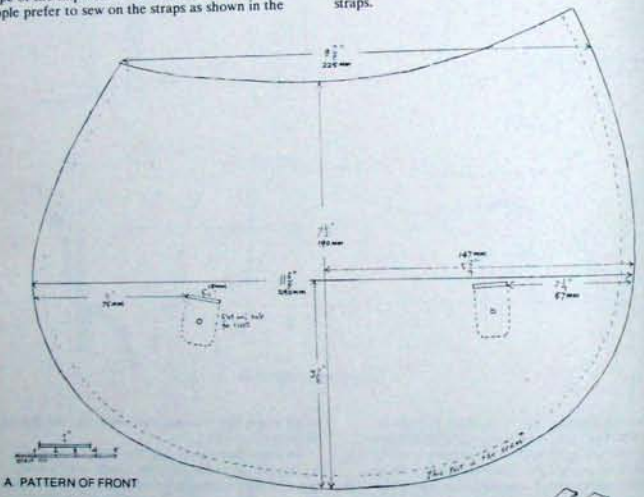
Figure B combines two patterns in one; the back including the slots to take the top straps, and the shape of the flap with its slots and rivet holes. Some people prefer to sew on the straps as shown in the drawing of the finished bag and not use rivets at all.

The smaller sketches show the other materials needed, four 15.5 millimetre brass buckles, straps, a strip of bag leather for the welt and another for the gusset.

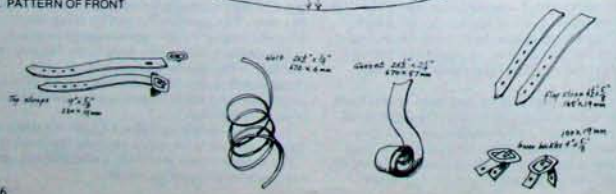
The front piece and the gusset are laid face to face with the narrow welt strip in between and sewn together, beginning twenty-five millimetres down the gusset (see figure C). When completed it is turned right side out again and the sewing is hidden from view. The buckles are then attached with rivets (see D) or sewn on.

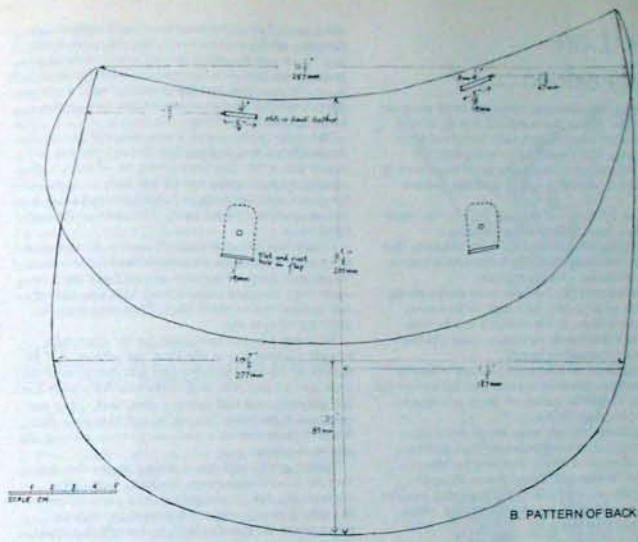
The front is then sewn onto the back (some leatherworkers start at the middle of the gusset) and when this is completed an angle cut is made in the gusset from front to back as shown in E.

The straps are then sewn or riveted onto the flap, and the flap is sewn onto the back. The top straps are fed through the slots till 150 millimetres hang out, and the flap is sewn across the buckle end of the straps.

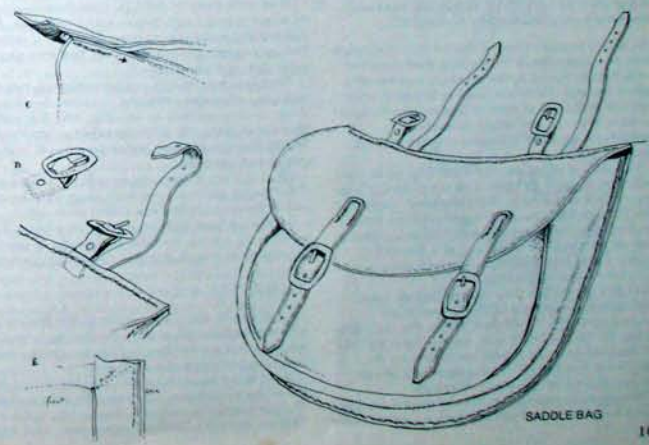


A. PATTERN OF FRONT





B. PATTERN OF BACK & FRONT FLAP



SADDLE BAG

Horse Lore

HORSE-BREAKING

The following description of horse-breaking gives an insight into the traditional methods that have been used in Australia since horses were first bred here. Horse-breaking with these methods requires the breaker to be young, strong and a good horseman. It also produces a percentage of horses that remain outlaws.

As early as 1914 a most unusual man by the name of Kell Jeffery was publicly demonstrating a completely different approach to horse handling that was based on understanding the horse's mind rather than trying to subdue it by brute force.

He had developed this method while convalescing on a property near Guyra. Although he had never ridden a horse before, at the end of a day he was quietly riding a previously unbroken mare that had been declared too tough to handle.

He used no force, and no strength, and in fact he was still handling unbroken horses when he was so old and frail that he had to use an oil drum as a step in order to get onto their backs.

Anyone wishing to learn more about this simple, yet unique method of horse-breaking should obtain *The Jeffery Method of Horse Handling* by Maurice Wright, R. M. Williams, 5 Percy Street, Prospect, South Australia, published in 1973. Note that he calls the method 'handling' rather than 'breaking' which has suggestions of violence.

BREAKING IN

(As described by Les Callope, Aboriginal stockman; transcribed from a tape made in August, 1972.)

Prior to this he had explained that on Bulimba Station where he was employed the working plant consisted of 150 horses, this being the necessary number for a team of ten men. Each man had five horses to work with, and at the end of three or four months he would put these in to rest and bring out another five. Sometimes it would be necessary to break in some more.

'Well, first of all we just chuck the rope on him and choke him down — let him fall on the ground. It's the only way out of it anyway — let him know who's the boss. Put a collar rope on him, so that he can't kick you; bag him down (bagging means to rub and flick a horse all over with an empty sack or a piece of bagging to get it used to being handled); throw a tin under him — anything at all.

'Let him get used to that. It might take an hour, maybe more. Then put a saddle on him — old smashed up saddle, or old pack saddle. Put the bridle on him; tie his head back a bit, not too tight, and let him get used to it. Tie it back onto a dee (on the saddle). Let him out into the big open yard and let him play around all day, take it off at night.

'Next morning, again, give him the same treatment. Chuck a rope onto him and pull him to a post. Same thing again but tie his head down a bit tighter. Let him play up for four or five hours, then take it off him. Then put the halter on him and tie him up to a good strong post or a tree and leave him there to fight it out. He can fight and fall down and sulk, and if he doesn't behave by that afternoon put him on the halter again next morning.

'When he comes out of it you can take him in. Put the saddle on him and put him through the run and mouth him a bit. You have a long set of reins, called running-reins — about twenty feet long — and you let him run round the yard, and pull him round. Let him run and pull him round again. The reins go through the dees.

'Teach him to come back off the bit. Hold him and keep pulling him back and teach him to come back one step at a time. First time you pull him back he might take one step back; second time you expect him to take two or three back. Then you don't do anything till next day.

'Next day you run him around a bit. Then hop straight on him. Just in the yard, get on him, and get somebody on another horse and just ride around the yard. Just let him sort of go anywhere for a start. Let him get used to it that you're on his back. They put on a turn sometimes, but you've got to expect that. Some of them will buck and just go mad; go over the gate or anything.

'You've got to lead him out then on another horse. You put a hobble chain on this side of the horse (through the dee on the saddle), and another one on this side. You put your halter rope in through this side, around the horse's chest, in through that chain, and you've got it up here, so you can sneak him along. That's how to learn him to lead along.

'If he pulls away he can't get away from you and if he wants to come up you take up a bit of slack. Lead him out and make him go down a couple of miles. Pull up and change over and make him lead on the other side, and take him back.

'Next day, hop on him, and let somebody ride out with you — another old horse — in case he races away, so they can race on and grab him. Normally they are all right, but sometimes they go mad and go bolting through the bush and throw you off — if they don't hit you up a tree.

'Once you get them going outside, well that's it. Then you've got to try and work them with the cattle, and tie them up outside, and hobble them out.

'It takes at least eight years to make a horse. I break in six a week, do them completely. If you can't break in six in a week then there's something wrong.'

TRIBUTE

I would like to pay a tribute here to Bill Davidson, who supplied the information for shoeing horses, plus a lot of other pieces that crop up through this book and in my collection of bush yarns.

Bill was a man of tremendous vitality, full of joy in the things around him. He once rode a horse from Rockhampton, on the Queensland coast, to the coast of West Australia, and back again, just to see what the country was like. It took him three years, and he worked on stations all the way over, repairing saddles, windmills and doing other sorts of bush work.

He was well known to all horsemen in the Cairns area as he used to shoe horses for the races, the trots, and the various pony clubs in the district. He was also well known to the general public as the man in the red coat on the grey horse, who acted as the steward at the trots and led the grand parade at the Cairns show.

He used to shoe our horses and was always happy to pass on any information that was asked of him. There were no trade secrets with Bill. He was one of the strongest, fittest and most active men that I knew. He had arranged to come and shoe our horses on a March Sunday in 1974, but on the Friday he had a pain in the chest. He drove himself to the hospital, walked up the stairs and dropped dead.

He was a great man.

SHOEING A HORSE

(As described by the late Bill Davidson, as he did it, Holloways Beach, 29 October 1972.)

Using a farrier's knife Bill first cut down the sole. In this case he must have cut over three millimetres down.

'First, I look and see that he hasn't got any corns or anything — that's just like dead skin on your feet. You put a lot of pressure on the knife.

'This hoof is cracked (on the sole) because of the dry weather. You can take it down to a certain point, then you get too low and do damage.

'Some horses' feet spread. Usually on the back you find they have more depth down to their soles than what they have on the front.

'You take the outside shell off. You don't take much off the heels otherwise you get them like Puss-in-boots. (Bill was using the rasp to take down the wall of the hoof, concentrating on the toe and hardly touching the heel). Concentrate on the toe and it brings them up and they don't get so much strain on their sinews.

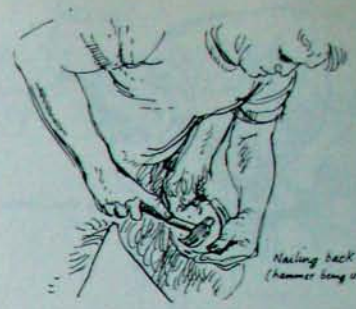
'That's where I feel that a lot of racehorses go soft. They go crook in the legs because they put them too flat. Now, lining up with the centre of the frog you cut out for the toe clip (cutting a small piece out of the outer front of the wall). You know your shoe is central then.

'It takes a lot of pressure to file them down. You've really got to push into them.'

(Bill now held the shoe against the hoof to see how it fitted, and then hammered it to the required shape on a small portable anvil made from a short piece of train line welded to some small pieces of plate.)

'If I was hot shoeing I'd actually shape that shoe. I'd put a pritchel into one of the nail holes.' (A pritchel is a piece of steel about 250 millimetres long by twenty by six millimetres tapering to a point. When driven into a nail hole the shoe can be lifted up with it. It is used to make and enlarge holes in shoes).

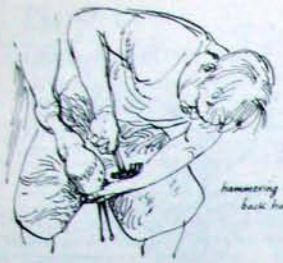
'You put this in when it is hot and go over to your horse's foot and put it on. You don't have it red hot.



Nailing back hoof (hammer being used on its side)

Clinching nails

filing under clincher (back)



hammering down clinches back hoof

filing rear hoof

cleaning out the front hoof

You have it hot so that it just burns the hoof. When you put it on, if you find that you have a piece really blackened and other pieces that aren't, it means that your hoof's not level. And that is actually the whole idea of hot shoeing, to get a level shoe and to get it seating well. It saves a hell of a lot of rasping. It burns a face on.

'But you look at a lot of these horses that aren't constantly shod. Burning them on is not a great advantage to you then because their feet aren't level, and there's no way in the world that you're going to burn them level, and you've got to leave a gap here and there.

'Especially under here' (indicating a point about thirty-eight millimetres from the end of the shoe) 'you get a gap. That's where they chip out. They always seem a bit softer there.

'Now you see this shoe on; it's touching all the way. You won't get any better if you burn on. Where the burning is an advantage is when you build your shoes. It makes sure that the hoof and the shoes are right, and that's where the advantage comes in there. But to turn around and heat up shoes when you haven't built the shoes is a lot of extra work, and I don't think it warrants it.'

(Bill now hammered in the nails, keeping the flat side out. As each nail came through the outer wall of the hoof he slipped the horns of the hammer around it and twisted it off).

'I'm trying here for a high nail' (aiming to get as much of the nail length as possible in the hoof with the smallest amount of the point coming through. At one stage a nail did not come through at all, and Bill withdrew it, and picked up another nail and bent it slightly). 'I'll bend the point of it to give it a bit more lead, and put it in the same place.' (The new nail went into the same hole, but came out in the correct place on the wall of the hoof). 'By the angle of the nail I know approximately where it's going to come out. I know the way a nail travels in a horse's hoof, and in a particular hoof.

'Sometimes you have to have a second shot; sometimes you get a crack in the hoof and it will just follow along the crack. Now there's his nails in and you'll see that they're a fairly good line, and they've been twisted off.'

(Bill now held the head of his pincers against the head of each nail, to act as a dolly, and hammered down on the snapped-off-points to fold them down so that they stuck out at right angles.)

'All this does is to pull the hoof and the shoe together and then you fold your clinch over. This can be a dangerous part in shoeing if a horse pulls his hoof away with these big clinches out.' (The protruding broken off nail can make a nasty wound.)

'Some of them don't like them tight; some horses just object to having a shoe on really tight. It's just a little bit uncomfortable for a start. Of course I could pull a shoe on that tight on a horse's foot that they mightn't walk. You can overtighten them with some horses. Not all horses, just some of them.

'Now I clean underneath' (Bill filed the hoof wall just below where the nails were protruding) 'to get rid of any little shells of hoof that might just hold up the nail from folding over clean. If I fold it down over a protruding bit of hoof it won't give me a good clinch.

'If you have too long a clinch on some horses they just lift straight out. Other horses, if they've got a crook foot you've got to leave a long clinch otherwise they'll pull through. This fellow takes about a medium clinch.

'See, I'm holding up underneath the nail head; it's just like dollying a rivet on a boat. Hitting them over and in.' (Bill held the pincers on the nail head and hammered the protruding ends down and back into the wall of the hoof.)

(He then pointed out that one should stand with the leg of the horse held in such a way that if it should kick, the farrier would be able to stand aside in safety.)

'If this horse was a bad horse, I would stand here, so that if he kicks, he kicks out, and I'm safe. The other way' (holding the hoof between his legs) 'if he kicks, he'll really pelt me back and I can get hurt. I always stand a little bit wide so that if he kicks it goes past.

'Some horses love it' (being shod). 'I don't know whether it's the sensation that they get from the rasping or what.' (Bill now rasped down the walls of the hoof, from where the nails came out down to the shoe. This removed the uneven shape, including a number of splits and chips.)

'The idea with the rasping is to try and keep the same plane as the foot. A lot of chaps don't realise it. They just square a little bit straight down on the head. It will come like that and straight down to the shoe — that's bad.' (Bill was showing here the correct method of rasping, so that the profile of the hoof appeared to be nearly a straight line. If done incorrectly the hoof shape showed a change in angle below the nails.) 'The higher you keep your nails the better plane you can keep on the hoof. You get nails coming out too soon, you've got to rasp down short underneath them. That's what you call snubbing — snubbing a toe.'

(The near back shoe was now on and Bill moved to the front near side.)

'To hold his foot you get it between your legs and stand like Charley Chaplin, no not Chaplin — I forget who was the pigeon toed actor. I can squeeze that so tight that he'll want to pull his foot away.' (The leg is held between and above the farrier's knees.)

'If you want to stop a horse in a race, put a twisted shoe on him. It puts pressure on one side and not on the other. The mugs who look at them can't pick it. I guarantee I can stop a horse five different ways through his feet and they will never pick it. But I won't be in it, though I've had offers. But I hate doing anything to an animal that is detrimental to them, that stops them or interferes with them or hurts them.

(Bill then demonstrated how the horse stood up better once the toe had been filed down — this horse had not been shod for a year and the toe had grown out quite a bit. When he had taken the toe down it made the horse stand more erect.)

Supporting rear hoof

'I've taken it down enough now. I could take it down more and shorten him up, but that's going to interfere with the free action of the horse. If I flatten the toe up it's going to push here and that's going to make him sore. That's what happens with race horses. I got five over here on the track working again, they couldn't get their legs right. But they've all started shoeing their horses again and they'll have them sore in no time.

'There's five of them that I put back on the track, and they had said that they couldn't do anything with them because they were going sore all the time. I shod them up, and said only light work, then I came back three weeks later and re-shod them and said work them as much as you like.

'They said, "He's going well. How about plating him up?" So I plated him up in the same style. He got one race and then the following race, and then nearly

everyone started shoeing their own horses, and I had a look at them. They were putting them on like this' (taking the heel down).

'I told them my method and why, but they've got their horses sore again. Some of them take them down that much that they take all the skin and hair off the fetlock — when they are galloping they come down so far. That's through taking too much of the heel off. If he has got heel there, it will hit before the toe hits.

'Some horses grow big heels and you have to square them down. My cream horse grows fantastic heels. If you didn't square them down he would stand like a lady in high heel shoes. I take his heel off and flatten him down a bit. Only a touch, might be a sixteenth or a quarter off the heel at the most, and I take the same off the toe.

'But with others I will take a quarter off the toe and nothing off the heel. I've taken three quarters off a toe and nothing off the heel to stand a horse up. And before I did it the tendons in the leg have been so tight that it wasn't funny.

'It's like you putting on a pair of shoes with big thick soles and no heels. A lot of people think that if you leave a great big toe the horse will dig his feet in and go faster. But a horse doesn't run on his toes, a horse lands on his heel, and then the toe. It's only a fraction, but you can spot it on a slow motion film.'

(Bill commenced shoeing the front hoof with the leg between his own legs. When he was putting the nails through, and the cut ends were sticking out of the walls of the hoof he held the leg from the side.)

'If you still have the foot between your legs and the horse pulls he'll put the nail straight through you. I've got scars to prove it. A lot of people laugh at this method, and I say, "Oh yes, and how many times have you been cut with nails?" "Oh, lots of times" "Well, wake up." Just imagine having this hoof between your legs while you were clinching up. If he moved he would rake you to hell. Of course you never have the back legs between your legs; he'd pelt you every time.

'You see how I rasp from the outside, it's a matter of safety. A lot of people get inside their horse's legs, but if he rears he will get you. People say that you can't rasp this way, but it's just a matter of training yourself.

'This split now' (a split in the centre of the hoof), 'I'll line above that to stop it going any further.' (He then filed a groove above the split and at right angles to it).

'Now onto the off hind. If that horse kicks he's got to pull his leg back here to kick, so he pushes me out of the way. And I lock their leg in here. This arm on top, so that he can't pull his leg away from me.

'A lot of these things you've got to think about why you do them. It becomes automatic. I've been shoeing now for thirty-six years. One of these rasps does me for about fifty horses. See that white line — that corny part? I can bring a nail half way across that, and I daren't come a fraction more. I usually come to the edge of the white.

'You see that the hind shoe is pointed and the round ones go at the front. Now you can see the white here through the hole in the shoe, that's where the nail will go.

'There's really four different kinds of material in a horse's foot. There's the greasy pad in between the white line and the sole, then the white line, and another ring between that and the shell.

'When a horse gets seedy toes, all this white line goes a stinking rotten black. It eats it up and leaves nothing between here (the sole) and here (the shell). The outside just becomes dead and breaks off, and it's a terrible state of affairs.

'I have formalin, paraffin oil and Stockholm tar mixed. About fifty-fifty tar and paraffin and a little formalin. I pour that in. The vets laughed at me when I told them what I had done, but there's two horses that they wanted to destroy.

'One of them was a little Shetland mare, and she could hardly walk. They got the vet out and he recommended that they destroy it straight away. They said no, and this chap said to me, "Have you got anything for seedy toe, for that Shetland mare of mine?"

'I had a look at it and I said, "No, get the vet on it." He said, "The vet wants it destroyed." "Oh", I said, "if that's as far as the vet will go I'll have a go."

'I had a go and in about seven months we had it right. We showed it in the next show, about three months after that. I built up all of its feet with this auto-patch. You know that putty that you build up rust in cars with? It's like a fibre-glass.

'I build up all the shell with that' (the shell had broken off) 'and it was walking on the soles of its feet. So I built it up and up, and this took about four hours. I tied its feet up until it had set; until I had something to rasp on.

'And as I put the shoes on there were parts where I would knock the auto-patch off, so I'd have to put the shoe on and fill the spaces up with auto-patch. The next day it was still laying down, and the next it got up and moved around, and then it was moving around more.

'Those shoes were on it about five weeks before the show came. I didn't touch the shoes. I just cleaned up the auto-patch and blackened it off. Won champion Shetland mare with her!

'Even the judge remarked on what beautiful neat feet she had — I felt quite embarassed. He said, "What's the idea of shoeing her?" I said, "The kids ride her around a lot".'

(As Bill walked around the back of the horse he put all his tools in one hand and placed the other on the horse's rump). 'This is another habit that I have, I can sense through that hand whether a horse is going to jump or kick. Also it lets the horse know that you are there.

'You break the nails off as you go. You couldn't have all those points sticking out.

'You do six nails in each shoe. The extra holes are for a horse with a bad hoof. You might require four nails if you have a horse with a bad hoof. It also gives you the choice of positioning your nails where you think it's the best part of the hoof.

'You have less thickness in the walls (the sides) than you have in the toe.'

(Bill noticed a bit of proud flesh above one hoof where the horse had run into a stick.) 'Hydrated lime is very good for proud flesh. Quite a few of the vets are using it now. When I told them about it, they thought that I was kidding them. I said, "Well you know such-and such a horse you are treating? Well go and have a look at the buggar." "Why?" "Well, your treatment wasn't doing any good and the owner was becoming a bit disappointed and they decided to let me put the hydrated lime on it." I chucked the slaked lime on it and they were amazed.

'But it's just one of those things that have got handed down over the years. It had nothing to do with me being a Doctor Mac with it.

'A corn is a big hard white lump. They get it anywhere on the sole but usually at the back, what they call the bar. That's why I clean back here, to see that there's no sign of a corn. The treatment is to cut them out. Some go in deep, but if you are regularly looking at the feet and cleaning them, they won't get them.

'On the thin side of the walls you'll see that it doesn't quite come down to the shoe, but it will grow down now it has the shoe there to protect it.'

HORSE REMEDIES

(From a taped interview with Cec Cory, Holloways Beach, 1973.)

'We used to use Stockholm tar and ashes for horses' wounds. We used ashes a lot. I don't know what that was for, maybe it dried them up. Stockholm tar and ashes were widely used, it might have made it stick better or something.

'You put the tar on and you sprinkle the ashes on top of that.

'I heard of cobwebs to stop bleeding, but I've never used it.'

(I remarked that my neighbour used to use pepper to stop bleeding after cutting off the spurs on his roosters.)

'To stop bleeding you can use anything that smarts. Metholated spirits is inclined to stop bleeding. We never used to bother about that sort of thing with horses. If a horse cut itself badly it either got over it or it died. There were no vets there to worry about. It surprises me here the way people run to the vet with cats and dogs, more than we used to do with our kids to the doctor. I mean if a dog got anything badly wrong with it you just used to shoot it; you wouldn't be bothered trying to fix it up. We put them out of their misery.

'Down where we used to be the dogs couldn't work because of the burrs; they couldn't walk because of the bindi-eye; and later the khaki burr; and they used to have to put boots on the dogs. Soft basil — it couldn't be too hard. I don't know how they used to encourage the dogs to keep them on, but I suppose the poor devils couldn't get around if they took them off.

Transport

FORK SLED

The early farmer was often in need of a cross-country type of vehicle that would go where his ordinary carts could not move, and the fork sled was the answer. In form it was the ultimate in simplicity — simply a solid forked branch with a hole drilled into it to take a chain.

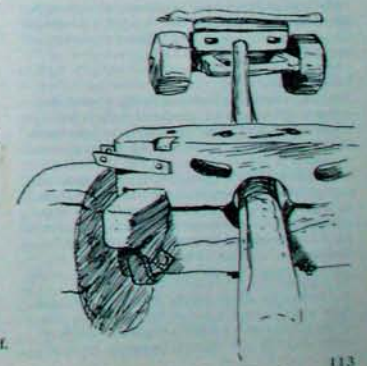
The one in the sketch was used in the Gembrook area, Victoria, to haul lengths of timber, and so was only fitted with three cross-members. Sleds for other work would often be timbered all the way across. They were frequently used to haul water from the dam carrying a water tank for the purpose. They would be hauled across the muddy edges of the dam where a wheeled vehicle would have got firmly stuck.

TIMBER JINKER

I did my original sketch of this timber jinker at Echuca in 1958, where it lay abandoned at the edge of the river.

It has a turntable at the front, and the back pole is held firmly in place by two poles which come together in a V just in front of the back wheels.

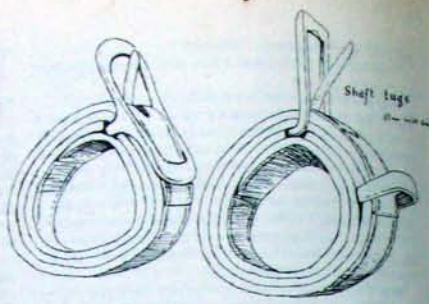
The whole vehicle has been cut out of solid timber by hand, and even the huge wheels have been hewn out of logs. Even empty it would have been a daunting weight for the bullocks to move, and must have required a huge team when fully loaded.



SHAFT TUGS

Shaft tugs, as the name suggests, were designed to take the shafts of a horse drawn vehicle. The pair illustrated here were lent to me by Ezzie Murray of Cairns.

Each one is made up from two pieces of leather. Each piece begins at the buckle and is wrapped around to make four thicknesses of leather at the widest point. The hole is then stitched through, but the inside surface of the leather is slit obliquely so that the stitches are just out of sight and below the surface.



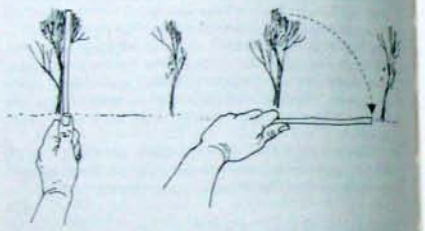
Bush Lore

ESTIMATING HEIGHT

This method of estimating height is not only very simple but surprisingly accurate. Timbermen will use it to establish whether a tree will fall into the clear space available, and will also use it if they want to know the height of a tree without chopping it down.

They hold a stick at arms length and adjust it so that it appears to be the same height as the tree. They then pivot the stick so that it lays along the ground, and take a note of the position of the end of the stick as it relates to the distant tree.

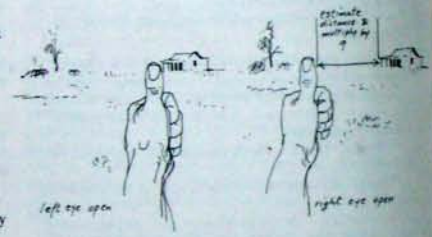
This will show them whether the falling tree will miss others, and they can estimate the height of the tree by making a mental note of the position the stick occupies on the distant ground, and measuring this.



ESTIMATING DISTANCE

The observer holds up his thumb, either hand, and lines it up with the distant object, at the same time closing his right eye. He then closes his left eye and opens the right, and the thumb will be seen to have apparently jumped several metres to the left of the distant object.

The next step is to make an estimate of how many metres the thumb seems to have jumped and multiply this by nine. This will give the distance of the object from the viewer.



ESTIMATING TIME

This is a common method used by the Australian bushman to estimate the amount of daylight left before sunset. He simply holds up one or both hands until he has filled the space between the horizon and the sun.

Each finger used is counted as fifteen minutes of daylight left. The method though widespread is not particularly accurate. Obviously there will be many minutes difference between fat fingers and thin ones, but it is near enough for everyday use as far as the bushman is concerned.

TRAVELLING IN A STRAIGHT LINE

It is frequently stated that the Aboriginal has some 'sixth sense' when it comes to finding his way. I have discussed this question with coloured people many times, and although they will frequently speak of some person as having an extraordinary skill in this direction it is always spoken of as a skill and not some mysterious gift from above. It is regarded as something which is learned, and anyone can acquire the ability given a good teacher and sufficient time.

I must hasten to point out that I do not have these skills, and can only pass on some interesting techniques that I have been told. The true bushman, white and black, sees things in the bush that others would never even notice, and it is the adding up of all these small signs that will allow him to make a detailed mental picture of the country through which he is travelling.

For instance the bushman will always take note of the 'fall' of the country while the townsmen would not pay any attention to this vital factor. The fall is the slope of the country, and he knows that if he follows this slope, however slight, he will come to a watercourse in time, even if it is only a small dry gully. This in turn will lead down, getting larger as it is joined by other gullies and creeks until it reaches the river, and the fall of the land will continue until the sea is reached.

So as he moves about he always has this fall as a reference point in the back of his mind. He will speak about being on the 'southern fall of Rocky Creek' or the 'west fall of Little Sandy'. Starting from a known point he will move about quite freely ,confident that all the little gullies and creeks that he may cross lead back to the river system that he is using as a reference.

So it is, that whichever way he moves, whether up or down, or in any direction, he is always conscious of being in a sort of bowl, and at the very bottom of the bowl is the river.

Now suppose that he moves on to high ground. When he reaches the highest point in his direction of travel he will look for a change in the fall of the land. The next slope will lead to a different creek, and this may join the earlier river that he is using as a point of reference, or it may run into a totally different river system. If he can deduce this information then he can move around this basin with the same confidence that he used to traverse the first.

Take for instance a man travelling from A to C, top of page. While he is moving around A he is conscious of the fact that all the fall of the land is towards creek A, and he knows that this will eventually join the main river.

He moves up to the highest point he has reached in his travels, and realises that as this is the highest point it must be the divide between area A and area B. Bushmen refer to this simply as the 'divide'. He will then try and establish a mental picture of the new system which he has to cross. Is the fall in the same general direction? If so then it may well be a creek system that will in turn join back to the main river. If not then what is its general direction?

Having established the general direction of the fall, the traveller will be able to proceed with confidence. In this case he will have noted that the general direction of the main creek is the same as the previous one, and will therefore assume that they are both tributaries of the same river.

As he proceeds he will also be taking into account the fact that the small gullies feeding into the main creek do so at an angle to that creek, and he will also use this to help him keep his directions. Because he has formed a mental picture of the creek system A and has related this to the new creek system B, he can now move across this new creek system with confidence, secure in the knowledge that as long as he continues to keep the fall of the land to his right side, then he will be travelling in the correct general direction.

In time he begins to climb, and once more reaches a new divide. Before moving on he establishes that in this case the new creek system is running at an angle to the previous one, and in order to keep to the correct course he must travel in the same direction as the small tributaries of this creek. In this way he will arrive at the general position of his objective.

It will be appreciated that a traveller will only attempt to travel in such a straight line if the country is gently undulating. If he encounters steep gullies and deep creeks he will simply follow the divide itself, following the course indicated by the heavy dotted line. He will still locate himself mentally by comparing the direction of the creek A with creek B, and in turn their relation to creek C, but will have the added advantage of being able to keep two creek systems in sight all the time, thus allowing greater precision in his pathfinding.

Notice how the early explorers used this system to move with confidence over unknown territory. Kennedy for instance made constant reference to the Divide when he explored Cape York. He knew that if the rivers that he crossed were flowing to the East then he was not very far from the coast, but if they flowed to the West then the Divide must be on his right side.

Of course, the bushman needs a lot more than knowledge of the directions of creeks and rivers to keep him on a straight line, but all these items of information are gathered and compared to help arrive at a correct solution.

In wooded country it often happens that the fall of the land is not perceptible and here other methods must be used. Even the best bushman will tend to veer slightly to the left or right as he travels along unless he takes steps to prevent this happening. I have heard many old bushmen describe how they have been temporarily lost, generally on heavily overcast days when travelling through country covered with low scrub.

The most common method used to keep to a straight course is to note a particular tree in the correct direction of travel, and head towards this. Sketches second from top, previous page. When it is reached a new tree is selected, and so on. Although this will lead to a straight line between the trees sighted, it can also lead to a wrong course as I have shown in figure A, previous page second from bottom. Having arrived at the first tree it is possible for the traveller to sight the next tree incorrectly and so gradually proceed to lose his correct direction.

The experienced bushman avoids this error as shown in figure B. Moving from point 1 he sights tree 2 and heads for it. However *before* reaching it he lines up tree 3. Similarly he sights up tree 4 when he is part way between points 2 and 3, and in this way his line is always correct.

This method is good for open forest country, but does not work on featureless plains. A Gulf country stockman told me that on the plains they used two systems that had been common among the Aborigines for centuries.

In the first method, one rider would always go ahead of the others, heading in the direction of travel indicated. No matter how featureless the country might appear to be, there would always be some small feature, perhaps just a particular clump of grass, beyond the leading rider, and as soon as he appeared to be veering off course it would become obvious to those following and they would then signal him back to the correct line.

The second method could be used by a lone traveller, and consisted of lighting two small fires which would give off a quantity of smoke for some time. The first would be lit at the camp site and the traveller would set out in the required direction. After a short time, and before there was any chance of having altered direction, he would select a clearing and light another fire.

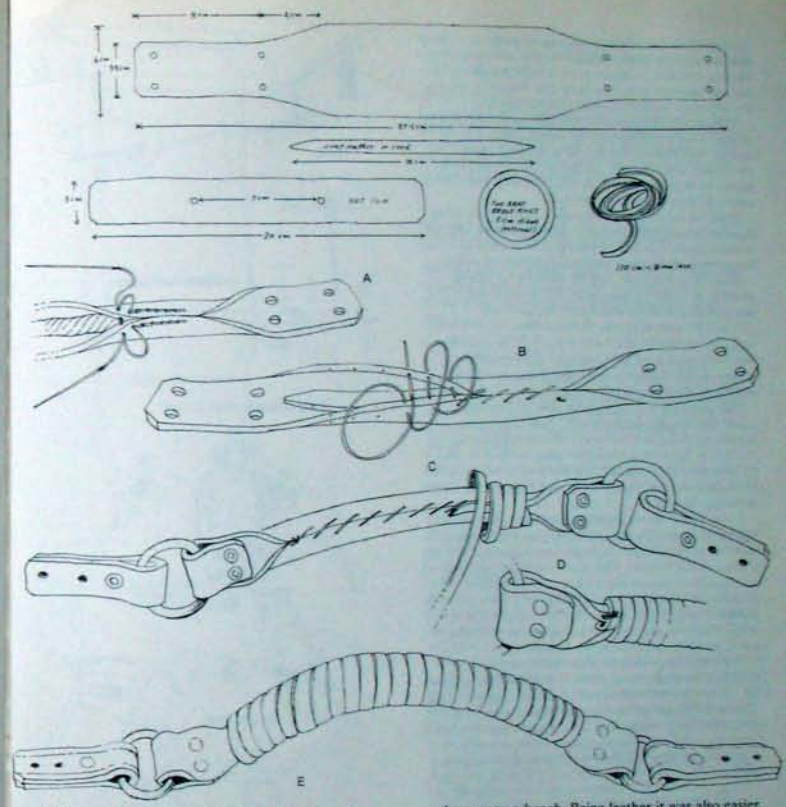
He would now proceed with confidence, knowing that as long as he kept the two smokes in line then he was going in a straight line. If he had a long way to travel he might light more fires as he went on, so that as the original smoke died down he would be able to continue with the directions maintained by the newer ones. See sketch bottom of previous page.

One Gulf country stockman told me an interesting sidelight into the art of travelling in a straight line. He had been mustering with an Aboriginal stockman noted for his direction-finding abilities. Having followed cattle all over the country they finally decided to return back to camp.

They decided on the direction in which camp must lie, and proceeded to make a direct line towards it. The old man asked my companion to ride behind him to ensure that he did not drift off direction, as mentioned above, and also told him not to use his spurs if he wanted to make a horse travel in a straight line.

He maintained that a horse will always veer one way or another when spurs are used, as it is always a little more tender on one side than another. Instead he broke off two sticks, around 1.2 metres long, and held one in each hand alongside his reins.

As he walked along he would alternately tap the horse's back thighs with one stick and then the other, quite lightly, but his companion said that it was amazing how it made the horse maintain course, and also walk very briskly.



Traditional Bush Tools

TRADITIONAL TOOL BOX HANDLE

One day a local carpenter asked me to make a replacement handle for his tool box. Most carpenters today are content to use ready made suitcase handles of plastic or metal, but this man had become used to the traditional leather handle and wished to retain it.

The old style handle was thicker than the present day ones and more than twice as long, long enough to be able to use both hands when lifting a heavy box of tools up onto a bench. Being leather it was also easier on the hands when the box had to be carried for any distance. There were undoubtedly many variants of these handles, but here is how the present one was made.

Four millimetres leather was used throughout, except for the lacing leather which was of three millimetres. The handle and two straps for the ends were first cut out, and a small piece of scrap leather was used as a belly. A short piece of rope is also often found used as a belly, anything in fact that will fill the cavity in the handles and prevent it crumpling under pressure.

The present handle was a little more elaborate than

most, as it had an outer wrapping of heavy lace. Most handles are left plain, and are usually sewn with two harness needles as shown in A. A hole is made with the awl on each side, at a forty-five degree angle, and the edges are pulled together with the thread.

In this case there was no need for such tight sewing as the outer covering held the handle tight, and so the leather was thoroughly wetted to make it pliable and then sewn with a single needle and large stitches as shown in B. (Note that in A, I have drawn a rope belly and in B, shown the leather belly.)

(I am reminded here of another method of sewing handles, using lighter leather. In this case the handle is sewn inside out and pulled back the right way when completed, while the leather is still moist and pliable.

Thus no stitches are visible. However, I doubt whether it could be done with this heavy leather. My brother used to make dog collars in this way.)

It will be seen from the sketches that the stitching was started and finished with a knot. If two needles had been used it would have been finished off by simply sewing back a couple of stitches and then cutting off the threads without a knot.

The heavy lace covering was then pulled tightly round the handle as shown in C. Notice how the beginning of the lace is tucked in and held firmly. If the lace is fairly thin, then this same method is used at the completion of the job, the last few turns being left loose until the end has been tucked through, and then drawn up tightly.

If the lace is heavy then this method is not suitable unless great care is exercised, because each end of the lace has to be thinned off to prevent it making too big a bulge in the handle. This is easy at the beginning, as no pressure is put on this end, but it could be a problem at the end trying to pull a very thick piece of leather through tight wrapping. Because of this, it is simpler to tuck the end down into the handle, and sew it onto the main leather as shown in D.

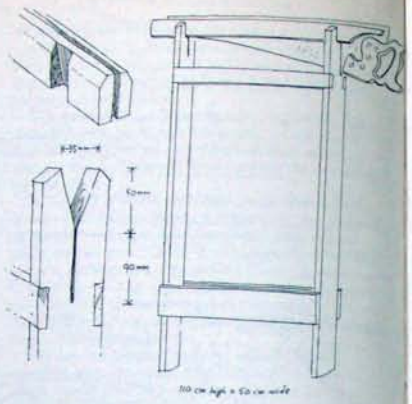
The brass rings may be attached at any time, though it is easiest to do them before the lacing is put on. They may be sewn or fastened with copper rivets. The outer straps are screwed or bolted to the tool box, using large washers to spread the load. The brass rings are used in bridle making, so are generally available through saddlers. The finished job is shown in E.

SAW SHARPENING CLAMP

I had taken the measurements of the clamp in the diagram top, right, from one used by a local builder, but had assumed that the idea was of recent origin. However, I recently discovered a photograph of a log hut taken in 1914, and leaning against the wall is an identical clamp!

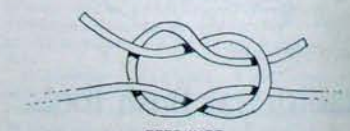
The clamp is based on two vertical pieces of timber with some cross arms. A sawcut is made in each of the verticals and a V cut down part of the way as shown in the drawing. The saw fits into this, and is held tightly by two movable lengths of timber with cuts in them as shown.

As these are hammered down on each side of the saw their wedge shape causes them to grip the saw tightly along its entire length, holding it firmly while it is being sharpened.

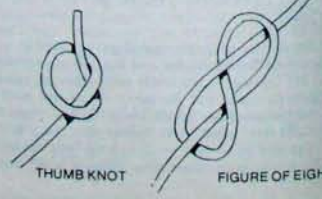


SAW SHARPENING CLAMP

BROAD AXE



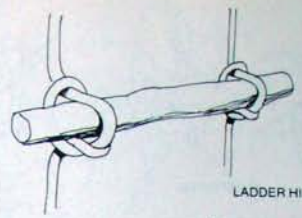
REEF KNOT



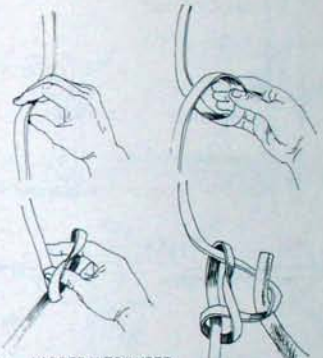
THUMB KNOT FIGURE OF EIGHT

BROAD AXE

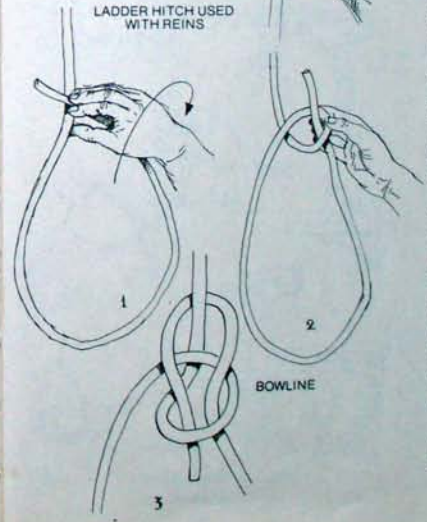
To most people the broad axe is a thing of the past, but in fact some bridge carpenters still use them, and I have also seen them used by men trimming timber for harbour piles. Their main use was as a tool for roughly shaping large timbers.



LADDER HITCH



LADDER HITCH USED WITH REINS



BOWLINE

Knots and Splices

This section deals with knots common in Australia amongst bushmen, fishermen, carriers and so on. Some other knots are included in the section on plaiting.

REEF KNOT

Probably this is the one knot that is known to everyone. Ashley, in his *Book of Knots*, claims that more lives have been lost through people relying on this knot than any other, and advises the sheet bend as an alternative if any amount of pressure is to be put on the rope.

THUMB KNOT AND FIGURE-OF-EIGHT KNOT

These two simple knots are usually put into ropes to make a stopper. The thumb knot is also often found being used to stop a rope fraying at the ends, but of course such ropes should be whipped or back-spliced rather than be treated like this.

LADDER HITCH

For the most part this hitch is not given any name — it is just a hitch. However, when it is used to make a rope ladder it is called a ladder hitch, so that name will have to do.

Because it is simple and easy to tie with one hand it is frequently used to tie up a horse when long divided reins are being used (divided reins are common among northern ringers). The reins are held in one hand as shown in the first sketch and the hand tipped over to form a loop.

Finger and thumb are passed through the loop to grasp the material, and this is pulled through the loop and dropped over any convenient peg.

The same hitch tied in rope can be used to construct a rope ladder, and the hitch becomes instantly undone when the sticks are removed.

BOWLINE

One of the most common and useful knots, it makes a firm, non-slipping noose which is still relatively easy to untie. It is used for hundreds of purposes, and is a handy knot to tie around a horse's neck when tethering out as there is no chance of it slipping up and strangling the animal.

The same wrist twist used for the ladder hitch also comes into use here. The end of the rope is laid across the main body of rope as shown in figure 1, and the wrist is given a twist to form a loop with the

end of the rope sticking through it as shown in figure 2.

When I was young we were taught the rest of this knot with a little story. 'Here is the snake sticking his head out of the hole. He walks around the back of the tree to see if there is any danger there, and then he slides back into his hole.' When he has slid back the knot is complete as in 3.

SHEET BEND

This knot is commonly used to tie together two ropes of unequal thickness, the thicker rope being the lower one if the knot is tied as described here. According to Ashley this is a far stronger and safer knot than the reef knot, and should be used instead of the reef knot in nearly all cases.

It may be tied with the same twist of the wrist used for the bowline, and in fact it will be seen to be exactly the same construction. If the left hand side of the loop of the bowline as shown in the sketch was cut the result would be a sheet bend.

The lower rope is laid across the upper, the wrist given a twist, and here we find the snake once more looking out of his hole. He goes round the back of the tree, back down his hole and the knot is complete.

TWO HALF HITCHES

The old saying was 'Two half hitches held the Queen's ship', though just which Queen was never explained. However, the surprising thing about a pair of half hitches is their use in holding things. We have used a couple of half hitches to tether the horses for years, and have never found it work loose, despite all their movement. Needless to say the hitches are not tied in the last few centimetres of rope. At least thirty centimetres are left hanging out at the end.

RING HITCH

The ring hitch forms the basis for cord girths, and is also the hitch used to fasten a hammock onto its metal ring.

CLOVE HITCH

This is a universal knot used for all sorts of things. It is the hitch used when hanging a net onto either the leadline or the corkline, and is tied as shown, the twine used being wrapped around a net needle.

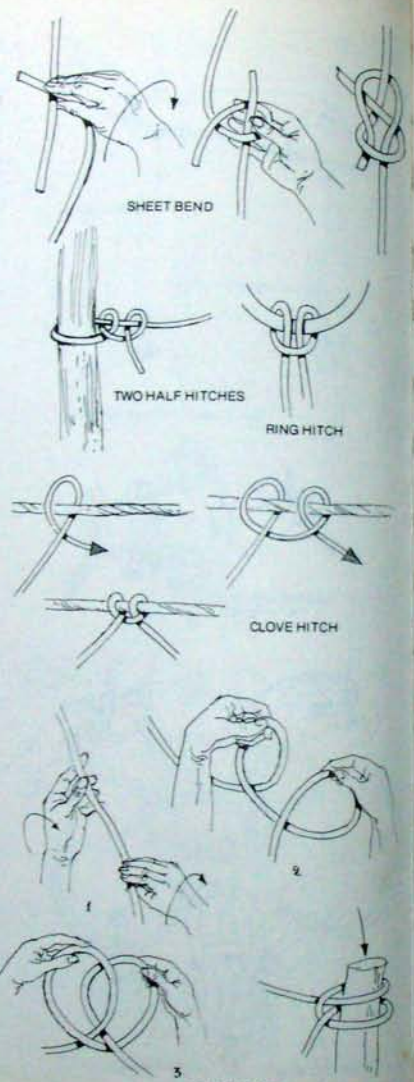
When being tied in heavier cord an easy method is to grasp the material as shown in figure 1. Both hands are then twisted so that two loops are formed as in 2.

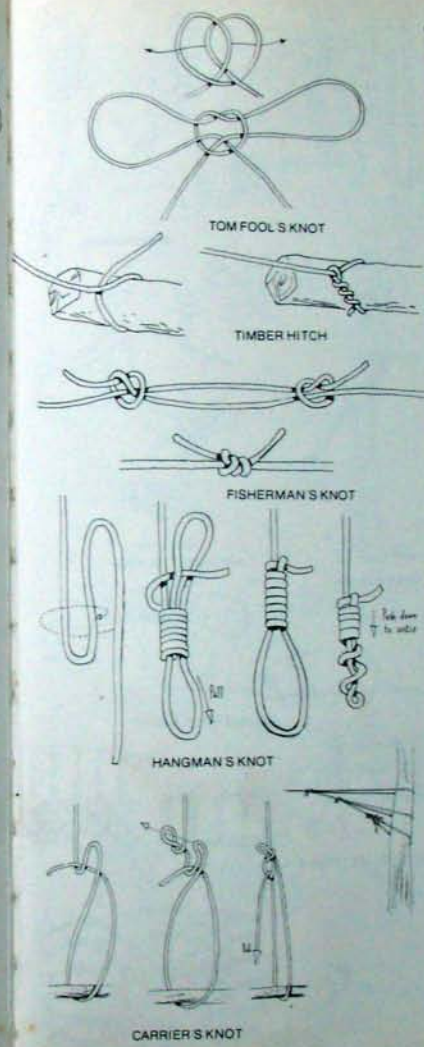
When placed together (3) the hitch is complete and can be dropped over a post or other support.

TOM FOOLS KNOT

The Tom Fools knot probably got its name from the fact that it is the knot most often tied by people with idle fingers for the pleasure of doing it rather than with any purpose in mind. It is a fact that while many bushmen know this knot, few know of any uses for it.

It can be used for lifting and, if a half hitch is placed around each of the long loops to prevent them tightening up, it becomes the Fireman's Chair knot. In practice the person to be lifted places his arms and shoulders through one loop and his legs through the





other. One of the loose ends of the rope is used for lifting, and the other can be used to keep the person being lifted from being bumped against rocks and so on.

It is also used as the main parts of the rope bridle, described in the section on bridles.

To tie it, a clove hitch is formed as described. The fingers then go into the two loops and pull out two ends, thus forming the knot. To untie it, the loose ends are pulled and it falls apart.

TIMBER HITCH

This useful hitch is frequently employed to move logs for short distances. Its great virtue lies in that fact that it can always be readily undone no matter how much pressure has been put on it.

This is the hitch that we use when we find logs across the track in the bush.

FISHERMAN'S KNOT

This knot is used for tying together slippery lines, and holds where many other knots would slip. It can also be untied by pulling the opposing hitches apart in the same way as they were put together.

HANGMAN'S KNOT

Despite its sinister name this is a useful knot when a noose is required that is not inclined to slacken off when tension is released. It is also favoured because it does not jam and is usually very easy to undo.

CARRIER'S KNOT

This is one of the number of knots used by carriers to tighten up their load and hold it in place. The first two steps are performed when the rope is hanging slack, and the knot thus formed is held in place with the hand until a certain amount of tension has been applied by pulling down on the end of the rope.

Once the rope is under tension the knot remains firm, and considerable pressure can be brought to bear on it. When it is tight enough the end is tied to the lower bar with a couple of half hitches, or they are put into the rope itself as shown in the last sketch.

We use this knot to get a good tight rope to throw a tarpaulin over when we are camping out in wet weather. If enough tension cannot be obtained by tying this knot once, then the end of the rope goes around the tree, and another knot is tied below the first. If there is still not enough tension obtained then a third knot can be tied, as shown in the sketch. This makes in effect the same sort of leverage that would be obtained by the use of pulleys, and with a smooth rope that slides easily through the loops considerable pull can be exerted.

The man who showed me this originally said that he often used it to pull down branches for firewood. He would throw one end of the rope over the branch, and tie it tight by forming a bowline in the end and sliding it up to make a noose around the timber.

He would then put the other end of the rope round a nearby tree, form a number of hitches to exert enough pressure to bring down the branch. Although in theory any number of knots could be formed, in practice three seems to be the maximum that will work on this system.

SHEEPSHANK

This is another knot used by carriers to tighten a load. It is formed by twisting a loop of the rope with the same wrist action that is used for the bowline. This same action is repeated a little lower down, and the result is a sheepshank. By itself this knot is used to shorten a length of rope.

By looping the loose end back into the lower eye of the sheepshank the carrier is able to haul downwards and so tighten his load.

This knot is now complete, and normally found in this configuration, but if increased leverage is needed then the system can be doubled or trebled in the same way as I have shown with the previous carrier's knot. The late Bill Davidson, our farrier, said that by trebling the knob he had gained enough leverage to pull a car out of a bog.

HITCHING RAIL KNOT

This is the knot that our farrier used when he was shoeing the horses. The tethering rope is around the horse's neck and the end is attached to the hitching rail in this manner. If the horse pulls back the knob simply tightens, but if the farrier wants to release it in a hurry he only has to pull sharply on the loose end.

FISHING HOOK KNOTS

There seems to be an endless variety in the knots used to fasten fishing hooks to the line. These are two of the more popular knots. The hangman's noose is also encountered quite often.

KNOTLESS NETTING

Fig. A shows the system of making fishing nets used by some of the Aboriginal tribes. Its main disadvantage is the fact that a fish pushing at a single hole will tend to enlarge it for the moment, allowing it to slip through. With fixed-knot nets the hole cannot be enlarged and so the fish get gilled.

Fig. B is another method of knotless netting. Old hammock makers used to often prefer knotless nets for their work as the result was a much more elastic hammock. In this system the cords are taken under two and over two before changing direction.

MESH KNOT

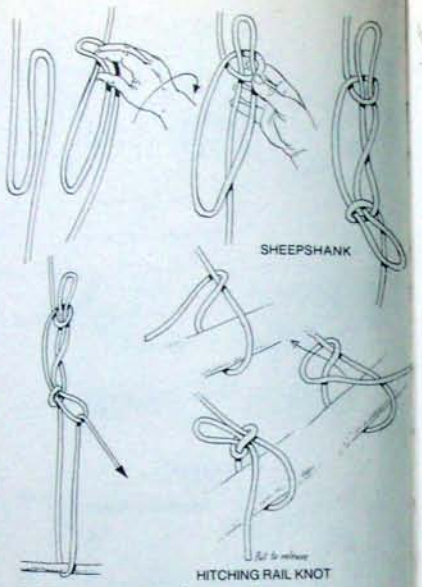
This is the simple mesh knot used to make most nets. It's uses are described in more detail in the section on net making. A piece of wood is used as a gauge. This fixes the size of the mesh to be made. The twine is taken round the gauge and through the back of the mesh above it.

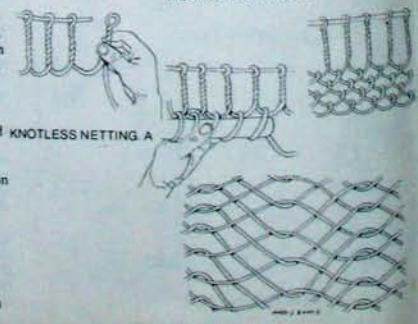
The thumb then grips the cord at this point to hold it firm and the twine is flicked across to the left.

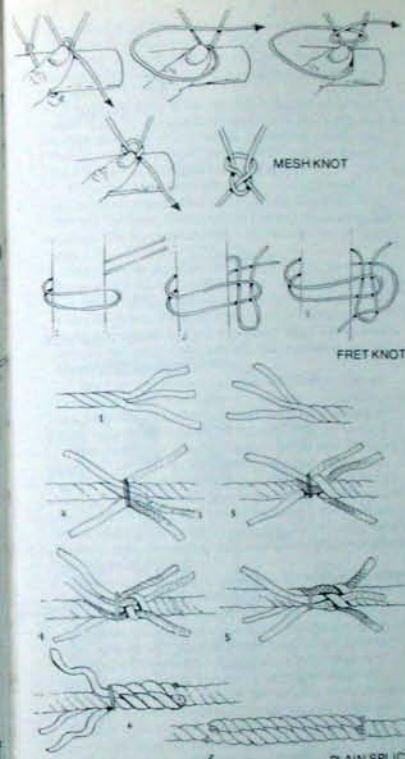
The twine is then brought around as shown and pulled tight, the thumb all the time holding tension on the mesh above until the knot is firmly pulled down. If this is not done then the final loop will often slip down and drop below the upper mesh and the knot will not be properly formed.

FRET KNOT

Australian folklorist John Manifold, showed me this traditional fret knot many years ago. It was tied with







a piece of gut fishing line around the necks of home-made instruments in place of the usual brass frets.

PLAIN SPLICE

Bushmen usually refer to this simply as a splice. It is the simplest and most common splice encountered, being used to rejoin broken rope, or to increase the length of a rope by adding on a fresh piece.

The ends of the rope are unravelled as in 1 and then brought together as in 2. For ease in working the splice, a small piece of cord is often tied around the centre as shown, and cut off after the job is completed.

A strand is then selected, passed over the top of the opposite strand and under the next one as in 3. Each strand is treated the same way, over one and under one, and this is continued until the strands are all used up as in 6. Then the other strands are worked into the rope in the same way until the final result should be something like that shown in 7. For a neater job the outer ends of the strands can be tapered down so that they are not bulky in the finished splice.

BACK SPLICE

This splice is used to finish off the end of a length of rope and stop it undoing. It is usually referred to as a back splice.

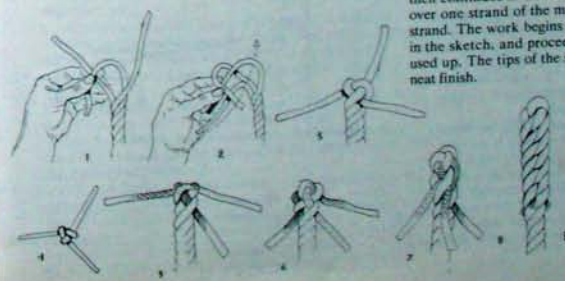
First a crown knot is tied in the end of the rope, as shown in figures 1 to 3. Figure 4 shows the crown knot from above.

Now each strand is taken over the one below it and under the next. Figures 5 to 6 show each strand being taken in turn and tucked down. When this is done the process is repeated until all the loose strands have been used up. If a very neat job is required, the ends of the strands are tapered so that they make a less noticeable finish.

EYE-SPLICE

There are a number of ways of making an eye-splice, but this is the most common one. The rope is unravelled for a short distance, and usually a piece of twine tied at this point to stop it unravelling any further. This is removed later.

Each strand is then put under a strand of the main body of the rope as shown in the first sketch. Splicing then continues in the usual way, each strand going over one strand of the main rope and under the next strand. The work begins with the lowest strand shown in the sketch, and proceeds until all the strands are used up. The tips of the strands are tapered to make a neat finish.



FAST EYE-SPLICE

This fast splice was show to me by a Cairns fisherman some years ago, and it never ceases to surprise me by its ease of tying and untying, and also its strength.

Its construction could not be easier. The rope is twisted slightly to part the strands a little and the end of the rope passed through the space. This is done three or four times and the splice is complete. If the splice is studied it will be seen that as pressure is applied to the loop it causes the strands that are holding the end in place to tighten and make the splice even more firm.

I have used this splice on a rope used to haul a car from a bog, and it has shown no sign of loosening.

WHIPPING

Whipping is used to prevent a rope from fraying on the ends. This is a simple method of doing it so that no ends are visible in the finished job. A strong twine is preferred for the job so that it will not break when the ends are being pulled through. Sometimes pliers are needed to do this job, so the thread must be able to take the strain.

LONG WHIPPING

When a fair area requires whipping it will be found that the ordinary method is not suitable as the end cannot be pulled down through the windings because of the amount of tight cord pressing down on it.

This type of whipping is used when binding over a cracked or splitting whip handle, and similar articles. The start of the twine is concealed as shown, and binding continues until the area has been almost covered.

Next the twine is jumped down a considerable distance, and the binding taken loosely upwards, passing under the bridge of twine each time it goes round. When the top bound area is reached the top of the twine bridge is grasped and this is wound tightly around, continuing the main run of binding.

When all the twine is used up the end is pulled through and cut off.

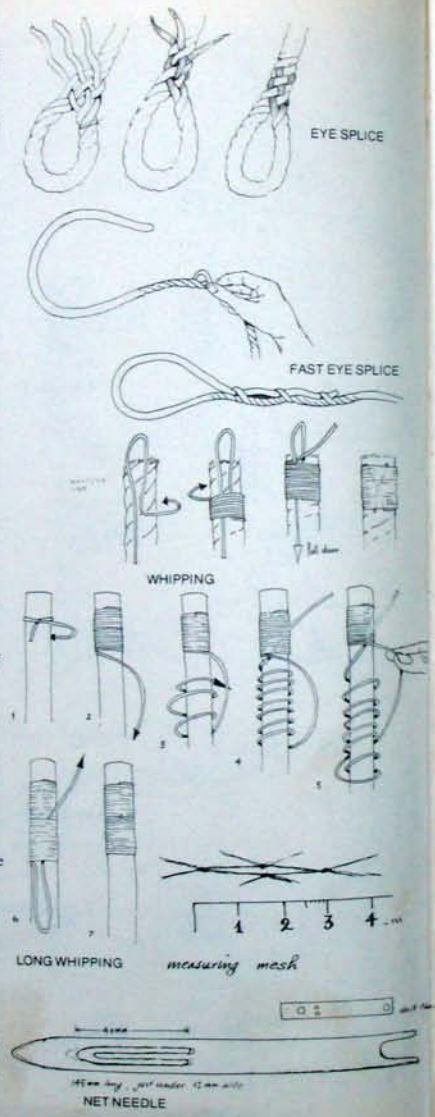
Net Making

CAST-NETS

Cast-nets are circular nets with lead weights around the circumference. A cord goes from the centre to the fisherman's hand. The net is gathered up in the arms and thrown in such a way that it spreads out into the full circle as it hits the water. The lead weights cause the outer edges to drop swiftly through the water, trapping any fish within the circle.

If the water is shallow the net will hit the bottom still opened out, but as the centre cord is pulled towards the fisherman the lead weights will slide along the bottom until they meet, forming a dense mass that prevents fish swimming out through them.

If the water is deep the net will hit the water in the open position, while the pieces of lead being the heaviest part travel through the water faster and also



get closer together as they do so, until the length of the cord has been used up and the net is hanging vertically with the lead weights again bunched into a dense mass at the bottom, preventing any fish from escaping.

The net is then lifted into the boat, or onto the bank, care being taken not to disturb the leads, and it is then shaken for any fish or prawns to tumble out. Details about throwing the net will be given later. First, I shall describe how a net is made.

These nets are used all over the Pacific, and probably in many other countries. It occurs to me that the biblical references to fishermen casting their nets on the waters can only refer to the use of cast-nets.

Nets vary in size, and in the size of the mesh, but the one that I am describing here was taught to me by Cec Stock of Cairns who has made hundreds of nets over the years. This net measured 2.7 metres in diameter, which is a good average size. I once had a net that measured 4.2 metres, but it was too big to handle with ease.

I have heard about some Pacific Islanders using extremely large nets, over 4.5 metres in diameter, but can only imagine that less lead per metre would be used, otherwise they would be very tiring to handle.

Few people in Australia today know how to make a cast-net, and fewer still attempt it more than once, due to the hours of knotting required. Towards the bottom of the net one has to make over 600 knots in order to go down one row. However, Cec Stock has been making them for so long that he can talk, listen to the radio, or even watch television while his hands are busy net making.

The mesh of a net is measured by pulling a mesh tight and measuring from knot to knot as shown in the diagram. This cast-net measured twenty-eight millimetres, a convenient size for catching prawns and small fish up to 150 millimetres long for use as bait.

Besides this method of making a net, there is another form made by cutting segments from an ordinary machine-made net and sewing them together to make a circle. Generally, these types of nets are not very well thought of. Good casters claim that they do not fall out into a satisfactory circle.

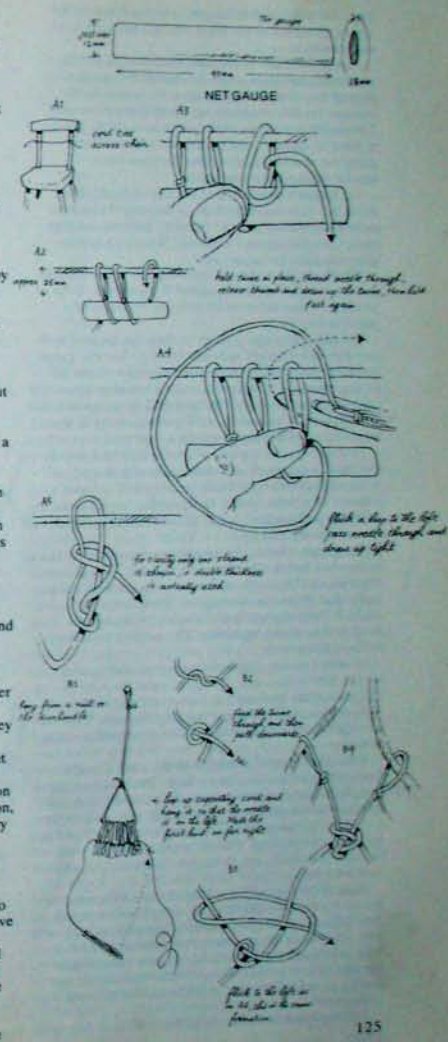
The following materials were used to make the net described here.

1 Approximately 300 grams (ten ounces) of Kuralon twine of six ply. Nylon nets are stronger than Kuralon, but the knots tend to work undone due to its slippery nature. Cotton soon rots away, and is seldom used today.

2 Five metres of strong cord, around three millimetre diameter to make the line that goes from the hand to the net, and a brass swivel to be tied into this line to stop it getting too twisted (not all nets have this swivel, but it is handy).

3 Around about 270 lead sinkers, weighing around three kilos altogether. Most net makers find it much more economical to buy sinkers moulds and cast the lead weights themselves, scrounging the scrap lead from wherever they can, for instance car batteries.

4 Nine metres or more of strong cord on which the



leads are threaded. It's diameter is governed by the size of the holes in the leads, but will be around two millimetres.

A net needle of the dimensions shown on p. 124 was used, and also a gauge. Cec made the needle himself out of a piece of Rangoon cane, but plastic ones are readily obtainable now and more often seen. The needle is made by drilling four holes in the piece of cane, as shown in the smaller sketch, and then doing the rest with a pen knife. The cane has a natural feeling lacking in plastic.

The gauge is what governs the size of the finished mesh. See previous page, top. In this case it was also made from a small piece of bamboo, but they are also made from bone, metal or plastic. Wooden ones are generally used for larger nets.

The shape shown in the cross-section is not critical. It is the total circumference that is important. If the gauge is thicker it has to be reduced in height to make up for this.

In making a gauge, a piece of thread is marked with two dots twenty-eight millimetres apart, and the gauge trimmed down till the dots meet when the thread is wrapped around it. This will make a net of twenty-eight millimetres mesh. The length of the gauge is not so important. The size shown fits comfortably in the hand, but some net makers prefer longer ones.

To begin the net a piece of cord is tied between the two back supports of a kitchen chair. Any scrap cord is suitable, as this is replaced at the end of the job with the hand line. In fact the hand line itself can be used, but will tend to get soiled over the period that the net is in the making.

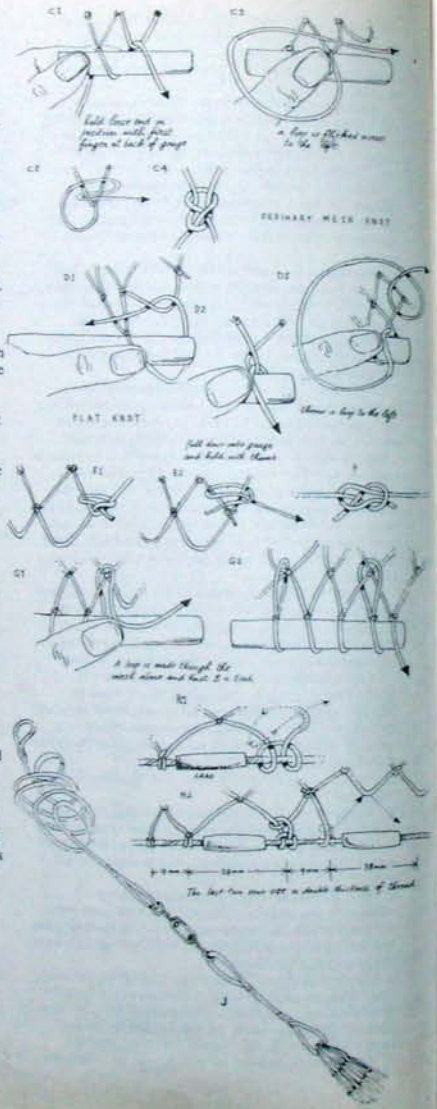
The gauge is held approximately twenty-five millimetres below this line and a number of loops are made around the cord, under the gauge and are then knotted as shown in the diagram. Forty loops are made in this way, and half a metre of cord is left hanging free at the beginning. The method is shown in diagram A1 — 5.

As noted on the diagram the cord is used double for the first three rows. This gives extra strength to this part of the net, and I have noticed that it also prevents small prawns from jumping through. The average needle will take about nine metres of doubled thread.

When the knots are completed the cord is undone from the chair and tied into a loop. This can then be hung from some convenient object while the first few rows are made. As the job progresses, it is usual to tie a cord to this loop, one to two metres long and tie this up at about eye level. The net maker can then sit at his ease and work, and as the job continues the cord is shortened.

After tying the cord in a loop the two ends are joined together as shown in B1 — 4. The first row is now begun, working from left to right and taking a turn around the gauge before tying the knot. After a time the gauge will become full as each new loop is completed and pushed along. When this happens a few loops are pulled off the left hand end to make more room.

The most common knot used for netting is the



ordinary mesh knot as shown in C1 — 4 which when completed takes the form of a sheet bend. Cec, however, preferred to use what is known in netting as a flat knot, which is in the form of a reef knot. He felt that it was an easier knot to use for making small mesh nets, but conceded that many other net makers preferred the ordinary mesh knot.

As each row is completed it comes back to the free hanging length of twine, and the knot shown in B1-4 is used. As this is done it will be seen that the original beginning of the twine is gradually knotted down inside the net.

Three rows are made with the double twine, or even four if there is sufficient twine left on the needle. In making a fourth row it sometimes happens that the twine on the needle runs out before the row is completed. When this happens the free hanging twine is wound onto the needle, and knotting continues from this end. The free hanging end is double at this stage, but when rows of single twine begin, one of the free hanging strands is also cut off.

Net makers use a variety of knots to join on new thread as it is needed. One common method is to simply cut off the thread fairly close to the last knot. The fresh twine is then knotted onto this same loop, and work proceeds (see E1 — 2). This same doubling of knots on loops takes place when nets are being repaired.

Another common method of joining the new end is simply with a sheet bend, F. Five rows are made, each with forty knots, but on the sixth row extra meshes are added as shown in G. First, two ordinary knots are made but the third one is looped freely upwards as shown, brought down and tied with the knot shown in B1 — 4. The twine is passed through from the back or from the front, according to whether the net maker is using a mesh knot or a flat knot for his other ties — it is simply easier to continue to pass the twine through in the same direction all the time.

From here to the bottom of the net no further problems are encountered. The net maker simply sits down and patiently adds on row after row, adding in extra knots after so many rows have been done, until the desired depth is reached.

The tables given below were compiled from a net made by my informant. However, there does not appear to be any set rule for increasing the number of meshes. Variations will be noticed in every net checked. It would seem that many makers do it by eye alone, but even so the general pattern will be not far removed from that given here.

There would appear to be some traditional basis for the increase noted in the right hand column, the sequence of 3 3 4 3 4 rather than a gradual increase as occurs after this. My informant had been taught this method and believed that it was important to the effective use of the net.

TABLE FOR MAKING A 2.7 METRE DIAMETER CAST-NET

Total No. of rows down	No. of rows between increases	No. of knots from one increase to the next (inc. the increase knot)
5	5	3
10	5	3
18	8	4
27	9	3
40	13	4
47	7	9
54	7	9
61	7	9
69	8	11
78	9	11
88	10	11
98	10	11
109	11	11
120	11	16
127 knots deep	7	leadline

The last two rows are tied with double twine as this section takes most wear, and the leadline is then attached. As noted earlier this will require approximately 270 lead sinkers. The sinkers are twenty-two millimetres long and just over six millimetres diameter, with a total weight of three kilos.

The very last row is attached to the leadline as it goes around. The twine goes down to the leadline and the knot shown in H is made. This consists of a clove hitch and a half hitch. The twine is then taken up and a mesh knot made, then down to the leadline and another knot made approximately nine millimetres from the previous one. Up again once more, and a lead is slid along the cord into position. The twine comes down thirty-eight millimetres from the last position and a knot is made which fixes the lead. For convenience sections of the leadline cord may be tied between two supports, with leads threaded on, and as each section is completed the cord is moved on.

Some cast-nets are made with pockets around the leadline. To do this the net is continued for another few rows below the leadline, and this is then folded back inside and tied back every so often, anywhere between 100 and 200 millimetres. This makes a number of pockets which are intended to trap fish. There is a difference of opinion about the value of pockets. It would seem that in a well made net they can be just a nuisance as the catch cannot be shaken free but must be pulled out of the pockets individually.

All that is required now is the handline that is attached to the centre of the net. This passes through the first row of loops and is generally five metres long. At the end is a small loop forty millimetres in diameter. Some fishermen pass part of the line through this to form a larger loop which they slip around their left wrist, while others simply slip the small loop over the middle finger of the left hand.

This latter method is probably the best if the net is being used from a moving boat. Should it get caught

on a snag the fishermen can let go of it by simply straightening his finger. If the cord is round the wrist the fisherman might be pulled into the water before he can release it, or the net may be badly torn.

Snags are a great trouble to all net fisherman. Two or three years ago I took a new cast-net down along a creek that I had not worked before. The water was deep and muddy green, and when I felt the net snag I knew that I was going to be lucky to get it back again. It had obviously fallen over and around a sunken mangrove tree and felt as if it was caught in dozens of places.

With some trepidation I lowered myself down the muddy banks and up to my neck in the opaque water, and tried to feel around and free the net, at the same time balancing on the sunken branches as the bottom was out of my depth.

After some considerable time I started to gather in bundles of net, until finally the whole lot was free. As I got the bundle out of the water I could see that it had torn into shreds, and I cursed myself for taking a new net into unknown waters. The lead line had been almost torn off. I decided that at least I would be able to salvage the leads, and started to untangle the mess.

Imagine my surprise when I finally got the whole lot sorted out to find that I had one complete leadline, a lot of torn net, and my own full and undamaged net as well. Someone must have had their net caught there before and been unable to free it, and mine had fallen over it in the same spot.

Back to the handline. Many fishermen use a straight cord, but others prefer to cut the cord about 100 millimetres from the net, and let in a brass swivel. This saves the cord from becoming twisted and developing kinks as it is used. See Fig. J, bottom of p. 126.

CASTING THE NET

There are many ways of casting a net and a number of variations within each method. The one shown in K is the most common method used in North Queensland.

The small loop is slipped over the middle finger of the left hand, and the rest of the cord gathered up in the same hand. The net is also picked up with this same hand, about one metre above the leadline. It is lifted off the ground, and the right hand is passed between the body and the net, to grasp a corner of the net from the far side.

This is then pulled back, lifted up and thrown over the left shoulder. The right hand is again passed between the body and the net to where the double fold of net is hanging from the shoulder and the inner piece of net is grasped.

The right hand then moves back to where it came from, gathering in the net as it goes, just above the leadline. Eventually all the net will have been gathered in except that which is hanging over the left shoulder. From this position the net is thrown with a smooth flowing action, 'just like using a scythe', as one informant put it.

There is quite an art to throwing the net so that it opens out properly, and while some people succeed at

K

L

their first attempt others take quite a long time to learn how to do it.

The method shown in L was noted at Machans Beach, north of Cairns. It is rather unusual for this area, and I have not noted it anywhere else. It is of great advantage when working in mangrove mud, as the fisherman does not end up covered in the stuff as he does with the normal method.

The net is picked up, cord first and then grasped about one metre from the leadline in the left hand the same as in the previous method. The fisherman then bends down and picks up a section of leadline with his right hand, and transfers this to his left hand also.

He runs his hand down the leadline until about thirty centimetres from the main bunch of leads, and then begins to gather the net into his hand until he is holding most of it. This hand is then moved up and away from him, so that the net is being held open in a small roughly circular shape.

The right hand throws first, the left releasing its bundle as the main bulk opens out. Once mastered this is a fast way of casting a net, but it seems to take much longer to learn than the previous method, and this probably accounts for its rarity in this area.

NET REPAIRING

There appear to be two distinct approaches to the repairing of fishing nets, and they could be classed as the academic and the practical. The academic method appears in most textbooks on the subject, and is by far the neatest, in fact when properly done the repairs cannot be detected. The practical is equally as strong, and takes less time but does leave evidence of repairs having been done in the form of some doubled sections of twine.

Here is a hole in a net, top right. Notice that it is laid out so that it faces the net repairer in the same way that it was made, that is to say with the meshes running at the diagonal, not with the sides horizontal and vertical.

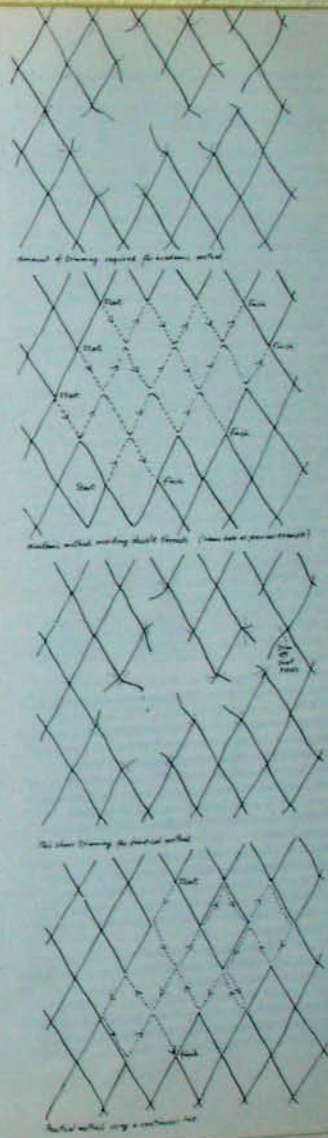
The academic approach would be to trim off all the remaining uneven meshes as shown in the second sketch and build in a complete new section using the net gauge to make the new meshes, just as if a new net was being made.

The practical method on the other hand is to repair the net with the minimum number of movements. First, all loose strands are removed and the hole is studied in order to work out the shortest repair route. It is generally considered simpler to have a strand double at various points rather than have to cut it and begin again on the next row.

The same basic mesh knot is used throughout. It is simple to tie upside down after a little practice, but somewhat harder to tie sideways, on the left and right. However, once the net maker has the form of the basic knot firmly fixed in his mind he can tie it in any position.

Unless the hole is very large the net repairer will not bother using his gauge but will rely on his eye to get the meshes the correct size.

This is the basic mesh knot (top of next page), it is used to make meshes at the top of the hole in the net.



The same knot is used to add on to the left and right side of the hole.

This is the variation of the same knot used to add new meshes to the bottom of the hole in the net. See Fig. 2.

Many fishermen use only these two variations for all their net repairing, but if you study the sketches of the finished knot you will see that they are only tied correctly when the new meshes are being worked in the direction of the worker's right hand.

When the new meshes have to move towards the left the worker has three choices of action. First he can turn the whole net over and work from the other side, when of course the new work will then be worked to the right and, therefore, his knot will be correct.

Secondly he will work towards the left, but use the two knot variations shown in Figs. 1 and 2. Although this does not give the proper form of the knot it is strong enough for all practical purposes.

Thirdly he may use the proper knots for working towards the left. These are the same basic form as the knots shown in 1 and 2, the only difference being that they are made by throwing the first loop in the opposite direction.

Whether the knot is tied at the top or the bottom of the hole, and whether the new work is moving to the right or the left, the knot remains basically the same. See Fig. 3. In each case the thread is passed through from behind, and a loop is then thrown to one side. In every case this loop is thrown back to the side from which the mending thread has just come. The thread then goes across to the side opposite the loop and round the back, and is pulled tight.

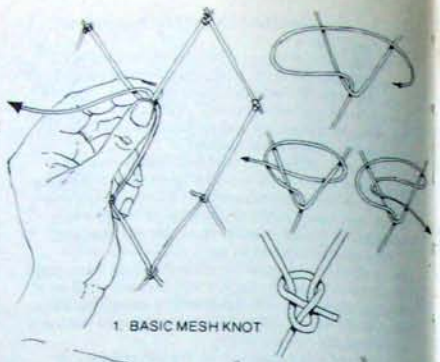
The worker keeps a firm grip on the work right until the knot has been worked down tight, otherwise the knot might slip over the end of the old mesh and become a no-knot.

Some workers spread the net over their knees to mend it, while others will hang it out for its full length supported by a number of sticks. This latter method though common is not very convenient as the repairer has to crouch down low to mend the holes along the leadline and stretch up high for repairs to the top.

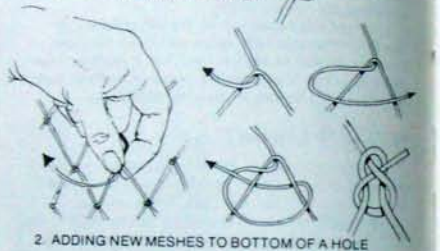
The most convenient method seems to be to drape the net over two sticks and work from the inside as shown in the sketch. In this way the hole to be repaired can be pulled up to the most convenient height each time.

The reason for two sticks is that if only one is used then the net hangs in a double layer and it is very hard to see the holes, but with the two sticks the worker can stand inside and has only one layer of net in his vision. Cast nets can be thrown over two sticks in the same way.

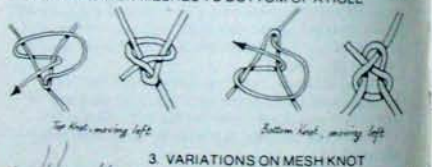
Note the scissors hanging around the neck on a piece of string. This puts them in the most convenient place for ready use. Each end of the string is tied to a different loop in the handle, and in this way they remain closed when hanging. If the string is attached to only one loop the scissors tend to remain hanging open which could be dangerous.



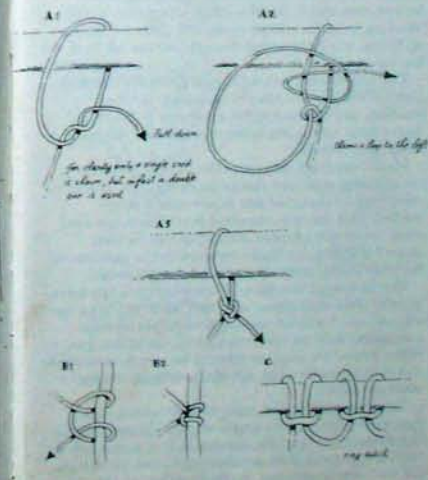
1. BASIC MESH KNOT



2. ADDING NEW MESHES TO BOTTOM OF A HOLE



3. VARIATIONS ON MESH KNOT



SINKER MAKING

One of the problems faced by net makers is obtaining sufficient lead sinkers for their needs. To buy them ready made is very expensive, and most net makers make their own, generally using an especially manufactured mould for the job. However, the old timers used to make up their own moulds using the materials that came readily to hand.

On a long net large quantities of lead weights will be needed, and because of the numbers involved they are seldom cast, but instead are made up on the lead line by rolling a strip of lead around it and crimping it tight with pliers, top, left.

A cast net, however, requires smooth leads to avoid any chance of snagging as the net is thrown, and the following is the method employed by many of the old northern fishermen.

Two pieces of timber are clamped together and a number of holes drilled along the seam. The wood used is the hardest available. If a soft wood is used, the hot lead will scorch it too much and enlarge the holes.

A nail is lightly tapped into each hole, just sufficiently to hold it in place. The lead used is generally scrap material picked up from wherever it can be easily obtained, frequently from old car batteries. It is melted down in a saucepan over a gas flame, or in a proper ladle if one is at hand and poured into the holes.

As soon as it sets the clamps are removed from the wood and the leads knocked out. The nails are removed with a pair of pliers. In this way two dozen or more leads are made at one time. They are not as neat as the ones made in a proper mould, and have to be trimmed up a little with tin snips before they can be used, but the method saves the net maker quite a bit of money.

HAMMOCK MAKING

Hammock making in Australia has never become an art in itself. A hammock has been generally regarded as a fishnet with cords attached. They only seem to have been made by fishermen, and all the methods used are simply adaptations of techniques used in making and repairing fishing nets.

The loose mesh hammock, in which the cords are looped around each other rather than knotted, seems to be uncommon and the prevailing method is the use of the ordinary mesh knot. The loose mesh knot is shown in the knotting section.

The original of the net described here had been made by a fisherman at Machans Beach, North Queensland. Using it as a guide I found that a hammock could be made in about four or five evenings, and with practice it could be made even faster.

MATERIALS

Twenty-one metres of strong cord three millimetres diameter for the ends — venetian blind cord is suitable.

Two brass rings about seventy-five millimetres in diameter. These are sold by saddlers as girth rings.

Two pieces of twenty-five millimetre diameter broom handle, seventy-five centimetres long with a six millimetre hole drilled fifty millimetres from each end.

Two cords to go down each side of the net. These are passed through the holes in the broom handles and a thumb knot tied in each end.

Two metre sides are average, so the cords will be 2.2 metres and around six millimetres thick. Any strong cord will do, but what fishermen call float rope seems to be favoured because it is cheap, and also I imagine because it is generally brightly coloured.

One or two spools of Kuralon or similar twine to make the body of the net. Quantity will depend on the size of the mesh and thickness of the twine. Anything between thirty ply and forty-five ply is suitable, the thicker it is, the softer the net, though it is also more expensive. Kuralon is a twine favoured for fishing nets, but any strong twine can be used.

Some hammocks are started by making either a series of clove hitches (knot B) with loops in between, or a series of ring hitches (knot C). In the example described here, I used knot A, but any of the three would be suitable. There is thirty-eight millimetres of twine between each loop, twenty-eight loops are made.

A needle of approximately the dimensions shown is used, and also a wooden gauge. The circumference of the gauge regulates the size of the mesh and as a net of eighty-eight millimetres meshes was required, a scrap piece of timber was trimmed down until it had an eighty-eight millimetre circumference (using a piece of twine to measure it).

I imagined that the easiest way to make a hammock would be to fix the top loops in position along the rod and proceed from there, but such is not the case. The rod is hung from a peg or a rafter, and the top row of knots made quite close together in the centre.

The meshes are also made close together, and at either end of the first row of loops the side lines are siezed with a clove hitch (B). At the completion of netting when the net is spread out along the rod these ends are passed through the hole in the rod and a thumb knot tied (E). The distance from the end of the loose side line to the first clove hitch is 152 millimetres.

Having made the first set of loops around the rod the ordinary mesh knot (F) is now used, and at the end of each row the twine is seized to the side line with the same clove hitch, leaving a distance of thirty-eight millimetres between this and the last knot.

I have experimented with meshing a hammock with the first row spread out and fixed in position, but found that it was slower and the meshes tended to become uneven. When bunched together not only can they be made faster and more evenly, but the whole of a row can be fitted onto the gauge which is quite convenient.

As the hammock grows in length it can be pulled up higher, and also the net maker sits further away after each row, so that the net comes to him at an angle (see sketch D).

The first row of meshes is made from left to right. It is possible to run the next row from right to left, knotting back to front as it were, but most fishermen prefer to twist the whole job around and so go from left to right again.

If the net cannot be twisted around, as happens when repairing large fishing nets, they walk to the other side of the net, and so avoid having to change their knotting pattern.

The body of the hammock is complete when some two metres of net has been meshed. Doubled twine is used for the very last row, as this is the one that goes around the spreader stick. The stick is fed through this row, and the side ropes also fed through their holes and a thumb knot tied to keep them in place.

The next step is to attach the cords and rings at each end. First, three large nails are arranged as shown in H1. The first two are 860 millimetres apart, and the spreader stick rests against them while the other is 760 millimetres from each of these. They may be hammered into a workbench top or a rough frame of scrap timber. The best arrangement is one after the style shown in the sketch G which allows a clear space below both ring and spreader stick so that one can use the cord wrapped around a net needle instead of having to pull it all through in a great long length.

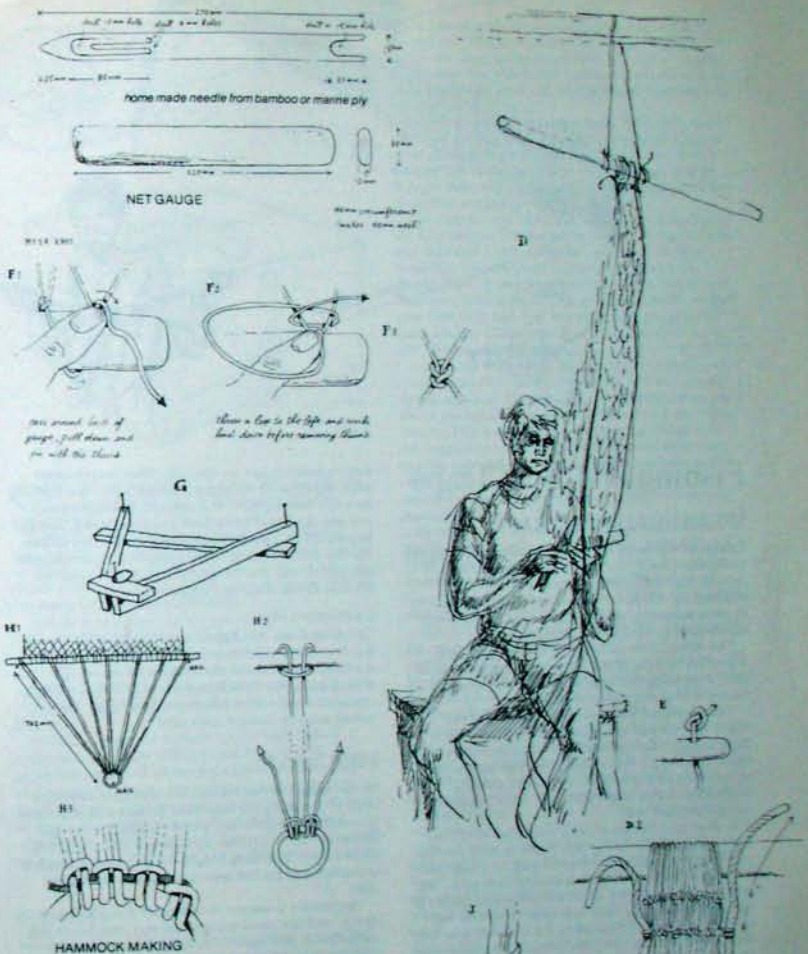
10.5 metres of cord are needed for each end, and the usual method is to start in the centre (H2) and work to either side, as this means that only half the cord has to be handled at the one time. Seven double strands are put in, fairly loosely, and the ends are tucked back inside the ring hitches as shown in H3. Working from the centre again, the cords are drawn up firmly, the ends pulled through and cut off flush, leaving a neat finish.

The ring hitches around the spreader stick tend to slide up and down while the hammock is being handled, and to prevent this a piece of twine is tied across from one to the other, right next to the stick, using clove hitches.

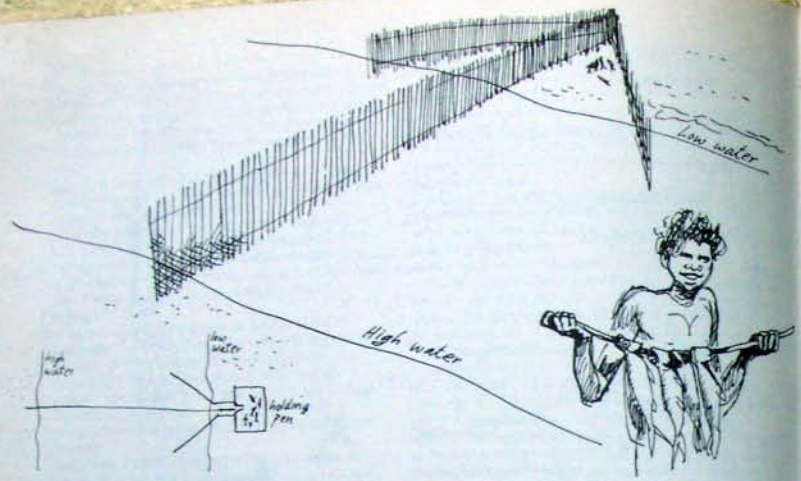
Many hammock makers prefer to drill holes along the spreader stick and thread cords through instead of using ring hitches, and this is probably a better method than the one described here. There are also other, more complicated knots that can be used around the ring, but these are more in the province of the professional rather than the home craftsman.

The hammock can then be hung between two trees, and the most convenient way to do this is to bend up a hook out of a small piece of ten-millimetre steel rod, rather than tie the hammock direct to the tree. When hooks are used the net can be simply unhooked and carried inside when not in use without having to untie any ropes.

The hammock is first tried out with around 2.1 metres of sideline. The length of the sideline controls the amount of sag of the hammock. If it appears to be too deep, the sidelines are shortened, and if it is too flat they are lengthened simply by adjusting the position of the thumb knot (E).



There is no such thing as a standard amongst home-made hammocks. Each maker works to his own ideas. Some prefer to have the centre wider than the ends, and others prefer a hammock half as wide again. It is an individual craft.



Fishing and Fish Traps

SPEARHEAD FISH TRAP

Spearhead fish traps were once common all along the Queensland coast, but tight minded bureaucrats decreed that they were unsightly and must be removed. In actual fact I have always found them to be most attractive, making an interesting feature in otherwise drab mudflats and estuaries.

The Aboriginals made use of the fish trap long before the coming of the white man, and remains of their stone traps still exist here and there though I do not know of any complete ones.

The spearhead fish trap works because of the rather odd behavioural pattern of fish. The trap is built, usually of mangrove poles stuck into the mud or sand and covered with rabbit wire. The longest part of the fence stretches from high water mark to beyond low water mark, while the arrow sections occupy only one end.

At high tide fish swim along the beach until they come to the fence. As the tide starts to drop the fish make their way along the fence trying to get around it. Now the strange thing is that when they get to the point of the spear they could still get round the fence by simply swimming back down the short arm and around. But they will not swim back against a falling tide and in the opposite direction in which they want to travel, and instead will mill around at the head of the spear until the tide has fallen too low, and they may then be collected.

Many fish traps had added features, according to the ideas of the builder. One common one was to build a holding pen for the fish. They would swim from the head of the spear through a tapering opening into this holding pen. The tapering opening would prevent the larger ones from swimming back, and this pen would be covered with water at all times so that the fish could be held there until needed. Sometimes this pen would also be arranged so that it could be lifted from the water to empty easily.

CARRYING FISH

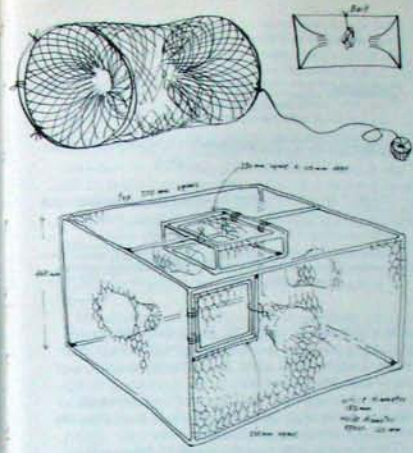
This is how the Aboriginal and Islander children on our beach carry fish home. In this case the subject of the sketch was one of the children of the noted Aboriginal artist Dick Roughsey. The fish are simply threaded onto a stick which passes through their mouth and out through their gills.

FISH TRAPS

In the islands of the Pacific, fish traps are beautiful objects. Constructed from cane or split bamboo, their graceful tapering curves afford pleasure to the eye. However, the Australian fisherman's fish trap is more often an eye sore than a sight for sore eyes, though it is constructed on the same principle as the island ones.

The theory is simple. A container has a bait put into it, and the entrance is a tapering one. Small fish can swim in and out at will, but the larger fish, or crab, finds it impossible to get out. He will have forced his way in through the opening readily enough, but now finds that the way out cannot be negotiated.

The most common form of fish trap is a circular one made with rabbit wire rolled into a cylinder. There is a tapering entrance at each end, and this is



attached to a circle of fencing wire. Bait, usually old bones, is placed inside and it is dropped into the water with a cork float to mark the position.

When the trap is lifted up, usually the following day, it is opened by removing one of the ends, which are held in place with three or four pieces of wire as shown in the sketch. This is the simplest form of trap, but many refinements are possible.

This next one was washed out of a creek near us during the wet season floods, and is a much more elaborate affair. The frame has been constructed of welded mild steel rod, and then covered with rabbit wire. It has an entrance on each of its four sides, and a separate door to allow the fish or crabs to be removed.

It also has a special counter for the bait. This is to allow small traces of bait to continually drift around the trap and attract fish and at the same time prevent the fish from consuming all the bait once they are in the trap. Both the openings are hinged with loops of wire and secured with a twist of plastic covered copper wire. I have sketched this trap upside down in order to show details of the bait holding compartment.

FISHING

Some time ago an unusual fishing contest was staged on a coral reef near the tourist resort of Green Island, near Cairns. The competitors were white Australians and Torres Straits Islanders, and the purpose of the contest was to discover which was the best way to catch fish, modern spear guns and equipment or the Islanders old style hand spear.

When the pearling lugger *Songhton* anchored near Green Island a group of visitors were fascinated by the way the Islanders caught fish using only face masks and long spears made from 3.5 metre lengths of slim bamboo with a 450 millimetre unbarbed point made from mild steel rod, polished and sharpened to a fine point.

The southerners were keen spear fishermen, and had been getting good hauls using the latest types of spear guns, with goggles and aqualungs, and one of them rashly remarked to the Island skipper that he thought that they could out-fish the Islanders because of all their modern equipment.

The skipper was Alf Mills, who comes from one of the best known Torres Straits Islands' diving families, and although a very quiet and modest man, this challenge was too good to miss. The rules were simple. Each group was to take a dinghy and choose their own fishing spots. One group was to use all the gear that they had, and the other only goggles and hand spears. There were four in the southern party, but Alf took only his cousin.

Soon both boats were moving out over the crystal clear waters that covered the maze of coral around Arlington Reef. Brightly coloured fish darted in and about the coral as the divers dropped into the warm waters. The southerners with their aqualungs were not limited to the shallow stretches, and were soon moving into the blue depths. The Islanders stayed close to the surface, up-ending themselves to peer under the mushroom growths of coral, and into the maze of crevices.

At the end of the afternoon the group of four southerners proudly landed with five good fish. Alf Mills' cousin was a bit slower in rowing in, and the southerners gasped when they saw the reason why. One end of the boat was almost filled to the gunwales with just on 200 assorted fish!

Discussing this with Alf, I asked him if he thought his catch that day was exceptional, but he just laughed. Once, he said, he staged a competition with his uncle off their home island of Naghie, just north of Thursday Island, and within half an hour he had caught 400 fish, and his uncle had 350.

When the fish are this plentiful the Islanders do not waste any time bringing their catch up to the boat. Instead, as soon as they spear them they simply bite the fish above the eyes, killing it instantly, pull it off the spear and let it go. As soon as there is a lull in the fishing they gather up the kill, throw them into the boat and move to another spot.

The Torres Strait Islander has many reasons for preferring the hand spear besides tradition. For one thing, once a power spear leaves the gun the operator has no further control over it, but the hand spear seldom needs to leave the Islander's hand because of the fact that by virtue of its great length the point is already 2.5 metres ahead of the diver, with the result that he can alter its direction, even in mid thrust.

At home in the sea from his earliest years, the young Islander can recognise the underwater scene with the same ease that young city bred Australians can pick the makes of moving cars, even at a distance. He can see fish where we would only be

able to see shadow inside the coral, and discover them when they are hidden in dense clumps of seaweed.

Nothing escapes his observation under water. I did not see my first trochus shell until the Islander that I was diving with held out my hand and put it right on the 100 millimetre high shell that was in a rock crevice only an arm's length in front of me.

The Islander uses the habits of the fish themselves to enable him to catch them. Swimming around a coral head he will let a few bubbles escape from under his mask, and the same time gently scrape the point of his spear against the coral. This will quite often arouse the curiosity of fish hiding in between the coral, and they will cautiously stick their heads out.

The Islander knows that as soon as he makes a sudden move the fish will turn and dart away, so he carefully lines up his spear, and then suddenly thrusts forward. The fish moves like a flash, but too late. As it turns, in nine cases out of ten, it is speared right through the gills.

With one swift action the diver surfaces, drops the spear across the gunwale, and as he pulls it towards him the fish is slid off into the boat, still thrashing. Most of the coral fish are fantastically coloured, but within minutes the iridescent hues have started to fade into dull patterns.

Even when standing in shallow water and using a multi-pronged spear the Islander has a few special techniques. When he walks he points his feet like a crane, toes down, so that he makes the least possible amount of ripple.

When he throws he does not throw directly at the tell-tale ripples that indicate fish, but angles his spear so that it hits the water before the ripples, and skims along the surface for anything up to three or four metres with the barbs under water, thus increasing his chances of collecting a fish on the way.

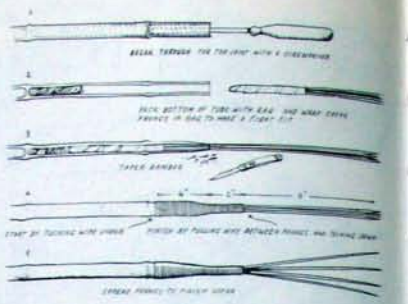
The multi-pronged spear has the same shaft as the single spear, but instead of one point there are anything from four to a dozen, usually made from fencing wire. It is generally used in shallow water among small fish, or where it has to be thrown. Its main advantages are that it covers a larger impact area, and that it will take much more knocking about than the single-pronged job. When bent too far out the small prongs can be easily straightened by hand.

Generally speaking the multi-pronged spears do not have any barbs, as they are quite difficult enough to keep sharp as they are. However, the Aborigines on Cape York use barbs with a vengeance. Instead of wire they use the razor sharp barbs from sting rays. These certainly catch and hold the fish but they can be dangerous, and I have seen a very badly cut hand result from careless handling.

It is not very difficult to make a hand spear, the main problem is usually getting suitable bamboo.

It requires a piece three to 3.5 metres long with a diameter of twenty to twenty-five millimetres at the butt.

In North Queensland, we are lucky in the fact that there are a few clumps of suitable bamboo growing



wild which can be used. The most favoured variety does not grow from a single clump, but springs up in single straight stalks some 300 millimetres apart, and requires no straightening.

Most other types of bamboo tend to be curved, so the first job is to straighten them out. This is done by steaming and bending, or by direct heat.

The Island people pass the bamboo through the flames of a fire, keeping it constantly moving. With a man at each end, they bend it gently over a rounded surface, a smooth log or a coconut, repeating the process of heating and bending until the bamboo is quite straight.

After this the shaft is then trimmed so that the first joint is between seventy-five to 100 millimetres from the end. This is done so that when the prongs are forced in, the joint will help prevent the bamboo from splitting.

With a screwdriver or similar tool the first joint is then broken through, making a tube which can be anything between 200 to 250 millimetres long. If the inside bore is very small, it may be necessary to use a drill to widen it, but this is not recommended. It is better to reduce the number of prongs and retain the strength of the shaft.

Pieces of rag or coconut fibre are then forced into the tube to fill it up for a distance of fifty to seventy-five millimetres. These act as a shock absorber, so that when the spear strikes a rock, as often happens, the prongs will not break through the second joint in the shaft.

The prongs are now prepared, using heavy galvanised fencing wire between ten and fourteen gauge. Selection of the wire will depend upon the bore of the bamboo. First, it must be thin enough to allow the maker to put in at least four prongs, or better still six, without splitting the shaft, and second it must be thick enough so that it won't be always bending at the slightest touch. The ideal thickness is just under three millimetres in diameter for a four or five pronged spear, and thinner for one of six to nine prongs.

If making a single pronged spear simply select a piece of mild steel rod six to nine millimetres in diameter, and long enough to allow it to extend at least 500 millimetres from the end of the shaft. The end of the rod is filed to a smooth point without any barb, and is set in the bamboo in the same way as the multi-pronged one.

Before setting the wire prongs in place they are sharpened. It is not necessary to give them barbs, because the angle made by two or more prongs entering a fish will hold the fish firmly. The prongs can either be filed into smooth round points, or the end of the wire can be flattened with a hammer, and then filed up to a point. The latter way is a little easier to keep sharpened after the prongs are in place.

To make the prongs sit firmly and prevent them twisting in their sockets, they are then wrapped up with a piece of rag before fitting them into the socket. If they feel quite firm then the final binding can be started.

Use copper wire for this, and allow plenty of room. The best idea is to turn the spear rather than the wire. Attach the wire to something firm, get back about six metres and start winding. This method allows a tighter finish than can be obtained in any other way.

Start the wire 100 millimetres up the shaft, tuck in the end, and work to about fifty millimetres up the prongs, then wedge the wire between a couple of prongs and poke it down firmly between them. It is a little harder to finish binding a single pronged spear, but it can be done using a penknife to force in the end of the wire. If the maker feels it is at all likely to work itself loose then he puts a spot of solder on each end. However, this should not be necessary if enough care has been taken.

All that remains now is to spread the prongs open and the spear is ready for use. One last point to remember is that whichever type is used, whether on a sandbank or swimming, the main thrust comes from the right hand which holds the spear shaft about 600 millimetres from the end when swimming and right at the end when throwing in the shallow.

DROP POTS

Drop pots, also known as 'dolly pots', are used to catch the large mud crabs that feed out on the tide covered mud flats of North Queensland. They consist simply of a ring of wire supporting a section of netting, in the centre of which is tied a piece of meat or a bone, generally fairly ripe.

Arching across the nets are two other pieces of wire, and attached to these a length of rope which goes to the surface of the water and is held there with a piece of cork or similar type of float. The fisherman throws a number of these pots into the water wherever he suspects crabs might be found, and leaves them until he thinks the crabs might be feeding on the bait. He then lifts the pot smartly into the boat, a swift action being necessary so that the crab does not have time to scuttle off the pot as it is being lifted.

Once into the boat the crab usually takes control and chaos reigns until it can be secured and popped into a bag, or had its claws tied up. The professional does this with ease, but the new chum usually finds it an unnerving experience. The large claws of a mud crab are tremendously strong, and seem capable of crushing a finger with ease.

Drop pots are most commonly made with sections of old net, simply cut to a rough circle and tied onto a ring of wire. However, there are still a few people who make the nets in the traditional way, and the design described here is of the type used by Cairns fisherman 'Duke' Neilson and made by his brother Christy.

The nets are made from forty-five ply Kuralon twine, or cord of similar thickness. The mesh stick is a piece of timber about 240 millimetres long with a circumference of 110 millimetres.

To begin, a piece of cord 500 millimetres is taken and tied into a circle. This is placed between two sticks or over the back of a chair or even between the net maker's toes as shown in A.

He leaves a loose piece of cord 600 millimetres long and ties either a ring hitch (B) or a clove hitch (C) around the looped cord. Using his mesh stick to make the correct sized loops he then ties fifteen hitches in all around the looped cord and takes it off whatever is supporting it (D).

The two ends of the loop are then tied together to form a circle with an inside diameter of twenty millimetres (E). The knot shown in F1, F2 and F3, is used to complete the first row of meshes.

The rest of the net is made with the common mesh knot used for all types of net making. G1 shows how the first loop is taken around the mesh stick and G2 and G3 shows the completion of the knot.

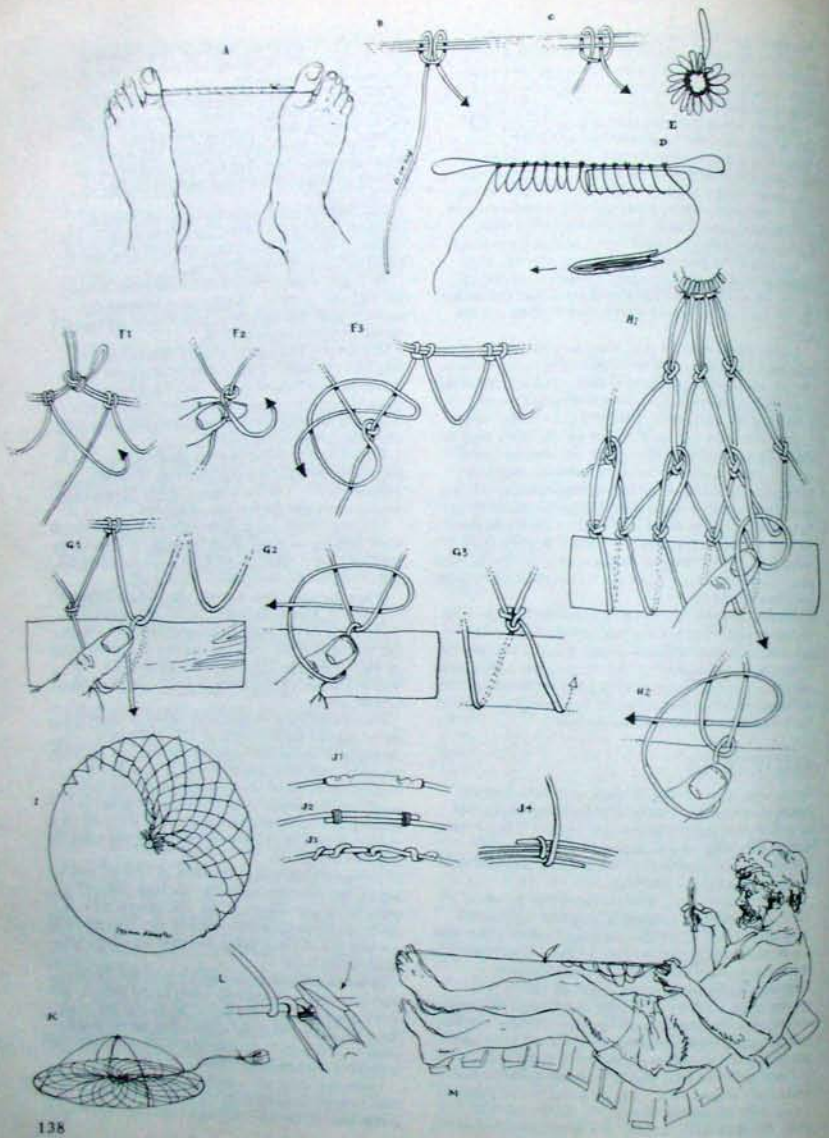
When the third row is made, the number of meshes is doubled. This is illustrated in H1. H2 shows the completion of the knot. Here again this is the same method used to increase the number of meshes when making cast-nets. The rest of the net is made with ordinary mesh knots as before, until nine rows are completed (I).

Heavy fencing wire is now threaded through the outer edge to form a circle of 750 millimetres diameter. Various methods are used to join the ends together, and these are shown in J1 to 4. J1, the neatest, is the method employed on the pot that I used as my example. A piece of copper tube has been pushed over each end and soldered in place, and a couple of hammer strokes at either end has made the job even firmer.

The next best method is shown as J2. Fine wire is used to tie the ends, and these are then soldered in place. J3 is very common, but also inconvenient as there always remain loose ends of wire sticking up to get snagged in other pots when they are stacked in heaps in the boat.

J4 was a pot which used lighter wire for the rim than the other examples. In order to get some weight into the edge, and also rigidity, the maker has made three loops, and tied the whole thing up by taking a couple of turns around with one of the wires that goes across the top to hold the float.

These top wires are usually of lighter wire than that used to form the circle. In my example, the wire used is that used as tie wire to fasten crates and so on. It is



looped above the net as shown in K and a piece of cord with a float completes the job. Years ago, these floats would be made from pieces of the light wood known as cottonwood or wild hibiscus. Later cork floats were used, and today pieces of polyurethane are often employed.

In order to get a neat attachment of the top wires to the lower one, a pair of pliers is used as shown in L to pull the wire into a tight loop.

When meshing the net, a piece of cord is attached to the top and then to a nail on the wall, or a convenient hook, or even around one's toe as shown in M.

HOME-MADE ANCHORS

Up till a few years ago, very few fishermen with rowing boats would dream of buying an anchor. The most casual would fill a bag with sand and throw it over the side, while any old lump of scrap metal would do for others.

However, in a strong rip neither of these ideas worked particularly well, and the keen fisherman usually made his own anchors with whatever materials came readily to hand.

This anchor, 1, was made with old car springs, and served its purpose very well until an enthusiastic friend of mine attached it to a fish trap and threw the lot overboard without a float!

The most popular type of home-made anchor in the north is generally known as the 'reef pick', though it is used for any sort of bottom. It is made with flukes of mild steel rod, sometimes four, or as many as six, bent back as shown. It is very useful when fishing over reefs where ordinary anchors get easily stuck.

The reef pick is designed so that it will hold the boat in all the currents and winds that it may find itself in, but when it becomes jammed in a reef the rods are soft enough to straighten out when a heavy pull is applied.

The one shown on the left is made by pushing two doubled up lengths of rod through a short section of water pipe, while the one on the right is made by welding the rod onto the section of pipe.

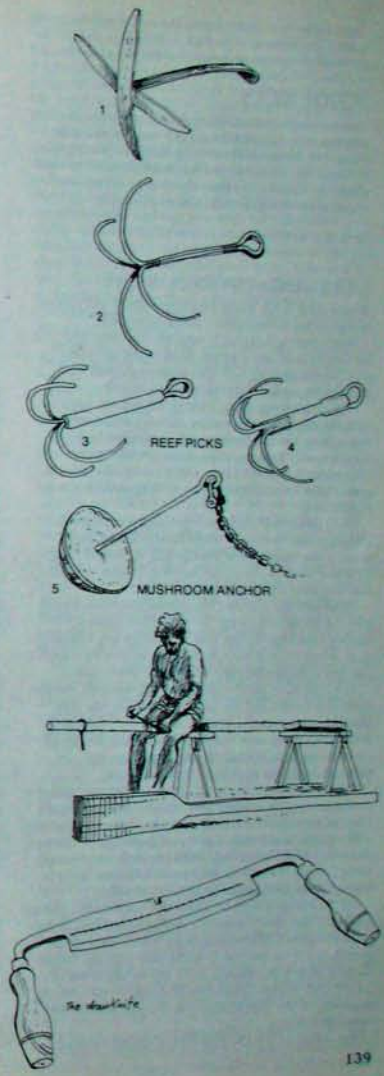
This anchor, 5, is known as a mushroom anchor, and is used over a mud or sandy bottom. It is made by filling a bowl with cement and inserting a bolt with an eye at one end. Car hub caps are often used as the base for this type of anchor.

Fishermen say that a length of chain should be attached to all anchors to make the rope lay correctly on the bottom. Two metres is sufficient for a rowing boat. The correct amount of anchor rope is three times the depth of the water to be fished in; six metres of water means eighteen metres of rope.

OARS

Silver quandong is the favoured timber for oars in the north. A rectangular plank is shaped as shown, and a grid pattern of saw cuts is made down to the required shape of the finished oar. The waste material is then chiselled off and the blade brought to shape.

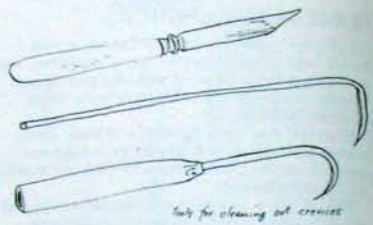
The rest of the oar is rounded by means of either a



draw knife or a spoke shave, the drawknife being the fastest and easiest. A rollock is slid along the oar as the work proceeds to ensure that the shape is correct.

SCOOP NETS

I haven't seen one of these for about eight years. I suppose that they are illegal like most of the other enjoyable methods of catching fish. The Aboriginals at Bessie Point, across the bay from us, used to walk along the shallows pushing these large scoop nets ahead of them and so catch a feed of prawns.



GOLD AND TIN RECOVERY

A complete book could be written about the various techniques used to recover precious metals.

When the prospector is working over new country, he carries only the simplest tools, a shovel, a small pick, a prospecting dish and perhaps a small hook that can be used to scrape out rock crevices.

If he is working along a creek he will not bother with the sands on the surface. Gold is extremely heavy, and when it is deposited in a creek bed it always works its way to the lowest possible spot. Everytime flood waters stir the sand up, the gold, no matter how tiny, will continue to drop until it can go no further.

The prospector digs down looking for this level, known as the bedrock. When he has found it he collects the sand or soil that lays on it, and also uses his small hook to clean out any cracks and crevices that may hold rich metal in them.

He places the soil into his prospecting dish, dips it into the creek and swirls the whole lot around, making sure that he has first broken up any lumps of clay. When he has the whole lot in motion he knows that any gold specks will be sinking to the bottom.

After the first good shaking he will wipe off the top layer of pebbles, for the larger pebbles in the dish should by now have worked their way to the top. He then tops up the dish with water and shakes it again. Once more he will wipe off the top layer, but carefully so as not to disturb the lower layers.

As the level of gravel in the dish is reduced, and the mud and clay all washed away, he no longer uses his hand to wipe off the top layer. Instead he will give the dish a good shake then put it just under the surface of the water that he is using. With the dish overflowing he will gently swirl it around so that the top layer is washed gently off by the movement of water.

He may then continue doing this until all the gravel and sand has been removed, and all that is left is the gold. However, before this stage is reached he will usually want to see just how the dish is going. When there is only a handful or so of gravel left in the dish he will put in less than a cup of water — the amount depends on the size of the dish and the amount of material left in it.

He will then tilt the dish with a circular rolling

motion so that the water goes round and round in a circle around the outer edge of the dish. Each time that it passes over the layer of gravel that is left it will lift off a few grains and carry them away to another part of the dish. In a few seconds, if there is any gold, it will start to appear and form a thin line along one edge of the remaining material.

At this point he will probably pick out any good specks with tweezers or more likely a moistened finger tip and drop them into a small bottle kept for the purpose. The rest will then be shaken together with the remainder of the material and he will proceed to wash it as before until only the gold remains. The prospecting dish has depressions stamped around its side so that there is little chance of the gold finding its way over this.

DRY PROSPECTING

There is not always water available just where the prospector is working, and he will often have to take his sample of soil some distance to wash it. The old timers used to sew up a piece of cloth into a sausage shape one and half metres or more long and closed at one end. They dropped a sample of soil into this and tied it up, then moved along to another spot.

When the sausage was full they draped it over their shoulders and headed back to the nearest water. By having one end of the container sewn up they were able to wash the samples in the correct order and so if they got a good prospect they knew where it had been obtained in relation to the other samples.

However, sometimes there was not even enough water to do this sort of prospecting, and the miner would have to adopt other ideas. One very old man explained to me how he had worked in dry country in north-west Australia around the turn of the century, and recently another mining man told me that this method is still in use.

He would set off to prospect the country around him carrying nothing at all. The metal that he was seeking was tin, and in this area the deposits were always found close to the surface. When he wanted to test a sample he picked up a dead stick and used it to dig out a handful of soil.

He placed this in the palm of his hand and shook it up and down blowing at it at the same time. Soon the dust and sand would be blown away and he would be left with perhaps a few specks of tin. With experience he said that these few specks allowed him to judge whether or not the area was worth working. If it was, he pushed a stick into the ground for a marker and moved to another spot and repeated the performance.

Finally he would have established a series of areas worth working and he pushed his dryblower out to them. This contrivance used air to separate the mineral from the sand.

The soil was shaken with rockers of some sort and at the same time a stream of air was directed at it by means of bellows. The mineral would settle and the sand and dust would be blown away. There were many types of dryblowers devised, from the very simple to more complex ones of recent days that are worked by small motors.

THE CRADLE

Whenever possible the miner used water to separate the metal from the soil. The prospecting dish was too slow, and so he used whatever type of machine suited the water supply available. If the water supply was static he used the cradle, but if he had access to running water he used the sluice box.

The cradle on page 142 is based on one in a drawing of Victorian miners in the 1850s. It was called a cradle because it sat on low wooden rockers and was rocked from side to side by means of the upright handle. Dirt was placed in the top of the cradle onto a movable wire screen. Water was poured onto it by means of the long handled dipper shown in the sketch, and the whole lot was rocked from side to side. The cradle was arranged at a gentle angle so that as the sand and small gravel fell through the screen it travelled down towards the opening at the bottom of the machine.

Small pieces of timber were jammed in place across the box to stop the gold escaping, and often the bottom of the box would be also lined with a piece of blanket to trap any fine gold dust. The opening of the cradle at the very bottom was also raised a little above the bottom of the box to act as a final barrier.

Every so often the miner lifted the wire grill and threw away the large stones that had accumulated. In latter days this was made easier by making a container such as that shown here out of flat iron. The lip was folded out so that it sat on top of the cradle and was easy to lift up and so dispose of the stones. Holes were punched in the bottom to let the sand and small gravel drop through.

When the miner had put through a certain amount of dirt he would 'wash up'. This meant that he took the fine sand and gravel that had collected in the cradle and put them into his prospecting dish. This was then worked as described earlier and he reduced the material until only the gold was left.

Cradles could be built to any size and dimensions, but as they were often moved from one place to another the governing factor was usually weight and convenience.

THE SLUICE BOX

If the miner had access to running water he constructed a sluice box. This was simpler to make than a cradle and worked faster. It simply consisted of a box channel, open at the top and at one end. Wooden battens were wedged across the bottom, as in the cradle, and there might also be a piece of blanket below these battens to catch any fine gold.

It was arranged so that water poured in over the closed end and travelled down to escape at the open end. The dirt was shovelled in at the top and the water caused it to travel down and wash out at the bottom, leaving any gold or tin trapped behind the battens (known as 'riffles').

Frequently the dirt was shovelled into a similar tray as that shown in the sketch of the cradle. This tray rested at the top end of the sluice, and the stones were emptied out from time to time.

Other miners would not bother with the tray, but used a fork to lift out the larger stones as they moved down the box. Some miners paved the bottom of their

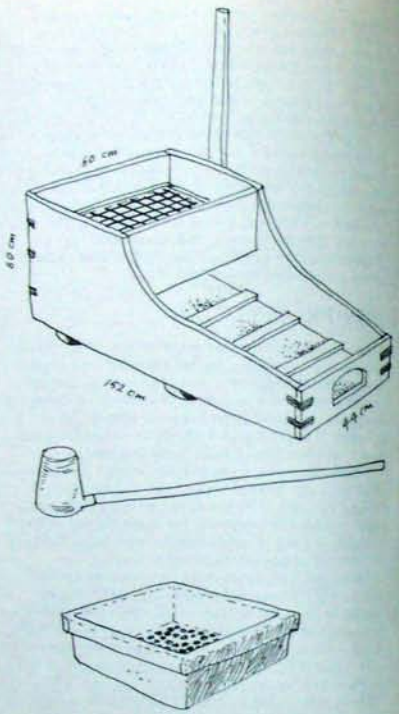
boxes with river stones to trap as much fine material as possible, and they used a short handled rake to move the unwanted stones down the box and out at the end. There were in fact quite a number of variations in the methods of working the boxes.

Length and width were not critical. Some men made boxes small enough to carry for long distances with ease. One old chap that I used to go out with had a box only 1.2 metres long, while near Watsonville, Queensland, I saw a box almost seven metres long and as wide as my old friend's box was long.

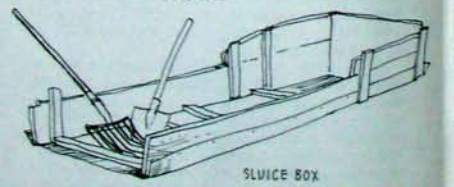
The only things that required attention were the flow of water and the angle of the box. If the country was suitable the box might be located in the creek itself, but this could only be done at a point where the water was dropping in height sufficiently to allow it to enter at the top of the box and leave at the bottom without the whole box being totally submerged. More often the water would have to be brought to the box from further up the creek by means of pipes or prepared channels, known as 'tailraces'.

If too much water was allowed to enter the box there was a chance that the gold would be swirled around to the extent that it would be swept out of the box, so a steady but not turbulant flow was aimed at. The angle was also adjusted with some care. If it was too extreme, the gold could be washed out before it had time to settle, but if it was not sloping enough then too much material built up in the box, and time was wasted having to put it all through the prospecting dish when it came time to clean up the box.

The example in the sketch was noted on Mount Spurgeon, Queensland and was some 3.5 metres long. The riffle nearest the open end is fixed firmly in place so that no metal can slip under it and escape, but the other riffles are simply wedged in place. In this case the bottom of the box was made of tin, and this was also curved up around the sides to prevent any metal escaping in that way.



THE CRADLE



SLUICE BOX

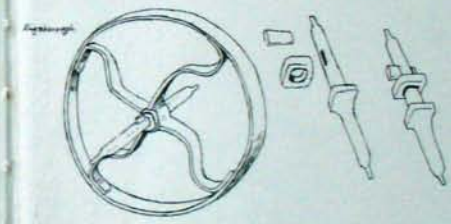
WHEELBARROWS

Many miners couldn't afford a horse, or didn't want to have the bother of owning one, and so they transported their gear around the country in home-made wheelbarrows. Alf Munn, the last resident of Maytown, took all his worldly possessions from Cooktown to Maytown in two wheelbarrows, a distance of about 160 kilometres. He would wheel one barrow along for a while, then go back and bring along the second one.

The bush wheelbarrow varied according to the ideas of the builder, and the type of materials at hand. The one in the sketch was found at the deserted Kingsborough Battery. It has very short legs, and the tray is made from flat galvanised iron.

The wheels for these barrows were made by local blacksmiths, and show considerable variety. This one was found on the top of Mount Spurgeon.

It has been entirely hand-forged and riveted, and the axle cleverly designed so that it can be knocked apart and a new wheel fitted.



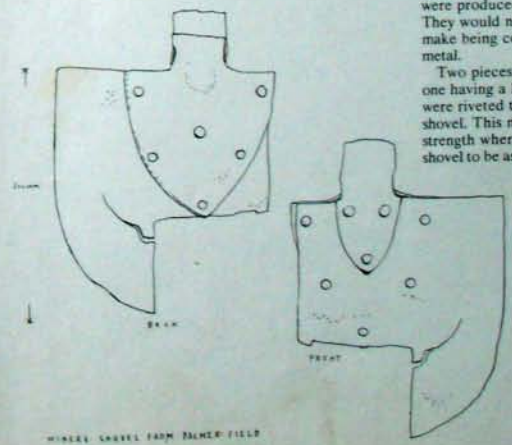
MINER'S SHOVELS

Miners carried a variety of tools with them, but the one thing that every single one of them had to own was a shovel. Remains of these shovels, often worn down to a fraction of their original size, are frequently encountered while exploring the old mining fields.

The old type of miner's shovel was quite different to that seen today. One characteristic of them is that they are very light, and this would have been an important factor to the man who had to walk over a hundred miles from the coast to the fields.

Many of them will be seen to bear makers' marks, and were obviously factory-produced, while others were produced by blacksmiths working on the field. They would not have been particularly difficult to make being constructed of three separate pieces of metal.

Two pieces of metal formed the handle, the back one having a larger end on it than the front, and these were riveted through to hold the main part of the shovel. This method of construction gave maximum strength where it was needed, while allowing the shovel to be as light as possible.



MINERS SHOVEL FROM PALMER FIELD

The companion volume to

Skills of the Australian Bushman (Bushcraft 2)

Bushcraft 3

AUSTRALIAN BUSHMEN traditionally have been able to look after themselves with the minimum of facilities, and 'make do and mend' with whatever comes to hand. Ron Edwards presents in this book a series of illustrated articles showing the reader how to make do with natural resources or whatever is at hand.

Easy instructions, copiously illustrated and accompanied by interesting background material, tell you how to:

- Make furniture and fishing nets
- Cool or heat rooms
- Make toys and musical instruments
- Build huts
- Make and repair horse gear
- Plait and work in leather
- Splice rope and tie knots
- Make camping and cooking equipment
- Use simple material for many purposes.

In these times, when things rise in price almost daily, all these ideas on how to make the best of anything handy makes good sense . . . as well as giving the satisfaction of making one's own requirements.

Ron Edwards has gleaned his information during years of collecting bush craft and bush lore from all over Australia. This fascinating book will give readers the pleasure of making things for themselves—easily, inexpensively, and attractively.

RON EDWARDS is regarded as one of Australia's leading folklorists. He was born in Geelong, Victoria, and gained his Diploma of Art at the Swinburne Institute of Technology. He is also aware of the greater interest today of young people in survival and in getting out and learning how to live in the bush.

In 1951 he and John Manifold sparked off the present interest in Australian folk song with their publication *Bandicoot Ballads*, and since then he has published a number of important works on the subject under the imprint of the Ram's Skull Press which he founded in 1952