

BUSHCRAFT

**THE ULTIMATE GUIDE TO SURVIVAL
IN THE WILDERNESS**



RICHARD GRAVES

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WILDERNESS

Richard Graves



Skyhorse Publishing

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THE PRACTICE OF BUSHCRAFT shows many unexpected results. The five senses are sharpened, and consequently the joy of being alive is greater.

The individual's ability to adapt and improvise is developed to a remarkable degree. This in turn leads to increased self-confidence.

Self-confidence, and the ability to adapt to a changing environment and to overcome difficulties, is followed by a rapid improvement in the individual's daily work. This in turn leads to advancement and promotion.

Bushcraft, by developing adaptability, provides a broadening influence, a necessary counter to offset the narrowing influence of modern specialisation.

For this work of bushcraft all that is needed is a sharp cutting implement: knife, axe or machete. The last is the most useful. For the work, dead materials are most suitable. The practice of bushcraft conserves, and does not destroy, wild life.

R.H.G.

ROPES AND CORDS

One of the first needs in Bushcraft is the ability to join poles or sticks. The only method available is by the use of lashings.

To use lashings however, it is necessary to have, find or make, materials for this purpose.

The ability to spin, or plait fibres into ropes or cords is one of the oldest of man's primitive skills. The method is simple, and follows precisely the same stages that are made use of by today's complicated machines.

The material from which to spin or plait ropes or cords is in abundance everywhere. Any fibrous material which has reasonable length, moderate strength and is flexible or pliable can be used. These are the three things to look for, and they can be found in many vines, grasses, barks, palms, and even in the hair of animals.

The breaking strains of handmade ropes and cords varies greatly with different materials, consequently it is essential that the rope or cord be tested for the purpose for which it will be used, before being actually put to use.

The uses to which these hand-made ropes and cords can be put, apart from lashing, is almost endless, and some few are included in this book.

THE MAKING OF ROPES AND CORDS

Almost any natural fibrous material can be spun into good serviceable rope or cord, and many materials which have a length of 12 to 24 inches, or more can be braided or plaited. Ropes of up to 3 and 4 inches diameter can be 'laid' by four people, and breaking strains for bush-made rope of one inch diameter range from 100 lbs. to as high as 2,000 or 3,000 lbs.

BREAKING STRAINS

Taking a three lay rope of 1 inch diameter as standard, the following table of breaking strains may serve to give a fair idea of general strengths of various materials. For safety sake always regard the lowest figure as the breaking strain unless you know otherwise.

Green Grass	100 lbs. to 250 lbs.
Bark Fibre	500 lbs. to 1,500 lbs.
Palm Fibre	650 lbs. to 2,000 lbs.
Sedges	2,000 lbs. to 2,500 lbs.
Monkey Rope (Lianas)	560 lbs. to 700 lbs.
Lawyer Vine (Calamus)	$\frac{1}{2}$ inch dia. 1,200 lbs.

Double the diameter quadruples the breaking strain.
Halve the diameter, and you reduce the breaking strain to one fourth.

PRINCIPLES OF ROPE MAKING MATERIALS

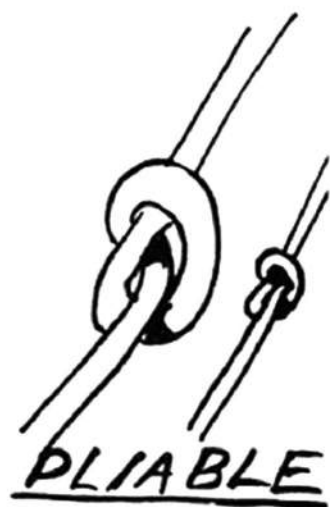
To discover whether a material is suitable for rope making it must have four qualities.

It must be reasonably long in the fibre.

It must have 'strength.'

It must be pliable.

And it must have 'grip' so that the fibres will 'bite' onto one another.



There are three simple tests to find if any material is suitable.

First pull on a length of the material to test it for strength. The second test, to be applied if it has strength, is to twist it between the fingers and 'roll' the fibres together; if it will stand this and not 'snap' apart, tie a thumb knot in it, and gently tighten the knot. If the material does not cut upon itself, but allows the knot to be pulled taut, then it is suitable for rope making, providing that the material will 'bite' together and is not smooth or slippery.

You will find these qualities in all sorts of plants, in ground vines, in most of the longer grasses, in some of the water reeds and rushes, in the inner barks of many trees and shrubs, and in the long hair or wool of many animals.



Some green freshly gathered materials may be 'stiff' or unyielding. When this is the case try passing it through hot flames for a few moments. The heat treatment should cause the sap to burst through some of the cell structure, and the material thus becomes pliable.

Fibres for rope making may be obtained from many sources: Surface roots of many shrubs and trees have strong fibrous bark;

Dead inner bark of fallen branches of some species of trees and in the new growth of many trees such as willows;

In the fibrous material of many water and swamp growing plants and rushes;

In many species of grass and in many weeds;

In some sea weeds;

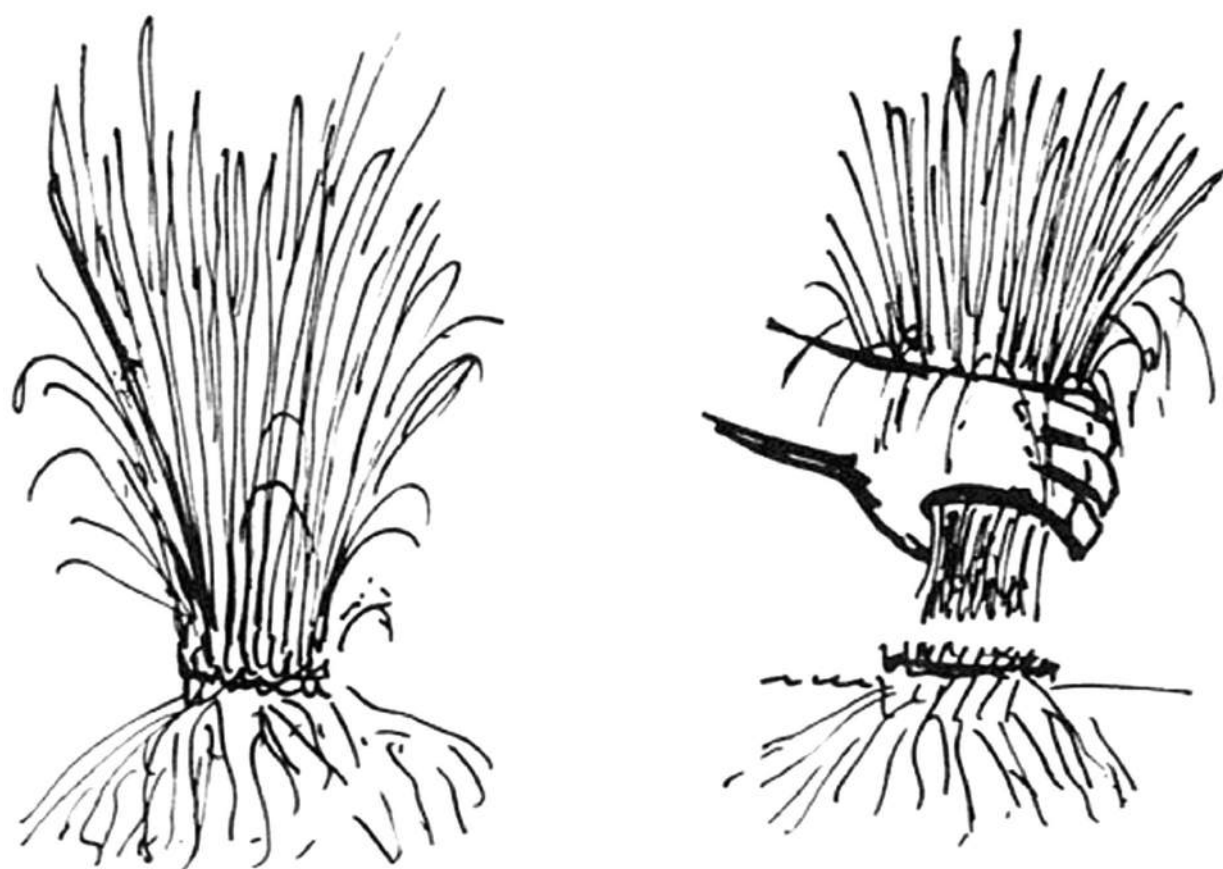
In fibrous material from leaves, stalks and trunks of many palms;

In many fibrous-leaved plants such as the aloes.

GATHERING AND PREPARATION OF MATERIALS

In some plants there may be a high content of vegetable gum and this can often be removed by soaking in water, or by boiling, or again, by drying the material and 'teasing' it into thin strips.

Some of the materials have to be used green if any strength is required. The materials that should be green include the sedges, water rushes, grasses, and lianas.



Grasses, sedges and water rushes should be cut and never pulled. *Cutting above ground level is 'harvesting,' but pulling up the plant means its 'destruction.'*

It is advisable not to denude an area entirely but to work over a wide location and harvest the most suitable material, leaving some for seeding and further growth.

For the gathering of sedges and grasses, be particularly careful therefore to *'harvest'* the material, that is, cut what you require above ground level, and take only from the biggest clumps.

By doing this you are not destroying the plant, but rather aiding the natural growth, since your harvesting is truly pruning.

You will find that from a practical point of view this is far the easiest method.

Many of the strong-leaved plants are deeply rooted, and you simply cannot pull a leaf off them.

Palm fibre in tropical or sub-tropical regions is harvested. You will find it at the junction of the leaf and the palm

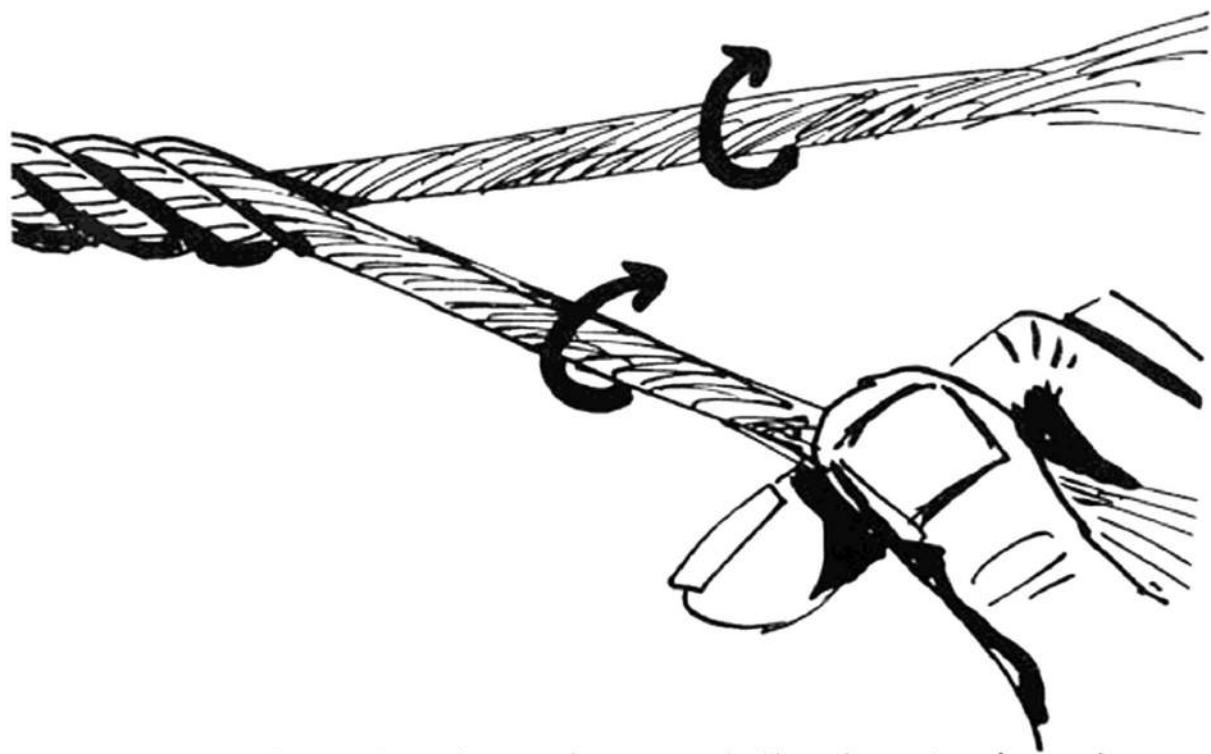
trunk, or you will find it lying on the ground beneath many palms. Palm fibre is a 'natural' for making ropes and cords.

Fibrous matter from the inner bark of trees and shrubs is generally more easily used if the plant is dead or half dead. Much of the natural gum will have dried out and when the material is being teased, prior to spinning, the gum or resin will fall out in fine powder.

There may be occasions when you will have to use the bark of green shrubs, but avoid this unless it is absolutely essential, and only cut a branch here and there. *Never ever cut a complete tree just because you want the bark for a length of cord.*

TO MAKE CORD BY SPINNING WITH THE FINGERS

Use any material with long strong threads or fibres which you have previously tested for strength and pliability. Gather the fibres into loosely held strands of even thickness. Each of these strands is twisted clockwise. The twist will hold the fibre together. The strands should be from $\frac{1}{8}$ " downwards—for a rough and ready rule there should be about 15 to 20 fibres to a strand. Two, three or four of these strands are later twisted together, and this twisting together or 'laying' is done with an anti-clockwise twist, while at the same time



This illustration shows the general direction of twist and the method whereby the fibres are bonded into strands. In similar manner the twisted strands are put together into lays, and the lays into ropes. Illustrated in this diagram is a two strand lay.

the separate strands which have not yet been laid up are twisted clockwise. *Each strand must be of equal twist and thickness.*

The person who twists the strands together is called the 'layer,' and he must see that the twisting is even, that the strands are uniform, and that the tension on each strand is equal. In laying, he must watch that each of the strands is evenly 'laid up,' that is, that one strand does not twist around the other two. (A thing you will find happening the first time you try to 'lay up.')

When spinning fine cords for fishing lines, snares, etc., considerable care must be taken to keep the strands uniform and the lay even. Fine thin cords of no more than one-thirty-second of an inch thickness can be spun with the fingers and they are capable of taking a breaking strain of twenty to thirty lbs. or more.



Normally two or more people are required to spin and lay up the strands for cord.

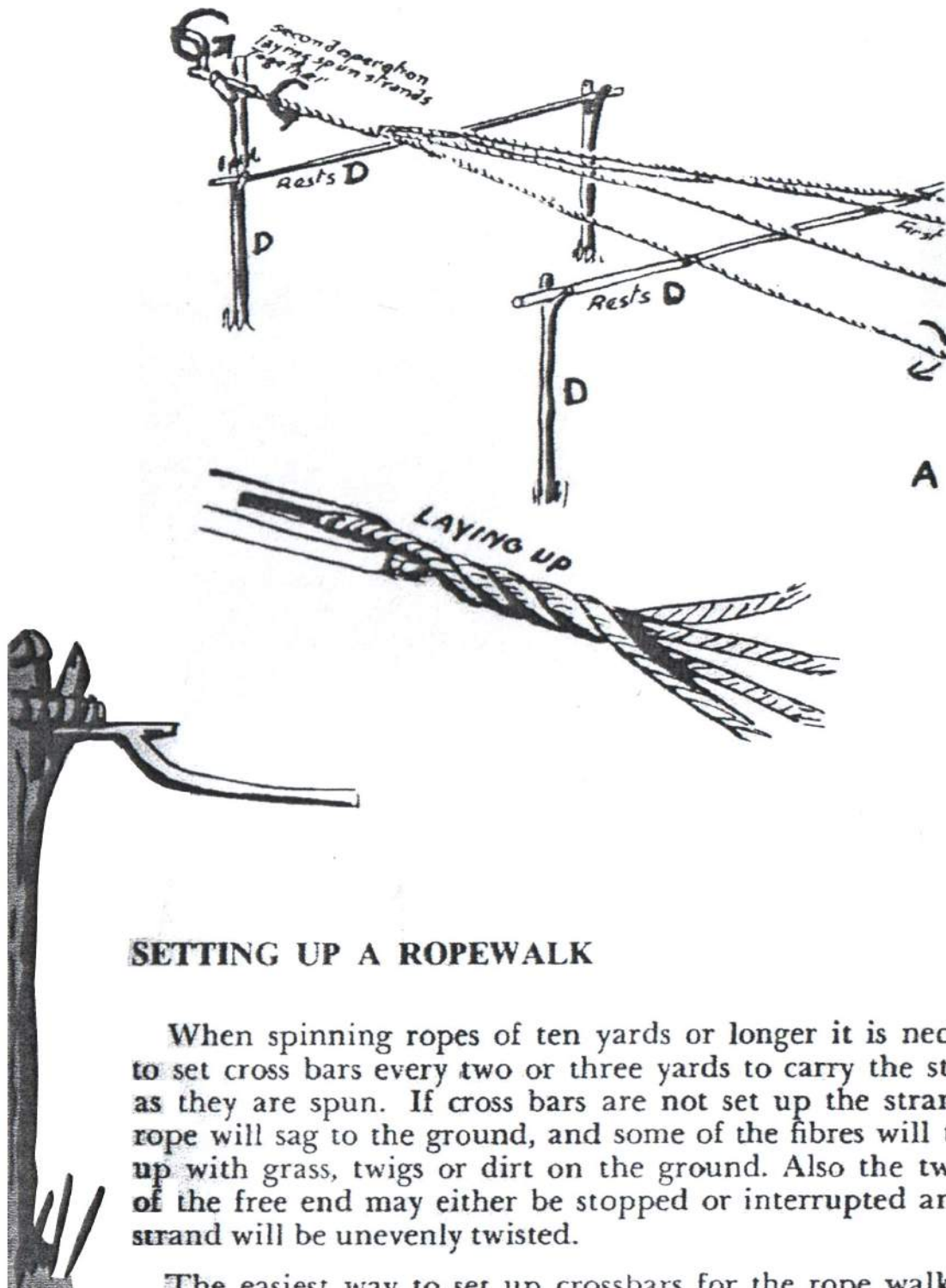
Many native people when spinning cord do so unaided, twisting the material by running the flat of the hand along the thigh, with the fibrous material between hand and thigh and with the free hand they feed in fibre for the next 'spin.' By this means one person can make long lengths of single strands.

This method of making cord or rope with the fingers is slow if any considerable length of cord is required.

A more simple and easy way to rapidly make lengths of rope of fifty to a hundred yards or more in length is to make a rope-walk and set up multiple spinners in the form of cranks. The series of photographic illustrations on the succeeding pages show the details of rope spinning.

In a rope walk, each feeder holds the material under one arm and with one free hand feeds it into the strand which is being spun by the crank. The other hand lightly holds the fibres together till they are spun. As the lightly spun strands are increased in length they must be supported on cross bars. Do not let them lie on the ground. You can spin strands of twenty to one hundred yards before laying up. Do not spin the material in too thickly. Thick strands do not help strength in any way, rather they tend to make a weaker rope.

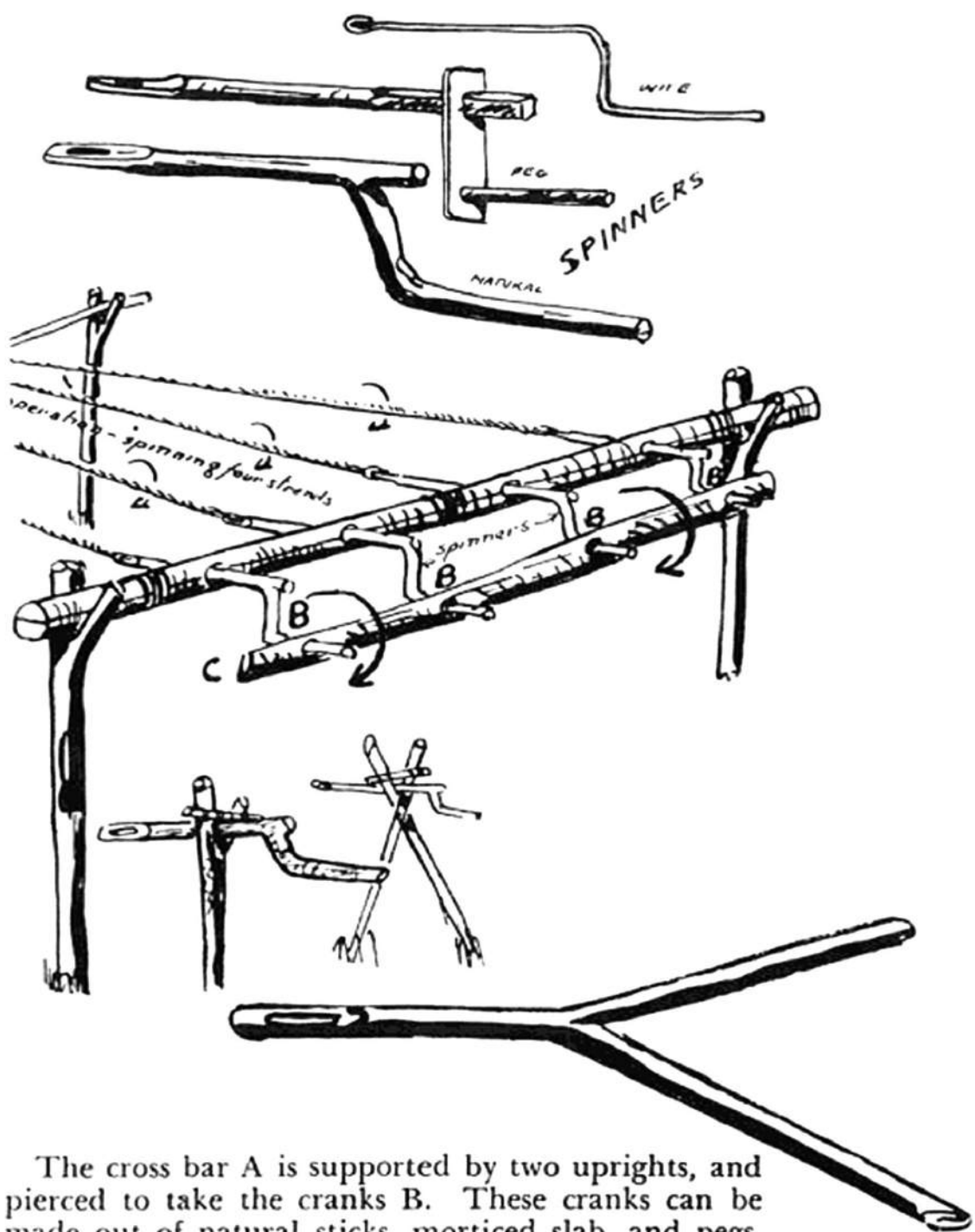
Layout of a rope walk.



SETTING UP A ROPEWALK

When spinning ropes of ten yards or longer it is necessary to set cross bars every two or three yards to carry the strands as they are spun. If cross bars are not set up the strands or rope will sag to the ground, and some of the fibres will tangle up with grass, twigs or dirt on the ground. Also the twisting of the free end may either be stopped or interrupted and the strand will be unevenly twisted.

The easiest way to set up crossbars for the rope walk is to drive pairs of forked stakes into the ground about six feet apart and at intervals of about six to ten feet. The cross bars must be smooth, and free from twigs and loose portions of bark that might twist in with the spinning strands.



The cross bar A is supported by two uprights, and pierced to take the cranks B. These cranks can be made out of natural sticks, morticed slab, and pegs, or if available, bent wire. The connecting rod C enables one man to turn all cranks clockwise simultaneously. Crossbars supporting the strands as they are spun are shown D. A similar crank handle to C is supported on a fork stick at the end of the rope walk. This handle is turned *in reverse* (anti-clockwise) to the cranks C to twist the connected strands together. These are 'laid up' by one or more of the feeders.

Always make it a rule to turn the first strand clockwise, then the laying up of the strands will be done anti-clockwise and the next laying will again be clockwise.



Bark fibre being spun into strands using a single crank handle.



Spinner-feeder on right with bundle of material under his right arm feeds in material.

HOW TO SURVIVE IN THE WILDERNESS WITH JUST A KNIFE—AND THIS BOOK

The Australian bush, the South American jungles, the freezing snows of deep Siberia . . .

Known to adventurers as the world's most dangerous locales, these wildernesses often mean death to those who wander in unprepared. With Richard Graves's *Bushcraft* in your backpack, you'll be ready for even the most unexpected challenges. *Bushcraft* is the ultimate guide to camping and survival.

Graves addresses all areas of survival and camping activities in this book, including:

- Making ropes and cords
- Mapmaking
- Building huts and camp craft
- Starting fires
- Finding food and water
- Fashioning hunting and trapping gear

With more than four hundred diagrams, drawings, and photographs, *Bushcraft* shows how to employ natural materials and share the outdoors with the wildlife that makes it their natural habitat. More than just a survival practice, "bushcraft" promises to increase self-confidence, hone the outdoorsman's senses, and teach you how to overcome everyday trials. Expertly instructive and filled with tips that never fail, *Bushcraft* is the must-have camping companion for anyone looking to face nature on its own terms.

RICHARD GRAVES created and led the Australian Jungle Rescue Detachment assigned to the Far East American Air Force. With his fellow soldiers, he conducted more than three hundred successful rescues. For more than twenty years, Graves ran a Bushcraft school and wrote more than ten classic books on the topic, including *The Bushcraft Handbooks*. He died in 1971.



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