

Appendix A

ECONOMIC CALCULATIONS

COSTS OF AND RETURNS ON KEEPING DONKEYS

Most users will need to work out, sooner or later, what their donkeys are costing them, and what they can earn with their donkeys. According to where the owner and the donkeys live, this can vary quite a lot. Given here are simply some guidelines to enable donkey owners to calculate matters for themselves, which is why the cost columns are left blank. The 'operation on cost' is to enable an average to be obtained so that a monthly figure can result, based on the cost frequency. Not all of these costs will apply in every situation.

COSTS				
of maintaining a team of four donkeys and their equipment				
ITEM	COST	COST FREQUENCY	OPERATION ON COST	MONTHLY COST
Buying price of 4 animals	?	per 40 years	/ 480	?

Castration of 2 male animals	?	per 40 years	/ 480	?
Deworming doses x 4	?	per 6 months	/ 6	?
Medicines	?	per year	/ 12	?
Shelter and crushpen construction.	?	per 20 years	/ 2400	?
Fencing	?	per 20 years	/ 240	?
Maintenance of structures	?	per year	/ 12	?
Cleaning out shelters	?	per hour	x 30	?
Supplementary feed when working	?	per 3 months	/ 4	?
Snacks for rewards	?	per month	(none)	?
Water	?	per month	(none)	?
Bell	?	per year	/ 12	?
Harness x 4	?	per 5 years	/ 60	?
Halter x 4	?	per 5 years	/ 60	?
Diaper x 20	?	per 5 years	/ 60	?

Ropes x 20	?	per 5 years	/ 60	?
Needles x 10	?	per 5 years	/ 60	?
Thread	?	per year	/ 12	?
Sacks x 10	?	per 2 years	/ 24	?
Backframe x 2	?	per 20 years	/ 240	?
Blanket	?	per 5 years	/ 60	?
Plow	?	per 20 years	/ 240	?
Maintenance of plow	?	per year	/12	?
Cart	?	per 20 years	/240	?
Maintenance of cart	?	per year	/12	?
Rake	?	per 10 years	/120	?
Shovel	?	per 10 years	/120	?
Wheelbarrow	?	per 10 years	/120	?
Supervision	?	per month	(none)	?
MONTHLY TOTAL				?

It will be seen that the cost of cleaning shelters and of supervision, if calculated on the minimum salary for a farm worker, comprise the major cost of keeping donkeys.

Suggestions for reducing costs:

Supervision: using child labour (fitting in with school hours)

Training donkeys in daily routines, including coming home (with snacks)

Making own harnesses (see also the budget for harness-making)



Where earnings and savings are concerned, it needs to be considered not only what can be earned, but also what is saved by **not** needing to pay someone else for the work (e.g. crop collection) that one's own donkeys are doing.

EARNINGS AND SAVINGS

possible with a team of four donkeys and their equipment

OPERATION

ITEM	EARN/SAVE	EARN/SAVE FREQUENCY	ON EARN/SAVE	MONTHLY EARN/SAVE
Plowing	?	per day for 4 days a week for 3 months	x 4	?
Crop collection	?	per day for 1 day a week for 1 month	/ 3	?
Transport of people	?	per day for 10 days a month	x 10	?
Firewood collection	?	per week	x 4	?
Manure collection	?	per day for 1 day a week for 1 month	/ 3	?
Tourism	?	per day for 3 days a month	x 3	?
Reproduction of animals	?	per 3 years	/ 36	?
Sale of meat x 4 animals	?	per 40 years	/ 480	?
Sale of hides x 4 animals	?	per 40 years	/ 480	?
Sale of bones x 4	?	per 40 years	/ 480	?

COSTS OF MAKING A HARNESS

Work it out for yourself !



Units sold	Cost per unit	Units needed for 1 harness	Description	Operation on unit cost for 1 harness	Cost of 1 harness
30m	?	3m x 50mm	Firehose (100 mm wide)	/ 20	?
1m	?	42 m	Other materials ? (e.g. braided thin straps, 42 m thin strap, braided	x 42	?

			together, makes 3 m x 50 mm wide)		
1	?	2	Roundbar rings	x 2	?
1	?	2	Roundbar rings with C-hooks		?
1	?	2	Large-eye needles	x 2	?
100 m	?	10 m	Strong polyester twine 100m	/ 10	?
1 hr	?	5 hrs	Own labour	x 5	?
TOTAL					?



It takes one person alone about 5 hours to make a harness. However, harness-making is a good community activity, and it is also easier for groups rather than individuals to organize the procurement of the necessary materials.

Extract from Naud-Moseley, B. & Jones, P. 2002. *Beasts of burden can save you money. Farmer's Weekly, 92043/Grow 129* (8 November): 4.:

Comparing costs

The following calculations serve purely as a guideline. Assuming there are 500kg to be transported 30km (a reasonable day's journey for any human or animal), we can apply the following figures:

Human head-loads: calculated as 30kg per person, as in the bad old days of head-porterage. The day's transport would require 17 people x R20 = R340.

Motor power: Purchase prices and fuel consumption vary, so let us use a round figure of R100 000 as the purchase cost, lasting 500 000km (according to farmers' estimates), and the Automobile Association's running costs for a diesel bakkie (including maintenance and fuel) of

RI,65/km:

TABLE 1: Motor Power	
Vehicle cost (R100 000 \div 500 000km x 30km)	R6.00
Running costs R1,65 x 30km) R49.50	R49.50
Driver	R20.00
	R75.50

Donkeys and carts

A cart costs, say, R 1 000 and lasts 2 000km per year for 10 years. Add six home-made harnesses for as little as R100 each and lasting perhaps 20 000km, with another R50 spent on repair. (The harnesses are for use by four donkeys, including a pair for breeching for the hind donkeys, which must also take a vertical load from the shaft over their backs.)

Four donkeys could cost R500 each and be able to work for 20 years, but teams should be rotated, so each donkey would work half the time that the cart is in use. Each donkey can then also provide 20 000km over

10 years, or 2 000km per year. Thus, daily rates are:

TABLE 2: A donkey cart	
1 person	R20.00
4 donkeys (x R500 ♦ 20 000 km x 30 km)	R3.00
Cart (R1 000 ♦ 20 000 km x 30 km)	R1.50
6 Harnesses (x R100 ♦ 20 000 km x 30 km)	R0.90
	R25.40

Backloading your donkeys

BACKLOADED donkeys can work double the time possible when pulling a fully loaded cart (that is, 40 000km per year); 500kg would require about seven donkeys, but the only equipment to be considered is the backframe, which distributes the load for the donkeys' comfort. A frame may cost about the same as a harness, and may last about as long. Thus for the day:

TABLE 3: Donkeys backloaded	
1 person	R20.00

7 donkeys (or 7 x R500 ⚡ 40 000 km x 30 km)	R2.62
7 backframes (x R100 ⚡ 20 000 km x 30 km)	R1.05
	R23.67

TABLE 4: Comparing costs

Transport (a day ⚡s) ⚡	Cost in SA Rands	Savings if donkeys used *
To carry 500kg 30 km		
Humans with headloads	340.00	315.00
Tractor & trailer or pickup	75.50	50.50
Donkeys with cart	25.40	-
	23.67	-
* Using round figure of R25 for donkey power		

WORK PRODUCED BY TEAMS ⚡⚡⚡

Using the rule-of-thumb that, for every animal added, 10% of the available work is lost, this yields the following formula: work = 250 (n - (n-1)/10) newtons, where n = number of donkeys and assuming each

donkey is capable of producing 250 newtons of work.

No. of donkeys (n)	Work (newtons)
1	250
2	475
3	700
4	925
5	1150
6	1375
7	1600
8	1825
9	2050
10	2275
11	2500
12	2725



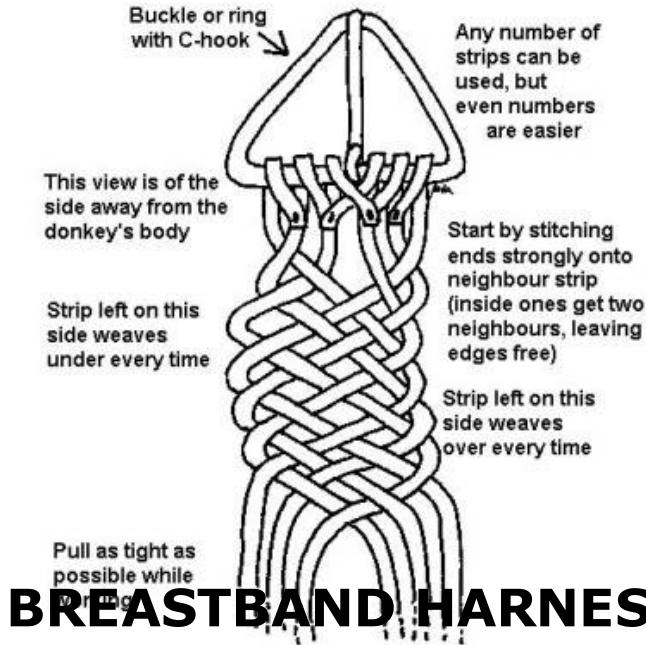
PHOTO © PETA JONES

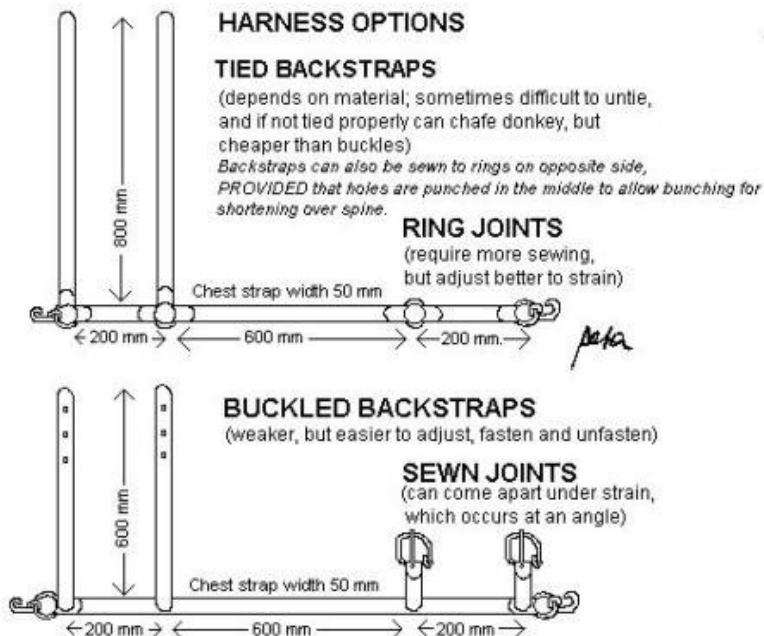
Appendix B

PATTERNS FOR EQUIPMENT

The availability of certain materials will vary from area to area, but these patterns are based on materials that are common in most parts of rural Africa. These designs are being developed and improved all the time, as they are used and work extends to more areas. I would welcome any suggestions from users, especially if they can e-mail me at asstute@lantic.net (always mention donkeys in the subject line).

BRAIDING STRAPS FOR HARNESS

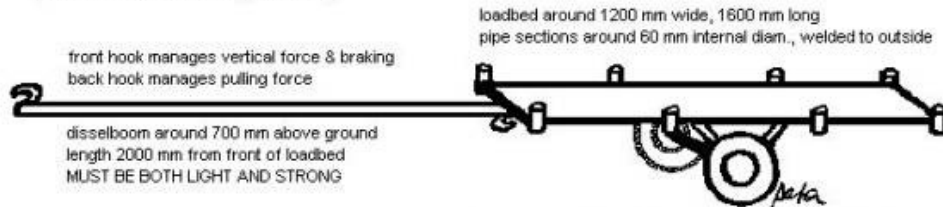




CART

SINGLE-SHAFT CART FOR TWO DONKEYS (or more)

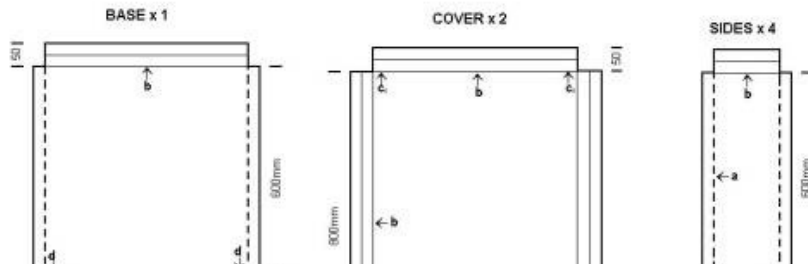
(sketch - not necessarily to scale)

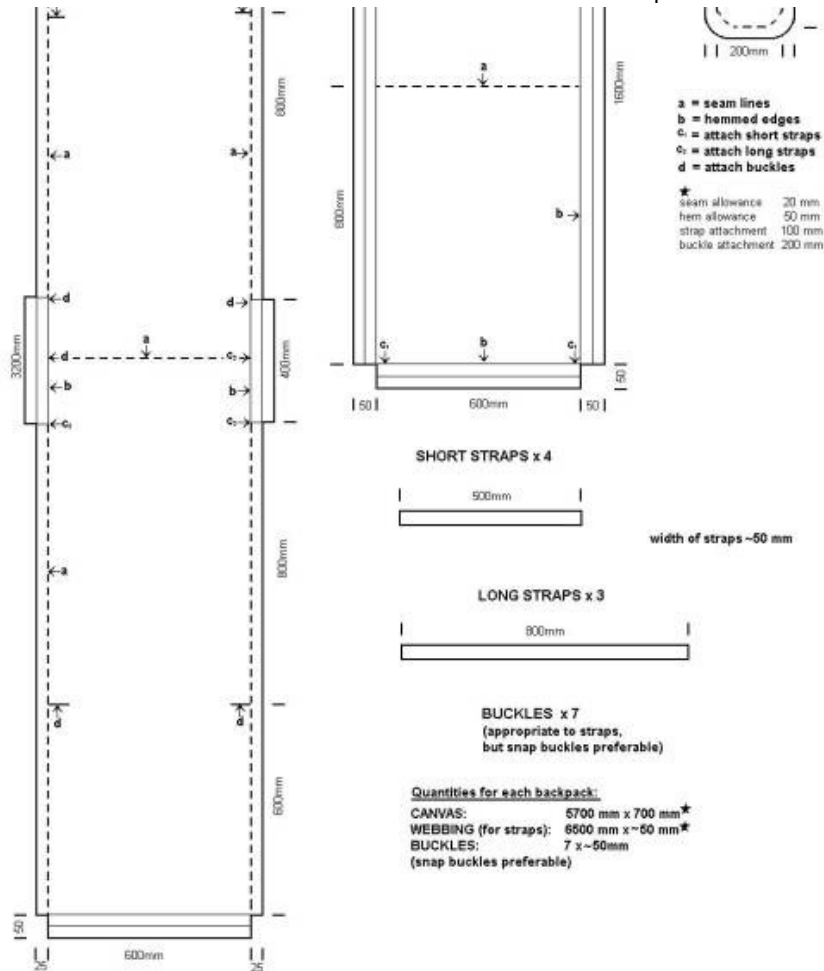


Wheels should be as large as possible consistent with economy, midway along loadbed (for balance), and with tyres, solid or pneumatic. Axle and struts to be strong without being heavy, and bearings in good condition. Springs only if cheap enough.

BACKBAGS

PATTERN FOR DONKEY BACKPACK





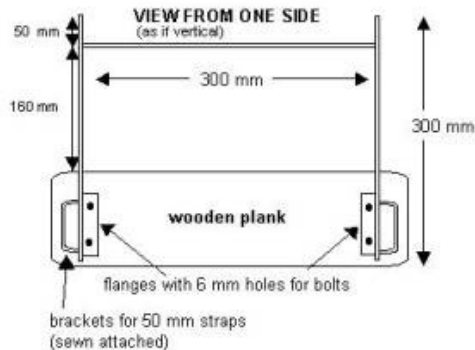
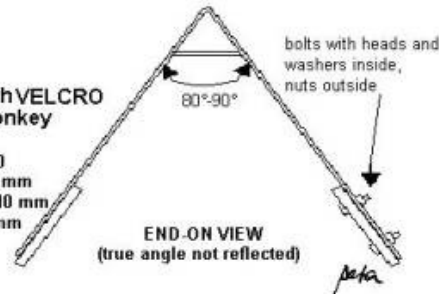
BACKFRAME

BACKFRAME OF METAL AND WOOD

(roundbar 10 mm diam; plank/plywood ~10 mm thick)

1 x METAL FRAME
 2 x WOODEN PLANKS
 8 x 6x30 mm BOLTS
 with nuts & washers
 2 x 50 mm wide STRAPS with VELCRO
 to fasten on same side of donkey

Angle between upright bars: 60°-90°
 Length from apex to crossbars: 50 mm
 Length from apex to board top: 210 mm
 Length from apex to bottom: 300 mm
 Crossbars: 300 mm

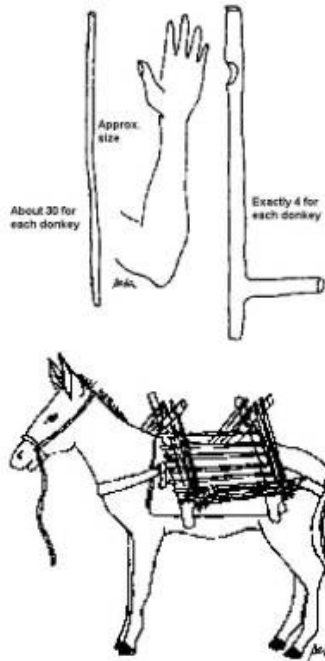


All measurements should be modified to fit donkey; these are just suggestions

RUN S-HOOKS ALONG CROSSBARS TO TAKE LOADS

Cushion over top makes comfortable seat (but should not touch donkey's spine)

BACKBOX



Step one

Cut suitable sticks from strong, flexible wood.

Step two

Tie sticks with twine or fibre to make two equal three-sided boxes, one for each side of the donkey. Open ends tied at top clear of donkey's spine.

Each side may take up to 15 bricks, depending on sizes of donkey and sticks, but load **must** balance evenly.

Straps of leather or braided twine tie the boxes back and front to prevent movement on slopes.

Sack or blanket should be under all loads.


Appendix C

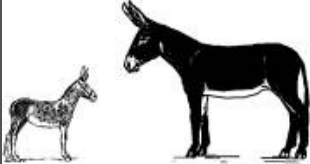
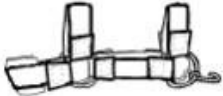
HITCHING TO CARTS

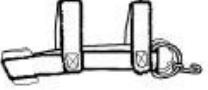
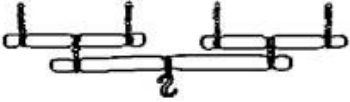

CHEAP, EASY AND KIND TO DONKEYS

Hitching to a single-shaft cart

What you will need:

Item	Description	Quantity
Cart 	One shaft, at least 2m long from front of loadbed Two hitching points (hooks or rings): <ol style="list-style-type: none"> 1. above shaft, at front end, 2. pulling point under 	1

	<p>shaft just in front of loadbed.</p> <p>Wheels as large as possible</p> <p>Tyres pneumatic as possible</p>	
<p>Donkeys</p> 	<p>Springs if possible in good condition, especially their legs and feet</p> <p>Deep chests</p>	2
<p>Harnesses</p>  <p>or</p>	<p>No sharp cutting edges or wire.</p> <p>Must fit the donkey wearing it, so preferably adjustable</p> <p>Various materials possible, but must be:</p>	4

	<ul style="list-style-type: none"> ◆ strong ◆ easy to clean ◆ preferably absorbent <p>(Design available on request)</p>	
<p>Swingle and evener sets</p> 	<p>Made of light, strong, rigid material (metal or wood)</p> <p>Each swingle connected to evener by two chain links</p> <p>Swingles long enough so that traces move clear of donkey body</p>	2
<p>Traces</p> 	<p>Preferably chains, 4mm</p> <p>Each 2m maximum</p>	4
<p>Hooks</p>	<p>Strong carbon steel (to <i>las</i></p>	

HOOKS



strong carbon steel (to take force)

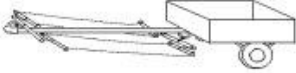
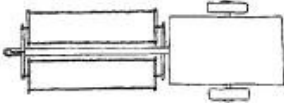
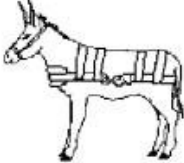
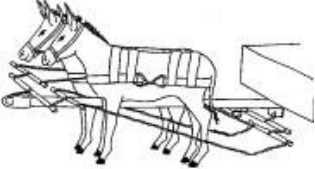
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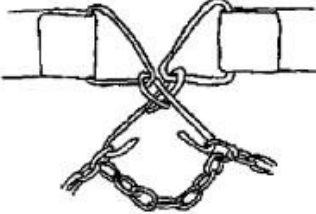

S-shaped can link traces to swingles, if not fixed, and eveners to cart, if not fixed.

C-shaped, if not already fixed to harnesses, to link harnesses to traces

Fitting it all together, step by step

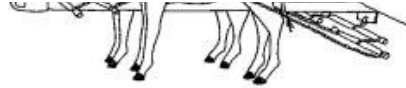
What it looks like

<p>1</p>	<p>(a) Hook swingle sets to front and back hooks on cart</p> <p>(b) Fix traces/chains between swingles, keeping them straight and tight</p>	 <p>From top:</p>  <p>(NB These can stay in place permanently)</p>
<p>2</p>	<p>Put two harnesses on each donkey, one for chest and one for backside</p>	
<p>3</p>	<p>With end of disselboom/shaft on the ground, put donkeys into position between the traces, clear of front and back swingles</p> <p>(when donkeys are</p>	

	accustomed, they do this on voice command)	
4	<p>On both sides of each donkey (easy to lean over):</p> <p>Pull up traces to hook tight to harnesses:</p> <ul style="list-style-type: none"> ❖ Front harness hooks to back ❖ Back harness hooks to front <p>(This is a little easier if someone lifts the disselboom/shaft)</p> <p>Slack chain remains between the hooks</p>	
5	<p>Stand back and check:</p> <ul style="list-style-type: none"> ❖ Disselboom/shaft 	

far enough from ground at front❖ (if not, then tighten traces more with hooks)

❖ Donkey front and back far enough from swingles so no contact when moving (if not, unhook and reposition donkey, then re-hook)



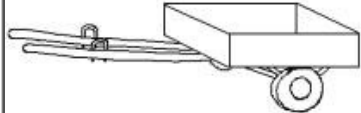
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Donkey comfort and efficiency assured.

EVEN CHEAPER, EASIER AND KINDER TO DONKEYS

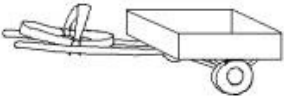
Hitching to a two-shaft cart

What you will need:

Item	Description	Quantity
<p data-bbox="89 204 161 238">Cart</p> 	<p data-bbox="611 204 1015 316">Two shafts, at least 1,50m long from front of loadbed</p> <p data-bbox="611 361 1015 563">Two hitching points (large staples or D-shackles), opposite one another, one on each shaft, 1 m from front of loadbed.</p> <p data-bbox="611 608 1015 686">Wheels as large as possible</p> <p data-bbox="611 731 1015 798">Tyres pneumatic if possible</p> <p data-bbox="611 843 1015 876">Springs if possible</p>	<p data-bbox="1110 204 1134 238">1</p>
<p data-bbox="89 891 209 925">Donkey</p>	<p data-bbox="611 891 1015 969">In good condition, especially legs and feet</p>	<p data-bbox="1110 891 1134 925">1</p>

	<p>Deep chest</p>	
<p>Wide straps</p> 	<p>About 50 mm wide, 1500 mm long</p> <p>No sharp cutting edges or wire.</p> <p>Must fit the donkey wearing it, so preferably adjustable</p> <p>Various materials possible, but must be:</p> <ul style="list-style-type: none"> ◆ strong ◆ easy to clean ◆ preferably absorbent 	<p>3</p>

Fitting it all together, step by step

<p>1</p>	<p>Using donkey as measurement, fit straps across shafts:</p> <ol style="list-style-type: none"> 1. Around donkey's chest 2. Under donkey's tail 3. Over donkey's back. <p>Attach to staples/shackles firmly, all projections away from donkey body.</p> <p>If different donkeys to be used at different times, then each strap should be adjustable, preferably by buckle</p>	<p>(NB These can stay in place permanently)</p> 
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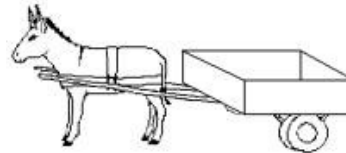
2

1. With shafts lifted, get donkey into place.
2. Lower harness over donkey, sliding front strap over head, and back strap under tail.

3

Stand back and check:

- ◆ Are shafts level with each other ?
- ◆ Are straps tight enough on donkey ?
- ◆ Is donkey far enough from front of cart not to touch it ?



**4**

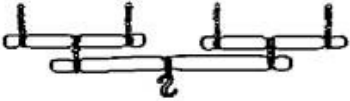

Donkey comfort and efficiency assured.

EXTRA DONKEYS FOR HEAVIER LOADS

Hitching to a single-shaft cart

What you will need:

Item	Description	Quantity
<p data-bbox="92 434 225 468">Donkeys</p> 	<p data-bbox="603 434 975 546">In good condition, especially their legs and feet</p> <p data-bbox="603 591 799 624">Deep chests</p>	<p data-bbox="1114 437 1134 460">2</p>
<p data-bbox="92 639 256 667">Harnesses</p> 	<p data-bbox="603 639 999 706">No sharp cutting edges or wire.</p> <p data-bbox="603 757 975 869">Must fit the donkey wearing it, so preferably adjustable</p> <p data-bbox="603 913 938 986">Various materials possible, but must be:</p>	<p data-bbox="1114 642 1134 665">2</p>


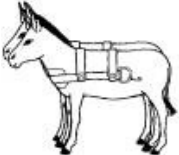
	<ul style="list-style-type: none"> ❖ strong ❖ easy to clean ❖ preferably absorbent <p>(Design available on request)</p>	
<p>Swingle and evener sets</p> 	<p>Made of light, strong, rigid material (metal or wood)</p> <p>Each swingle connected to evener by two chain links</p> <p>Swingles long enough so that traces move clear of donkey body</p>	1
<p>Traces</p> 	<p>Preferably chains</p> <p>Each 2m maximum</p>	4
<p>Hooks</p>	<p>Strong carbon steel (to take force)</p>	(as required)




S-shaped can link traces to swingles, if not fixed, and eveners to cart, if not fixed.

C-shaped, if not already fixed to harnesses, to link harnesses to traces


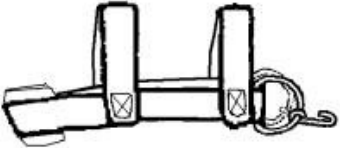
Fitting it all together, step by step



<p>1</p>	<p>(c) Hook swingle set to front hook on cart</p> <p>(d) Fix traces/chains to swingles</p>	
<p>2</p>	<p>Put one harnesses on front of each donkey</p>	
<p>3</p>	<p>Position each donkey in front of one harnessed behind</p>	

	(when donkeys are accustomed, they do this on voice command)	
4	With disselboom raised (i.e. properly hitched to behind donkeys), hook traces to harnesses on front donkeys so that they are firm and tight.	
5	Stand back and check: <ul style="list-style-type: none"> ❖ Disselboom/shaft far enough from ground at front❖ (if not, then tighten traces more with hooks) ❖ Donkeys front and back far enough from swingles so no contact when moving (if not, unhook and reposition donkey, then re-hook) 	
6	Donkey comfort and efficiency assured.	

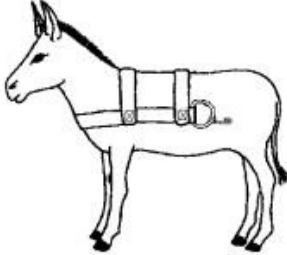
Hitching to a two-shaft cart

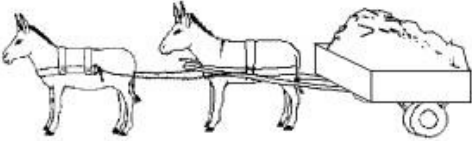
What you will need:

Item	Description	Quantity
Donkey 	In good condition, especially legs and feet Deep chest	1
Harness 	No sharp cutting edges or wire. Must fit the donkey wearing it, so preferably adjustable Various materials possible, but must be:	1

	<p>❖ strong</p> <p>❖ easy to clean</p> <p>❖ preferably absorbent</p> <p>(Design available on request)</p>	
<p>Traces</p> 	<p>Preferably chains</p> <p>Each 2m maximum</p>	<p>2</p>
<p>Hooks</p> 	<p>Strong carbon steel (to take force)</p> <p>S-shaped can link traces to swingles, if not fixed, and evens to cart, if not fixed.</p> <p>C-shaped, if not already fixed to harnesses, to link</p>	<p>(as required)</p>

Fitting it all together, step by step

Step	What you do	What it looks like
1	Put harness on front of donkey	
2	<ol style="list-style-type: none"> 1. Position donkey in front of donkey already hitched 2. Connect traces from harness of front donkey to staples or D-shackles on each 	

<p>3</p>	<p>shaft of cart</p> <p>Stand back and check:</p> <ul style="list-style-type: none"> ◆ Are shafts level with each other ? ◆ Are straps tight enough on donkeys ? ◆ Is donkey far enough from front of cart not to touch it ? 	
<p>4</p>	<p style="text-align: center;">READY TO GO !</p> <p style="text-align: center;">Donkey comfort and efficiency assured.</p>	

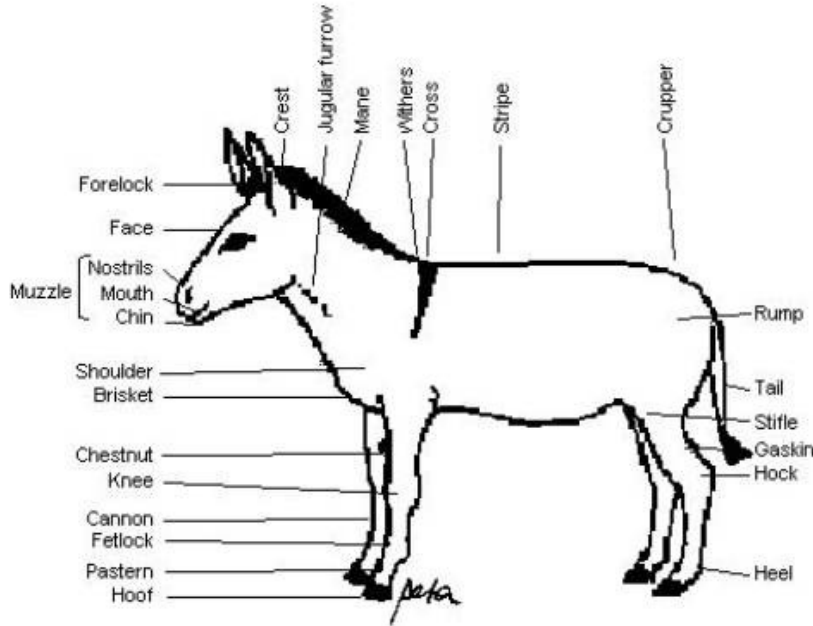


Adaptations are possible, of course. ♦ Here, an ordinary breastband harness (braided from plastic tying straps) is attached to the brackets of a two-shaft cart, and a sacking strip tied behind to provide the necessary breeching.

GLOSSARY

(not all donkey parts on the drawing are listed)

PARTS OF A DONKEY - SOME NAMES



ABREAST (adj & adv) side by side.

ASS (n) original English word for 'donkey'.

AWL (n) sharp spike with handle for making holes.

BARREL (n) centre part of animal's body.

BIT (n) metal bar in animal's mouth to which reins attached for controlling head.

BRAID (v & n) interweave three or more strings or strips to make a wide band.

BRAY (v & n) loud noise a donkey makes when it

wants a companion or otherwise feels frustrated. In South Africa the same word is also used for the softening of animal skins by means of water and twisting and stretching.

BRIDLE (n) straps around head of an animal to which reins and/or a bit may be attached.

BREECH (v, n & adj) support under an animal's tail around its buttocks.

BREED (v & n) successful mating between two animals.

BURRO (n) Latin American term for donkey, usually small and sometimes wild.

CAST (v) throw to the ground.

CASTRATE (v) remove, damage or isolate male testicles to prevent reproduction and reduce sexual violence.

CHESTNUT (n) black oval patch of skin inside equines' front legs and above the knee, the last remains of an ancient 'thumb'.

COAT (n) animal's hair covering.

COLD SOAK (n) cloth soaked in very cold water applied to hot swelling of muscle to reduce it.

COLIC (n) acute digestive discomfort, having various causes.

COLOSTRUM (n) first milk of a mother, with high proportion of antibodies for use by baby to combat disease.





} **COLT (n) male foal, see below.**

CROUP ◆◆◆◆◆◆ (n) part of equine back just in front of tail, but also strap

CRUPPER ◆◆◆ from top of saddle or backload, passed under tail and back again.

DAM (n) mother equid, see below.

DENTAL STAR (n) mark on teeth seen from the top, made by small folds in the enamel, appearing when donkey around 8 years old, at first at the front of teeth and light in colour, later becoming smaller, darker and further back.

DISSELBOOM (n) originally Dutch word, widely used in all languages in southern Africa meaning the single, central shaft of a wagon or cart, often inaccurately called a  drawpole  and more accurately in English called a  shaft , see below.

DOURINE (n) equine form of nagana (trypanosomiasis) but not necessarily spread by the tsetse fly.

DRENCH (v & n) liquid internal medicine administered through back of mouth.

DUNG (n & v) solid waste emitted from animal's back passage.

ELBOW (n) joint at back of front leg, where leg joins body.

EQUID (n)/EQUINE (adj) any member of the family which includes donkeys, horses and zebras, and also the hybrids: mules, hinnies, and the cross between a zebra and a donkey, a zonkey.

EVENER (n) last freely swivelling cross bar in front of draft implement or cart, serving to concentrate at one point the pulling of two or more animals abreast, each of which would also have a swingle (see below).

FAECES (n) dung, see above.

FANGHOLE (n) dental star, see above.

FETLOCK (n) the projection above and behind an equid's hoof, containing the bone which in humans would be a heel.

FILLY (n) female foal, see below.

FLANK (n & v) side of animal, towards hindquarters.

FOAL (n) young equid, usually younger than 3 years; also
(v) to give birth in equids.

GASKIN (n) upper part of equine back leg, between hock and body.

GELD (v) castrate; hence **GELDING (n)** castrated male equid.

GIRTH (n) circumference of animal's body; also strap under equine belly connecting both sides of saddle.

GROOM(v) keep coat clean and in good condition, mainly by brushing; also

◆◆◆ ◆◆◆◆ ◆◆◆(n) person who is employed to do this to equines.

HALTER (n) straps around head of animal which can be pulled by hand, rope or rein to control its head, or to which can be attached a tether, see below.

HAMSTRING (n) tendon at rear of back leg above hock

HARNESS (n & v) straps or ropes around animal's body connecting it to an implement or cart.

HAUNCH (n) buttocks or whole upper rear part of an animal.

HEADGEAR (n) straps or ropes around an animal's head to enable a human to control its movement; bridles, halters and headropes are all headgear.

HEAT (n) period of sexual arousal, or oestrus (see below), in females around the time of ovulation, when the animal is receptive to male approach and ready to start a pregnancy.

HERD (n) group of large animals, like donkeys; also the person who does (v) moving any animals into a group.

HINDQUARTERS (n) part of animal body including croup, hips, thigh, buttocks, tail etc.

HINNIE ♦ (n) hybrid equid with horse as father and donkey as mother; as foetus can in this situation be too big for the mother, hinnies are tricky to produce.

HITCH (v & n) method of attaching draft animal to implement or cart.

HOCK (n) joint halfway up the rear leg above the fetlock

HORSE CUBE (n) pellet of mixed milled grain and chaff sold commercially as a food supplement for equids.

HOT SOAK (n) cloth soaked in hot salt water applied to hot swelling suspected of containing pus, to concentrate in one place, or otherwise

to aid re-absorption.

HYBRID (n) result of breeding between two completely unrelated animals, sometimes between species so that the hybrid is often infertile, although fully sexed.

INCISOR (n) front or cutting tooth.

INFUNDIBULUM (n) impression made by the meeting of top and bottom teeth at the beginning of wear, not noticeable in a donkey which is more than 30 years old.

JACK (n) adult male donkey or mule.

JENNET/ JENNY (n) adult female donkey or mule.

KNEE (n) in equines, the joint halfway up the front leg above the fetlock

KRAAL (n & v) a southern African term for large enclosure for animals, and to put animals into such an enclosure.

LACTATE (v) produce and yield milk.

LASH (v & n) loose rope thrown across something and then tightened.

MANE (n) long hairs down centre of back of equine neck.

MARE (n) adult female equid, see above.

MECONIUM (n) first faeces passed out by newborn, thick and very dark.

MOLAR (n) back tooth, with broad flat top for chewing.

MULE (n) hybrid equid with horse as mother and donkey as father, so larger and stronger than a donkey, but also with long ears.

MUZZLE (n) area around mouth and nostrils of an animal.

NAGANA (n) animal form of trypanosomiasis, spread by the tsetse fly.

NEAR SIDE (n) animal's left side.

NUCHAL CREST (n) top of equine skull, under poll.

OESTRUS (n) female cycle of fertility; also used to mean 'heat', see above.

OFF SIDE (n) animal's right side.

PANNIER (n) box or basket, one of a pair attached to a donkey's saddle for carrying goods of appropriate size or shape.

PASTERN (n) indentation between fetlock and hoof, the part which in humans would be the underside of the instep, only in equids it is vertical and not parallel to the ground.

PEN (n & v) animal enclosure, same as kraal.

POLL (n) part of mane between donkey's ears.

RASP (n & v) roughened surface, usually metal, for filing down softer material such as a donkey's hoof; and to do it.

RAWHIDE (n) animal skin cured only with salt and oil, no other substances for softening.

REIN (n) strap held in hand of rider or driver to control an animal's head, so usually attached to the bridle or, less commonly, the halter, see above.

RIEM (n) strip of animal skin, salted and oiled, usually with hair removed. ♦ This widely used word comes from Afrikaans; in English the same thing is called a 'rawhide strip' or 'thong'.

RIG (v & n) arrangement or total assembly of equipment.

ROSTRAL (adj) front, or nearest, or facing towards the front of the mouth

RUMP (n) part of hindquarters around croup, nearly equivalent to haunch.

SADDLE (v & n) wide strap across equine back for taking load.

SCOUR (v) to suffer from diarrhea, i.e. 'loose bowels', to pass liquefied faeces; also the liquid faeces themselves.

SCROTUM (n) skin bag containing testicles of male animal.

SHAFT (n) long pole which is horizontal when it is part of a cart or wagon, to which the draft animals may be attached in some way.

SHEATH (n) thin protective covering; skin covering of penis, into which penis withdraws when animal not urinating or erecting.

STALLION (n) adult fully male equine, not a gelding, see above.

STIFLE (n) the joint where the front of an animal's back leg joins its body.

SWINGLE (n) wooden bar attached to harness by traces, serving to concentrate pulling force of animal or implement at central point.

TACK (n) all equipment used for controlling equid and the work done by it, thus including harness and headgear, not including implements, carts, etc.

TANDEM (adj & n) one in front of the other, connected.

TASSEL (n) cluster of long hairs at the end of donkey's tail.

TEAT (n) fleshy projections on female animal from which milk is sucked by young, the equivalent of human nipples.

TIDBIT/TITBIT ♦ (n) something small and delicious to eat.

THONG (n) strip of animal skin, salted and oiled, usually with hair removed. ♦ Also known as 'rawhide strip' and 'riem'.

TRACE (n) strap, rope or chain connecting the harness of a draft animal with the thing it pulls, usually through a swingle.

UDDER (n) part of female animal where milk is produced, and from which milk is sucked by its young by means of teats.

VULVA (n) opening in body of female animal where the male penis

◆◆◆◆◆◆◆◆ penetrates and through which young are born, the outside end of the birth canal.

WITHERS (n) part of equid just behind where the neck joins its back, being actually the top of its shoulders.



However well people know donkeys, they also like to know the words.

FURTHER READING

In compiling this manual, a great many people (and donkeys) have been consulted, including farmers in a number of countries, but much has also been gleaned from a wide variety of books and

documents, as well as discussions at various conferences on animal draft power in general and donkeys in particular.◆ There is much that is of a very technical nature, summarized and synthesized in this manual, but readers may want to consult some of the sources for themselves.◆

Accordingly, something of a selective bibliography is given here, encompassing the more general works and papers of particular interest and relevance. For people in developing countries, most will be difficult to find (and hence the reason for this book); for academics it will be easier, and these general works may provide leads to more specialist material. Two organizations in particular may be contacted for more details or further references on donkeys:

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The Donkey Sanctuary & International

Donkey Protection Trust,

SIDMOUTH, Devon, EX10 0NU, England

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Donkeys for Development

Peta Jones

[Donkey Power, South Africa](#)

158pp, 2005

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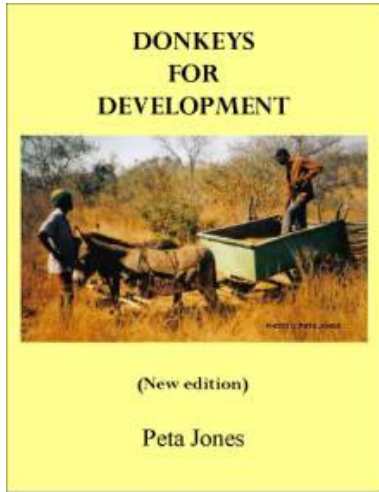


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INTRODUCTION

It seems to have taken unreasonably long for development workers to realize what a vital role donkeys can play in an economy. In many cases, farmers have realized it earlier, if they ever forgot.  The donkey, after all, seems to have been in use very soon after humans first engaged in farming, and if in this century its usefulness seemed to have ended, that was only an illusion, or perhaps delusion, indulged in by wealthy

countries in which (at the expense of others) machinery and fuel had become cheap.

Inevitably, the view of the wealthy prevails, so that in Africa, for instance, an animal that could have been useful in the last half century was considered (and is often still considered) beneath notice. But wealthy countries, it seems, are giving up agriculture just at a time when international agencies are reporting that the world is no longer producing enough food to feed its people. ♦ The logical corollary of this is that the poorer countries must now produce more food, for in the ways of the wealthy there is no reasonable future for humankind. ♦ The race to increase agricultural production is now under way again, but this time it is obvious that machines and fossil fuels will not be available to give it speed. ♦ There are other kinds of advanced technology, perhaps, such as genetic engineering, which may increase yields - but they are not going to help a lot with the equally fundamental problems of processing and distribution of the world's food.

With the industrialized countries opting out of agriculture, an even greater proportion of the world's farmers live in remote places and on small plots, ill served by roads and transport systems. ♦ As farmers are simultaneously pressed to use ever more difficult environments, this

situation must get worse, not better.

Because not all those environments are suitable for plowing - which in any case is too damaging on most tropical soils - and because transport has become the bigger problem, often transport over rocky, sandy and muddy terrain, humankind is turning to back to one of its oldest friends: the one with the strong back and four nimble feet. ♦ This friend is also quite good at pulling carts as well as plows, but the donkey's biggest role, I predict, will be what it always was: as a pack animal.

For much of humankind, throughout history, women have also filled this role, but now at last it is beginning to be realized that women have more important work to do, since they possess human brains - which donkeys do not, bright though they often are. So the spotlight has turned back to the donkey, still ready, after half a dozen millennia, to do heavy work for humans. ♦ But are humans ready for the donkey ?

In the areas of its original adoption ♦ the Middle and Near East and the Mediterranean ♦ the donkey never really went out of use, or so briefly that the traditions governing it may easily be revived. ♦ In the Americas, too, colonized from the Mediterranean, the donkey's place is still recognizable even if value and therefore treatment has deteriorated. ♦ But there is much more developing world than that. In the distant past,

donkeys never seem to have penetrated the tropics and equatorial regions, precisely the regions where now development is most needed. ♦ And although indigenous to north-east Africa, donkeys were never much used in the rest of Africa, the most tropical of continents which spans both tropics and the equator. ♦ Donkeys do not thrive where it is excessively wet, but more of the tropics are dry these days, and one thing that donkeys can tolerate really well is heat. ♦ This is not new knowledge:

♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦♦ *"The climate of England is much too cold for the ass; in the south of France and the Mediterranean, where it is much warmer, the ass is a much finer animal; but to see it in perfection we must go to the Torrid Zone in Guinea, right on the equator, the hottest portion of the globe, where the ass, in its native state and in its native country, is a handsome creature and as fleet as the wind; indeed, supposed to be, and mentioned in the Scriptures as the fleetest animal in creation. ♦ The fact is, that in Asia, especially in Palestine and Syria, asses were in great repute, and used in preference to horses. ♦ We must see an animal in its own climate to form a true estimate of its value."* ♦ [Captain Marryat, in *Masterman Ready*]

So there are vast new areas of the world where donkeys could now go

to help humankind, but as with all introductions of new technology, it should not be thought that this will happen automatically or simply. ♦ Societies which are accustomed to using women and maybe cattle for work, and have traditions of caring only for cattle, goats, sheep, pigs and chickens - i.e. meat animals - are surprisingly ill-equipped to use and care for donkeys. ♦ They need skills of harness-making, they need to recognize the donkeys' limitations as well as their potential, and they need to make a social niche for an animal that responds to persuasion rather than harassment, which may need rather more in terms of supervision, food and shelter than other animals do, particularly if it is to work all day, and which can live as long as many humans. ♦ Above all, some value needs to be given to the work it does. ♦ Like the work of women, the work of animals is seldom entered into economic equations.

This book has therefore been written partly for development workers who may recognize the need the donkeys, but may not appreciate the complexity of problems to be overcome when it comes to introducing them into areas where they are known only by repute. ♦ It is also written for extension workers who do not necessarily have any direct experience of donkeys. ♦ But most of all it is written for people who must use donkeys and depend on them for transport: peasant farmers, yes, but not necessarily unsophisticated or illiterate. ♦ Many will be like

myself: schoolteachers, either working in remote areas or trying to farm in such areas, recognizing clearly that transport needs must be met but not having the kind of income that will stretch to tractors and pickups, even assuming the terrain will allow them.💠 We do not have many options, either, in the keeping of donkeys, which must be integrated with the keeping of other livestock in areas where labour is short, veterinary care nonexistent, and purchasable fodder unheard of.

What is obviously needed is a practical guide to donkeys, their use and their care, and it is hoped that what follows meets this need.💠 It is based on a dozen years of practical experience in resource-poor conditions, so it takes into account the need for simplicity in equipment-making and emphasizes the differences between donkeys and other livestock.💠 On the other hand, it assumes a fair knowledge of farming and husbandry on the part of the user, who is assumed to be ignorant only about donkeys.💠 In my experience, farmers do not like to be ignorant about anything for very long, and this was written to help them satisfy themselves about donkeys, as twelve years ago I myself needed to be satisfied - but found no help.

Training centres in my own part of Africa are already finding themselves 'donkey driven', to use a phrase employed by one in a neighbouring

country. ♦ Extension workers are asking for courses on and information about donkeys, and it is difficult for them to know where to turn. ♦ Many write to me. This book is designed to help, and also to save me repeating myself endlessly in letters ! ♦ Because it is aimed at practitioners and not academics, I have left out the many references I could have made to research papers, etc. ♦ The reading list I provide at the end, I hope, will satisfy those in search of substantive proof for many of the things that I say. ♦ Sometimes, of course, there has been no research to rely on, and my own experience and observations must serve. ♦ Workshopping with others has also taught me much about donkeys.

NOTE FOR THE SECOND EDITION

In the seven years since this book was first published, there has accumulated good evidence that the interest in donkeys is growing and not diminishing, and that this is not just a matter of my own bias. ♦ Meanwhile, also, I have learned a good deal more about donkeys as more of mine have been born, and even more, tragically, have died.

For various reasons, I made the move to South Africa, where at last I could get access to better communications ♦ notably my own computer,

and e-mail ♦ and better materials for donkey equipment in rural areas, which is why roundbar, firehose and Velcro now feature in this new edition.♦♦ It took two years, however, to get my donkeys back with me, and meanwhile three of them died.♦♦ Those that joined me eventually walked about 800 km, from the shores of the Zambezi on Lake Kariba to and along the Limpopo; the last 100 km into Zoutpansberg Mountains of the Limpopo Province of South Africa had to be by truck, to the terror of us all.♦ They survived the journey better than the accompanying humans, but adaptation to the new environment was a learning experience for all.♦♦ On the Zambezi I had regarded crocodiles as the greatest constraint to keeping donkeys; in the Zoutpansberg I learned that snakes are a greater one.♦ Nine months after their journey, two donkeys were dead, one was blind and two pregnancies had been lost.♦ Two years later, things are at last back to normal, but I now know from direct experience, just as I learned earlier that buying donkeys is not a simple matter, that moving donkeys is also fraught with problems.



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THE EFFECTS OF ADAPTATION. This is the same donkey, four years younger on the left. The right-hand photo was taken 18 months after a journey of 800 km (on foot) from a hot, dry tropical valley to cooler, wetter mountains. The first winter after arrival was a hard one, and all the donkeys had health problems. Another 18 months after the right-hand photo, and he began to look much more as he does on the left. (Manda)

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Many, many people have helped me in the preparation of this book. ♦ To the best of my knowledge, they are all still alive, except for my sister, Penny. ♦ The text of the first edition was finalized on her computer during the last few weeks of her life, while I tried to keep her



Donkeys moved from a hot, dry environment can have a hard time adjusting to one that is cold and wet, and sometimes also vice-versa. From left to right: Mulonga, Nzala, Tuliyande, Gologa, Tubone, Utalindi, Twasika and (in front, always the leader) Manda. This was their first experience of fog.

A NOTE ON SPELLING

Because British English is my mother tongue, in general I use the spellings that go with it. However, at a meeting of the South African Network of Animal Traction (SANAT) in November 2003 it was pointed out that confusion is created among those for whom English is a foreign language by the particular spellings of plough and draught, and it was recommended that the American forms be adopted. Since the donkey-owners for whom this book was written almost without exception regard English as a foreign language and many do not know it at all, as a current member of the SANAT steering Committee I feel obliged to use the American spellings for these two words at least. I

hope that not too many of my readers will feel offended by this inconsistency in spelling conventions.

DONKEY POWER

FACILITATION AND CONSULTANCY SERVICES

- **All the things your donkeys can do** ●
- **Problems to be solved with donkeys** ●
- **How to make equipment for donkeys** ●
 - **How to look after your donkeys** ●
 - **What your donkeys are worth** ●
- **How to earn money with your donkeys** ●

How to get money with your donkey



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