

BICYCLE EXPEDITIONS

Planning, equipping and undertaking long distance expeditions by bicycle

By Paul Vickers FRGS

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ABOUT THE AUTHOR

Paul Vickers is a design consultant who has travelled extensively in South East Asia, the Indian Subcontinent and China. In 1982-83 he travelled overland from Australia to Britain via the Far East using every mode of transport available. In 1986-88, having decided that the bicycle was the best possible way to go, he set out to cycle from London to Australia and New Zealand, a journey of 15,000 miles which took 19 months. He is presently working on a book about the journey.

In 1989 he organised and led the Trans Himalayan Bicycle Expedition and made a television film for the RGS/BBC TV Mick Burke Award. He has written several articles about independent travel and cycling, and has appeared on radio and television.

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1 **Bicycle Expedition Philosophy**

"Why by bicycle?" I am frequently asked by people with an expression of horror and amazement! After several years of extensive travelling in almost fifty countries and by every conceivable mode of transport I have become convinced that the bicycle is the best possible form of transport for the lightweight independent expedition.

The idea first occurred to me in the jungles of Central Sumatra as I crossed the equator on a pot-holed road in the middle of the monsoon. I was crammed into an antediluvian bus, my knees jammed under my chin, my head crashing against the luggage rack - there had to be a better way to travel through this part of the world!

Independence

The bicycle provides, above all, total independence. You determine your own route and timing whilst travelling can stop and start precisely at will. You are free from the restrictions of unreliable bus and train schedules. It enables you to discover and explore unknown areas off the beaten track and inaccessible to other vehicles.

Flexibility

It is an incredibly and uniquely flexible form of transport, enabling you to ride or to walk, to load the bike onto the back of a cart or truck, a boat or plane or even to lash it to the back of a camel. If necessary, when you can't ride it, you can shoulder it and carry it yourself. Normally the bicycle carries your baggage leaving you unencumbered and unlike walking there is no effort involved in going downhill, you can put your feet up and freewheel for about 33.3% of the time - on a 15,000 mile journey that is about 5,000 miles freewheeling!

Human contact

In terms of human contact - one of the principal reasons for travelling to remote regions - it cannot be beaten. Riding into a jungle village on the only form of transport that the undeveloped world knows creates an immediate rapport and an understanding that arriving in a motor vehicle can never do. On a bicycle you break down the barriers that other forms of transport throw up, and you are immediately open to contact which invariably leads to friendship and hospitality.

Understanding

Travelling by bicycle you travel at a pace that enables you to understand the country, its landforms and people through which you are travelling. You can see, smell and feel the terrain and climate changing. You are more in tune with the environment and therefore aware of what you are experiencing.

Maintenance and economics

Compared with all other mechanical forms of transport maintenance is minimal and very simple - something that becomes important when one is hundreds of miles from the nearest workshop. There is very little to go wrong on a bicycle and spares are easy to carry. There are none of the problems of fuel supply and availability and it is also the most economic form of transport with virtually no running costs once the expedition is under way.

Environmental impact

Environmentally speaking the bicycle cannot be faulted. It is driven by human energy, creates no pollution and makes the most minimal impact on the environment. As a modified version of the Sierra Club motto goes... "Take only memories - leave only tyre tracks".

Accessibility

Through mountains, tropical jungles and deserts, I have found there is almost nowhere you cannot get to on a bicycle. Four wheel drive vehicles and motorcycles become quickly bogged in mud and grounded on rocks and they require at least a single lane width track. A bicycle can get through almost anything even when a bridge consists of only a precariously balanced single log and a mountain track has been reduced to a few inches wide by a landslide or avalanche.

2 The Bicycle

Choosing the bicycle

The choice of bicycle depends on the type and length of the expedition being undertaken and the sort of terrain and road surfaces likely to be encountered. There has been a lot of high-tech development in bicycle design recently: lightweight alloys, aluminium and fibre glass frames, double-buttet tubing, Hyperglide gear shifting, Kevlar reinforced tyres and tubes, and eighteen to twenty one gears are not uncommon.

Obviously it is important to thoroughly research the market and familiarise oneself with the comparative specifications of different models and manufacturers. Always buy the best bicycle you can afford - it is your principal investment and a good bike will last tens, even hundreds, of thousands of miles.

Custom built frames equipped with a chainset and components of ones' choice can be assembled by those who know precisely what they want.

A considerable saving in expense and equipment weight can be made if the entire expedition team rides the same model of bicycle. A single tool kit will service all bikes and spare parts will be interchangeable.

Touring or mountain bikes?

I am frequently asked about the pros and cons of conventional touring bikes against mountain bikes or ATBs (all terrain bikes). Touring bikes are more lightweight, have a higher gear ratio, narrower road rims and tyres, and have dropped handle bars providing a variety of riding positions. By contrast, mountain bikes are incredibly tough and rugged, have a lower gear ratio, big knobbly tyres and wide wheel rims and a single but comfortable upright riding position.

For touring in the West where roads are generally well surfaced a touring bike will be ideal, being faster and with less rolling resistance than a mountain bike. For expeditions that will be extensively off-road or on dirt or rocky tracks and for journeys in the Indian subcontinent, Asia, Africa and Latin America, a mountain bike is ideal and at times essential. Off-road and even over rutted, pot-holed, badly maintained roads, conventional thin rims and tyres at times cannot cope. On all my expeditions beyond Europe I have used mountain bikes and never had a single buckled wheel. I have met the occasional cyclist on a touring bike stranded with a rim crumpled by appalling road surfaces and pot-holes.

3 Frames, components and technical specifications

The Frame

Bicycle frames have to be lightweight, strong and highly flexible. Manganese molybdenum steel is formed into Reynolds - or similar - double-buttet tubing which has a 120,000 psi strength, is thin and flexible in the tube centres, and thick and strong at the frame junctions. Frame sizes (measured down the length of seat tube from the cross bar to the bottom bracket spindle) come in 1" or 2" increments. Touring bike frames are typically from 19" to 24", mountain bikes from 16" to 22". Correct frame size is determined by taking your inside leg measurement and subtracting 9" for a touring bike frame size, or 11"-12" for a mountain bike frame. Check that your crotch can comfortably clear the top tube when standing on the ground. Minor adjustments to riding position can be made by raising or lowering the saddle and handlebars. Look for conventional swept frame forks that minimise vibration.

Braze-ons

Check the frame has adequate braze-on bosses for mounting your rear rack, front rack or low riders, mudguards and sufficient mountings for water bottle cages.

Gear ratios and chain sets

Racing, touring and mountain bikes are all equipped with different chainsets and gearing ratios. Usually 2 or 3 chainset sprockets are used to drive 5 to 7 rear sprockets giving a combination of 15 to 21 gears. These increasingly wide ranges of gears enable you to traverse almost any type of terrain imaginable. Racing chainset sprockets are in the region of 42-52 to a 13-21 rear, touring chainsets 28-38-48 to a 13-30 rear, and mountain bike chainsets 28-38-48 to a 12-28 rear. Mountain bike gear ratios are excellent off road but can sometimes be a bit under geared on a good road and with a tail wind. Try a few bikes with different gear ratios. Chainrings can be easily changed if needed.

Bottom bracket and headset bearings

This is what ensures the smooth running of your machine. Bearings last between 5,000-10,000 miles, but under gruelling conditions water and grit can get into your bottom bracket and headsets can be shaken loose. In the event - which you will soon be aware of - replace worn bearings with new ones packed in clean grease.

Wheels, tyres and tubes

Wide alloy rims are light and strong. In over 15,000 miles of on and off road riding I have never buckled one, and between three of us we broke only half a dozen spokes.

Tyres should be selected for terrain. Many mountain bikes are equipped with unnecessarily knobby tyres which increase rolling resistance on sealed roads. A tyre that combines a road ridge with good off road grip is best unless the expedition is going to be predominantly off road. Kevlar reinforced tyres are puncture resistant and considerably reduce punctures under most conditions. Tyres last between 3,000-5,000 miles and of course take much more of a battering on rough rocky tracks under extremely hot conditions. In the North Western Frontier Province with a disintegrating rear tyre, a local cobbler repaired it with a hand sewn goatskin patch that lasted another 1,000 miles without any problem.

Airseal latex filled tubes are another new development that increase puncture resistance.

Handlebars

Touring bikes are usually equipped with drop bars offering numerous different grip positions which reduce stiffness when riding, the dropped position being most useful to reduce wind resistance and improve streamlining when riding against a head wind. Flat bars (usually fitted to mountain bikes) provide a very firm control, which is essential over rough terrain, and easy gear changing without having to move the hands from the bars. The upright riding position is comfortable and provides good vision. I have found flat bars perfect on long expeditions but drop bars can easily be fitted to a mountain bike if you prefer. All bars

should be well padded with foam grips to reduce vibration and shock which can cause the hands and wrists to go numb over long periods.

Saddles

You will be sitting in the saddle for many hours a day - and maybe for many weeks or months - so selection of an appropriate saddle is very important. The saddle should give adequate support without interfering with your riding position. Sprung, unsprung, leather, synthetic and silicon saddles are available in male and female anatomic designs. In tropical conditions the saddle will be frequently wet from perspiration so quick drying materials are important. On the UK to Australia Expedition we used Brookes B66 sprung leather touring saddles which were good but took almost a month to break in. On the Trans-Himalaya Expedition, we used synthetic saddles with hydro elastic support and lycra covers which were immediately comfortable and hard wearing.

Chains

The drive mechanism needs to be kept clean and well oiled to prolong its life and the life of the chainset and rear sprocket. Special attention is needed in sandy and muddy conditions where chains become quickly clogged. A good chain lasts approximately 10,000 miles.

Brakes

Cantilevered centre-pull brakes are now fitted on almost all mountain and touring bikes. They provide firm, powerful stopping control.

Mudguards

Not usually fitted on mountain bikes, mudguards are nevertheless essential in wet, muddy and snowy conditions.

Toeclips

Toeclips are an invaluable aid in securing your feet firmly on the pedals and as an aid on the upward stage of the pedal revolution. Lightweight, virtually indestructible ones are made of high density plastic.

Bottle Cages

Two, three or even more lightweight aluminium or high density plastic cages will be needed for most expeditions and can be mounted onto all the angled frame tubes.

Bottles

Bottles should be large capacity three-quarter litre ones. In extremely hot conditions extra bottles can be carried in pannier pockets or small jerrycans carried in the front low rider panniers. A fabric bottle cover - or spare pair of socks - makes an effective insulator and when wet will keep your water cool in scorching conditions using, the evaporative cooling principal.

Pumps

Make sure you have several pumps between you; they are one of your most essential pieces of equipment and are the item most likely to be stolen or lost.

4 Racks, Panniers and Load Carrying

Racks

Racks are the basis of your loadcarrying capability and should be the best available as carrying a full expedition load they will take a brutal pounding over thousands of rides of rough roads.

Aluminium manganese alloy racks are extremely strong, light and rigid. They should be bolted with self locking nuts to braze-ons on the bike frame. Rack mountings and nuts need regular checking and tightening especially during the early stages of the expedition and over rocky terrain. Take spare rack nuts; they are the bolt you are likely to lose most of. Do not be tempted by cheaper inferior racks - it can be extremely difficult trying to find a skilled aluminium welder in the Hindu Kush!

There are a huge variety of rack designs available for touring and mountain bikes: front racks, low-riders - especially good for a low centre of gravity load distribution - and rear racks with or without a shelf platform.

Panniers

Panniers should be selected to provide the optimum load carrying capacity for the expedition in mind. There are numerous manufacturers, designs, capacities and materials available.

Traditional materials are canvas or cotton duck which are incredibly hard wearing, 100% waterproof but slightly heavier than modern synthetic materials. I have forded rivers with canvas panniers half submerged and left them out during monsoon storms to find everything totally dry inside when opened.

Synthetic bags are well designed, lightweight, usually with conveniently positioned zippered external pockets useful for tools, inner tubes and frequently needed items. They require tough plastic inners as they are not totally waterproof.

Pannier mountings

The pannier mounting system or clips will take a lot of hard use. Look for the most rugged clips, be sure panniers are securely attached to minimise vibration, and take spare clips, shock cords and adjustable nylon straps in case of emergencies.

I have found that after about 6,000 miles virtually all clips fail and break. On the Trans-Himalayan expedition with 20 kilos in the panniers two clips broke on the first day on rough potholed roads west of Katmandu - not a good start!

Pannier capacity

Pannier capacity, like a rucksack, is measured in litres. A combination sufficient to carry your needs can be worked out.

Rear panniers range from	40 - 45 litres a pair
Front panniers range from	15 - 35 litres a pair
Bar bags range from	7 - 10 litres
Giving total capacities of	62 - 90 litres

Additional items, lightweight tents and closed cell foam mats can be carried on the rear rack. Small items can be carried in handlebar pouches. Panniers especially designed for mountain bikes usually have surprisingly small capacities unsuitable for many expeditions.

Do not carry a rucksack when riding: it is extremely uncomfortable and tiring. A waist belt or "bum-bag" is a better alternative.

Some manufacturers produce a pannier that converts into a rucksack which although unsuitable for a long trek is useful as a day pack for short excursions away from the bike.

Weight distribution

It is important to distribute the load evenly around the bike, both front to rear and left to right sides. By positioning the load close to the wheel axles, front panniers, and best of all low riders, keep the centre of gravity low and give better control and handling. In hilly and mountainous country it is essential to distribute the weight between the front and rear to keep the front wheel down and prevent loss of control. I normally use 45 litre rear panniers, the top of the rear rack, 35 litre front low riders and a handle bar-bag which gives maximum distribution. In mountainous conditions and cold climates and where food, fuel and water must be carried this entire capacity will be required. In tropical climates I have managed to dispense with a considerable amount of equipment using only rear panniers and the bar-bag.

Equipment weight

A crucial factor in your expedition planning and successful operation is the amount of equipment carried. Travelling light is the key to success. Bicycle expeditions are famous for their fanatical approach to weight pruning: cutting the handles off tooth brushes, drilling holes in spanners, trimming the edges off maps, throwing away the pages of books as they are read (or even using them as loo paper) and frequently cutting toe-nails!

Equipment weight UK-Australia Expedition:

Europe	20 kilos
Indian Subcontinent and SE Asia	15 kilos
Australia and New Zealand	18 kilos

Equipment weight Trans Himalayan Expedition:

Nepal and India	20 kilos
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(All weights exclude food and water.)

A balance has to be struck between comfort and economy, essential and superfluous weight. The amount of equipment carried is primarily dependent on the type of expedition being undertaken, the climatic conditions to be experienced and the terrain to be traversed. On long expeditions this can fluctuate as your needs change. For example during the UK-Australia expedition, we had sleeping bags and tents from London to Istanbul and then again through Australia and New Zealand; in between, in the Indian subcontinent and Asia, we travelled lighter.

On the Trans Himalayan expedition we carried the best lightweight equipment possible, including tents and full cold weather gear. We also had two video cameras and a complete filming and sound recording outfit.

The ultra lightweight approach has been expounded by Nick and Richard Crane, who used just two small rear panniers each on their two month long "Journey to the Centre of the Earth".

Packing

All equipment should be packed in tough clear plastic bags to keep everything dry and separate, and to allow easy identification. The heaviest and least used items should be placed at the bottom inner side of the panniers. This usually means spare parts, infrequently needed tools and heavier clothing. Lighter and more frequently used items are put towards the top of the pannier. It is useful to have one pannier which contains your wash gear, night things and a change of clothes so you can grab just one bag at the end of a long hard day when you go to get cleaned up.

Outer pockets on the panniers are useful for tools, puncture repair kits and spare inner tubes as well as food or extra water bottles.

The bar-bag is the ideal place to keep valuable and important items like cameras, passports, travellers cheques and money. It is always within sight while riding, can be easily and quickly removed and carried on your shoulder when walking around.

Cameras and lenses need to be well padded in a solid foam block to prevent damage from vibration and shock on rough roads.

Handling

Familiarise yourself with the handling of the fully laden bike before departing: it is totally different from riding unladen and takes a bit of getting used to. Acceleration is much more sluggish; it is more difficult to stop and more unstable. A practice run of several days with all gear before departing will help shake down and sort out any problems. It will also help you to prune a few more kilos off your weight.

5 Clothing and Equipment

This is a fairly exhaustive list of clothing and equipment refined over numerous expeditions under all climatic extremes. Always take the minimum clothing and equipment you can survive with. It is better to buy extra items when you find you need them than to carry something hundreds of miles just in case you might need it one day. Likewise when you have finished with something you can give it away or send it home rather than carrying it on.

Equipment and Clothing used on UK-Australia Bicycle Expedition:

<i>Equipment list:</i>	<i>Clothing list:</i>
silk sleeping bag liner	2 short sleeve/"T" shirts
sleeping bag *	1-2 long sleeve shirts
closed cell foam mat	1 chamois lined cycling shorts
lightweight tent *	1 strong cotton shorts
survival blanket	1 long trousers
wash kit	2 cotton underwear
medical kit	2-3 cotton socks
journal	1 lightweight/Goretex jacket
writing materials, pens	1 cotton sarong (used as towel etc)
address list	2 handkerchiefs/neckerchiefs
maps, guide books	1 lightweight trekking shoes
cameras, lenses	1 pair flip-flops
film	1 hat with brim
compass	1 sweater *
Swiss army knife	1 cycling gloves
spoon	1 swim wear
loo paper	1 money belt
spare glasses/sun-glasses	
clothes line	
soap powder	
mosquito net	
padlock and cable lock	
nylon straps and shock cords	
matches and candles	

* Items used in Europe, Australia and New Zealand only.

Equipment and clothing used on Trans Himalayan expedition

Equipment list:	Clothing list
glacier glasses/snow goggles	1 thermal underwear
spare glasses	1 cotton socks
maglight torch	1 woollen socks
down sleeping bag	2 underwear
silk sleeping bag liner	1 thermal inner gloves
closed cell foam mat	1 Goretex pile lined gloves
lightweight 2 person tent	1 lightweight trekking shoes
multi-fuel stove	1 long sleeve shirt
cooking pan	2 "T" shirts
plastic bowl and lid and spoon	1 shorts
Swiss army knife	1 long trousers
wash kit	1 pile lined jacket
medical kit	1 down jacket
matches/lighter	1 Goretex jacket
survival blanket	1 Goretex overtrousers
loo paper	1 polypropylene balaclava
fuel jerry can	2 handkerchiefs/neckerchiefs
water jerry can	1 silk headscarf
dehydrated foods	1 sarong (towel)
vitamin supplements	1 chamois cycling shorts
cameras, lenses, filters	1 panama hat
video cameras and equipment	1 cycling gloves
spare batteries, lens wipes	1 money belt
maps, guide books	1 watch (for time and as compass)
journal, pens	
compass	
address list	
presents	
nylon straps and shock cords	
elasticated clothes line	
soap powder	
cable lock	

Notes on clothing and equipment lists

- * Keep one complete set of clothes, including long trousers as your dry change to put on at the end of the day.
- * If your riding clothes are still wet in the morning, do not be tempted to put on your only dry change as you will be bound to get wet and dirty and have nothing dry left. It is better to set off in a wet set and soon warm up in it than have nothing in reserve.
- * Long sleeve shirts and trousers can be essential, not only in the cold but as protection from strong burning sun.
- * Chamois lined shorts take a long time to dry, so ordinary cotton shorts are also useful.
- * A sarong is much better than a towel which never dries and soon starts to rot. It can be used as a sarong, scarf, turban, towel, bedsheet and to carry things in.
- * Lightweight trekking shoes can be used for walking, cycling and trekking. You cannot walk far in cycling shoes.
- * Flip flops are a useful change and prevent hook worm when washing in public places.
- * Thermal underwear that wicks away moisture is good for cold weather riding.

- * Glacier glasses are essential protection against snow blindness and goggles against sandstorms in deserts.
- * Above 13,000 in the Himalayas we wore thermal underwear, pile lined tops, down jackets, Goretex jackets and overtrousers against the sub-zero temperatures.
- * Wet clothes can be dried under the hood of your panniers in hot sun.

ADDITIONAL EQUIPMENT FOR CAMPING

Tents

Lightweight one and two man tents weighting between 1 and 3 kilograms can be carried on a bicycle rear rack. Look for lightweight materials and easy pitching designs. Commodious front porches are useful for storing your panniers in.

On the Trans Himalayan Expedition we used North Face Westwind tents which performed ideally under normal conditions as well as on rock and in snow. Being a tunnel tent with hooped poles, it provided maximum headroom and was also quick and easy to pitch and strike.

Sleeping bags

Down sleeping bags are best for bicycle expeditions being both lighter and less bulky than synthetics. Select a bag suitable for the prevailing climatic conditions to be experienced; a 1 or 2 season bag for Europe, a 2 or 3 season bag for mountains and winters where temperatures can drop below freezing at night. In the tropics a sleeping bag inner is quite adequate.

Stove

Lightweight stoves like the Mountaineers MSR Whisperlite are ideal for bicycle expeditions. If fuel supply is uncertain get a multi-fuel stove that can burn almost anything. In many parts of the world a stove is unnecessary due to the availability of local food in markets and villages.

CAMERAS, SOUND RECORDING EQUIPMENT AND FILM

Cameras

35 mm SLR cameras and lenses will undoubtedly be carried. I use manual 35 mm cameras there being less delicate gadgetry to go wrong in them. In 15,000 miles only one of my Olympus OM1 bodies has ever jammed. Even if a light meter is damaged or a battery is flat you can still continue to take pictures with a manual camera.

A couple of zoom lenses, 35-70 mm and 75-210 mm plus a wide angle lens will cover most subjects and conditions. All lenses need daylight or UV filters and at high altitude polarising filters work well.

Take spare batteries, lens cleaning fluid and cloths. Cameras need to be well protected against vibration, shock and dust. Pack them in a solid foam block cut to shape. The bar bag is a good place to keep cameras and lenses always close at hand.

35mm automatic pocket cameras are useful for those quick, candid shots and can be fired without focussing or metering. A flash may be useful for interiors and poor lighting, and a small tripod for long exposures or self-timed pictures, although you can often find a convenient rock to balance your camera on.

Film

Take as much as you can from the UK, since film is more expensive in virtually all other countries. It is difficult to advise how much to take: a professional photographer will shoot a dozen rolls a day. I find that between one and two rolls a week depending on the length of the expedition is about sufficient. Over a year that works out at almost 2,000 pictures. I shoot almost exclusively colour transparencies which have superb colour rendition and can also be used for illustrated talks.

Black and white is useful for newspaper reproduction and beautiful in the hands of an experienced black and white photographer.

I have carried film through dramatic temperature changes from deserts to glaciers without any ill-effect to the film stock. Do keep it dry and dust free in plastic canisters and plastic bags and pack it in the middle of your equipment to insulate it as much as possible.

Only very fast films - around 400 ASA - will be affected by airport security X rays.

Sound recording equipment

Another fascinating way to document your expedition is by sound recording. Local music, dialogue, team discussions and jungle sounds as well as a spoken diary are very evocative and atmospheric. The Sony Walkman Professional recorder which allows for stereo recording with recording level monitoring is perfect, easily portable and can be of radio broadcast standard. Spare batteries, tapes and maybe a microphone are essential.

Video film cameras and equipment

In the hands of an experienced and committed film maker/cameraman or crew, this can result in a superb documentary of the expedition and can be a very rewarding thing to do. However it involves a lot of extra work to make a good film. Bear in mind the amount of time it takes to prepare, set up and shoot good film sequences, that you need the support of your entire expedition team, that it is often laborious work and that if you and your bicycles are not pulling enough of a crowd already that the production of a video camera in remote areas is guaranteed to produce mob scenes!

Having said all that it is well worth the effort. On the Trans Himalayan Expedition we made a television film for the Royal Geographical Society/BBC TV Mick Burke Award. We carried two video 8 camcorders with standard long and wide angle lenses, three different microphones, meters of cables and leads, headphones, video film, 5 rechargeable power packs, a recharger unit, a back up solid state battery unit and batteries, and a solid but reasonably lightweight tripod with oil filled head. Total weight of video equipment was 11.5 kgs. It was a lot of extra gear to drag over the Himalayas and it was often a long way to a power source for recharging but it was well worth it.

6 Tools and spare parts

Once you have left Western Europe or wherever you equip your expedition, there will be virtually no spare parts available that will fit a sophisticated western bicycle equipped with the latest components. You must therefore reckon to be self-sufficient for spares and maintenance throughout your expedition.

Tools and spare parts used on UK-Australia Bicycle Expedition

<i>Tools</i>	<i>Spare parts</i>
large adjustable spanner	1 spare tyre each
no. 6, 7, 8, 10 spanners	2 spare inner tubes each
Allen keys	1 front derailleur
tyre levers	1 rear derailleur
puncture repair kits	1 chain
screwdrivers (all on Swiss Army Knife)	1 rear sprocket cluster
miniature pliers/wire cutters	1 wheel axle rear
freewheel spanner	3 rear brake cables
chain link extractor	3 rear gear cables
bottom bracket spanner	brake blocks
core spanners	bearings
miniature oil can	cantilever brake spans
spoke key	spare rack nuts and bolts
roll of tape	12 spokes (taped to frame)
high pressure pump	

Tools and spare parts used on Trans Himalaya Expedition

large adjustable spanner	1 spare tyre each
no. 8, 10 spanners	2 spare inner tubes each
Allen keys	3 rear brake cables
plastic tyre levers	3 rear gear cables
puncture repair kits	cantilever brake spans
screwdrivers (on Swiss army knife)	brake blocks
miniature pliers/wire cutters	spare rack nuts and bolts
chain link extractor	6 spare spokes each (taped to frame)
plastic spoke key	
cloth tape	
shoulder carrying strap	
high pressure pump	
1 tube of grease	

Notes on tools and spare parts list

- * A lot of spare parts were carried on the UK-Australia Expedition which lasted 19 months; by contrast the Trans Himalayan Expedition of under two months required considerably less equipment, little being likely to go wrong or wear out in that time.

- * Each member of the team should be equipped to at least mend a puncture in case of being separated or alone when punctured.
- * A chain link extractor is essential in case of a broken chain.
- * A couple of pumps are invaluable in case of loss, theft or even explosion which has happened.
- * A complete rear, and to a less extent front, derailleur might be needed in the event of being smashed on very rocky ground, but it is unlikely.
- * Rear brake and gear cables can be cut down to use as front ones.
- * Spokes are taped to the seat column to prevent them from getting bent.
- * To save time in the event of a puncture, insert spare inner tube and patch the punctured one at a convenient stop, or at the end of the day.
- * Remember that nomadic tribesmen and people in the Third World are generally incredibly resourceful with a bit of bent wire - so don't worry!

7 Medical and Survival

The expedition medical kit is essential in case of accident or illness and also a very good insurance policy. I have carried a reasonably compact but comprehensive kit on several expeditions and luckily have rarely needed more than the Metronidazole courses (for amoebic dysentery) and the support bandages (for sprained knees).

Medical kit

Puritabs (for water purification)

iodine (for water purification or an antiseptic); being liquid this is inconvenient

antiseptic cream

plasters and sterilised dressings (various sizes)

knee support bandage

crepe bandage

Metronidazole or Flagyl (for amoebic dysentery)

Immodium (for diarrhoea)

codeine (for diarrhoea or general pain-killer)

Dystalgic (a pain-killer for bites and stings)

syringes and needles

artificial stitches (skin closures) for large wounds

Diamox (for altitude sickness)

sun cream

lipsalve

vitamin supplement tablets

malaria tablets (in malaria zones)

paracetamol or aspirin

Tiger balm (the Far Eastern cure-all)

Septin Forte (a broad based antibiotic, use with care)

small roll elastoplast

rehydration sachets (Rehidrat) for serious dehydration.

Most medicines come in heavy glass bottles: decant all drugs into small plastic film canisters, which are waterproof and airtight. Pack the tablets with a piece of cotton wool to prevent vibration reducing them to powder. Label canisters and cover label with clear tape to prevent it rubbing away.

Cyclists' medical complaints

Your bottom and crotch are your most sensitive areas in long distance cycling. Long periods in the saddle over rough jolting ground particularly in hot or tropical climates will result in permanently wet shorts or underwear and can lead to unpleasant rashes around the crotch.

Frequent and thorough washing of you and your shorts is essential. As chamois shorts can take a long time to dry take two pairs or a pair of cotton shorts as a change. A small flask of talcum powder is useful.

Vibration

Vibration through the handlebars can lead to numbness in the fingers and wrists, even to temporary loss of the use of some fingers. Foam padded handlebar grips - as opposed to cloth tape - helps as do well padded leather cycling gloves. Gloves also provide a better grip in hot sweaty conditions and invaluable protection if you come off.

Dehydration

Dehydration is probably the biggest danger to the cycling expedition and must not be underestimated as it can be fatal. When riding in hot and dry, or hot and humid conditions, you sweat an enormous amount and this may not be apparent as the sweat evaporates off, leaving you feeling dry. Although one litre of water is the healthy daily recommended intake at home, you may need up to six or even nine litres a day in extremely

hot conditions. Altitude and winds compound this and in the Himalayas in 40³C we needed nine litres a head a day and passed virtually none.

Above all keep up your fluid intake at all times, and if dehydrated take extra sugar and salt. Sugar in tea, salt with food. In severe cases take rehydration sachets in solution. Finally, always wear a hat with a broad brim to protect the head from the powerful rays of the sun.

Rabies

This is the other danger particularly relevant to cyclists. In Europe, but even more so east of Istanbul and throughout Asia, many dogs and other animals carry rabies, which may not be visible and a lot of dogs seem to be driven mad by the sound or sight of a passing bicycle and will attack usually going for your furiously peddling legs.

Get inoculated against rabies before you go and if bitten seek medical advice. Prevention is better than cure: if you think you can out-pace an attacking dog, do, but if you think it is gaining on you, it is better to stop, put your bike between the dog and yourself and discourage him with a few rocks or a hard blow with your bike pump.

Diarrhoea and dysentery

These are usually caused by polluted water and are very much par for the course and should not cause panic. Diarrhoea usually clears up by itself in several days but if in need of blocking up, codeine phosphate, Immodium or Lomotil will do the job. Dysentery recognisable by blood and/or mucus in your stools should be treated by a doctor but in remote areas Metronidazole or Flagyl should be taken. Consult your doctor beforehand and you can be prescribed the appropriate drug for the region you will be visiting.

Water purification

All water should be boiled or purified with chlorine based Puritabs or Iodine solution. This is essential to break down the amoebic cysts that cause dysentery etc. One Puritab will conveniently purify one litre of water in ten minutes. Work out approximately how many litres you will need to purify a day to determine how many tablets you need (they come in boxes of 48 tablets).

8 Fitness and Training

A reasonably high level of fitness and cycling experience is essential before starting your expedition. Walking, swimming and of course cycling are the best forms of exercise. Limbering up and stretching exercises before riding are a good idea. Gradually build up your cycling training with regular daily rides or commuting and then long weekend rides to get used to spending all day in the saddle. Practise day rides averaging around fifty miles a day - or whatever you estimate to do - with your full equipment load. Also practise camping: this will help you get the feel of a fully loaded bike, familiarise yourself with your equipment and also help sort out any initial problems or excess gear.

On long expeditions you will build up your fitness and daily distance over the first month. On the UK-Australia expedition we felt we were really in condition, mentally and physically by the time we reached Istanbul.

On shorter expeditions when flying straight into difficult terrain and climatic conditions, a much higher level of fitness is required and illness is more likely to strike due to lack of acclimatisation time.

9 Distances and Route Planning

"How far do you go a day?" is a frequently asked question. The answer is dependent on many factors: terrain, climate, altitude, road surface, weight of equipment, availability of food and water, health and fitness, your attitude and state of mind.

Even on a laden bike, once acclimatised you can do 100 miles a day, but I would regard that as an exception rather than the rule. If your aim is to meet people, explore temples and markets and stop to film or take photographs as and when you wish, you will probably average around 50 miles a day.

In mountainous terrain on dirt roads and in extreme heat and cold your mileage will drop to about 30-40 miles a day. In ideal conditions in undulating country and with the benefit of a tail wind your average will be considerably increased.

Ill health, lack of food and water will lead to fatigue and low mileage, but in extremis I have ridden 65 miles through mountains in extreme heat on three biscuits and numerous cups of tea suffering from amoebic dysentery.

Head-winds

Surprisingly head-winds are worse than any mountain range and can literally stop you in your tracks. I have known it a struggle to get down a mountain because of the wind against one.

Rest days

Much like a working week, we found that on average on the UK-Australia Expedition five days riding to two days off was about the ratio we liked. Sometimes we rode every day for three or four weeks and then stopped for about a week; other times we would stop one day in every two or three. On shorter expeditions proportionally less rest days are needed.

During the UK-Australia Expedition we averaged exactly 50 miles a day over the year it took us to reach Australia. I would say this is a good average daily distance on which to calculate the time distance ratios for an expedition.

Route planning

In Europe and the West the most minor roads are to be preferred being quieter, more scenic and interesting, safer and usually in good condition. In Asia, Africa, Latin America and in the Third World there is often only one surfaced road, the alternative being dirt tracks which are often not even marked on maps. Even surfaced roads can often be in pretty poor condition and traffic, although frequently dangerous, is usually fairly light, except on the busiest major trade routes between main centres. Wherever trucks and jeeps go you will find periodical stops for water, tea and food supplies.

Once out of Europe be prepared always to give way to trucks and buses and even to take drastic avoidance action. There are stories of cyclists being intentionally pushed off the road by truck drivers. I have had to ride straight off the road and crash land in a rice paddy far below to avoid annihilation by three Indian trucks racing neck and neck, on a winding mountainous road. Never assume they will stop for you.

Perhaps surprisingly, undulating or hilly country is preferable to ride through than dead flat country. In the hills your view is constantly changing, there is always the fascination of discovering what lies around the next bend and you alternate hill climbs with freewheeling descents. On the plains your view is limited and hardly changes all day, sometimes you can see your day's objective when you start and it seems to creep towards you inch by inch. You ride all day at the same pace and momentum and winds are more prevalent.

Off-road riding

Some of the most rewarding riding and experiences are to be had riding off-road and on dirt tracks. They can lead you to completely unvisited areas and even today, to villages where white people have never been seen. Invariably the reception and hospitality in these regions is enormous but one does of course become something of a phenomenon, with every action followed by several hundred pairs of fascinated eyes.

Off road riding can be hard work especially where the tracks are rocky, sandy or corrugated and navigation is only possible by compass and usually unreliable local advice; do not romanticise it but it is well worth the effort.

Food, water and fuel

When travelling in hot countries and especially in mountains deserts and off road it is vital to carry sufficient supplies of food water and possibly fuel to cover the distances between supply centres.

Water

Water is most important for survival but it is heavy and difficult to carry. The water bottles on your bike will hardly be sufficient for a day and even with an extra jerry can it is difficult to carry more than two days supply at a time. In the Australian outback we carried three three-quarter litre bottles and two additional two litre bottles a head, a total of six and a quarter litres - this was barely enough for one day and it had to be strictly rationed and meant we had to reach a water source at the end of each day.

In the Himalayas we needed nine litres a head a day and were totally dependent on finding springs and streams in the mountains. In remote arid areas you need to plan your route about known water sources or oasis. Small plastic jerry cans can be fitted into front low rider panniers.

Food

Locally produced high-energy foods or dehydrated mountaineering rations can be carried. The latter are light, pressurised and therefore not too bulky but are expensive. They usually only require the addition of boiling water to prepare. Local supplies, which are good for survival and energy but are bulkier and heavier, vary from region to region. They include dried fruits (apricots, raisins and dates) nuts, hard boiled eggs, biscuits and occasionally chocolate and fresh fruit. Rice, noodles and cous-cous tend to be staples but whatever food you use the diet still tends to become fairly monotonous. Instant soups, tea, coffee and hot chocolate are useful supplements.

Fuel

If you are carrying a stove - essential in cold climates and barren areas where you must cook for yourself - you must also carry sufficient fuel. Multifuel stoves are invaluable in areas where fuel supply is uncertain. Work out how much fuel you need to cook a day's meals and drinks for your team and allow for higher fuel consumption at altitudes over 10,000 feet.

Supply dumps

On long expeditions, carrying the diverse range of spare parts, equipment, clothing, maps and food, can be difficult and impractical. This can be reduced by arranging supply dumps in advance and having the necessary equipment sent out when and where you need it. Allow plenty of time as parcels can easily take over a month to arrive at their destination and there is always a risk that they will not arrive at all.

Make arrangements in advance for the receipt of your gear. Embassies will not accept parcels without prior agreement, which is not always forthcoming. American Express may hold parcels and mail for their clients. Post offices are usually reliable. Be prepared for time consuming collection arrangements and possible import duty charges.

During our Australia expedition we successfully had parcels containing spare tyres, inner tubes, maps, books and medicines sent out to various Poste Restante offices in Post Offices in India and Asia. Everything arrived but it required a lot of patience to collect. Our Delhi parcel took three full days!

10 Accommodation

Hotels and guesthouses

In less remote areas beyond Europe there are usually a plentiful supply of cheap local guesthouses and hotels. They generally have some form of adequate but rudimentary WC and washing facilities which will be very much appreciated at the end of the day.

Whenever possible take your bicycles into your room, otherwise it will, at the least be fiddled with all night and at the worst be ridden or gone in the morning.

Camping

You can be totally independent with a tent and can pitch camp in some incredibly beautiful locations beside rivers or on mountain passes. Look for a fresh water supply for drinking and washing. In doubtful territory or remote areas either camp in a village under the protection of the village chief or if in open country camp well away from people, erecting your tent out of sight just as it gets dark.

On occasions I have been forced to sleep out without any camping gear. A closed cell foam mat and sleeping bag inner can be sufficient but remember temperatures drop in the night, particularly in very hot areas such as deserts. Once in the Thar desert of Rajasthan we slept amidst the sand dunes beside our bicycles, clad in every piece of clothing we possessed and a survival blanket - it was bitterly cold although the days were scorching hot.

Staying with the locals

This is one of the great opportunities that a bicycle expedition offers. Arriving by bicycle you are open to local hospitality and may well be invited to stay with families or the village headman.

During our nineteen month long UK-Australia expedition we spent as much time staying with local people as we did in hotels or guesthouses, providing the most fascinating insight into the lives of the people whose countries we travelled through. Even when hospitality extended to food and drinks, our offers of payment were virtually always refused.

Other sources of accommodation

Even the most remote areas if they are inhabited will have temples, schools or police stations where accommodation may often be offered.

Police stations

Riding through Dacoit infested country in Northern India where villages had no accommodation for visitors we frequently stayed with the police in their well fortified police posts, sometimes in a dormitory, sometimes in a spare cell. We occasionally ate with the police chief who was usually the only person in the village who could speak English.

Temples

Temples, particularly Buddhist temples and monasteries, are happy to provide accommodation to the passing traveller: they are always peaceful places. A donation to the temple should be made.

Schools

Schools, especially in countries where English is taught, are often happy to provide somewhere for the night. Their generosity may sometimes be reciprocated in kind: in Burma we gave a talk in English about our journey which was translated sentence by sentence into Burmese by the school master for the benefit of the junior English class.

11 The Human Factor

Crowds

The bicycle provides the best possible means of transport for getting off the beaten track and meeting people: sometimes it can be a bit too good! As if you weren't enough of an attraction yourself, a laden, high-tech mountain bike never before seen by the local people will really draw the crowds. In India and China this can become quite exhausting and even slightly intimidating. In India I once had the tea house I was sitting in literally demolished by the pressure of the crowd.

More often it is just a little exasperating to be continually surrounded by a crowd whenever you stop. The rule is to keep calm and not let it annoy you. In a way there is a positive aspect to the presence of so many people. Having left my bicycle unattended in thousands of villages around the world I have never had anything stolen from it - the large fascinated crowd effectively prevents anyone from trying to take anything.

Theft

The presence of an interested crowd makes theft highly unlikely in villages and rural areas. In towns and cities greater care needs to be taken. Whenever possible take bikes into your room at night. If this is not possible try to lock them together right under your window.

The most likely items to be stolen are your essential pump and water bottles, so a team should carry several pumps just in case. If in doubt take them with you.

Carry all valuables, cameras, money and passport in your bar-bag which is always in sight when riding and can be conveniently slung over your shoulder when you dismount.

Stone throwing

This is a particularly unpleasant phenomenon that many bicycle tourers have experienced. Stone-throwing seems to start in Eastern Turkey and continue throughout Pakistan and into North Eastern parts of India. At the least it can be annoying at its worst it can be extremely dangerous and alarming. There seems to be little you can do about it. Obviously in Islamic Fundamentalist regions wearing long trousers and long sleeve shirts will reduce aggression but women will be especially at risk. When attacked keep together, ride confidently and determinedly and watch attackers carefully: eye contact is perhaps the best defence. We called out Islamic greetings which occasionally defused the situation. Do not stop and retaliate as this is asking for trouble and westerners have been stoned to death on occasions.

Hospitality and generosity

By contrast with the above section, your experiences will normally be 99% ones of enormous hospitality. Peoples' hearts go out to the bicycle rider, they can identify with your mode of transport, you represent no threat to them and you are usually in need of a drink or nourishment which is something they can offer you. It is interesting to note that it is the poorest and simplest who are usually the most generous. In mountain, jungle or desert villages you will often be offered accommodation and or food. Always offer to pay for this in cash, or with a gift - it is usually refused.

Presents

Always carry a supply of small presents which can be given to people you meet en route or as thanks for hospitality. These need only be small items - it's the thought that counts. Suitable, easily carried lightweight presents include picture postcards of Britain - a good talking point, photographs of yourself and family - always a source of delight, badges, flags, plastic lighters, needles and thread and cheap jewelry.

If you take a photograph of your hosts and say you will send them a copy, do remember to send it; it will mean an awful lot.

Remember you will be viewed very much as a representative of your country - almost a travelling diplomat - therefore behave accordingly, be polite and friendly, make an effort to reassure and please and you will be treated accordingly.

12 The Female Cycle Tourer

How safe is it for women cyclists?

I have met single female cycle tourers in Europe and know intrepid women who have cycled solo in China and Asia. Beyond Europe, the risks are the same but increase in remote areas and become increasingly dangerous in Muslim countries. In fundamentalist Muslim countries the lone female would be asking for trouble especially in the nomadic tribal areas of Kurdistan, Turkey, Pakistan and the Dacoit areas of Northern India. Having said that, Bettina Selby is living proof that it can be done. Myfanwy, who rode with me throughout South East Asia, experienced hassle whenever we became separated; when we were together there was never any problem.

For safety I would recommend travelling with a man or in an expedition with balanced male and female numbers. Always respect local dress standards. In Muslim countries women will reduce trouble wearing local clothes; the Shalwar Kameez baggy trousers and long flowing shirt are light and cool and easy to cycle in - you can wear your chamois lined shorts underneath. Even men in shorts and short sleeved shirts may be attacked or stoned. Women can also reduce attention by making themselves look like men with short haircuts, or if travelling with a man by wearing a wedding ring.

A woman's viewpoint by Myfanwy Vickers

I have done long distance cycle touring alone in Europe, and with men in Asia and elsewhere and think there is little to add which is applicable to women only. Nevertheless it is true to say that unwelcome attention increases dramatically when you are not in male company and that this can be a cause of distress or at least annoyance. In my experience the hazards are highest in Islamic countries. Discretion, and when necessary, projecting a "tough" image helps, as does the mobility of a bike - quick get aways from amorous pursuers. Go alone if you are prepared to sustain vigilance and run the usual risks.

Women may find that with demanding exercise on a regular basis combined with dramatic changes of environment, diet etc. menstruation becomes irregular or ceases. This should not be a cause for concern - it is the body's natural defence and something of an advantage and everything should return to normal when conditions do the same.

The anatomical saddles designed for women are especially recommended, make and style being a matter of personal choice. A capacious tent-like dress can serve a multitude of purposes, it can ensure a little privacy when under the scrutiny of a hundred pairs of eyes and makes a nice change of clothes.

13 Cycling in mountains, cold climates, jungles and deserts

Mountains and cold climates

Equipment for expeditions in mountains and extensive cold regions must be specially considered, you need to be equipped for both heat and cold as your body temperature and climatic conditions can change dramatically at high altitudes from one extreme to the other.

On the Trans Himalayan bicycle expedition cold and wet weather equipment for use between 10,000 and 13,000 feet had to be carried. This involved a layer system additional to normal bicycle expedition clothing, consisting of:

- thermal underwear
- pile lined jackets
- down jackets
- Goretex waterproof jackets
- Goretex overtrousers
- thermal mitts
- Goretex pile lined mountaineering gloves
- thermal balaclavas
- glacier glasses

Camping equipment included:

- mountaineering tunnel tents
- four season down sleeping bags
- silk inner sheets
- multifuel lightweight stove
- fuel
- food provisions

For full details of equipment see chapter 5.

This all represents a lot of extra equipment to carry in mountainous terrain, but it is absolutely essential to be properly equipped for the altitude. Bikes will need mud guards against mud, slush, water and snow. An even distribution of the load, front to rear, is essential on very steep inclines. For extensive journeys on ice and snow covered roads the bicycles equivalent of chains - rubber tyres with steel studs are invaluable. Bear in mind that descending steep winding mountain roads in icy or wet conditions is extremely dangerous; hands become quickly numbed so that brakes cannot be operated. Take frequent breaks to restore circulation, and remember that the wind chill factor is multiplied when riding.

Tropical jungles

Tropical expeditions can be much more lightweight than temperate or cold climate expeditions, clothing and equipment being kept to a minimum.

Monsoons

A waterproof is required against monsoon storms, but as storms are so powerful and usually short-lived, the best solution is to get under cover and wait them out.

Panniers must be adequately waterproofed and the contents kept in plastic bags.

River crossings

In tropical regions there will be numerous river crossings often without bridges. On a laden bike you can usually ford a river through two feet of water in low gear but assess the strength of the current and the river bed material before hand, and ride at a diagonal with the current. Alternatively ford the river carrying your panniers and then your bike. If the river is fast moving or in flood a rope is essential for safe crossings with gear and equipment.

Plastic bags over your feet with elastic bands at the ankles can do wonders for keeping feet dry in river crossings and heavy rain.

From trial and error I have found the best way to cross suspension bridges is to boldly ride straight across without stopping or faltering - this minimises the swaying and swinging motion. Check beforehand that planks and cables are not missing. Some rivers can only be crossed in a dog box slung beneath a steel cable - this is a fairly hair-raising technique and hard work as one must often make two journeys for the bike and panniers.

Deserts

Desert expeditions require some special planning. The prime factor is water availability and supply, extra jerry cans may need to be carried, a jerry-can that snugly fits in a front low rider pannier is a good way of carrying it.

Crossing the Australian outback of the Northern Territory, we carried six and a quarter litres a head, which was just enough when rationed to reach a water supply at the end of each day. The daily range to water supplies averaged about 70 miles. Crossing the Thar desert of Rajasthan, India we relied on refilling and purifying water bottles at nomad camps and villages, but suffered dehydration from the total lack of shade. In the Himalayas in 40°C we needed nine litres of water a head a day.

Be sure of your water supply points and carry more than enough in case of accidents or emergencies. If possible warn people of your intentions so that if you don't appear someone is aware of it.

Collapsible jerry cans are useful to prevent water slopping around when half full.

A turban or Arab style head-dress is useful to protect your head from the heat, reduce sweating and evaporation, and as protection from dust and sandstorms. Goggles are essential in sandstorms.

14 Long Distance Bicycle Expeditions

Case Studies

The UK-Australia Hospice Bicycle Expedition 1986-1987

Distance	15,000 miles
Duration	19 months
Route	UK, France, Germany, Austria, Hungary, Yugoslavia, Romania, Bulgaria, Greece, Turkey, Pakistan, India, Nepal, Bangladesh, Burma, Thailand, Indonesia, Australia, New Zealand, Hawaiian Islands, USA, UK.
Dates	Departure: June 1986 for the European summer and September/October arrival in the Pakistan/Indian subcontinent. We reached Darwin, Australia one year after departure in June 1987 and returned to London at the end of December 1987.
Daily distance	Average over whole route 50 miles per riding day
Bicycles	Dawes Ranger Mountain bikes
Chainset	Suntour Mountech 26-36-46
Freewheel	Suntour 13-28
Panniers	Carradice Super C large rear panniers, low riders and bar bag.
Wheels	Weinmann 26 x 1.75 with stainless steel spokes. Rims never buckled, only half a dozen spokes broken.
Tyres	Seven tyres worn out over journey per bicycle.
Punctures	Almost 100 punctures between the three bikes.
Maintenance	All brake and gear cables broken and replaced. Headset and bottom bracket bearings replaced. Chains and freewheels replaced. Headsets continually working loose was a major problem due to rough road surfaces. Rear racks repeatedly broken and re-welded.
Cost	The entire 19 month journey cost us between £3,000 - £4,000 a head from departure (excluding initial costs of equipping the expedition).

The Trans Himalayan Bicycle Expedition 1989

Distance	500 miles
Duration	6 weeks
Route	Katmandu, Nepal via western Nepal to India, Uttar Pradesh and Himachal Pradesh to Kulu Valley and Rohtang Pass.
Daily distance	40 miles per riding day
Max altitude	13,000 feet
Bicycles	Madison Ridgeback 603 competition mountain bikes
Chainset	Shimano Deore 11 Biopace 28-38-48
Freewheel	Shimano Hyperglide 12-28
Panniers	Karrimor Korniche 45 litre rear, 30 litre front and bar bag.
Wheels	Araya 25 x 1.50 with stainless spokes. No spokes were broken.
Tyres	Richley force 2.0
Tubes	Latex airseal
Punctures	One only
Maintenance	Minimal cleaning/oiling routine, checking and tightening rack nuts and tightening one headset.
Cost	Flight £350, expedition running costs £350, total £700 (excluding initial costs of equipping the expedition).

15 Maps

Always get your maps before leaving. The best maps of the whole world can be found in the UK, Europe and America; often once you reach a country the best available locally will be in an old school atlas.

Small scale, detailed maps which show relief by contours or shading are essential for bicycle travel. The Bartholomew's World Travel Series 1:4,000,000 will give you an accurate overview of your route. Relief is marked in colour. In many parts of the third and developing world they will mark every tar-macadam road and even principal dirt roads.

Nelles Verlag of Munich, produce a good series of 1:1,500,000 maps covering all of the Indian subcontinent and South East Asia. Relief is shown by shading. More detailed maps can be consulted at the Royal Geographical Society's Map Room by arrangement or can be ordered and purchased through Stanfords, the map, chart and book shop (addresses in Chapter 20).

In Europe there are no shortage of highly detailed maps including Michelin 1:200,000 Institut Geographique Nationale 1:100,000 which cover the whole of France, Touring Club Italiano 1:200,000 covering all Italy. In the UK the Ordnance Survey covers the whole country at 1:50,000. In remote areas not yet mapped in great detail, satellite photographs can be extremely useful.

Military maps can sometimes be acquired from government departments. Care has to be taken in politically volatile areas and near sensitive borders where highly detailed maps can be interpreted by over zealous border guards as evidence of spying!

Carry maps in sealed plastic bags and use in a clear plastic map case to protect them in wet conditions. A compass is essential when navigating off road and following tracks that may not be shown on maps.

Check information locally as maps quickly become outdated, bridges collapse and border roads close.

16 Passports and Paperwork

Make sure your passport is valid for at least a year and that you have sufficient space for the visas you will need.

Procuring visas is usually no problem, just time consuming and expensive. On long expeditions get your visas as you go along as they are only valid for use within a few months of issue. Allow at least one working day to collect most visas and carry a supply of passport photos. A photocopy of your passport carried somewhere separate from the passport can be useful if it is lost or stolen.

Keep copies of insurance documents, travellers cheques and identification numbers of cameras and lenses separate from your valuables.

There is usually no extra paperwork involved in taking a bike although occasionally I have had it entered into my passport to prevent me selling it in some countries.

Medical certificates are only occasionally inspected. I always carry all my money with me in the form of travellers cheques, which if stolen will be replaced. Having money sent out causes endless delay and innumerable problems - often it never arrives. Keep your documents in a plastic bag for protection against the wet.

17 Transporting the bicycle

Flying the bike

Bicycles are usually carried free of charge on all international flights. To load the bike you may have to turn the handlebars, remove the pedals and deflate the tyres. Remember to keep your tools available for this. Some airlines provide cardboard protective cartons for bicycles.

On internal flights there is often a charge for the bicycle and on very small planes you may have to completely dismantle it just to get it through the luggage hatch.

Trains

Transporting a bike by train can be a lot of trouble in many parts of the world - it invariably involves extra ticketing, sometimes booking in advance and worst of all sometimes travelling on a different train from you. Anyone who has tried taking their bike on Indian trains will know that it is a nightmare.

Buses

By contrast with trains, buses are absolutely no problem: you just sling it onto the roof, lash it down well and keep an eye on your bags when the bus stops. Likewise you can easily transport it in the back of a truck or buffalo cart if need be.

Boats

Usually there is no extra charge for transporting your bike on boats, be they cross channel ferries or Thai fishing boats.

Other modes of transport

The bike offers the most flexible form of transport available: if the worst comes to the worst you could push it (I have never had to do so), and if you can't ride it you can carry it - strategically positioned foam pads on the cross bar and seat tube are a great help. When bogged in sand dunes in the Thar desert of Rajasthan you can even lash it on the back of a camel!

18 Costs and Economics

The cost of outfitting the expedition is the major expense and will usually far outweigh the running costs once you are under way. These initial costs are subject to numerous variables depending on type of expedition, duration and availability of existing equipment.

Major setting up and expedition outfitting costs

research, books and maps
 telephone, postage and travel
 publicity and sponsorship
 bicycles
 spares and tools
 clothing and equipment
 cameras and film
 medical kit
 inoculations
 visas
 tickets and flights
 insurance

Expedition running costs

Once the expedition is up and running costs are generally pretty low. Main costs are food and drink, followed by accommodation, dependent on whether you are camping or not. There will be some other costs for boats, flights, maintenance and personal expenses. For example in 1986-8 on the UK-Australia bicycle expedition we spent about £3,000 a head in the year it took us to reach Australia. This is approximately $\text{€}8.00$ per day and included a few flights: Istanbul-Karachi, Dacca-Rangoon-Bangkok, Denpasar-Darwin. In the entire 19 months we spent about £4,000 per head. Europe and America are more expensive areas to tour than Asia, Africa, Latin America and the third world, the low daily costs balancing out the initial expense of the flights needed to reach them.

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Expedition Planners' Handbook & Directory Nigel and Shane Winser (eds.) (EAC)

Mountain Bike Magic by Rob van der Plas (Bicycle Books San Francisco)*

Richard's Mountain Bike Book: The Mega Adventurers' Guide (Pan)

Richard's Bicycle Book Richard Ballantine (Pan)

The Bicycle Touring Manual by Rob van der Plas (Bicycle Books Inc, San Francisco)

The Cyclists Sourcebook: the essential directory (Front Page Creations, Newcastle upon Tyne)

The Tropical Traveller by John Hatt (Pan)

Manuals and technical guides published by Royal Geographical Society/Expedition Advisory Centre

Note: Any really good book shop has a wide selection of bicycle manuals and books for sale.

Magazines

Bicycle

Cycle Touring and Campaigning, Cyclists Touring Club

Cycle Industry

6a Kenton Park, Gosforth, NEWCASTLE UPON TYNE, Tyne and Wear, NE3 4NN

Tel: 0191 213 2058, Fax: : 0191 213 2052

Global Adventure Sports & Travel

Maze Media (2000) Ltd, 89 East Hill, COLCHESTER, Essex CO1 2QN

Tel: 01206 505920, Fax: 01206 505905

Email: duffy@globaladventuremag.com

Traveller, WEXAS International, 45- 49 Brompton Road, London, SW3 1DE

Tel: 0171 589 0500 Fax: 0171 581 1357, Website: <http://wexas.com/travel>.

Wanderlust, PO Box 1832, Windsor, Berks SL4 5YG

Tel: 01753 620 426, Fax: 01753 620 474

20 Useful addresses & websites

Adventure Cycling Association & Magazine

www.adv-cycling.org

Bicycle Association

Starley House, Eaton Road, Coventry, CV1 2FM Tel: 01203 553 838

is the national trade body for UK based manufacturers and importers of bicycles, components and accessories. Its members supply over 80% of all the cycling products available on the UK market. It works by providing a forum for the industry, lobbying government, developing technical standards, assisting exporters, monitoring the world-wide market.

Cyber Cyclery

www.cycling.org

Thousands of bicycle enthusiasts around the world use Cyber Cyclery every day to find a wide variety of biking related information, resources and services

Cyclists' Touring Club

www.ctc.org.uk

Cotterell House, 69 Meadrow, Godalming, Surrey GU7 3HS

Tel: 01483-417217, Fax: 01483-426994

email cycling@ctc.org.uk,

Services include country information sheets (covering Europe and much of Africa, the Americas, Asia and Australasia), travel and cycle insurance, and a comprehensive cycling bookshop.

Expedition Advisory Centre

www.rgs.org/eac

Royal Geographical Society (with The Institute of British Geographers)

1 Kensington Gore, London SW7 2AR

Tel +44 (0)20 7591 3030, Fax +44 (0)20 7591 3031

Email eac@rgs.org, Website www.rgs.org

L'ordre des Cols Dur, 37 Acacia Avenue, Hale, Altrincham, Cheshire WA15 8QY.

Club for those interested in cycling in European mountains.

Intrepid Trips, 15 Freefolk Priors, Freefolk, Nr Whitchurch, Hants RG28 7NJ (Tel/Fax: 01256-893432)

established by David Elliott, a world record holder for his 10,000km crossing of Africa, specialises in bicycle adventure travel. Tailor-made tours and expeditions, bike hire and sales.

Swallow Tandems, Vyrnwy Workshops, Lake Vyrnwy, Llanwddyn, Mid Wales SY10 ONA

Tel: 01691-73211) run tandem maintenance courses.

Round-the-World Cyclists Registry

PO Box 1065, Station A, Toronto, Ontario, Canada M5W 1G6

Stanfords Maps and Guidebooks

12-14 Long Acre, Covent Garden, London WC2E 9LP

Tel: 0207 836 1321, Fax: 0207 836-0189)

The Travel Bookshop

13-15 Blenheim Crescent, London W11 2EE

Tel: 0207 229 5260, Fax: 0207 243 1552)

Travel with your Bicycle (Touring Reports)

www.bikeaccess.net/touring_db.cfm