Camping and Equipment Guide for The Camper and The Four Wheel Drive Tourer

A guide to chosing and care of your camping equipment and for those that enjoy the outdoors and Four Wheel Drive touring

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Whenever you intend to go camping a certain amount of planning that has to be done so things go smoothly and domestic disputes don't occur. The following article was written to assist campers plan for getting out and about to enjoy the great out doors of Australia from my own experiences. I only hope you will enjoy your experiences of camping as my family continues to do.

There are three golden rules that must be followed when having a trip or holiday. These are to have (1) a good nights sleep, (2) eat well, and (3) dress according to the conditions. If you follow these three rules then a good time should be had by all.

Equipment

The equipment required for camping and care of it has been split up into sections, so that each section can be dealt with separately.

This guide has been separated under the following headings.

Section 1. **Kitchen Equipment**

Lets deal with the kitchen equipment first. You will have different requirements depending on your own tastes, the amount of comfort you wish to have and effort that you want to put into enjoying yourselves, also the amount of room that is available to carry the amount of selected equipment. Some of this equipment is essential and some is nice to have. You will have to assess what equipment you will take for the trip or camp you intend, but the list below is a guide. You may like to add to this with your own suggestions.

Kitchen Check List

- Awning for kitchen area complete (p,p & r)
- Bags to keep kitchen gear in
- Billies - ones that nest inside one another
- Billy hooks
- Bucket (s)
- Camp oven
- Can-opener
- Chairs
- Clothes pegs and line
- Colander (rice)
- Cups or mugs
- Cutting board
- Cutting or carving knife
- Detergent and disinfectant
- Draining Spoon
- Dust pan and brush
- Equipment bags for billies, frypans etc.
- Fire lighters
- Fly Veils
- Fold Up Toilet
- Food box with fitting lid
- Frypan
- Garbage bags and carry bags
- Grill - to go over open fire
- Jaffle Iron
- Knife fork & spoons
- Light - with gas bottle or spare fuel
- Matches
- Mittens - to handle hot billies etc.
- Mixing Bowl
- Plates- Bowls, Dinner plates etc.
- Portable Fridge or esky
- Portable sink stand
- Rubber gloves
- Scourer - Stainless or nylon type
- Screw on hanging hooks
- Set of plugs for sink
- Shower unit
- Stove - with gas bottle or spare fuel
- Stove stand
- String
- Table(s)
- Tea towels - two
- Toasting Fork
- Toilet Paper
- Tongs - Long
- Tripod
- Washing up bowl
- Washing up cloth & brush
- Water purification Tablets

Just remember the above list is only a guide and some of the equipment can be omitted or substituted with equipment from the kitchen at home. If you don't have an esky or fridge see your green grocer for one of the polystyrene boxes with lid that broccoli comes in. These are better than nothing and are usually at the right price, Free!

Section 2.**Vehicle Preparation**

When deciding to do a trip a certain amount of planing must be done to make the whole event more enjoyable. Pre- planing can be enjoyable as the trip by collecting information from tourist information centre, obtaining maps and finding out about the area and points of interest, history of the area and so on.

Preparation of your vehicle is also an important part of the trip, for with out a reliable vehicle a holiday could be spoilt. How often I have driven up the express way out of Sydney to see vehicle after vehicle loaded up with holiday equipment and the bonnet up. Why - because they didn't look under the bonnet before they left as part of their holiday preparation. It is not a bad idea to have your car serviced a week or so before and mention to the service centre that you intend to be going on a trip and to do a pre trip check. Most service centres will be only too happy to do this and point out items like break pads, fan belts, hoses or fuel filters that might need attention.

If you are taking a trailer or van, how long has it been since the wheel bearings were looked at. Not a hard job to do but a dry bearing can be a problem miles from the next town and will they have the part. It's a lot easier to do jobs like that at home before you leave. Those with boat trailers require more attention than box trailers or caravans because of the salt water. We have all driven up the expressway to see a trailer on the side of the road with the wheel off.

If a fridge is going to be used in the vehicle, then it is advisable to have a second battery fitted. If a second battery is not fitted then the installation of a voltage cut out can be fitted to isolate the fridge once the voltage drops to 11.5 volts. This leaves enough voltage in the battery to start the vehicle. By fitting a second battery the wiring is done in such a way using an isolation device, so that while driving, both batteries are charged but when the ignition is turned off it separates the two batteries. This means that only the secondary battery is used to run the fridge and lights etc. This will safe guard you from being stuck with a flat battery, as the main battery is only used to start and run the vehicle not the accessories.

Your vehicle dealer, 4-wheel drive speciality service centre or an auto electrician can do the fitting of the second battery and associated equipment. The battery type recommended for this usage is deep cycle type, as they are different to a cranking battery and designed to be constantly drained, powering things like the fridge, lights etc. and recharging slowly through the next day as you drive along. The cost of this set-up is not cheap being about $650, this being for the deep cycle battery, cradle to carry the battery, isolator and all wiring and installation. Cost can vary depending manufacture of vehicle and equipment chosen.

Section 3. **Bedding: Sleeping Bags**

There are some rules that come into force if you are going to enjoy yourself when you go camping and a most important one is to have a good nights sleep. If you have the wrong equipment you could finish up with one of the longest coldest nights you will ever remember. When I was a boy I was told," I go into the bush to enjoy myself, and a third of the time I spend in bed." The person who said this was Paddy Pallin and I would like to add to this quote, 'why not be comfortable'. The correct sleeping bag for the conditions that you could encounter is essential. The conditions can change dramatically from one day to the next to such an extent I have seen snow fall in January on Barrington Tops where we had 40oC only days before. There is a lot in choosing the right sleeping bag as there is a lot of designs available to chose from, from summer type bag to the depths of winter. Depending what sort of budget you're working on, this can come into consideration when choosing a sleeping bag. Just remember that you are not buying for the one off event but for say the next fifteen to twenty years, if its looked after (see note on how to look after your sleeping bag).

Some ***Synthetic*** type Sleeping Bags are bulkier compared to ***Down*** for the same temperature rating and are manufactured for a particular temperature rating, and as such to cater for all seasons in the year, one would have to have three sleeping bags. One for summer, one for winter, and another for in between, where as if you chose the correct down type sleeping bag of the box wall construction, you can have the temperature rating of the bag changed by re-distributing the down. This type of bag can be used for the middle of summer to the middle of winter. The better manufactured bags like the 'Roman' Flight range of down sleeping bags have the down scotch guarded, and this has the advantage of the down not absorbing moisture if the bag gets wet. It can then be rung out like a synthetic bag. There is a range of down type sleeping bags available with different quantities and mixtures of down to feather giving different temperature ratings and the prices vary accordingly.

It is better to get a good sleeping bag in the beginning than to buy the cheapie that just does not do the job, and then you have to go out and buy the one you should have purchased in the first place. When the cost is spread out over the years of happy times, it's not very much, but it seems a lot at the time of purchase.

For those wanting to purchase for his and her bags, a left and right or an over and under combination can be obtained depending on make and model. There are some points I would like to bring to notice at this stage. When two bags are joined together, in the summer with warmer conditions prevailing it is not a critical issue, but when Jack Frost comes round, then all heat generated must be retained, as heat loss can occur out the top of a double combination, as this cannot be closed up like a single bag. Some facts about the body; A normal adult person can generate enough heat to boil a pint (600mils) of water in an hour and when in a sleeping bag 80% of your body heat can be lost out through the head. If the sleeping bag does not have a hood the wearing of a beanie will assist in retaining body heat.

It is a necessity to place directly under the sleeping bag an insulating mat of some description. See section 4 on ***What to sleep on***.

Recommendation

For those wanting a recommendation, the Australian made Roman Flight 506 sleeping bag which comes with a hood, and is available in both left and right configuration, so as to make a double bed if required. It has a 1000g. of 70% down 30% fine feather. For those that require a generous size bag then this bag is also available in extra wide or extra

long or long & wide . This bag is rated for - 8 oC. and will cover you for all four seasons here in Australia.

Section 4. **What to sleep on**

The older you get the more creature comforts you require. With this in mind children will sleep on anything as long as they are warm. The main thing is to stop ground cold from coming up under you. There are a number of products on the market for putting your sleeping bag on, which will do this. The first is the thin foam camping mattresses which the bush walkers use. These are lightweight, do not give much comfort but stops the ground cold.

Secondly there is the air bed or li lo. Airbeds are OK in summer but come the cooler months they can be extremely cold. Just remember that they have to be blown up and if you are on a trip this can become a real chore inflating these every night. Some sort of insulation is required on top of an airbed if it is to be used in cooler conditions. This also goes also for stretchers. A blanket or one of the thin foam mattresses used for bushwalking is excellent for this purpose, placed on top of the air mattress or stretcher will stop the cold coming up from underneath.

Foam mattresses covered with a cotton cover can be also used but are very bulky and absorb moisture and are hard to get dry once this happens. They also compress over a period and do not retain their profile or insulation properties.

Therm-a rest of USA have a range of self inflating mattresses that will cater for all with their range, for the bushwalker, camper, and tourer. The bushwalkers look to the lighter models which are 1" or 1 1/2" thick being 4' or 3/4 length or 6' the full length models. They also do a deluxe model that is 2" thick . All these are 20" wide .

Another range of self inflating mattresses is distributed by DMH. The quality is comparable with Therm-a rest product and comes with a life time guarantee and have taken a fair share of the market since there arrival in October 1997 because the price advantage being cheaper for basically the same thing.

Therm-a-rest also market a range they call 'Camprest'. There are a number of products in this range. The standard Camprest is 2" thick while the Deluxe model is 2.5 inches thick with both 25 inches wide and 77 inches long.

DMH also have a 2" mattress of similar size called the Jumbo, and also a 4" mattress they call the Mega-Mat. They are all deceiving for their thickness as they are surprisingly comfortable. They roll up to be compact for storage on trips, they insulate, don't absorb moisture, non-slip and only the Therm-a rest Deluxe model comes with a storage bag with a repair kit where all DMH units come with these accessories, if an accident does occur.

With a coupling kit self-inflating mattresses can be joined together to make a double bed. There are other units on the market that have tried to copy the Therm-a-rest range of products but only DMH have come up with a comparable unit and with a price advantage and with the life time guarantee. As I stated before if you buy good equipment in the beginning it will stand by you, buy cheap and replace.

Storage of Self Inflating Mattresses

Therm-a-rest and DMH mattresses come with an instruction brochure which most purchasers do not read to their disadvantage. The instruction for storage of Self Inflating mattresses is to open the valve on the unit and store inflated. To store for an extended time rolled up is deleterious to the mattress and will extend the time that will be required for the mattress to inflate, and also the mattress will not inflate to it's full potential. The same thing applies to the storage sleeping bags. See the section on sleeping bags.

Section 5. **Accommodation**

Depending on the type of camping you intend to do, there is a number of different designs of tents available on the market ranging from the back packing light weight tents, larger dome tents, cabin style tents, and touring type tents. Each have a place in the market and I intend deal with each type, but it is up to you to make the decision as to your requirement. There is a number of things that make up a good tent. In a nylon tent there are a lot of cheap single skin tents available usually from department stores. Steer clear of this type of tent as these tents don't breath and as a result, condensation builds up in the tent.

A person will generate about 600 mils or a pint of water in the form of condensation either through their respiratory system or through perspiration during the course of an evening. Make sure the tent is a double skin tent or has plenty of ventilation. A double skin tent is one that has a fly over a breathable inner tent. The condensation can then escape and dissipate to the atmosphere.

Condensation is not such a problem with the family tents or touring tents as these have windows for better ventilation.

Back Packing Tents

These are a lightweight tent designed to be carried in a back pack by bush walkers. These do not have a lot of room, just enough room to sleep. These are usually one or two person tents with the weight being a big consideration, but a rule of thumb 1kg to 1.5kg per person is the usual thing. Tent consists of a Nylon fly with a breathable inner, poly floor with a fibre glass or alloy pole system. There are also the older conventional style of tent being the "A" frame type. These have just about disappeared off the market and been replaced by the dome style tent but there is a lot out there still being used. Some of the expedition "A" frame type tents are still available from manufactures like Vango and Eureka, but with high a price tag. There are various designs available to fill consumers requirements in the light weight hike tents and usually the price indicates the quality of the product.

Family Dome Tents

Dome type tents have gained in popularity over the last couple of years with the larger domes available being considered by families. Because of their compact nature, campers that have a limited space in their vehicle can take a three metre by three metre tent with a height of 1.83 metre in height that weighs only about 10kg and takes up only a portion of the space that a cabin style tent would occupy. They are usually easy to erect and self-standing, manufactured mainly of nylon with a poly floor and supported by fibreglass pole system. When looking at this type of tent, remember it is only a lightweight construction, and care needs to be observed when using, and is not recommended for consistent use on a long trip. Another type of tent could be more suitable, so chose carefully.

Cabin Style Tents
Cabin style tents are the larger type of tents for family camping. This type of tent is mainly used for extended stays in the one spot rather than for touring, as they take some effort to erect. They are available in a variety of sizes and quality. It usually requires at least two people to erect this type of tent because of the design of the frame. These tents are available with one or two room with an awning out the front, with the usual option to be able to enclose the front awning. This is called a sunroom.

The normal sizes for tents of this type are 10' x 8', 12' x 9', 13' x 10', 15 x 12' and for those wanting plenty of room there is also available an 18' x 12'. If you would like to get away for a weekend now and again and don't mind putting up a large two-room tent that's ok by me but here is an option to think about.

You have a family of say two or three children and to have every one sleeping the same area can sometimes be awkward especially when mum is trying to get changed and one of the kids barge in with some new found friends, got the picture. An option would be to have two smaller tents, say 10' x 8' or 12' x 9' tents erected with the awnings facing so that they can be joined. This gives a breezeway and an area that can be enclosed if you so desire for setting up the kitchen etc. Mum has her privacy and the kids have their own tent. For a weekend only one tent needs to be taken where for the extended stay, then the two can be erected.

Depending on the size of the tent the packed up size can be quite bulky and of considerable weight. A 15' x 12' two room tent weighs approx 45/50kg.

Touring Tents
Touring tents are for the campers who are on the move, here today, there tomorrow and somewhere else the next day, and with extended trips which could last a number of weeks, this can mean a lot of wear and tear on a tent. With this in mind, a tent that is going to do this type of service has to have a number of special features that others types of tents mentioned before don't have. It has to be tough and it also has to be easy to erect otherwise it is likely to become a chore setting up camp every night. Some of the touring tents on the market are of better design and materials than others, some with poly floor, the better with the floor of a reinforced vinyl. This material can be patched in a number of ways that is successful where the poly floor can be patched, but not with permanent success like PVC based materials.

The one which has good reports and I would recommend is the Bushmaster range of tents made in Australia from Australian material for Aust. conditions, available in 9'x 9', 10' x 10', and 10' x 13' configuration in 12oz canvas. The floor is a reinforced vinyl. Southern Cross Canvas, the manufactures of these also does a lighter weight tent in 10-oz material. This tent has a larger frame (100cm x 100cm) in the roof than the bushmaster range (80cm x 80cm in the 9' x 9 and 90cm x 90cm in the 10' x 10'/13') and this can be a problem in storing on a trip where space is a premium. This range of tents also have available awnings that affix to the tent, either in canvas or poly having a size of 19' x 9' approx. and available as a kit complete with poles, ropes and pegs. Both have there for and against. With poly this can rattle if the wind starts blowing but is not subject to mildew if stored damp for a short period, where the canvas awning is put away damp mildew can occur if it is left for too long but is quite with wind. Both take up about the same amount of room.

Section 6. Vehicle

When planing a trip there is always the vehicle to consider and where you intend to go while away. If you have a conventional car / station wagon the likely hood of straying to far from civilisation is remote, where as those with four wheel drive vehicles are likely to be far more adventurous and travel into remote areas of this beautiful continent. Before setting out certain things must be undertaken to ensure that your holiday / trip is going to be enjoyable.

The vehicle must be reliable, otherwise disaster could be just around the corner, with service done regularly with things like brakes checked and good tyres with a good battery. These things are more common sense to the experienced driver and are basic maintenance of your motor vehicle. If the vehicle is of low mileage then trouble free motoring should be experienced, but if the vehicle has done over 100,000 kilometres then certain spares should be carried. These include things like hoses, fan belts, points, spark plugs and leads, spare oil and water. It is best to talk to your local service centre mechanic or have a motoring authority (NRMA) give their advise or even an inspection on your vehicle. It is a worthwhile investment to join the motoring authority in your state. These have agreements with authorities in other states and extended plans to cover you while your vehicle is repaired if the worst happens.

No matter how good the tyres, you can still pick up the puncture so make sure that the spare is in good condition as many a person remembers the spare too late as they drag it out to find it flat. For those heading off the beaten track extra tyres and tubes should be carried with the equipment to enable these repairs to be carried out and know how to use it.

For those intending to head bush, it is advisable to have done a course on 4 x 4 driving. By doing a course, a better understanding of the capabilities of your vehicle and its workings will be learnt. There are a number of organisations commercially that do weekend training courses. These are on the whole very comprehensive. There is also four wheel drive clubs that run driver training courses, in fact, to participate in club outings one has to have done a driver training course before one can do trips with the club. This is a very good way to gain from others expertise, as these clubs do a variety of trips from which you can chose to gain experience.

As you can appreciate these trips with a club can be a good way to do a shake down trip. From these trips you will have a better understanding of what you left behind to make your camping more enjoyable. Take a notebook and write down the things that are missing and gather ideas from other members on these trips. This will help in making that checklist for further outings with your vehicle.

With the experience gained and having your vehicle properly prepared with the correct recovery gear and equipment, so that one can either get oneself out of a predicament or be assisted is all part of preparing for a trip. Its like an insurance policy, you don't need it until you have a problem.

Winches
Winches are available in a number of different forms and sizes. There are hand winches as well as different types of vehicle mounted winches that include electric the most common, hydraulic winches and power take off type. As you will realise a winch on the front of a vehicle will only take you in one direction, and that's forward, or recover some one in trouble in front of you.

Air Bags
Not all vehicles are able to have this type fitted because of the technological advancements such as anti crash devices known as air bags fitted to their vehicles as sensors being fitted to the front bumper bar. Vehicle manufactures and manufactures of accessories are working through this problem with bull bars now available for some models that will comply with standard requirements, overcoming the problems that confronted them so that a winch can be fitted to the front of these vehicles. To find out if a certain type of vehicle will take these accessories check with the manufacturer or a reputable accessory dealer/fitter to advise you on your requirements.

A winch on the front bull bar can be a very useful piece of your overall equipment if it is of adequate size for your vehicle. These winches come in a range of capacities and manufacturers. Warn is the most commonly known followed by Ramsey here in Australia with a range of electric winches with low mounts that hide away in the bar to the heavier duty high mount winch. Some have two settings, a heavy-duty pull or a fast feed.

Electric Winches
Electric winches require a vehicle to be specially prepared with a second battery to supply the power required to run the winch. The motor on an electric winch is similar to the starter motor on the vehicle and requires a large amount of current to operate. When operating an electric winch there are a number of factors to consider. How long are you going to winch for? Depending on the load you only have a limited time to winch before the motor over heats and the battery only has a limited capacity and has to be recharged. One thing to remember is that it is electric, and as such does not like being immersed in water and could fail in operation from such or previous occasion. It is not a bad idea to carry out preventive maintenance on the unit to make sure it will work when required.

There are also hydraulic winches available that look like electric but instead of cables going to them they have hoses. These have advantages and disadvantages when compared with the electric winch. The same goes when comparing the electric to the hydraulic winch.

To be able operate a hydraulic winch it is like the power steering on your vehicle, thus the motor must be going to have hydraulic fluid pressure to operate the motor on the winch. This fluid can with the correct connections tap into the power steering system and use the pressure to operate the winch. What about the power steering to drive you say? When winching your vehicle will still have the full capacity of the power steering. The winch is operated by a three-position two-way valve unit that when in central position does not hinder the fluid to drive the power steering. When the winch is required the solenoid is activated to have the fluid pass through the motor of the winch. The solenoid unit can reverse the fluid through the motor giving the winch the opposite direction, similar operation to the electric winch.

Power Take Off Winch
Then there is the power take-off type winch. Not all vehicles can be fitted with this type of winch as the gearbox or transfer box must have the provision for fitting such an accessory. Land Rover and Toyota four wheel drive vehicles always had a position to add a power take off box for such things as pumps and winch. On the new Discovery as with the Land Cruiser no longer is this option able to be applied unless you pay for it. If by chance you have an old model vehicle and can get your hands on a PTO Winch, this type of winch will pull more than the skin off the custard. It will work all day being driven by the motor of the vehicle and by selecting a gear would then select speed of winching. To feed out under load just select reverse gear.

Hand Winch
Taking into consideration the types of winches that can be mounted on a vehicle, these can be considered but there is one that while you can still raise a trot will always work. That is a hand winch. By choosing a hand winch of adequate size will be much more useful. This is a portable piece of equipment and as such will be able to be used for things like pulling a tree off the road, or pulling your vehicle out of a bog from the front or the rear. When choosing a hand winch you must consider the weight of the vehicle and what other equipment that you are taking with you in the way of recovery gear. To make your job easier a pulley can be used this will half the load but twice the amount of cable has to be passed through the winch.

It is all well and good to have this equipment but do you know how to use it? This is were training courses are a definite requirement if you are going to do four wheel driving, to learn to use the equipment and what the advantages and disadvantages can be. You will notice from the following equipment list some recovery gear is mentioned, including a1600kg hand winch. There are a number of makes around the most common would be the Turfor, others come to mind like Beaver, Anchor, and Black Rat just to name a few all having the same principal of double action so that the cable is pulled through the winch when the handle is moved in either direction.

Experience and foresight is a wonderful thing and when I was young my father would say, "It's a shame that you can't put old heads on young shoulders". In the future this might happen but in the mean time let those with the experience show the youth and those that are willing to learn how to get them selves out of trouble that they should not have got into in the first place. Recovery gear is like an insurance policy. You don't need it until something goes wrong.

If you would like more on winches have a look on the World Wide Web on
www.teleport.com/~winches/justthe.htm
Www.teleport.com/~winches/compar.htm
www.superwinch.com/hyd-data.htm

These are some interesting web sights as they compare electric against hydraulic winches and how they perform. The 'Super Winch' web sight is interesting as it shows the difference in torque of the winch with a smaller centre when the cable is spooled out. The hydraulic test reports show how the electric winches are not what they are cracked up to be.

I hope this article will assist you to make a valued decision. Oh yes, by the way, yes. I have winch on my Land Cruiser, its a hydraulic winch

Section 7. **Equipment List**

A list of equipment which I consider is required when Four Wheel Driving is listed below. Some items are for petrol driven vehicles and can be ignored if you own a diesel. Depending on the type of vehicle and how the vehicle has been prepared some equipment might not be compatible for use, eg. high lift jack.

Equipment Lists Suggested List of Tools parts and equipment

Additional spare wheel
Air filter
Air transfer hose unit
Assorted screwdrivers
Axe
Break fluid
Bull bag (air lift jack)
Cake of soap or hand cleaner
Chain saw or bow saw
'D' Shackles - 3.2ton minimum 3
Drag chain 5 or 6 metre
Drinking water (in a number of containers)
Engine, Gear box and Diff Oil
Fire extinguisher
First aid kit and book
Fuel filter
Fuel tank repair kit
Gas bottle and torch
Ground sheet/ Radiator Blind
Hacksaw
Hammer
Hessian bags
High lift jack and fittings
HV Leads & plugs
Insulation tape & gaffa tape
Jack c/w base plate 12"square x 1"
Jumper leads
Leather Gloves
Length of plastic tube
Main leaf or spring
Manufactures handbook
Muffler repair kit
Paper Towel
Pickets
Pliers & vice grips
Plug spanner
Points
Protective goggles
Recovery Bag for equipment
Recovery Kit
Rope, tow
Rubber mallet
Shifting spanners
Shovel
Sledge hammer
Snatch block (8 ton)
Snatch strap
Soldier and flux
Spanners, socket & screwdriver sets
Spare fan - ancillary belts
Spare fuel and funnel
Spare fuses
Spare radiator hoses & clamps
Spare Wheel
Spare wheel studs & nuts
Tie wire
Torch and batteries
Tree Protector - sling 3 metre
Tyre Bead breaker
Tyre leavers 2
Tyre pressure gauge
Tyre pump or compressor
Tyre repair kit
WD40
Wheel brace
Wheel chains
Winch extension strap
Winch Hand 1600kg
Winch shear pins

There is a lot more that could be added to this list but it is up to your judgement as to the items that you decide to include in your trip preparation.

Section 8.**Maintainance of Equipment - Tents**

One of the main thing to remember is that now that you have the equipment to go camping it must be looked after, otherwise the next time that you intend to go camping and pull the equipment out, disaster could have crept up without you knowing until it is too late. At this stage I am going to advise you, do not to lend your equipment to anyone. I have seen and had to repair tents that were loaned to so called friends or relatives and been returned with damage done and nothing said. There is also the very familiar statement given on the return of the equipment, "Oh yes, the tent has been cleaned and is bone dry". Do not take their word for they are not going to worry if you don't check it. Pull the tent out and check it because if you don't, when pulled out six months later and you open the top of the bag and it smells like mushrooms you then know that you should have checked it, for now it has the dreaded lurgy - mildew. I could keep going with these disaster stories but I think you get the drift. If you are approached to lend your equipment just say, 'I think I'm using it that week end' and suggest that if they really need a tent for that week end had they thought of buying or hiring it. (Hint hint)

Tents, no matter what type, must be bone dry before putting away in storage. With all our hire tents, on return, we sun them for a number of hours to get all the moisture out of the material. If on return from camping, the tent is wet, don't leave it in its bag, get it out and hang it in the car port or garage and let the air get through it, or put it up in the garden. It is suppressing how dry you can get them this way even when it is raining. While they have air circulating mildew won't start.

Dirt or other substances like bird droppings should be removed as soon as possible as these are deleterious to the tent. Don't use any detergent on tents as detergent or soap is a wetting agent and could cause leakage. Use a soft brush around the bottom of the tent to remove grass, sand and dirt before you pull it down. Bird droppings can be lightly scraped off and washed with just water and a soft brush. Before pulling down the tent, sweep out the tent thoroughly, for it is a lot easier to clean while the tent is up. It also means that next time you go camping it will be clean. A dustpan and brush has been included in the kitchen equipment. I have seen the results where a small amount of food was left in a rolled up tent and a rat burrowed through six layers of canvas to get to it.

Section 9. **Cleaning of Sleeping Bags**

Sleeping bags should never be dry-cleaned. This is the quickest way to destroy a sleeping bag. No matter what type of bag, be it down or synthetic, the best way to clean sleeping bag is to wash the sleeping bag in a front loading washing machine. (These are usually available in Laundromats.) Never use a top loading washing machine to wash a bag, as the agitator could rip the bag apart. If a front loader is not available then a bath will do just as well to wash the sleeping bag in. There are special detergents available to wash sleeping bags like 'Sports Wash', which can be used for synthetic and down bags. 'Fluffy' is another product especially for washing down products, and as such could also be used to wash doonas or if you can't obtain these, a product like lux could be used.

Place the bag in the bath with warm water and the wash and leave for the day after giving it a good working. (I find by walking up and down a few times is an easy way to do it). After returning, bring the water temperature back up to warm and repeat the process. Drain the bath without lifting the bag out, just squeeze against side and remove as much water as possible. The reason for not lifting the bag out while heavy with water is the bag could rip. Refill the bath with clean water and repeat cleaning process. Depending how dirty the bag was, this process might have to be repeated a number of times until you are satisfied with the job. Once the bag has been drained of all surplus water it can now be lifted from the bath and spread out to dry. A clothes drier could also be used to dry the bag.

A way to keep sleeping bags cleaner longer is to use a sleeping bag liner. This is a bag made out of material that slips into the bag like sheets on a bed. It can also make the bag warmer in winter. Different types of liners are available in both single and double.

Storage of sleeping bags

Sleeping Bags are a very important part of your equipment, and as such if they are not looked after properly then they will not perform to the best of their ability when required.

When a sleeping bag is used a certain amount of moisture which is generated by the person that used it and will be trapped in the insulation material be it synthetic or down. To remove this moisture the bag should be aired in the sun inside out. This will keep the bag sweet, for if this is not done mildew could start to form on the fill, and the bag would smell when next used.

After the sleeping bag has been aired then it can be stored till it is required for next use. Most people shove the bag back in its stuff bag (carry bag). This is not the best way to store a sleeping bag as the fill or insulation material will be in a crushed position for a period of time, and when the bag is used next the fill will retain the crushed position and as a result will not loft up to its full potential which means up to 15% heat Loss.

Sleeping Bags should be stored either hanging up or if you don't have the room for this then stored in a bag large enough for the sleeping bag to be in a loose or uncrushed condition. It is only when you are going away then you can put the bag into the stuff bag that the bag came in. The short time that the bag is in the stuff bag till you use it will not cause any problem. Look after the sleeping bag and it will look after you.

Section 11. **Stoves**

Most campers when selecting cooking equipment for their outdoor activities seem to chose gas. The reason for this is the fact that it is a very convenient way of cooking, for all you have to do is connect the stove up to the gas bottle and light.

Most stoves on the market are of the high-pressure type, with a small hole in the gas jet which is only about 0.14mm and being so small, a small piece of foreign matter (sand or dirt) ingression into the system is enough to block the jet. With this information, it is well worth the trouble to keep your equipment clean, otherwise blockages could occur. The usual method to rectify the blockage is to replace the jet. A tip is to always blow the top of the gas bottle out before connecting any apparatus like a light or stove to get rid of any dirt that may have collected in the top of the bottle. When the stove is not in use put the hose in a plastic bag to keep it clean.

When looking at stoves the most expensive is not always the best. There are different makes which are basically the same, most have very little control over the burners, it is either on or off with different heat out puts depending on the size of the burner. This heat is measured usually in British Thermal Units (BTU). The small burner found on the average two burner stove will give about 5000 BTU's, where the large burner will deliver about 8000 BTU's. The best gas stove on the market for value is the Coleman two-burner stove, which is a reduced pressure type. Instead of running on high pressure, the stove comes with a regulator and the burner control knobs have very good control over the burners. The burners in this unit will give out 10,000 plus BTU's, with the gas consumption for this unit with both burners on full, 210 GPH. By choosing Coleman, you have more controllable heat as this stove works on 15 p.s.i. The hole in the jets are a lot larger than the high pressure type and are not subject to blockages and because of their design don't blow out in windy conditions. Coleman also manufacture a three burner unit with two 10,000 BTU burners and a 15,000 BTU burner, total heat output with all burners on full 35,000 BTU's with gas consumption 527 GPH.

Low Pressure Gas Stoves

Other types of stove are available for campervans and caravans which are a low-pressure type, same as most BBQ's. These require a regulator that reduces the pressure that is in the gas bottle, which can vary depending on the temperature of the bottle. (This can be from about 180 p.s.i. up) If the bottle gets too hot then the relief safety valve will release, allowing the excess pressure escape. This is one of the reasons why vans and campervans have their gas bottles outside or vented to the outside (Government Regulations). The regulator reduces the pressure to 1/3 p.s.i. or 2.75 kpa. It is rare to have any problems with this type of stove and heat control is also good.

Duel Fuel or Petrol Stoves

One of the stoves that has gained popularity over the last few years since its introduction in 1989 is the Coleman Dual Fuel or Unleaded stove. There is a range of one, two and three burner units. Each unit has its place in the market. The more popular units are the Compact two burner unit and the Power House unit. These stoves use unleaded petrol or shelite and are regarded to be safer to use than a gas stove. They are also very economical to run being about 1/5 of the price of gas and the best of all with a small container of fuel can be refilled in the field. In some locations it is difficult to have a gas bottle refilled. The Compact unit total burner output is 21,000 B.T.U.'s with the main burner is 11,500 BTU's, where the Power House unit total output is 24,000 B.T.U's with the main burner 13,000 BTU's, both with very good control over the heat. Maintainance on these units is minimal, with the

replacement of the generator about the only thing that needs to be replaced from time to time, but this is only a small expense compared with the savings on running costs and convenience.

Section 12. **Lights**

Lights for camping as with stoves are normally found to be gas because of the convenience of turn on and light. This type of light has a mantle, and for those that have had no contact with this type of light before, a mantle is best described as a small bag that is tied onto the mantle holder in the light. A new mantle is a flexible woven bag, that once fitted, has to then be burnt off. Once this is done with the gas turned on, the mantle will then puff out turn black and then progressively turn white. At this stage mantle becomes brittle, and if touched will break and will have to be replaced. A gas lantern should never be ignited with a broken or holed mantle. The light should be checked each time before it is ignited, for if the mantle does have a hole, this could cause the glass to fracture from the hot gas escaping through the hole and hitting the glass and overheating one small spot causing the fracture.

There are two main basic designs in gaslights. They are available in six sizes and have different size mantles. One type is the double tie mantle which has the mantle holder coming straight up the centre of the light, with the mantle being tied top and bottom on this stem. The other type is the single tie mantle, which has a tube coming out of the bottom of the light in the shape of a crook stick with a mantle holder on its end. The mantle then hangs down off this with a single tie. This type of light seems to work better than the double tie type lantern. Both of these types of lights are high pressure type with the jet used having a small hole which is prone to blockage if care is not taken to stop dirt and dust getting into the system.

There is another type that has an in-built regulator. This is made by Coleman. It is hard to not mention Coleman by name as they seem to do things better, but still at a competitive price tag, when compared with other equipment available on the market. They manufacture a range of gas lights, in butane as well as propane. The butane lights are of the small style with double tie mantles and disposable gas canisters. These are aimed at the bush walking end of the market. The larger lights that are usually associated with camping attach to the 3/8 left hand thread style of bottle. These are available with single or two mantle, and take single tie mantles. Their latest edition to the range their Northstar 2000 with electronic Ignition. This light is regarded as the brightest light on the market and takes a tube mantle. The suprising thing is, it uses only 73 GPH which is less gas consumption than most high pressure gas lights available on the market. They also produce mantles that they claime to be tougher than the regular brands. This type of light has been found very reliable compared to the high-pressure type mentioned above and is not so prone to blockages because of the larger hole in the gas jet. The other advantage with the Coleman lights is that they can be turned down, or as they put it – fully adjustable light output.

As with the stoves there is also lights that work on unleaded petrol and others that work on kerosene. The kerosene lights are a bit smelly and require methylated sprits to get them started. With the petrol lights these are instant lighting like gas, and like the stoves can be filled up in the field. The light output from all these lights is very good, with a range to chose from. There is a small single mantle unit, which is equivalent to a small gaslight. The

other units available are of a larger size with the option of one or two mantle depending on which unit are chosen, and an extra large double mantle unit known as the Powerhouse Lantern. There is a new light available in gas or petrol by Coleman called a Northstar that has electronic ignition and uses a tube mantle. Not cheep but light output is something to be seen. All these units have carry cases available as an accessory. Maintenance is minimal with the generator about the only part that needs to be replaced from time to time because of deterioration caused by impurities in the petrol. By adding a fuel additive like Spit Fire, this can help in keeping the generator clean, thus extending its life.

For lighting in tents it is advisable to not use any thing that has to be ignited, as a light knocked over can have a devastating effect. Torches or fluorescent lighting is a safe way to light up the tent especially when children are present.

Introduction to Bushwalking

Backpacking

Over the years a lot has been written on the art of bushwalking by those that made it an art. Some that I have walked with, to keep the weight down in their packs would even go to the lengths of cutting off the handle of their toothbrush.

When giving a talk to a Scout Troop I open with the statement "When a Scout is going on a bush walk or hike his worst enemy is his Mother". The reason for saying this is that Mothers have a tendency of assisting in the packing of the pack. With this comes the friendly advice of "You had better take this in case". As a result the pack gets heaver and heaver. At this stage you don't want to offend, but then Mother does not have to carry the pack. A stern line must be taken and very diplomatically tell Mum to go cook a cake so you can take it with you. (This is consumed on the train by the group on the way to the starting point of the hike).

A lot has happened to the design of camping equipment over the last 15 years especially with backpacks and tents. The pack of today is of an ergonomic design and have features that were not thought of on the old style packs. These packs were carried on the shoulders, which became saw after a short distance.

A good back pack of today have built in features like - in-built frame that can be moulded to the shape of the back, compression straps to pull or compress the load and with a fully adjustable harness and a padded waist belt. This padded belt does not go around the waist but around the pelvic girdle and takes the main weight of the pack, so it needs to be tight. With the old style pack this belt did not exist and as a result the shoulders had to take the weight, compressing the spinal column and finally the legs carried the load. With the new design, the weight is transferred directly into the legs and the shoulder straps are there only to guide the load.

The pack should be big enough to take all your equipment in it, about 70 litre to 80 litre should suffice, so as not to have half of the equipment hanging on the out side tied on with string. This is how expensive equipment is damaged or lost. The pack with all your equipment, including food and water should not weigh more than one fifth (1/5) of your weight for an adolescent or a quarter of your weight for an adult.

The tent can be split up so each member of the group to sleep in that tent has a portion of it. For example, a three-man tent, one carries the poles, one the fly and one the inner of the tent. This is fairly even way to carry this piece equipment.

Keep the cooking and dining equipment to a minimum. The Australian army has been using Dixie units with a folding handle for years. These can be used for boiling water on open fire or stove for cooking and eating from. Keep the load down to a minimum but remember that you can't go to your room once your out there to grab a jumper or rain coat. Think about what you are going to take, make a list, talk to the group and plan what you are going to eat, wear, drink, and sleeping arrangement, and how to carry it all. The main aim is to keep the weight down to a minimum, remember you have to carry it,

Bushwalking

To enjoy bushwalking there are five golden rules that have to be correct other wise you will not enjoy your selves. I thought of doing only a small section on this but through feed back from the web page I was asked to expand this section for there are a lot of young people doing The Duke of Edinburgh Scheme would like more information. So here goes.

1. Look after your feet, without these you get nowhere.
2. Dress according to the conditions
3. Eat well
4. Have a good comfortable backpack
5. Have the right sleeping equipment

1. When you have a look at these five rules, and they are followed, then all that has to be done, is the walking. A good pair of walking shoes or boots is essential, for if blisters do occur then it can be a very painful experience. Thick woollen socks are good way protect your feet. While on foot care don't forget to cut your toenails before going bushwalking, especially the big ones. I have seen people that have neglected to do this simple thing and have after the first day blisters under the big toe nails. (A very painful experience)

2. Dress according to the conditions. Places like Barrington Tops can still get very cold of a night even in summer so take a warm jumper. You will find that most bushwalkers walk in shorts, even when raining. Wet pants can cause a lot of body heat loss, which could lead to hypothermia.

3. Food. Make sure that the food that you take is going to give you enough energy to carry out this physical activity. It is a good idea to take a bag of nuts, cashew, raisins, and smarties, jellybeans etc. in a resealable glad bag. These can be munched on along the way and give you that short term extra energy. Mars bars are very good for this as well but don't try to live on them, you need something more substantial for main meals. Rice is a very good lightweight meal. This can be dressed up with a beef cube or some curry powder. Noodles and also freeze-dried food can also be considered. Tubes of condensed milk are also available, but you have to have a strong will to take, otherwise you will eat it all in one sitting. Breakfast could be wheetbix or muesli. Just remember that you don't want food that will spoil. Sit down and do a menu is the only way to plan. Resealable glad bags are a good way to portion out meals instead of taking packets.

Cooking can be done over an open fire in most cases but it is advisable also to take a stove. There are a few different types to consider as it must be light weight. Solid fuel or Hexamine stove is what the army use and is very efficient way as it is light, folds up to nothing and efficient. Metho is an

4. Backpacks have already been discussed to some extent. Just make sure that it is adjusted correctly. If by chance rain does occur while hiking green garbage bags are an essential part of the equipment to take. They are strong, waterproof containers that can be used for waterproofing the pack while walking or out side the tent of a night. Float the pack across the stream, a liner for the pack to keep every thing dry including the sleeping bag, and to put your dirty cloths in, and can be also used to collect water. So you can see they have a number of uses, and they don't take up much room.

5. Sleeping bags. This is a subject not to be taken lightly. If you don't get a good night sleep then you will find that you will become irritable and become a pain to the rest of the group with your moans etc. The selection of a good sleeping bag is essential. Refer to Section 2. Sleeping Bags and Section 3. What to sleep on, for more information appertaining to this subject.

Kitchen Check List

- Awning for kitchen area complete (p,p & r)
- Bags to keep kitchen gear in
- Billies - ones that nest inside one another
- Billy hooks
- Bucket (s)
- Camp oven
- Can-opener
- Chairs
- Kleenex Tissues
- Clothes pegs and line
- Colander (rice)
- Cups or mugs
- Cutting board
- Cutting or carving knife
- Detergent and disinfectant
- Draining Spoon
- Dust pan and brush
- Equipment bags for billies, frypans etc.
- Fire lighters
- Fly Veils
- Fold Up Toilet
- Food box with fitting lid
- Frypan
- Garbage bags and carry bags
- Grill - to go over open fire
- Jaffle Iron
- Fridge Cover & base
- Freezer blocks
- Knife fork & spoons
- Light - with gas bottle or spare fuel
- Matches
- Mittens - to handle hot billies etc.
- Mixing Bowl
- Paper towels. (roll)
- Plates- Bowls, Dinner plates etc.
- Portable Fridge or esky
- Portable sink stand
- Rubber gloves
- Scourer - Stainless or nylon type
- Screw on hanging hooks
- Set of plugs for sink
- Shower unit
- Stove - with gas bottle or spare fuel
- Stove stand
- Table(s)
- Tea towels - two
- Toasting Fork
- Toilet Paper
- Tongs - Long
- Tripod
- Washing up bowl
- Washing up cloth & brush
- Water container(s) & water
- Water purification Tablets

Personal Equipment

- Camera, Film & Tripod
- Clothing
- Dental Floss
- Hair Drier
- Soft bag for personal gear
- Thongs (for going to the shower)
- Toiletry bag
- Wet weather gear
- Fishing Gear

Equipment Lists

Suggested List of Spares, Equipment and Tools

- Additional spare wheel
- Air filter
- Air transfer hose unit
- Assorted screwdrivers
- Axe
- Break fluid
- Bull bag (air lift jack)
- Cake of soap or hand cleaner
- Chain saw or bow saw
- 'D' Shackles - 3.2ton minimum 3
- Drag chain 5 or 6 metre
- Drinking water (in a number of containers)
- Engine, Gear box and Diff Oil
- Fire extinguisher
- First aid kit and book
- Fuel filter
- Fuel tank repair kit
- Gas bottle and torch
- Ground sheet/ Radiator Blind
- Hacksaw
- Hammer
- Hessian bags
- High lift jack and fittings
- HV Leads & plugs
- Insulation tape & gaffa tape
- Jack c/w base plate 12"square x 1"
- Jumper leads
- Leather Gloves
- Length of plastic tube
- Main leaf or spring
- Manufactures handbook
- Muffler repair kit
- Paper Towel
- Pickets
- Pliers & vice grips
- Plug spanner
- Points
- Protective goggles
- Recovery Bag for equipment
- Recovery Kit
- Rope
- Rubber mallet
- Shifting spanners
- Shovel
- Sledge hammer
- Snatch block (8 ton)
- Snatch strap
- Soldier and flux
- Spanners, socket & screwdriver sets
- Spare fan - ancillary belts
- Spare fuel and funnel
- Spare fuses
- Spare radiator hoses & clamps
- Spare Wheel
- Spare wheel studs & nuts
- Tie wire
- Torch and batteries
- Tree Protector - sling 3 metre
- Tyre Bead breaker
- Tyre leavers 2
- Tyre pressure gauge
- Tyre pump or compressor
- Tyre repair kit
- WD40
- Wheel brace
- Wheel chains
- Winch extension strap
- Winch Hand 1600kg
- Winch shear pins

Sleeping Equipment

- Air mattress
- Camping mat
- Camprest Mattress
- Camprest Mattress coupling kit
- Dry Bag for swag (keeps it clean and dry)
- Dust Pan and brush
- Hammer
- Light and battery
- Pillow
- Repair Kit for mattress
- Sleeping Bag
- Swag
- Tarp to go under tent
- Tent with poles, ropes and pegs