

is also careful to give the Lord a lot of notice. All in all we try to do all that cooperation as to how it is used & maintained, so that it does not become a burden in any way.

HE WANTED TO PASS ON TO THE REST OF OUR DEAR FAMILY SOME OF THE "JEWELS" that we have learned from Dad over the past few months, in the hopes that they will be a help to you & that your time spent driving will be a pleasant experience as well!

DAILY MAINTENANCE & CARE OF YOUR CAR
DAD BELIEVES IN APPOINTING ONE PERSON IN A HOUSE TO BE SPECIFICALLY RESPONSIBLE FOR THE UPKEEP & DAILY MAINTENANCE OF THE CAR as well as going over the daily checklist before the car leaves on a trip. This individual quickly becomes familiar with the car, how it works, its peculiarities & idiosyncrasies, as well as keeping check on when it needs an oil change etc.

AS MENTIONED IN "WHAT EVERY DRIVER SHOULD KNOW" (NO. 85), DAD HAS ADVISED THE FAMILY TO CHECK OUT CERTAIN BASIC POINTS each day before we "take-off", (the level of the water & the oil, clean windshields, that there's enough gas, & that the tires have sufficient pressure.) In spite of our sometimes "pressing" mission, we never leave without doing this, & we have discovered a few times saving devices & ideas that might help you in this area of daily maintenance.

TO KEEP THE WINDOWS CLEAN WE USE, AS WELL AS A CLOTH, A SQUEEJEE, a length of sponge with a rubber strip on the other side, all on a handle, which is available for a dollar or two in most service stations. We also use a spray can of ammonia window cleaner which, when applied with water & rubbed off with the squeegee will keep the windows very clean.

WE ALSO INVESTED IN A NICE SOFT LEATHER CLOTH KNOWN AS A CHAMOIS which, when wet can be used to wipe off a damp car, leaving it nice & shiny, providing it wasn't too dirty to start off with. This is a big help when you don't have time to wash the car, as it renders the exterior of the car instantly clean. (Be sure to properly wash & wax the car from time to time as well!)

AS IS NECESSARY, WE VACUUM THE INTERIOR OF THE CAR, which can be done at most service stations that have automatic car washes if you cannot do it at home. We keep all these car cleaning products & bits & pieces in a bucket in one place so that we have everything together & can check the car out & clean it at a moment's

we can to keep the car clean inside & out, a good testimony to others, pleasant to ride in as well as creating a good impression at frontier crossing points, police checkpoints, etc.

GOING OVER THIS DAILY CHECK-LIST HAS BECOME SECOND NATURE TO US & we heartily recommend that the whole family follow it. Once you know that you have done your best to check the car out & that it is in good order, you will have so much more peace of mind & faith to trust the Lord to keep all the other things operating smoothly when you are driving, as you will have done your part.

DAD HAS OFTEN MENTIONED TO US HOW IT IS SUCH A MIRACLE THAT IN ALL THE DRIVING WE HAVE DONE WE HAVE NEVER EVEN HAD THE SLIGHTEST BREAKDOWN OR FLAT TIRE. We believe that this is partly due to the fact that he has impressed on us the importance of doing what we can in using this preventative maintenance. "Better to build a fence at the top of the cliff than a hospital at the bottom."

WE HAVE RECENTLY ADDED TO OUR MAINTENANCE KIT A GOOD HAND TIRE PUMP that easily inflates car & bicycle tires. We had previously tried a version of a "foot" model operated by pumping a lever with your foot, but it quickly broke. This particular model that we bought is the traditional hand pump & cost about \$30 in a bicycle & motorcycle shop. It also has a built-in tire gauge & can, in 20 or 30 strokes, inflate your car tire pressure five or six pounds. This is due to some sort of incorporated hydraulic help that makes it much more effective & less strenuous than a normal bicycle pump.

DAD HAS US PUT IT IN THE TRUNK ALONG WITH A LITTLE TIRE REPAIR KIT whenever we go out & it has been a big help on many occasions in keeping the correct tire pressure. He says that these pumps should be a recommended part of any caravanners toolkit as it makes them much less dependent on service stations, whose air pressure gauges are notoriously inaccurate anyway.

RADIATORS & ANTIFREEZE
WHILE ON THIS SUBJECT OF THE DAILY CHECK-LIST REMEMBER WHAT DAD SAID ABOUT ALWAYS CHECKING YOUR RADIATOR LIQUID LEVEL WHEN THE MOTOR IS COLD. If for some reason you must open the rad cap after the motor has warmed up, exercise extreme caution--wear your work gloves, a long sleeve shirt, glasses, & hold the rad cap

with a rag, keeping your face well away to avoid being scalded by a geyser of boiling water. Open the cap just a tiny bit to allow the steam to blow off before unscrewing it completely.

IF YOU NEED TO ADD WATER WHILE THE MOTOR IS WARM be sure that the motor is turning over & that the water to be added is lukewarm & not cold, as cold water could crack the motor block. Dad recommends carrying a ten liter Jerry-can of water in the trunk in the event that such a "topping up" would be necessary en route.

RECENTLY WHILE TRAVELLING WE MET A MECHANIC WHO WARNED US ABOUT PUTTING "HARD" OR CALCAREOUS WATER IN THE CAR RADIATOR as it can be very bad for the cooling system. Avoid using tap water in these areas, as over a period of time this water builds up calcareous deposits in the interior pipes of your motor.

WHILE ON THE SUBJECT OF LIQUIDS, DAD GAVE US A TALK ON THE SUBJECT OF PROTECTING CARS FROM EXTREME COLD RECENTLY, a very important subject for those of you in cold countries.

"TRY TO PARK IN SUNNY SPOTS WITH THE ENGINE FACING THE SUN" & if you're not sure about how much antifreeze is in your cooling system, you better get out & run your engine until it's hot just before you go to bed. You only just have to run it 'till it's at operating temperature as that ought to protect it for the night & you won't waste gas. It takes a pretty hard freeze to freeze an engine that's been warmed up at that late an hour.

"OF COURSE IF THE TEMPERATURE REALLY DROPS A LOT IT'S ALWAYS A POSSIBILITY" I've known many a time when I've had to get out there in the cold of the night, get underneath the radiator & drain the engine. Usually radiators have two drain cogs, one at the bottom of the radiator & one on the block, which you have to open to drain the water out.

"IF YOU DON'T HAVE ANY ANTIFREEZE WE LEARNED AN OLD TRICK FROM THE FARMERS OF CANADA before the days of antifreeze so that they didn't have to drain their radiators every night or even during the day time. In Wisconsin, Minnesota & Canada it goes down to 20, 30, 40 or 50 degrees F. below zero.

"IF WORSE COMES TO WORST & YOU HAVEN'T GOT ANYTHING ELSE WE USED HONEY AS AN ANTIFREEZE, I don't know how much, but I imagine maybe a quart or something like that. It makes very good antifreeze, but by the time we got down to hot Florida,

why, it was boiling over & the flies were all over the place! They weren't bees, they were flies & my Mother was so ashamed because ours was the only car all covered with flies! Ha, ha, ha!

"SO YOU CAN USE HONEY AS AN ANTI-FREEZE, IT'S SOMETHING TO REMEMBER IN A COLD COUNTRY IF YOU EVER need antifreeze" & don't want to drain the radiator. I put in a quart of honey, & considering the prices nowadays it probably isn't any more expensive than the antifreeze.

"THERE ARE SEVERAL DIFFERENT KINDS OF ANTIFREEZES. Do you remember the days when they used to use the alcohol anti-freezers? The problem with those was that whenever the engine got warm, unless it was really tightly sealed, the alcohol would boil away & it'd evaporate into gas, whereas these new glycerine anti-freezers are called permanent anti-freezers because they don't boil away & you leave them in all year 'round.

"I PRESUME THIS IS WHAT MOST OF THEM ARE NOWADAYS" I don't even know if they use alcohol anymore. It was real cheap as the glycerine ran about \$3 or \$4 a gallon but you could buy the alcohol very cheap at about a dollar a gallon. So if you couldn't afford glycerine, permanent anti-freeze, you bought alcohol. Do you use that anymore at all for antifreezes? I doubt it but it was real cheap you know.

"ANOTHER THING YOU CAN DO TO PROTECT THE MOTOR IS TO THROW A CANVAS OR ANY KIND OF A CLOTH OVER THE RADIATOR so that the air & wind can't get in. In fact, if you were in a cold climate or winter, you may recall that there were radiator covers that could be snapped part way, or if it was very cold, almost all the way so that the radiator didn't get any air at all even when you were driving.

"YOU'D SNAP IT UP ALL THE WAY AT NIGHT TO PROTECT IT FROM THE COLD" & you'd just let it down about halfway in the daytime, even when driving, as otherwise it would be so cold that the engine temperature wouldn't even raise to normal. Some climates are cold enough that even driving a car can't get the engine warm enough, & you have to use something to cover up the radiator.

"I'VE BEEN IN CLIMATES WHERE IT WAS THAT COLD & EVERYBODY USED RADIATOR COVERS. I remember covering the radiator in the Cruiser there in Oklahoma, & I drove off one day & forgot about it as it wasn't that cold, & the engine really got

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hot as I had a piece of aluminum which I was using as a radiator cover between the grill & the radiator."

A SIMPLE WAY TO DETERMINE IF YOU HAVE SUFFICIENT ANTIFREEZE IN YOUR COOLING SYSTEM is to use a hydrometer, a simple instrument that every garage should have. It will show you on a scale to what degree temperature the cooling system is protected from freezing.

AUTOMATIC TRANSMISSION FLUID
IF YOU HAVE AUTOMATIC TRANSMISSION &/OR POWER STEERING, let the car warm up to operating temperature before checking these fluid levels. An easy way to make a funnel with which to add all these liquids is to cut an empty plastic bottle in half & use the top half. Dad warned us that some of the oils & fluids can eat right through insulation on electrical wires, so you be sure to use a funnel when adding these to avoid drippings & spills.

BATTERY FLUID LEVEL
DAD HAS CAUTIONED US RECENTLY TO BE CAREFUL NOT TO HAVE THE FLUID LEVEL IN THE BATTERY TOO HIGH, but to keep it about two centimeters below the bottom of the little cap. On the other hand, in hot weather this liquid tends to evaporate quickly so be sure to check it regularly.

REPAIRS: TOOLS
WHenever we do any kind of work underneath the car, DAD SEES TO IT THAT WE'RE WEARING GLOVES & GLASSES. He said, "I believe in taking all safety measures possible, as in all of my years of mechanics I've never had an accident." He also told us that it's simply not worth it to buy "cheap" tools for the car, as we had been doing at a nearby discount store. We subsequently found out that they certainly were "cheap", as they broke the first time we used them. He asked us to get some good guaranteed forged tools that we could count on to last, which we did, & they certainly have been a big help.

AMONG THE TOOLS WE KEEP IN THE CAR IS A GOOD FOUR-PRONGED LUG WRENCH, the ideal of which has three different sizes of wrenches, the fourth prong being a tire iron used to pop off the hub cap. Dad asked us to check the lug nuts every month as well as before any long trips & that when using the big wrench to be sure to use two hands & to avoid stripping the nuts.

GARAGE REPAIRS
DAD HAS MADE IT A POINT IN OUR HOUSE THAT ONE OF US STAYS WITH THE CAR TO CHECK THE WORK WHENEVER WE TAKE IT TO THE GARAGE,

as is mentioned in "What Every Driver Should Know".

THIS POLICY CERTAINLY PAID OFF FOR US RECENTLY as we took the car in to get part of the muffler replaced, & through a mix-up they thought we wanted a shock absorber replaced! When the driver faithfully popped in to check up on them he spotted the mistake & was able to correct the situation. However, he then left again for three quarters of an hour & when he was back they had replaced the whole muffler! So by & large it is almost impossible to trust garages & mechanics for most repair jobs & the only way you can be sure that the work is done is to actually be there & check on them yourselves from time to time.

DAD SAID, "IT'S A MIRACLE THAT WE EVEN HAVE TIRE GAUGES ANYMORE" as everybody expects the mechanics & somebody else to do it for them. But I never trusted anybody to test my tires, or my antifreeze, or my oil or anything unless they showed them to me." It is also a good policy to check the mileage of your car before you take it into the garage, as recently one of the mechanics took our car out for a "test run" after it was repaired & was gone for an hour!

OVER HEATING
DURING SOME HOT WEATHER RECENTLY WE WERE GETTING READY TO LEAVE ON A LONG TRIP & when checking the car out we noticed that the radiator was about two liters low on water, indicating a possible leak. We quickly located it, a pinhole sized leak in the bottom of the radiator. As we could not delay our trip, we went to a nearby gas station & got a can of radiator repair liquid, the kind that you pour in & is supposed to immediately plug the hole wherever it is. For good measure we also glued a toothpick into the hole which eventually worked even better!

A FEW WEEKS LATER, THOUGH, WE WERE HAVING PROBLEMS WITH OVERHEATING & A GARAGE MECHANIC TOLD US THAT THIS REPAIR LIQUID HAD PLUGGED UP SOME OF THE CONDUITS OF THE RAD & that we would have to have the rad completely disconnected & flushed out. Dad says that this repair liquid is usually more trouble than its worth & it is better to avoid using it if possible, especially as in our situation it didn't even plug the leak!

WITH OUR CAR THE OVER-HEATING WAS CAUSED BY THE FACT THAT THE THERMOSTAT IN THE WATER HOSE HAD BROKEN, not allowing the water to circulate freely. When we

took it in for repairs Dad asked us to be sure to have them put in a summer thermostat as opposed to a winter one, the difference being that the summer one opens at a lower temperature, keeping the water cooler. This is very important to have in a hot climate, so if you're having problems with over-heating this might be the problem.

IF YOU EVER HAVE YOUR RADIATOR DISMANTLED IN THE GARAGE TO BE CLEANED OUT OR REPAIRED, be sure to tell them to keep the cooling liquid, so that they can refill the radiator with it when it is fixed, as this liquid can be quite expensive to replace.

DAD TOLD US OF HIS HABIT OF ALWAYS SHIFTING INTO NEUTRAL WHEN TEMPORARILY STOPPED, something he learned to avoid over-heating the motor while driving in hot climates. He says, "If you are going to be standing still for a long time in hot weather, you should shift to neutral, but just be sure that you keep your foot on the brake so that you don't roll. If you keep it in neutral it is not as apt to stall & it also won't over-heat."

AND SOMETIMES IF IT IS REAL HOT WEATHER IDLE IT FAST to make sure that it won't over-heat, as the best thing to keep as well as being extremely dangerous. With an engine from over-heating is to idle it fast, a faster than normal idle, believe it or not. While I am standing at a light or something I'll put the engine into neutral & keep one foot on the brake & one on the accelerator."

IF YOUR MOTOR SHOULD OVER-HEAT, HE COUNSELS YOU TO PULL OVER & REV UP THE ENGINE IN NEUTRAL with one foot on the brake & the other foot on the accelerator, as this keeps the engine cool & the water circulating. If you over-heat the motor & he is always looking for stones on the road & kicks them aside, a habit that all of us, even the children have since picked up. We are also careful to drive slowly through any puddles as you can never tell what's in them.

WHEN YOU HAVE AN OIL CHANGE THIS IS A GOOD TIME TO BUY ONE OR TWO LITERS OF EXACTLY THE SAME GRADE & BRAND OIL as was put in the motor, to keep on hand in case you need to add oil from time to time. Mechanics say this is much better than switching grades & brands each time you add some oil. Also Dad told us that when checking the oil level not to add oil until the dipstick shows that it is one liter low which is usually the minimum mark on the dipstick.

WE MENTIONED IN PART ONE OF THIS RFN THAT DAD LIKED US TO KEEP THE PAINT JOB OF THE CAR TOUCHED UP AS IT LOOKS BETTER & PREVENTS RUST. We found a very easy way

to touch up tiny chips & scrapes by simply buying a small can of spray paint at an auto supply shop, making sure that it is exactly the same shade as the original paint of the car. Spray a little into the cap of the can & use a small children's art paint brush to touch up the parts. This is much tidier & more practical than spraying the paint directly on to the car for a tiny scratch or chip.

RECENTLY SOME TREE SAP DROPPED ON THE CAR WHILE IT WAS PARKED UNDER SOME TREES FOR A FEW DAYS. It hardened & refused to come off until Dad suggested that we try rubbing alcohol, which completely took it off without damaging the paint work. Dad said that fabric cleaner or alcohol will take care of almost any stain or spill inside or outside of a car & that they are good liquids to keep on hand.

IN TIMES PAST DAD HAS COUNSELED THE WHOLE FAMILY TO KEEP GAS TANKS AT LEAST ONE HALF FULL. Now, due to the "wars & rumours of wars" in the Midwest & possible oil shortages, he has told us to always bring the car home with a full gas tank. We always make sure that we have an empty five liter metal Jerry-can in the trunk; it full ones being illegal in many countries, as well as being extremely dangerous. With the impending fuel shortage Dad has again exhorted us to only use the car when necessary & in general to try to conserve gas.

DAD IS VERY SENSITIVE TO ROCKS & OBSTRUCTIONS OF ANY KIND ON THE ROADWAY, explaining, "If you have had as many blow-outs because of sharp stones etc. as I have, you would be careful too." He had us go over our gravel driveway & dig out any sharp stones that might damage the tires, & when he goes for his daily walk he is always looking for stones on the road & kicks them aside, a habit that all of us, even the children have since picked up. We are also careful to drive slowly through any puddles as you can never tell what's in them.

ONE DAY DAD POINTED OUT A CAR THAT WAS PARKED HORIZONTALLY ON A SLOPE, ONE SIDE HIGHER THAN THE OTHER. He said that any car left in such a position for very long would have permanently damaged shock absorbers on the low side. Dad told us that the best kind of tow rope or chain is a thick rope about three centimeters thick, such a rope would have plenty of give.

RECENTLY AT A SUNDAY FELLOWSHIP MEETING DAD SHARED WITH US SOME OF HIS THOUGHTS ON MOTORCYCLES. One of the reasons that they are so dangerous is that in the

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