Leave our cars Alone!

I hope you all enjoyed the brunch at Wine and Roses. I'm sorry that Inga and I couldn't make it. Between planting and pruning season and houseguests we just got ourselves overbooked. I hope you can join us on the 19th for our little drive through West Marin. It should be beautiful. Our friend, Max Brown, owner and head chef at Rancho Nicasio, always puts on a great lunch and he has a full bar for those of you who can't stand the sight of another Coors Lite or Inglenook chardonnay. After lunch come drive with us over the backside of Mt Tam, home to more TV car commercials than any other road on the planet.

My report on the AGM, from which I just returned last night, will appear in the May JAGazette. I've got some very interesting things to tell you.

While at the AGM I picked up the April 2008 copy of Jaguar World and it had a fascinating article on the original XJ220, the one with all-wheel drive and a 4 cam V12. It was introduced at the 1988 Earls Court Motor Show, where it caused a sensation. It is not hard to understand why Jaguar never built this version. With that huge V12, that only made 500 hp, and the heavy FF all-wheel drive it must have weighed 2 tons! Tires of the day could never have handled that weight at anything approaching 220 mph, a speed that I doubt it could have come close to. The production XJ220 was able to get very close to 220 mph and with its lightweight and 536 hp it was some performer! It's too bad that the average enthusiast couldn't understand why Jaguar didn't build the original version.

I won't comment on Tata's purchase of Jaguar and Land Rover, you can read more than you want to in the general press. All I can hope is that Tata will pour in the money and hire the talent that Ford was unwilling to.

I know that many of you don't like to read anything more than a page long, but what I have to say this month is longer, so I've put the important points in **boldface . . . just read them** and have your kids read the details. They are the ones who are going to suffer the consequences of the bad decisions our generation has made when it comes to taking care of the only home we have.

Gun advocates are fond of saying the God created men, but Colt made them equal. The truth is that Henry Ford made "men" equal. With his creation of the Model T a common person could travel at a higher speed and in more comfort than kings and queens of a few decades before. It has only gotten better since.

Because of global warming the automobile is under attack. "Curtail its use, eliminate it, make it electric," the critics cry, "Force people to use public transportation." Public transportation sucks. It takes forever and when it finally arrives you are forced to be with people you don't want to know. They are probably muggers, rapists, or carrying an incurable form of TB. *IF* you get a seat it was probably puked or peed on by some rug-rat a few hours before. At the very least you will end up with a bad smell in your clothes and some minor respiratory complaint. I hope I never have to use public transportation. Commercial airplanes are as close as I ever get.

In this county, the most automotive place on the planet, personal cars contribute about 25% of the CO_2 put into the atmosphere by humans. In western Europe it's about 12% and in the rest of the world it's negligible. When you live on $1 a day a personal car is not part of your life!

Agriculture contributes about 20%. Reducing agriculture's contribution is nearly impossible. All the arable land in the world is in production. All humanity can do is shift what is grown and where it is grown to try and increase efficiency and bring the grown food closer to where it is eaten. It is true that if people ate less meat less CO_2 and methane would be produced. If you take a look at the waistlines of the rich world you might say cut food consumption in the "overdeveloped" world in half, but that would only reduce agricultural output by about 10% and that food really should go to the many people in Africa and Asia who don't get enough to eat. Maybe solar powered tractors and railroads instead of trucks to move production can help, but basically we need to eat and agriculture is pretty efficient the way it is.

Global warming is a fact. As a small-scale farmer it will be devastating for me. As the Western U.S. gets warmer and drier the irrigation water from snow melt I depend on all summer will dry up and I will be forced to use well water with the huge pumping costs and atmospheric pollution associated with it. It will put me out of business.

As an engineer by training and a scientist by avocation I have my doubts that humanity is the sole cause of global warming, but it doesn't matter. Humanity must stop putting so much CO_2 and methane into the atmosphere. CO_2 is acidifying the oceans. The oceans should be our major source of high quality proteins and fats. At the present rate of acidification the oceans will be dead in 50 years.

If we don't stop global warming the permafrost in the Arctic will melt and release huge quantities of methane, which is a greenhouse gas 20 times as powerful as CO_2. Climate control is the only answer, but we don't presently have the technology to control the climate if you discount setting off most of the nuclear bombs stashed around the world to create a nuclear winter that might last for decades.

However, there are things that can be done today that would cut CO_2 emissions by 80%. Homes and industry are the source of over half the CO_2 produced. We have the technology and resources today to convert them entirely to large scale solar and wind power. When I say large scale I'm talking about using the entire state of Nebraska as a windfarm and the entire state of Nevada as a solar farm. We could then shut down virtually all the coal fired power plants that are so devastating to the land the coal comes from, the water that runs through that land, and the air that the byproducts of coal combustion are released into, not to mention all the miners lives that would be saved.

Biofuels are not the answer. I hope you read the article in the most recent Time magazine. It has been calculated that what Brazil and Indonesia are doing to grow the crops used to make biofuels will set the world back 300 to 400 years in its battle against

CO_2. The only hope for biofuels is if we can somehow grow algae in the ocean that will yield enough oil that can be economically converted into some kind of liquid fuel. This is total pie in the sky. Right now no one can economically convert switch grass into fuel, let alone algae.

Burning petroleum for fuel is economic suicide. 3% of the world's petroleum is used for non-fuel purposes (plastics, fertilizers, and pharmaceuticals) yet it produces as much economic value as the 97% that is burned.

CO_2 isn't the only greenhouse gas and it is far from the worst. As mentioned above methane is 20 times as powerful. R134a, the refrigerant that replaced Freon so that we could stop depleting the ozone layer, is 1000 times as powerful a greenhouse gas as CO_2. Dust, man-made and natural, is a major contributor. When it lands on snow and ice it causes increased heat absorption that leads to faster melting. Major causes of "dust" are agriculture, mining and automobile tires and brakes and diesel exhaust. Diesel exhaust particulates are not only harmful to your health they are another source of heat trapping particulates. So is burning wood. The CO_2 wood burning gives off is carbon neutral, but the smoke is a particulate with all the consequences associated with particulates.

If it doesn't move - power it with solar, wind, or water. You don't need expensive silicon solar cells to get energy from the sun. All you need is a curved mirror, a glass pipe at the mirror's focal point and some kind of transfer medium like water or a molten salt that undergoes a phase change. Efficiencies of 30% have already been achieved. Wind power has its consequences. It kills birds, makes a lot of noise and ruins the view of the landscape. But windpower in cold, cloudy places like Germany and Denmark is happening. We have better wind resources in the U.S. than anywhere in the world. Moving water has tremendous power, be it a river, a tide, or a wave. Most of the world's rivers are tapped out, but the ocean has tremendous power that is never used.

If it moves - move it on water. Water was the first way humans were able to move tremendous weights. The stones for the pyramids were moved primarily by water. One man walking on a footpath along side a canal can move a boat weighing 20 tons with little effort. Modern sails are tremendously efficient and large ships could be covered with concentrating solar collectors to power steam turbines. Ships could once again be pollution free instead of some of the worst polluters in the world.

If you can't move it by water - move it by rail. Trains are at least 10 times as efficient as trucks. They never have to stop for traffic and they can be powered by electricity generated from solar, wind and water. We don't need highspeed trains with their super-expensive, high maintenance tracks and the unbelievable noise they generate when they go by. A train traveling at a steady 60 mph can cross the U.S. in two days. The best airfreight takes one day. Railroad tires are steel as is the "pavement" they run on. No more millions of pounds of rubber dust and pavement particles in the atmosphere. Steel is totally recyclable. No more mountains of tires stacked in the desert to periodically catch on fire and pour black smoke into the atmosphere. These trains won't even need

brakes. To stop they could simply turn their motors into generators and pour their kinetic energy back into the grid from whence came their power in the first place.

Portland cement manufacturing produces 8% to 10% of the world's CO_2. Limestone (calcium carbonate) and other carbon bearing clays are burned to make cement. Most conventional concrete can be replaced with geopolymer concrete which releases no CO_2. We could also go back to using cut stone and rammed earth for many of our building needs.

There is a pattern in the above paragraphs. Our ancestors were able to do a lot without producing very much CO_2. As we advanced technologically we were able to do much more, much faster, but the consequence is the destruction of our planet.

Speed kills (the planet). Everybody knows that it takes 4 times as much power to go twice as fast. With a little planning ahead many of the things we move could be moved a lot more slowly and still get there on time. Think of the energy that could be saved.

Back to the automobile. Make cars electric. Great idea. So they can get their electricity from a coal fired powerplant? Or a nuclear powerplant? Or hydrogen made from methane? Pure electric cars will never serve the needs of our mobile society. Batteries or fuel cells simply cannot store enough energy to move a car long distances at high speed. The lithium-ion battery has great potential, but the cost will always be too high to give a 250 mile range on batteries alone.

In conclusion, as I step off my soapbox, I would like to see all the resources being devoted to getting people out of their fossil fuel cars turned over to technologies we already have. We could then eliminate 70 to 80% of the CO_2 within a decade. It would have to be a worldwide effort and would probably absorb the GDP of the entire rich world for years to come. I'm willing to pay. I can accept a car injection molded out of thermoplastic with a one-quart hybrid plug-in diesel and my wife sitting behind me instead of beside me, but I beg our lord Henry Ford in heaven above, just **LEAVE MY CAR ALONE!** (that's lord with a lower case L). It's not the major cause of our problems and eliminating it will not solve anything.

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