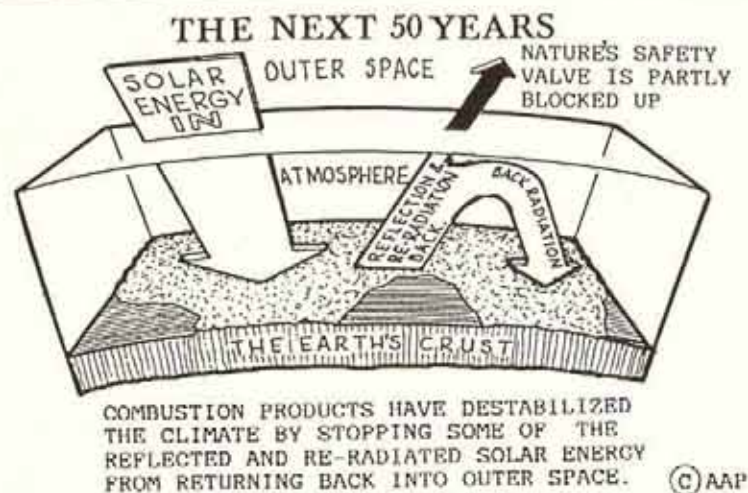
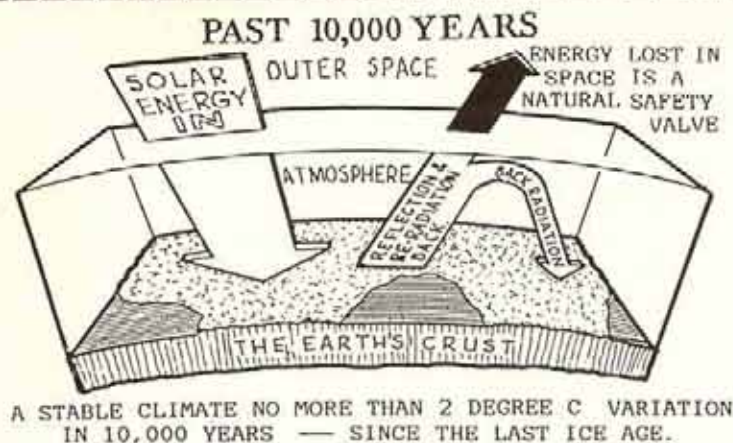


THE GREENHOUSE EFFECT



British and Soviet research teams had established why the decade of the 1980s was the warmest in over a century and why the mean atmospheric temperature may rise 3 degrees celsius and produce a two metre rise in the sea level by 2030 with catastrophic consequences across the globe.

Approximately 40% of the atmospheric overheating is due to the carbon dioxide and nitrogen oxides exhausted by the 380 million motor cars in use and the accumulation of internal combustion engine emissions over the last thirty years.

What is the Greenhouse effect?

The Greenhouse Effect is not a new scientific theory. As long ago as 1896 a Swedish chemist, Svante Arrhenius, theorised that the world's atmosphere functions like a greenhouse and coined the term. The drawing which shows a segment of the earth's crust illustrates the basic concept of the Greenhouse Effect, but the scientific detail is far more complex.

The concept is based on the fact that a greenhouse and the earth's atmosphere both trap the sun's energy and allow organic life to survive in a stable climate within a limited temperature range.

The atmosphere is likened to greenhouse glass that holds in life giving warmth. If the carbon dioxide, water vapour and other naturally occurring gases did not absorb some of the sun's energy coming inwards and retained much of the energy reflected back from the earth's surface then our world would be lifeless like that of Mars.

These gases also protect us from deadly radiation that is given off by the sun when it's surface explodes with massive solar flares as well as other deadly rays from outer space.

Too much gas?

Since 1896 the industrialised countries of the World have been on an energy binge. As a result the planet's liver, the

BICYCLES TO THE RESCUE?

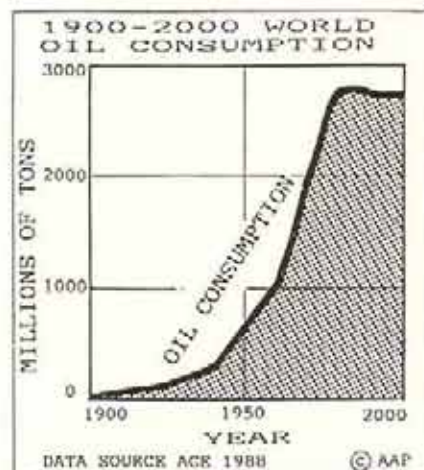
How bicycle transportation can save the World from the disastrous consequences of the Greenhouse effect

BY ALAN A PARKER

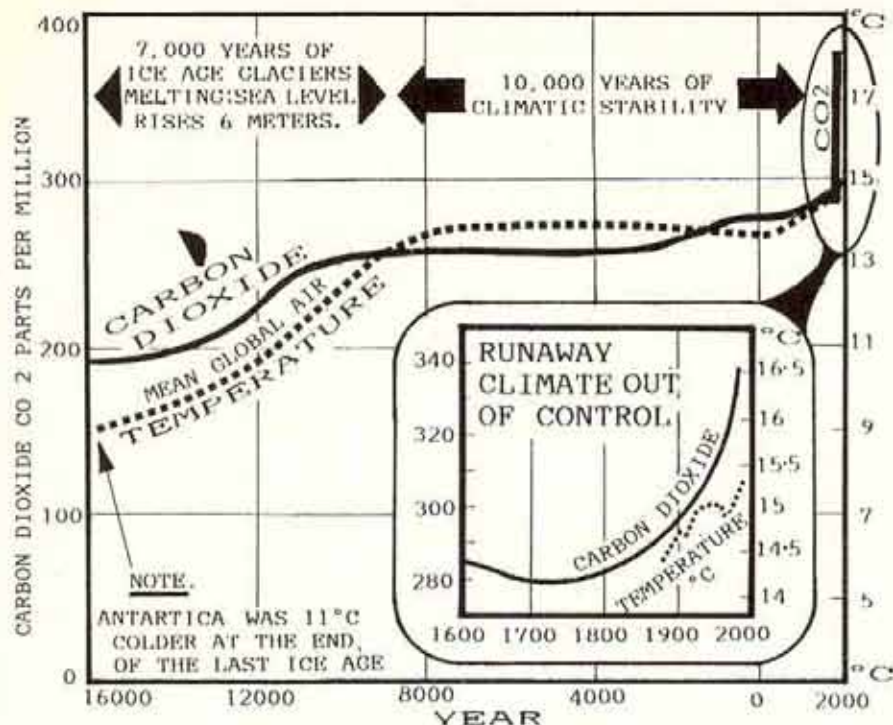
ITHASTAKEN scientists nearly a hundred years to find out conclusively that we are now locked into a period of human influenced climatic change that could slowly but surely devastate world food production and put many coastal cities under water. When governments finally work

out the huge hidden costs of putting millions of tons of combustion gases into the atmosphere every year, the non polluting bicycle and energy efficient public transport systems may at long last receive priority in the provisions of transport funding.

At the end of March 1988, American,



TEMPERATURE AND CARBON DIOXIDE (CO₂) LEVELS SINCE THE LAST ICE AGE TO THE YEAR 2000



biosphere, has finally broken down with atmospheric cirrhosis due to accumulation of more and more gases released by burning coal and oil. In the early years we burned fuel to stoke the fires of the factories and homes of the first industrial revolution, more recently to satisfy our passion for motorised mobility.

The massive increase in world oil usage is expected to level out by 1990 and as shown on the graph. As three tons of carbon dioxide are produced for each ton of oil used and half of this remains permanently in the atmosphere, then 4,500 million tons of this gas will be added to the atmosphere each year. Coal and gas combustion will add a similar tonnage of carbon dioxide to the atmosphere each year.

The graph showing carbon dioxide levels over the last 12,000 years puts the small changes in levels of the gas into some meaningful perspective. As carbon dioxide levels fall the temperature drops and as levels increase so does the atmospheric pressure. It does not take much of an increase in temperature to destabilise the climate.

Over the last 10,000 years, the climate has been relatively stable and the atmospheric pressure has not varied more than 2 degrees since the Ice Age. Not only is the temperature rising nowadays but it is rising very fast in terms of what has happened before.

No one knows what the safe level of manufactured carbon dioxide additions to the atmosphere would be and what this would mean in terms of desirable limitations on the burning of fossil fuels.

What is happening is still not fully understood and the exponential growth carbon dioxide levels that has accurately been measured over the last fifty years may continue for a long time yet no matter what counter measures are taken.

In addition to carbon dioxide there are other greenhouse gases. Methane fluorocarbons and oxides of nitrogen are all interacting in the thickening blanket of greenhouse gases. The damage they do to the atmosphere is shown on the chart.

TYPICAL BREAKDOWN OF ENGINE EXHAUST

	GAS OR COMPOUND	Vol%	PROBLEM
SAKE (SOURCE) PRODUCTS	NITROGEN	77	NO PROBLEMS
	WATER	10	
	HYDROGEN	4	
	OXYGEN	2	
HARMFUL TRAILER PRODUCTS	CARBON MONOXIDE	11	ATMOSPHERIC POLLUTION (HEALTHY GREENHOUSE EFFECT)
	NITROGEN DIOXIDE	0.04	
	CARBON PEROXIDE	0	
	HYDROCARBONS	0.06	
LEAD AND 1990 OTHER ORGANIC COMPOUNDS	SULFUR DIOXIDE	507	TRACE
			LEAD BURN, 1990 SOOT & TOXIC PARTICLES

• NITROGEN OXIDES ALSO CREATE SMOG

For twenty years the scientific community has warned of the possible dangers of a climate running out of control and only a pitiful amount of research has gone in checking whether or not manufactured pollutants could melt the polar ice caps.

In the book *Limits to Growth* published in 1972 the predictions for carbon dioxide levels in 1988 are the same as the actual 1988 figures. It seems criminal that a trillion dollars a year is spent on armaments yet basic research on whether or not our own climate will fry

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all of us gets a pitiful small amount of research funding.

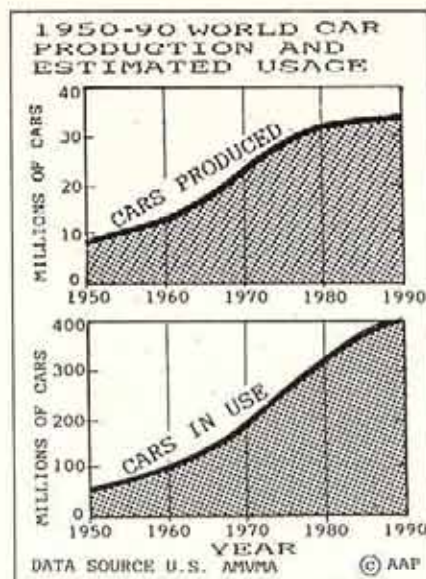
An unstable world climate is a threat to every nation's security second only to a nuclear world war yet we remain totally unprepared to deal with this problem.

The nations responsible for destabilising the climate should apply the 'user pays' principle to their own transport systems when they work out the true costs of motoring. Transport planners have ignored the non polluting role of the bicycle for so long because they did not know what was happening. Now they have no excuse for not taking into account this monstrous hidden cost of motoring.

The hidden costs of motor vehicles

Throughout the world there are about 380 million motor cars of which 132 million are in the USA and 6.5 million are in use in Australia. Motor vehicle exhaust contains nitrous oxides and is responsible for much of the 0.4% increase per year in atmospheric nitrous oxide and will at least equal the contribution of carbon dioxide to a warming of the atmosphere.

Exhaust emission controls reduce nitrogen oxides by 50% BUT do not reduce the carbon dioxide content. More effi-



cient cars will also reduce both carbon dioxide and nitrogen oxides in new vehicles but this will be more than offset by the growth in the number of new cars produced and used for ten to twenty years. In poor countries cheap labour enables old cars to be kept going for over twenty years. The world wide growth in motor car use and production is shown on the graphs.

Do any of the world's 380 million car owners responsible for a third of the

carbon dioxide in the atmosphere ever consider the hidden costs of their mobility? For example if there was only a partial polar melt down and only a billion people starve to death in the next 100 years who is going to pay the bill.

The reason for the growth in the car industry was the ridiculously low price of oil - only \$14 per ton in the 1950's. This price was so low because of a mixture colonial exploitation and corrupt local leadership; it has nothing to do with the long term value of oil as a non-renewable resource which needs to be conserved.

We have to change our attitudes. It's a bit like the dustbowl created by over farming or over grazing. One can only avoid the gross mistakes of the past if they are recognised as mistakes. If, from now on car dominated passenger transport systems are not recognised as being obsolete, then very little will happen to stop the exponential growth of the combustion products that will lead to an icecap meltdown.

The situation is now critical but current trends show that in western countries there is a trend towards multiple car ownership by families and for less passengers to be carried by cars on trips to work. In addition more women are now working and they have the greatest rate of increase in car ownership of any social grouping. It is probable therefore

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that exhaust emissions will remain as high as they are today unless there is a major shift to public transport for the trip to work in the large cities and bicycle trips substitute for car trips in those cities that are small enough for people to go about their business by bicycle.

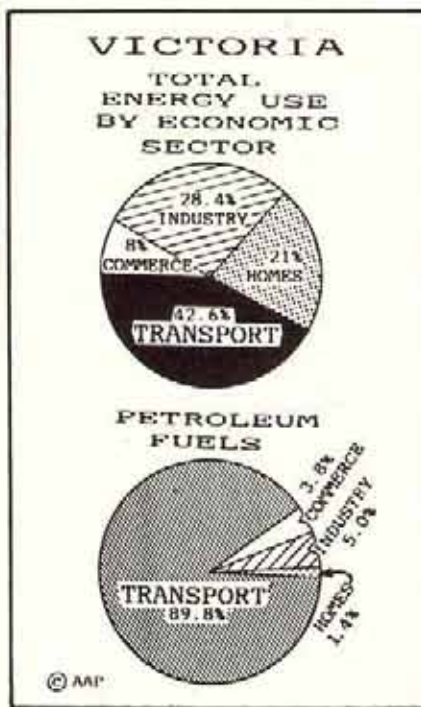
Such lifestyle changes will not occur overnight indeed where the public transport infrastructure is not present it will take many years to create a viable system.

The USA and Canada combined do more atmospheric damage than all the developing nations including China and India because they use so much energy for heating, cooling, transport and manufacturing.

Our contribution to the greenhouse gases

200 years ago when Europeans first settled in Australia they used the energy equivalent of half a ton of oil per year to live. The energy sources then were mainly wood, some coal and muscle power from animals and human beings. Today the per capita energy use required to satisfy Victorian consumer needs is the energy equivalent of nearly five tons of oil per person. Nearly 40% of this energy is lost before it can be used by the consumer, due to refining, generating or distribution losses. Unfortunately consumers need electricity at low voltages (unsuitable for efficient long distance transmission) and can't burn crude oil in their cars.

In Victoria only 1% of energy derived from hydro-electric or solar sources so the 99% of energy is from burning fossil fuels and this will create approximately 15 tonnes of carbon dioxide for every Victorian per year. Victorian energy

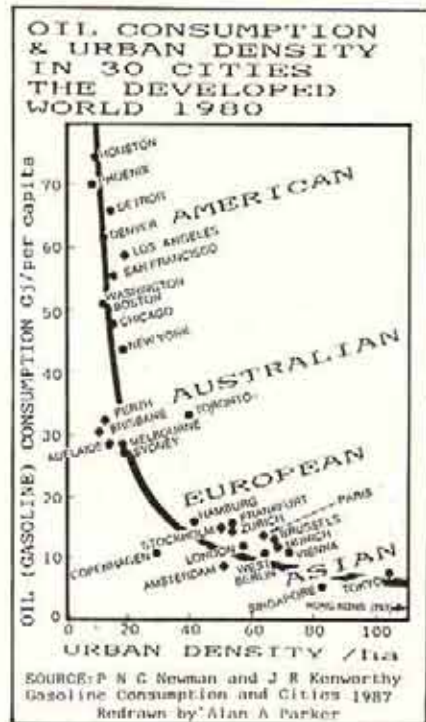


data for 1985 shows that fuels for motor vehicles are the largest contribution to the Greenhouse Effect.

The percentage of energy used by the economic sector is shown on the pie charts which clearly shows how large a component the transport sector is in Victoria and that 85% of the fuel used is for transport. Only 8% of these fuels are used by heavy trucks so most of it is used by people driving private or company owned cars, station wagons or taxis. The average motorist will consume enough petrol each year to add 6 tons of carbon dioxide to the air of which about 3 tons will permanently stay in the atmosphere.

To use Melbourne as an example, our per capita transport energy consumption is one half that of Los Angeles, but two to three times more than European capitals and four times more than Tokyo. The reason for this is that the Europeans and the Japanese use public transport more and cars much less than we do.

The car trip to work in all Australian cities is costly to the individual and to society. Each week day Melbourne motorists travel 20 million kilometres to and from work and burn up more than 850 tonnes of petrol which produces around 2,500 tons of carbon dioxide and local atmospheric pollution.



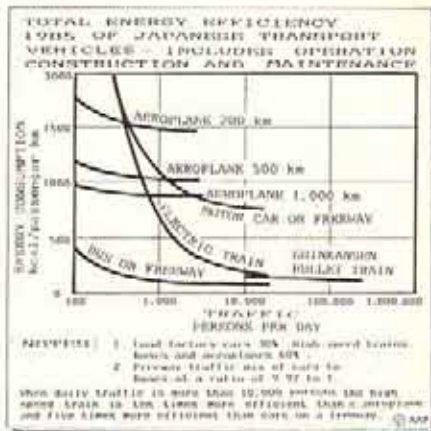
Clearly we need a more effective public transport system here. We also need to make our cities safe for cycling and to make it possible to use bicycles as feeders to energy efficient buses and trains. The graph shows how energy wasteful Australian cities are compared to European and Asian cities.

The bicycle to the rescue?

With the problems of the Greenhouse threatening future life on our planet the crucial issue is do we really need to consume all this energy. Surely we can put together alternatives that: do not destabilise the climate; are personally satisfying; and are even healthier and more fulfilling than the way we presently live. Our way of life can be changed as there are lots and lots of ways using energy less wastefully by running existing machines in ways that are more energy efficient and by utilising new technologies that will enable us to use solar energy directly.

In Europe and Japan with their energy efficient public transport systems, it is the oil and coal fired power stations that are doing the damage, but in Australia it is motor vehicle exhausts that make up most of our contribution to the Greenhouse Effect.

Japan's contribution to the Greenhouse Effect partly comes from the cars they export or are manufactured under licence overseas as well as their own power and steel production using Australian coal. Japanese cars contribute as well but the public transport systems are what we should be studying when looking for solutions to this problem. Japanese rail systems are the most energy efficient in the world.

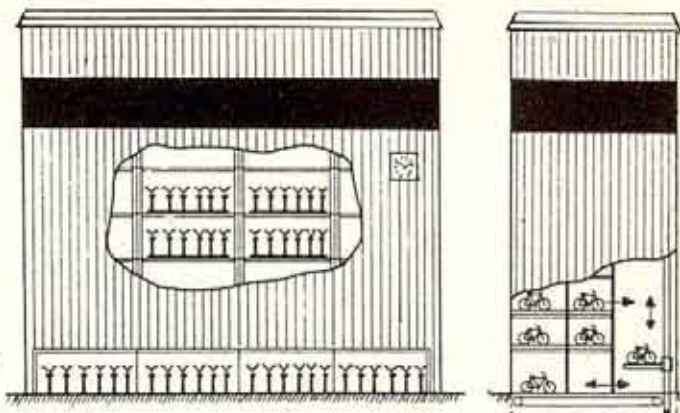
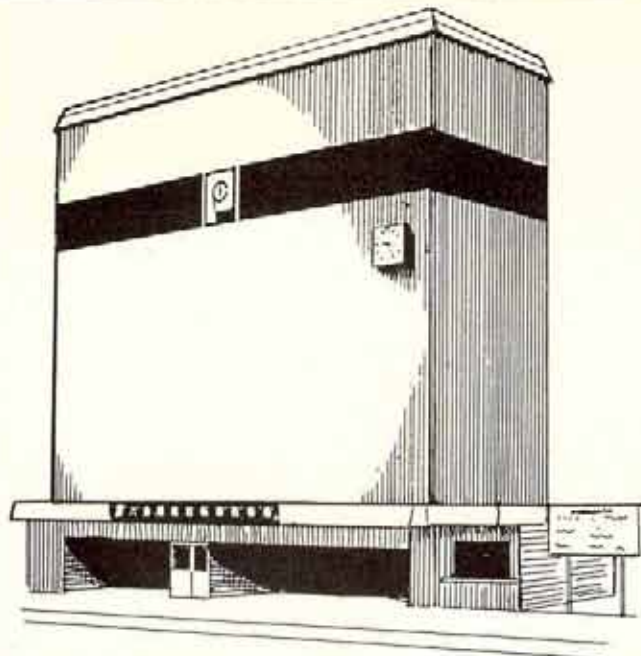


The graph showing the energy efficiency of various forms of transport clearly how much more efficient ordinary rail traffic is. Note that even bullet trains (Shinkansen) are five times more energy efficient than cars on freeways. Even more energy efficient are express buses running on freeways and in Australian cities there is great scope for using bicycles as feeders to express bus services.

The fast and effective rail commuter systems are the backbone of the Japanese passenger transport system and they are the reason that large Japanese cities use one fourth of the transport energy of Australian capital cities.

We can't copy the high density living of their inner and middle suburbs but we

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and handle 3,000 bicycles per day © AAP

can learn from how they cope with their equivalent of suburban sprawl. Instead of low density sprawl they have satellite and dormitory towns that are just as far away from peoples work as they are in Australia, but they still manage to use public transport. In the outer areas of their cities they use bicycles to access

the rail station and not just a few hundred as in Melbourne but several millions.

The Japanese have been extraordinary competent in encouraging bike rail trips on their suburban rail network. Metropolitan rail systems have acquired over two million bike users in ten years.

Their increasing bicycle theft problem has been controlled and does not constrain the increase in bike/rail patronage. The Japanese rail engineers have developed innovative and cost effective means of storing large numbers of bicycles without the problems of theft or vandalism.

The Japanese also use smaller cars than we do and have pioneered more energy efficient vehicles. However, Japanese railway engineering expertise and planning is what Australia really needs.

In the book *Bicycles and Public Transportation; New Links to Suburban Transit Markets* (M Replogle 1983) it states that bicycle access to public is growing throughout the world: "The growing importance of bicycle access to public transportation... is not limited to Japan. Indeed, in countless European communities 10% to 55% of railway patrons and up to 20% of bus riders arrive at their transit boarding point by bicycle. In the Netherlands, over one third of all access to rail stations nationwide is by bicycle, making this the predominant access mode. The share of all travel involving a combination of bicycles and transit has more than doubled in Denmark since 1971, reaching 5% on all trips, according to the Danish Traffic Directorate. Similar growth has been observed in many parts of West Germany."

Fostering bike-transit programs requires developing plans and designs that make it easy and safe to transit and securely park the bike. Overseas, rail authorities encourage local government to provide safe bicycle routes to the stations. Fundamentally it's a matter of forming a policy than following through

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step-by-step with the necessary implementation measures.

The whole system must be thought through and put together from pedal to park and the most practical way of doing this is for the Ministries of Transport to develop a bicycle transit strategy, that incorporates the provisions of secure storage facilities and a marketing program. What is currently being done in Australia can only be described as being pathetically inadequate.

Using bikes to make better use of cars

Uncontrolled urban sprawl and the diffusion of employment in low density employment zones along main road routes, mostly not adequately served by public transport, has created a degree of motor vehicle dependence that will constrain the use of bicycles for trips to work.

The decline in the percentage of car passengers over the last ten years shows that the present informal system of sharing cars is contributing to an overloaded road system because the great potential to make better use of cars is being ignored by government.

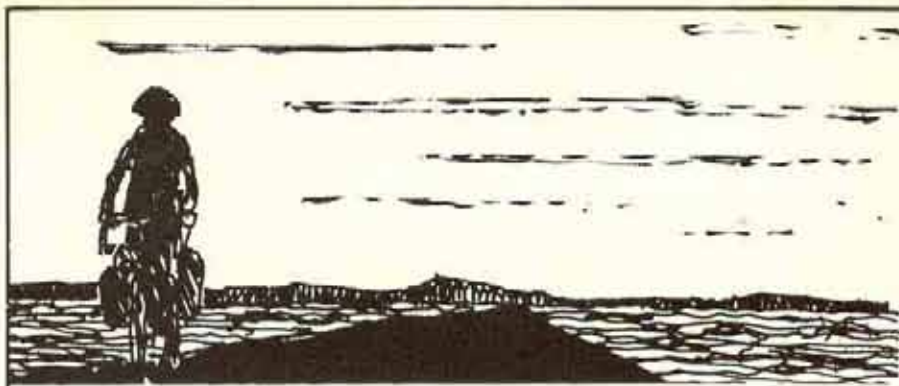
Government's policy of doing nothing is obviously not working. A way must be found of enabling workers to reduce their transport costs by sharing their cars. Furthermore adult cyclists, most of whom drive to work, need to be encouraged to ride to fellow workers homes and then be driven the rest of the way to work.

Government needs to develop this concept further because bicycles have great potential as feeders to shared cars. Relative to walking cycling increases the catchment area around the shared car drivers home by 9 to 14 times dependent on the type of bicycle and local terrain.

What is needed is a computerised service that can not only tell you as driver or passenger who you might share with, but short list them in terms of compatibility to your special needs such as hours of work. Then surely it would be possible for hundreds of thousands of people nationwide to be able to come together to share a car.

With a computer matching system the limited contact people have now at their place of work is greatly increased, because it is not limited to a few people they know but extends to the locality which may have many factories, offices and shops.

Bicycle/car sharing arrangements could take many different forms but what is needed is tax relief which creates a financial incentive to car drivers so that they seek out one or more paying passengers who cycle or walk to their home or a pick up point that is convenient to the driver. Cars or minibuses could be used for this purpose.



THE BOULDERS TO BOURKE

BY JOE MARTIN

So, I wandered up to Queensland
To escape the Melbourne smog
And misty wintry mornings.
And the missus came along.
She could sun up at The Boulders
But me, I'd be a jerk,
I'd take my "Old Black Bess" along
And ride it down to Bourke.

So I hopped upon my mangle
And headed down the track.
My bluey is a bivvy bag
And pint pot's in the pack.
There's hard tack in the tucker box,
No time to pause or shirk.
You gotta get the pedals going
If you're gonna get to Bourke.

Way up through Millaa Millaa
And down on through the Lynd.
There's yet more miles of bitumen
And a light but helpful wind.
My tyres are singing merrily
And spirits start to perk,
But there's days and days of unmade roads
Twixt me and bloody Bourke.

Oh! I cursed those flaming wheel tracks
That some goat called a road.
And I took my share of headers
From my bike, when'er bestrode:
But the sun is climbing higher
And there's eight more hours to work
Ten "clicks" per hour is mighty slow
When you're reaching down to Bourke.

And I'm sick of singing love songs
To the goats and to their kids,
And dodging sand and gibbers
And talking to the grids -
And looking ever forward
For the road to give a quirk
For sameness: never ending
On this dreary road to Bourke.

The days seem even longer
And I wish the sun would down,
And could I spot a possie
For my bluey on the ground?
And in some nice secluded spot
From prying eyes could lurk
For there's trigger happy nit wits
On that lonely road to Bourke.

Wheeling down the Warrego,
West of the Condamine,
Where the grids are never ending
And the cattle stand in line.
Where the emus run in circles
When they see me through the murk
Just them an' roos an' cattle
In that country north of Bourke.

I'm holed up in a railway hut
The wind is howling round.
There's not a blasted tree in sight,
No shelter to be found.
The hut is full of bullet holes
and the weather's gone berserk.
It's raining cats and bloody dogs,
I wish I was in Bourke.

The sun had topped horizon
When C'mulla passed away.
Now I have my weary eyes on
The ending of the day.
But pub ahead is lit up!
Hooray! I'll knock off work!
Curse the inhospitable bludger
At Barrington, north of Bourke.

But it can't go on forever,
The border I've just crossed
And Queensland's now behind me
And the gravel's all got lost.
If my fortune I could only see
I'd wear a gleeful smirk -
There's a free cab lift to a public house
And long cool beers in Bourke.

Now I'm back down in the city,
In Melbourne's wintry sleet.
Where people jostle people
Just to walk along the street.
Where kids sleep in the open
And no one feels the irk
And I'm glad I've been to where that Australia is,
Way out, The Back o' Bourke.