Wood as fuel

Birch and fir logs burn too fast
Blaze up bright and do not last,
it is by the Irish said
Hawthorn bakes the sweetest bread.
Elm wood burns like churchyard mould,
E'en the very flames are cold
But ash green or ash brown
Is fit for a queen with golden crown
Poplar gives a bitter smoke,
Fills your eyes and makes you choke,
Apple wood will scent your room
Pear wood smells like flowers in bloom
Oaken logs, if dry and old
keep away the winter's cold
But ash wet or ash dry
a king shall warm his slippers by.

Many people are going back to open fires and stoves, so what is the secret of efficient and enjoyable wood burning?

Buy your logs as far in advance as possible- if possible buy in the spring for use not in the following winter but in the one after that. Firewood needs to be stacked outside to air dry for a minimum of one year, with a cover over the top, but allowing the air to move through it. Without a cover over the top in the autumn the wood will be rewetted and its moisture content will shoot up. If you are short of space buy from a merchant who guarantees summer drying. Bring logs inside a few weeks before use to become house-dry, then bring more in as these are burned.

Wood gives off carbon monoxide or coal gas when burnt slowly, and needs to be burnt at a sufficiently high temperature of up to 700oC to break the wood down with air into ash, carbon dioxide and steam. Wood also burns less efficiently the larger the piece is, and is actually a poor conductor of heat. Logs burns best when less than 10 cm thick.

Air dried wood burns at 70% efficiency in free standing stoves, 60% in built in stoves and only 35% efficiency in open fires. The large log on the open pub fire is actually burning very inefficiently, not giving out maximum heat, putting most of its energy up the chimney and producing a lot of polluting smoke.

With open fires, a coal grate should be covered with a metal base plate. Reduce the area of the lowest part of the fire with sloping fire bricks to deepen the ash bed but leaving more space for logs above. A fine mesh spark guard should be used for safety. Maintain a fast burn with a few thin logs at a time until there is enough ash and charcoal present for a slow burn. Adding new logs on a fire set to burn slowly will create smoke and tarry deposits in the chimney, and smoke equals pollution. Once an open fire has reached the correct burn temperature there should be very little smoke.

Burning logs in an enclosed stove is more efficient and can be just as cheery as an open fire if you choose one with a good sized glass door. The better stoves have both primary and secondary air systems. Primary air is cool air that enters the fire at the base, providing the oxygen for the burn. Secondary air is air that enters from the base but is passed around the fire in a chamber to warm it first before channelling it onto the top of the fire. This secondary air will ignite the gases being given off by the wood (producing a beautiful ball of yellow flame), burning these gases at 600 to 700

degrees C, producing carbon dioxide and steam. Some areas, mostly in cities, are 'smokeless zones', where the use of woodfuel is restricted. Some woodstoves are approved for use in these areas, however, so check with your local council.

If you have a bit of land why not grow your own firewood? To do this the easiest way is with a coppice cycle. To entirely heat a 4 bedroomed house all year needs 7 tonnes of air dry wood a year (14 tonnes green wood). One hectare will produce 21/2 tonnes dry wood per year so it would need 3 hectares to produce enough firewood on a sustainable basis.