“Up yer Flue”

I saw a man walking down the road the other day, he was a chimney sweep, he didn’t look very busy. He was obviously very enterprising and had stumbled on that elusive notion - a business with no competition. A shame he didn’t do his market research. Talking of market research did you know that there are now 3.472 restaurants per tourist in Kuta.

There isn’t much call for chimney sweeps anymore in Bali. It all changed at the Climate change convention when a persuasive man call Eric Higginbottom from a little known NGO called OsAID (Oswaldtwistle Association Idle Dishwashers) whispered in Bambang’s ear and persuaded him that the best way to clean up the air in Indonesia was to learn from what they did in Lancashire many years ago and declare a smokeless zone. Following Eric’s advice the Balinese were told to stop burning coal in their fireplaces and so chimneys don’t need much sweeping anymore.

Contrary to popular belief there is in fact a call for fireplaces and chimneys here in Bali.

A fellow I know who had a fireplace built in his new house was told by his builder that he would need an electric fan in the chimney to draw the smoke out. A fan? He obviously doesn’t know much about flues. Imagine how many electric fans Henry the Eighth would have needed to get all those chimneys in Hampton Court working properly.

There is in fact an ancient art to getting a flue to draw. There used to be skilled artisans who would travel around the countryside setting people’s flues. They’d wander up and down the streets calling “Want me to fix yer flue missus?”

These days of course the science is well understood and you can go to that ancient source of traditional wisdom which has seen knowledge handed down from generation to generation through eons of time (a long time is an eon you know) www.ancientsourceoftraditionalwisdom.com to find the details.

The secret to getting a flue to draw is to have a constriction in the chimney. It is called a venturi and is named after an Italian physicist Giovanni Batista Venturi (1746 - 1822).

You see Giovanni was watching a parliamentary debate one day and noted how hot air has a tendency to rise. As the Italian politician’s discussion developed and they went into their traditional “physical persuasion” part of the debate Giovanni made the interesting observation that when a politician’s neck is constricted the hot air has a tendency to rise much faster.

That night sitting in front of his fire with a hot mug of cocoa he watched the smoke rising up the chimney. His mind drifted and he remembered the man who had offered to fix his wife’s flue. That’s a coincidence he thought, he looks just like my son but anyway I wonder what he did to that flue, it certainly draws much better than it did. As he idly stared into the fire he noticed that while the smoke rose steadily from the coal it suddenly sped up as it reached the lip of the flue as though an invisible force was sucking it up the chimney. He poked around in the soot and found the secret, the flue setter had put a constriction in the throat of the flue. A few observations and measurements and a rather black face and he had worked out how it worked. He then went into his laboratory and designed the world’s first carburettor though unfortunately it would be another 140 years before
someone designed a motorcar to use it.

Above a fireplace we put a chimney and the hot air rises up the chimney. Now if the chimney has a constriction in it the rising air must speed up in order to get past the constriction and keep up with the flow rate in the rest of the chimney. This results in a drop in air pressure in the constriction. This lower air pressure in turn results in suction which pulls air into the constriction speeding it up and getting the flue to draw.

Getting the constriction just right used to be a real artform. These days it is a science and we see the venturi principle used in many ways such as pulling petrol into your car engine and drawing air in to mix with the gas in your gas stove. Have you ever noticed that power station cooling towers are narrower in the middle?

Now I am sure you are reading this and thinking what on earth is the relevance of all this here in Bali?

Well I have come across some people that want fire places in Bali and finding people who can build the flue can be just a little bit problematical. People don’t understand hence the builder who intended to install a fan.

More importantly this same venturi principle applies to vertical roof vents.

In Queensland the old house builders used to install a small vertical chimney with a decorative cowl on the top in the centre of the highest ridge of a roof. The vents were about 300mms in diameter and perhaps 800 mms long with a smaller diameter of pipe in the middle.

The roof space under a corrugated iron roof can get very hot and has very few gaps to allow ventilation and the old builders had found these vertical roof vents were very effective. The vent would draw hot air out of the roof space drawing cooler air in under the eaves along the bottom edge of the roof. The constant air flow through the roof space would take away the heat and keep the house cool.

Most houses in Bali have tiled roofs and roof space ventilation is not an issue as there are usually lots of gaps between the tiles which allow the air to circulate freely. However if your roof is fairly well sealed and has a lining under the tiles or if it is corrugated iron, colourbond, asbestos or, as I saw recently, copper sheet an effective roof vent may be a sensible option.

The thing about using a venturi is that this natural phenomenon can be used to create air movement even on the stillest of days. It is very simple with no moving parts.

It is early days yet but as initiatives to combat global warming combined with the high cost of energy start to really take off we may well see some very clever developments using the venturi effect to help keep our houses cool.

In the meantime the next time someone says "Up yer flue mate" resist that overwhelming desire to constrict someone’s neck, instead you might take the opportunity to pass on some interesting if not totally useless knowledge.

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