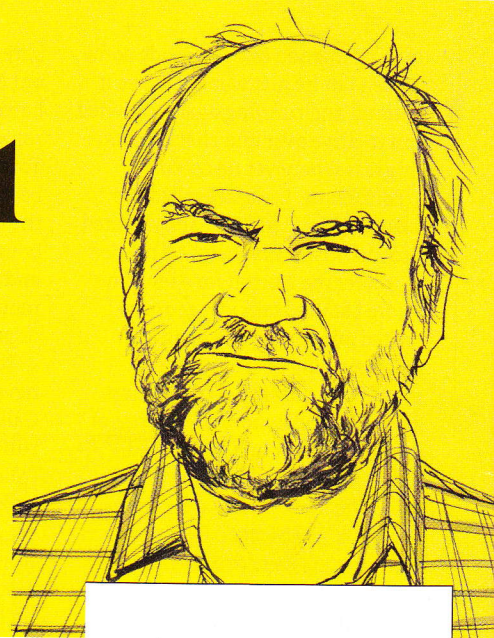


MOTORCYCLE LANGUAGE 101

CLASS IS IN SESSION **BY KEVIN CAMERON**



Maybe winter has made me peevish, but there are a few errors that persist in our sport that I'd like to see zeroed out.

Nothing in our public school experience prepares us for the brand name "Husqvarna." In school exercises, the letter "q" always appears with a "u" after it, as in words such as "quality" and "quantity." This gives us the knee-jerk reaction to see that "u" after "q" even when it isn't there, as in Husqvarna.

As a result, it comes out wrong, as "Huss-qua-VAR-na." But since there is no "u," there can be no "qua," so the correct pronunciation is "Hoosk-VAR-na."

That "q," all by itself with no "u" after it, represents a more back-of-the-throat "k," as in the country name Qatar.

Another large class of problems centers on the letter "g" in Italian names. Public school rules transform "Castiglioni" into "Cass-tig-lee-oh-nee," but in Italian, that "g" is pretty much silent, so it becomes "Cas-ti-lyo-nee." The name of Ducati's late and revered senior designer and the man behind the company's adoption of desmodromic valves, Fabio Taglioni, is transformed into something really bumpy and hard to say, like "Taggle-ee-oh-nee," but it's actually something simple and flowing to say: "Ta-lyo-nee."

Another confusion is the seemingly perpetual one between preignition and detonation. They are not the same, and that fact was discovered almost 100 years ago by engine pioneer Harry Ricardo. He used an engine indicator to make this discovery. An engine indicator is a device that records the cylinder pressure as a function of crankshaft rotation, and in his day, it was all mechanical. Today a high-pressure microphone tapped into the combustion chamber and a crank position encoder perform the same function.

When an engine was pre-igniting,

what he saw on the indicator was cylinder pressure rising from compression as the piston began its compression stroke then suddenly soaring upward to very much higher values as some ignition source other than the spark plug set the charge burning before spark could occur. This other ignition source could be glowing carbon deposits in the cylinder, an overheated exhaust valve, or the glowing electrode(s) of a spark plug whose heat range is too hot for that engine.

An engineer at GM, using a modern indicator, confirmed that usually preignition takes place somewhere around bottom center, so the unusually steep rise of cylinder pressure begins more than 100 crank degrees *before* the normal ignition spark, which usually occurs somewhere around 35 degrees BTDC. Thus, preignition is no subtle thing. The GM engineer went on to say that once preignition begins, the piston seldom survives more than one or two cycles of it before its dome caves in.

When Ricardo placed his indicator on a detonating engine, he saw something completely different. He could see compression pressure rising normally as the piston rose on its compression stroke, and he could then see the beginning of combustion as a normal, steep rise of pressure after the spark set the charge burning.

In fact, everything was identical to normal combustion until very near the end of combustion, as the flame front was reaching the last bits of charge to burn, out at the edges of the piston. Then something incredibly violent happened, which wrecked his indicator.

Further study revealed that, as the last part of combustion was taking place, bits of overheated unburned charge out at the edge of the piston apparently auto-ignited. And instead of burning at the normal combustion velocity of 50 to 100 feet per second, they burned at the local speed of

BY THE NUMBERS



1959

**THE YEAR HUSQVARNA
WON ITS FIRST MOTOCROSS
WORLD CHAMPIONSHIP**

68.2

**VELOCITY OF NORMAL
COMBUSTION, IN MPH.
THAT'S EQUAL TO
100 FEET PER SECOND.**



37

**NUMBER OF WORLD
CHAMPIONSHIPS WON BY
MV AGUSTA (SAY IT RIGHT!)**

sound—25 to 50 times faster. The resulting shock wave then struck the chamber walls, making a sharp knocking sound.

Upon disassembly, piston crowns looked as if their outer edges had been sandblasted. If detonation became more intense, the upper land of the top piston ring softened, and the hammering of knock forged it downward, trapping the ring. In cases of prolonged heavy detonation, so much piston material was blasted away that the piston rings were exposed and combustion flame could freely blow down into the crankcase. And in complete contrast with preignition, the center of the piston crown is usually completely undamaged.

My last peeve is also one I have whinged about before. It is the idea that cooling water can go through an engine so fast that "it doesn't have time to pick up any heat," so the engine overheats.

In 1974, when Yamaha first brought out its beastly TZ750A racebike, it had a dinky 250cc-sized radiator on it, and what do you suppose they did to improve the cooling? They sent new owners new water-pump drive gears to spin the pump faster, and the cooling was improved—enough for Giacomo Agostini to win Daytona on the first attempt.

Why do so many people have this other idea?

Engineers tell me it comes from what can happen if the cooling system's thermostat is removed. Since there's no longer a pressure drop, the water pump might cavitate—pump bubbles instead of water—and cause overheating. Or you could perform the following thought experiment, which I rather like. It's January, and at the weather station on top of Mount Washington in New Hampshire, the wind is blowing 100 mph and the tempera-

DOES ANYONE REALLY BELIEVE HE OR SHE COULD JUST STROLL OUTDOORS NAKED IN THOSE CONDITIONS AND BE AS TOASTY AS A BAHAMAS VACATION?

ture is 100 degrees below zero.

Does anyone really believe he or she could just stroll outdoors naked in those conditions and be as toasty as a Bahamas vacation? Will you be perfectly warm "because the wind's moving so fast it doesn't have time to pick up heat from your body"? Ever hear of wind-chill factor? It exists because the faster the cooling medium moves (air in this case), the more heat it carries away from the hot object—your pink and tormented skin.

Oh, and one more. Have a look at the honored motorcycle name "MV Agusta." So many times I hear this pronounced "MV Augusta," as if it were said like the famous golf course in Georgia that hosts The Masters. It's not—there's only one "u" in the name, after the "g," and it's a long one. So it's pronounced "Ah-goose-ta."

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