TURBID MASHING by Mike Retzlaff

Nearly 200 years ago in what is now Belgium, the Dutch were in charge and began taxing brewers based on the volume of their mash tuns. In response, the brewers started cramming more grain into their mash instead of using bigger tuns. In 1830, a revolt resulted in a free Belgium. They formed their own oppressive and unresponsive government which changed nothing as far as taxes on brewing. Without tax relief, these thick mashes evolved into really thick mashes as low as 0.6 quarts per pound of grain! That's 1.25 liters per kilogram for you metric brewers.

Most of the brews they traditionally made (lambic, wit, small beers) utilized a lot of raw wheat and flour which tended to gum up the works when it came time for the lauter. These ingredients made the resulting wort quite muddled or turbid. This cloudy, starchy wort provided dextrins in sour beers for the bacteria to eat once the yeast had done its job and produced a remarkable amount of body for low gravity beers which weren't soured. The mash tuns of the day weren't heated directly and step infusion mashing was the norm. However, because the mash tuns were now already full of malt, crushed raw grain, flour, and brewing liquor, room had to be made for the infusion of boiling water. They used a tightly woven wicker basket as a strainer to separate the liquid from the mash. They pushed the basket down into the mash and removed enough wort to make room to add the boiling water. At the end of the mashing, they simply ran the reserved wort through the mash as an element of sparging during the lauter. At some point as this new mashing regimen evolved, they treated it as a backward decoction and boiled the reserved wort before returning it to the mash tun in lieu of adding boiling water at all.

With such thick mashes, mechanization was almost required. The labor intensive method of stirring the thick mash with oars eventually gave way to elaborate gear driven mashing machines with arms and rakes which really took much of the manual labor out of mashing. As the designs became more elaborate, the arms were made hollow with perforated disks attached to the ends. They worked like a rotating false bottom to draw the mash liquor from the tun. At some point, the government gave brewers an allowance for "head space" in the tun so that the mash wouldn't spill over the top. The brewers immediately utilized this allowance to add more grain. Another "upgrade" added a vertical conveyer screw to the machinery which caused the mash to heap up in the center and allowed them to add even more grist to the mash tun. The turbid wort drawn from this mash necessitated the fabrication of a "chain copper" which was a boiling vessel fitted with rotating arms that dragged chains around the bottom of the kettle. This kept the pasty sludge of the wort from scorching during the boil. The Industrial Revolution certainly didn't bypass Belgian brewers.

By 1885, the Belgian government finally decided to tax brewers on the gravity of the wort produced (as in Britain) and the size of the mash tun no longer mattered; at least to the tax collector. However, sixty-three years of doing something a particular way makes it "normal" and, of course, all things familiar tend to trump change of any kind. George M. Johnson, a noted British brewing scientist once said "For the space of sixty years, the best minds in the Belgian brewing world seem to have concentrated on the problem of getting a quart into a pint pot." Many Belgian brewers continued using turbid mashing well into the 1950's while it was slowly replaced with procedures and equipment, which today, seem a bit more recognizable to us.

Cantillon and Boon are two of the few breweries in Belgium which still use this mashing method for Lambic-style beers.

Mash tun at Cantillon