

IT'S A MYSTERY TO ME! by Mike Retzlaff

I found an article from 1901 in the Scientific American magazine which stated that the *London Standard* newspaper had called for making sugars for brewing from sugar beets. This, it declared, “*would dispense with the employment of substances like those which brought on the recent arsenical poisonings.*” My interest was perked by these ‘recent poisonings’ so I did a little research.

In the last few months of 1900, an outbreak of illness appeared in the Manchester, England area. The symptoms included muscle paralysis and loss of sensory nerve function. Other symptoms included skin discoloration which led to the common moniker of “khaki disease.” Focus was almost immediately drawn to beer but action was delayed as it was thought to be a side effect of alcoholism. As the number of victims rose, Doctors looked into it with a bit more urgency and the illness was diagnosed as arsenic poisoning.

As the local investigation continued, the epidemic spread to Lancashire and Staffordshire. As one of his first acts as Monarch, Edward VII established a Royal Commission to determine the cause and suggest remedial action. The Commission’s investigation confirmed that beer was the source of the poisoning and it seemed to be confined to the Midlands. Hundreds of beer samples were run through laboratories and many were found to contain arsenic in varying amounts. Oddly, some beers contained arsenic while others from the same brewery did not. Samples of raw materials revealed that some sugars used in the kettle and for cask priming contained arsenic. In other breweries, some beers contained arsenic although they didn’t use contaminated sugars at all. It had all the elements of a mystery novel.

Bostock & Co. near Liverpool was the principal supplier of glucose and invert sugar for the brewers of the region. The company had, only a few years before, been purchased as a thriving concern. It kept on doing business as it always had . . . until now. In the process of refining sugar, Bostock used sulfuric acid purchased from Nicholson & Son in Leeds. This company had recently started making an additional line of sulfuric acid from pyrites. It was this acid which contained the arsenic although it was claimed they had no idea for what purpose Bostock used the acid.

The city of Liverpool alone was estimated to have over 2200 retail outlets for beer. 750,000 gallons of beer were consumed per year in a city with only 680,000 people. Over 267,000 gallons were “poured away” by the brewers of that city when the beer was proven tainted. Overall, millions of gallons of beer were recalled from pubs and dumped into sewers along with the brewery stores which hadn’t yet shipped. Law suits were filed and legislators attempted to enact laws to deal with this fiasco. There were proposals to enact a Pure Beer regulation similar to the Reinheitsgebot of Bavaria which would ban the use of sugar in brewing altogether.

There was still the question of the beer containing arsenic in which no contaminated sugars were used. The Royal Commission studied even malting procedures in detail. It turned out that gas coke kilns were responsible for the arsenic contamination in the malt while other maltsters, using oven coke kilns or those fired with anthracite coal, did not produce contaminated malt. The arsenic contamination of malt had probably existed for several years but was so slight that it was never noticed. Keep in mind that many brewers had their own malting operations while smaller breweries bought their malt from malting houses or larger brewers.

The Commission’s report in July of 1901 apparently led to using anthracite coal in malt kilns as an immediate correction. Eventually, using hot air kilns for drying malt in which the malt was never in contact with the fumes from the fuel became the standard for the industry. Once the problem was identified and corrective solutions were put in place, it was recognized that most of the brewers had been proactive in these corrections and had been far ahead of any legislation or legal mandate. Even breweries which previously didn’t have much use for a chemist were hiring one and providing him an office and laboratory in the brewery.

Over 6,000 people suffered and more than 70 people died due to arsenic poisoning during the several months of this epidemic.