

## New and Very Old

My goal in writing this column is to bring to the attention of the readers something that is new, or at least different, and interesting. I do wonder sometimes whether we pay sufficient attention to history in general and to the history of the sugar industry in particular. I have been intrigued to read “The Sugar Cane,” a long poem in four parts by James Grainger and written in 1764 about his experiences as a sugar planter in the West Indies. I have ended this column with some excerpts from this – the language is very different from the formal technical prose that we use in our day to day technical work. Yet, there is much in what Grainger wrote that describes continuing issues related to cane processing. There is much more in his writings, most of which deal with the social and political issues of the time.

As I was reading Grainger’s work, I came across the comment: “Although it may not be true, it is well conceived.” Grainger’s social and technical commentary may be hard to follow, given the rather flowery language common at his time, but it has the ring of truth and is certainly well conceived. In contrast, I am often approached with technical proposals that are well thought out, do not violate basic scientific principles and sound really good. However, detailed review shows that they are neither true nor useful. Some recent examples are cleaning systems for evaporators, crystallization aids and simple, very low energy systems for extraction of juice from cane; and these are in the area of well established technology. The emerging technology for conversion of cellulosic biomass to ethanol and other liquid fuels is full of wonderful conceptions but very little hard data. I hope that real technology in this area can make its way through the fog/smog of all the ideas currently being promoted. I am confident that this will be a new avenue for the sugar industry but we must make haste slowly.

The following is from Book III of Grainger’s poem and deals with the issues of desirable harvesting weather, cane quality, clarification, crystallization and sugar quality. I have added modern words or phrases where I found the original difficult to understand.

The skilled in chemia, boast of modern arts,  
 Know from experiment, the fire of truth,  
 In many a plant that oil, and acid juice,  
 And ropy mucilage, by nature live:  
 These, envious, stop the much desired embrace  
 Of the essential salts, tho’ coction bid  
 The aqueous particles to mount in air.

Among salts essential, sugar wins the palm,  
 For taste, for color, and for various use:  
 And in the nectar of the yellowest Cane,

Much acor (acidity), and mucilage (viscosity) abound;  
 But in the less mature, from mountain-land,  
 These harsh intruders so redundant float,  
 Muster so strong, as scarce to be subdued....

Nor is it ineffectual: But wouldst thou  
 Have rival brokers for thy cades (kegs or barrels) contend;  
 Superior arts remain. – Small casks provide,  
 Replete with lime-stone thoroughly calcined,  
 And from the air secured: This Bristol sends...  
 Bristol, without thy marble, by the flame  
 Calcined to whiteness, vain the stately reed  
 Would swell with juice mellifluent; heat would soon  
 The strongest, best hung furnaces consume...  
 But chief thy lime the experienced boiler loves,  
 Nor loves ill-founded; when no other art  
 Can bribe to union the coy floating salts,  
 A proper portion of this precious dust...  
 With nectared muscovado soon will charge...

While flows the juice mellifluent from the Cane,...  
 While flame thy chimneys, while thy coppers foam,  
 How blithe, how jocund, the plantation smiles!  
 ...; serene, the sun  
 Shines not intensely hot; the trade-wind blows:  
 How sweet, how silken, is its noontide breath?  
 ...; Then seldom pray for rain:  
 Rather for cloudless days thy prayers prefer;  
 For, if the skies too frequently relent,  
 Crude flows the Cane-juice, and will long elude  
 Thy boilers wariest skill: thy Canes will spring  
 To an unthrifty loftiness: or weighed  
 Down by their load, (Ambition’s curse) decay,

Encourage thou thy boilers: much depends  
 On their skilled efforts. If too soon they strike,  
 E’er all the watery particles have fled;  
 Or lime insufficient granulate the juice:  
 In vain the thickening liquor is effused:  
 An heterogeneous, an uncertain mass,  
 And never in thy coolers to condense.

Or, planter, if the coction they prolong  
 Beyond its stated time; the viscous wave  
 Will in huge flinty masses chrystalize,  
 Which forceful fingers scarce can crumble down;  
 And which with its melasses ne’er will part:  
 Yet this, fast dripping in nectarious drops,  
 Not only betters what remains, but when  
 With art fermented, yields a noble wine,...

In the last coppers, when the embrowning wave  
 With sudden fury swells: some grease immixed,  
 The foaming tumult sudden will compose,  
 And force to union the divided grain.