

Beeronomics

The economics of beer and brewing

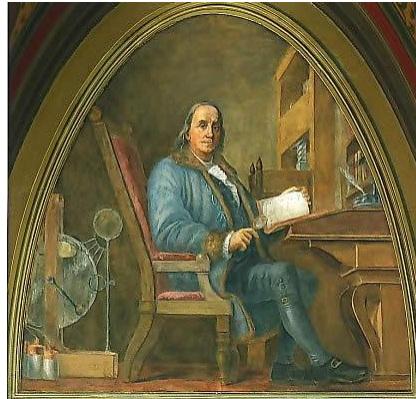
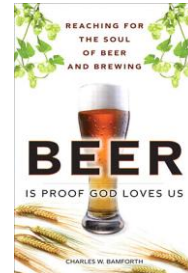


Beer: People as Much as Pounds and Pesetas

Charlie Bamforth

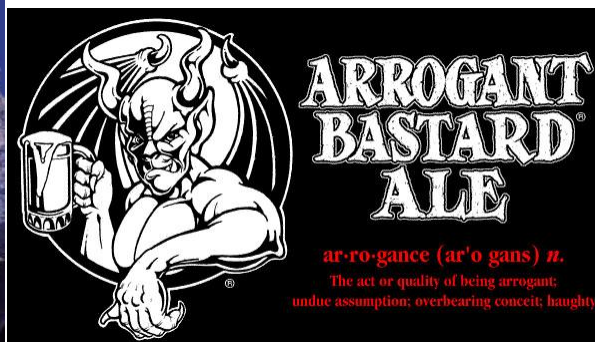


November 3, 2011



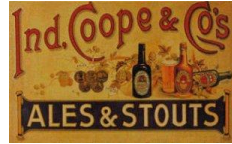
In a 1779 letter to the French economist André Morellet, Franklin wrote

Behold the rain which descends from heaven upon our vineyards, there it enters the roots of the vines, to be changed into wine, a constant proof that God loves us, and loves to see us happy.



1587: the first beer brewed in New World at Sir Walter Raleigh's colony in Virginia

– from corn





INTERCONTINENTAL
HOTELS GROUP



**NFL SUNDAYS
OPEN AT 9AM!**

**ALL THE GAMES!
ALL THE TIME!**

BREAKFAST AVAILABLE
9:30AM TO 10:30AM



DAVIS GRADUATE
805 RUSSELL BLVD
WWW.DAVISGRAD.COM



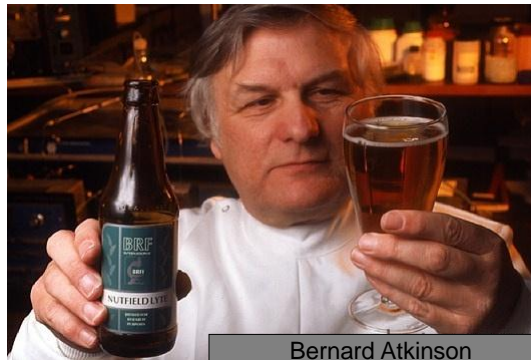
THE EPISCOPAL CHURCH OF ST. MARTIN

Where God can be found, and God can find you

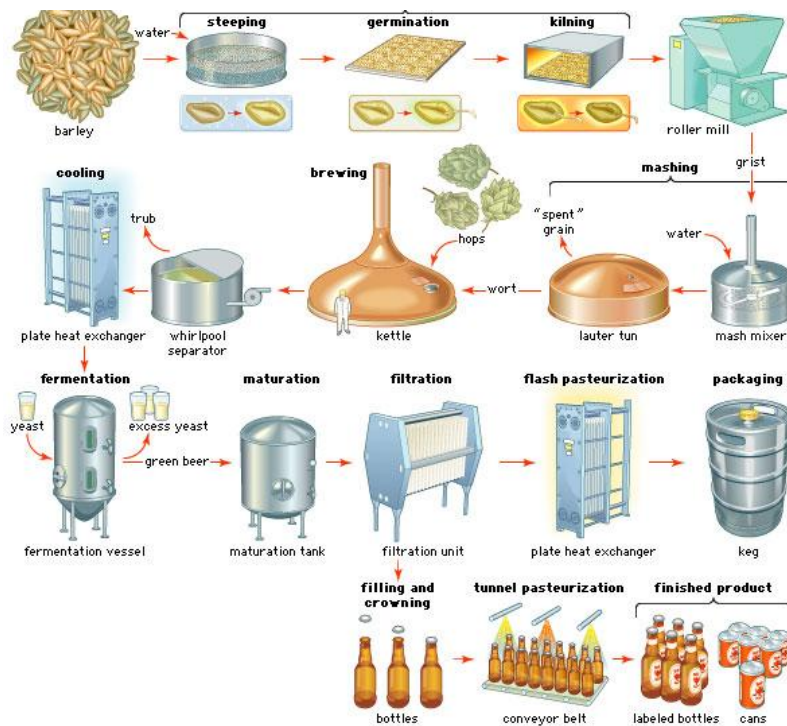








Bernard Atkinson



Corn Syrup Process

- All corn sugar adjunct
- Hop extract
- Yeast
- Water
- "Beer" Flavoring and Coloring
- Quillaia extract (saponin powder) as a foaming agent
- Process begins at the boil
- Includes packaging

“New Paradigm” Process

- Corn based pure ethanol (E100)
- Pre-Isomerized Hop extract
- Water
- “Beer” Flavoring and Coloring
- Quillaia extract (saponin powder) as a foaming agent
- Process starts at blending
- Includes packaging

Conclusions

Percentage Reduction Versus Conventional Process (%)

Variable	Syrup Process	E100 Process
SEC	2.8%	35.9%
Water Usage	11.4%	73.1%
Effluent Output	3.0%	65.9%
Carbon Dioxide	10.2%	47.5%
Cost	8.4%	56.8%

SEC = Specific Energy Consumption

Conclusions

- Preliminary analysis
 - Excellent savings
 - Assumes indistinguishable product (**a big assumption!**)
 - Effect on sale price
- Experimental model
 - Equipment already in place
 - Labor not included



glycerol
beer flavor
malt extract
maltodextrin
corn sugar
citric acid
dried beer extract
caramel color
yucca extract
iso-alpha acids
hop oil
carbon dioxide
water



A panel of 46 beer drinking consumers ranging in age from 21 to 50 years old evaluated the beer, twice. In both cases they scored their liking for the beer on a standard 9-point hedonic scale with 1= like extremely, 5=neither like nor dislike and 9=dislike extremely

First: no explanation

Second: The beer was “manufactured”

SAMPLE SET

PANELIST	Before providing concept	After providing concept	
1	7	7	7
2	7	7	5
3	9	9	9
4	6	6	5
5	2	2	3
6	7	7	7
7	6	6	7
8	7	7	6
9	7	7	8
10	5	5	5
11	8	8	8
12	5	5	4
13	7	7	6
14	7	7	8
15	3	3	4

Before mean = 5.9, range 2 to 9

After mean = 6.2, range 3 to 9

The two mean values were not significantly different at $p < 0.05$.

The consumers in general disliked the beer somewhat.

'Soulless' and very low in flavor.



Third Category



Happoshu





cwbamforth@ucdavis.edu