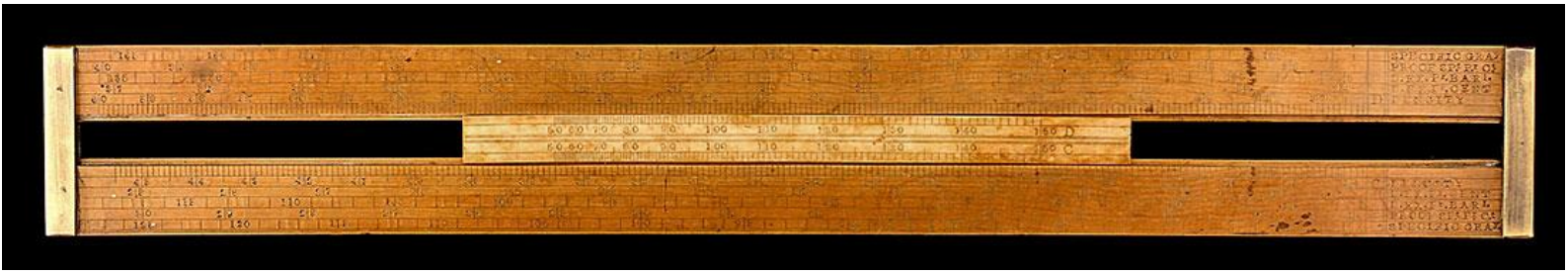
LA REGLE de CALCULO
Dring & Fage

para el

SACCHAROMETER



Gonzalo Martín

Mayo 2019

La regla ‘saccharometer’ de Dring & Fage

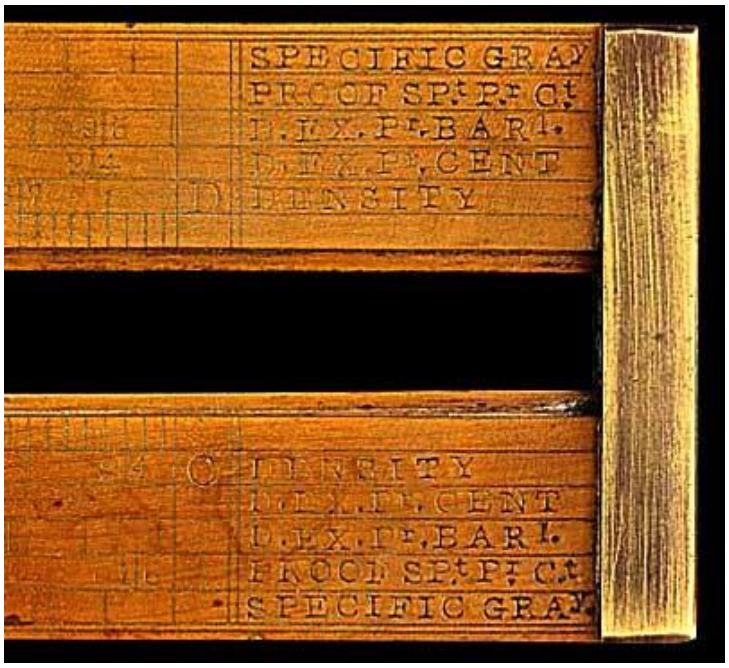
Esta regla formaba parte de los estuches ‘saccharometer’ comercializados por los constructores ingleses de instrumentos de medida a principios del siglo XX.

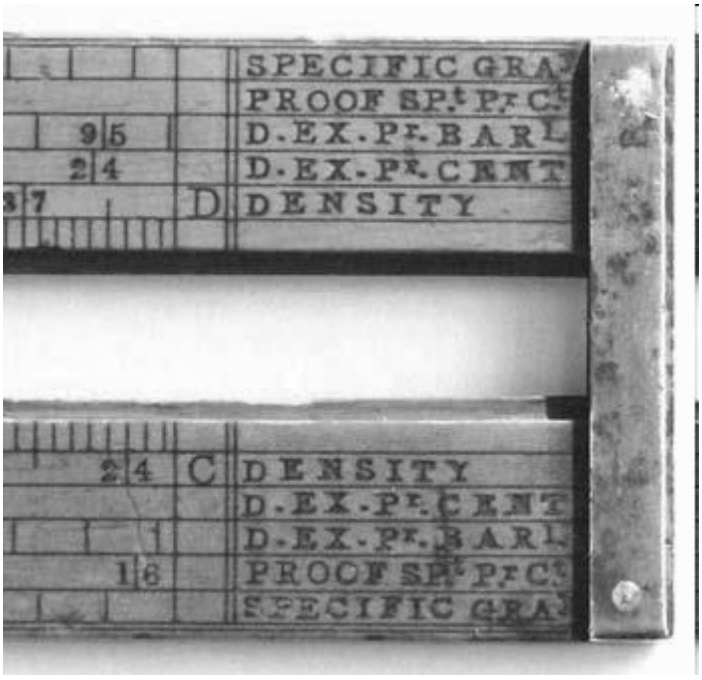
El ‘saccharometer’ se utilizaba en la industria cervecera para medir el contenido de azúcares de los mostos; hoy se utiliza el refractómetro.

La medida obtenida con el ‘saccharometer’ se corregía con la regla de cálculo en función de la temperatura ambiente. La regla de cálculo también servía para ciertas conversiones como, por ejemplo, convertir el valor **‘lb/brl’** en **‘lb dry extract/brl’**.

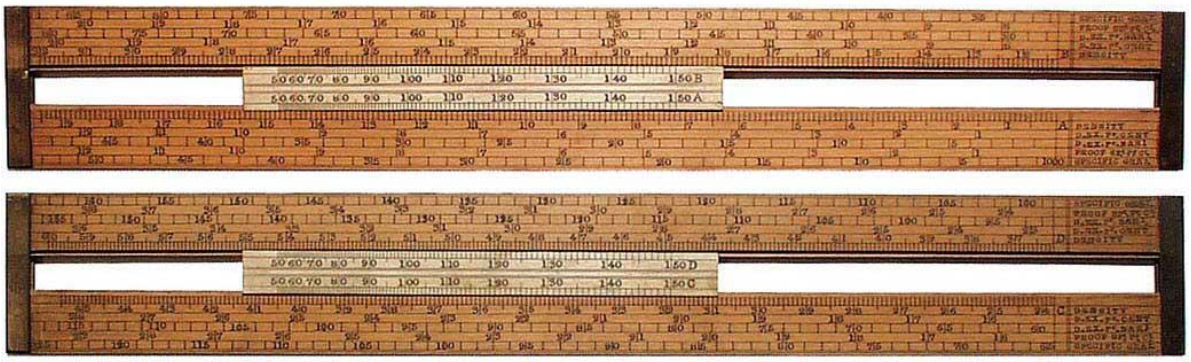
Notamos la ausencia de cursor en todos los ejemplares vistos en catálogos e internet.

Significado de las escalas de la regla Dring & Fage





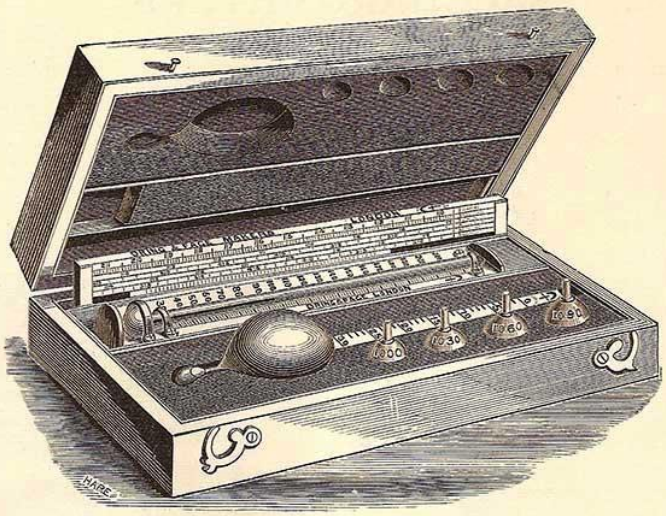
SPECIFIC GRAVITY	the equivalent specific gravity.
PROOF SPt. Pr. Ct.	the number of wine gallons of proof spirit that can be obtained from 100 wine gallons of wort at the appropriate density (lb/brl).
D. EX. Pr. BARl.	the lb dry extract in a barrel of wort.
D. EX. Pr. CENT	the lb dry extract contained in 100 lb of wort (moût).
DENSITY	Richardson's lb/brl



catalogue Herman rekeninstrumenten.nl

catalogue Dring & Fage (c. 1925)

SACCHAROMETERS.

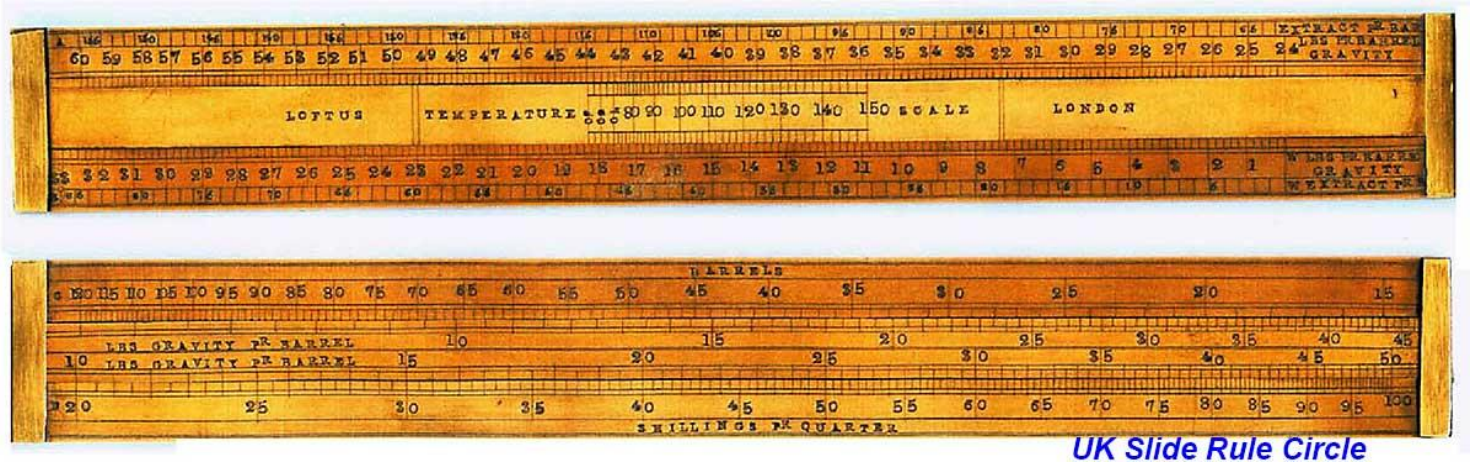


No. Fig. 77. £ s. d.

77 **Bates' Saccharometer,** brass, strongly gilt, with four poises ranging from 1000° to 1030°, 1030° to 1060°, 1060° to 1090°, and 1090° to 1120° specific gravity, with Thermometer and boxwood rule for the correction of temperatures and showing the lbs. per barrel of any wort and the dry extract per barrel, in mahogany case, proof glass and instructions (Fig. 77) .. 4 4 0

Se comercializaron otras reglas de cálculo para utilizarlas con el ‘saccharometer’,

como por ejemplo este modelo de la casa Loftus:



Además de las escalas de la regla Dring & Fage esta regla lleva una escala para estimar en shillings el valor comercial de la malta.

Equivalencias de algunas unidades de medida

Malting and Brewing Science: Volume II Hopped Wort and Beer by J.S.Hough and others (1982)

Conversions

METRIC SYSTEM

m = 1·0936 yard = 3·2808 ft; cm = 0·3937 in;
hectare = 2·471 acre; m^2 = 10·764 ft^2; cm^2 = 0·1550 in^2;
m^3 = 1000 dm^3 (or litre) = 33·315 ft^3 = 61024 in^3;
hl = 100 dm^3 (or litre) = 21·998 gal (British) = 26·418 gal (US) = 0·6111 barrel (British) = 0·8387 barrel (US) = 0·8522 *beer* barrel (US);
litre = 35·196 fl. oz (British) = 33·815 fl. oz (US);
tonne = 1000 kg = short ton = 0·9842 long ton = 2204·6 lb = 10 doppelzentner = 20 zentner; zenter = 50 kg = 0·984 cwt = 110·231 lb;
g = 0·03527 oz = 15·432 grain.

BRITISH MEASURES

yard = 3 ft = 36 in = 0·9144 m;
in = 2.540 cm = 1000 thou (thousandth of an inch);
thou = 25·4 micron or micrometre;
acre = 4840 yd^2 = 0·4047 hectare;
yd^2 = 0·8361 m^2; ft^2 = 9·290 dm^2; in^2 = 6·452 cm^2;
yd^3 = 0·7646 m^3; ft^3 = 28·317 dm^3; in^3 = 16·387 cm^3;
ton (long) = 20 cwt = 2240 lb = 1016 kg;
lb = 16 oz = 256 dram = 7000 grains = 0·45359 kg;
oz = 28·35 g; grain = 64·80 mg;
gal = 160 fl. oz = 8 pints = 1·201 gal (US) = 4·546 litre = 0·1605 $ft.^3$;
pint = 0·5682 litre; fl. oz = 28·412 ml;
butt = 2 hogshead = 3 barrel = 108 gal = 4·9096 hl;
brl = 2 kilderkin = 4 firkin = 36 gal = 1·6365 hl = 1·4 brl beer (US).

US MEASURES

beer brl = 31 gal (US) = 25·81 gal (British) = 1·1734 hl = 0·717 brl British;
standard brl = 31·5 gal (US) = 26·23 gal (British) = 1·1924 hl = 0·729 brl British;
gal = 8 pint = 128 fl. oz = 3·7853 litre = 0·8327 gal British = 231·0 in^3.

BARLEY AND MALT MEASURES

Britain and South Africa:	Barley bushel = 56 lb = 25·401 kg;
	Barley quarter = 448 lb = 203·209 kg;
	Malt bushel = 42 lb = 19·051 kg;
	Malt quarter = 336 lb = 152·407 kg;
Australia and New Zealand:	Barley bushel = 50 lb; Malt bushel = 40 lb;
US and Canada:	Barley bushel = 48 lb; Malt bushel = 34 lb;

USEFUL DATA

1 kcal = 4·186 kJ = 3·968 BTU = 1·1628 Wh = 3088 ft lb;
BTU = 1·055 kJ = 0·252 kcal = 0·2931 Wh = 778·2 ft lb;
Wh = 3·6 kJ = 0·860 kcal = 3·412 BTU = 2655 ft lb;
therm = 105·506 MJ = 29·307 kWh;
standard ton refrigeration per 24 hr = 12000 BTU/hr = 3024 kcal/hr;
atm = bar = 14·70 lb/in^2 = 750.1 mm Hg = 10^5 Nm^{-2};
lb in^{-2} = 6894·76 Nm^{-2} = 0.06895 bar = 703 kg m^{-2} = 27·7 inches water;
lb/gal (British) = 99·76 g/l; lb/gal (US) = 119·8 g/l;
lb/brl (British) = 3.336 g/l; lb/brl (US) = 3·865 g/l;
grain/gal (British) = 14·25 mg/l; grain/gal (US) = 17·12 mg/l;
CO_2 in beer: g/100 ml = 5·06 vol/vol beer;
vol/vol beer = 0·198 g/100 ml.

Fuentes de información

Regla del Museo de Ciencias de Londres:

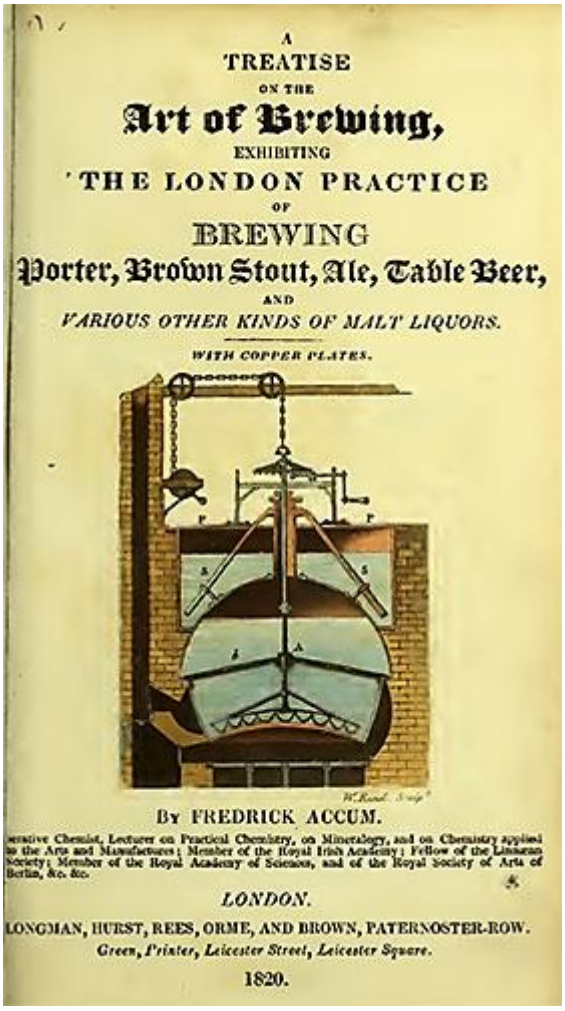
https://collection.maas.museum/object/379329

Revista Oughtred Society -page 32- :

http://www.breweryhistory.com/journal/archive/124_5/Hydrometry.pdf

Tratado de cervecería (1868) -page 113- :
"The brewer: a familiar treatise on the art of brewing, with directions ... Loftus, W. R."

https://babel.hathitrust.org/cgi/pt?id=uc1.31175034926090;view=1up;seq=121


A
TREATISE
ON THE
Art of Brewing,
EXHIBITING
THE LONDON PRACTICE
OF
BREWING
Porter, Brown Stout, Ale, Table Beer,
AND
VARIOUS OTHER KINDS OF MALT LIQUORS.
WITH COPPER PLATES.
By FREDRICK ACCUM.
LONDON.
LONGMAN, HURST, REES, ORME, AND BROWN, PATERNOSTER-ROW.
Green, Printer, Leicester Street, Leicester Square.
1820.

Art of Brewing… Fredrick Accum. https://archive.org/details/b24918660/page/n4