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OF BREWING**

CONTAINING  
**THE TRANSACTIONS OF THE VARIOUS INSTITUTES**  
TOGETHER WITH  
**ABSTRACTS OF PAPERS PUBLISHED IN OTHER JOURNALS.**

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to "break" well. Other yeasts cause the beer to appear quite muddy after primary fermentation and only separate after long standing; these fine, powdery yeasts attenuate the beer to the full extent, and consequently, provided they are free from wild yeasts, they favour the stability of the beer and are recommended for making bottled or export beers. A low degree of attenuation is also obtained by cool fermentation, rapid cooling down after primary fermentation, short cellarage at low temperatures with copious addition of "Kräusen."

By very long storage, the theoretical final degree of attenuation may be exceeded, owing to the conversion of carbohydrates into fermentable sugar by the yeast enzymes.

For bottled and export beers where a high standard of stability is required, a high degree of attenuation should be attained, and this attenuation should in all cases be final. Beer required for rapid local consumption should show a low attenuation, not carried to its final extent, in order to retain a large proportion of extract with fulness and body.

The brewer is advised to make the determination of the final degree of attenuation of his worts a matter of daily control, since this practice would afford a clear indication of the characters of his worts and beers. For this purpose, samples of each brewing should be taken after pitching, and fermented as far as they will go, in a warm place, at 25° C.; fermentation will be complete in 5—6 days.

**The Pale Colour of Beer.** (*Gambrinus*; through *Der Bierbrauer*, 1900, 473).—The Pilsener beer has stimulated the demand for very pale beers, but a correct imitation of the slight greenish tint of Pilsener beer is a matter of some difficulty. The author has observed this greenish colour in four kinds of beer, namely, the Berlin "white beer," the Scotch export pale ale, the Pilsener and the Gratz beers. The first and fourth are prepared by top fermentation, "the second partly by top and partly by bottom," and the third by bottom fermentation.

In considering the causes of this tint the Berlin white beer may be left out of account, since it is made from unboiled wort and the albuminoids of the wort have no chance of being converted into soluble products affecting the colour.

The Indian pale ale for export is brewed as follows:—68 lb. of best

hops are used for 1000 lb. of pale malt; 60 lb. of the hops are digested separately with 108 lb. of water at 75° C., and allowed to infuse. This hop infusion is added to the wort, which is then boiled with 8 lb. of hops. The author suggests that the hop infusion extracts the tannin of the hops, which precipitates the albuminoids of the wort during boiling, and the greenish shade is produced.

The Pilsener beer is treated with so large a proportion of hops, that if these were all boiled with the wort the beer would be unpalatable. The hops are therefore divided into three parts: one-third is boiled with the wort in the usual manner, another third receives only half-an-hour's boiling, and the hot wort is then run through the other third at the time of striking the pan. In this way there is a selective extraction of the tannin from the large quantity of hops, and only a partial extraction of the bitter principles; the large amount of tannin is therefore available for interacting with the albuminoids to produce the greenish colour. The Gratz beer also receives an excessive proportion of hops, and if they were fresh hops the beer would be undrinkable. But only hops five or six years old are employed; it is well known that the storage of hops for long periods causes a destruction or disappearance of the bitter principles and the essential oil, but the tannin would not be affected.

Hence, in all these cases where the greenish colour is characteristic of the beer, the conditions are such as to favour the utilisation of the tannin of the hops, and to restrict that of the bitter and flavouring principles. It therefore follows that the same effect ought to be obtainable by the artificial addition of tannin to a wort treated with a more moderate proportion of hops. This is in fact the case as regards colour, but the artificial addition of tannin causes disturbances in the albuminoids which serve as yeast nutrients, and the fermentation is not satisfactory.

**Evil Effects of Odours in the Brewery, especially those Emanating from Moulds and Putrefactive Organisms.** By P. LINDNER (*Wochensch. Brau.*, 1900, 17, 605, 607).—It is well known that wort and beer are extremely sensitive to odours. A case is quoted of a fire in a malt-house where the smoke penetrated to the brewery. The wort absorbed it readily at all stages; only the beer in active fermentation was free from smoky flavour, as the froth had protected