Fermented Liquors in Old-time Cooking

THE riboflavin value found in ancient buns and ale (see NATURE, September 4, pp. 273–274) has an interesting historical background. Few people realize to-day the extent to which our ancestors used fermented liquors for all manner of domestic purposes.

Out of 516 early English recipes[1] (A.D. 1430–1450), ale, vinegar and wine are given as ingredients 306 times, often two or all three together and in considerable quantities. Barm and yeast (the latter presumably yeast strained from barm) were also used, apart from their normal function in bread and cakes. Fish was almost invariably cooked in ale, vinegar or wine, and mutton was stewed with all three.

In preparing "Mawmene"[2], a mixture of finely shredded pheasant, partridge and capon, often with the addition of pork or veal, wine was added six times, vinegar twice and ale once. The dish was not so alcoholic as it sounds; it was cooked for some time and most of the spirit would evaporate, but what subsidiary food factors were left behind?

The sauces used by our ancestors had a base of crumbled bread mixed with wine, or vinegar, and flavoured with salt, pepper, mustard, cinnamon, cloves and other spices, and many of their meat dishes were sweetened with honey or sugar comfits. Relics of these are our bread sauce with game, red currant jelly with mutton and apple sauce with pork.

A recipe of Sir Kenelm Digby (A.D. 1669)[3] for stewing rump of beef says, "and put upon it about two quarts of good strong deep well bodied claret wine". The gravy must have been rather nice! Sir Kenelm also used elder vinegar with turkey, capon, hare, pigeon and veal, and for fattening chickens recommends that their food should be mixed with ale and adds, "and let them have strong ale to drink".

At about this same period Hannah Woolly[4], a 'domestic science' expert of her time, guaranteed to cure scurvy by steeping scurvy-grass, wormwood, horseradish, red-dock root and various other herbs in five gallons of ale, the patient to drink a pint night and morning—approximately a three weeks course. It would be interesting to know the ascorbic acid value of that mixture.

Hannah Glasse[5] (A.D. 1747) used port and sherry on all possible occasions, stewed her steak in ale and, in a chapter headed "For Captains of Ships", gives a recipe for mushroom catchup to keep twenty years, which starts "Take a gallon of strong stale beer. . . ."

In the early eighteen hundreds, pickled herrings were still a national dish, great quantities were eaten, and there was a thriving Scottish trade in salmon pickled in vinegar, which was exported to the growing industrial towns of the south[6].

These delectable habits died rapidly during the second half of the nineteenth century. Quick transport from the developing railways, the drift of population to the towns during the Industrial Revolution, the growth of vast suburbs with cramped kitchens (later to become our slums), the invention of canning plus the demand of an industrial people for ready prepared foods, most of all, possibly, the ever-increasing excise on fermented liquors and the decline of home brewing—all these played a part in the change.

Whether the result has been for the nutritional benefit of the nation as a whole is open to grave doubt.

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[1] Austin, "Two Fifteenth Century Cookery Books" (Early English Text Society, 1888).
[2] Harleian MS. 4016. "Here Beginnethe a Boke of Kokery".
[3] "The Closet of Sir Kenelm Digby, Opened" (1669).
[4] Woolly, Hannah, "The Queenlike Closet" (1670).
[5] Glasse, Hannah, "The Art of Cookery made Plain and Easy" 1747, and later editions).
[6] Beaufoy pamphlet, *circa* 1820.

Initiation of Glow Discharges

THE form of the breakdown voltage/pressure curve for various gases in the pressure range 0–5 cm. mercury has been established by several investigators. The breakdown voltage usually measured is that at which a galvanometer in series with the experimental tube indicates a current of 0–1 microamp. This current increase is usually so abrupt (Druyvesteyn and Penning[1], p. 105 and Fig. 16) that the corona-starting voltage is defined within a range usually smaller than the accuracy of measurement. Huxley[2,3], Penning[4], Bruce[5] and Boulind[6], among others, have studied He,Ne[2] and N_2[3], A,He,Ne[4], H_2[5], and O_2, CO_2, H_2 and air[6].

There has been little published work dealing oscillographically with the breakdown processes at these pressures[7] (less than 5 cm. mercury). Considerable information is available for air at atmospheric pressures[8,9,10], and more recently, after our own experiments were started, data have been obtained for He, N_2 and A[11] at pressures down to 10 cm. mercury.

Owing to the present circumstances, the time available for our studies has been limited, and the gases used (H_2, N_2, O_2, A, Ne, CO_2, CH_4, air and CCl_2F_2) have usually been of commercial purity. Mercury contamination has been carefully avoided. However, the results obtained with these gases have been so varied and reproducible that some conclusions may be drawn for the pressures less than 3 cm. mercury. Also, the use of alternating current (50 c.p.s.), which is unusual in work of this kind, has been found advantageous and has led to certain improvements in technique. Other earlier workers[12,13] have used A.C. in corona studies carried out before modern methods were applied in this field. Care must clearly be taken in the interpretation of the results, so that effects due to the A.C. are not attributed to discharges in the gases. The A.C. results have, therefore, been checked frequently with D.C., and it is unlikely that any but very minor effects are due to the use of A.C. However, the persistence of metastable atoms in argon apparently causes small currents to flow during the positive half-cycles if appreciable currents are established during the preceding negative half-cycles. This causes the A.C. peak breakdown voltages in argon to be consistently less than the corresponding D.C. breakdown values, whereas in the other gases, the A.C. and D.C. breakdown voltages are identical, within the limits of experimental error. In accordance with the earlier work[4], negative breakdown precedes positive breakdown at the smaller electrode; the only exceptions we have found are oxygen and air at certain pressures in the counter, again confirming established data[6].

The use of a two-beam oscillograph, which allows