

Adulteration of Food.

To elevate the standard of food products, to put a premium on quality v. quantity, has been the object of the concerted efforts of many of our leading houses. To succeed in this meritorious work, they must have the co-operation of their customers; for what will it avail them to handle high-grade goods if there is no demand for them? If the consumer would be well served, he must lend his assistance to the producers, in so much as first to demand that he be well served, and second, to see that he is well served, rejecting all that is not as represented. To succeed in such a system would, of course, necessitate familiarity with the goods handled, and would require study, but what study could be productive of better results? Upon it depends the well-being of the community. Although the art of adulteration has been brought to great perfection, there are in most instances simple methods of detecting sophistication. Jellies, jams, marmalade, fruit, butter, etc., are articles which admit of much adulteration, both in the inspissated substance and the materials used for flavoring. The pulp of the turnip, whose characteristic flavor is easily overcome by admixture and flavoring, is a convenient and favorite material for this purpose; but may be easily detected by the aid of the microscope, the texture of the several fruit pulps for which it is liable to be substituted, being sufficiently dissimilar to be easily recognized. With jams which contain small seeds, such as blackberry, raspberry, etc., the pulp of damaged figs is sometimes mixed. This substitution, although not apparent to the casual observer, may be detected by the microscope by the difference in texture of the pulp, as well as the difference in the seeds. For flavoring this class of preserves, artificial extracts are prepared from several of the compound ethers and appropriately colored with anniline dyes. They are to be distinguished from the genuine fruit juice by the following tests, founded upon the presence of anniline. Fuchsine dyes a woolen or silken thread a permanent rose color, the tint imparted by natural fruit juices washes out, dilute mineral acids redden the natural fruit juices, but turn those containing an aniline dye yellow, artificial syrups are reddened by carbonate of potassium, but natural syrups are not affected, and subacetate of lead precipitated red with fuchsine, but green with natural fruit. Salicylic acid was first produced in 1874 at a cost sufficiently small to permit of its being used in the arts. It was originally brought to notice on account of its inhibitory influence on putrefaction, and is now used by some packers for the purpose of preserving their goods. When pure it appears as a snow-white crystalline powder, without odor or taste, but leaving a sense of astringency on the tongue, and irritation of the membrane of the mouth. The commercial article is, however, often very impure sodium chloride (common salt), carbolic acid and creosotic acid being the usual impurities. It may be detected in its aqueous solution by the addition of a neutral solution of ferric chloride, which develops a beautiful violet color. This is a very delicate test, one part of salicylic acid in four hundred thousand parts of water having been thus detected. The effect of this acid upon the human system is at first similar to that produced by an overdose of quinine, i.e., fullness of the head, with roaring in the ears. It is a powerful drug, and its effect is to paralyze the higher nerve tissue. In the case of spices, purchasers are apt to accept the fact of their being whole as a guarantee of their purity. This, however, is not always the case. Nutmegs are often punctured and boiled to extract the volatile oil, upon which the flavor depends, after which the orifice is so carefully closed up as to defy detection, without breaking the kernel. As the loss in weight when thus manipulated is very marked, they may be recognized, but are not otherwise altered in appearance. An inferior nutmeg is occasionally met with, which may be distinguished by its greater length,

elliptical shape, the absence of the dark brown veins, and its comparatively feeble odor and disagreeable taste. This is the male, or wild nutmeg, and is sometimes mixed with the cultivated article. Cloves are liable to the same treatment as nutmegs, i.e., the admixture with those from which the essential oil has been extracted by distillation, and with the powdered article, when this practice is extensive, detection is nearly impossible. Ginger root, with the exception that inferior grades are sometimes substituted for the better varieties, is generally sold for what it is; but the flour is frequently adulterated with rice starch, flour of ginger, which has been exhausted in the manufacture of preparations, and occasionally brick dust and chalk; the loss of pungency occasioned by the mixture being atoned for by the addition of pepper or mustard. Turmeric is sometimes employed to give color to the adulterated powder, but may be detected by adding an alkali to the alcoholic solution, when, if turmeric acid be present, the liquid will assume a reddish-brown color.

The quality of cinnamon has a wide range of variation, the best coming from Ceylon, but even this is not constant in quality, the flavor and aroma being much affected by the character of the soil and the mode of cultivation, different localities producing different grades. Cassia bark, however, which is only a species of cinnamon, and an inferior article, is often substituted, or mixed with the true cinnamon. It may be detected, when not ground, by close inspection, as the cassia is much thicker than cinnamon flavor less delicate, and not so strong. In the powder, cassia may be recognized by the addition of tincture of iodine to a decoction which will assume a violent tint, due to the starch contained in the cassia. This does not prove the presence of cassia, but only that starch has been in some way introduced. Allspice, from its comparative cheapness, is not liable to be adulterated, although the husk of mustard seed is sometimes mixed with it when in a powdered state; this, however, can be readily detected by the microscope. Curry powder is composed of several ingredients, of which turmeric forms the greater portion, coriander and black pepper are next in amount, and a small proportion is made up of cayenne, cardamoms, cumin, and fenugreek seeds. Small quantities of ginger, cloves and allspice are sometimes used, but not in all cases. As it enters into commerce it is liable to much adulteration, large quantities of ground rice being often incorporated with the powder, and the reduction in color being made up for by the addition of red-lead. The practice of coloring curry powder with lead is pernicious in the extreme, for, unlike most spices, it is consumed in large quantities by those who are fond of it, and they are thus liable to take into their system lead in sufficient quantity to cause serious, if not dangerous results. For the sake of the additional weight, salt is often added in considerable quantity. With much care the microscope will reveal the presence of rice or other flour adulterations, but would not identify anything of an organic nature, further than the discernment of red earthy particles which might or might not be lead; but as no salts of iron are apt to be present, if a small quantity of the powder be shaken up with water and upon addition of sulphide of ammonium the liquid assumes a dark or black appearance the presence of lead is indicated, and the amount by the degree of color assumed.—*New York Grocer's Review.*

The Canadian Magazine for June.

The June number of *The Canadian Magazine* is bright, interesting and well illustrated. A commercial article of interest to everybody, and full of suggestions worthy of the attention of the commercial men and publicists both of Canada and the United States, is that by Chauncey N. Dutton, of Washington, on "The Aorta of North American Commerce." Mr.

Dutton's facts and figures go to show that the rapid growth of American cities on the upper lakes, is owing to the cheap transportation afforded to the materials on which the industries of these cities depend, through large vessels plying on the lakes; and he predicts that, should the Welland Canal and St. Lawrence route be deepened, and deep and speedy connection made from Lake St. George to the Hudson, Toronto and Montreal and various cities on Lake Ontario and the St. Lawrence will also make rapid progress in the future. Z. A. Lash, Q. C., contributes a timely article on the questions before the Buhning Sea arbitration at Paris. J. J. Mackenzie, bacteriologist to the Ontario Board of Health, writes in popular vein an illustrated article on "Bacteria and their Role in Nature." Other illustrated articles are, "The Women of the United States," by Cecil Logsdail; an article on "The Nickel Region of Canada," bringing into prominence the enormous value of the mineral deposits of Algoma and Nipissing; and an article, "Dak to Peshawur," by A. H. Morrison, full of entertaining incidents of a ride from Lahore to the Khyber Pass; "A Rare Specimen," a personal sketch, by J. H. Stevenson, B.A.; "Glimmerings of Sartor Resartus," by C. M. Sinclair; "Aspects of Lake Ontario," by John Hague, F.R.S.S.; "Women and Money," by Ella S. Atkinson; and another of Henry Lye's "Tales of Wayside Inns," are all charmingly written. The stories are "A Cerebral Discovery," by E. MacG. Lawson, and "The Chamois Hunter," by Florence Ashton Fletcher, the latter a most powerful tale, of intense interest and true to life. A number of short poems are given.

Wheat Values May Mend.

The old "bear" cry of immense supplies and tight money, while still used to force down prices and satisfy the destroyers of values, is having less effect among a good share of the investors. They are not so feverish as they were and begin to exhibit more confidence in the stability of our finances, as well as in the fact that wheat prices are too low to continue so long. They realize that the price of wheat as compared with any other product of the farm, is below its real value, and that either the prices of other cereals, cotton, gold and animal products are now too high, or else that wheat is too low. Prices of all these products are regulated in the end by the supply and the demand there is for them. If wheat is relatively too low and out of line with them, the people will consume more flour, as the masses eat what is the cheapest. So it would be with meat, or any other product that is in general use for food. Now meat is high and people use less of it. Flour is cheap, and while it remains so, they will use more bread in the place of meat and potatoes, which will finally help to restore prices to their proper level.

Another thing that is beginning to attract attention is that when the present supply and prospective yield are looked up thoroughly, the situation is not found to be so alarming. In fact, it rather looks as though the supply before the next crop year is out, would be drained pretty low. Now they see if the United States raises 410,000,000 bushels of both spring and winter wheat, which is among the larger estimates, and there is 70,000,000 bushels surplus, which is larger by 10,000,000 bushels than is generally supposed it will be, there would be only 510,000,000 bushels in sight. After taking out of that the amount required for seed and domestic use, there would only be 140,000,000 bushels left for export, which would be 20,000,000 bushels less than the average exports for the last seven years. Now that they are beginning to figure on this, they are looking for a better condition of affairs, even if it does take some time to work off the present surplus and get the great obstacle of big stocks out of sight.—*Minneapolis Market Record*, June 15.