

Report on the adulteration of bread / by Septimus Gibbon.

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REPORT

ON THE

ADULTERATION OF BREAD,

BY
SEPTIMUS GIBBON, A.B. & M.B., (CANTAB.)

Licentiate of the Royal College of Physicians; Medical Officer of Health for the Board of Works, Holborn District; Assistant Physician to the London Hospital, &c., &c.

AT a Meeting of the Board of Works for the Holborn District, held March 16th, 1857, the following Report of the Medical Officer of Health was read, and ordered to be printed for general circulation among the Inhabitants of the District.

(Signed) S. W. HOPWOOD,
Clerk to the Board.

TO THE BOARD OF WORKS, HOLBORN DISTRICT.

GENTLEMEN,—

Since the date of my appointment, I have constantly visited the markets and shops where fish, meat, vegetables, and fruit are exposed for sale, and have also directed the Inspector to visit the public streets and markets, especially Leather Lane, on Saturday nights, where such things are sold; and, as you are aware, in several instances food of an improper kind has been detected and seized. My attention has also been directed to the adulteration of various articles of food sold in this district. It is manufactured articles alone that admit of adulteration, and especially demand my interference; the quality, good or bad, of those provisions which are sold in their "raw" or original condition is sufficiently apparent to enable

the public to protect themselves. Adulterations may be divided into two classes—the one, such as mixing chicory with coffee, is a commercial fraud; the other, such as colouring pickles with salts of copper, is a crime.

It is with the latter class alone, as injurious to health, that a health officer is concerned. Of all manufactured articles of diet, bread is the most important, consequently it has claimed my earnest attention. On analysing numerous samples of that article purchased of different bakers in the district, I have generally found them more or less adulterated with alum; in other respects the article has proved good and wholesome. Notwithstanding that the law (37 Geo. III., c. 98, sec. 21) prohibits under a penalty, the use of alum in the manufacture of bread, it is admitted even by bakers themselves to be so used under the name of “stuff.” I am satisfied that this sophistication has been practised with the most innocent intentions. The bakers believe the portion of alum mixed with the bread to be quite harmless; to a certain extent it is a commercial fraud, though it is a great convenience in the manufacture, and improves the quality of the bread in certain respects which the public appear to value. If it be perfectly harmless, I conceive we have no right whatever to interfere in the matter. However, it is my deliberate opinion, that although alum is not a poison, yet that its use in the manufacture of bread is injurious to health, and concurs indirectly with other things in increasing the mortality, especially of young children, the staple article of whose dietary is bread.

The more effectually to discountenance this practice, I will briefly detail some of the grounds whereon this opinion is founded.

The well known medicinal effect of alum is to confine the bowels. It is also well known that small doses of alum repeated for a considerable time will produce at first costiveness, afterwards great irregularity of the bowels, that is to say, alternations of costiveness and looseness, and at length continued looseness with ulceration. The quantity of alum which I have generally met with in bread, has been in the proportion of from half a drachm to one drachm in the four pound loaf; so that the man who consumes half a loaf a-day swallows every twenty-four hours from 15 to 30 grains of alum. Now it is found that even 12 grains per diem, taken by a healthy adult, will produce constipation. Its effects on children would of course be greater than on adults; a smaller quantity would suffice to produce the diarrhœa and dysenteric symptoms, and they would appear sooner. Alum enters into chemical combination with the gluten of the flour, therefore I admit that its effects in bread are less active and injurious than when administered in its pure state. I have little hesitation, however, in assigning this impurity in the bread as the chief cause of the frequent

constipation, headaches, liver derangements, &c., of those who are dependent on bakers for their bread. The fatal diarrhoea of infants under three years of age may also have arisen from, or have been aggravated by, this cause.

As this adulteration has been practised for a very great length of time, I cannot recommend the adoption of any harsh measures for its suppression; I would suggest that all bakers in the district should be cautioned against it. If any flagrant case occurs where the injury to health is clearly made out, I shall feel it to be my duty to advise your Board to take the necessary proceedings to prevent its recurrence.

When the bakers are duly informed of this opinion, I am in hopes that they will of their own accord cease to use alum in making bread. The bakers' plea at present is that it is harmless, that the public "like it," and "will have it." So that the more effectually to put down an adulteration which is injurious to health, the public on their part should cease to set so high a value on those qualities in a loaf, which alum is used to produce.

The following particulars will, I trust, enable the purchaser to distinguish a loaf that does not contain alum from one which does:—

Alum increases the whiteness and firmness of the bread made from inferior flour, and thereby causes it to resemble bread made from the very best flour. The qualities which alum imparts to a loaf are very unimportant, having reference merely to the appearance, "lightness," neatness of shape, &c.

The chemical action of alum on moistened flour is analogous to tanning, and destroys in a considerable degree its nutritiveness. It converts the gluten (the most nutritious portion) of the flour into a kind of tough tenacious "wash leather," which is difficult of digestion. This gives the dough a tenacity and firmness, enabling it to retain the thousand of little air bubbles (given off by the yeast) which constitutes the "lightness" or spongy porous character of the bread. Hence flour that will not "rise," may be made to do so by means of alum. Another object in the use of alum is that it preserves the upright form of the loaves, and prevents them from adhering firmly together, thereby enabling the baker to separate them more readily on their removal from the oven—the "batch parts clean," as the expression is, without tearing. An unalumed loaf is, with a little practice, distinguishable from an alumed one by its appearance alone, it is wanting in all those peculiarities which I have mentioned as the effects of alum—it is not so bulky nor so symmetrical in its shape: its sides are roughened and torn in being separated from the batch. Unalumed bread "bites short," alumed bread "bites tough," and the rough sour taste

of alum is slightly perceptible in it. The most marked contrast, however, is apparent in "crumbling," when a day or two old; unalumed bread crumbles with the greatest facility by rubbing it between the hands, whereas alumed bread, however old, "crumbles" with difficulty. In the same way alum renders the new loaf less liable to crumble when cut.

These then are the qualities and appearances in a loaf which I recommend the purchaser to disregard. I am not prepared to say that these points can be fully relied on as tests for the presence of alum; chemical tests alone can justify one in declaring positively that a loaf of bread contains alum.

I have the honor to be, Gentlemen,

Your obedient servant,

SEPTIMUS GIBBON, M.B., (Cantab.)

Medical Officer of Health.

11, FINSBURY PLACE, SOUTH,

March 16th, 1857.